

**Pb-free
HEAT**



5351K Series

Single Color Rectangular Shape Type

Features

| | |
|-------------------------|--|
| Package | 2 × 5 Rectangular shape type, BG,PG : Green Surface Diffused epoxy PY,AY : Yellow Surface Diffused epoxy AA : Orange Surface Diffused epoxy VR,BR,PR : Red Surface Diffused epoxy |
| Product features | <ul style="list-style-type: none"> • Outer Dimension 2 × 5 Rectangular shape type • Operation temperature range. Storage Temperature : -30°C~100°C Operating Temperature : -30°C~85°C • Lead-free soldering compatible • RoHS compliant |
| Dominant wavelength | Green : 558nm (BG) Yellow Green : 567nm (PG) : 572nm (PY) Yellow : 590nm (AY) Orange : 606nm (AA) Red : 624nm (VR) : 647nm (BR) : 630nm (PR) |
| Half Intensity Angle | BG,PG,PY : $\theta_x = 139 \text{ deg. } \theta_y = 134 \text{ deg.}$ AY : $\theta_x = 150 \text{ deg. } \theta_y = 120 \text{ deg.}$ AA,VR : $\theta_x = 126 \text{ deg. } \theta_y = 120 \text{ deg.}$ BR : $\theta_x = 148 \text{ deg. } \theta_y = 135 \text{ deg.}$ PR : $\theta_x = 151 \text{ deg. } \theta_y = 129 \text{ deg.}$ |
| Die materials | BG,PG,PY,PR : GaP AY,AA,VR : GaAsP BR : GaAlAs |
| Rank grouping parameter | Sorted by luminous intensity per rank taping |
| Soldering methods | TTW (Through The Wave) soldering and manual soldering |
| ESD | More than 2kV(HBM) |
| Packing | Bulk : 200pcs(MIN.) |

Recommended Applications

Amusement Equipment, Electric Household Appliances, OA/FA, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

| Part No. | Material | Emitted Color | Lens Color | | Dominant Wavelength λd (nm) | | Luminous Intensity I_v (mcd) | | |
|----------|----------|---------------|------------|-----|---|-------|-----------------------------------|-------|---------------------|
| | | | | | TYP. | I_F | MIN. | TYP. | I_F |
| | | | | | BG5351K | GaP | Green | Green | Surface Diffused |
| PG5351KY | GaP | Yellow Green | 567 | 20 | 1.5 | 3.0 | 20 | | |
| PY5351K | GaP | | Yellow | 572 | 20 | 2.0 | 4.0 | 20 | |
| AY5351K | GaAsP | Yellow | 590 | 20 | 1.2 | 2.4 | 20 | | |
| AA5351K | GaAsP | Orange | Orange | 606 | 20 | 1.2 | 2.4 | 20 | |
| VR5351K | GaAsP | Red | Red | 624 | 20 | 1.2 | 2.4 | 20 | |
| BR5351K | GaAlAs | | | 647 | 20 | 1.5 | 3.0 | 20 | |
| PR5351K | GaP | | | 630 | 10 | 0.3 | 0.5 | 10 | |

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | | | | | | | | Unit |
|---------------------------------|--------------|--------------------------|------|------|------|------|------|------|------|-------|
| | | BG | PG | PY | AY | AA | VR | BR | PR | |
| Power Dissipation | P_d | 125 | 125 | 125 | 125 | 125 | 75 | 100 | 75 | mW |
| Forward Current | I_F | 50 | 50 | 50 | 50 | 50 | 30 | 50 | 30 | mA |
| Pulse Forward Current ※1 | I_{FRM} | 100 | 100 | 100 | 100 | 100 | 100 | 300 | 100 | mA |
| Derating (Ta=25°C or higher) | ΔI_F | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.33 | 0.67 | 0.33 | mA/°C |
| Reverse Voltage | V_R | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | V |
| Operating Temperature | T_{opr} | -30~+85 | | | | | | | | °C |
| Storage Temperature | T_{stg} | -30~+100 | | | | | | | | °C |

 ※1 I_{FRM} Measurement condition : Pulse Width ≤ 1 ms., Duty $\leq 1/20$.

Electro-Optical Characteristics(BG,PG,PY,AY,AA,VR,BR)

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | | | | | | | Unit |
|--------------------------|----------------------|----------------|-----------------|----------|----------|----------|----------|----------|----------|----------|------|
| | | | BG | PG | PY | AY | AA | VR | BR | | |
| Forward Voltage | I _F =20mA | V _F | TYP. | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.0 | 1.7 | V |
| | | | MAX. | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.0 | |
| Reverse Current | V _R =4V | I _R | MAX. | 100 | 100 | 100 | 100 | 100 | 100 | 100 | μ A |
| Peak Wavelength | I _F =20mA | λ _p | TYP. | 555 | 560 | 570 | 580 | 605 | 630 | 660 | nm |
| Dominant Wavelength | I _F =20mA | λ _d | TYP. | 558 | 567 | 572 | 590 | 606 | 624 | 647 | nm |
| Spectral Line Half Width | I _F =20mA | Δλ | TYP. | 30 | 30 | 30 | 30 | 30 | 30 | 30 | nm |
| Half Intensity Angle | I _F =20mA | 2θ 1/2 | TYP. | 139(θ x) | 139(θ x) | 139(θ x) | 150(θ x) | 126(θ x) | 126(θ x) | 148(θ x) | deg. |
| | | | | 134(θ y) | 134(θ y) | 134(θ y) | 120(θ y) | 120(θ y) | 120(θ y) | 135(θ y) | |

Electro-Optical Characteristics(PR)

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | Unit |
|--------------------------|----------------------|----------------|-----------------|----------|------|
| | | | | PR | |
| Forward Voltage | I _F =10mA | V _F | TYP. | 2.1 | V |
| | | | MAX. | 2.5 | |
| Reverse Current | V _R =4V | I _R | MAX. | 100 | μ A |
| Peak Wavelength | I _F =10mA | λ _p | TYP. | 700 | nm |
| Dominant Wavelength | I _F =10mA | λ _d | TYP. | 630 | nm |
| Spectral Line Half Width | I _F =10mA | Δλ | TYP. | 100 | nm |
| Half Intensity Angle | I _F =10mA | 2θ 1/2 | TYP. | 151(θ x) | deg. |
| | | | | 129(θ y) | |

