



# THE DATASHEET OF SPHWAHDNM231ZT3U9

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Samsung LED  
Retail  
Lighting Solutions

# Increasing Demand for High Color Quality

## Perfect Atmosphere Created by Light

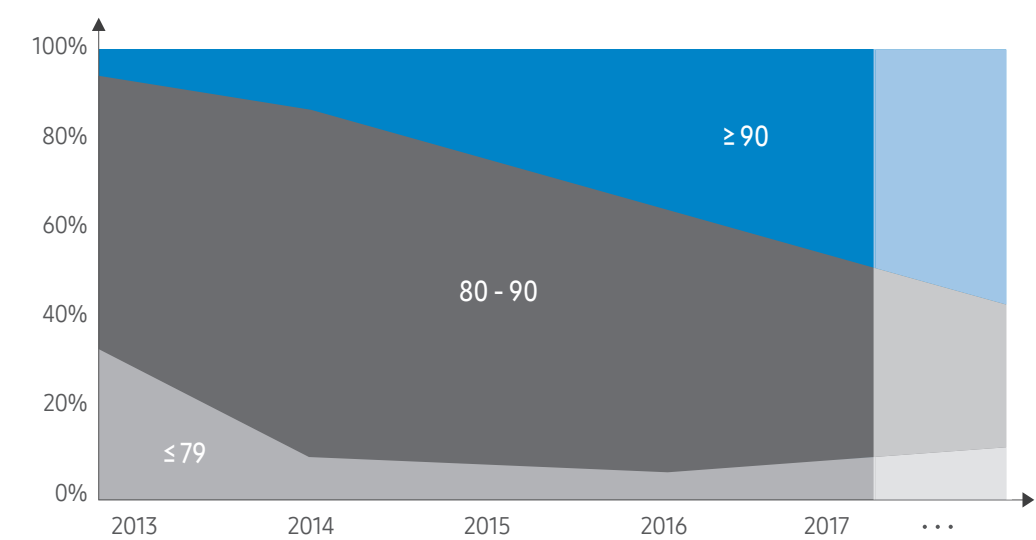
Carefully tuned light intensity and color can influence customers' behavior. It can lead customers to stay longer in the store and eventually result in sales increase



Adam de Guerra\_Design Director, Glowing Structure (Light. Space. Design Summit, March 2019 Australia)

## Lightings Go Natural

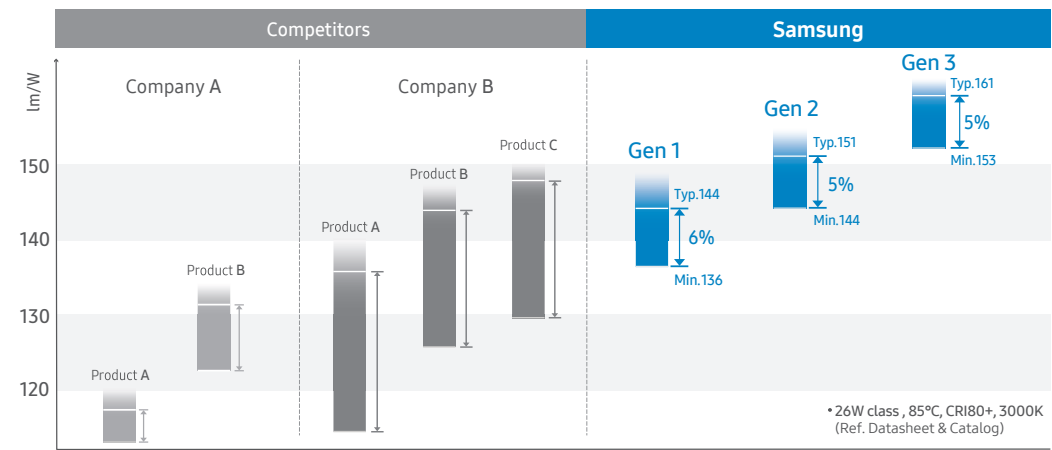
Market demands for more accurate rendering of natural color increased significantly from 4% to 49%



Energy Efficient Light Source

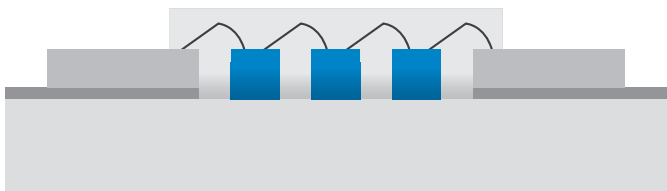
Industry-leading Efficacy

Superior performance based on advanced LED technologies, Samsung COB series provide the industry-leading light efficacy



High Reliability

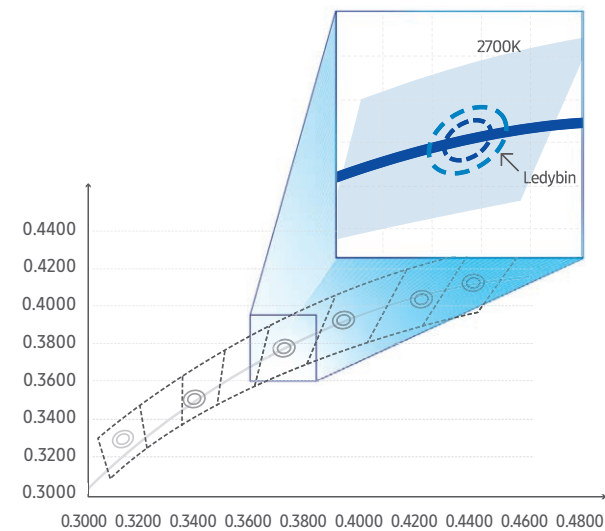
Metal substrate and small chip structure enable low thermal resistance and high reliability



High Color Quality

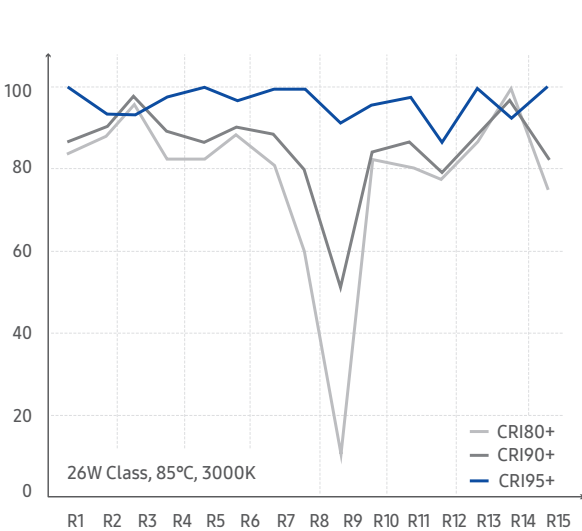
High Color Consistency

All COB LEDs are available in 2-step MacAdam ellipse and also 1-step



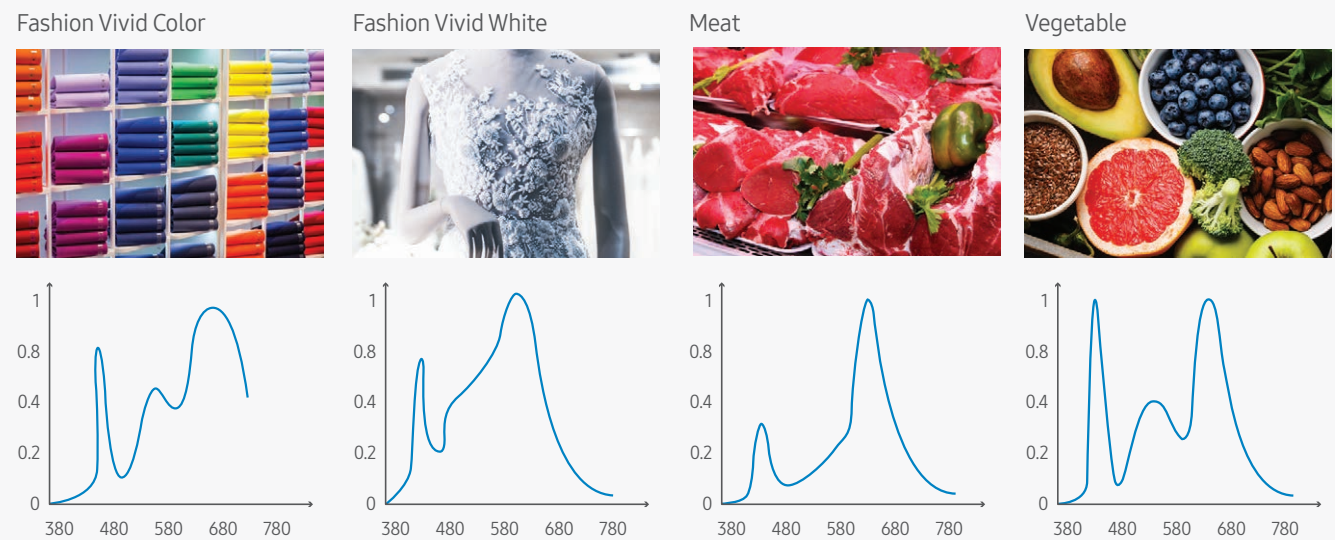
Superior Color Rendering

Ultra High CRI (Ra 95+): Typ. R9 ≈ 90



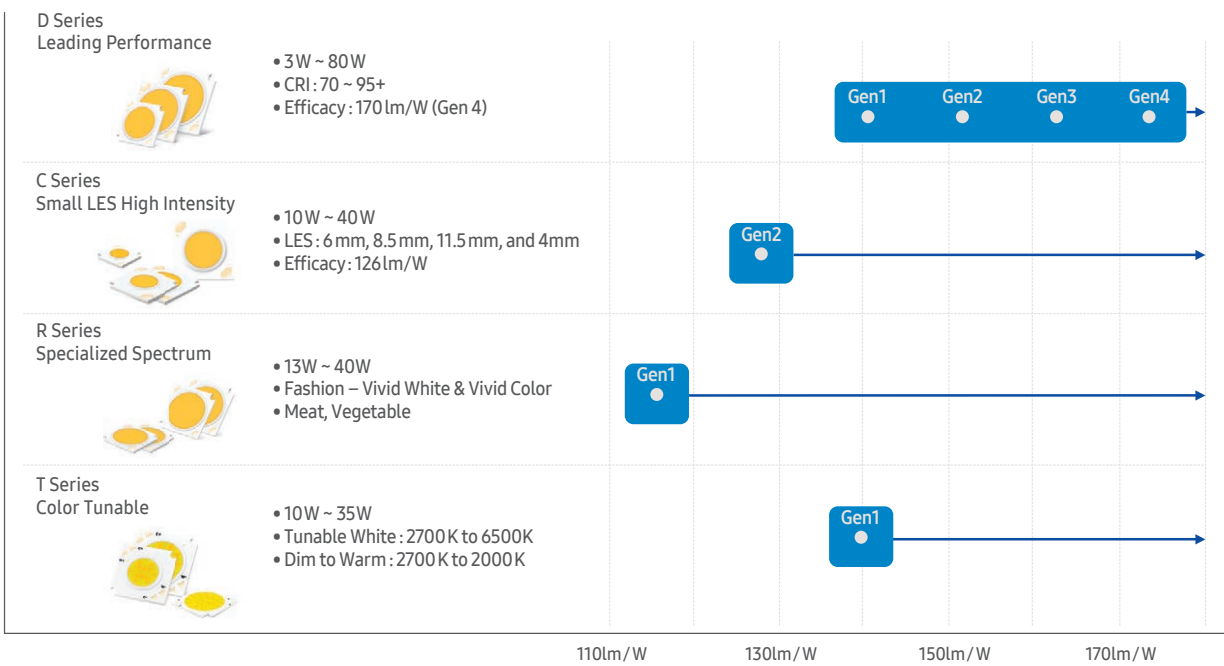
Advanced Spectrum Engineering

Samsung spectrum engineering creates the special color for retail lighting



One Stop Solution

A wide range of wattage and CRI options



D-Series

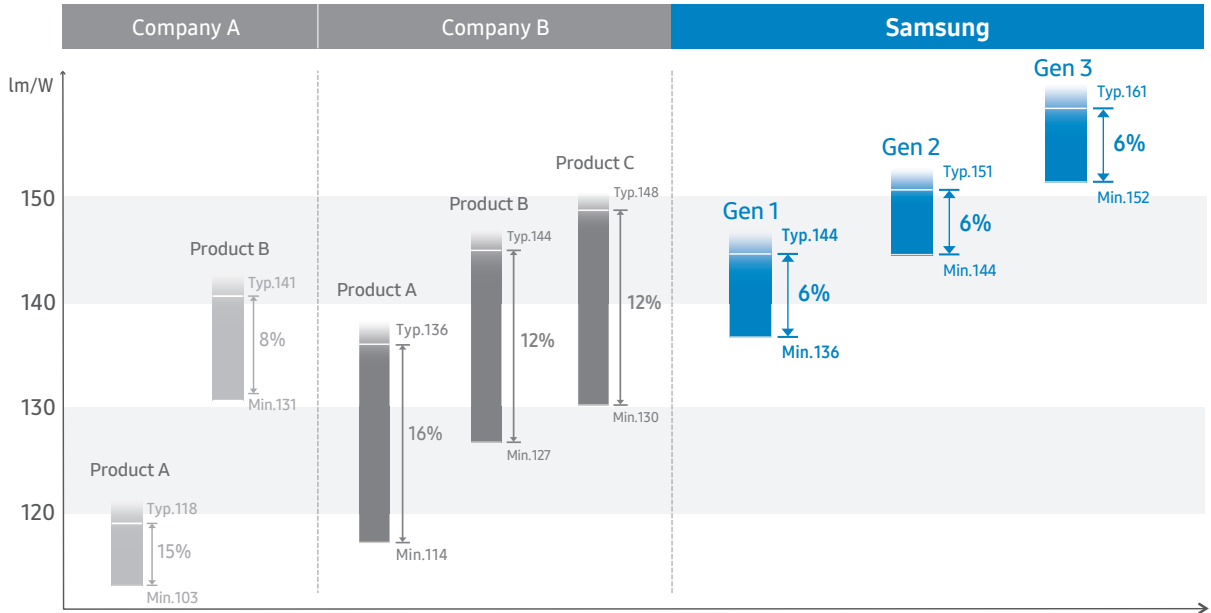
Flawless Lighting,  
Anywhere

Selective quality standards certify superior  
lights for all applications

D-series with Leading Performance

Industry-leading performance in a wide range of wattage and CRI options

The industry-leading performance



A wide range of wattage and CRI options

| D-series | Model LES | Wattage        |    |    |     |                  |     |     |     |                  |     |     |
|----------|-----------|----------------|----|----|-----|------------------|-----|-----|-----|------------------|-----|-----|
|          |           | 3W             | 6W | 9W | 13W | 16W              | 19W | 26W | 33W | 40W              | 60W | 80W |
|          |           | 9.8mm (13.5mm) |    |    |     | 14.5mm (19x19mm) |     |     |     | 22.0mm (28x28mm) |     |     |
| Gen 1    | CRI 70+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 80+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 90+   |                |    |    |     |                  |     |     |     |                  |     |     |
| Gen 2    | CRI 70+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 80+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 90+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 95+   |                |    |    |     |                  |     |     |     |                  |     |     |
| Gen 3    | CRI 70+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 80+   |                |    |    |     |                  |     |     |     |                  |     |     |
|          | CRI 90+   |                |    |    |     |                  |     |     |     |                  |     |     |

D-series Gen 3



| T <sub>j</sub> =85°C | LC003D<br>Gen 3 | LC006D<br>Gen 3  | LC009D<br>Gen 3  | LC013D<br>Gen 3  | LC016D<br>Gen 3   | LC019D<br>Gen 3   | LC026D<br>Gen 3   | LC033D<br>Gen 3   | LC040D<br>Gen 3    | LC060D<br>Gen 3    | LC080D<br>Gen 3    |
|----------------------|-----------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|
| LES                  | 9.8mm           |                  |                  |                  | 14.5mm            |                   |                   |                   | 22 mm              |                    |                    |
| Typical              | 33.8V           |                  |                  |                  |                   |                   |                   |                   |                    | 50.7V              |                    |
|                      | 3.0W<br>(90mA)  | 6.1W<br>(180mA)  | 9.1W<br>(270mA)  | 12.2W<br>(360mA) | 15.2W<br>(450mA)  | 18.3W<br>(540mA)  | 24.3W<br>(720mA)  | 30.4W<br>(900mA)  | 36.5W<br>(1080mA)  | 54.8W<br>(1080mA)  | 82.1W<br>(1620mA)  |
| Max.                 | 8.7W<br>(230mA) | 17.4W<br>(460mA) | 26.1W<br>(690mA) | 34.8W<br>(920mA) | 43.5W<br>(1150mA) | 52.2W<br>(1380mA) | 69.6W<br>(1840mA) | 86.9W<br>(2300mA) | 104.3W<br>(2760mA) | 152.9W<br>(2760mA) | 229.3W<br>(4140mA) |
| Size                 | 13.5mm x 13.5mm |                  |                  |                  | 19mm x 19mm       |                   |                   |                   | 28mm x 28mm        |                    |                    |

Color Variation

※ CRI: Minimum

| Product        | CRI90+ |       |       |       |       | CRI80+ |       |       |       |       |       |       | CRI70+ |       |       |
|----------------|--------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|                | 2700K  | 3000K | 3500K | 4000K | 5000K | 2700K  | 3000K | 3500K | 4000K | 5000K | 5700K | 6500K | 3000K  | 4000K | 5000K |
| LC003D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC006D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC009D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC013D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC016D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC019D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC026D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC033D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC040D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC060D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC080D Gen3    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| MacAdam 2-Step | o      | o     | o     | o     |       | o      | o     | o     | o     |       |       |       |        |       |       |
| MacAdam 3-Step | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |

