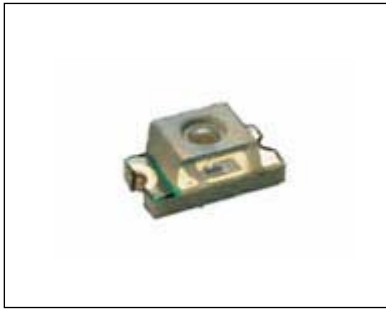




**THE DATASHEET OF
AN1102W**





**Pb-free
HEAT**



□□1102W

Surface Mount IRED/Inner Lens Type

Features

| | |
|-------------------------|---|
| Package | 3015 type, Water clear epoxy |
| Product features | <ul style="list-style-type: none"> •Outer Dimension 3.0 x 1.5 x 1.5mm (L x W x H) •Inner Lenz type •Radiant Intensity <ul style="list-style-type: none"> DNK : 2.2mW/sr TYP. (I_F=20mA) TAN : 1.4mW/sr TYP. (I_F=20mA) AN : 0.8mW/sr TYP. (I_F=20mA) •Lead-free soldering compatible •RoHS compliant |
| Peak Wavelength | DNK : 865nm TAN : 940nm AN : 950nm |
| Half Intensity Angle | DNK : $\theta_x = 60 \text{ deg.}, \theta_y = 80 \text{ deg.}$ TAN : $\theta_x = 80 \text{ deg.}, \theta_y = 90 \text{ deg.}$ AN : $\theta_x = 60 \text{ deg.}, \theta_y = 90 \text{ deg.}$ |
| Die materials | GaAlAs (DNK) GaAs (TAN,AN) |
| Rank grouping parameter | Sorted by radiant intensity per rank taping |
| Assembly method | Auto pick & place machine (Auto Mounter) |
| Soldering methods | Reflow soldering ※Please refer to Soldering Conditions about soldering. |
| Taping and reel | 2,500pcs per reel in a 8mm width tape. (Standard) Reel diameter: ϕ 180mm |
| ESD-withstand voltage | 2kV (HBM) |

Recommended Applications

Car Audio, Electric Household Appliances, OA/FA, PC/Peripheral Equipment, Other General Applications



□□1102W

Surface Mount IRED/Inner Lens Type

Color and Luminous Intensity

(Ta=25°C)

| Part No. | Material | Lens Color | Peak Wavelength λ_p (nm) | | Radiant Intensity I_E (mW/sr) | | |
|----------|----------|-------------|-------------------------------------|------------|------------------------------------|------|------------|
| | | | TYP. | I_F (mA) | MIN. | TYP. | I_F (mA) |
| DNK1102W | GaAlAs | Water Clear | 865 | 20 | 1.1 | 2.2 | 20 |
| TAN1102W | GaAs | | 940 | 20 | 0.7 | 1.4 | 20 |
| AN1102W | GaAs | | 950 | 20 | 0.5 | 0.8 | 20 |

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | | | Unit |
|---------------------------------|------------------|--------------------------|------|------|-------|
| | | DNK | TAN | AN | |
| Power Dissipation | P_d | 80 | 70 | 75 | mW |
| Forward Current | I_F | 50 | 50 | 50 | mA |
| Pulse Forward Current ※1 | I_{FRM} | 300 | 300 | 300 | mA |
| Derating (Ta=25°C or higher) | ΔI_F | 0.67 | 0.67 | 0.67 | mA/°C |
| | ΔI_{FRM} | 4.00 | 4.00 | 4.00 | mA/°C |
| Reverse Voltage | V_R | 5 | 5 | 5 | V |
| Operating Temperature | T_{opr} | -30~+85 | | | °C |
| Storage Temperature | T_{stg} | -40~+100 | | | °C |

 ※1 I_{FRM} Measurement condition : Pulse Width $\leq 100 \mu s$, Duty $\leq 1/100$

Electro-Optical Characteristics

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | | Unit | |
|----------------------|---|------------------|-----------------|------------------|------------------|------------------|---------|
| | | | DNK | TAN | AN | | |
| Forward Voltage | $I_F=20mA$ | V_F | TYP. | 1.40 | 1.20 | 1.22 | V |
| | | | MAX. | 1.65 | 1.40 | 1.40 | |
| Reverse Current | $V_R=5V$ | I_R | MAX. | 100 | 10 | 10 | μA |
| Radiant Intensity | $I_F=20mA$ | I_E | MIN. | 1.1 | 0.7 | 0.5 | mW/sr |
| | | | TYP. | 2.2 | 1.4 | 0.8 | |
| Total Output Power | $I_F=20mA$ | P_o | TYP. | 8.5 | 5.7 | 2 | mW |
| Peak Wavelength | $I_F=20mA$ | λ_p | TYP. | 865 | 940 | 950 | nm |
| Spectral Half-width | $I_F=20mA$ | $\Delta \lambda$ | TYP. | 45 | 50 | 45 | nm |
| Half Intensity Angle | $I_F=20mA$ | $2\theta_{1/2}$ | TYP. | 60(θ_x) | 80(θ_x) | 60(θ_x) | deg. |
| | | | | 80(θ_y) | 90(θ_y) | 90(θ_y) | |
| Cut-off Frequency | $I_F=20mA_{DC} \pm 5mA$, -3db from 0.1MHz | f_c | MIN. | - | - | - | MHz |
| | | | TYP. | 50 | - | 0.5 | |
| Response Time | $I_F=20mA$ | tr/tf | TYP. | 7 | 1000 | 700 | ns |