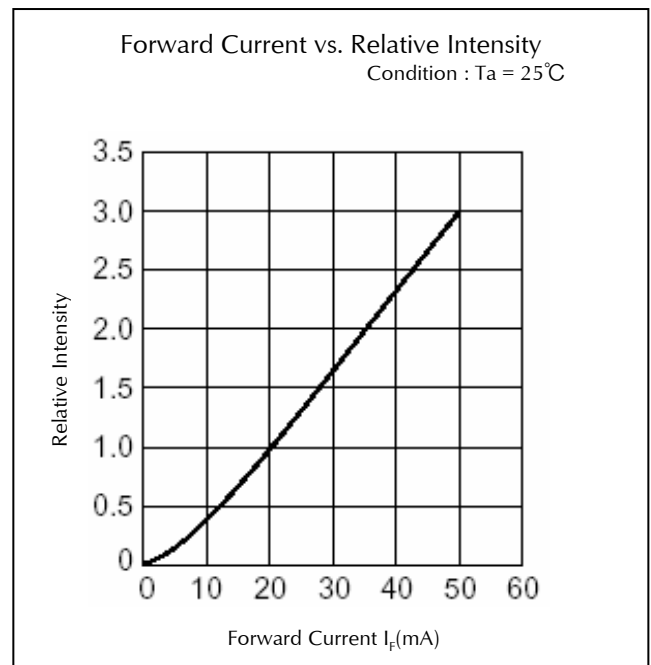
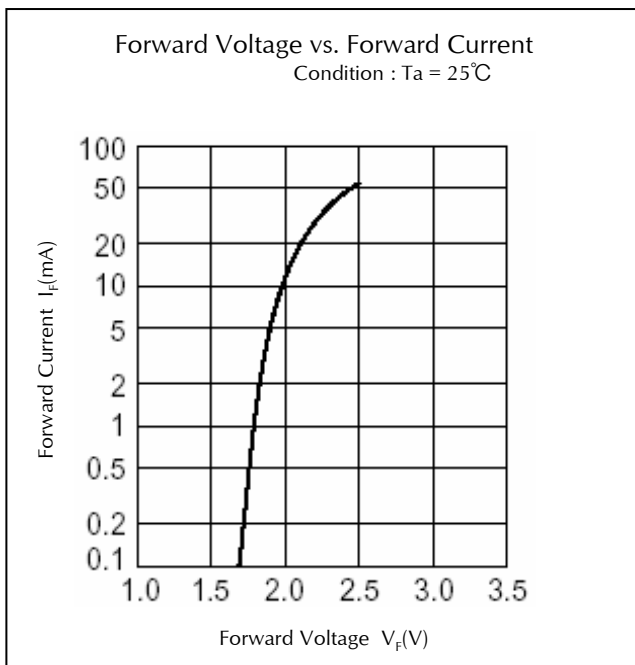
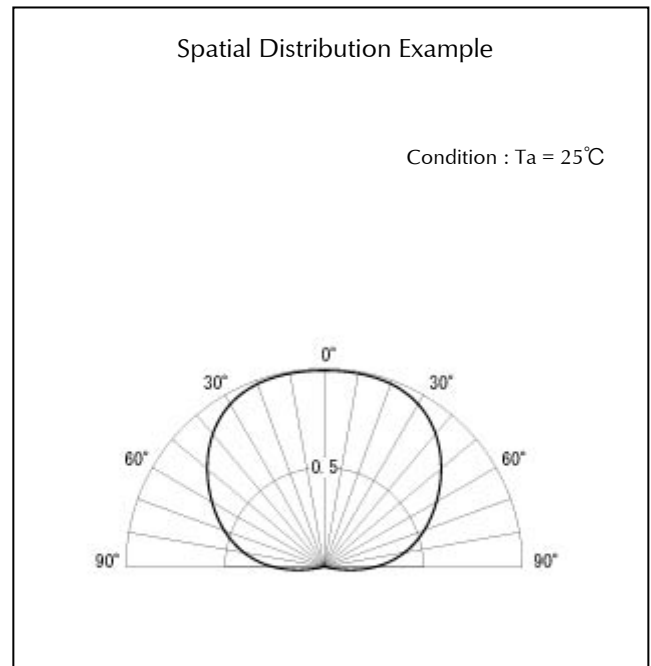
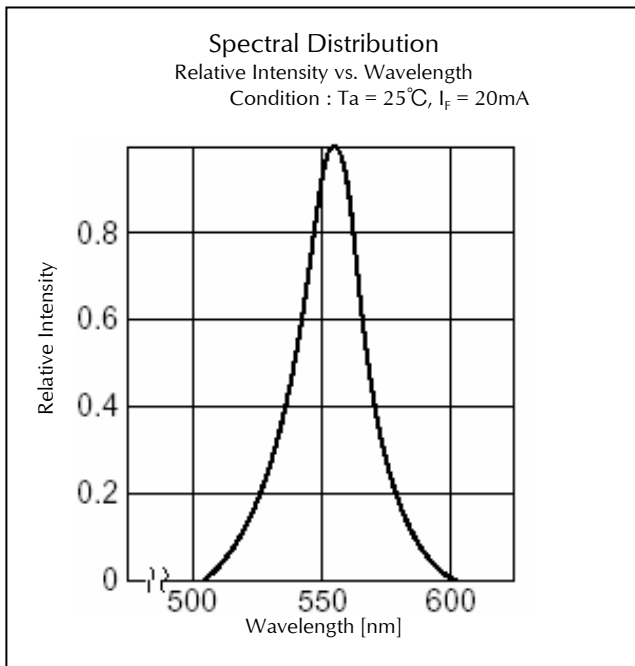
Luminous Intensity Rank

(Ta=25°C)

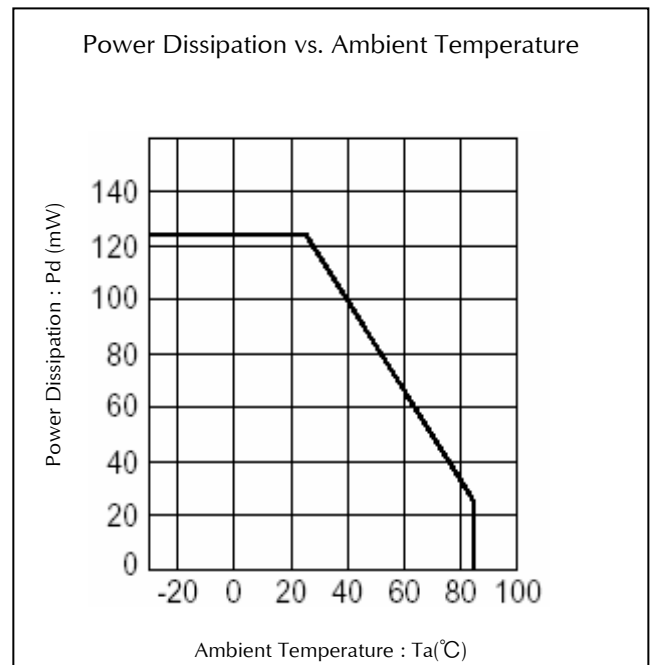
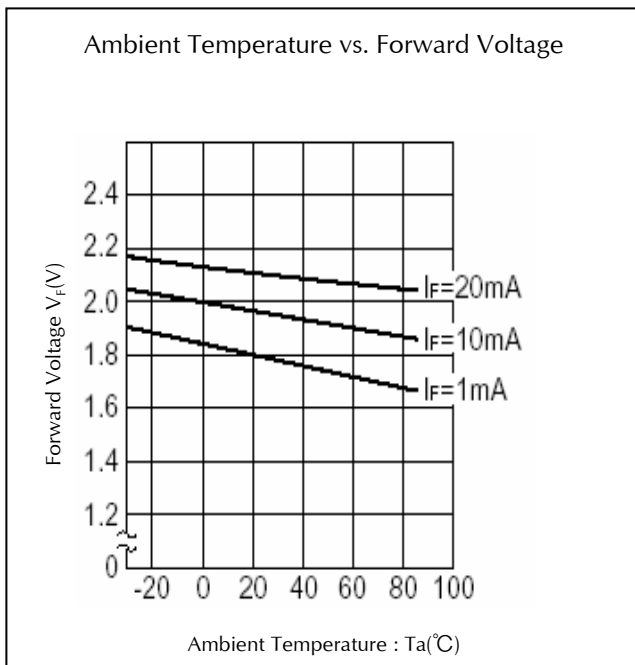
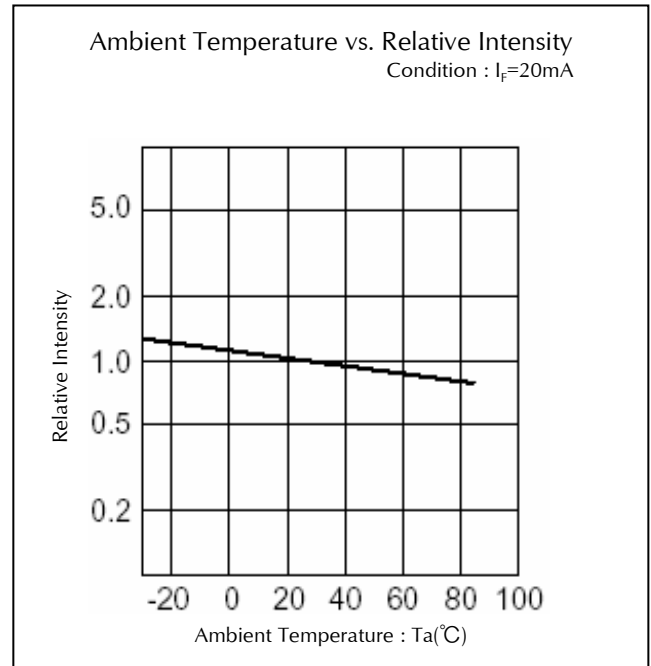
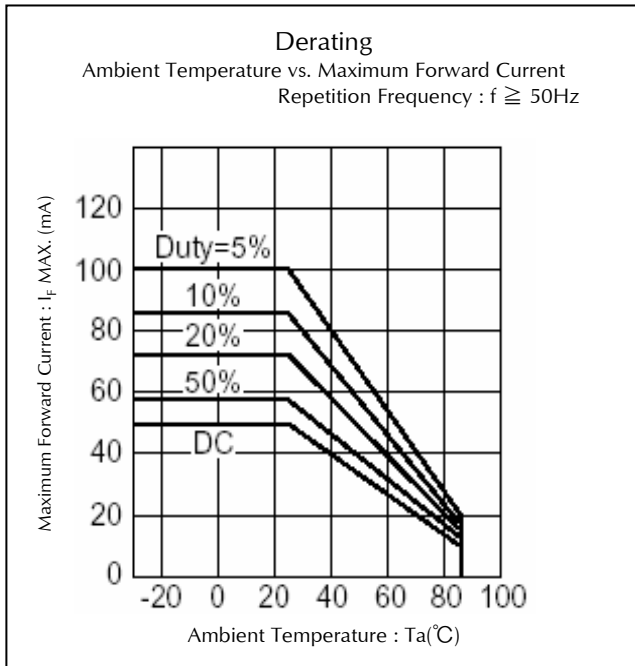
| Rank | I _v (mcd) | | | | | | | | | | | | | | | |
|----------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|
| | BG | | PG | | PY | | AY | | AA | | VR | | BR | | PR | |
| | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =10mA | |
| | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| A | 0.5 | 1.0 | 1.5 | 3.0 | 2.0 | 4.0 | 1.2 | 2.4 | 1.2 | 2.4 | 1.2 | 2.4 | 1.5 | 3.0 | 0.30 | 0.60 |
| B | 0.7 | 1.4 | 2.1 | 4.2 | 2.8 | 5.6 | 1.6 | 3.2 | 1.6 | 3.2 | 1.6 | 3.2 | 2.1 | 4.2 | 0.42 | 0.84 |
| C | 1.0 | 2.0 | 3.0 | 6.0 | 4.0 | 8.0 | 2.4 | 4.8 | 2.4 | 4.8 | 2.4 | 4.8 | 3.0 | 6.0 | 0.60 | 1.20 |
| D | 1.4 | 2.8 | 4.2 | 8.4 | 5.6 | 11.2 | 3.2 | 6.4 | 3.2 | 6.4 | 3.2 | 6.4 | 4.2 | 8.4 | 0.84 | 1.68 |
| E | 2.0 | - | 6.0 | - | 8.0 | - | 4.8 | - | 4.8 | - | 4.8 | - | 6.0 | - | 1.20 | - |