Specifications

| Product                                                                                               | CRI           | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------|---------------|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                       |               |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC003D Gen 3   | 80+           | 2700          | MacAdam 2step     | SPHWAHDNA25YZW2D3 | 475                        | 156                              | 90mA<br>33.8V                             |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA25YZW3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3000          | MacAdam 2step     | SPHWAHDNA25YZV2D3 | 499                        | 164                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA25YZV3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3500          | MacAdam 2step     | SPHWAHDNA25YZU2D3 | 514                        | 169                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA25YZU3D3 |                            |                                  |                                           |
|                                                                                                       |               | 4000          | MacAdam 2step     | SPHWAHDNA25YZT2D3 | 524                        | 172                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA25YZT3D3 |                            |                                  |                                           |
|                                                                                                       |               | 5000          | MacAdam 3step     | SPHWAHDNA25YZR3D3 | 529                        | 174                              |                                           |
|                                                                                                       |               | 5700          | MacAdam 3step     | SPHWAHDNA25YZQ3D3 | 529                        | 174                              |                                           |
|                                                                                                       | 6500          | MacAdam 3step | SPHWAHDNA25YZP3D3 | 524               | 172                        |                                  |                                           |
|                                                                                                       | 90+           | 2700          | MacAdam 2step     | SPHWAHDNA27YZW2D3 | 407                        | 134                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA27YZW3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3000          | MacAdam 2step     | SPHWAHDNA27YZV2D3 | 428                        | 141                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA27YZV3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3500          | MacAdam 2step     | SPHWAHDNA27YZU2D3 | 441                        | 145                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA27YZU3D3 |                            |                                  |                                           |
|                                                                                                       |               | 4000          | MacAdam 2step     | SPHWAHDNA27YZT2D3 | 450                        | 148                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNA27YZT3D3 |                            |                                  |                                           |
|                                                                                                       |               | 5000          | MacAdam 3step     | SPHWAHDNA27YZR3D3 | 453                        | 149                              |                                           |
| <br>LC006D Gen 3 |               | 80+           | 2700              | MacAdam 2step     | SPHWAHDNB25YZW2D3          | 946                              | 155                                       |
|                                                                                                       | MacAdam 3step |               |                   | SPHWAHDNB25YZW3D3 |                            |                                  |                                           |
|                                                                                                       | 3000          |               | MacAdam 2step     | SPHWAHDNB25YZV2D3 | 994                        | 163                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB25YZV3D3 |                            |                                  |                                           |
|                                                                                                       | 3500          |               | MacAdam 2step     | SPHWAHDNB25YZU2D3 | 1023                       | 168                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB25YZU3D3 |                            |                                  |                                           |
|                                                                                                       | 4000          |               | MacAdam 2step     | SPHWAHDNB25YZT2D3 | 1043                       | 171                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB25YZT3D3 |                            |                                  |                                           |
|                                                                                                       | 5000          |               | MacAdam 3step     | SPHWAHDNB25YZR3D3 | 1052                       | 173                              |                                           |
|                                                                                                       | 5700          |               | MacAdam 3step     | SPHWAHDNB25YZQ3D3 | 1052                       | 173                              |                                           |
|                                                                                                       | 6500          | MacAdam 3step | SPHWAHDNB25YZP3D3 | 1043              | 171                        |                                  |                                           |
|                                                                                                       | 90+           | 2700          | MacAdam 2step     | SPHWAHDNB27YZW2D3 | 809                        | 133                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB27YZW3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3000          | MacAdam 2step     | SPHWAHDNB27YZV2D3 | 851                        | 140                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB27YZV3D3 |                            |                                  |                                           |
|                                                                                                       |               | 3500          | MacAdam 2step     | SPHWAHDNB27YZU2D3 | 877                        | 144                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB27YZU3D3 |                            |                                  |                                           |
|                                                                                                       |               | 4000          | MacAdam 2step     | SPHWAHDNB27YZT2D3 | 895                        | 147                              |                                           |
|                                                                                                       |               |               | MacAdam 3step     | SPHWAHDNB27YZT3D3 |                            |                                  |                                           |
|                                                                                                       |               | 5000          | MacAdam 3step     | SPHWAHDNB27YZR3D3 | 902                        | 148                              |                                           |

Specifications

| Product                                                                                           | CRI           | CCT (K)                                                                                             | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |      |     |
|---------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|------|-----|
|                                                                                                   |               |                                                                                                     |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |      |     |
| <br>LC009D Gen 3 | 70+           | 3000                                                                                                | MacAdam 3step | SPHWAHDNC23YZV3D3 | 1594                       | 174                              | 270mA<br>33.8V                            |      |     |
|                                                                                                   |               | 4000                                                                                                | MacAdam 3step | SPHWAHDNC23Yzt3D3 | 1624                       | 177                              |                                           |      |     |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNC23YzR3D3 | 1653                       | 180                              |                                           |      |     |
|                                                                                                   | 80+           | 2700                                                                                                | MacAdam 2step | SPHWAHDNC25YZW2D3 | 1405                       | 154                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC25YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 3000                                                                                                | MacAdam 2step | SPHWAHDNC25YZV2D3 | 1476                       | 162                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC25YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 3500                                                                                                | MacAdam 2step | SPHWAHDNC25YZU2D3 | 1519                       | 166                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC25YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 4000                                                                                                | MacAdam 2step | SPHWAHDNC25Yzt2D3 | 1550                       | 170                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC25Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNC25YzR3D3 | 1563                       | 171                              |                                           |      |     |
|                                                                                                   |               | 5700                                                                                                | MacAdam 3step | SPHWAHDNC25YZQ3D3 | 1563                       | 171                              |                                           |      |     |
|                                                                                                   |               | 6500                                                                                                | MacAdam 3step | SPHWAHDNC25YZP3D3 | 1550                       | 170                              |                                           |      |     |
|                                                                                                   | 90+           | 2700                                                                                                | MacAdam 2step | SPHWAHDNC27YZW2D3 | 1202                       | 132                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC27YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 3000                                                                                                | MacAdam 2step | SPHWAHDNC27YZV2D3 | 1264                       | 139                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC27YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 3500                                                                                                | MacAdam 2step | SPHWAHDNC27YZU2D3 | 1302                       | 143                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC27YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 4000                                                                                                | MacAdam 2step | SPHWAHDNC27Yzt2D3 | 1329                       | 146                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNC27Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNC27YzR3D3 | 1340                       | 147                              |                                           |      |     |
|                                                                                                   |               | <br>LC013D Gen 3 | 70+           | 3000              | MacAdam 3step              | SPHWAHDND23YZV3D3                |                                           | 2094 | 171 |
| 4000                                                                                              | MacAdam 3step |                                                                                                     |               | SPHWAHDND23Yzt3D3 | 2133                       | 174                              |                                           |      |     |
| 5000                                                                                              | MacAdam 3step |                                                                                                     |               | SPHWAHDND23YzR3D3 | 2171                       | 177                              |                                           |      |     |
| 80+                                                                                               | 2700          |                                                                                                     | MacAdam 2step | SPHWAHDND25YZW2D3 | 1845                       | 152                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND25YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 3000          |                                                                                                     | MacAdam 2step | SPHWAHDND25YZV2D3 | 1939                       | 159                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND25YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 3500          |                                                                                                     | MacAdam 2step | SPHWAHDND25YZU2D3 | 1996                       | 164                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND25YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 4000          |                                                                                                     | MacAdam 2step | SPHWAHDND25Yzt2D3 | 2036                       | 167                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND25Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 5000          |                                                                                                     | MacAdam 3step | SPHWAHDND25YzR3D3 | 2053                       | 169                              |                                           |      |     |
|                                                                                                   | 5700          |                                                                                                     | MacAdam 3step | SPHWAHDND25YZQ3D3 | 2053                       | 169                              |                                           |      |     |
|                                                                                                   | 6500          |                                                                                                     | MacAdam 3step | SPHWAHDND25YZP3D3 | 2036                       | 167                              |                                           |      |     |
| 90+                                                                                               | 2700          |                                                                                                     | MacAdam 2step | SPHWAHDND27YZW2D3 | 1579                       | 130                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND27YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 3000          |                                                                                                     | MacAdam 2step | SPHWAHDND27YZV2D3 | 1661                       | 137                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND27YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 3500          |                                                                                                     | MacAdam 2step | SPHWAHDND27YZU2D3 | 1710                       | 141                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND27YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 4000          |                                                                                                     | MacAdam 2step | SPHWAHDND27Yzt2D3 | 1745                       | 143                              |                                           |      |     |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDND27Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                   | 5000          |                                                                                                     | MacAdam 3step | SPHWAHDND27YzR3D3 | 1760                       | 145                              |                                           |      |     |

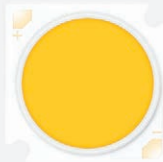
| Product                                                                                             | CRI           | CCT (K)                                                                                               | Color Rank    | Part Number        | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |      |     |
|-----------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------------|----------------------------------|-------------------------------------------|------|-----|
|                                                                                                     |               |                                                                                                       |               |                    | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |      |     |
| <br>LC016D Gen 3 | 70+           | 3000                                                                                                  | MacAdam 3step | SPHWWAHDNE23YZV3D3 | 2697                       | 176                              | 450mA<br>33.8V                            |      |     |
|                                                                                                     |               | 4000                                                                                                  | MacAdam 3step | SPHWWAHDNE23Yzt3D3 | 2747                       | 180                              |                                           |      |     |
|                                                                                                     |               | 5000                                                                                                  | MacAdam 3step | SPHWWAHDNE23YzR3D3 | 2797                       | 183                              |                                           |      |     |
|                                                                                                     | 80+           | 2700                                                                                                  | MacAdam 2step | SPHWWAHDNE25YZW2D3 | 2376                       | 156                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE25YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 3000                                                                                                  | MacAdam 2step | SPHWWAHDNE25YZV2D3 | 2497                       | 164                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE25YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 3500                                                                                                  | MacAdam 2step | SPHWWAHDNE25YZU2D3 | 2570                       | 169                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE25YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 4000                                                                                                  | MacAdam 2step | SPHWWAHDNE25Yzt2D3 | 2622                       | 172                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE25Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 5000                                                                                                  | MacAdam 3step | SPHWWAHDNE25YzR3D3 | 2644                       | 174                              |                                           |      |     |
|                                                                                                     |               | 5700                                                                                                  | MacAdam 3step | SPHWWAHDNE25YzQ3D3 | 2644                       | 174                              |                                           |      |     |
|                                                                                                     |               | 6500                                                                                                  | MacAdam 3step | SPHWWAHDNE25YzP3D3 | 2622                       | 172                              |                                           |      |     |
|                                                                                                     | 90+           | 2700                                                                                                  | MacAdam 2step | SPHWWAHDNE27YZW2D3 | 2033                       | 134                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE27YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 3000                                                                                                  | MacAdam 2step | SPHWWAHDNE27YZV2D3 | 2139                       | 141                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE27YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 3500                                                                                                  | MacAdam 2step | SPHWWAHDNE27YZU2D3 | 2203                       | 145                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE27YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 4000                                                                                                  | MacAdam 2step | SPHWWAHDNE27Yzt2D3 | 2248                       | 148                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNE27Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                     |               | 5000                                                                                                  | MacAdam 3step | SPHWWAHDNE27YzR3D3 | 2267                       | 149                              |                                           |      |     |
|                                                                                                     |               | <br>LC019D Gen 3 | 70+           | 3000               | MacAdam 3step              | SPHWWAHDNF23YZV3D3               |                                           | 3220 | 175 |
| 4000                                                                                                | MacAdam 3step |                                                                                                       |               | SPHWWAHDNF23Yzt3D3 | 3280                       | 179                              |                                           |      |     |
| 5000                                                                                                | MacAdam 3step |                                                                                                       |               | SPHWWAHDNF23YzR3D3 | 3339                       | 182                              |                                           |      |     |
| 80+                                                                                                 | 2700          |                                                                                                       | MacAdam 2step | SPHWWAHDNF25YZW2D3 | 2837                       | 155                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 3000          |                                                                                                       | MacAdam 2step | SPHWWAHDNF25YZV2D3 | 2982                       | 163                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 3500          |                                                                                                       | MacAdam 2step | SPHWWAHDNF25YZU2D3 | 3069                       | 168                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 4000          |                                                                                                       | MacAdam 2step | SPHWWAHDNF25Yzt2D3 | 3130                       | 171                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF25Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 5000          |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YzR3D3 | 3157                       | 173                              |                                           |      |     |
|                                                                                                     | 5700          |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YzQ3D3 | 3157                       | 173                              |                                           |      |     |
|                                                                                                     | 6500          |                                                                                                       | MacAdam 3step | SPHWWAHDNF25YzP3D3 | 3130                       | 171                              |                                           |      |     |
| 90+                                                                                                 | 2700          |                                                                                                       | MacAdam 2step | SPHWWAHDNF27YZW2D3 | 2428                       | 133                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF27YZW3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 3000          |                                                                                                       | MacAdam 2step | SPHWWAHDNF27YZV2D3 | 2554                       | 140                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF27YZV3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 3500          |                                                                                                       | MacAdam 2step | SPHWWAHDNF27YZU2D3 | 2630                       | 144                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF27YZU3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 4000          |                                                                                                       | MacAdam 2step | SPHWWAHDNF27Yzt2D3 | 2684                       | 147                              |                                           |      |     |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWWAHDNF27Yzt3D3 |                            |                                  |                                           |      |     |
|                                                                                                     | 5000          |                                                                                                       | MacAdam 3step | SPHWWAHDNF27YzR3D3 | 2707                       | 148                              |                                           |      |     |

Specifications

| Product                                                                                             | CRI           | CCT (K)           | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------|---------------|-------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                     |               |                   |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC026D Gen 3   | 70+           | 3000              | MacAdam 3step | SPHWAHDNG23YZV3D3 | 4230                       | 174                              | 720mA<br>33.8V                            |
|                                                                                                     |               | 4000              | MacAdam 3step | SPHWAHDNG23Yzt3D3 | 4308                       | 177                              |                                           |
|                                                                                                     |               | 5000              | MacAdam 3step | SPHWAHDNG23YZR3D3 | 4387                       | 180                              |                                           |
|                                                                                                     | 80+           | 2700              | MacAdam 2step | SPHWAHDNG25YZW2D3 | 3727                       | 153                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG25YZW3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3000              | MacAdam 2step | SPHWAHDNG25YZV2D3 | 3917                       | 161                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG25YZV3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3500              | MacAdam 2step | SPHWAHDNG25YzU2D3 | 4032                       | 166                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG25YzU3D3 |                            |                                  |                                           |
|                                                                                                     |               | 4000              | MacAdam 2step | SPHWAHDNG25Yzt2D3 | 4112                       | 169                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG25Yzt3D3 |                            |                                  |                                           |
|                                                                                                     |               | 5000              | MacAdam 3step | SPHWAHDNG25YZR3D3 | 4147                       | 170                              |                                           |
|                                                                                                     |               | 5700              | MacAdam 3step | SPHWAHDNG25YzQ3D3 | 4147                       | 170                              |                                           |
|                                                                                                     |               | 6500              | MacAdam 3step | SPHWAHDNG25YzP3D3 | 4112                       | 169                              |                                           |
|                                                                                                     | 90+           | 2700              | MacAdam 2step | SPHWAHDNG27YZW2D3 | 3190                       | 131                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG27YZW3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3000              | MacAdam 2step | SPHWAHDNG27YZV2D3 | 3355                       | 138                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG27YZV3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3500              | MacAdam 2step | SPHWAHDNG27YzU2D3 | 3455                       | 142                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG27YzU3D3 |                            |                                  |                                           |
|                                                                                                     |               | 4000              | MacAdam 2step | SPHWAHDNG27Yzt2D3 | 3526                       | 145                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNG27Yzt3D3 |                            |                                  |                                           |
| 5000                                                                                                | MacAdam 3step | SPHWAHDNG27YZR3D3 | 3556          | 146               |                            |                                  |                                           |
| <br>LC033D Gen 3 | 70+           | 3000              | MacAdam 3step | SPHWAHDNH23YZV3D3 | 5235                       | 172                              | 900mA<br>33.8V                            |
|                                                                                                     |               | 4000              | MacAdam 3step | SPHWAHDNH23Yzt3D3 | 5332                       | 175                              |                                           |
|                                                                                                     |               | 5000              | MacAdam 3step | SPHWAHDNH23YZR3D3 | 5429                       | 178                              |                                           |
|                                                                                                     | 80+           | 2700              | MacAdam 2step | SPHWAHDNH25YZW2D3 | 4612                       | 152                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNH25YZW3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3000              | MacAdam 2step | SPHWAHDNH25YZV2D3 | 4847                       | 159                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNH25YZV3D3 |                            |                                  |                                           |
|                                                                                                     |               | 3500              | MacAdam 2step | SPHWAHDNH25YzU2D3 | 4989                       | 164                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNH25YzU3D3 |                            |                                  |                                           |
|                                                                                                     |               | 4000              | MacAdam 2step | SPHWAHDNH25Yzt2D3 | 5089                       | 167                              |                                           |
|                                                                                                     |               |                   | MacAdam 3step | SPHWAHDNH25Yzt3D3 |                            |                                  |                                           |
|                                                                                                     |               | 5000              | MacAdam 3step | SPHWAHDNH25YZR3D3 | 5132                       | 169                              |                                           |
|                                                                                                     |               | 5700              | MacAdam 3step | SPHWAHDNH25YzQ3D3 | 5132                       | 169                              |                                           |
|                                                                                                     |               | 6500              | MacAdam 3step | SPHWAHDNH25YzP3D3 | 5089                       | 167                              |                                           |

| Product                                                                                               | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                       |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC033D Gen 3   | 90+ | 2700    | MacAdam 2step | SPHWAHDNH27YZW2D3 | 3947                       | 130                              | 900mA<br>33.8V                            |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNH27YZW3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3000    | MacAdam 2step | SPHWAHDNH27YZV2D3 | 4152                       | 136                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNH27YZV3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3500    | MacAdam 2step | SPHWAHDNH27YZU2D3 | 4276                       | 141                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNH27YZU3D3 |                            |                                  |                                           |
|                                                                                                       |     | 4000    | MacAdam 2step | SPHWAHDNH27YZT2D3 | 4364                       | 143                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNH27YZT3D3 |                            |                                  |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNH27YZR3D3 | 4401                       | 145                              |                                           |
| <br>LC040D Gen 3 | 70+ | 3000    | MacAdam 3step | SPHWAHDNK23YZV3D3 | 6440                       | 176                              | 1080mA<br>33.8V                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNK23YZT3D3 | 6560                       | 180                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNK23YZR3D3 | 6679                       | 183                              |                                           |
|                                                                                                       | 80+ | 2700    | MacAdam 2step | SPHWAHDNK25YZW2D3 | 5675                       | 155                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK25YZW3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3000    | MacAdam 2step | SPHWAHDNK25YZV2D3 | 5963                       | 163                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK25YZV3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3500    | MacAdam 2step | SPHWAHDNK25YZU2D3 | 6138                       | 168                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK25YZU3D3 |                            |                                  |                                           |
|                                                                                                       |     | 4000    | MacAdam 2step | SPHWAHDNK25YZT2D3 | 6261                       | 172                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK25YZT3D3 |                            |                                  |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNK25YZR3D3 | 6313                       | 173                              |                                           |
|                                                                                                       |     | 5700    | MacAdam 3step | SPHWAHDNK25YZQ3D3 | 6313                       | 173                              |                                           |
|                                                                                                       |     | 6500    | MacAdam 3step | SPHWAHDNK25YZP3D3 | 6261                       | 172                              |                                           |
|                                                                                                       | 90+ | 2700    | MacAdam 2step | SPHWAHDNK27YZW2D3 | 4856                       | 133                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK27YZW3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3000    | MacAdam 2step | SPHWAHDNK27YZV2D3 | 5108                       | 140                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK27YZV3D3 |                            |                                  |                                           |
|                                                                                                       |     | 3500    | MacAdam 2step | SPHWAHDNK27YZU2D3 | 5260                       | 144                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK27YZU3D3 |                            |                                  |                                           |
|                                                                                                       |     | 4000    | MacAdam 2step | SPHWAHDNK27YZT2D3 | 5369                       | 147                              |                                           |
|                                                                                                       |     |         | MacAdam 3step | SPHWAHDNK27YZT3D3 |                            |                                  |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNK27YZR3D3 | 5415                       | 148                              |                                           |

