



**THE DATASHEET OF  
SPHWAHDNL251ZP3Q6**



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Samsung LED  
Retail  
Lighting Solutions

# Increasing Demand for High Color Quality



## Perfect Atmosphere Created by Light

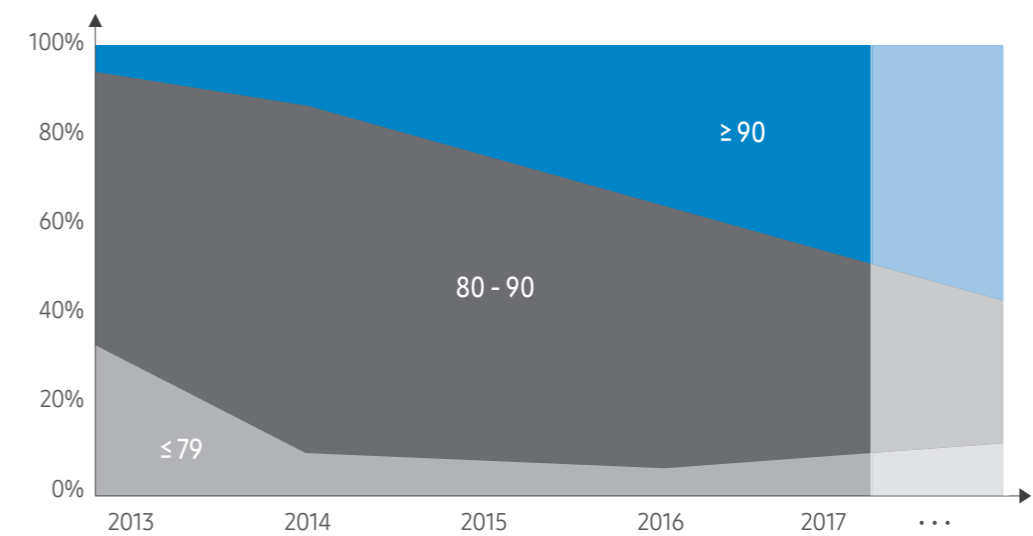
Carefully tuned light intensity and color can influence customers' behavior. It can lead customers to stay longer in the store and eventually result in sales increase



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

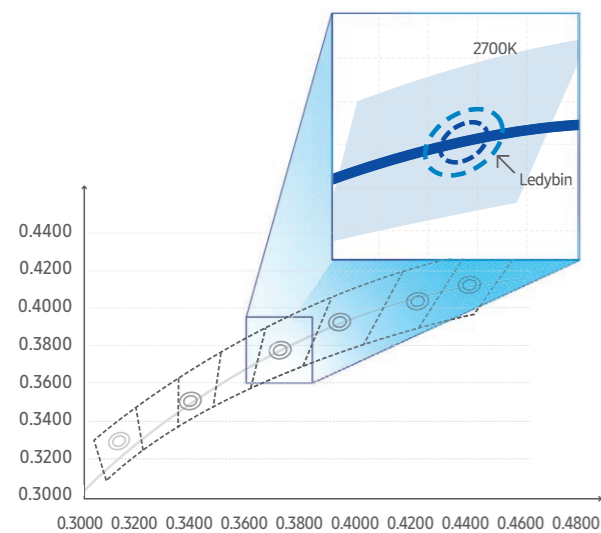
Metal substrate and small chip structure enable low thermal resistance and high reliability



## 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 |   |   |   |   |
| Gen 1<br>D1 rank: 143lm/W<br>D0 rank: 136lm/W | CRI 70+   |         |    |    |     |     |     |     |     |     |     |     |   |   |   |   |
|   | CRI 80+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
|   | CRI 90+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
| Gen 2<br>D2 rank: 151lm/W                     | CRI 70+   |         |    | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
|   | CRI 80+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
|   | CRI 90+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
| Gen 3<br>D3 rank: 161lm/W                     | CRI 70+   |         |    | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
|   | CRI 80+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |
|   | CRI 90+   | ●       | ●  | ●  | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ●   | ● | ● | ● | ● |



## D-series Gen 3

| T <sub>j</sub> =85°C | LC003D Gen 3    | LC006D Gen 3  | LC009D Gen 3  | LC013D Gen 3  | LC016D Gen 3   | LC019D Gen 3   | LC026D Gen 3   | LC033D Gen 3   | LC040D Gen 3    | LC060D Gen 3    | LC080D Gen 3    |       |
|----------------------|-----------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-------|
| LES                  | 9.8mm           |               |               | 14.5mm        |                |                |                | 22 mm          |                 |                 |                 |       |
| Typical              | 33.8V           |               |               |               |                |                |                |                |                 |                 |                 | 50.7V |
|                      | 3.0W (90mA)     | 6.1W (180mA)  | 9.1W (270mA)  | 12.2W (360mA) | 15.2W (450mA)  | 18.3W (540mA)  | 24.3W (720mA)  | 30.4W (900mA)  | 36.5W (1080mA)  | 54.8W (1080mA)  | 82.1W (1620mA)  |       |
| Max.                 | 8.7W (230mA)    | 17.4W (460mA) | 26.1W (690mA) | 34.8W (920mA) | 43.5W (1150mA) | 52.2W (1380mA) | 69.6W (1840mA) | 86.9W (2300mA) | 104.3W (2760mA) | 152.9W (2760mA) | 229.3W (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    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     |        |       |       |
| LC006D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     |        |       |       |
| LC009D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC013D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC016D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC019D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC026D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC033D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC040D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC060D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| LC080D Gen3    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| MacAdam 2-Step | 0      | 0     | 0     | 0     |       | 0      | 0     | 0     | 0     |       |       |       |        |       |       |
| MacAdam 3-Step | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |

## 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 Typ. (lm) | Luminous Efficacy 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                           |   |
|   | 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                     |                               |   |
| 5000  | MacAdam 3step | SPHWAHDNA27YZR3D3 | 453               | 149               |                         |                               |   |
| <br>LC006D Gen 3 | 80+           | 2700              | MacAdam 2step     | SPHWAHDNB25YZW2D3 | 946                     | 155                           | 180mA<br>33.8V                            |
|   |               |                   | 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                           |   |
|   | 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                     |                               |   |
| 5000  | MacAdam 3step | SPHWAHDNB27YZR3D3 | 902               | 148               |                         |                               |   |