Please contact our sales staff concerning rank designation.

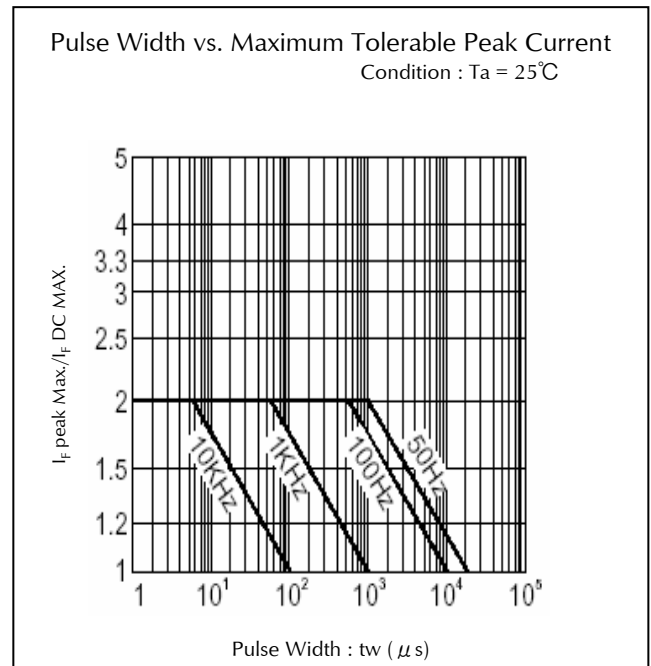
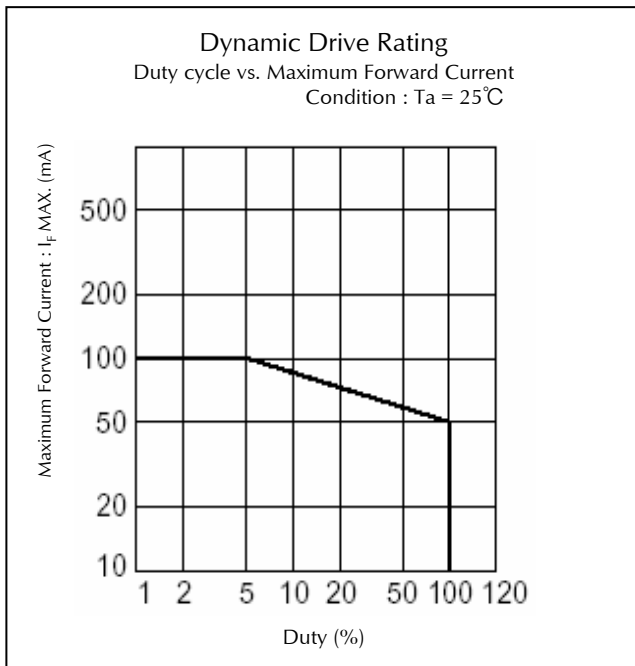
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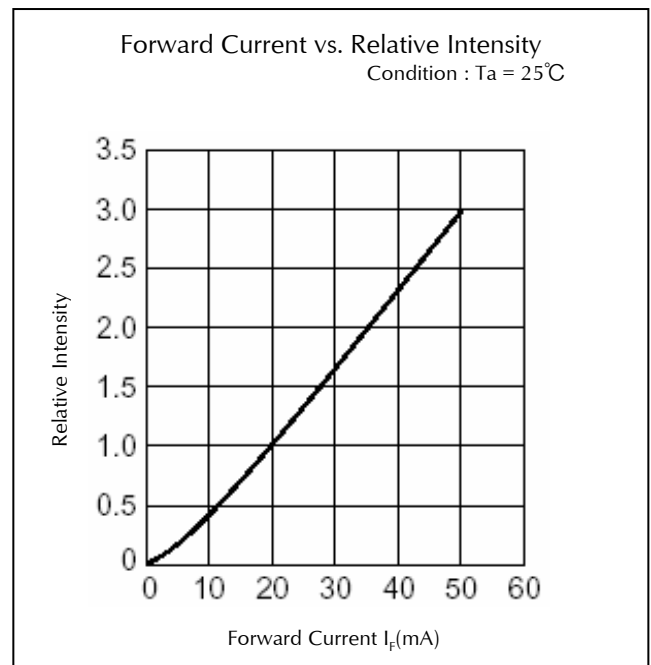
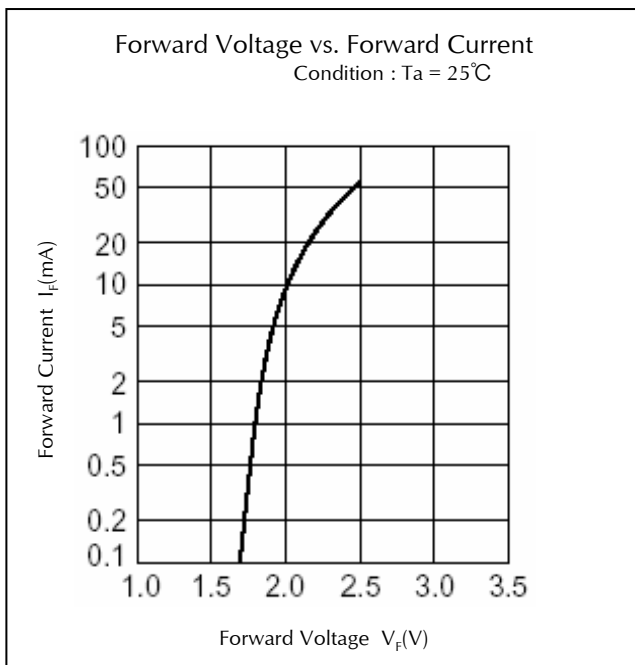
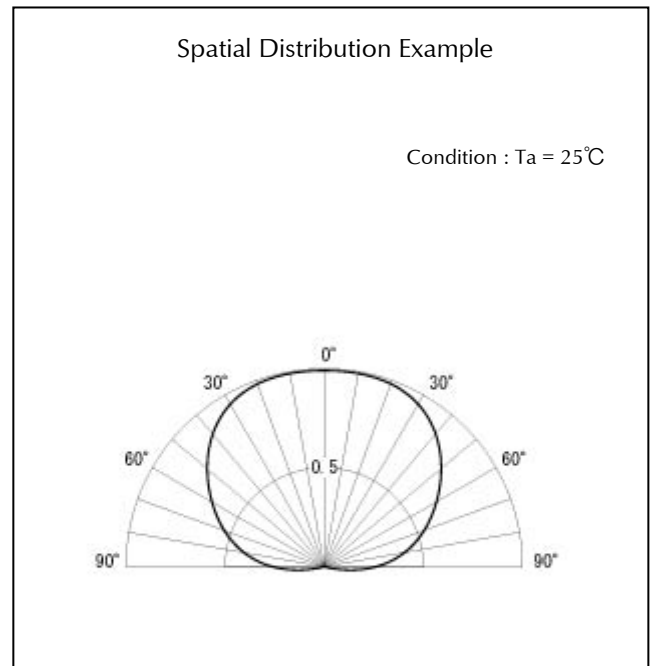