 ※ θ_x : Product long side axis, θ_y : Product short side axis

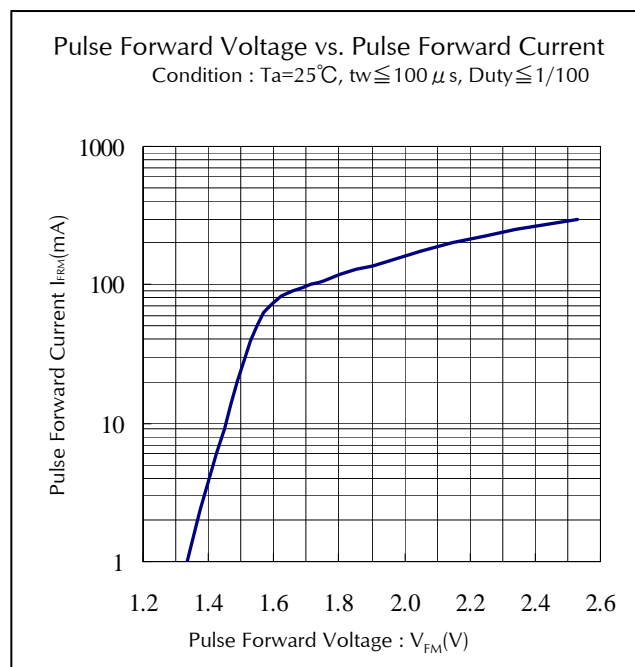
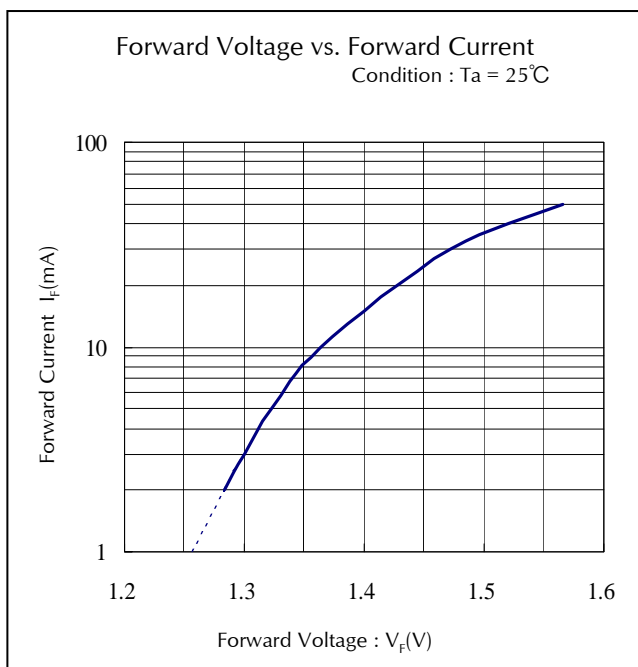
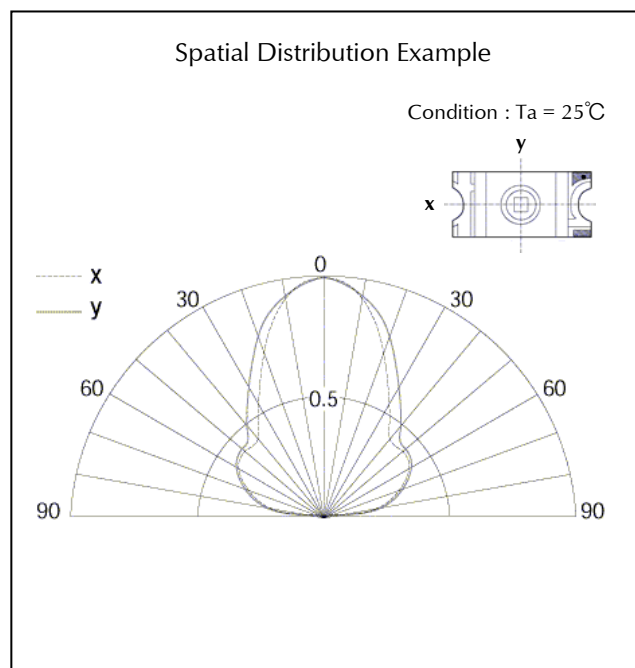
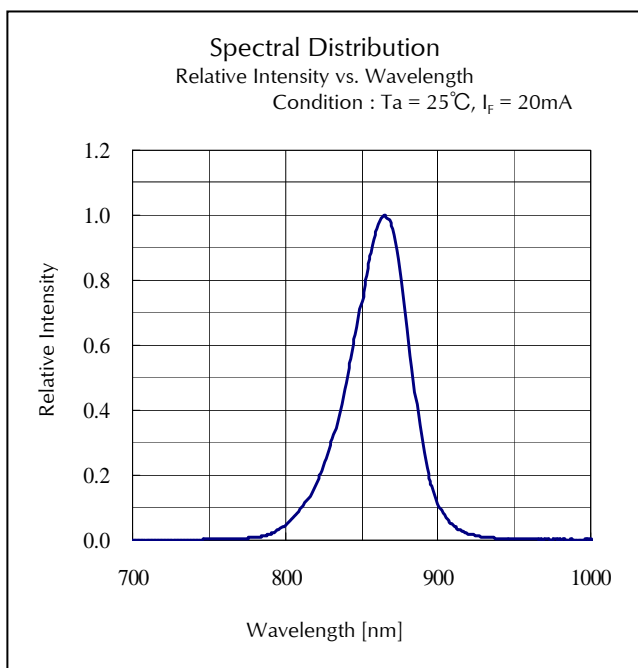
Radiant Intensity Rank

(Ta=25°C)

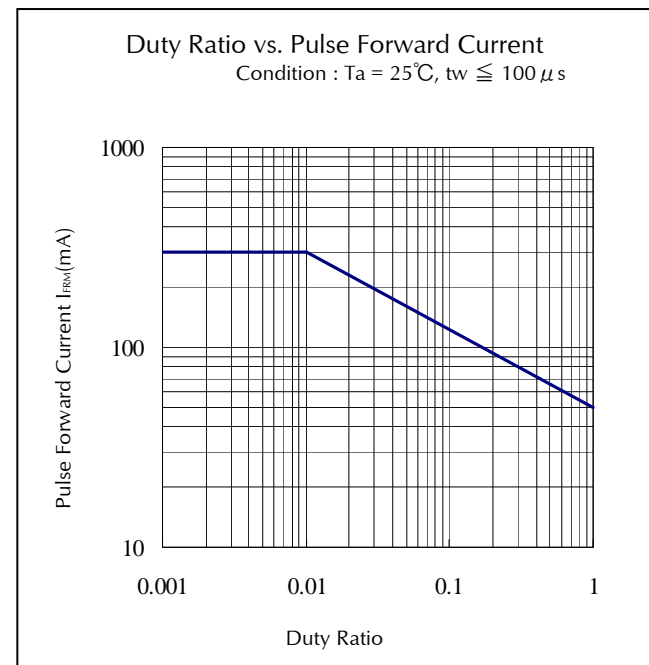
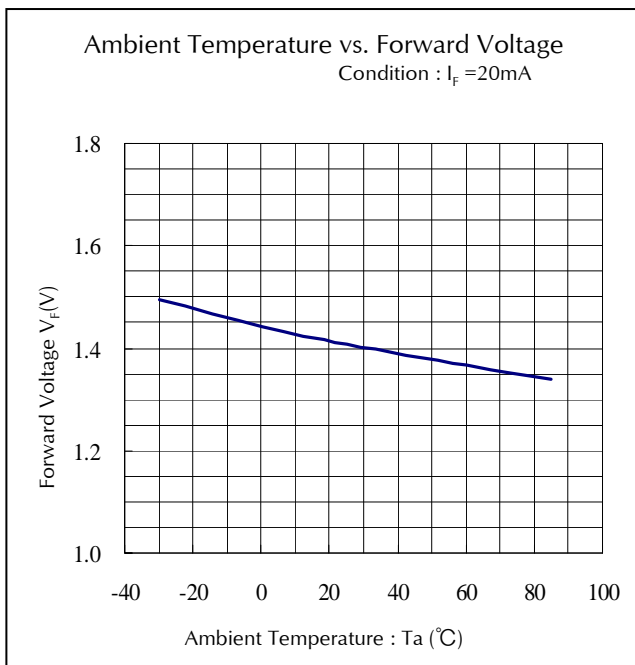
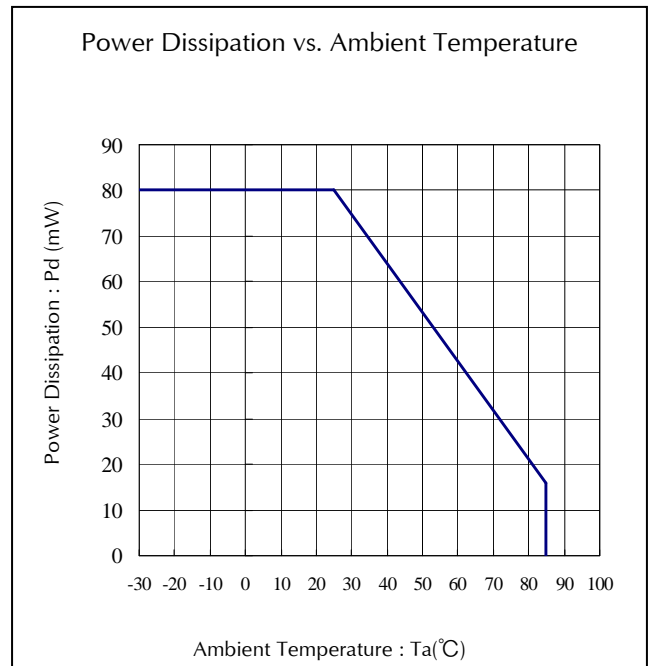
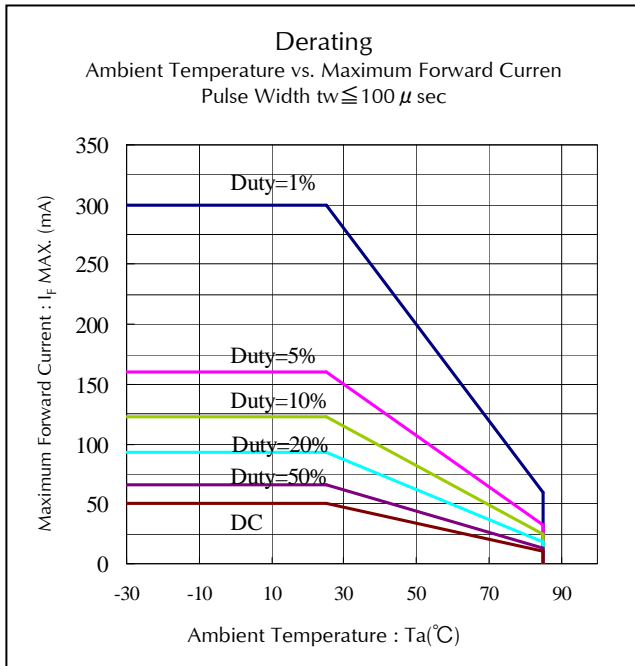
| Rank | I _E (mW/sr) | | | | | |
|----------|------------------------|------------|----------------------|------------|----------------------|------------|
| | DNK | | TAN | | AN | |
| | I _F =20mA | | I _F =20mA | | I _F =20mA | |
| | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| A | 1.1 | 2.2 | 0.7 | 1.4 | 0.5 | 1.0 |
| B | 1.6 | 3.2 | 1.0 | 2.0 | 0.7 | 1.4 |
| C | 2.2 | 4.4 | 1.4 | 2.8 | 1.0 | 2.0 |
| D | 3.2 | 6.4 | 2.0 | 4.0 | 1.4 | 2.8 |
| E | 4.4 | 8.8 | 2.8 | 5.6 | 2.0 | - |