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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC009D Gen 3 | 70+  | 3000          | MacAdam 3step     | SPHWAHDNC23YZV3D3 | 1594                    | 174                           | 270mA<br>33.8V                            |
|   |      | 4000          | MacAdam 3step     | SPHWAHDNC23YT3D3  | 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     | SPHWAHDNC25YT2D3  | 1550                    | 170                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNC25YT3D3  |                         |                               |   |
|   |      | 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 | SPHWAHDNC27YT2D3  | 1329              | 146                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNC27YT3D3  |                   |                         |                               |   |
| 5000  |      | MacAdam 3step | SPHWAHDNC27YZR3D3 | 1340              | 147                     |                               |   |
| 70+   | 3000 | MacAdam 3step | SPHWAHDND23YZV3D3 | 2094              | 171                     | 360mA<br>33.8V                |   |
|   |      | 4000          | MacAdam 3step     | SPHWAHDND23YT3D3  | 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     | SPHWAHDND25YT2D3  | 2036                    |                               | 167                                       |
|   |      |               | MacAdam 3step     | SPHWAHDND25YT3D3  |                         |                               |   |
|   |      | 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 | SPHWAHDND27YT2D3  | 1745              | 143                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDND27YT3D3  |                   |                         |                               |   |
| 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC016D Gen 3 | 70+  | 3000          | MacAdam 3step     | SPHWAHDNE23YZV3D3 | 2697                    | 176                           | 450mA<br>33.8V                            |
|   |      | 4000          | MacAdam 3step     | SPHWAHDNE23YT3D3  | 2747                    | 180                           |   |
|   |      | 5000          | MacAdam 3step     | SPHWAHDNE23YZR3D3 | 2797                    | 183                           |   |
|   | 80+  | 2700          | MacAdam 2step     | SPHWAHDNE25YZW2D3 | 2376                    | 156                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE25YZW3D3 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNE25YZV2D3 | 2497                    | 164                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE25YZV3D3 |                         |                               |   |
|   |      | 3500          | MacAdam 2step     | SPHWAHDNE25YZU2D3 | 2570                    | 169                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE25YZU3D3 |                         |                               |   |
|   |      | 4000          | MacAdam 2step     | SPHWAHDNE25YT2D3  | 2622                    | 172                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE25YT3D3  |                         |                               |   |
|   |      | 5000          | MacAdam 3step     | SPHWAHDNE25YZR3D3 | 2644                    | 174                           |   |
|   | 5700 | MacAdam 3step | SPHWAHDNE25YZQ3D3 | 2644              | 174                     |                               |   |
|   | 6500 | MacAdam 3step | SPHWAHDNE25YZP3D3 | 2622              | 172                     |                               |   |
|   | 90+  | 2700          | MacAdam 2step     | SPHWAHDNE27YZW2D3 | 2033                    | 134                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE27YZW3D3 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNE27YZV2D3 | 2139                    | 141                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNE27YZV3D3 |                         |                               |   |
| 3500  |      | MacAdam 2step | SPHWAHDNE27YZU2D3 | 2203              | 145                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNE27YZU3D3 |                   |                         |                               |   |
| 4000  |      | MacAdam 2step | SPHWAHDNE27YT2D3  | 2248              | 148                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNE27YT3D3  |                   |                         |                               |   |
| 5000  |      | MacAdam 3step | SPHWAHDNE27YZR3D3 | 2267              | 149                     |                               |   |
| 70+   | 3000 | MacAdam 3step | SPHWAHDNF23YZV3D3 | 3220              | 175                     | 540mA<br>33.8V                |   |
|   |      | 4000          | MacAdam 3step     | SPHWAHDNF23YT3D3  | 3280                    |                               | 179                                       |
|   |      | 5000          | MacAdam 3step     | SPHWAHDNF23YZR3D3 | 3339                    |                               | 182                                       |
|   | 80+  | 2700          | MacAdam 2step     | SPHWAHDNF25YZW2D3 | 2837                    |                               | 155                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF25YZW3D3 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNF25YZV2D3 | 2982                    |                               | 163                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF25YZV3D3 |                         |                               |   |
|   |      | 3500          | MacAdam 2step     | SPHWAHDNF25YZU2D3 | 3069                    |                               | 168                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF25YZU3D3 |                         |                               |   |
|   |      | 4000          | MacAdam 2step     | SPHWAHDNF25YT2D3  | 3130                    |                               | 171                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF25YT3D3  |                         |                               |   |
|   |      | 5000          | MacAdam 3step     | SPHWAHDNF25YZR3D3 | 3157                    |                               | 173                                       |
|   | 5700 | MacAdam 3step | SPHWAHDNF25YZQ3D3 | 3157              | 173                     |                               |   |
|   | 6500 | MacAdam 3step | SPHWAHDNF25YZP3D3 | 3130              | 171                     |                               |   |
|   | 90+  | 2700          | MacAdam 2step     | SPHWAHDNF27YZW2D3 | 2428                    |                               | 133                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF27YZW3D3 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNF27YZV2D3 | 2554                    |                               | 140                                       |
|   |      |               | MacAdam 3step     | SPHWAHDNF27YZV3D3 |                         |                               |   |
| 3500  |      | MacAdam 2step | SPHWAHDNF27YZU2D3 | 2630              | 144                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNF27YZU3D3 |                   |                         |                               |   |
| 4000  |      | MacAdam 2step | SPHWAHDNF27YT2D3  | 2684              | 147                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNF27YT3D3  |                   |                         |                               |   |
| 5000  |      | MacAdam 3step | SPHWAHDNF27YZR3D3 | 2707              | 148                     |                               |   |

D-series

# 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 Typ. (lm) | Luminous Efficacy 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 |                   |                         |                               |   |
|   | 90+           | 5000              | MacAdam 3step     | SPHWAHDNG25YZR3D3 | 4147                    | 170                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNG25YZQ3D3 |                         |                               |   |
|   |               | 6500              | MacAdam 3step     | SPHWAHDNG25YZP3D3 | 4112                    | 169                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNG27YZW2D3 |                         |                               |   |
|   |               | 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               |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNG27YZP3D3 |                   |                   |                         |                               |   |
| <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                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNH25YZQ3D3 |                         |                               |   |
|   |               | 6500              | MacAdam 3step     | SPHWAHDNH25YZP3D3 | 5089                    | 167                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNH25YZW2D3 |                         |                               |   |

| 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 Typ. (lm) | Luminous Efficacy 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                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNH27YZP3D3 |                   |                         |                               |   |
|   | 70+           | 3000              | MacAdam 3step     | SPHWAHDNK23YZV3D3 | 6440                    | 176                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNK23YZT3D3 |                         |                               |   |
| MacAdam 3step   |               |                   | SPHWAHDNK23YZR3D3 |                   |                         |                               |   |
| 4000  |               | MacAdam 3step     | SPHWAHDNK25YZW2D3 | 5675              | 155                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK25YZW3D3 |                   |                         |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK25YZV2D3 |                   |                         |                               |   |
| 3000  | MacAdam 2step | SPHWAHDNK25YZV2D3 | 5963              | 163               |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNK25YZV3D3 |                   |                   |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNK25YZR3D3 |                   |                   |                         |                               |   |
| 80+   | 3500          | MacAdam 2step     | SPHWAHDNK25YZU2D3 | 6138              | 168                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK25YZU3D3 |                   |                         |                               |   |
|   | 4000          | MacAdam 2step     | SPHWAHDNK25YZT2D3 | 6261              | 172                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK25YZT3D3 |                   |                         |                               |   |
|   | 5000          | MacAdam 3step     | SPHWAHDNK25YZR3D3 | 6313              | 173                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK25YZQ3D3 |                   |                         |                               |   |
| 6500  | MacAdam 3step | SPHWAHDNK25YZP3D3 | 6261              | 172               |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNK27YZW2D3 |                   |                   |                         |                               |   |
| <br>LC040D Gen 3 | 2700          | MacAdam 2step     | SPHWAHDNK27YZW2D3 | 4856              | 133                     | 1080mA<br>33.8V               |   |
|   |               | 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                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNK27YZP3D3 |                   |                         |                               |   |

D-series

# 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC060D Gen 3 | 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                          |   |
|  | 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC080D Gen 3 | 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                         |   |
|  | 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