Specifications

| Product                                                                                                               | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                       |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC060D Gen 3</div> | 70+ | 3000    | MacAdam 3step | SPHWAHDNL231ZV3D3 | 9518                       | 174                              | 1080mA<br>50.7V                           |
|                                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNL231ZT3D3 | 9694                       | 177                              |                                           |
|                                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNL231ZR3D3 | 9870                       | 180                              |                                           |
|                                                                                                                       | 80+ | 2700    | MacAdam 2step | SPHWAHDNL251ZW2D3 | 8386                       | 153                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL251ZW3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 3000    | MacAdam 2step | SPHWAHDNL251ZV2D3 | 8813                       | 161                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL251ZV3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 3500    | MacAdam 2step | SPHWAHDNL251ZU2D3 | 9071                       | 166                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL251ZU3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 4000    | MacAdam 2step | SPHWAHDNL251ZT2D3 | 9253                       | 169                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL251ZT3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNL251ZR3D3 | 9330                       | 170                              |                                           |
|                                                                                                                       |     | 5700    | MacAdam 3step | SPHWAHDNL251ZQ3D3 | 9330                       | 170                              |                                           |
|                                                                                                                       |     | 6500    | MacAdam 3step | SPHWAHDNL251ZP3D3 | 9253                       | 169                              |                                           |
|                                                                                                                       | 90+ | 2700    | MacAdam 2step | SPHWAHDNL271ZW2D3 | 7177                       | 131                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL271ZW3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 3000    | MacAdam 2step | SPHWAHDNL271ZV2D3 | 7549                       | 138                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL271ZV3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 3500    | MacAdam 2step | SPHWAHDNL271ZU2D3 | 7774                       | 142                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL271ZU3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 4000    | MacAdam 2step | SPHWAHDNL271ZT2D3 | 7934                       | 145                              |                                           |
|                                                                                                                       |     |         | MacAdam 3step | SPHWAHDNL271ZT3D3 |                            |                                  |                                           |
|                                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNL271ZR3D3 | 8002                       | 146                              |                                           |

| Product                                                                                                                 | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                         |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC080D Gen 3</div> | 70+ | 3000    | MacAdam 3step | SPHWAHDNM231ZV3D3 | 14115                      | 172                              | 1620mA<br>50.7V                           |
|                                                                                                                         |     | 4000    | MacAdam 3step | SPHWAHDNM231ZT3D3 | 14376                      | 175                              |                                           |
|                                                                                                                         |     | 5000    | MacAdam 3step | SPHWAHDNM231ZR3D3 | 14637                      | 178                              |                                           |
|                                                                                                                         | 80+ | 2700    | MacAdam 2step | SPHWAHDNM251ZW2D3 | 12437                      | 151                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM251ZW3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 3000    | MacAdam 2step | SPHWAHDNM251ZV2D3 | 13069                      | 159                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM251ZV3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 3500    | MacAdam 2step | SPHWAHDNM251ZU2D3 | 13452                      | 164                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM251ZU3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 4000    | MacAdam 2step | SPHWAHDNM251ZT2D3 | 13721                      | 167                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM251ZT3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 5000    | MacAdam 3step | SPHWAHDNM251ZR3D3 | 13836                      | 168                              |                                           |
|                                                                                                                         |     | 5700    | MacAdam 3step | SPHWAHDNM251ZQ3D3 | 13836                      | 168                              |                                           |
|                                                                                                                         |     | 6500    | MacAdam 3step | SPHWAHDNM251ZP3D3 | 13721                      | 167                              |                                           |
|                                                                                                                         | 90+ | 2700    | MacAdam 2step | SPHWAHDNM271ZW2D3 | 10643                      | 130                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM271ZW3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 3000    | MacAdam 2step | SPHWAHDNM271ZV2D3 | 11195                      | 136                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM271ZV3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 3500    | MacAdam 2step | SPHWAHDNM271ZU2D3 | 11529                      | 140                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM271ZU3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 4000    | MacAdam 2step | SPHWAHDNM271ZT2D3 | 11766                      | 143                              |                                           |
|                                                                                                                         |     |         | MacAdam 3step | SPHWAHDNM271ZT3D3 |                            |                                  |                                           |
|                                                                                                                         |     | 5000    | MacAdam 3step | SPHWAHDNM271ZR3D3 | 11867                      | 144                              |                                           |

D-series Gen 2



| T <sub>J</sub> =85°C | LC003D<br>Gen 2   | LC006D<br>Gen 2   | LC009D<br>Gen 2    | LC013D<br>Gen 2    | LC016D<br>Gen 2     | LC019D<br>Gen 2     | LC026D<br>Gen 2    | LC033D<br>Gen 2     | LC040D<br>Gen 2      | LC060D<br>Gen 2      | LC080D<br>Gen 2     |
|----------------------|-------------------|-------------------|--------------------|--------------------|---------------------|---------------------|--------------------|---------------------|----------------------|----------------------|---------------------|
| LES                  | 9.8mm             |                   |                    |                    | 14.5mm              |                     |                    |                     | 22 mm                |                      |                     |
| Typical              | 34.6 V            |                   |                    |                    |                     |                     |                    |                     |                      | 52 V                 |                     |
|                      | 3.1 W<br>(90 mA)  | 6.2 W<br>(180 mA) | 9.4 W<br>(270 mA)  | 12.5 W<br>(360 mA) | 15.6 W<br>(450 mA)  | 18.7 W<br>(540 mA)  | 24.9 W<br>(720 mA) | 31.1W<br>(900 mA)   | 37.4 W<br>(1080 mA)  | 56.1W<br>(1080 mA)   | 84.2 W<br>(1620 mA) |
| Max.                 | 8.6 W<br>(230 mA) | 17.2W<br>(460 mA) | 25.9 W<br>(690 mA) | 34.5 W<br>(920 mA) | 43.1 W<br>(1150 mA) | 51.8 W<br>(1380 mA) | 69 W<br>(1840 mA)  | 86.2 W<br>(2300 mA) | 103.5 W<br>(2760 mA) | 143.4 W<br>(2760 mA) | 215 W<br>(4140 mA)  |
| Size                 | 13.5mm x 13.5mm   |                   |                    |                    | 19mm x 19mm         |                     |                    |                     | 28mm x 28mm          |                      |                     |

Color Variation

※ CRI: Minimum

| Product        | CRI95+ |       |       |       |       | CRI90+ |       |       |       |       | CRI80+ |       |       |       |       |       |       | CRI70+ |       |       |
|----------------|--------|-------|-------|-------|-------|--------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|                | 2700K  | 3000K | 3500K | 4000K | 5000K | 2700K  | 3000K | 3500K | 4000K | 5000K | 2700K  | 3000K | 3500K | 4000K | 5000K | 5700K | 6500K | 3000K  | 4000K | 5000K |
| LC003D Gen2    |        |       |       |       |       | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC006D Gen2    |        |       |       |       |       | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC009D Gen2    |        |       |       |       |       | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC013D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC016D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC019D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC026D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC033D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC040D Gen2    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC060D Gen2    |        |       |       |       |       | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC080D Gen2    |        |       |       |       |       | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| MacAdam 2-Step | o      | o     | o     | o     |       | o      | o     | o     | o     |       | o      | o     | o     | o     |       |       |       |        |       |       |
| MacAdam 3-Step | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |

Specifications

| Product                                                                                                                  | CRI           | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|--------------------------------------------------------------------------------------------------------------------------|---------------|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                          |               |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC003D Gen 2</div>   | 80+           | 2700          | MacAdam 2step     | SPHWAHDNA25YZW2D2 | 459                        | 147                              | 90mA<br>34.6V                             |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA25YZW3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3000          | MacAdam 2step     | SPHWAHDNA25YZV2D2 | 483                        | 155                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA25YZV3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3500          | MacAdam 2step     | SPHWAHDNA25YZU2D2 | 501                        | 161                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA25YZU3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 4000          | MacAdam 2step     | SPHWAHDNA25YZT2D2 | 507                        | 163                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA25YZT3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 5000          | MacAdam 3step     | SPHWAHDNA25YZR3D2 | 513                        | 165                              |                                           |
|                                                                                                                          |               | 5700          | MacAdam 3step     | SPHWAHDNA25YZQ3D2 | 513                        | 165                              |                                           |
|                                                                                                                          | 6500          | MacAdam 3step | SPHWAHDNA25YZP3D2 | 507               | 163                        |                                  |                                           |
|                                                                                                                          | 90+           | 2700          | MacAdam 2step     | SPHWAHDNA27YZW2D2 | 388                        | 125                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA27YZW3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3000          | MacAdam 2step     | SPHWAHDNA27YZV2D2 | 406                        | 130                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA27YZV3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3500          | MacAdam 2step     | SPHWAHDNA27YZU2D2 | 419                        | 135                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA27YZU3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 4000          | MacAdam 2step     | SPHWAHDNA27YZT2D2 | 427                        | 137                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNA27YZT3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 5000          | MacAdam 3step     | SPHWAHDNA27YZR3D2 | 430                        | 138                              |                                           |
| <div></div> <div>LC006D Gen 2</div> |               | 80+           | 2700              | MacAdam 2step     | SPHWAHDNB25YZW2D2          | 924                              | 148                                       |
|                                                                                                                          | MacAdam 3step |               |                   | SPHWAHDNB25YZW3D2 |                            |                                  |                                           |
|                                                                                                                          | 3000          |               | MacAdam 2step     | SPHWAHDNB25YZV2D2 | 971                        | 156                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB25YZV3D2 |                            |                                  |                                           |
|                                                                                                                          | 3500          |               | MacAdam 2step     | SPHWAHDNB25YZU2D2 | 1001                       | 161                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB25YZU3D2 |                            |                                  |                                           |
|                                                                                                                          | 4000          |               | MacAdam 2step     | SPHWAHDNB25YZT2D2 | 1024                       | 164                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB25YZT3D2 |                            |                                  |                                           |
|                                                                                                                          | 5000          |               | MacAdam 3step     | SPHWAHDNB25YZR3D2 | 1030                       | 165                              |                                           |
|                                                                                                                          | 5700          |               | MacAdam 3step     | SPHWAHDNB25YZQ3D2 | 1030                       | 165                              |                                           |
|                                                                                                                          | 6500          | MacAdam 3step | SPHWAHDNB25YZP3D2 | 1018              | 163                        |                                  |                                           |
|                                                                                                                          | 90+           | 2700          | MacAdam 2step     | SPHWAHDNB27YZW2D2 | 786                        | 126                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB27YZW3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3000          | MacAdam 2step     | SPHWAHDNB27YZV2D2 | 824                        | 132                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB27YZV3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 3500          | MacAdam 2step     | SPHWAHDNB27YZU2D2 | 853                        | 137                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB27YZU3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 4000          | MacAdam 2step     | SPHWAHDNB27YZT2D2 | 870                        | 140                              |                                           |
|                                                                                                                          |               |               | MacAdam 3step     | SPHWAHDNB27YZT3D2 |                            |                                  |                                           |
|                                                                                                                          |               | 5000          | MacAdam 3step     | SPHWAHDNB27YZR3D2 | 874                        | 140                              |                                           |

Specifications

|                                                                                                                      |     |      |               |                   |      |     |                |  |
|----------------------------------------------------------------------------------------------------------------------|-----|------|---------------|-------------------|------|-----|----------------|--|
| <div></div> <div>LC009D Gen 2</div> | 70+ | 3000 | MacAdam 3step | SPHWAHDNC23YZV3D2 | 1578 | 161 | 270mA<br>34.6V |  |
|                                                                                                                      |     | 4000 | MacAdam 3step | SPHWAHDNC23Yzt3D2 | 1654 | 169 |                |  |
|                                                                                                                      |     | 5000 | MacAdam 3step | SPHWAHDNC23YZR3D2 | 1707 | 174 |                |  |
|                                                                                                                      | 80+ | 2700 | MacAdam 2step | SPHWAHDNC25YZW2D2 | 1342 | 144 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC25YZW3D2 |      |     |                |  |
|                                                                                                                      |     | 3000 | MacAdam 2step | SPHWAHDNC25YZV2D2 | 1418 | 152 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC25YZV3D2 |      |     |                |  |
|                                                                                                                      |     | 3500 | MacAdam 2step | SPHWAHDNC25YZU2D2 | 1459 | 156 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC25YZU3D2 |      |     |                |  |
|                                                                                                                      |     | 4000 | MacAdam 2step | SPHWAHDNC25Yzt2D2 | 1494 | 160 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC25Yzt3D2 |      |     |                |  |
|                                                                                                                      |     | 5000 | MacAdam 3step | SPHWAHDNC25YZR3D2 | 1506 | 161 |                |  |
|                                                                                                                      |     | 5700 | MacAdam 3step | SPHWAHDNC25YZQ3D2 | 1506 | 161 |                |  |
|                                                                                                                      |     | 6500 | MacAdam 3step | SPHWAHDNC25YZP3D2 | 1488 | 159 |                |  |
|                                                                                                                      | 90+ | 2700 | MacAdam 2step | SPHWAHDNC27YZW2D2 | 1152 | 123 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC27YZW3D2 |      |     |                |  |
|                                                                                                                      |     | 3000 | MacAdam 2step | SPHWAHDNC27YZV2D2 | 1206 | 129 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC27YZV3D2 |      |     |                |  |
|                                                                                                                      |     | 3500 | MacAdam 2step | SPHWAHDNC27YZU2D2 | 1245 | 133 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC27YZU3D2 |      |     |                |  |
|                                                                                                                      |     | 4000 | MacAdam 2step | SPHWAHDNC27Yzt2D2 | 1273 | 136 |                |  |
|                                                                                                                      |     |      | MacAdam 3step | SPHWAHDNC27Yzt3D2 |      |     |                |  |
|                                                                                                                      |     | 5000 | MacAdam 3step | SPHWAHDNC27YZR3D2 | 1278 | 137 |                |  |

|                                                                                                                        |     |      |               |                   |      |     |                |  |
|------------------------------------------------------------------------------------------------------------------------|-----|------|---------------|-------------------|------|-----|----------------|--|
| <div></div> <div>LC013D Gen 2</div> | 70+ | 3000 | MacAdam 3step | SPHWAHDND23YZV3D2 | 2106 | 161 | 360mA<br>34.6V |  |
|                                                                                                                        |     | 4000 | MacAdam 3step | SPHWAHDND23Yzt3D2 | 2173 | 166 |                |  |
|                                                                                                                        |     | 5000 | MacAdam 3step | SPHWAHDND23YZR3D2 | 2207 | 169 |                |  |
|                                                                                                                        | 80+ | 2700 | MacAdam 2step | SPHWAHDND25YZW2D2 | 1764 | 142 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND25YZW3D2 |      |     |                |  |
|                                                                                                                        |     | 3000 | MacAdam 2step | SPHWAHDND25YZV2D2 | 1857 | 149 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND25YZV3D2 |      |     |                |  |
|                                                                                                                        |     | 3500 | MacAdam 2step | SPHWAHDND25YZU2D2 | 1915 | 154 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND25YZU3D2 |      |     |                |  |
|                                                                                                                        |     | 4000 | MacAdam 2step | SPHWAHDND25Yzt2D2 | 1950 | 157 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND25Yzt3D2 |      |     |                |  |
|                                                                                                                        |     | 5000 | MacAdam 3step | SPHWAHDND25YZR3D2 | 1967 | 158 |                |  |
|                                                                                                                        |     | 5700 | MacAdam 3step | SPHWAHDND25YZQ3D2 | 1967 | 158 |                |  |
|                                                                                                                        |     | 6500 | MacAdam 3step | SPHWAHDND25YZP3D2 | 1938 | 156 |                |  |
|                                                                                                                        | 90+ | 2700 | MacAdam 2step | SPHWAHDND27YZW2D2 | 1509 | 121 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND27YZW3D2 |      |     |                |  |
|                                                                                                                        |     | 3000 | MacAdam 2step | SPHWAHDND27YZV2D2 | 1580 | 127 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND27YZV3D2 |      |     |                |  |
|                                                                                                                        |     | 3500 | MacAdam 2step | SPHWAHDND27YZU2D2 | 1635 | 131 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND27YZU3D2 |      |     |                |  |
|                                                                                                                        |     | 4000 | MacAdam 2step | SPHWAHDND27Yzt2D2 | 1670 | 134 |                |  |
|                                                                                                                        |     |      | MacAdam 3step | SPHWAHDND27Yzt3D2 |      |     |                |  |
|                                                                                                                        |     | 5000 | MacAdam 3step | SPHWAHDND27YZR3D2 | 1674 | 134 |                |  |