※Please contact our sales staff concerning rank designation.

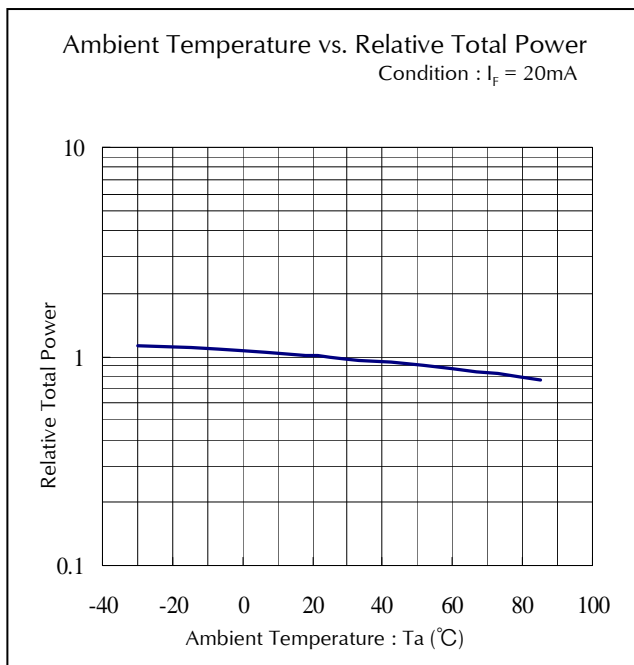
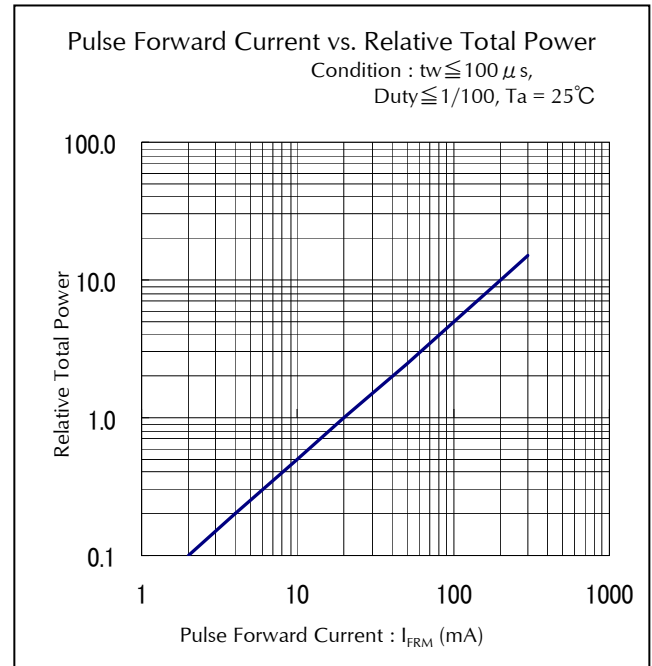
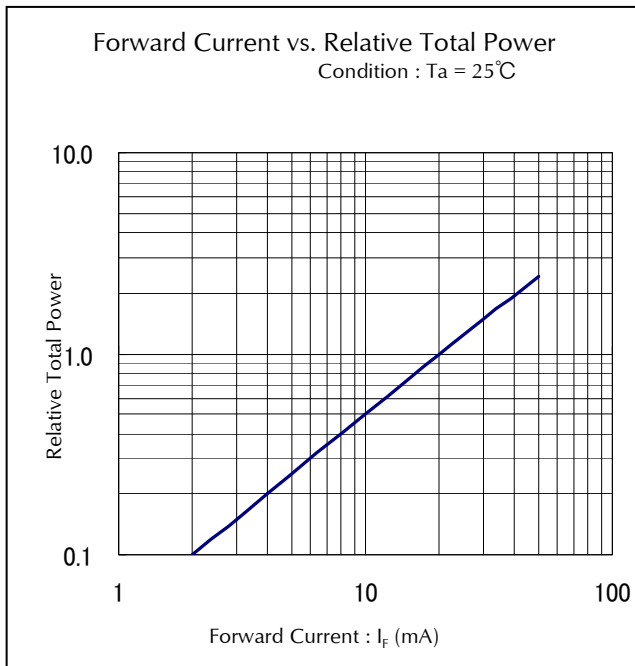
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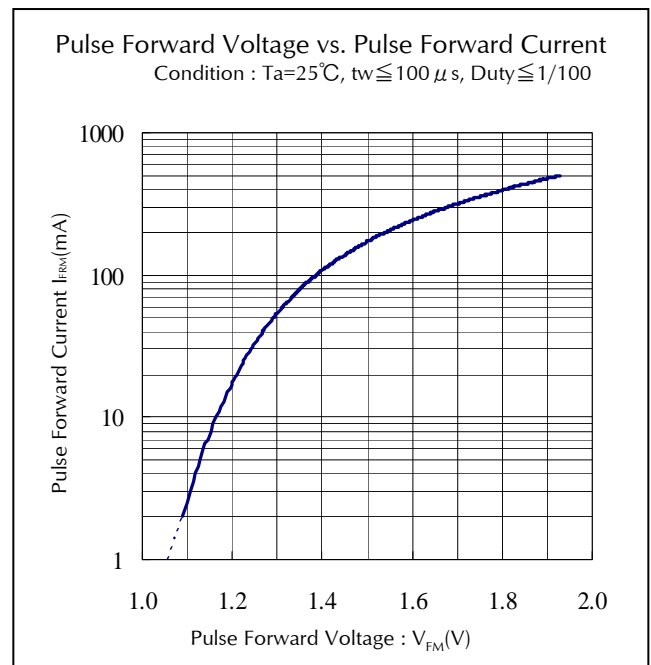
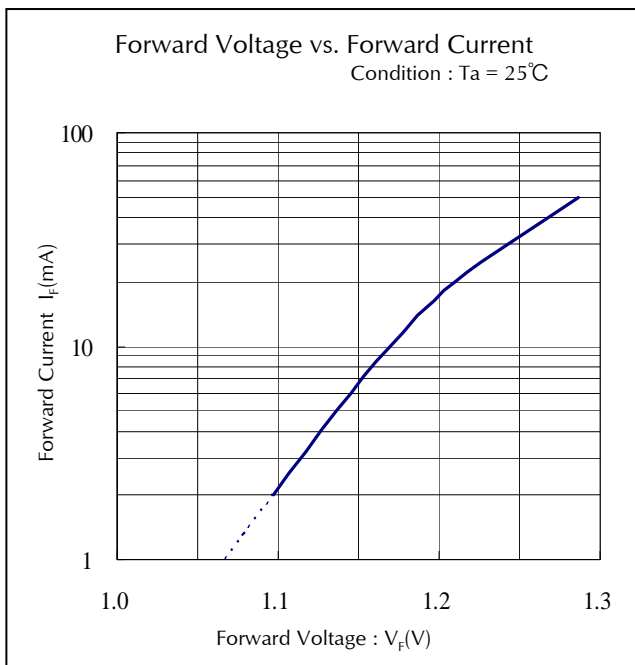
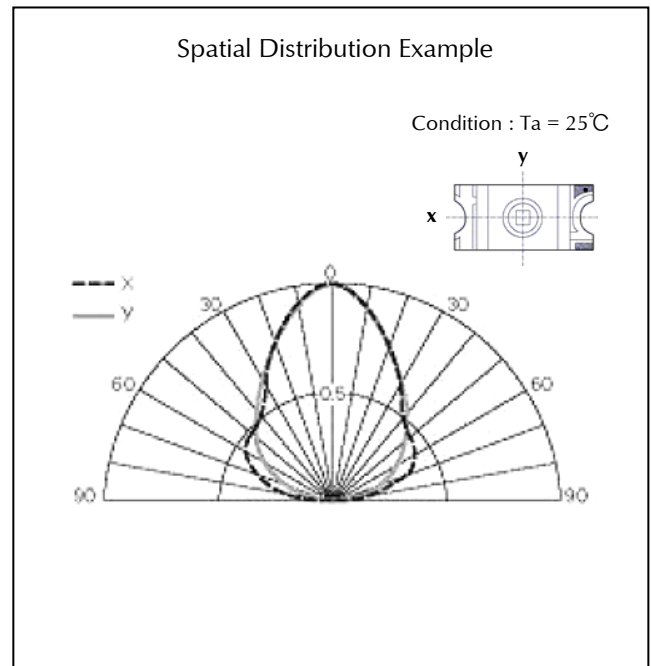