# D-series Gen 2



| T <sub>j</sub> =85°C | LC003D Gen 2      | LC006D Gen 2       | LC009D Gen 2       | LC013D Gen 2       | LC016D Gen 2        | LC019D Gen 2        | LC026D Gen 2       | LC033D Gen 2        | LC040D Gen 2         | LC060D Gen 2         | LC080D 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) | 31.1 W<br>(900 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) | 17.2 W<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    |        |       |       |       |       | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      |       |       |       |
| LC006D Gen2    |        |       |       |       |       | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      |       |       |       |
| LC009D Gen2    |        |       |       |       |       | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC013D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC016D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC019D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC026D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC033D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC040D Gen2    | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC060D Gen2    |        |       |       |       |       | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| LC080D Gen2    |        |       |       |       |       | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| MacAdam 2-Step | 0      | 0     | 0     | 0     |       | 0      | 0     | 0     | 0     |       | 0      | 0     | 0     | 0     |       |       |        |       |       |       |
| MacAdam 3-Step | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |

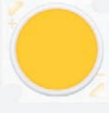
## Specifications

| 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |                |
| <br>LC003D Gen 2   | 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                           |   |     |                |
|   |                   | <br>LC006D Gen 2 | 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                           |   |     |                |
| <br>LC006D Gen 2 | 80+               |   |                   | 2700              | MacAdam 2step           | SPHWAHDNB25YZW2D2             | 924                                       | 148 | 180mA<br>34.6V |
|   |                   | 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                           |   |     |                |
|   |                   | <br>LC006D Gen 2 | 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

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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC009D Gen 2 | 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                     |                               |   |
| 70+   | 3000 | MacAdam 3step | SPHWAHDND23YZV3D2 | 2106              | 161                     | 360mA<br>34.6V                |   |
|   |      | MacAdam 3step | SPHWAHDND23YZT3D2 | 2173              | 166                     |                               |   |
|   |      | 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                     |                               |   |

| 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |                |
| <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 |                   |                         |                               |   |                |
|   | 70+           | 3000              | MacAdam 3step     | SPHWAHDNE23YZV3D2 | 2617                    | 168                           |   | 450mA<br>34.6V |
|   |               |                   | MacAdam 3step     | SPHWAHDNE23YZT3D2 | 2701                    | 173                           |   |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNE23YZR3D2 | 2742                    | 176                           |   |                |
|   |               | 2700              | MacAdam 2step     | SPHWAHDNE25YZW2D2 | 2293                    | 147                           |   |                |
| MacAdam 3step   |               |                   | SPHWAHDNE25YZW3D2 |                   |                         |                               |   |                |
| MacAdam 2step   |               |                   | SPHWAHDNE25YZV2D2 | 2423              | 156                     |                               |   |                |
| 80+   | 3000          | MacAdam 3step     | SPHWAHDNE25YZV3D2 |                   |                         |                               |   |                |
|   |               | MacAdam 2step     | SPHWAHDNE25YZU2D2 | 2513              | 161                     |                               |   |                |
|   | 3500          | MacAdam 3step     | SPHWAHDNE25YZU3D2 |                   |                         |                               |   |                |
|   |               | MacAdam 2step     | SPHWAHDNE25YZT2D2 | 2558              | 164                     |                               |   |                |
|   | 4000          | MacAdam 3step     | SPHWAHDNE25YZT3D2 |                   |                         |                               |   |                |
|   |               | MacAdam 2step     | SPHWAHDNE25YZR3D2 | 2581              | 166                     |                               |   |                |
|   | 5000          | MacAdam 3step     | SPHWAHDNE25YZQ3D2 | 2581              | 166                     |                               |   |                |
|   |               | MacAdam 3step     | SPHWAHDNE25YZP3D2 | 2558              | 164                     |                               |   |                |
|   | 90+           | 2700              | MacAdam 2step     | SPHWAHDNE27YZW2D2 | 1967                    | 126                           | 450mA<br>34.6V                            |                |
| 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                     |                               |   |                |
|   |               | 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 |                   |                   |                         |                               |   |                |
| 95+   | 4000          | MacAdam 2step     | SPHWAHDNE28YZT2D2 | 1776              | 114                     |                               |   |                |
|   |               | MacAdam 3step     | SPHWAHDNE28YZT3D2 |                   |                         |                               |   |                |
|   | 5000          | MacAdam 2step     | SPHWAHDNE28YZR3D2 | 1791              | 115                     |                               |   |                |
|   |               | MacAdam 3step     | SPHWAHDNE28YZR3D2 |                   |                         |                               |   |                |

D-series


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 Typ. (lm) | Luminous Efficacy 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 |                         |                               |   |
|   |               | 3500              | MacAdam 2step     | SPHWAHDNF25YZU2D2 | 2965                    | 159                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF25YZU3D2 |                         |                               |   |
|   |               | 4000              | MacAdam 2step     | SPHWAHDNF25YZT2D2 | 3026                    | 162                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF25YZT3D2 |                         |                               |   |
|   |               | 5000              | MacAdam 2step     | SPHWAHDNF25YZR3D2 | 3059                    | 164                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF25YZR3D2 |                         |                               |   |
|   |               | 5700              | MacAdam 2step     | SPHWAHDNF25YZQ3D2 | 3059                    | 164                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF25YZQ3D2 |                         |                               |   |
|   | 6500          | MacAdam 2step     | SPHWAHDNF25YZP3D2 | 3026              | 162                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNF25YZP3D2 |                   |                         |                               |   |
|   | 90+           | 2700              | MacAdam 2step     | SPHWAHDNF27YZW2D2 | 2336                    | 125                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF27YZW3D2 |                         |                               |   |
|   |               | 3000              | MacAdam 2step     | SPHWAHDNF27YZV2D2 | 2449                    | 131                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF27YZV3D2 |                         |                               |   |
|   |               | 3500              | MacAdam 2step     | SPHWAHDNF27YZU2D2 | 2539                    | 136                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF27YZU3D2 |                         |                               |   |
|   |               | 4000              | MacAdam 2step     | SPHWAHDNF27YZT2D2 | 2594                    | 139                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF27YZT3D2 |                         |                               |   |
|   |               | 5000              | MacAdam 2step     | SPHWAHDNF27YZR3D2 | 2596                    | 139                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF27YZR3D2 |                         |                               |   |
| 95+   |               | 2700              | MacAdam 2step     | SPHWAHDNF28YZW2D2 | 1880                    | 101                           |   |
|   |               |                   | MacAdam 3step     | SPHWAHDNF28YZW3D2 |                         |                               |   |
|   | 3000          | MacAdam 2step     | SPHWAHDNF28YZV2D2 | 1976              | 106                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNF28YZV3D2 |                   |                         |                               |   |
|   | 3500          | MacAdam 2step     | SPHWAHDNF28YZU2D2 | 2056              | 110                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNF28YZU3D2 |                   |                         |                               |   |
|   | 4000          | MacAdam 2step     | SPHWAHDNF28YZT2D2 | 2121              | 114                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNF28YZT3D2 |                   |                         |                               |   |
|   | 5000          | MacAdam 2step     | SPHWAHDNF28YZR3D2 | 2138              | 114                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNF28YZR3D2 |                   |                         |                               |   |
|   | 70+           | 3000              | MacAdam 3step     | SPHWAHDNG23YZV3D2 | 4063                    | 163                           | 720mA<br>34.6V                            |
|   |               |                   | MacAdam 3step     | SPHWAHDNG23YZT3D2 | 4193                    | 168                           |   |
| MacAdam 3step   |               |                   | SPHWAHDNG23YZR3D2 | 4258              | 171                     |                               |   |
| 2700  |               | MacAdam 2step     | SPHWAHDNG25YZW2D2 | 3580              | 144                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNG25YZW3D2 |                   |                         |                               |   |
| 3000  |               | MacAdam 2step     | SPHWAHDNG25YZV2D2 | 3762              | 151                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNG25YZV3D2 |                   |                         |                               |   |
| 3500  |               | MacAdam 2step     | SPHWAHDNG25YZU2D2 | 3872              | 155                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNG25YZU3D2 |                   |                         |                               |   |
| 4000  |               | MacAdam 2step     | SPHWAHDNG25YZT2D2 | 3950              | 159                     |                               |   |
|   |               | MacAdam 3step     | SPHWAHDNG25YZT3D2 |                   |                         |                               |   |
| 5000  |               | MacAdam 2step     | SPHWAHDNG25YZR3D2 | 3983              | 160                     |                               |   |
|   | MacAdam 3step | SPHWAHDNG25YZR3D2 |                   |                   |                         |                               |   |
| 5700  | MacAdam 2step | SPHWAHDNG25YZQ3D2 | 3983              | 160               |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNG25YZQ3D2 |                   |                   |                         |                               |   |
| 6500  | MacAdam 2step | SPHWAHDNG25YZP3D2 | 3950              | 159               |                         |                               |   |
|   | MacAdam 3step | SPHWAHDNG25YZP3D2 |                   |                   |                         |                               |   |