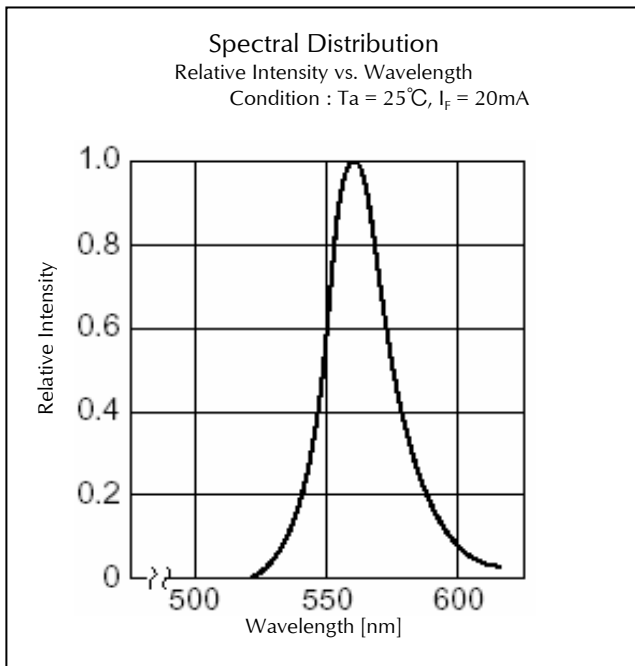
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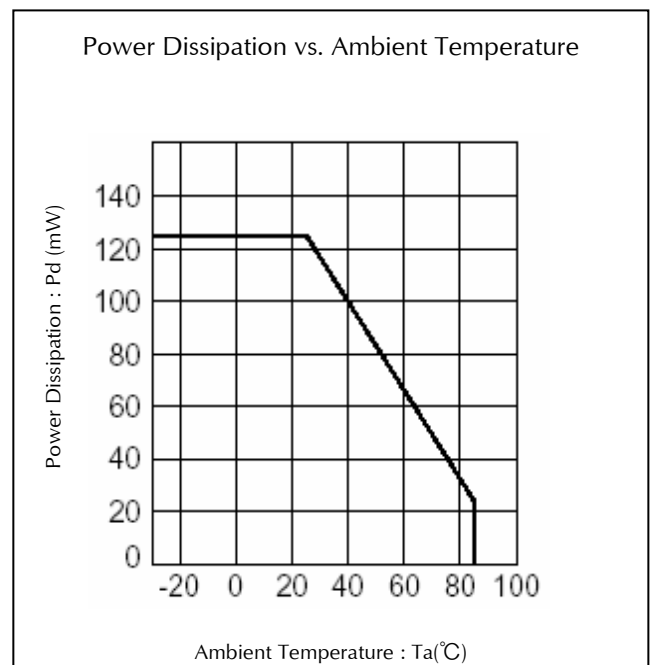
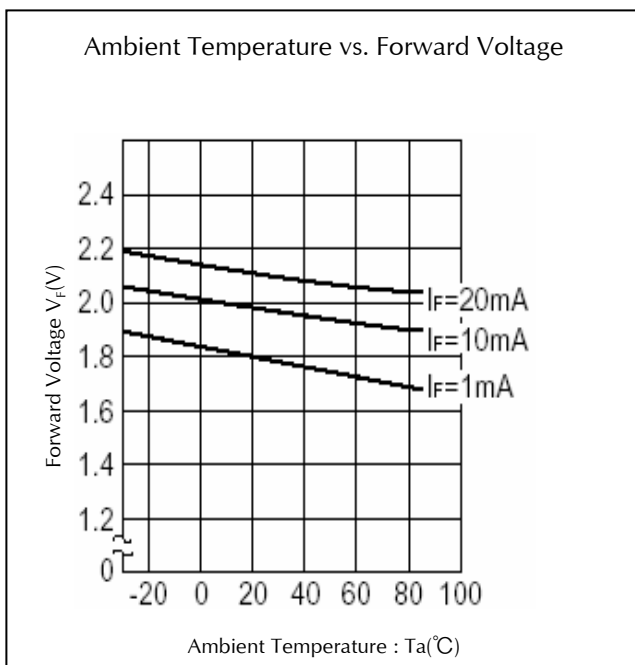
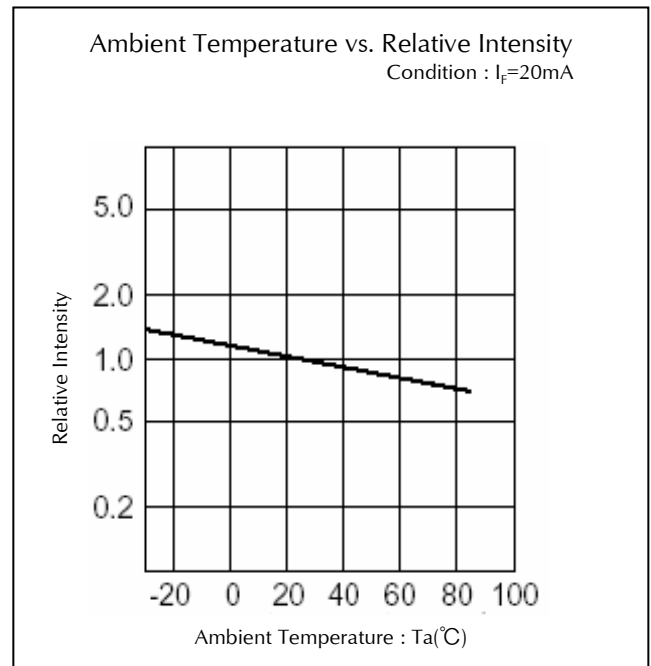
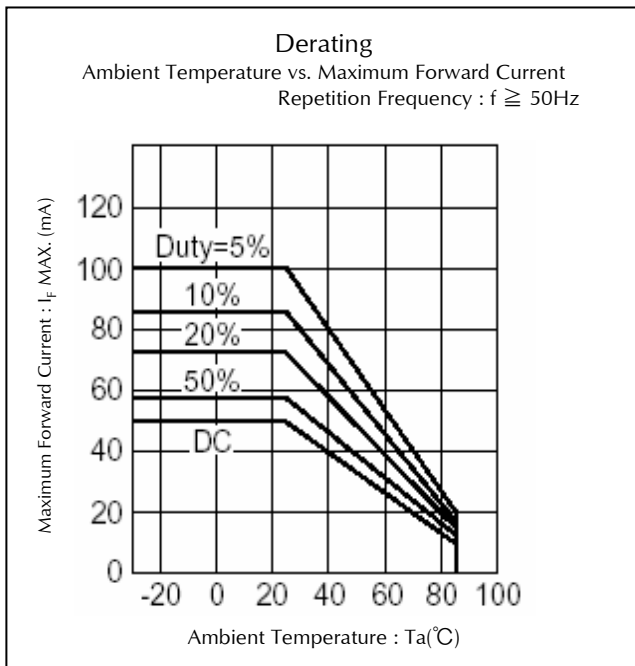
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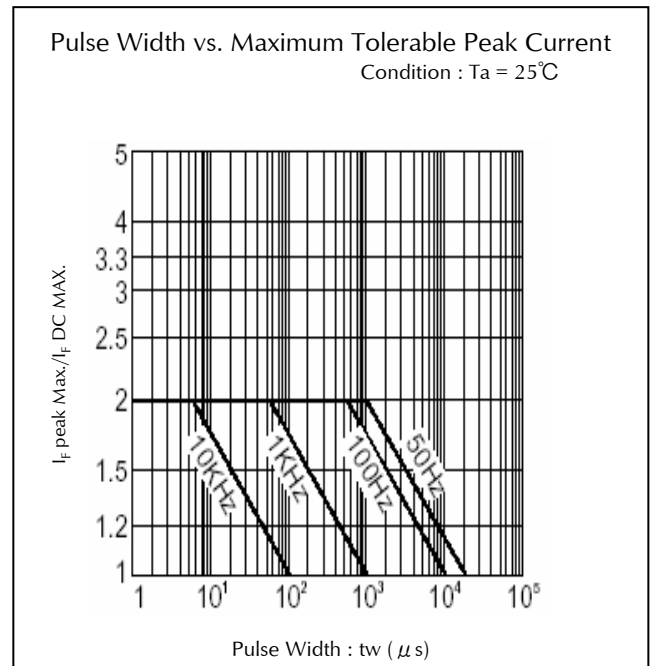