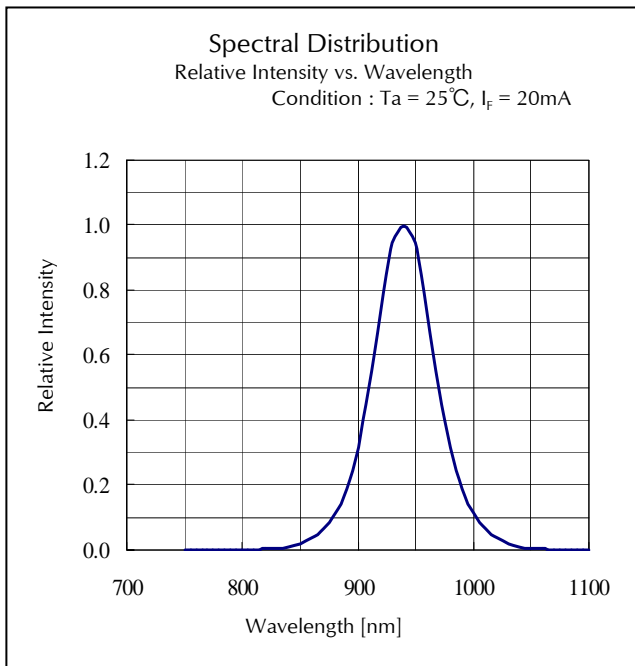
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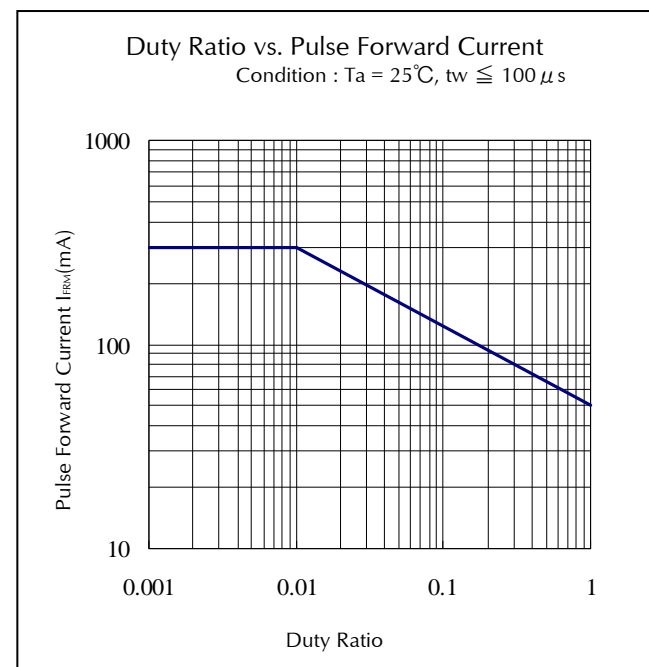
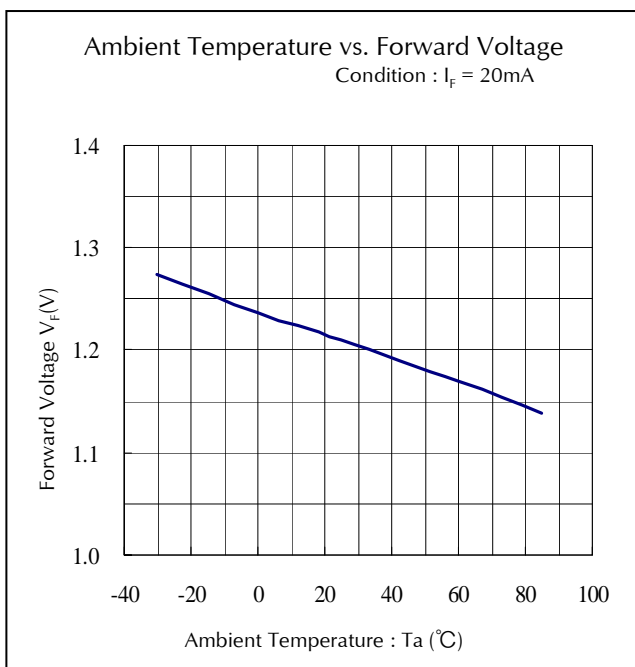
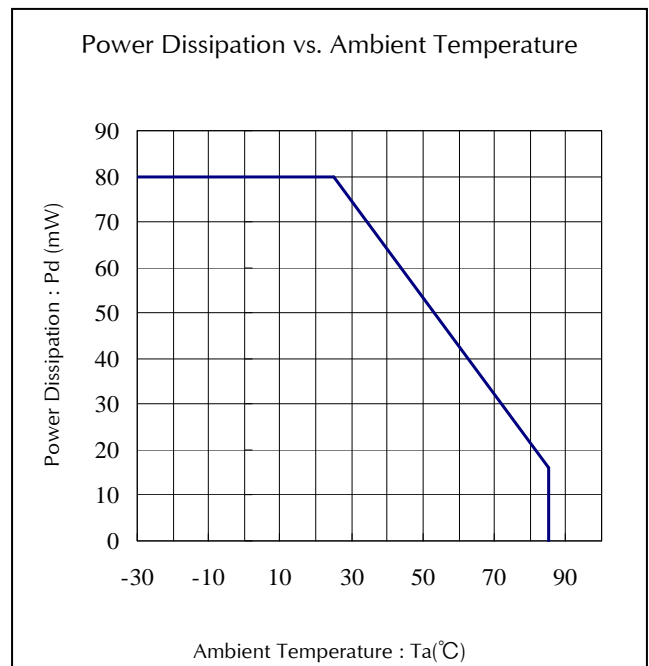
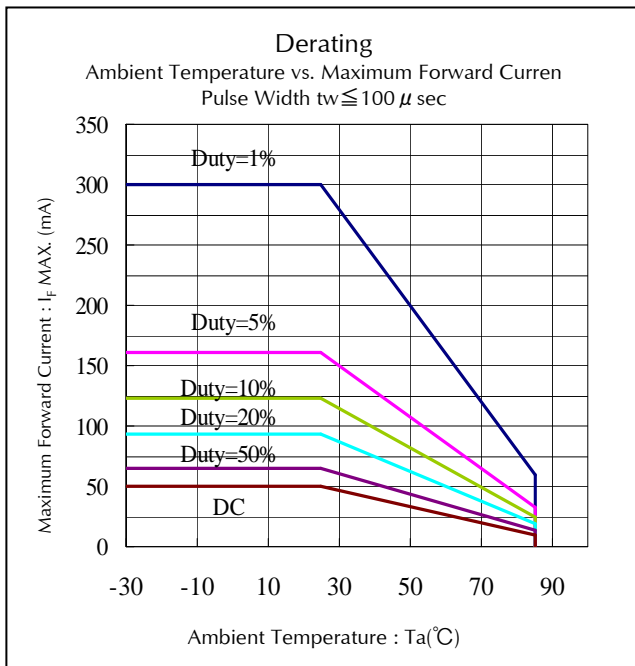
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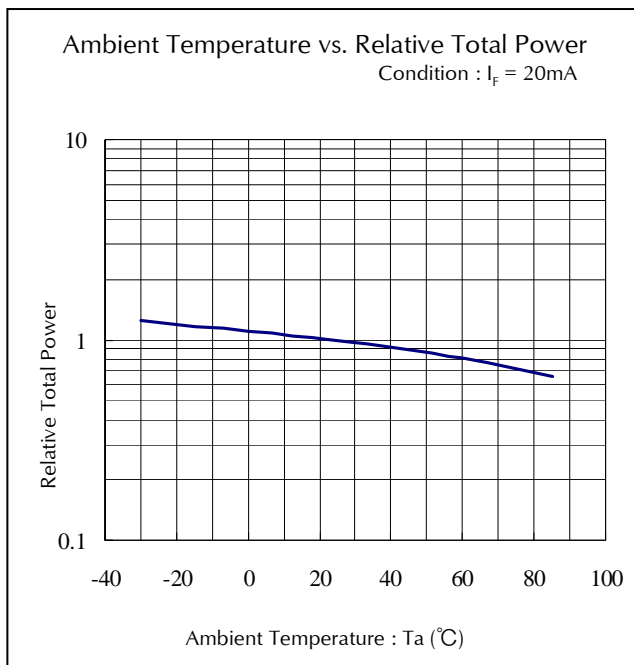
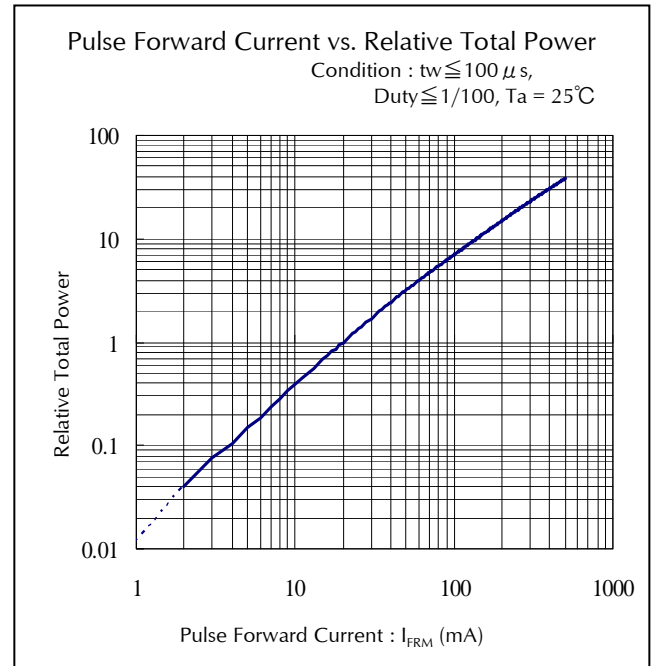