LC026D Gen 2

| 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 Typ. (lm) | Luminous Efficacy 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     | SPHWAHDNG27YZU2D2 | 3319                    | 133                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG27YZU3D2 |                         |                               |   |     |                |
|   |               | 4000              | MacAdam 2step     | SPHWAHDNG27YZT2D2 | 3387                    | 136                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG27YZT3D2 |                         |                               |   |     |                |
|   |               | 5000              | MacAdam 2step     | SPHWAHDNG27YZR3D2 | 3416                    | 137                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG27YZR3D2 |                         |                               |   |     |                |
|   |               | 95+               | 2700              | MacAdam 2step     | SPHWAHDNG28YZW2D2       | 2470                          |   | 99  |                |
|   |               |                   |                   | MacAdam 3step     | SPHWAHDNG28YZW3D2       |                               |   |     |                |
|   | 3000          |                   | MacAdam 2step     | SPHWAHDNG28YZV2D2 | 2596                    | 104                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG28YZV3D2 |                         |                               |   |     |                |
|   | 3500          |                   | MacAdam 2step     | SPHWAHDNG28YZU2D2 | 2701                    | 108                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG28YZU3D2 |                         |                               |   |     |                |
|   | 4000          |                   | MacAdam 2step     | SPHWAHDNG28YZT2D2 | 2786                    | 112                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG28YZT3D2 |                         |                               |   |     |                |
|   | 5000          |                   | MacAdam 2step     | SPHWAHDNG28YZR3D2 | 2809                    | 113                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNG28YZR3D2 |                         |                               |   |     |                |
|   | 70+           |                   | 3000              | MacAdam 3step     | SPHWAHDNH23YZV3D2       | 5014                          |   | 161 | 900mA<br>34.6V |
|   |               |                   |                   | MacAdam 3step     | SPHWAHDNH23YZT3D2       | 5175                          |   | 166 |                |
|   |               | MacAdam 3step     |                   | SPHWAHDNH23YZR3D2 | 5255                    | 169                           |   |     |                |
|   |               | 2700              | MacAdam 2step     | SPHWAHDNH25YZW2D2 | 4418                    | 142                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNH25YZW3D2 |                         |                               |   |     |                |
|   |               | 3000              | MacAdam 2step     | SPHWAHDNH25YZV2D2 | 4643                    | 149                           |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNH25YZV3D2 |                         |                               |   |     |                |
| 3500  |               | MacAdam 2step     | SPHWAHDNH25YZU2D2 | 4779              | 153                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH25YZU3D2 |                   |                         |                               |   |     |                |
| 4000  |               | MacAdam 2step     | SPHWAHDNH25YZT2D2 | 4875              | 157                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH25YZT3D2 |                   |                         |                               |   |     |                |
| 5000  |               | MacAdam 2step     | SPHWAHDNH25YZR3D2 | 4916              | 158                     |                               |   |     |                |
|   | MacAdam 3step | SPHWAHDNH25YZR3D2 |                   |                   |                         |                               |   |     |                |
| 5700  | MacAdam 2step | SPHWAHDNH25YZQ3D2 | 4916              | 158               |                         |                               |   |     |                |
|   | MacAdam 3step | SPHWAHDNH25YZQ3D2 |                   |                   |                         |                               |   |     |                |
| 6500  | MacAdam 2step | SPHWAHDNH25YZP3D2 | 4875              | 157               |                         |                               |   |     |                |
|   | MacAdam 3step | SPHWAHDNH25YZP3D2 |                   |                   |                         |                               |   |     |                |
| 90+   | 2700          | MacAdam 2step     | SPHWAHDNH27YZW2D2 | 3781              | 121                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH27YZW3D2 |                   |                         |                               |   |     |                |
|   | 3000          | MacAdam 2step     | SPHWAHDNH27YZV2D2 | 3977              | 128                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH27YZV3D2 |                   |                         |                               |   |     |                |
|   | 3500          | MacAdam 2step     | SPHWAHDNH27YZU2D2 | 4096              | 132                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH27YZU3D2 |                   |                         |                               |   |     |                |
|   | 4000          | MacAdam 2step     | SPHWAHDNH27YZT2D2 | 4180              | 134                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH27YZT3D2 |                   |                         |                               |   |     |                |
|   | 5000          | MacAdam 2step     | SPHWAHDNH27YZR3D2 | 4216              | 135                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH27YZR3D2 |                   |                         |                               |   |     |                |
|   | 95+           | 2700              | MacAdam 2step     | SPHWAHDNH28YZW2D2 | 3057                    | 98                            |   |     |                |
|   |               |                   | MacAdam 3step     | SPHWAHDNH28YZW3D2 |                         |                               |   |     |                |
| 3000  |               | MacAdam 2step     | SPHWAHDNH28YZV2D2 | 3212              | 103                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH28YZV3D2 |                   |                         |                               |   |     |                |
| 3500  |               | MacAdam 2step     | SPHWAHDNH28YZU2D2 | 3343              | 107                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH28YZU3D2 |                   |                         |                               |   |     |                |
| 4000  |               | MacAdam 2step     | SPHWAHDNH28YZT2D2 | 3447              | 111                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH28YZT3D2 |                   |                         |                               |   |     |                |
| 5000  |               | MacAdam 2step     | SPHWAHDNH28YZR3D2 | 3476              | 112                     |                               |   |     |                |
|   |               | MacAdam 3step     | SPHWAHDNH28YZR3D2 |                   |                         |                               |   |     |                |