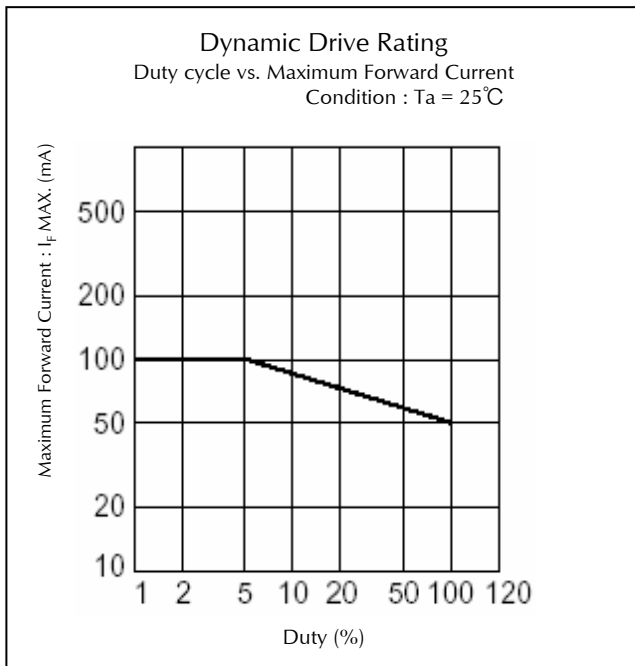
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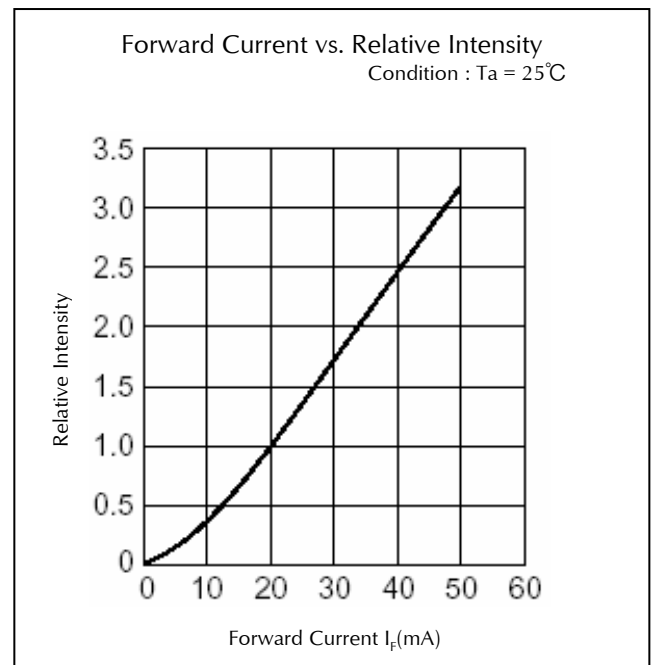
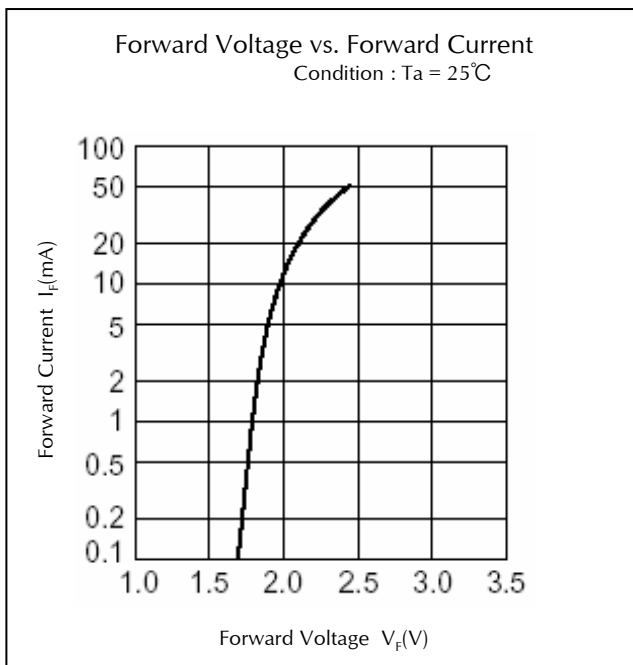
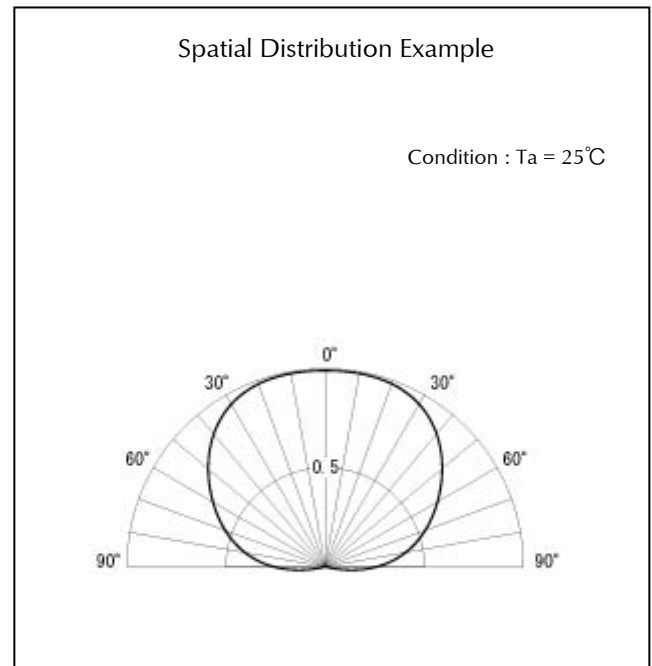
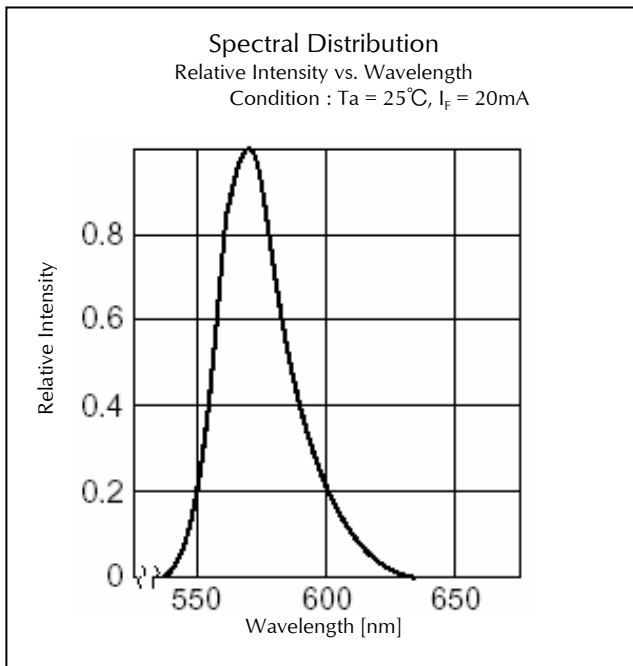
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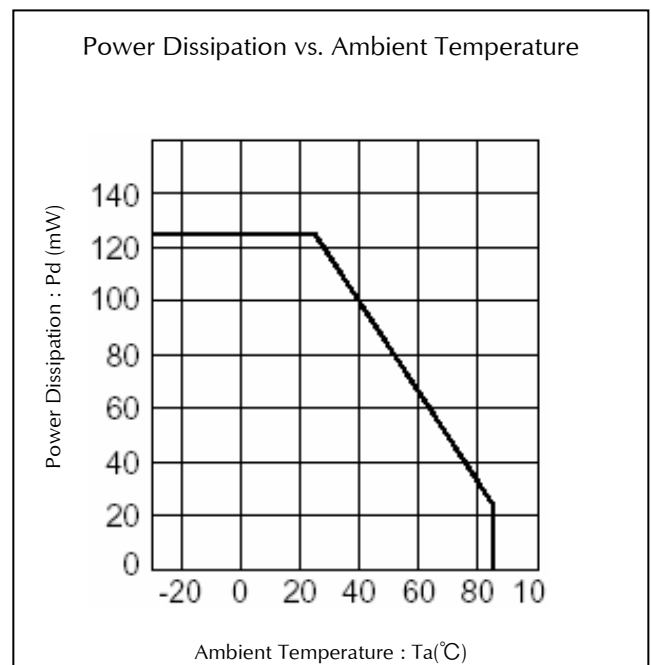