|                                                                                                     |               |                                                                                                       |               |                   |               |                   |                |
|-----------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------|---------------|-------------------|---------------|-------------------|----------------|
| <br>LC013D Gen 2 | 95+           | 2700                                                                                                  | MacAdam 2step | SPHWAHDND28YZW2D2 | 1223          | 98                | 360mA<br>34.6V |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDND28YZW3D2 |               |                   |                |
|                                                                                                     |               | 3000                                                                                                  | MacAdam 2step | SPHWAHDND28YZV2D2 | 1285          | 103               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDND28YZV3D2 |               |                   |                |
|                                                                                                     |               | 3500                                                                                                  | MacAdam 2step | SPHWAHDND28YZU2D2 | 1337          | 107               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDND28YZU3D2 |               |                   |                |
|                                                                                                     |               | 4000                                                                                                  | MacAdam 2step | SPHWAHDND28YZT2D2 | 1379          | 111               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDND28YZT3D2 |               |                   |                |
|                                                                                                     |               | 5000                                                                                                  | MacAdam 3step | SPHWAHDND28YZR3D2 | 1390          | 112               |                |
|                                                                                                     |               | <br>LC016D Gen 2 | 70+           | 3000              | MacAdam 3step | SPHWAHDNE23YZV3D2 |                |
| 4000                                                                                                | MacAdam 3step |                                                                                                       |               | SPHWAHDNE23YZT3D2 | 2701          | 173               |                |
| 5000                                                                                                | MacAdam 3step |                                                                                                       |               | SPHWAHDNE23YZR3D2 | 2742          | 176               |                |
| 80+                                                                                                 | 2700          |                                                                                                       | MacAdam 2step | SPHWAHDNE25YZW2D2 | 2293          | 147               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZW3D2 |               |                   |                |
|                                                                                                     | 3000          |                                                                                                       | MacAdam 2step | SPHWAHDNE25YZV2D2 | 2423          | 156               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZV3D2 |               |                   |                |
|                                                                                                     | 3500          |                                                                                                       | MacAdam 2step | SPHWAHDNE25YZU2D2 | 2513          | 161               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZU3D2 |               |                   |                |
|                                                                                                     | 4000          |                                                                                                       | MacAdam 2step | SPHWAHDNE25YZT2D2 | 2558          | 164               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZT3D2 |               |                   |                |
|                                                                                                     | 5000          |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZR3D2 | 2581          | 166               |                |
|                                                                                                     | 5700          |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZQ3D2 | 2581          | 166               |                |
|                                                                                                     | 6500          |                                                                                                       | MacAdam 3step | SPHWAHDNE25YZP3D2 | 2558          | 164               |                |
| 90+                                                                                                 | 2700          |                                                                                                       | MacAdam 2step | SPHWAHDNE27YZW2D2 | 1967          | 126               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE27YZW3D2 |               |                   |                |
|                                                                                                     | 3000          |                                                                                                       | MacAdam 2step | SPHWAHDNE27YZV2D2 | 2084          | 134               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE27YZV3D2 |               |                   |                |
|                                                                                                     | 3500          |                                                                                                       | MacAdam 2step | SPHWAHDNE27YZU2D2 | 2146          | 138               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE27YZU3D2 |               |                   |                |
|                                                                                                     | 4000          |                                                                                                       | MacAdam 2step | SPHWAHDNE27YZT2D2 | 2189          | 141               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE27YZT3D2 |               |                   |                |
|                                                                                                     | 5000          |                                                                                                       | MacAdam 3step | SPHWAHDNE27YZR3D2 | 2209          | 142               |                |
| 95+                                                                                                 | 2700          |                                                                                                       | MacAdam 2step | SPHWAHDNE28YZW2D2 | 1575          | 101               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE28YZW3D2 |               |                   |                |
|                                                                                                     | 3000          |                                                                                                       | MacAdam 2step | SPHWAHDNE28YZV2D2 | 1655          | 106               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE28YZV3D2 |               |                   |                |
|                                                                                                     | 3500          |                                                                                                       | MacAdam 2step | SPHWAHDNE28YZU2D2 | 1722          | 111               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE28YZU3D2 |               |                   |                |
|                                                                                                     | 4000          |                                                                                                       | MacAdam 2step | SPHWAHDNE28YZT2D2 | 1776          | 114               |                |
|                                                                                                     |               |                                                                                                       | MacAdam 3step | SPHWAHDNE28YZT3D2 |               |                   |                |
|                                                                                                     | 5000          |                                                                                                       | MacAdam 3step | SPHWAHDNE28YZR3D2 | 1791          | 115               |                |

Specifications

| Product                                                                                             | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |  |
|-----------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|--|
|                                                                                                     |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |  |
| <br>LC019D Gen 2   | 70+ | 3000    | MacAdam 3step | SPHWAHDNF23YZV3D2 | 3107                       | 166                              | 540mA<br>34.6V                            |  |
|                                                                                                     |     | 4000    | MacAdam 3step | SPHWAHDNF23YZT3D2 | 3207                       | 172                              |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNF23YZR3D2 | 3256                       | 174                              |                                           |  |
|                                                                                                     | 80+ | 2700    | MacAdam 2step | SPHWAHDNF25YZW2D2 | 2728                       | 146                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YZW3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3000    | MacAdam 2step | SPHWAHDNF25YZV2D2 | 2877                       | 154                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3500    | MacAdam 2step | SPHWAHDNF25YU2D2  | 2965                       | 159                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YU3D2  |                            |                                  |                                           |  |
|                                                                                                     |     | 4000    | MacAdam 2step | SPHWAHDNF25YZT2D2 | 3026                       | 162                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YZT3D2 |                            |                                  |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF25YZT3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNF25YZR3D2 | 3059                       | 164                              |                                           |  |
|                                                                                                     |     | 5700    | MacAdam 3step | SPHWAHDNF25YZQ3D2 | 3059                       | 164                              |                                           |  |
|                                                                                                     |     | 6500    | MacAdam 3step | SPHWAHDNF25YZP3D2 | 3026                       | 162                              |                                           |  |
|                                                                                                     | 90+ | 2700    | MacAdam 2step | SPHWAHDNF27YZW2D2 | 2336                       | 125                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF27YZW3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3000    | MacAdam 2step | SPHWAHDNF27YZV2D2 | 2449                       | 131                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF27YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF27YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3500    | MacAdam 2step | SPHWAHDNF27YU2D2  | 2539                       | 136                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF27YU3D2  |                            |                                  |                                           |  |
|                                                                                                     |     | 4000    | MacAdam 2step | SPHWAHDNF27YZT2D2 | 2594                       | 139                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF27YZT3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNF27YZR3D2 | 2596                       | 139                              |                                           |  |
|                                                                                                     | 95+ | 2700    | MacAdam 2step | SPHWAHDNF28YZW2D2 | 1880                       | 101                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF28YZW3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3000    | MacAdam 2step | SPHWAHDNF28YZV2D2 | 1976                       | 106                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF28YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3500    | MacAdam 2step | SPHWAHDNF28YU2D2  | 2056                       | 110                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF28YU3D2  |                            |                                  |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF28YU3D2  |                            |                                  |                                           |  |
|                                                                                                     |     | 4000    | MacAdam 2step | SPHWAHDNF28YZT2D2 | 2121                       | 114                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNF28YZT3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNF28YZR3D2 | 2138                       | 114                              |                                           |  |
| <br>LC026D Gen 2 | 70+ | 3000    | MacAdam 3step | SPHWAHDNG23YZV3D2 | 4063                       | 163                              | 720mA<br>34.6V                            |  |
|                                                                                                     |     | 4000    | MacAdam 3step | SPHWAHDNG23YZT3D2 | 4193                       | 168                              |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNG23YZR3D2 | 4258                       | 171                              |                                           |  |
|                                                                                                     | 80+ | 2700    | MacAdam 2step | SPHWAHDNG25YZW2D2 | 3580                       | 144                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNG25YZW3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3000    | MacAdam 2step | SPHWAHDNG25YZV2D2 | 3762                       | 151                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNG25YZV3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 3500    | MacAdam 2step | SPHWAHDNG25YU2D2  | 3872                       | 155                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNG25YU3D2  |                            |                                  |                                           |  |
|                                                                                                     |     | 4000    | MacAdam 2step | SPHWAHDNG25YZT2D2 | 3950                       | 159                              |                                           |  |
|                                                                                                     |     |         | MacAdam 3step | SPHWAHDNG25YZT3D2 |                            |                                  |                                           |  |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNG25YZR3D2 | 3983                       | 160                              |                                           |  |
|                                                                                                     |     | 5700    | MacAdam 3step | SPHWAHDNG25YZQ3D2 | 3983                       | 160                              |                                           |  |
|                                                                                                     |     | 6500    | MacAdam 3step | SPHWAHDNG25YZP3D2 | 3950                       | 159                              |                                           |  |

| Product                                                                                               | CRI           | CCT (K)          | Color Rank       | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------|---------------|------------------|------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                       |               |                  |                  |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC026D Gen 2   | 90+           | 2700             | MacAdam 2step    | SPHWAHDNG27YZW2D2 | 3064                       | 123                              | 720mA<br>34.6V                            |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG27YZW3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3000             | MacAdam 2step    | SPHWAHDNG27YZV2D2 | 3223                       | 129                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG27YZV3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3500             | MacAdam 2step    | SPHWAHDNG27YU2D2  | 3319                       | 133                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG27YU3D2  |                            |                                  |                                           |
|                                                                                                       |               | 4000             | MacAdam 2step    | SPHWAHDNG27YT2D2  | 3387                       | 136                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG27YT3D2  |                            |                                  |                                           |
|                                                                                                       | 5000          | MacAdam 3step    | SPHWAHDNG27YR3D2 | 3416              | 137                        |                                  |                                           |
|                                                                                                       | 95+           | 2700             | MacAdam 2step    | SPHWAHDNG28YZW2D2 | 2470                       | 99                               |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG28YZW3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3000             | MacAdam 2step    | SPHWAHDNG28YZV2D2 | 2596                       | 104                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG28YZV3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3500             | MacAdam 2step    | SPHWAHDNG28YU2D2  | 2701                       | 108                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNG28YU3D2  |                            |                                  |                                           |
|                                                                                                       |               | 4000             | MacAdam 2step    | SPHWAHDNG28YT2D2  | 2786                       | 112                              |                                           |
| MacAdam 3step                                                                                         |               |                  | SPHWAHDNG28YT3D2 |                   |                            |                                  |                                           |
| 5000                                                                                                  | MacAdam 3step | SPHWAHDNG28YR3D2 | 2809             | 113               |                            |                                  |                                           |
| <br>LC033D Gen 2 | 70+           | 3000             | MacAdam 3step    | SPHWAHDNH23YZV3D2 | 5014                       | 161                              | 900mA<br>34.6V                            |
|                                                                                                       |               | 4000             | MacAdam 3step    | SPHWAHDNH23YT3D2  | 5175                       | 166                              |                                           |
|                                                                                                       |               | 5000             | MacAdam 3step    | SPHWAHDNH23YR3D2  | 5255                       | 169                              |                                           |
|                                                                                                       | 80+           | 2700             | MacAdam 2step    | SPHWAHDNH25YZW2D2 | 4418                       | 142                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH25YZW3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3000             | MacAdam 2step    | SPHWAHDNH25YZV2D2 | 4643                       | 149                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH25YZV3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3500             | MacAdam 2step    | SPHWAHDNH25YU2D2  | 4779                       | 153                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH25YU3D2  |                            |                                  |                                           |
|                                                                                                       |               | 4000             | MacAdam 2step    | SPHWAHDNH25YT2D2  | 4875                       | 157                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH25YT3D2  |                            |                                  |                                           |
|                                                                                                       |               | 5000             | MacAdam 3step    | SPHWAHDNH25YR3D2  | 4916                       | 158                              |                                           |
|                                                                                                       |               | 5700             | MacAdam 3step    | SPHWAHDNH25YQ3D2  | 4916                       | 158                              |                                           |
|                                                                                                       |               | 6500             | MacAdam 3step    | SPHWAHDNH25YP3D2  | 4875                       | 157                              |                                           |
|                                                                                                       | 90+           | 2700             | MacAdam 2step    | SPHWAHDNH27YZW2D2 | 3781                       | 121                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH27YZW2D2 |                            |                                  |                                           |
|                                                                                                       |               | 3000             | MacAdam 2step    | SPHWAHDNH27YZV2D2 | 3977                       | 128                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH27YZV3D2 |                            |                                  |                                           |
|                                                                                                       |               | 3500             | MacAdam 2step    | SPHWAHDNH27YU2D2  | 4096                       | 132                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH27YU3D2  |                            |                                  |                                           |
|                                                                                                       |               | 4000             | MacAdam 2step    | SPHWAHDNH27YT2D2  | 4180                       | 134                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH27YT2D2  |                            |                                  |                                           |
|                                                                                                       |               | 5000             | MacAdam 3step    | SPHWAHDNH27YR3D2  | 4216                       | 135                              |                                           |
|                                                                                                       |               | 95+              | 2700             | MacAdam 2step     | SPHWAHDNH28YZW2D2          | 3057                             |                                           |
|                                                                                                       | MacAdam 3step |                  |                  | SPHWAHDNH28YZW3D2 |                            |                                  |                                           |
|                                                                                                       | 3000          |                  | MacAdam 2step    | SPHWAHDNH28YZV2D2 | 3212                       | 103                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH28YZV3D2 |                            |                                  |                                           |
|                                                                                                       | 3500          |                  | MacAdam 2step    | SPHWAHDNH28YU2D2  | 3343                       | 107                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH28YU3D2  |                            |                                  |                                           |
|                                                                                                       | 4000          |                  | MacAdam 2step    | SPHWAHDNH28YT2D2  | 3447                       | 111                              |                                           |
|                                                                                                       |               |                  | MacAdam 3step    | SPHWAHDNH28YT3D2  |                            |                                  |                                           |
|                                                                                                       | 5000          | MacAdam 3step    | SPHWAHDNH28YR3D2 | 3476              | 112                        |                                  |                                           |

Specifications

| Product                                                                                           | CRI           | CCT (K)                                                                                             | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |      |
|---------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|------|
|                                                                                                   |               |                                                                                                     |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |      |
| <br>LC040D Gen 2 | 70+           | 3000                                                                                                | MacAdam 3step | SPHWAHDNK23YZV3D2 | 6304                       | 169                              | 1080mA<br>34.6V                           |      |
|                                                                                                   |               | 4000                                                                                                | MacAdam 3step | SPHWAHDNK23YZT3D2 | 6506                       | 174                              |                                           |      |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNK23YZR3D2 | 6607                       | 177                              |                                           |      |
|                                                                                                   | 80+           | 2700                                                                                                | MacAdam 2step | SPHWAHDNK25YZW2D2 | 5547                       | 148                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZW3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3000                                                                                                | MacAdam 2step | SPHWAHDNK25YZV2D2 | 5837                       | 156                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZV3D2 |                            |                                  |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZV3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3500                                                                                                | MacAdam 2step | SPHWAHDNK25YZU2D2 | 6016                       | 161                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZU3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 4000                                                                                                | MacAdam 2step | SPHWAHDNK25YZT2D2 | 6146                       | 164                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZT3D2 |                            |                                  |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK25YZT3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNK25YZR3D2 | 6175                       | 165                              |                                           |      |
|                                                                                                   |               | 5700                                                                                                | MacAdam 3step | SPHWAHDNK25YZQ3D2 | 6205                       | 166                              |                                           |      |
|                                                                                                   |               | 6500                                                                                                | MacAdam 3step | SPHWAHDNK25YZP3D2 | 6138                       | 164                              |                                           |      |
|                                                                                                   | 90+           | 2700                                                                                                | MacAdam 2step | SPHWAHDNK27YZW2D2 | 4755                       | 127                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK27YZW3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3000                                                                                                | MacAdam 2step | SPHWAHDNK27YZV2D2 | 5024                       | 134                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK27YZV3D2 |                            |                                  |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK27YZV3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3500                                                                                                | MacAdam 2step | SPHWAHDNK27YZU2D2 | 5152                       | 138                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK27YZU3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 4000                                                                                                | MacAdam 2step | SPHWAHDNK27YZT2D2 | 5266                       | 141                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK27YZT3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNK27YZR3D2 | 5325                       | 143                              |                                           |      |
|                                                                                                   | 95+           | 2700                                                                                                | MacAdam 2step | SPHWAHDNK28YZW2D2 | 3760                       | 101                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK28YZW3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3000                                                                                                | MacAdam 2step | SPHWAHDNK28YZV2D2 | 3952                       | 106                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK28YZV3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 3500                                                                                                | MacAdam 2step | SPHWAHDNK28YZU2D2 | 4113                       | 110                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK28YZU3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 4000                                                                                                | MacAdam 2step | SPHWAHDNK28YZT2D2 | 4241                       | 113                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNK28YZT3D2 |                            |                                  |                                           |      |
|                                                                                                   |               | 5000                                                                                                | MacAdam 3step | SPHWAHDNK28YZR3D2 | 4277                       | 114                              |                                           |      |
|                                                                                                   |               | <br>LC060D Gen 2 | 70+           | 3000              | MacAdam 3step              | SPHWAHDNL231ZV3D2                |                                           | 9225 |
| 4000                                                                                              | MacAdam 3step |                                                                                                     |               | SPHWAHDNL231ZT3D2 | 9521                       | 170                              |                                           |      |
| 5000                                                                                              | MacAdam 3step |                                                                                                     |               | SPHWAHDNL231ZR3D2 | 9668                       | 172                              |                                           |      |
| 80+                                                                                               | 2700          |                                                                                                     | MacAdam 2step | SPHWAHDNL251ZW2D2 | 8107                       | 144                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZW3D2 |                            |                                  |                                           |      |
|                                                                                                   | 3000          |                                                                                                     | MacAdam 2step | SPHWAHDNL251ZV2D2 | 8542                       | 152                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZV3D2 |                            |                                  |                                           |      |
|                                                                                                   | 3500          |                                                                                                     | MacAdam 2step | SPHWAHDNL251ZU2D2 | 8812                       | 157                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZU3D2 |                            |                                  |                                           |      |
|                                                                                                   | 4000          |                                                                                                     | MacAdam 2step | SPHWAHDNL251ZT2D2 | 8995                       | 160                              |                                           |      |
|                                                                                                   |               |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZT3D2 |                            |                                  |                                           |      |
|                                                                                                   | 5000          |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZR3D2 | 9039                       | 161                              |                                           |      |
|                                                                                                   | 5700          |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZQ3D2 | 9084                       | 162                              |                                           |      |
|                                                                                                   | 6500          |                                                                                                     | MacAdam 3step | SPHWAHDNL251ZP3D2 | 8990                       | 160                              |                                           |      |