LC033D Gen 2

D-series

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 Typ. (lm) | Luminous Efficacy 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 |                         |                               |   |
|   |      | 3500          | MacAdam 2step     | SPHWAHDNK25YZU2D2 | 6016                    | 161                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNK25YZU3D2 |                         |                               |   |
|   |      | 4000          | MacAdam 2step     | SPHWAHDNK25YZT2D2 | 6146                    | 164                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNK25YZT3D2 |                         |                               |   |
|   |      | 5000          | MacAdam 3step     | SPHWAHDNK25YZR3D2 | 6175                    | 165                           |   |
|   |      |               | 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 |                         |                               |   |
|   |      | 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                     |                               |   |
|   |      |               |                   |                   |                         |                               |   |
|   | 70+  | 3000          | MacAdam 3step     | SPHWAHDNL231ZV3D2 | 9225                    | 164                           | 1080mA<br>52V                             |
|   |      |               | MacAdam 3step     | SPHWAHDNL231ZT3D2 | 9521                    | 170                           |   |
| MacAdam 3step   |      |               | SPHWAHDNL231ZR3D2 | 9668              | 172                     |                               |   |
| 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                     |                               |   |
|   |      | 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 Typ. (lm) | Luminous Efficacy 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                     |                               |   |               |
|   |               |                   |                   |                   |                         |                               |   |               |
|   | 70+           | 3000              | MacAdam 3step     | SPHWAHDNM231ZV3D2 | 13465                   | 160                           |   | 1620mA<br>52V |
|   |               |                   | MacAdam 3step     | SPHWAHDNM231ZT3D2 | 13896                   | 165                           |   |               |
| MacAdam 3step   |               |                   | SPHWAHDNM231ZR3D2 | 14112             | 168                     |                               |   |               |
| 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                     |                               |   |               |
|   | MacAdam 3step | SPHWAHDNM251ZQ3D2 | 13258             | 157               |                         |                               |   |               |
| 6500  | MacAdam 3step | SPHWAHDNM251ZP3D2 | 13121             | 156               |                         |                               |   |               |
|   |               |                   |                   |                   |                         |                               |   |               |
| 90+   | 2700          | MacAdam 2step     | SPHWAHDNM271ZW2D2 | 10157             | 121                     | 1080mA<br>52V                 |   |               |
|   |               | 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



# D-series Gen 1

| T <sub>j</sub> =85°C | LC003D Gen1    | LC006D Gen1     | LC009D Gen1     | LC013D Gen1     | LC016D Gen1      | LC019D Gen1      | LC026D Gen1     | LC040D Gen1       | LC060D Gen1       | LC080D Gen1      |
|----------------------|----------------|-----------------|-----------------|-----------------|------------------|------------------|-----------------|-------------------|-------------------|------------------|
| LES                  | 9.8mm          |                 |                 | 14.5mm          |                  |                  | 22mm            |                   |                   |                  |
| Typical              | 34.6 V         |                 |                 |                 |                  |                  |                 |                   | 52 V              |                  |
|                      | 3.1 W (90 mA)  | 6.2 W (180 mA)  | 9.4 W (270 mA)  | 12.5 W (360 mA) | 15.6 W (450 mA)  | 18.7 W (540 mA)  | 24.9 W (720 mA) | 37.4 W (1080 mA)  | 56.1 W (1080 mA)  | 84.2 W (1620 mA) |
| Max.                 | 8.6 W (230 mA) | 17.2 W (460 mA) | 25.9 W (690 mA) | 34.5 W (920 mA) | 43.1 W (1150 mA) | 51.8 W (1380 mA) | 69 W (1840 mA)  | 103.5 W (2760 mA) | 143.4 W (2760 mA) | 215 W (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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |     |
| LC003D Gen1   | 80+               | 2700          | MacAdam 2step     | SPHWAHDNA25YZW2A9 | 413                     | 133                           | 90mA<br>34.6V                             |     |     |
|               |                   |               | MacAdam 3step     | SPHWAHDNA25YZW3A9 |                         |                               |   |     |     |
|               |                   |               | MacAdam 2step     | SPHWAHDNA25YZW2D1 | 434                     | 139                           |   |     |     |
|               |                   |               | MacAdam 3step     | SPHWAHDNA25YZW3D1 |                         |                               |   |     |     |
|               |                   |               | 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

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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |
| <br>LC006D Gen 1 | 80+           | 2700    | MacAdam 2step     | SPHWAHDNB25YZW2E9 | 832                     | 134                           | 180mA<br>34.6V                            |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZW3E9 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB25YZW2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZW3D1 |                         |                               |   |     |
|   |               | 3000    | MacAdam 2step     | SPHWAHDNB25YZV2F3 | 875                     | 140                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZV3F3 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB25YZV2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZV3D1 |                         |                               |   |     |
|   |               | 3500    | MacAdam 2step     | SPHWAHDNB25YZU2F5 | 902                     | 145                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZU3F5 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB25YZU2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZU3D1 |                         |                               |   |     |
|   |               | 4000    | MacAdam 2step     | SPHWAHDNB25YZT2F8 | 923                     | 148                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB25YZT3F8 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB25YZT2D1 |                         |                               |   |     |
|   |               |         | 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 |                         |                               |   |     |
|   | MacAdam 3step |         |                   | SPHWAHDNB27YZW3D1 |                         |                               |   |     |
|   | 3000          |         | MacAdam 2step     | SPHWAHDNB27YZV2E9 | 743                     | 119                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB27YZV3E9 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB27YZV2D1 |                         |                               |   |     |
|   | 3000          |         | MacAdam 3step     | SPHWAHDNB27YZV3D1 | 780                     | 125                           |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB27YZU2E0 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB27YZU3E0 |                         |                               |   |     |
|   | 3500          |         | MacAdam 2step     | SPHWAHDNB27YZU2D1 | 807                     | 130                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB27YZU3D1 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNB27YZT2E4 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNB27YZT3E4 |                         |                               |   |     |
| 4000  | MacAdam 2step |         | SPHWAHDNB27YZT2D1 | 824               | 132                     |                               |   |     |
|   | MacAdam 3step |         | SPHWAHDNB27YZT3D1 |                   |                         |                               |   |     |
|   | MacAdam 2step |         | SPHWAHDNB27YZR3E4 |                   |                         |                               |   |     |
|   | MacAdam 3step |         | SPHWAHDNB27YZR3D1 |                   |                         |                               |   |     |
| 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |
| <br>LC009D Gen 1 | 80+           | 2700    | MacAdam 2step     | SPHWAHDNC25YZW2H1 | 1209                    | 129                           | 270mA<br>34.6V                            |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZW3H1 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC25YZW2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZW3D1 |                         |                               |   |     |
|   |               | 3000    | MacAdam 2step     | SPHWAHDNC25YZV2H2 | 1278                    | 137                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZV3H2 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC25YZV2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZV3D1 |                         |                               |   |     |
|   |               | 3500    | MacAdam 2step     | SPHWAHDNC25YZU2H2 | 1315                    | 141                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZU3H2 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC25YZU2D1 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZU3D1 |                         |                               |   |     |
|   |               | 4000    | MacAdam 2step     | SPHWAHDNC25YZT2H2 | 1347                    | 144                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC25YZT3H2 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC25YZT2D1 |                         |                               |   |     |
|   |               |         | 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 |                         |                               |   |     |
|   | MacAdam 3step |         |                   | SPHWAHDNC27YZW3D1 |                         |                               |   |     |
|   | 3000          |         | MacAdam 2step     | SPHWAHDNC27YZV2H0 | 1087                    | 116                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC27YZV3H0 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC27YZV2D1 |                         |                               |   |     |
|   | 3000          |         | MacAdam 3step     | SPHWAHDNC27YZV3D1 | 1141                    | 122                           |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC27YZU2H0 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC27YZU3H0 |                         |                               |   |     |
|   | 3500          |         | MacAdam 2step     | SPHWAHDNC27YZU2D1 | 1178                    | 126                           |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC27YZU3D1 |                         |                               |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNC27YZT2H0 |                         |                               |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNC27YZT3H0 |                         |                               |   |     |
| 4000  | MacAdam 2step |         | SPHWAHDNC27YZT2D1 | 1204              | 129                     |                               |   |     |
|   | MacAdam 3step |         | SPHWAHDNC27YZT3D1 |                   |                         |                               |   |     |
|   | MacAdam 2step |         | SPHWAHDNC27YZR3H1 |                   |                         |                               |   |     |
|   | MacAdam 3step |         | SPHWAHDNC27YZR3D1 |                   |                         |                               |   |     |
| 5000  | MacAdam 3step |         | SPHWAHDNC27YZR3H1 | 1152              | 123                     |                               |   |     |
|   |               |         | SPHWAHDNC27YZR3D1 | 1210              | 130                     |                               |   |     |