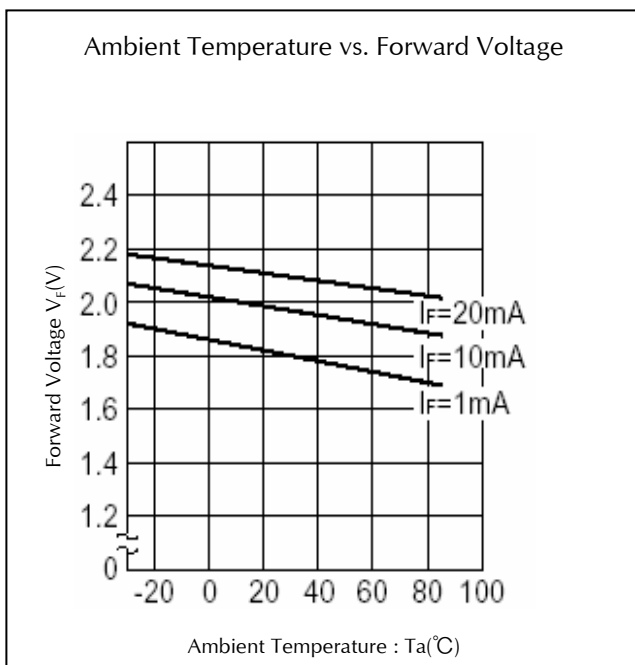
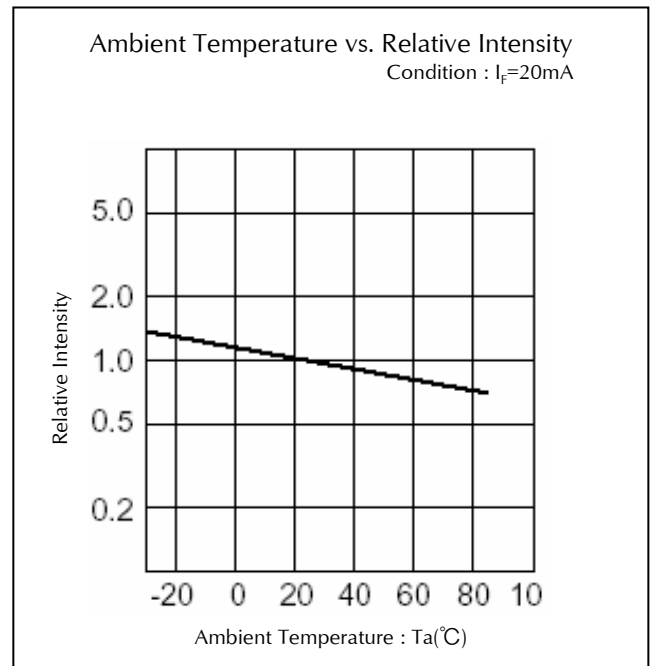
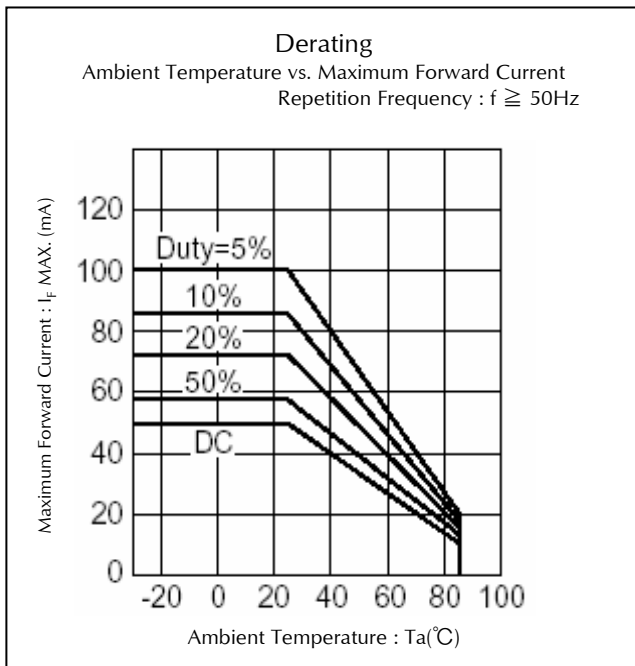
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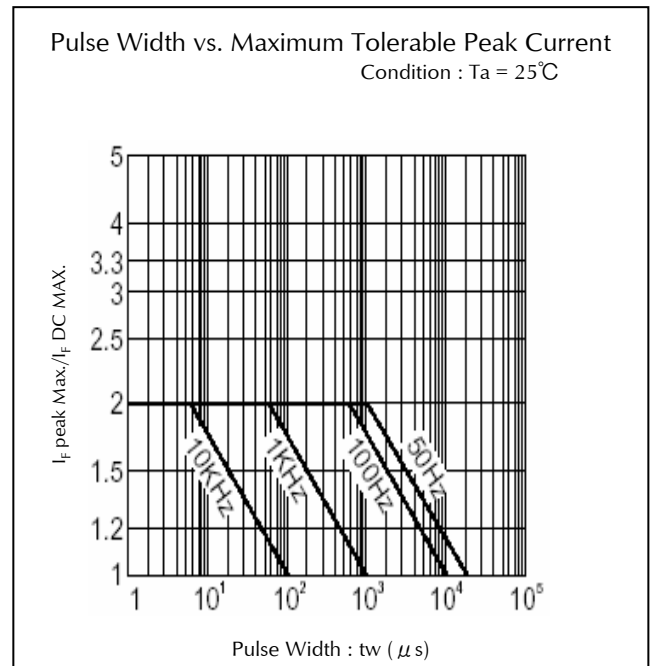
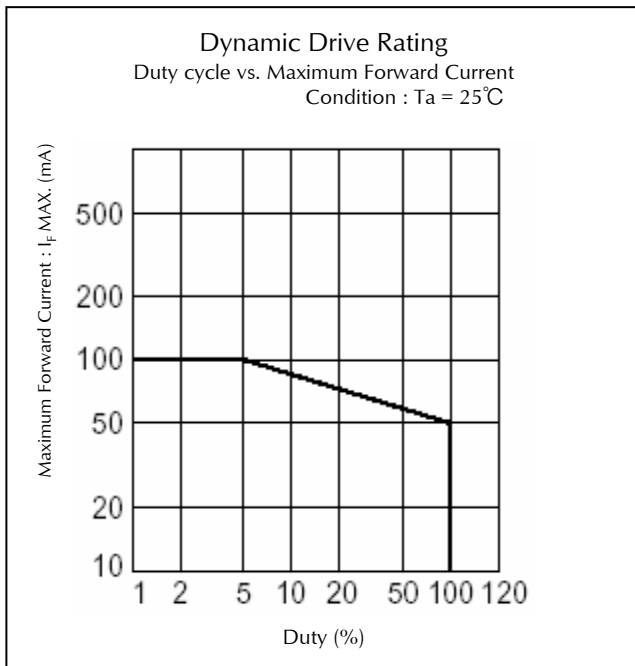
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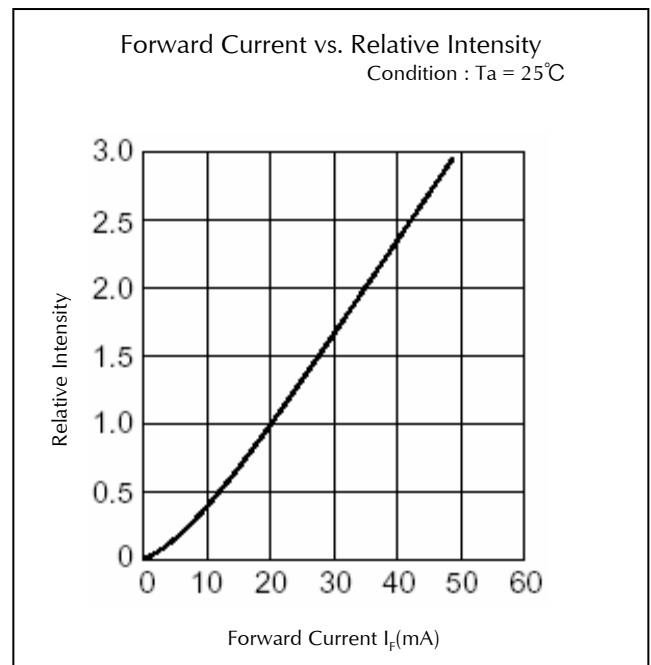