| Product                                                                                             | CRI                                                                                                  | CCT (K)           | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                     |                                                                                                      |                   |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC060D Gen 2 | 90+                                                                                                  | 2700              | MacAdam 2step     | SPHWAHDNL271ZW2D2 | 6959                       | 124                              | 1080mA<br>52V                             |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNL271ZW3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 3000              | MacAdam 2step     | SPHWAHDNL271ZV2D2 | 7352                       | 131                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNL271ZV3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 3500              | MacAdam 2step     | SPHWAHDNL271ZU2D2 | 7539                       | 134                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNL271ZU3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 4000              | MacAdam 2step     | SPHWAHDNL271ZT2D2 | 7706                       | 137                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNL271ZT3D2 |                            |                                  |                                           |
| 5000                                                                                                | MacAdam 3step                                                                                        | SPHWAHDNL271ZR3D2 | 7793              | 139               |                            |                                  |                                           |
|                                                                                                     | <br>LC080D Gen 2 | 70+               | 3000              | MacAdam 3step     | SPHWAHDNM231ZV3D2          | 13465                            | 160                                       |
| 4000                                                                                                |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM231ZT3D2 | 13896                      | 165                              |                                           |
| 5000                                                                                                |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM231ZR3D2 | 14112                      | 168                              |                                           |
| 80+                                                                                                 |                                                                                                      | 2700              | MacAdam 2step     | SPHWAHDNM251ZW2D2 | 11815                      | 140                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM251ZW3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 3000              | MacAdam 2step     | SPHWAHDNM251ZV2D2 | 12468                      | 148                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM251ZV3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 3500              | MacAdam 2step     | SPHWAHDNM251ZU2D2 | 12852                      | 153                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM251ZU3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 4000              | MacAdam 2step     | SPHWAHDNM251ZT2D2 | 13123                      | 156                              |                                           |
|                                                                                                     |                                                                                                      |                   | MacAdam 3step     | SPHWAHDNM251ZT3D2 |                            |                                  |                                           |
|                                                                                                     |                                                                                                      | 5000              | MacAdam 3step     | SPHWAHDNM251ZR3D2 | 13196                      | 157                              |                                           |
|                                                                                                     | 5700                                                                                                 | MacAdam 3step     | SPHWAHDNM251ZQ3D2 | 13258             | 157                        |                                  |                                           |
| 6500                                                                                                | MacAdam 3step                                                                                        | SPHWAHDNM251ZP3D2 | 13121             | 156               |                            |                                  |                                           |
| 90+                                                                                                 | 2700                                                                                                 | MacAdam 2step     | SPHWAHDNM271ZW2D2 | 10157             | 121                        |                                  |                                           |
|                                                                                                     |                                                                                                      | MacAdam 3step     | SPHWAHDNM271ZW3D2 |                   |                            |                                  |                                           |
|                                                                                                     | 3000                                                                                                 | MacAdam 2step     | SPHWAHDNM271ZV2D2 | 10731             | 127                        |                                  |                                           |
|                                                                                                     |                                                                                                      | MacAdam 3step     | SPHWAHDNM271ZV3D2 |                   |                            |                                  |                                           |
|                                                                                                     | 3500                                                                                                 | MacAdam 2step     | SPHWAHDNM271ZU2D2 | 11004             | 131                        |                                  |                                           |
|                                                                                                     |                                                                                                      | MacAdam 3step     | SPHWAHDNM271ZU3D2 |                   |                            |                                  |                                           |
|                                                                                                     | 4000                                                                                                 | MacAdam 2step     | SPHWAHDNM271ZT2D2 | 11247             | 134                        |                                  |                                           |
|                                                                                                     |                                                                                                      | MacAdam 3step     | SPHWAHDNM271ZT3D2 |                   |                            |                                  |                                           |
| 5000                                                                                                | MacAdam 3step                                                                                        | SPHWAHDNM271ZR3D2 | 11375             | 135               |                            |                                  |                                           |

D-series Gen 1



| T <sub>J</sub> =85°C | LC003D<br>Gen1    | LC006D<br>Gen1    | LC009D<br>Gen1     | LC013D<br>Gen1     | LC016D<br>Gen1      | LC019D<br>Gen1      | LC026D<br>Gen1     | LC040D<br>Gen1       | LC060D<br>Gen1       | LC080D<br>Gen1      |
|----------------------|-------------------|-------------------|--------------------|--------------------|---------------------|---------------------|--------------------|----------------------|----------------------|---------------------|
| LES                  | 9.8mm             |                   |                    |                    | 14.5mm              |                     |                    | 22mm                 |                      |                     |
| Typical              | 34.6 V            |                   |                    |                    |                     |                     |                    |                      | 52 V                 |                     |
|                      | 3.1 W<br>(90 mA)  | 6.2 W<br>(180 mA) | 9.4 W<br>(270 mA)  | 12.5 W<br>(360 mA) | 15.6 W<br>(450 mA)  | 18.7 W<br>(540 mA)  | 24.9 W<br>(720 mA) | 37.4 W<br>(1080 mA)  | 56.1 W<br>(1080 mA)  | 84.2 W<br>(1620 mA) |
| Max.                 | 8.6 W<br>(230 mA) | 17.2W<br>(460 mA) | 25.9 W<br>(690 mA) | 34.5 W<br>(920 mA) | 43.1 W<br>(1150 mA) | 51.8 W<br>(1380 mA) | 69 W<br>(1840 mA)  | 103.5 W<br>(2760 mA) | 143.4 W<br>(2760 mA) | 215 W<br>(2760 mA)  |
| Size                 | 13.5 x 13.5mm     |                   |                    |                    | 19 x 19mm           |                     |                    | 28 x 28mm            |                      |                     |

Color Variation

※ CRI: Minimum

| Product        | CRI90+ |       |       |       |       | CRI80+ |       |       |       |       |       |       | CRI70+ |       |       |
|----------------|--------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|                | 2700K  | 3000K | 3500K | 4000K | 5000K | 2700K  | 3000K | 3500K | 4000K | 5000K | 5700K | 6500K | 3000K  | 4000K | 5000K |
| LC003D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC006D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC009D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC013D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC016D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC019D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC026D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC040D Gen1    | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     |        |       |       |
| LC060D Gen1    |        |       |       |       |       | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| LC080D Gen1    |        |       |       |       |       | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |
| MacAdam 2-Step | o      | o     | o     | o     | o     | o      | o     | o     | o     |       |       |       |        |       |       |
| MacAdam 3-Step | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     | o     | o     | o      | o     | o     |

Specifications

| Product                                                                                                                 | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                         |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC003D Gen1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNA25YZW2A9 | 413                        | 133                              | 90mA<br>34.6V                             |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZW3A9 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA25YZW2D1 | 434                        | 139                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNA25YZV2B1 | 435                        | 140                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZV3B1 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA25YZV2D1 | 457                        | 147                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNA25YZU2B2 | 451                        | 145                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZU3B2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA25YZU2D1 | 474                        | 152                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25YZU3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 4000          | MacAdam 2step     | SPHWAHDNA25Yzt2B3 | 457                        | 147                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25Yzt3B3 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA25Yzt2D1 | 480                        | 154                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA25Yzt3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 5000          | MacAdam 3step     | SPHWAHDNA25YZR3B3 | 462                        | 148                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNA25YZR3D1 | 485                        | 156                              |                                           |
|                                                                                                                         |     | 5700          | MacAdam 3step     | SPHWAHDNA25YZQ3B3 | 462                        | 148                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNA25YZQ3D1 | 485                        | 156                              |                                           |
|                                                                                                                         |     | 6500          | MacAdam 3step     | SPHWAHDNA25YZP3B3 | 457                        | 147                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNA25YZP3D1 | 480                        | 154                              |                                           |
|                                                                                                                         | 90+ | 2700          | MacAdam 2step     | SPHWAHDNA27YZW2A3 | 349                        | 112                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA27YZW3A3 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA27YZW2D1 | 367                        | 118                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA27YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNA27YZV2A4 | 365                        | 117                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA27YZV3A4 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNA27YZV2D1 | 384                        | 123                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA27YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNA27YZU2A5 | 377                        | 121                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNA27YZU3A5 |                            |                                  |                                           |
| MacAdam 2step                                                                                                           |     |               | SPHWAHDNA27YZU2D1 | 396               | 127                        |                                  |                                           |
| MacAdam 3step                                                                                                           |     |               | SPHWAHDNA27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                    |     | MacAdam 2step | SPHWAHDNA27Yzt2A6 | 385               | 124                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNA27Yzt3A6 |                   |                            |                                  |                                           |
|                                                                                                                         |     | MacAdam 2step | SPHWAHDNA27Yzt2D1 | 404               | 130                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNA27Yzt3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                    |     | MacAdam 3step | SPHWAHDNA27YZR3A6 | 387               | 124                        |                                  |                                           |
|                                                                                                                         |     |               | SPHWAHDNA27YZR3D1 | 407               | 131                        |                                  |                                           |

Specifications

| Product                                                                                                               | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                       |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC006D Gen1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNB25YZW2E9 | 832                        | 134                              | 180mA<br>34.6V                            |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZW3E9 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB25YZW2D1 | 874                        | 140                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZW3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3000          | MacAdam 2step     | SPHWAHDNB25YZV2F3 | 875                        | 140                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZV3F3 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB25YZV2D1 | 919                        | 148                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZV3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3500          | MacAdam 2step     | SPHWAHDNB25YZU2F5 | 902                        | 145                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZU3F5 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB25YZU2D1 | 947                        | 152                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZU3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 4000          | MacAdam 2step     | SPHWAHDNB25YZT2F8 | 923                        | 148                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZT3F8 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB25YZT2D1 | 969                        | 156                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB25YZT3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 5000          | MacAdam 3step     | SPHWAHDNB25YZR3F8 | 928                        | 149                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNB25YZR3D1 | 975                        | 157                              |                                           |
|                                                                                                                       |     | 5700          | MacAdam 3step     | SPHWAHDNB25YZQ3F8 | 928                        | 149                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNB25YZQ3D1 | 975                        | 157                              |                                           |
|                                                                                                                       |     | 6500          | MacAdam 3step     | SPHWAHDNB25YZP3F7 | 918                        | 147                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNB25YZP3D1 | 964                        | 155                              |                                           |
|                                                                                                                       | 90+ | 2700          | MacAdam 2step     | SPHWAHDNB27YZW2D7 | 709                        | 114                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB27YZW3D7 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB27YZW2D1 | 744                        | 119                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB27YZW3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3000          | MacAdam 2step     | SPHWAHDNB27YZV2E9 | 743                        | 119                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB27YZV3E9 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNB27YZV2D1 | 780                        | 125                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB27YZV3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3500          | MacAdam 2step     | SPHWAHDNB27YZU2E0 | 768                        | 123                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNB27YZU3E0 |                            |                                  |                                           |
| MacAdam 2step                                                                                                         |     |               | SPHWAHDNB27YZU2D1 | 807               | 130                        |                                  |                                           |
| MacAdam 3step                                                                                                         |     |               | SPHWAHDNB27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                  |     | MacAdam 2step | SPHWAHDNB27YZT2E4 | 784               | 126                        |                                  |                                           |
|                                                                                                                       |     | MacAdam 3step | SPHWAHDNB27YZT3E4 |                   |                            |                                  |                                           |
|                                                                                                                       |     | MacAdam 2step | SPHWAHDNB27YZT2D1 | 824               | 132                        |                                  |                                           |
|                                                                                                                       |     | MacAdam 3step | SPHWAHDNB27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                  |     | MacAdam 3step | SPHWAHDNB27YZR3E4 | 787               | 126                        |                                  |                                           |
|                                                                                                                       |     |               | SPHWAHDNB27YZR3D1 | 827               | 133                        |                                  |                                           |

| Product                                                                                                                 | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                         |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC009D Gen1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNC25YZW2H1 | 1209                       | 129                              | 270mA<br>34.6V                            |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZW3H1 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC25YZW2D1 | 1270                       | 136                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNC25YZV2H2 | 1278                       | 137                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZV3H2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC25YZV2D1 | 1342                       | 144                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNC25YZU2H2 | 1315                       | 141                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZU3H2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC25YZU2D1 | 1381                       | 148                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZU3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 4000          | MacAdam 2step     | SPHWAHDNC25YZT2H2 | 1347                       | 144                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZT3H2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC25YZT2D1 | 1414                       | 151                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC25YZT3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 5000          | MacAdam 3step     | SPHWAHDNC25YZR3H2 | 1357                       | 145                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNC25YZR3D1 | 1425                       | 153                              |                                           |
|                                                                                                                         |     | 5700          | MacAdam 3step     | SPHWAHDNC25YZQ3H2 | 1357                       | 145                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNC25YZQ3D1 | 1425                       | 153                              |                                           |
|                                                                                                                         |     | 6500          | MacAdam 3step     | SPHWAHDNC25YZP3H2 | 1341                       | 144                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNC25YZP3D1 | 1408                       | 151                              |                                           |
|                                                                                                                         | 90+ | 2700          | MacAdam 2step     | SPHWAHDNC27YZW2G8 | 1038                       | 111                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC27YZW3G8 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC27YZW2D1 | 1090                       | 117                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC27YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNC27YZV2H0 | 1087                       | 116                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC27YZV3H0 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNC27YZV2D1 | 1141                       | 122                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC27YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNC27YZU2H0 | 1122                       | 120                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNC27YZU3H0 |                            |                                  |                                           |
| MacAdam 2step                                                                                                           |     |               | SPHWAHDNC27YZU2D1 | 1178              | 126                        |                                  |                                           |
| MacAdam 3step                                                                                                           |     |               | SPHWAHDNC27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                    |     | MacAdam 2step | SPHWAHDNC27YZT2H0 | 1147              | 123                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNC27YZT3H0 |                   |                            |                                  |                                           |
|                                                                                                                         |     | MacAdam 2step | SPHWAHDNC27YZT2D1 | 1204              | 129                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNC27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                    |     | MacAdam 3step | SPHWAHDNC27YZR3H1 | 1152              | 123                        |                                  |                                           |
|                                                                                                                         |     |               | SPHWAHDNC27YZR3D1 | 1210              | 130                        |                                  |                                           |

Specifications

| Product                                                                                                                | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|------------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                        |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC013D Gen 1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDND25YZW2H5 | 1589                       | 128                              | 360mA<br>34.6V                            |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZW3H5 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND25YZW2D1 | 1669                       | 134                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZW3D1 |                            |                                  |                                           |
|                                                                                                                        |     | 3000          | MacAdam 2step     | SPHWAHDND25YZV2H5 | 1673                       | 134                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZV3H5 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND25YZV2D1 | 1757                       | 141                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZV3D1 |                            |                                  |                                           |
|                                                                                                                        |     | 3500          | MacAdam 2step     | SPHWAHDND25YZU2H6 | 1725                       | 138                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZU3H6 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND25YZU2D1 | 1812                       | 145                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZU3D1 |                            |                                  |                                           |
|                                                                                                                        |     | 4000          | MacAdam 2step     | SPHWAHDND25YZT2H6 | 1757                       | 141                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZT3H6 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND25YZT2D1 | 1844                       | 148                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND25YZT3D1 |                            |                                  |                                           |
|                                                                                                                        |     | 5000          | MacAdam 3step     | SPHWAHDND25YZR3H6 | 1772                       | 142                              |                                           |
|                                                                                                                        |     |               |                   | SPHWAHDND25YZR3D1 | 1861                       | 149                              |                                           |
|                                                                                                                        |     | 5700          | MacAdam 3step     | SPHWAHDND25YZQ3H6 | 1772                       | 142                              |                                           |
|                                                                                                                        |     |               |                   | SPHWAHDND25YZQ3D1 | 1861                       | 149                              |                                           |
|                                                                                                                        |     | 6500          | MacAdam 3step     | SPHWAHDND25YZP3H6 | 1746                       | 140                              |                                           |
|                                                                                                                        |     |               |                   | SPHWAHDND25YZP3D1 | 1834                       | 147                              |                                           |
|                                                                                                                        | 90+ | 2700          | MacAdam 2step     | SPHWAHDND27YZW2H2 | 1359                       | 109                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND27YZW3H2 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND27YZW2D1 | 1427                       | 115                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND27YZW3D2 |                            |                                  |                                           |
|                                                                                                                        |     | 3000          | MacAdam 2step     | SPHWAHDND27YZV2H3 | 1423                       | 114                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND27YZV3H3 |                            |                                  |                                           |
|                                                                                                                        |     |               | MacAdam 2step     | SPHWAHDND27YZV2D1 | 1494                       | 120                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND27YZV3D1 |                            |                                  |                                           |
|                                                                                                                        |     | 3500          | MacAdam 2step     | SPHWAHDND27YZU2H4 | 1473                       | 118                              |                                           |
|                                                                                                                        |     |               | MacAdam 3step     | SPHWAHDND27YZU3H4 |                            |                                  |                                           |
| MacAdam 2step                                                                                                          |     |               | SPHWAHDND27YZU2D1 | 1547              | 124                        |                                  |                                           |
| MacAdam 3step                                                                                                          |     |               | SPHWAHDND27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                   |     | MacAdam 2step | SPHWAHDND27YZT2H4 | 1505              | 121                        |                                  |                                           |
|                                                                                                                        |     | MacAdam 3step | SPHWAHDND27YZT3H4 |                   |                            |                                  |                                           |
|                                                                                                                        |     | MacAdam 2step | SPHWAHDND27YZT2D1 | 1580              | 127                        |                                  |                                           |
|                                                                                                                        |     | MacAdam 3step | SPHWAHDND27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                   |     | MacAdam 3step | SPHWAHDND27YZR3H4 | 1508              | 121                        |                                  |                                           |
|                                                                                                                        |     |               | SPHWAHDND27YZR3D1 | 1584              | 127                        |                                  |                                           |

| Product                                                                                                                  | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|--------------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                          |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC016D Gen 1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNE25YZW2H9 | 2065                       | 133                              | 450mA<br>34.6V                            |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZW3H9 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE25YZW2D1 | 2169                       | 139                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZW3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 3000          | MacAdam 2step     | SPHWAHDNE25YZV2J0 | 2182                       | 140                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZV3J0 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE25YZV2D1 | 2291                       | 147                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZV3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 3500          | MacAdam 2step     | SPHWAHDNE25YZU2J1 | 2263                       | 145                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZU3J1 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE25YZU2D1 | 2376                       | 153                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZU3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 4000          | MacAdam 2step     | SPHWAHDNE25YZT2J1 | 2304                       | 148                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZT3J1 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE25YZT2D1 | 2419                       | 155                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE25YZT3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 5000          | MacAdam 3step     | SPHWAHDNE25YZR3J2 | 2324                       | 149                              |                                           |
|                                                                                                                          |     |               |                   | SPHWAHDNE25YZR3D1 | 2440                       | 157                              |                                           |
|                                                                                                                          |     | 5700          | MacAdam 3step     | SPHWAHDNE25YZQ3J2 | 2324                       | 149                              |                                           |
|                                                                                                                          |     |               |                   | SPHWAHDNE25YZQ3D1 | 2440                       | 157                              |                                           |
|                                                                                                                          |     | 6500          | MacAdam 3step     | SPHWAHDNE25YZP3J1 | 2304                       | 148                              |                                           |
|                                                                                                                          |     |               |                   | SPHWAHDNE25YZP3D1 | 2419                       | 155                              |                                           |
|                                                                                                                          | 90+ | 2700          | MacAdam 2step     | SPHWAHDNE27YZW2H6 | 1771                       | 114                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE27YZW3H6 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE27YZW2D1 | 1860                       | 119                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE27YZW3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 3000          | MacAdam 2step     | SPHWAHDNE27YZV2H7 | 1877                       | 121                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE27YZV3H7 |                            |                                  |                                           |
|                                                                                                                          |     |               | MacAdam 2step     | SPHWAHDNE27YZV2D1 | 1970                       | 127                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE27YZV3D1 |                            |                                  |                                           |
|                                                                                                                          |     | 3500          | MacAdam 2step     | SPHWAHDNE27YZU2H8 | 1932                       | 124                              |                                           |
|                                                                                                                          |     |               | MacAdam 3step     | SPHWAHDNE27YZU3H8 |                            |                                  |                                           |
| MacAdam 2step                                                                                                            |     |               | SPHWAHDNE27YZU2D1 | 2029              | 130                        |                                  |                                           |
| MacAdam 3step                                                                                                            |     |               | SPHWAHDNE27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                     |     | MacAdam 2step | SPHWAHDNE27YZT2H8 | 1971              | 127                        |                                  |                                           |
|                                                                                                                          |     | MacAdam 3step | SPHWAHDNE27YZT3H8 |                   |                            |                                  |                                           |
|                                                                                                                          |     | MacAdam 2step | SPHWAHDNE27YZT2D1 | 2069              | 133                        |                                  |                                           |
|                                                                                                                          |     | MacAdam 3step | SPHWAHDNE27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                     |     | MacAdam 3step | SPHWAHDNE27YZR3H8 | 1989              | 128                        |                                  |                                           |
|                                                                                                                          |     |               | SPHWAHDNE27YZR3D1 | 2089              | 134                        |                                  |                                           |