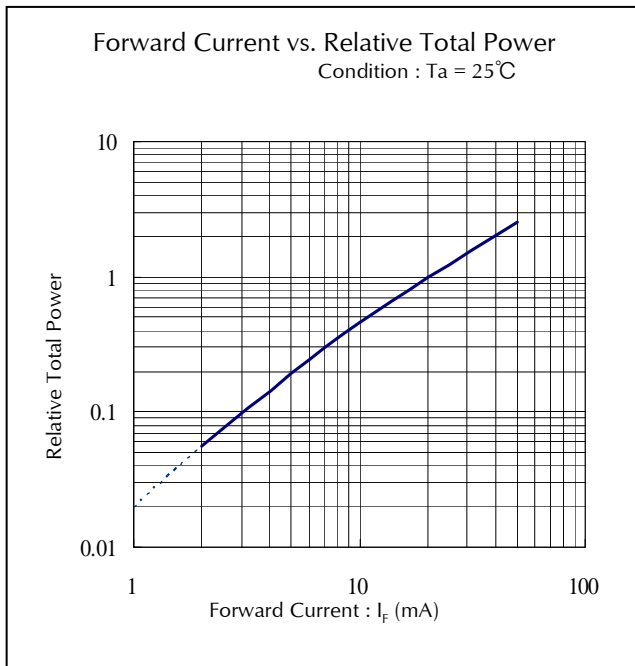
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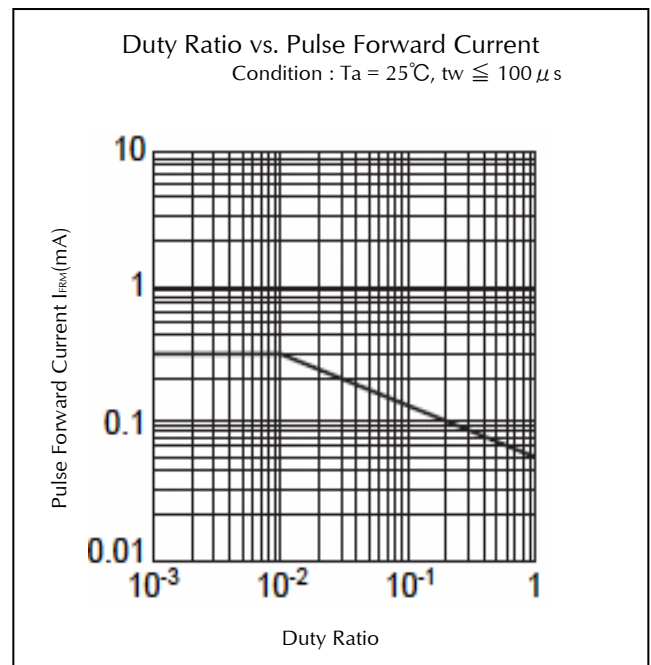
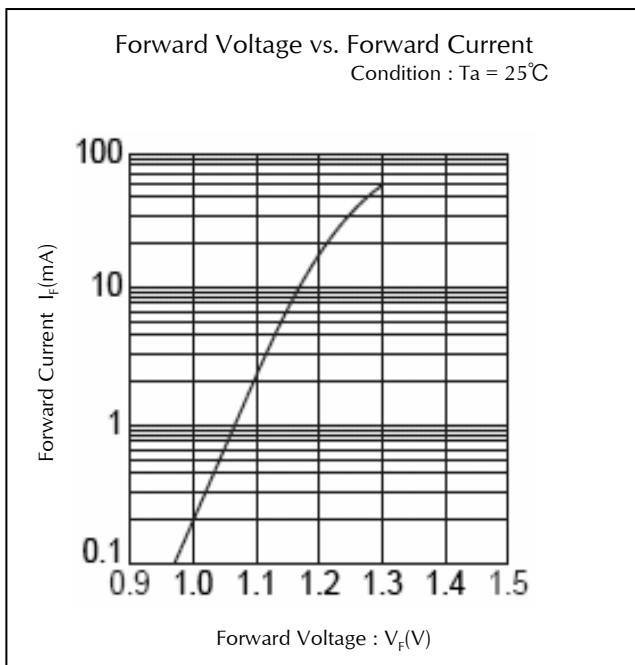
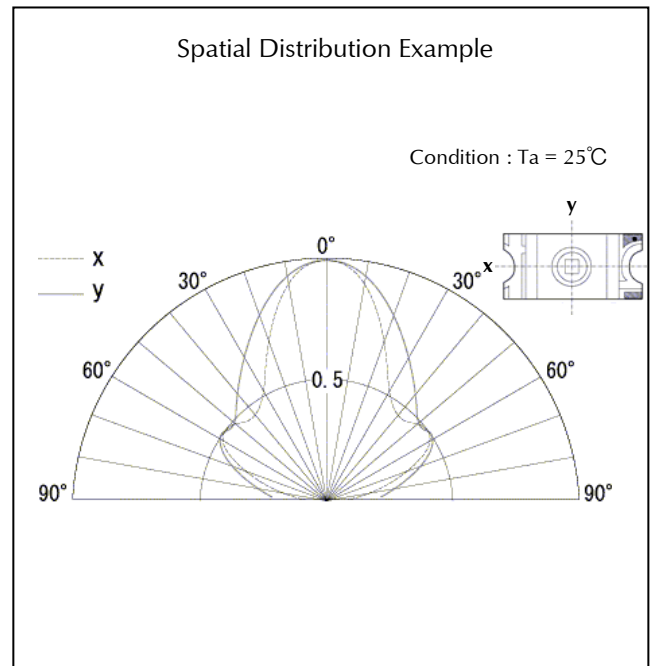
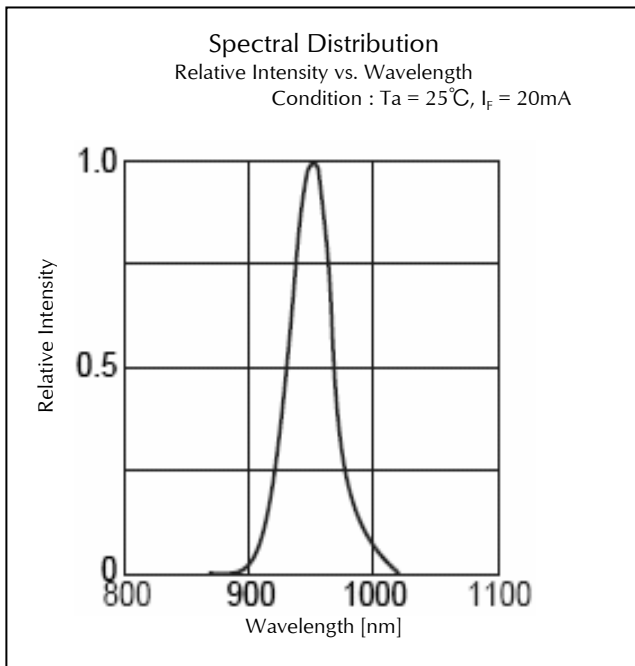
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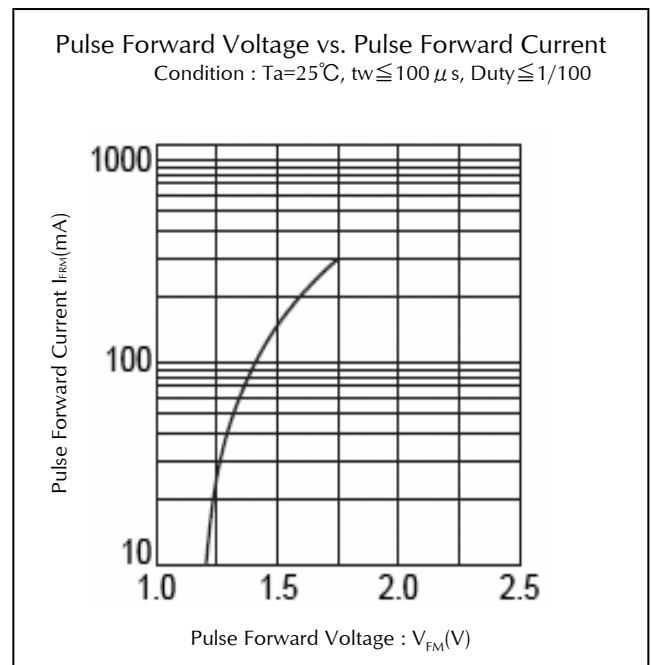