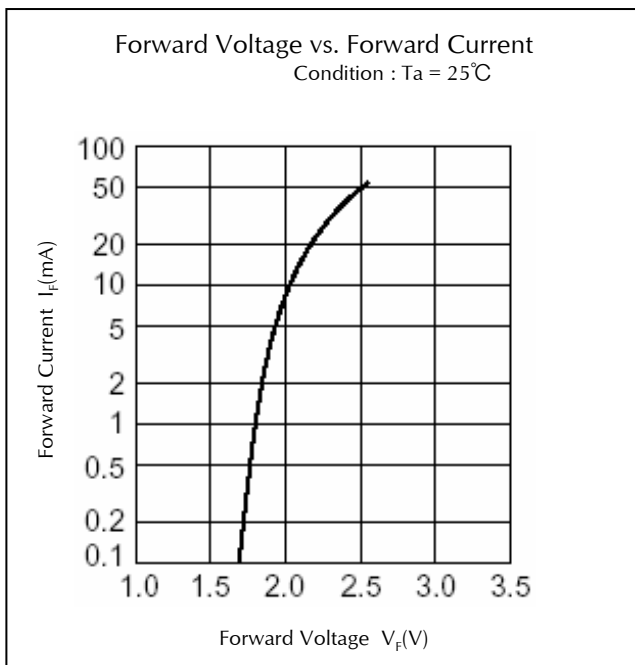
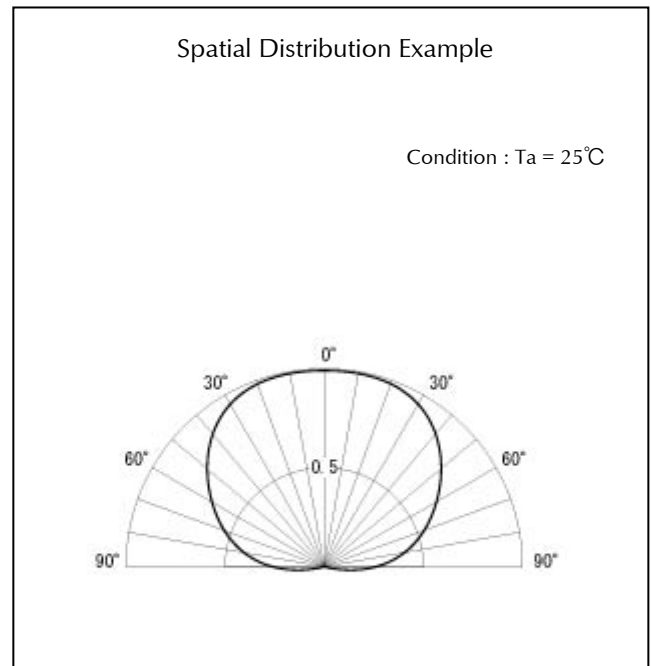
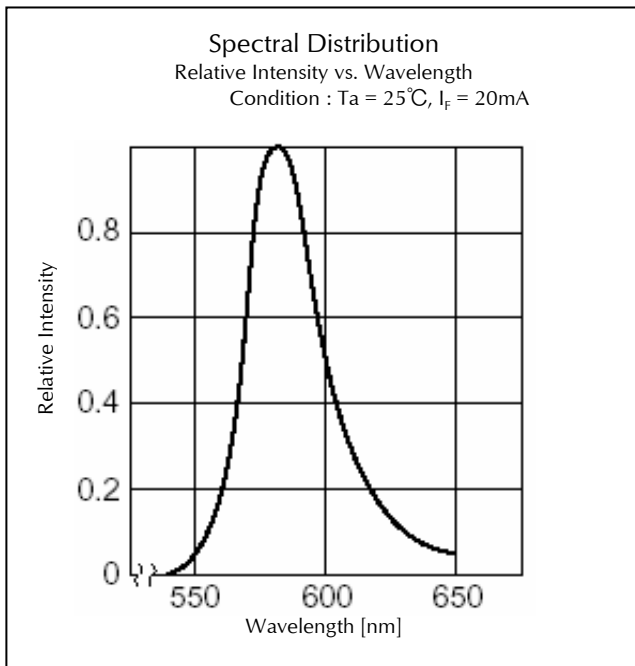
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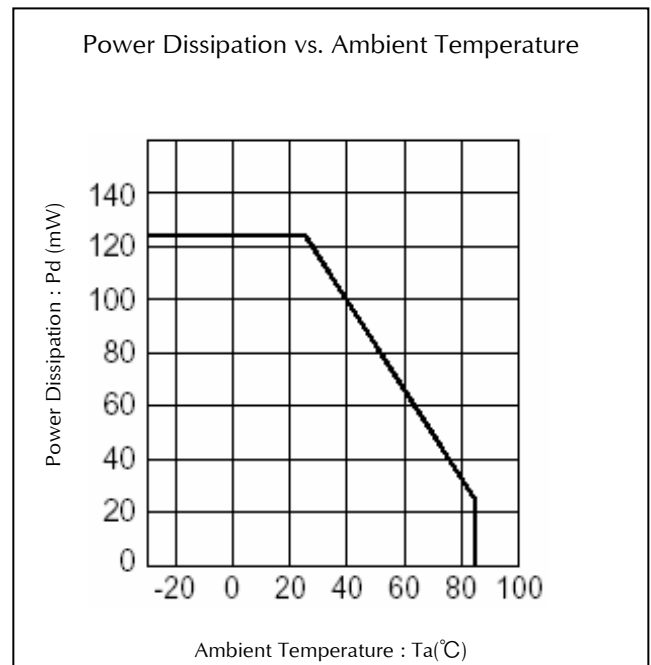
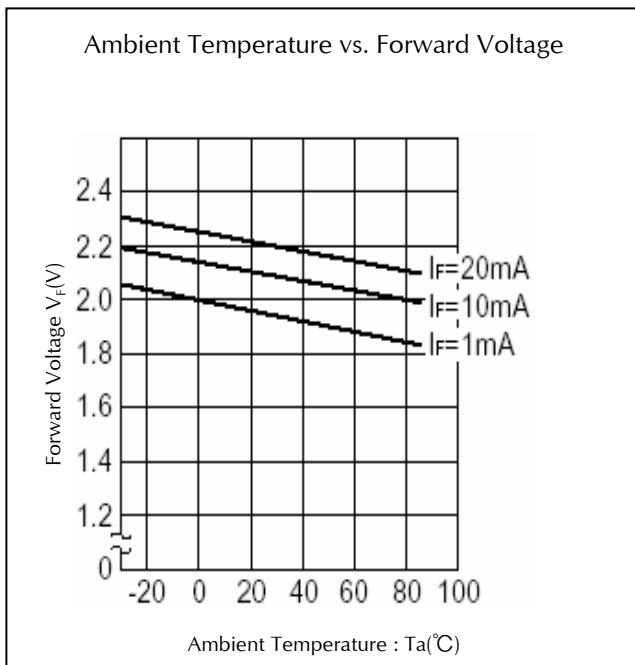
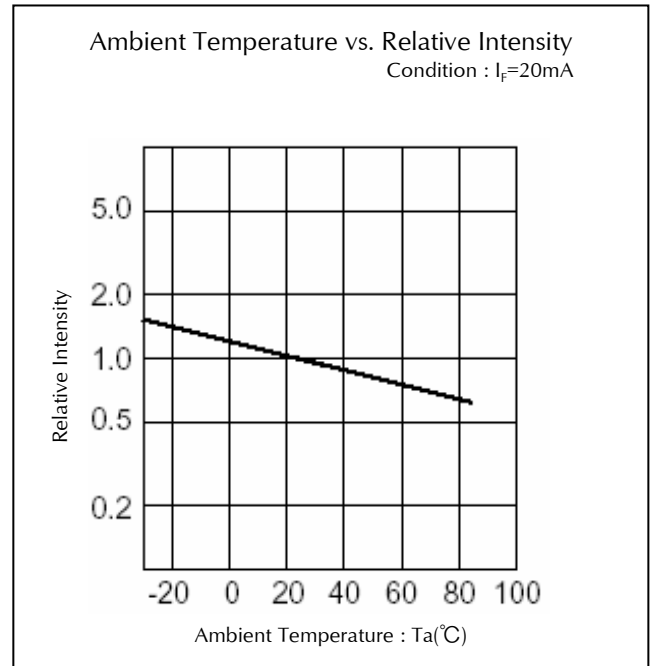