Specifications

| Product                                                                                                               | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                       |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC019D Gen1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNF25YZW2J3 | 2458                       | 132                              | 540mA<br>34.6V                            |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZW3J3 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF25YZW2D1 | 2581                       | 138                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZW3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3000          | MacAdam 2step     | SPHWAHDNF25YZV24  | 2592                       | 139                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZV3J4 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF25YZV2D1 | 2722                       | 146                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZV3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3500          | MacAdam 2step     | SPHWAHDNF25YZU25  | 2672                       | 143                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZU3J5 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF25YZU2D1 | 2805                       | 150                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZU3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 4000          | MacAdam 2step     | SPHWAHDNF25YZT25  | 2726                       | 146                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZT3J5 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF25YZT2D1 | 2863                       | 153                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF25YZT3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 5000          | MacAdam 3step     | SPHWAHDNF25YZR3J6 | 2756                       | 148                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNF25YZR3D1 | 2894                       | 155                              |                                           |
|                                                                                                                       |     | 5700          | MacAdam 3step     | SPHWAHDNF25YZQ3J6 | 2756                       | 148                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNF25YZQ3D1 | 2894                       | 155                              |                                           |
|                                                                                                                       |     | 6500          | MacAdam 3step     | SPHWAHDNF25YZP3J5 | 2726                       | 146                              |                                           |
|                                                                                                                       |     |               |                   | SPHWAHDNF25YZP3D1 | 2863                       | 153                              |                                           |
|                                                                                                                       | 90+ | 2700          | MacAdam 2step     | SPHWAHDNF27YZW2H9 | 2104                       | 113                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF27YZW3H9 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF27YZW2D1 | 2210                       | 118                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF27YZW3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3000          | MacAdam 2step     | SPHWAHDNF27YZV2J0 | 2207                       | 118                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF27YZV3J0 |                            |                                  |                                           |
|                                                                                                                       |     |               | MacAdam 2step     | SPHWAHDNF27YZV2D1 | 2317                       | 124                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF27YZV3D1 |                            |                                  |                                           |
|                                                                                                                       |     | 3500          | MacAdam 2step     | SPHWAHDNF27YZU2J1 | 2287                       | 122                              |                                           |
|                                                                                                                       |     |               | MacAdam 3step     | SPHWAHDNF27YZU3J1 |                            |                                  |                                           |
| MacAdam 2step                                                                                                         |     |               | SPHWAHDNF27YZU2D1 | 2402              | 129                        |                                  |                                           |
| MacAdam 3step                                                                                                         |     |               | SPHWAHDNF27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                  |     | MacAdam 2step | SPHWAHDNF27YZT2J2 | 2337              | 125                        |                                  |                                           |
|                                                                                                                       |     | MacAdam 3step | SPHWAHDNF27YZT3J2 |                   |                            |                                  |                                           |
|                                                                                                                       |     | MacAdam 2step | SPHWAHDNF27YZT2D1 | 2454              | 131                        |                                  |                                           |
|                                                                                                                       |     | MacAdam 3step | SPHWAHDNF27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                  |     | MacAdam 3step | SPHWAHDNG27YZR3J8 | 2339              | 125                        |                                  |                                           |
|                                                                                                                       |     |               | SPHWAHDNG27YZR3D1 | 2456              | 131                        |                                  |                                           |

| Product                                                                                                                 | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                         |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <div></div> <div>LC026D Gen1</div> | 80+ | 2700          | MacAdam 2step     | SPHWAHDNK25YZW2M7 | 3225                       | 129                              | 720mA<br>34.6V                            |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZW3M7 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK25YZW2D1 | 3386                       | 136                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNK25YZV2M9 | 3389                       | 136                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZV3M9 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK25YZV2D1 | 3558                       | 143                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNK25YZU2N1 | 3488                       | 140                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZU3N1 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK25YZU2D1 | 3663                       | 147                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25YZU3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 4000          | MacAdam 2step     | SPHWAHDNK25Yzt2N2 | 3558                       | 143                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25Yzt3N2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK25Yzt2D1 | 3736                       | 150                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK25Yzt3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 5000          | MacAdam 3step     | SPHWAHDNK25YzR3N2 | 3588                       | 144                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNK25YzR3D1 | 3767                       | 151                              |                                           |
|                                                                                                                         |     | 5700          | MacAdam 3step     | SPHWAHDNK25YzQ3N3 | 3588                       | 144                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNK25YzQ3D1 | 3767                       | 151                              |                                           |
|                                                                                                                         |     | 6500          | MacAdam 3step     | SPHWAHDNK25YzP3N2 | 3558                       | 143                              |                                           |
|                                                                                                                         |     |               |                   | SPHWAHDNK25YzP3D1 | 3736                       | 150                              |                                           |
|                                                                                                                         | 90+ | 2700          | MacAdam 2step     | SPHWAHDNK27YZW2M0 | 2760                       | 111                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK27YZW3M0 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK27YZW2D1 | 2898                       | 116                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK27YZW3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3000          | MacAdam 2step     | SPHWAHDNK27YZV2M2 | 2903                       | 117                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK27YZV3M2 |                            |                                  |                                           |
|                                                                                                                         |     |               | MacAdam 2step     | SPHWAHDNK27YZV2D1 | 3048                       | 122                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK27YZV3D1 |                            |                                  |                                           |
|                                                                                                                         |     | 3500          | MacAdam 2step     | SPHWAHDNK27YZU2M4 | 2990                       | 120                              |                                           |
|                                                                                                                         |     |               | MacAdam 3step     | SPHWAHDNK27YZU3M4 |                            |                                  |                                           |
| MacAdam 2step                                                                                                           |     |               | SPHWAHDNK27YZU2D1 | 3139              | 126                        |                                  |                                           |
| MacAdam 3step                                                                                                           |     |               | SPHWAHDNK27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                                                    |     | MacAdam 2step | SPHWAHDNK27Yzt2M5 | 3051              | 122                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNK27Yzt3M5 |                   |                            |                                  |                                           |
|                                                                                                                         |     | MacAdam 2step | SPHWAHDNK27Yzt2D1 | 3204              | 129                        |                                  |                                           |
|                                                                                                                         |     | MacAdam 3step | SPHWAHDNK27Yzt3D1 |                   |                            |                                  |                                           |
| 5000                                                                                                                    |     | MacAdam 3step | SPHWAHDNK27YzR3M5 | 3077              | 124                        |                                  |                                           |
|                                                                                                                         |     |               | SPHWAHDNK27YzR3D1 | 3231              | 130                        |                                  |                                           |

Specifications

D-series

| Product                                                                                            | CRI | CCT (K)       | Color Rank        | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|----------------------------------------------------------------------------------------------------|-----|---------------|-------------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                    |     |               |                   |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC040D Gen1 | 80+ | 2700          | MacAdam 2step     | SPHWAHDNG25YZW2K0 | 4996                       | 134                              | 1080mA<br>34.6V                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZW3K0 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG25YZW2D1 | 5246                       | 140                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZW3D1 |                            |                                  |                                           |
|                                                                                                    |     | 3000          | MacAdam 2step     | SPHWAHDNG25YZV2K2 | 5257                       | 141                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZV3K2 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG25YZV2D1 | 5520                       | 148                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZV3D1 |                            |                                  |                                           |
|                                                                                                    |     | 3500          | MacAdam 2step     | SPHWAHDNG25YZU2K3 | 5418                       | 145                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZU3K3 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG25YZU2D1 | 5689                       | 152                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZU3D1 |                            |                                  |                                           |
|                                                                                                    |     | 4000          | MacAdam 2step     | SPHWAHDNG25YZT2K3 | 5535                       | 148                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZT3K3 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG25YZT2D1 | 5812                       | 156                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG25YZT3D1 |                            |                                  |                                           |
|                                                                                                    |     | 5000          | MacAdam 3step     | SPHWAHDNG25YZR3K4 | 5561                       | 149                              |                                           |
|                                                                                                    |     |               |                   | SPHWAHDNG25YZR3D1 | 5839                       | 156                              |                                           |
|                                                                                                    |     | 5700          | MacAdam 3step     | SPHWAHDNG25YZQ3K4 | 5588                       | 150                              |                                           |
|                                                                                                    |     |               |                   | SPHWAHDNG25YZQ3D1 | 5868                       | 157                              |                                           |
|                                                                                                    |     | 6500          | MacAdam 3step     | SPHWAHDNG25YZP3K3 | 5528                       | 148                              |                                           |
|                                                                                                    |     |               |                   | SPHWAHDNG25YZP3D1 | 5804                       | 155                              |                                           |
|                                                                                                    | 90+ | 2700          | MacAdam 2step     | SPHWAHDNG27YZW2J6 | 4283                       | 115                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG27YZW3J6 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG27YZW2D1 | 4497                       | 120                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG27YZW3D1 |                            |                                  |                                           |
|                                                                                                    |     | 3000          | MacAdam 2step     | SPHWAHDNG27YZV2J7 | 4525                       | 121                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG27YZV3J7 |                            |                                  |                                           |
|                                                                                                    |     |               | MacAdam 2step     | SPHWAHDNG27YZV2D1 | 4751                       | 127                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG27YZV3D1 |                            |                                  |                                           |
|                                                                                                    |     | 3500          | MacAdam 2step     | SPHWAHDNG27YZU2J8 | 4640                       | 124                              |                                           |
|                                                                                                    |     |               | MacAdam 3step     | SPHWAHDNG27YZU3J8 |                            |                                  |                                           |
| MacAdam 2step                                                                                      |     |               | SPHWAHDNG27YZU2D1 | 4872              | 130                        |                                  |                                           |
| MacAdam 3step                                                                                      |     |               | SPHWAHDNG27YZU3D1 |                   |                            |                                  |                                           |
| 4000                                                                                               |     | MacAdam 2step | SPHWAHDNG27YZT2J8 | 4742              | 127                        |                                  |                                           |
|                                                                                                    |     | MacAdam 3step | SPHWAHDNG27YZT3J8 |                   |                            |                                  |                                           |
|                                                                                                    |     | MacAdam 2step | SPHWAHDNG27YZT2D1 | 4979              | 133                        |                                  |                                           |
|                                                                                                    |     | MacAdam 3step | SPHWAHDNG27YZT3D1 |                   |                            |                                  |                                           |
| 5000                                                                                               |     | MacAdam 3step | SPHWAHDNG27YZR3J8 | 4796              | 128                        |                                  |                                           |
|                                                                                                    |     |               | SPHWAHDNG27YZR3D1 | 5036              | 135                        |                                  |                                           |

| Product                                                                                              | CRI           | CCT (K)           | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|------------------------------------------------------------------------------------------------------|---------------|-------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                      |               |                   |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC060D Gen1   | 70+           | 3000              | MacAdam 3step | SPHWAHDNL231ZV3Q8 | 8284                       | 148                              | 1080mA<br>52V                             |
|                                                                                                      |               | 4000              | MacAdam 3step | SPHWAHDNL231ZT3R1 | 8550                       | 152                              |                                           |
|                                                                                                      |               | 5000              | MacAdam 3step | SPHWAHDNL231ZR3R2 | 8683                       | 155                              |                                           |
|                                                                                                      | 80+           | 2700              | MacAdam 2step | SPHWAHDNL251ZW2P9 | 7277                       | 130                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNL251ZW3P9 |                            |                                  |                                           |
|                                                                                                      |               | 3000              | MacAdam 2step | SPHWAHDNL251ZV2Q3 | 7667                       | 137                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNL251ZV3Q3 |                            |                                  |                                           |
|                                                                                                      |               | 3500              | MacAdam 2step | SPHWAHDNL251ZU2Q5 | 7904                       | 141                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNL251ZU3Q5 |                            |                                  |                                           |
|                                                                                                      |               | 4000              | MacAdam 2step | SPHWAHDNL251ZT2Q6 | 8075                       | 144                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNL251ZT3Q6 |                            |                                  |                                           |
|                                                                                                      |               | 5000              | MacAdam 3step | SPHWAHDNL251ZR3Q7 | 8113                       | 144                              |                                           |
|                                                                                                      |               | 5700              | MacAdam 3step | SPHWAHDNL251ZQ3Q7 | 8151                       | 145                              |                                           |
| 6500                                                                                                 | MacAdam 3step | SPHWAHDNL271ZP3Q6 | 8066          | 144               |                            |                                  |                                           |
| <br>LC080D Gen1 | 70+           | 3000              | MacAdam 3step | SPHWAHDNM231ZV3U5 | 12084                      | 143                              | 1620mA<br>52V                             |
|                                                                                                      |               | 4000              | MacAdam 3step | SPHWAHDNM231ZT3U9 | 12483                      | 148                              |                                           |
|                                                                                                      |               | 5000              | MacAdam 3step | SPHWAHDNM231ZR3V0 | 12673                      | 150                              |                                           |
|                                                                                                      | 80+           | 2700              | MacAdam 2step | SPHWAHDNM251ZW2T1 | 10612                      | 126                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNM251ZW3T1 |                            |                                  |                                           |
|                                                                                                      |               | 3000              | MacAdam 2step | SPHWAHDNM251ZV2T6 | 11201                      | 133                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNM251ZV3T6 |                            |                                  |                                           |
|                                                                                                      |               | 3500              | MacAdam 2step | SPHWAHDNM251ZU2T9 | 11533                      | 137                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNM251ZU3T9 |                            |                                  |                                           |
|                                                                                                      |               | 4000              | MacAdam 2step | SPHWAHDNM251ZT2U2 | 11780                      | 140                              |                                           |
|                                                                                                      |               |                   | MacAdam 3step | SPHWAHDNM251ZT3U2 |                            |                                  |                                           |
|                                                                                                      |               | 5000              | MacAdam 3step | SPHWAHDNM251ZR3U2 | 11847                      | 141                              |                                           |
|                                                                                                      |               | 5700              | MacAdam 3step | SPHWAHDNM251ZQ3V0 | 11904                      | 141                              |                                           |
| 6500                                                                                                 | MacAdam 3step | SPHWAHDNM251ZP3V5 | 11723         | 139               |                            |                                  |                                           |