D-series

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>LC013D Gen 1 | 80+           | 2700    | MacAdam 2step     | SPHWAHDND25YZW2H5 | 1589                       | 128                              | 360mA<br>34.6V                            |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZW3H5 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND25YZW2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZW3D1 |                            |                                  |   |     |
|   |               | 3000    | MacAdam 2step     | SPHWAHDND25YZV2H5 | 1673                       | 134                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZV3H5 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND25YZV2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZV3D1 |                            |                                  |   |     |
|   |               | 3500    | MacAdam 2step     | SPHWAHDND25YZU2H6 | 1725                       | 138                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZU3H6 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND25YZU2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZU3D1 |                            |                                  |   |     |
|   |               | 4000    | MacAdam 2step     | SPHWAHDND25YZT2H6 | 1757                       | 141                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND25YZT3H6 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND25YZT2D1 |                            |                                  |   |     |
|   |               |         | 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 |                            |                                  |   |     |
|   | MacAdam 3step |         |                   | SPHWAHDND27YZW3D2 |                            |                                  |   |     |
|   | 3000          |         | MacAdam 2step     | SPHWAHDND27YZV2H3 | 1423                       | 114                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND27YZV3H3 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND27YZV2D1 |                            |                                  |   |     |
|   | 3500          |         | MacAdam 3step     | SPHWAHDND27YZV3D1 | 1494                       | 120                              |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND27YZU2H4 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND27YZU3H4 |                            |                                  |   |     |
|   | 4000          |         | MacAdam 2step     | SPHWAHDND27YZU2D1 | 1547                       | 124                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND27YZU3D1 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDND27YZT2H4 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDND27YZT3H4 |                            |                                  |   |     |
| 5000  | MacAdam 2step |         | SPHWAHDND27YZT2D1 | 1580              | 127                        |                                  |   |     |
|   | MacAdam 3step |         | SPHWAHDND27YZT3D1 |                   |                            |                                  |   |     |
|   | MacAdam 2step |         | SPHWAHDND27YZR3H4 |                   |                            |                                  |   |     |
|   | MacAdam 3step |         | SPHWAHDND27YZR3D1 |                   |                            |                                  |   |     |

| 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 1 | 80+           | 2700    | MacAdam 2step     | SPHWAHDNE25YZW2H9 | 2065                       | 133                              | 450mA<br>34.6V                            |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZW3H9 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE25YZW2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZW3D1 |                            |                                  |   |     |
|   |               | 3000    | MacAdam 2step     | SPHWAHDNE25YZV2J0 | 2182                       | 140                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZV3J0 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE25YZV2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZV3D1 |                            |                                  |   |     |
|   |               | 3500    | MacAdam 2step     | SPHWAHDNE25YZU2J1 | 2263                       | 145                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZU3J1 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE25YZU2D1 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZU3D1 |                            |                                  |   |     |
|   |               | 4000    | MacAdam 2step     | SPHWAHDNE25YZT2J1 | 2304                       | 148                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE25YZT3J1 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE25YZT2D1 |                            |                                  |   |     |
|   |               |         | 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 |                            |                                  |   |     |
|   | MacAdam 3step |         |                   | SPHWAHDNE27YZW3D1 |                            |                                  |   |     |
|   | 3000          |         | MacAdam 2step     | SPHWAHDNE27YZV2H7 | 1877                       | 121                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE27YZV3H7 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE27YZV2D1 |                            |                                  |   |     |
|   | 3500          |         | MacAdam 3step     | SPHWAHDNE27YZV3D1 | 1970                       | 127                              |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE27YZU2H8 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE27YZU3H8 |                            |                                  |   |     |
|   | 4000          |         | MacAdam 2step     | SPHWAHDNE27YZU2D1 | 2029                       | 130                              |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE27YZU3D1 |                            |                                  |   |     |
|   |               |         | MacAdam 2step     | SPHWAHDNE27YZT2H8 |                            |                                  |   |     |
|   |               |         | MacAdam 3step     | SPHWAHDNE27YZT3H8 |                            |                                  |   |     |
| 5000  | MacAdam 2step |         | SPHWAHDNE27YZT2D1 | 2069              | 133                        |                                  |   |     |
|   | MacAdam 3step |         | SPHWAHDNE27YZT3D1 |                   |                            |                                  |   |     |
|   | MacAdam 2step |         | SPHWAHDNE27YZR3H8 |                   |                            |                                  |   |     |
|   | MacAdam 3step |         | SPHWAHDNE27YZR3D1 |                   |                            |                                  |   |     |

D-series

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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |
| <br>LC019D Gen 1 | 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |     |
| <br>LC026D Gen 1 | 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               |                         |                               |   |     |