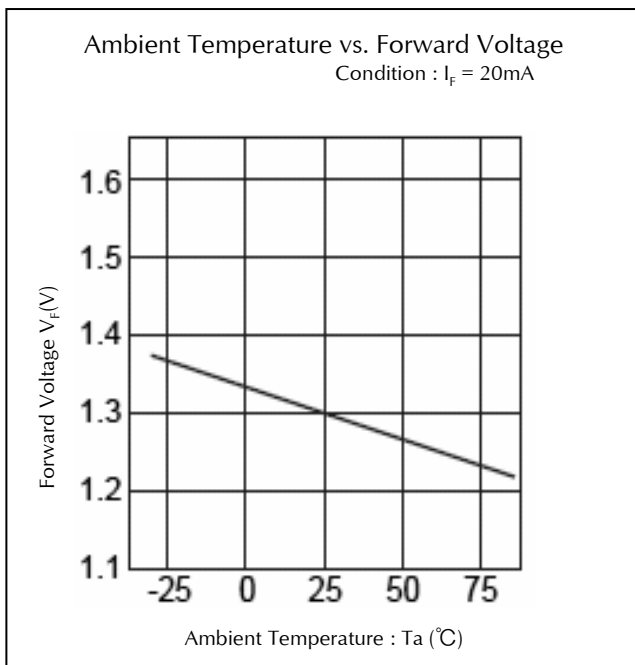
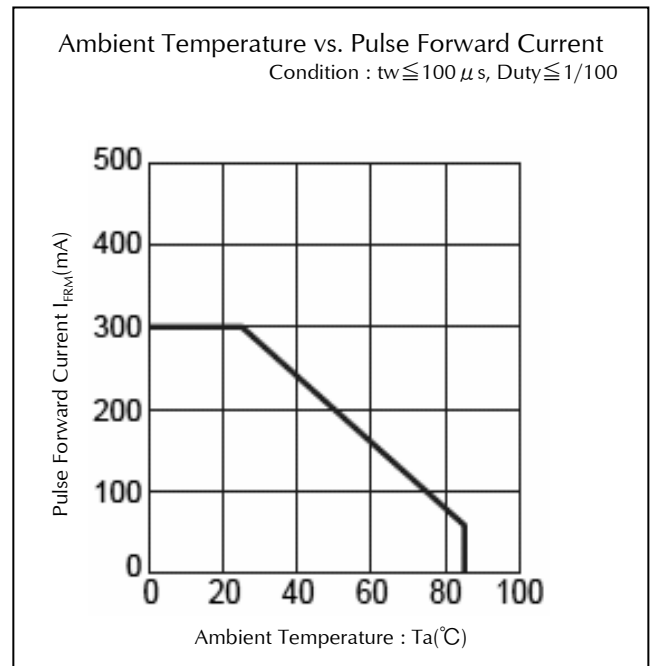
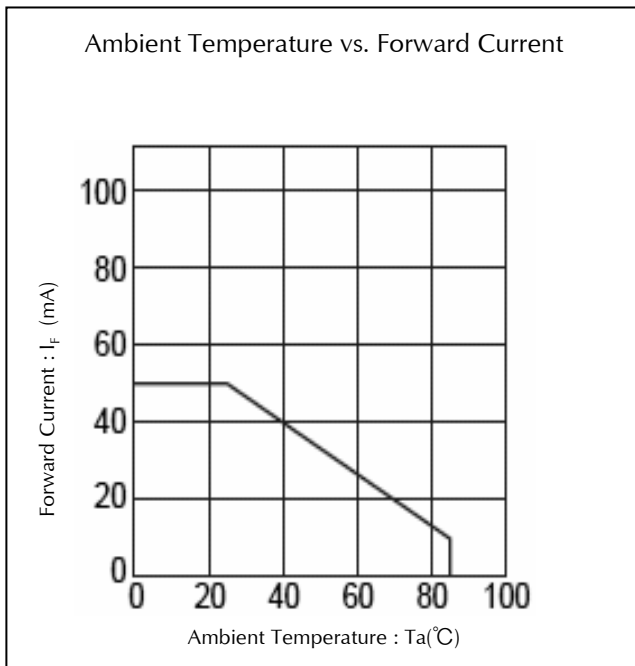
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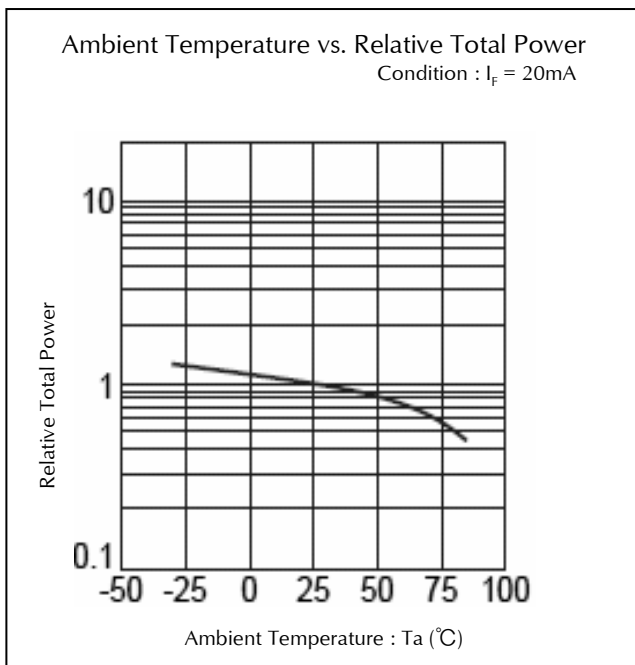
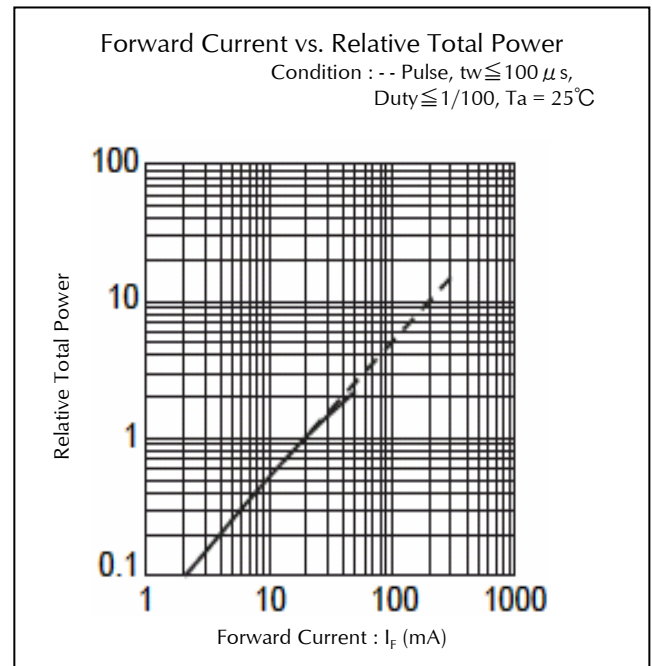
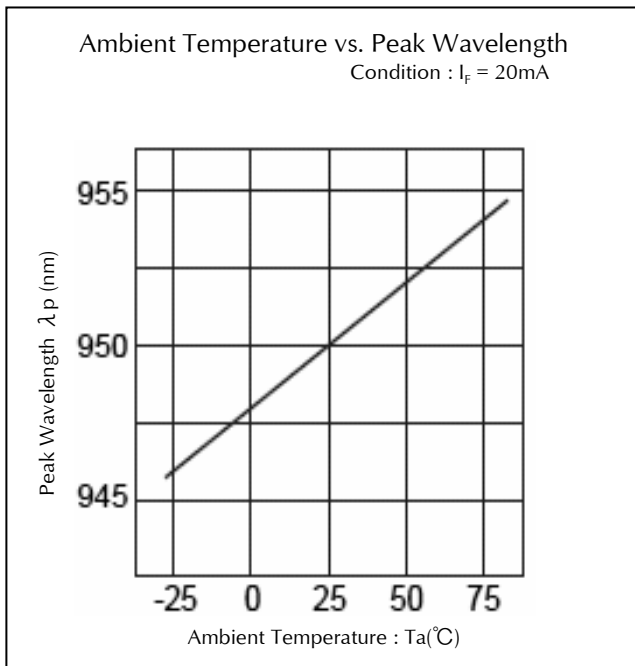
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Technical Data (AN)