D-series

## C-Series

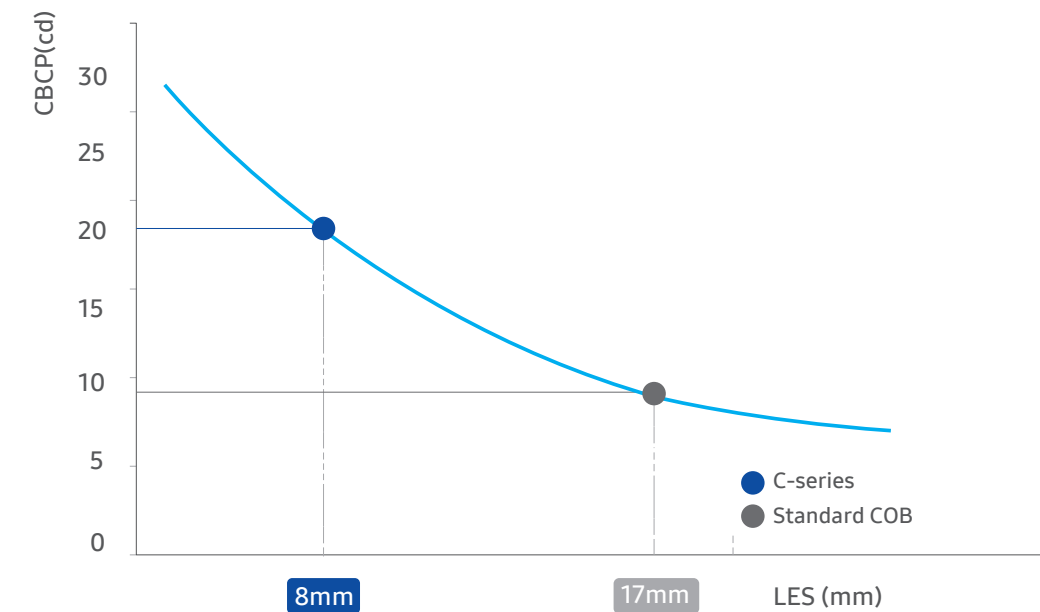
# Make Your Business Shine

High-intensity small LES for powerfully effective retail lighting

## C-series with High Intensity

Smaller LES, high intensity, higher CBCP

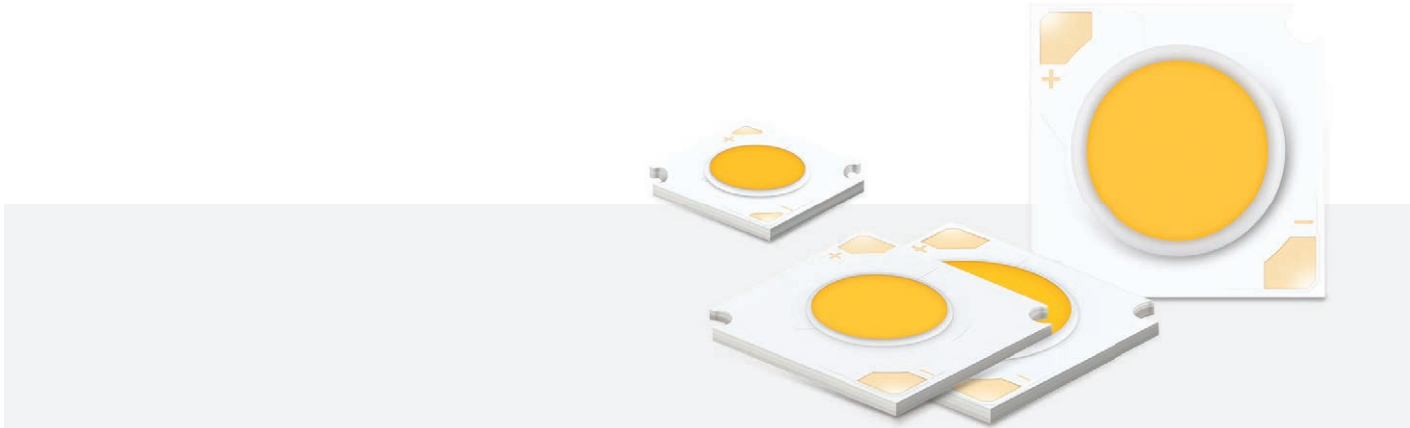
### High lumen density COB



Standard COB



C-Series



C-series Gen 2 [Small LES COB]

| T <sub>J</sub> =85°C | LC010C Gen 2     | LC020C Gen 2     | LC030C Gen 2      | LC040C Gen 2      |
|----------------------|------------------|------------------|-------------------|-------------------|
| LES                  | 6.0mm            | 8.5mm            | 11.5mm            |                   |
| Typical              | 35.0V            |                  |                   |                   |
|                      | 10.5W<br>(300mA) | 21.0W<br>(600mA) | 31.5W<br>(900mA)  | 36.8W<br>(1050mA) |
| Max.                 | 13.8W<br>(380mA) | 34.0W<br>(920mA) | 51.1W<br>(1380mA) | 59.5W<br>(1610mA) |
| Size                 | 13.5mm x 13.5mm  | 19mm x 19mm      | 19mm x 19mm       |                   |

Color Variation

| Product        | CRI90+ |       |       |       |       | CRI80+ |       |       |       |       |
|----------------|--------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
|                | 2700K  | 3000K | 3500K | 4000K | 5000K | 2700K  | 3000K | 3500K | 4000K | 5000K |
| LC010C Gen 2   | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     |
| LC020C Gen 2   | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     |
| LC030C Gen 2   | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     |
| LC040C Gen 2   | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     |
| MacAdam 3-Step | o      | o     | o     | o     | o     | o      | o     | o     | o     | o     |

Specifications

| Product                                                                                             | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>f</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                     |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC010C Gen 2 | 80+ | 2700    | MacAdam 3step | SPHWAHDNC25YZW3C2 | 1212                       | 115                              | 300mA<br>35.0V                            |
|                                                                                                     |     | 3000    | MacAdam 3step | SPHWAHDNC25YZV3C2 | 1274                       | 121                              |                                           |
|                                                                                                     |     | 3500    | MacAdam 3step | SPHWAHDNC25YZU3C2 | 1311                       | 125                              |                                           |
|                                                                                                     |     | 4000    | MacAdam 3step | SPHWAHDNC25YZT3C2 | 1337                       | 127                              |                                           |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNC25YZR3C2 | 1348                       | 128                              |                                           |
|                                                                                                     | 90+ | 2700    | MacAdam 3step | SPHWAHDNC27YZW3C2 | 1037                       | 99                               |                                           |
|                                                                                                     |     | 3000    | MacAdam 3step | SPHWAHDNC27YZV3C2 | 1091                       | 104                              |                                           |
|                                                                                                     |     | 3500    | MacAdam 3step | SPHWAHDNC27YZU3C2 | 1123                       | 107                              |                                           |
|                                                                                                     |     | 4000    | MacAdam 3step | SPHWAHDNC27YZT3C2 | 1147                       | 109                              |                                           |
|                                                                                                     |     | 5000    | MacAdam 3step | SPHWAHDNC27YZR3C2 | 1156                       | 110                              |                                           |

Specifications

| Product                                                                                               | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>f</sub> (mA)<br>V <sub>F</sub> (V) |
|-------------------------------------------------------------------------------------------------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                       |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC020C Gen 2   | 80+ | 2700    | MacAdam 3step | SPHWAHDNF25YZW3C2 | 2485                       | 118                              | 600mA<br>35.0V                            |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNF25YZV3C2 | 2625                       | 125                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNF25YZU3C2 | 2688                       | 128                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNF25YZT3C2 | 2742                       | 131                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNF25YZR3C2 | 2765                       | 132                              |                                           |
|                                                                                                       | 90+ | 2700    | MacAdam 3step | SPHWAHDNF27YZW3C2 | 2127                       | 101                              |                                           |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNF27YZV3C2 | 2237                       | 107                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNF27YZU3C2 | 2304                       | 110                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNF27YZT3C2 | 2351                       | 112                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNF27YZR3C2 | 2372                       | 113                              |                                           |
| <br>LC030C Gen 2 | 80+ | 2700    | MacAdam 3step | SPHWAHDNH25YZW3C2 | 3765                       | 120                              | 900mA<br>35.0V                            |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNH25YZV3C2 | 3956                       | 126                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNH25YZU3C2 | 4072                       | 129                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNH25YZT3C2 | 4154                       | 132                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNH25YZR3C2 | 4188                       | 133                              |                                           |
|                                                                                                       | 90+ | 2700    | MacAdam 3step | SPHWAHDNH27YZW3C2 | 3222                       | 102                              |                                           |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNH27YZV3C2 | 3389                       | 108                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNH27YZU3C2 | 3490                       | 111                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNH27YZT3C2 | 3562                       | 113                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNH27YZR3C2 | 3592                       | 114                              |                                           |
| <br>LC040C Gen 2 | 80+ | 2700    | MacAdam 3step | SPHWAHDNK25YZW3C2 | 4305                       | 117                              | 1050mA<br>35.0V                           |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNK25YZV3C2 | 4524                       | 123                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNK25YZU3C2 | 4657                       | 127                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNK25YZT3C2 | 4750                       | 129                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNK25YZR3C2 | 4790                       | 130                              |                                           |
|                                                                                                       | 90+ | 2700    | MacAdam 3step | SPHWAHDNK27YZW3C2 | 3684                       | 100                              |                                           |
|                                                                                                       |     | 3000    | MacAdam 3step | SPHWAHDNK27YZV3C2 | 3875                       | 105                              |                                           |
|                                                                                                       |     | 3500    | MacAdam 3step | SPHWAHDNK27YZU3C2 | 3991                       | 109                              |                                           |
|                                                                                                       |     | 4000    | MacAdam 3step | SPHWAHDNK27YZT3C2 | 4073                       | 111                              |                                           |
|                                                                                                       |     | 5000    | MacAdam 3step | SPHWAHDNK27YZR3C2 | 4108                       | 112                              |                                           |

## R-Series

# Enriched Colors for Displaying

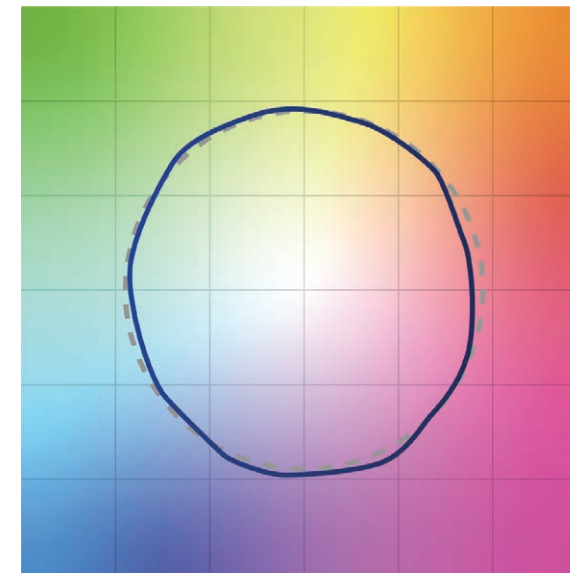
Vividly enhanced premium colors, contrast and exceptional white light



## R-series with Specialized Spectrum

Enhanced color appearance based on color gamut and preference survey

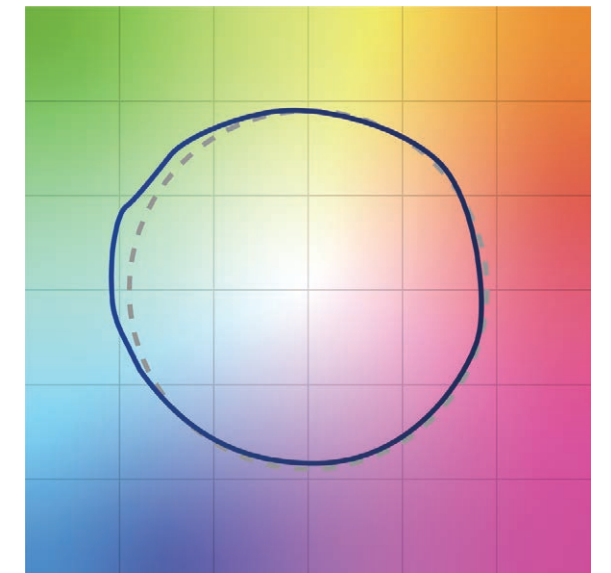
Fashion Vivid Color



— Fashion Vivid Color LED    - - - Color Standard by TM 30

Enhanced whiteness and vividness by diminishing of yellowish

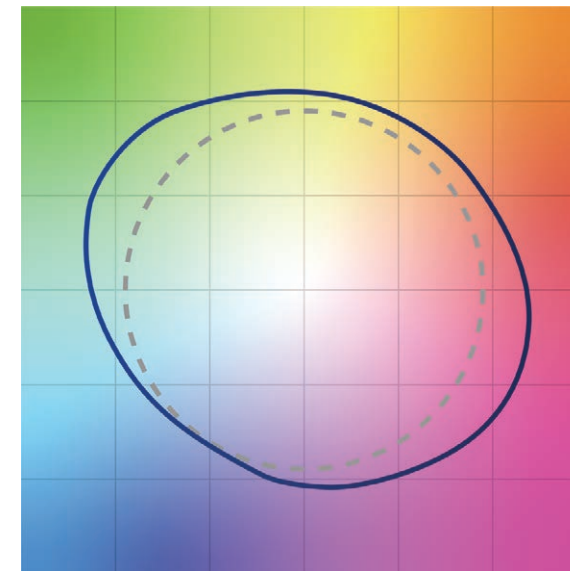
Fashion Vivid White



— Fashion Vivid White LED    - - - Color Standard by TM 30

Emphasizing whiteness by adjusting color point below blackbody locus

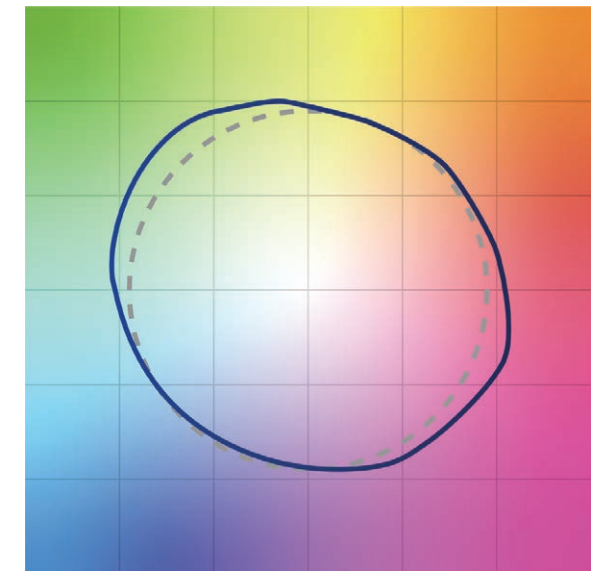
Meat



— Meat LED    - - - Color Standard by TM 30

Enhanced whiteness and reddish color by using longer 650nm red phosphors

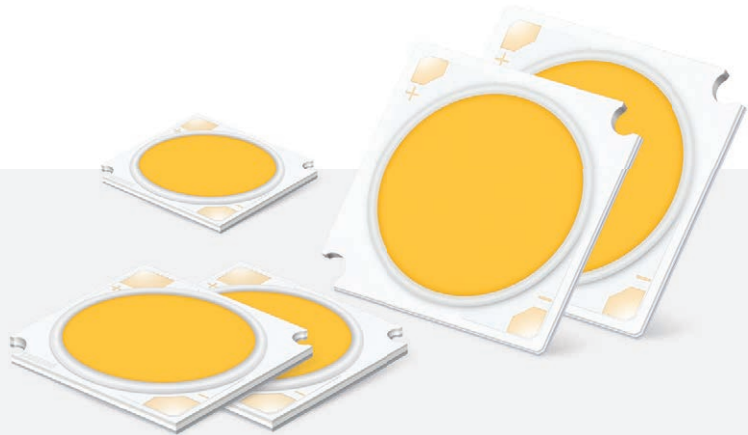
Vegetable



— Vegetable LED    - - - Color Standard by TM 30

Fresh greenish color based on preference survey of 300 persons

R-series Fashion



| T <sub>j</sub> =85°C | LC013R Fashion  | LC016R Fashion | LC019R Fashion | LC026R Fashion | LC033R Fashion | LC040R Fashion |
|----------------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| LES                  | 9.8mm           | 14.5mm         |                |                |                | 22mm           |
| Typical              | 34.6V           |                |                |                |                |                |
|                      | 12.5W           | 15.6W          | 18.7W          | 24.9W          | 31.1W          | 37.4W          |
|                      | 360mA           | 450mA          | 540mA          | 720mA          | 900mA          | 1080mA         |
| Max.                 | 34.5W           | 43.1W          | 51.8W          | 69.0W          | 86.2W          | 103.5W         |
|                      | 920mA           | 1150mA         | 1380mA         | 1840mA         | 2300mA         | 2760mA         |
| Size                 | 13.5mm x 13.5mm | 19mm x 19mm    |                |                |                | 28mm x 28mm    |

Specifications

| Product                                                                                                              | CRI | CCT (K)             | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|----------------------------------------------------------------------------------------------------------------------|-----|---------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                      |     |                     |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC013R<br>Fashion Vivid White | 90+ | 3000<br>(Below BBL) | MacAdam 3step | SPHWAHDND2VYZVND2 | 1435                       | 115                              | 360mA<br>34.6V                            |
|                                                                                                                      |     | 3500<br>(Below BBL) | MacAdam 3step | SPHWAHDND2VYZUND2 | 1494                       | 120                              |                                           |
|                                                                                                                      |     | 4000<br>(Below BBL) | MacAdam 3step | SPHWAHDND2VYZTND2 | 1541                       | 124                              |                                           |
| <br>LC016R<br>Fashion Vivid White | 90+ | 3000<br>(Below BBL) | MacAdam 3step | SPHWAHDNE2VYZVND2 | 1837                       | 118                              | 450mA<br>34.6V                            |
|                                                                                                                      |     | 3500<br>(Below BBL) | MacAdam 3step | SPHWAHDNE2VYZUND2 | 1912                       | 123                              |                                           |
|                                                                                                                      |     | 4000<br>(Below BBL) | MacAdam 3step | SPHWAHDNE2VYZTND2 | 1972                       | 127                              |                                           |
| <br>LC019R<br>Fashion Vivid White | 90+ | 3000<br>(Below BBL) | MacAdam 3step | SPHWAHDNF2VYZVND2 | 2195                       | 117                              | 540mA<br>34.6V                            |
|                                                                                                                      |     | 3500<br>(Below BBL) | MacAdam 3step | SPHWAHDNF2VYZUND2 | 2284                       | 122                              |                                           |
|                                                                                                                      |     | 4000<br>(Below BBL) | MacAdam 3step | SPHWAHDNF2VYZTND2 | 2355                       | 126                              |                                           |
| <br>LC026R<br>Fashion Vivid White | 90+ | 3000<br>(Below BBL) | MacAdam 3step | SPHWAHDNG2VYZVND2 | 2917                       | 117                              | 720mA<br>34.6V                            |
|                                                                                                                      |     | 3500<br>(Below BBL) | MacAdam 3step | SPHWAHDNG2VYZUND2 | 3036                       | 122                              |                                           |
|                                                                                                                      |     | 4000<br>(Below BBL) | MacAdam 3step | SPHWAHDNG2VYZTND2 | 3131                       | 126                              |                                           |