D-series

# 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC040D Gen 1 | 80+  | 2700          | MacAdam 2step     | SPHWAHDNG25YZW2K0 | 4996                    | 134                           | 1080mA<br>34.6V                           |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZW3K0 |                         |                               |   |
|   |      |               | MacAdam 2step     | SPHWAHDNG25YZW2D1 |                         |                               |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZW3D1 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNG25YZV2K2 | 5257                    | 141                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZV3K2 |                         |                               |   |
|   |      |               | MacAdam 2step     | SPHWAHDNG25YZV2D1 |                         |                               |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZV3D1 |                         |                               |   |
|   |      | 3500          | MacAdam 2step     | SPHWAHDNG25YZU2K3 | 5418                    | 145                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZU3K3 |                         |                               |   |
|   |      |               | MacAdam 2step     | SPHWAHDNG25YZU2D1 |                         |                               |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG25YZU3D1 |                         |                               |   |
|   | 4000 | MacAdam 2step | SPHWAHDNG25YZT2K3 | 5535              | 148                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNG25YZT3K3 |                   |                         |                               |   |
|   |      | MacAdam 2step | SPHWAHDNG25YZT2D1 |                   |                         |                               |   |
|   |      | 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 |                         |                               |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG27YZW3D1 |                         |                               |   |
|   |      |               | MacAdam 2step     | SPHWAHDNG27YZV2J7 |                         |                               |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG27YZV3J7 |                         |                               |   |
|   |      | 3000          | MacAdam 2step     | SPHWAHDNG27YZV2D1 | 4751                    | 127                           |   |
|   |      |               | MacAdam 3step     | SPHWAHDNG27YZV3D1 |                         |                               |   |
| MacAdam 2step   |      |               | SPHWAHDNG27YZU2J8 |                   |                         |                               |   |
| 3500  |      | MacAdam 3step | SPHWAHDNG27YZU3J8 | 4640              | 124                     |                               |   |
|   |      | MacAdam 2step | SPHWAHDNG27YZU2D1 |                   |                         |                               |   |
|   |      | MacAdam 3step | SPHWAHDNG27YZU3D1 |                   |                         |                               |   |
| 4000  |      | MacAdam 2step | SPHWAHDNG27YZT2J8 | 4742              | 127                     |                               |   |
|   |      | MacAdam 3step | SPHWAHDNG27YZT3J8 |                   |                         |                               |   |
|   |      | MacAdam 2step | SPHWAHDNG27YZT2D1 |                   |                         |                               |   |
|   |      | 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC060D Gen 1   | 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             |   |
| 5700  |               | MacAdam 3step     | SPHWAHDNL251ZQ3Q7 |                   |                         |                               |   |
| 6500  | MacAdam 3step | SPHWAHDNL271ZP3Q6 | 8066              | 144               |                         |                               |   |
|   |               | SPHWAHDNL271ZP3Q6 | 8066              | 144               |                         |                               |   |
| <br>LC080D Gen 1 | 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| LC013R<br>Fashion Vivid White | 90+ | 3000 (Below BBL) | MacAdam 3step | SPHWAHDND2VYZVND2 | 1435                    | 115                           | 360mA<br>34.6V                            |
|                               |     | 3500 (Below BBL) | MacAdam 3step | SPHWAHDND2VYZUND2 | 1494                    | 120                           |   |
|                               |     | 4000 (Below BBL) | MacAdam 3step | SPHWAHDND2VYZTND2 | 1541                    | 124                           |   |
| LC016R<br>Fashion Vivid White | 90+ | 3000 (Below BBL) | MacAdam 3step | SPHWAHDNE2VYZVND2 | 1837                    | 118                           | 450mA<br>34.6V                            |
|                               |     | 3500 (Below BBL) | MacAdam 3step | SPHWAHDNE2VYZUND2 | 1912                    | 123                           |   |
|                               |     | 4000 (Below BBL) | MacAdam 3step | SPHWAHDNE2VYZTND2 | 1972                    | 127                           |   |
| LC019R<br>Fashion Vivid White | 90+ | 3000 (Below BBL) | MacAdam 3step | SPHWAHDNF2VYZVND2 | 2195                    | 117                           | 540mA<br>34.6V                            |
|                               |     | 3500 (Below BBL) | MacAdam 3step | SPHWAHDNF2VYZUND2 | 2284                    | 122                           |   |
|                               |     | 4000 (Below BBL) | MacAdam 3step | SPHWAHDNF2VYZTND2 | 2355                    | 126                           |   |
| LC026R<br>Fashion Vivid White | 90+ | 3000 (Below BBL) | MacAdam 3step | SPHWAHDNG2VYZVND2 | 2917                    | 117                           | 720mA<br>34.6V                            |
|                               |     | 3500 (Below BBL) | MacAdam 3step | SPHWAHDNG2VYZUND2 | 3036                    | 122                           |   |
|                               |     | 4000 (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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| LC013R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDND2VYZV2D2 | 1334                    | 107                           | 360mA<br>34.6V                            |
|                               |                  | MacAdam 3step     | SPHWAHDND2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDND2VYZA2D2 | 1394                    | 112                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDND2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDND2VYZU2D2 | 1433                    | 115                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDND2VYZUVD2 |                         |                               |   |
| 4000 (Below BBL)              | MacAdam 2step    | SPHWAHDND2VYZT2D2 | 1533              | 123                     |                               |   |
|                               | MacAdam 3step    | SPHWAHDND2VYZTVD2 |                   |                         |                               |   |
| LC016R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDNE2VYZV2D2 | 1745                    | 112                           | 450mA<br>34.6V                            |
|                               |                  | MacAdam 3step     | SPHWAHDNE2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDNE2VYZA2D2 | 1823                    | 117                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNE2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDNE2VYZU2D2 | 1875                    | 120                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNE2VYZUVD2 |                         |                               |   |
| 4000 (Below BBL)              | MacAdam 2step    | SPHWAHDNE2VYZT2D2 | 2005              | 129                     |                               |   |
|                               | MacAdam 3step    | SPHWAHDNE2VYZTVD2 |                   |                         |                               |   |
| LC019R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDNF2VYZV2D2 | 2068                    | 111                           | 540mA<br>34.6V                            |
|                               |                  | MacAdam 3step     | SPHWAHDNF2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDNF2VYZA2D2 | 2160                    | 116                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNF2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDNF2VYZU2D2 | 2222                    | 119                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNF2VYZUVD2 |                         |                               |   |
| 4000 (Below BBL)              | MacAdam 2step    | SPHWAHDNF2VYZT2D2 | 2376              | 127                     |                               |   |
|                               | MacAdam 3step    | SPHWAHDNF2VYZTVD2 |                   |                         |                               |   |
| LC026R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDNG2VYZV2D2 | 2706                    | 109                           | 720mA<br>34.6V                            |
|                               |                  | MacAdam 3step     | SPHWAHDNG2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDNG2VYZA2D2 | 2827                    | 113                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNG2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDNG2VYZU2D2 | 2907                    | 117                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNG2VYZUVD2 |                         |                               |   |
| 4000 (Below BBL)              | MacAdam 2step    | SPHWAHDNG2VYZT2D2 | 3108              | 125                     |                               |   |
|                               | MacAdam 3step    | SPHWAHDNG2VYZTVD2 |                   |                         |                               |   |
| LC033R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDNH2VYZV2D2 | 3339                    | 107                           | 900mA<br>34.6V                            |
|                               |                  | MacAdam 3step     | SPHWAHDNH2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDNH2VYZA2D2 | 3488                    | 112                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNH2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDNH2VYZU2D2 | 3588                    | 115                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNH2VYZUVD2 |                         |                               |   |
| 4000 (Below BBL)              | MacAdam 2step    | SPHWAHDNH2VYZT2D2 | 3836              | 123                     |                               |   |
|                               | MacAdam 3step    | SPHWAHDNH2VYZTVD2 |                   |                         |                               |   |
| LC040R<br>Fashion Vivid Color | 3000 (Below BBL) | MacAdam 2step     | SPHWAHDNK2VYZV2D2 | 4150                    | 111                           | 1080mA<br>34.6V                           |
|                               |                  | MacAdam 3step     | SPHWAHDNK2VYZVVD2 |                         |                               |   |
|                               | 3300 (Below BBL) | MacAdam 2step     | SPHWAHDNK2VYZA2D2 | 4335                    | 116                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNK2VYZAVD2 |                         |                               |   |
|                               | 3500 (Below BBL) | MacAdam 2step     | SPHWAHDNK2VYZU2D2 | 4459                    | 119                           |   |
|                               |                  | MacAdam 3step     | SPHWAHDNK2VYZUVD2 |                         |                               |   |
| 4000 (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<br>Meat | MacAdam 2step | SPHWHAHND2VYZTSD2 | 914                        | 73                               | 360mA<br>34.6V                            |
| <br>LC016R<br>Meat | MacAdam 2step | SPHWHAHNE2VYZTSD2 | 1188                       | 76                               | 450mA<br>34.6V                            |
| <br>LC019R<br>Meat | MacAdam 2step | SPHWHAHNF2VYZTSD2 | 1412                       | 76                               | 540mA<br>34.6V                            |
| <br>LC026R<br>Meat | MacAdam 2step | SPHWHAHNG2VYZTSD2 | 1845                       | 74                               | 720mA<br>34.6V                            |
| <br>LC033R<br>Meat | MacAdam 2step | SPHWHAHNH2VYZTSD2 | 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<br>Vegetable | MacAdam 2step | SPHWHAHND2VYZRSD2 | 1188                       | 95                               | 360mA<br>34.6V                            |
| <br>LC016R<br>Vegetable | MacAdam 2step | SPHWHAHNE2VYZRSD2 | 1544                       | 99                               | 450mA<br>34.6V                            |
| <br>LC019R<br>Vegetable | MacAdam 2step | SPHWHAHNF2VYZRSD2 | 1835                       | 98                               | 540mA<br>34.6V                            |
| <br>LC026R<br>Vegetable | MacAdam 2step | SPHWHAHNG2VYZRSD2 | 2399                       | 96                               | 720mA<br>34.6V                            |
| <br>LC033R<br>Vegetable | MacAdam 2step | SPHWHAHNH2VYZRSD2 | 2969                       | 95                               | 900mA<br>34.6V                            |