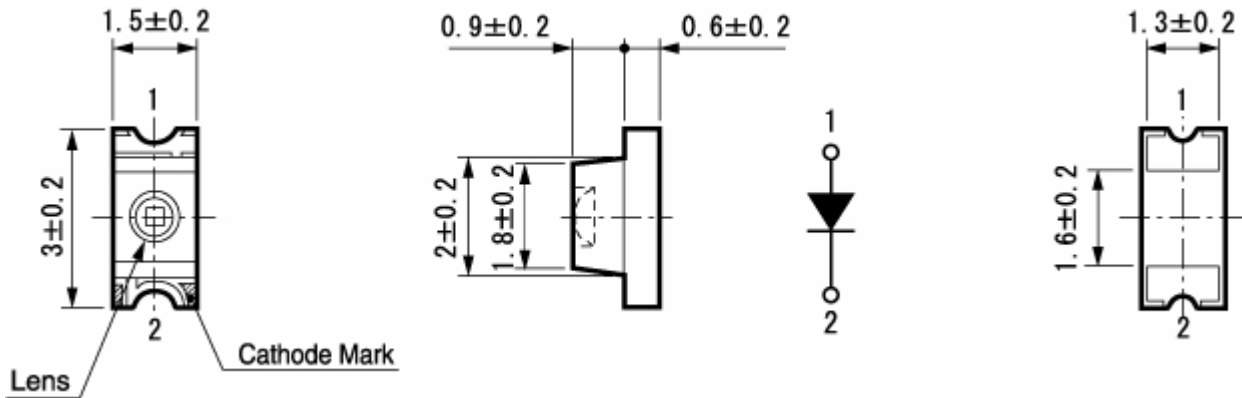
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Package Dimensions