Specifications

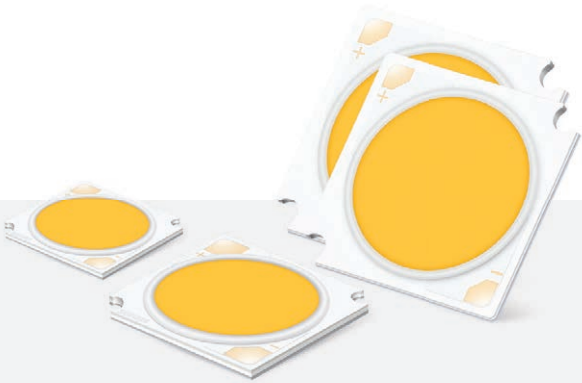
| Product                                                                                                                | CCT (K)             | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|------------------------------------------------------------------------------------------------------------------------|---------------------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                                        |                     |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC013R<br>Fashion Vivid Color   | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDND2VYZV2D2 | 1334                       | 107                              | 360mA<br>34.6V                            |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDND2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDND2VYZA2D2 | 1394                       | 112                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDND2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDND2VYZU2D2 | 1433                       | 115                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDND2VYZUVD2 |                            |                                  |                                           |
| <br>LC016R<br>Fashion Vivid Color   | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDNE2VYZ2VD2 | 1745                       | 112                              | 450mA<br>34.6V                            |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNE2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDNE2VYZA2D2 | 1823                       | 117                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNE2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDNE2VYZU2D2 | 1875                       | 120                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNE2VYZUVD2 |                            |                                  |                                           |
| <br>LC019R<br>Fashion Vivid Color  | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDNF2VYZV2D2 | 2068                       | 111                              | 540mA<br>34.6V                            |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNF2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDNF2VYZA2D2 | 2160                       | 116                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNF2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDNF2VYZU2D2 | 2222                       | 119                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNF2VYZUVD2 |                            |                                  |                                           |
| <br>LC026R<br>Fashion Vivid Color | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDNG2VYZV2D2 | 2706                       | 109                              | 720mA<br>34.6V                            |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNG2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDNG2VYZA2D2 | 2827                       | 113                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNG2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDNG2VYZU2D2 | 2907                       | 117                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNG2VYZUVD2 |                            |                                  |                                           |
| <br>LC033R<br>Fashion Vivid Color | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDNH2VYZV2D2 | 3339                       | 107                              | 900mA<br>34.6V                            |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNH2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDNH2VYZA2D2 | 3488                       | 112                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNH2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDNH2VYZU2D2 | 3588                       | 115                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNH2VYZUVD2 |                            |                                  |                                           |
| <br>LC040R<br>Fashion Vivid Color | 3000<br>(Below BBL) | MacAdam 2step | SPHWAHDNK2VYZV2D2 | 4150                       | 111                              | 1080mA<br>34.6V                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNK2VYZVVD2 |                            |                                  |                                           |
|                                                                                                                        | 3300<br>(Below BBL) | MacAdam 2step | SPHWAHDNK2VYZA2D2 | 4335                       | 116                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNK2VYZAVD2 |                            |                                  |                                           |
|                                                                                                                        | 3500<br>(Below BBL) | MacAdam 2step | SPHWAHDNK2VYZU2D2 | 4459                       | 119                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNK2VYZUVD2 |                            |                                  |                                           |
| <br>LC040R<br>Fashion Vivid Color | 4000<br>(Below BBL) | MacAdam 2step | SPHWAHDNK2VYZT2D2 | 4768                       | 128                              |                                           |
|                                                                                                                        |                     | MacAdam 3step | SPHWAHDNK2VYZTVD2 |                            |                                  |                                           |

R-series Meat



| T <sub>j</sub> =85°C | LC013R Meat     | LC016R Meat | LC019R Meat | LC026R Meat | LC033R Meat |
|----------------------|-----------------|-------------|-------------|-------------|-------------|
| LES                  | 9.8mm           | 14.5mm      |             |             |             |
| Typical              | 34.6V           |             |             |             |             |
|                      | 12.5W           | 15.6W       | 18.7W       | 24.9W       | 31.1W       |
|                      | 360mA           | 450mA       | 540mA       | 720mA       | 900mA       |
| Max.                 | 34.5W           | 43.1W       | 51.8W       | 69.0W       | 86.2W       |
|                      | 920mA           | 1150mA      | 1380mA      | 1840mA      | 2300mA      |
| Size                 | 13.5mm x 13.5mm | 19mm x 19mm |             |             |             |

R-series Vegetable



| T <sub>j</sub> =85°C | LC013R Vegetable | LC016R Vegetable | LC019R Vegetable | LC026R Vegetable | LC033R Vegetable |
|----------------------|------------------|------------------|------------------|------------------|------------------|
| LES                  | 9.8mm            | 14.5mm           |                  |                  |                  |
| Typical              | 34.6V            |                  |                  |                  |                  |
|                      | 12.5W            | 15.6W            | 18.7W            | 24.9W            | 31.1W            |
|                      | 360mA            | 450mA            | 540mA            | 720mA            | 900mA            |
| Max.                 | 34.5W            | 43.1W            | 51.8W            | 69.0W            | 86.2W            |
|                      | 920mA            | 1150mA           | 1380mA           | 1840mA           | 2300mA           |
| Size                 | 13.5mm x 13.5mm  | 19mm x 19mm      |                  |                  |                  |

Specifications

| Product                                                                                            | Color Rank    | Part Number        | T <sub>j</sub> = 85°C      |                                  | I <sub>f</sub> (mA)<br>V <sub>F</sub> (V) |
|----------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                    |               |                    | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC013R Meat | MacAdam 2step | SPHWHAHND2VYZTSD2  | 914                        | 73                               | 360mA<br>34.6V                            |
| <br>LC016R Meat | MacAdam 2step | SPHWHAHNE2VYZTSD2  | 1188                       | 76                               | 450mA<br>34.6V                            |
| <br>LC019R Meat | MacAdam 2step | SPHWHAHDNF2VYZTSD2 | 1412                       | 76                               | 540mA<br>34.6V                            |
| <br>LC026R Meat | MacAdam 2step | SPHWHAHDNG2VYZTSD2 | 1845                       | 74                               | 720mA<br>34.6V                            |
| <br>LC033R Meat | MacAdam 2step | SPHWHAHDNH2VYZTSD2 | 2284                       | 73                               | 900mA<br>34.6V                            |

Specifications

| Product                                                                                                   | Color Rank    | Part Number        | T <sub>j</sub> = 85°C      |                                  | I <sub>f</sub> (mA)<br>V <sub>F</sub> (V) |
|-----------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------------|----------------------------------|-------------------------------------------|
|                                                                                                           |               |                    | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC013R Vegetable | MacAdam 2step | SPHWHAHND2VYZRSD2  | 1188                       | 95                               | 360mA<br>34.6V                            |
| <br>LC016R Vegetable | MacAdam 2step | SPHWHAHNE2VYZRSD2  | 1544                       | 99                               | 450mA<br>34.6V                            |
| <br>LC019R Vegetable | MacAdam 2step | SPHWHAHDNF2VYZRSD2 | 1835                       | 98                               | 540mA<br>34.6V                            |
| <br>LC026R Vegetable | MacAdam 2step | SPHWHAHDNG2VYZRSD2 | 2399                       | 96                               | 720mA<br>34.6V                            |
| <br>LC033R Vegetable | MacAdam 2step | SPHWHAHDNH2VYZRSD2 | 2969                       | 95                               | 900mA<br>34.6V                            |



## T-Series

# Perfect Ambience Created by Light

Tunable lighting enriches your life more than ever  
through superb optimizations

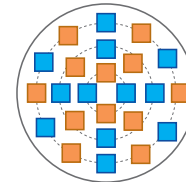
## T-series with White Color Tunability

Provides a wide CCT tunable range

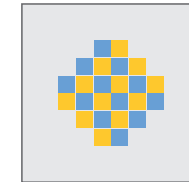
### High Color Quality

Excellent color mixing with optimized chip arrangements

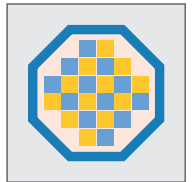
Samsung



Company A



Company B

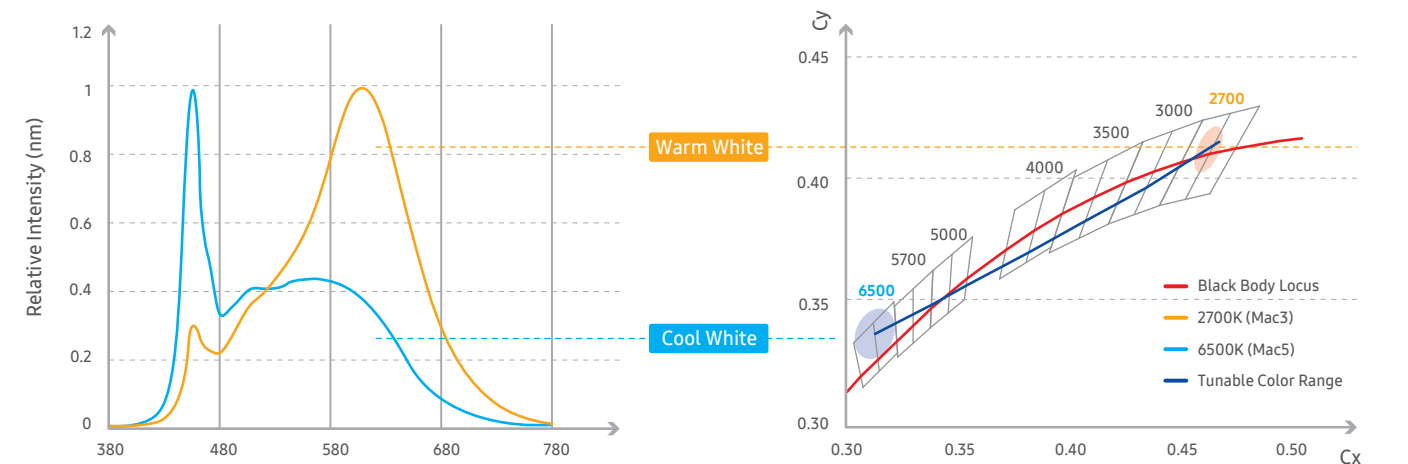


| Chip layout type                    | Concentric Circle<br>Round Dam | Lattice arrangement<br>Octagonal Dam | Lattice arrangement<br>No Dam |
|-------------------------------------|--------------------------------|--------------------------------------|-------------------------------|
| CCT<br>distribution<br>(Simulation) |                                |                                      |                               |

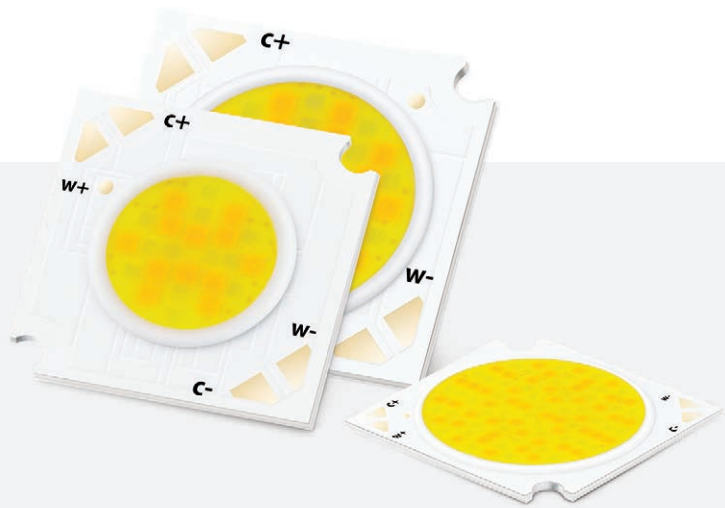
Cool White Warm White

### Wide Range of Color Temperature

From 2700K thru 6500K white color tunable

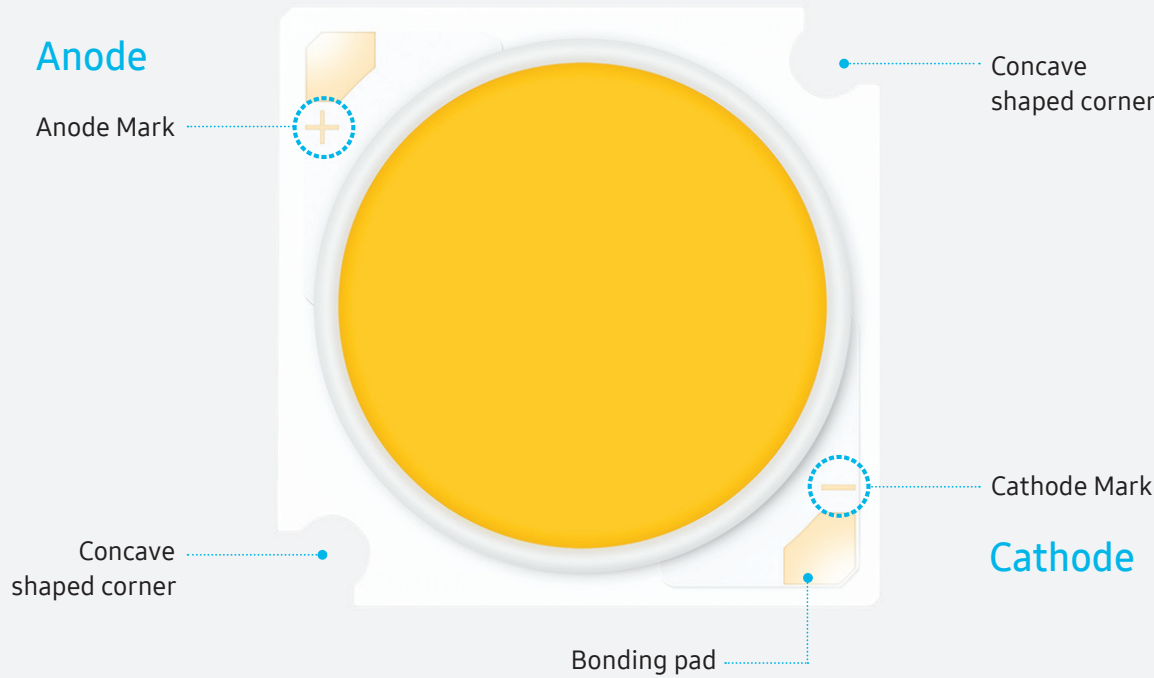


T-series



| T <sub>j</sub> =85°C | LC010T      | LC020T | LC035T      |
|----------------------|-------------|--------|-------------|
| LES                  | 9.8mm       | 13mm   | 22mm        |
| Typical              | 9.8W        | 19.6W  | 34.3W       |
|                      | 280mA       | 560mA  | 980mA       |
| Max.                 | 15W         | 30W    | 45W         |
|                      | 400mA       | 800mA  | 1250mA      |
| Size                 | 19mm x 19mm |        | 28mm x 28mm |

Product Details



Specifications

| Product    | CRI | CCT (K) | Color Rank    | Part Number       | T <sub>j</sub> = 85°C      |                                  | I <sub>F</sub> (mA)<br>V <sub>F</sub> (V) |
|------------|-----|---------|---------------|-------------------|----------------------------|----------------------------------|-------------------------------------------|
|            |     |         |               |                   | Luminous Flux<br>Typ. (lm) | Luminous Efficacy<br>Typ. (lm/W) |                                           |
| <br>LC010T | 80+ | 2700    | MacAdam 3step | SPHWAHDNC25YZWPT1 | 1011                       | 103                              | 280mA<br>35V                              |
|            |     | 6500    | MacAdam 5step |                   | 1313                       | 134                              |                                           |
| <br>LC020T | 80+ | 2700    | MacAdam 3step | SPHWAHDNF25YZWPT1 | 2022                       | 103                              | 560mA<br>35V                              |
|            |     | 6500    | MacAdam 5step |                   | 2626                       | 134                              |                                           |
| <br>LC035T | 80+ | 2700    | MacAdam 3step | SPHWAHDNH25YZWPT1 | 3698                       | 108                              | 980mA<br>35V                              |
|            |     | 6500    | MacAdam 5step |                   | 4802                       | 140                              |                                           |

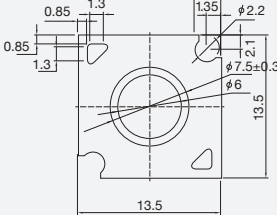
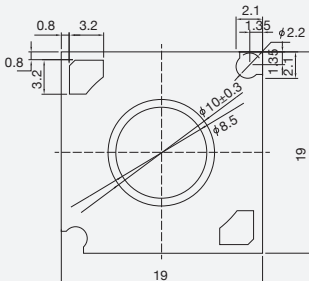
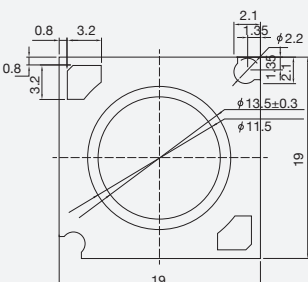
Product Dimensions

D-series

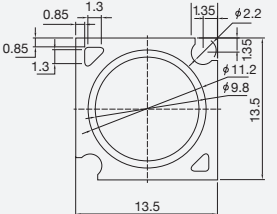
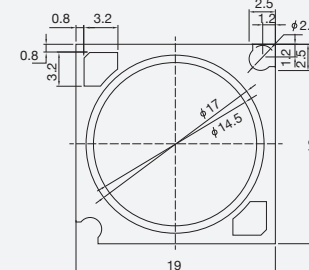
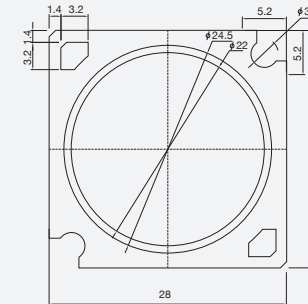
| LC003D / LC006D / LC009D / LC013D | LC016D / LC019D / LC026D / LC033D | LC040D / LC060D / LC080D |
|-----------------------------------|-----------------------------------|--------------------------|
|                                   |                                   |                          |

Product Dimensions

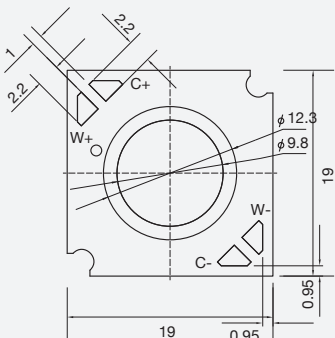
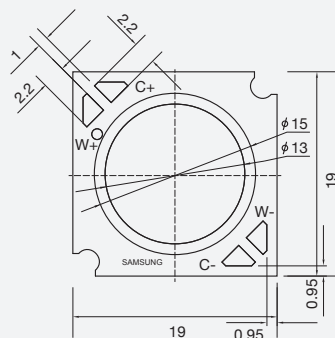
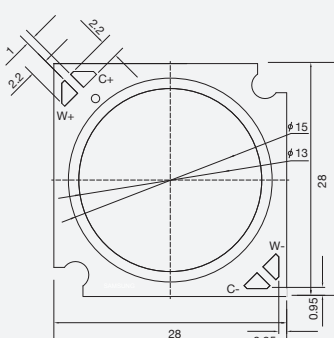
C-series

| LC010C Gen 2                                                                      | LC020C Gen 2                                                                      | LC030C Gen 2 / LC040C Gen 2                                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |

R-series

| LC003R / LC006R / LC009R / LC013R                                                   | LC016R / LC019R / LC026R / LC033R                                                  | LC040R / LC060R / LC080R                                                             |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |

T-series

| LC010T                                                                              | LC020T                                                                              | LC035T                                                                                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |

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