## T-Series

# Perfect Ambience Created by Light

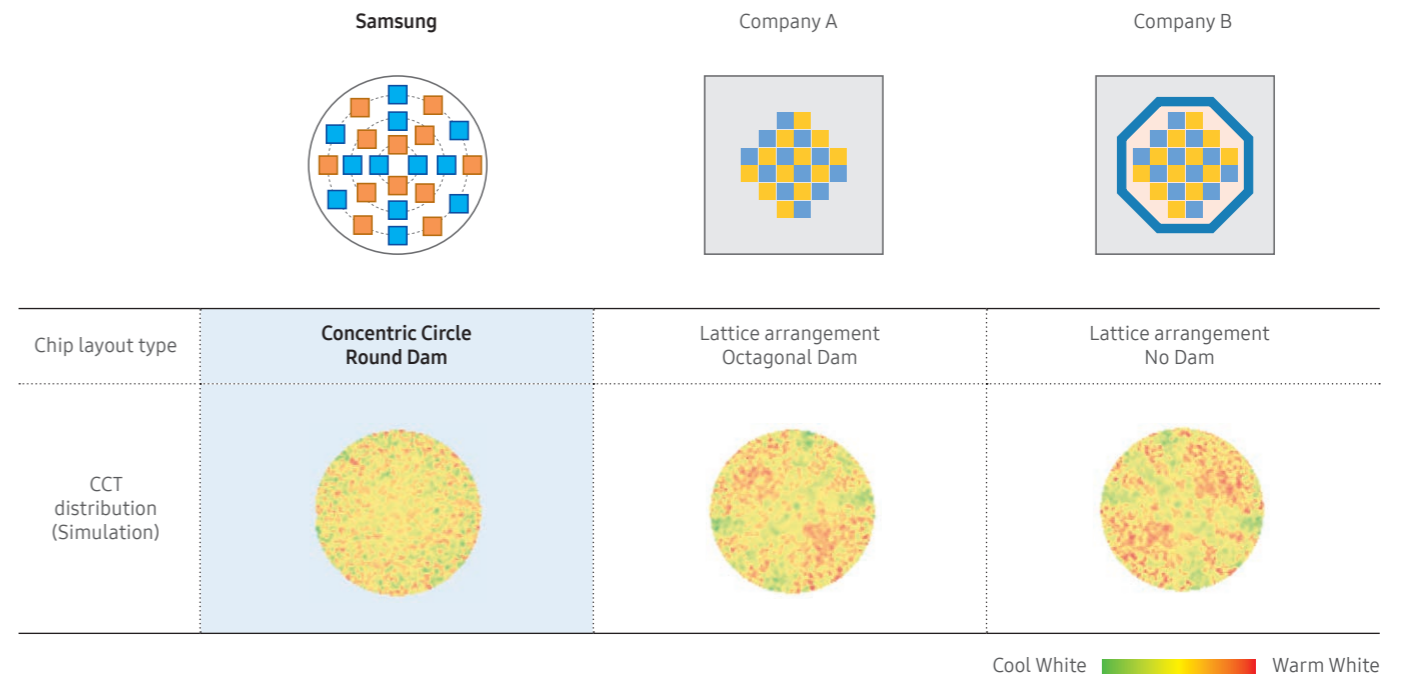
Tunable lighting enriches your life more than ever through superb optimizations

## T-series with White Color Tunability

Provides a wide CCT tunable range

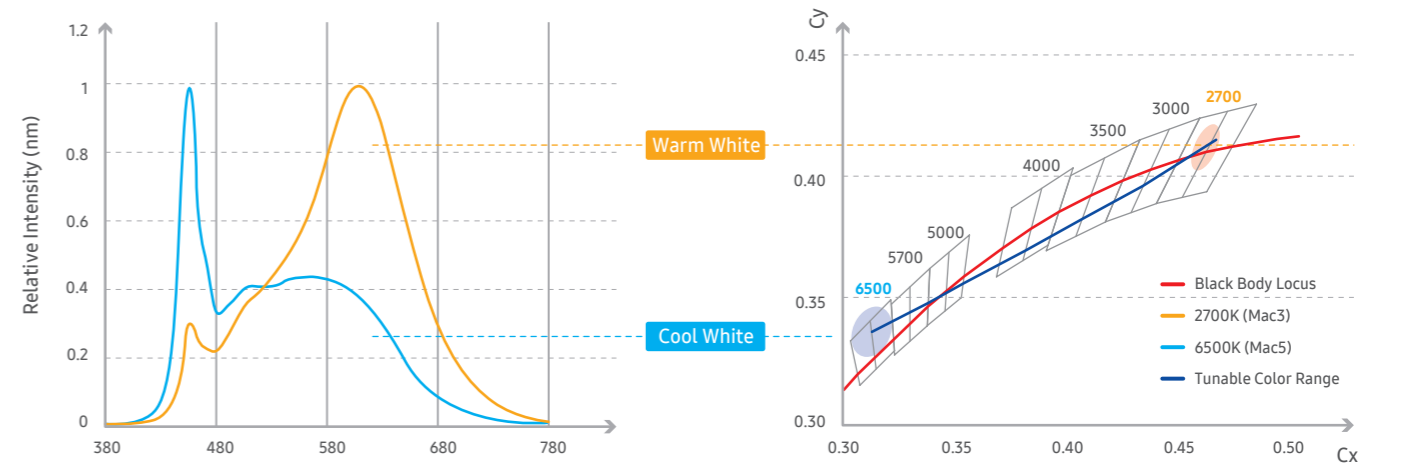
### High Color Quality

Excellent color mixing with optimized chip arrangements



### 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 Typ. (lm) | Luminous Efficacy Typ. (lm/W) |   |
| <br>LC010T | 80+ | 2700    | MacAdam 3step | SPHWHAHDC25YZWPT1  | 1011                    | 103                           | 280mA<br>35V                              |
|   |     | 6500    | MacAdam 5step |                    | 1313                    | 134                           |   |
| <br>LC020T | 80+ | 2700    | MacAdam 3step | SPHWHAHDF25YZWPT1  | 2022                    | 103                           | 560mA<br>35V                              |
|   |     | 6500    | MacAdam 5step |                    | 2626                    | 134                           |   |
| <br>LC035T | 80+ | 2700    | MacAdam 3step | SPHWHAHDNH25YZWPT1 | 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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