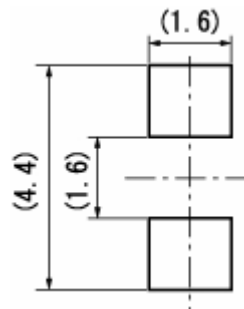
(Unit: mm)

Weight: (7.80)mg



Recommended Soldering Pattern

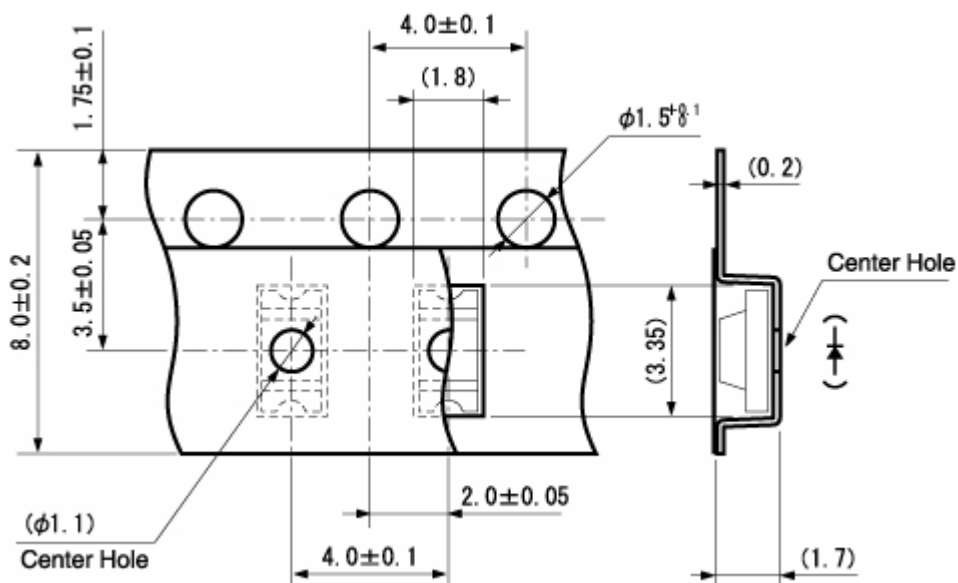
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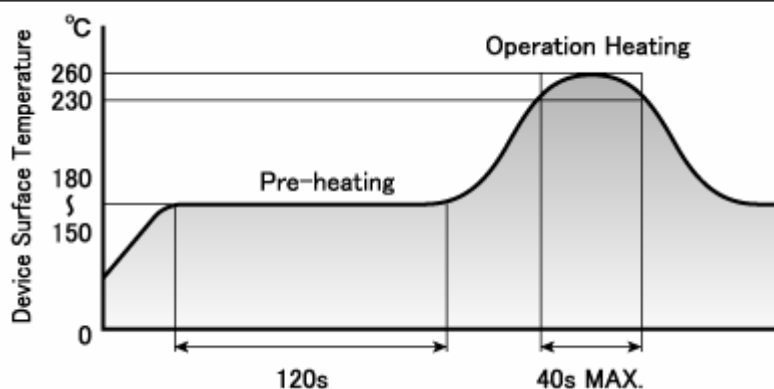
Taping Specification

(Unit: mm)

Quantity: 2,500pcs/ reel (standard)



Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the LED from absorbing moisture.
- 3) Temperature fluctuation to the LED during the pre-heating process shall be minimized.

Manual Soldering Conditions

| | | |
|------------------------------|--------|--------------------|
| Iron tip temp. | 350 °C | (MAX.) (30 W Max.) |
| Soldering time and frequency | 3 s | (MAX.) |
| | 1 time | (MAX.) |

Reliability Testing Result

| Reliability Testing Result | Applicable Standard | Testing Conditions | Duration | Failure |
|-------------------------------|-----------------------|---|----------|---------|
| Room Temp. Operating Life | EIAJ ED-4701/100(101) | Ta = 25°C, If = Maximum Rated Current | 1,000 h | 0/25 |
| Resistance to Soldering Heat | EIAJ ED-4701/300(301) | (Pretreatment) Individual standard (Reflow Soldering) Pre-heating 150°C~180°C 120s Operating Heating 230°C Min. Peak temperature 260°C | Twice | 0/25 |
| Temperature Cycling | EIAJ ED-4701/100(105) | Minimum Rated Storage Temperature(30min) ~Normal Temperature(15min) ~Maximum Rated Storage Temperature(30min) ~Normal Temperature(15min) | 5 cycles | 0/25 |
| Wet High Temp. Storage Life | EIAJ ED-4701/100(103) | Ta = 60±2°C, RH = 90±5% | 1,000 h | 0/25 |
| High Temp. Storage Life | EIAJ ED-4701/200(201) | Ta = Maximum Rated Storage Temperature | 1,000 h | 0/25 |
| Low Temp. Storage Life | EIAJ ED-4701/200(202) | Ta = Minimum Rated Storage Temperature | 1,000 h | 0/25 |
| Vibration, Variable Frequency | EIAJ ED-4701/400(403) | 98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction | 2 h | 0/10 |

Failure Criteria



| Items | Symbols | Conditions | Failure criteria |
|-------------------|----------------|---|---|
| Radiant Intensity | I _E | If Value of each product Radiant Intensity | Testing Min. Value < Initial Value x 0.5 |
| Forward Voltage | V _F | If Value of each product Forward Voltage | Testing Max. Value > Spec. Max. Value x 1.2 |
| Reverse Current | I _R | V _R = Maximum Rated Reverse Voltage V | Testing Max. Value ≥ Spec. Max. Value x 2.5 |

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