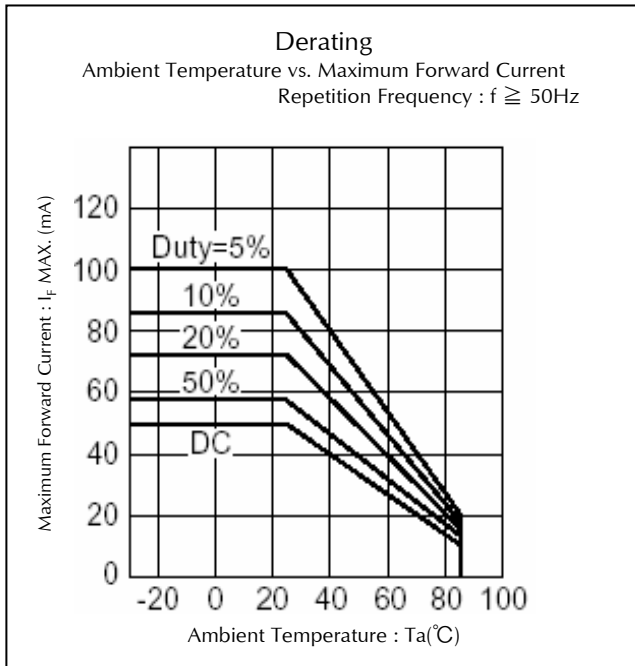
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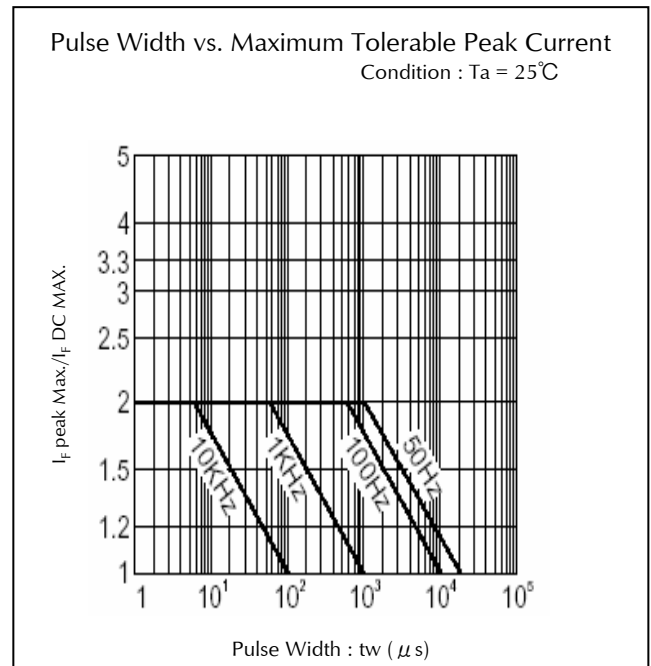
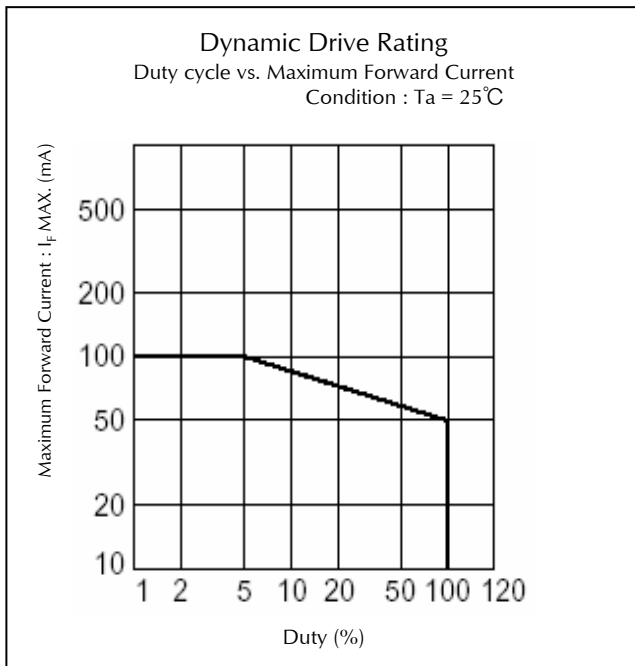
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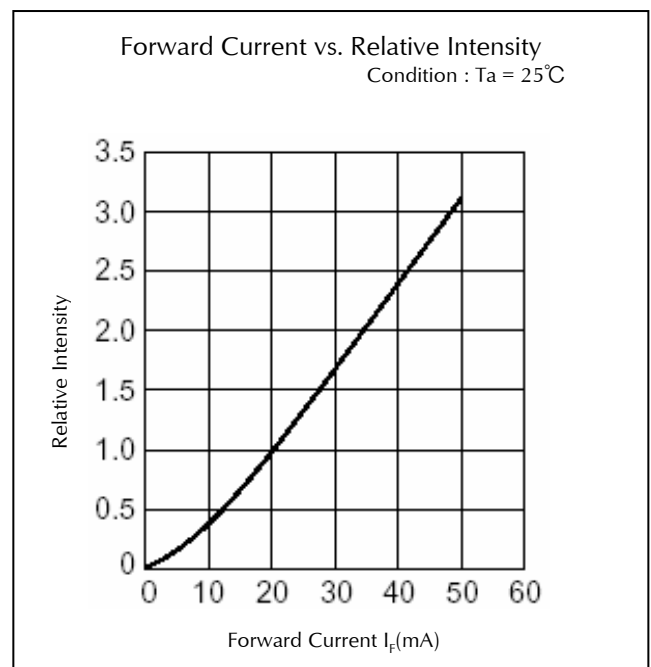
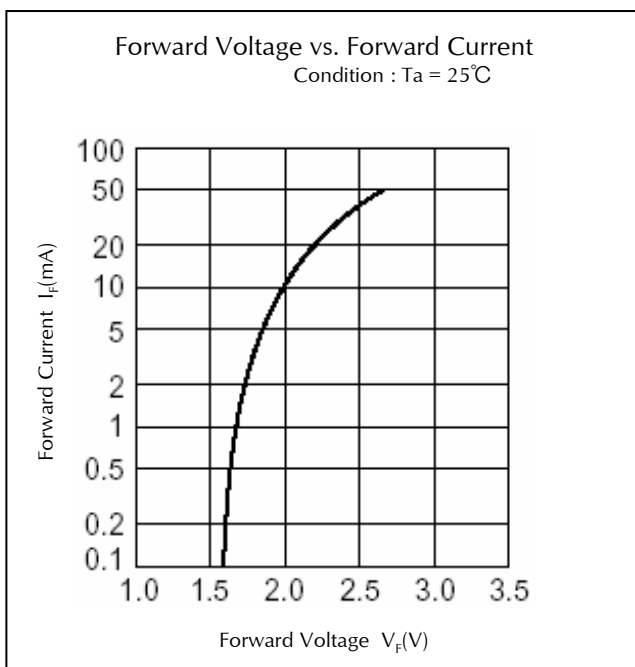
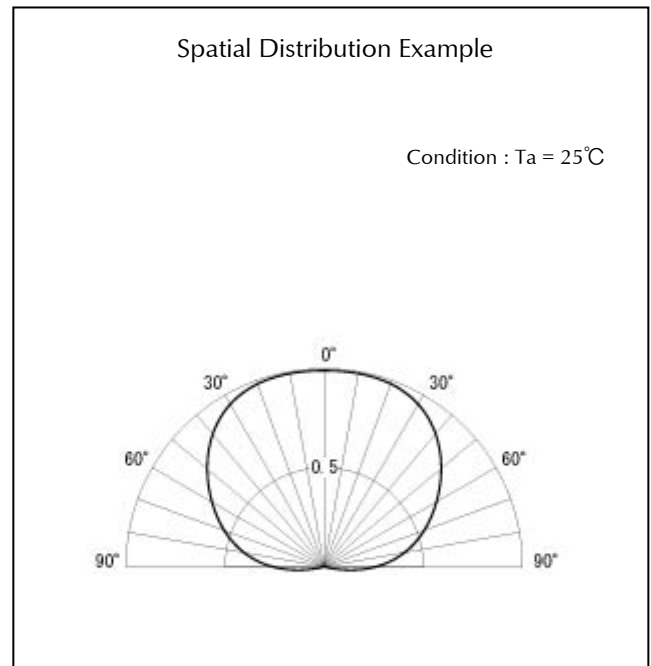
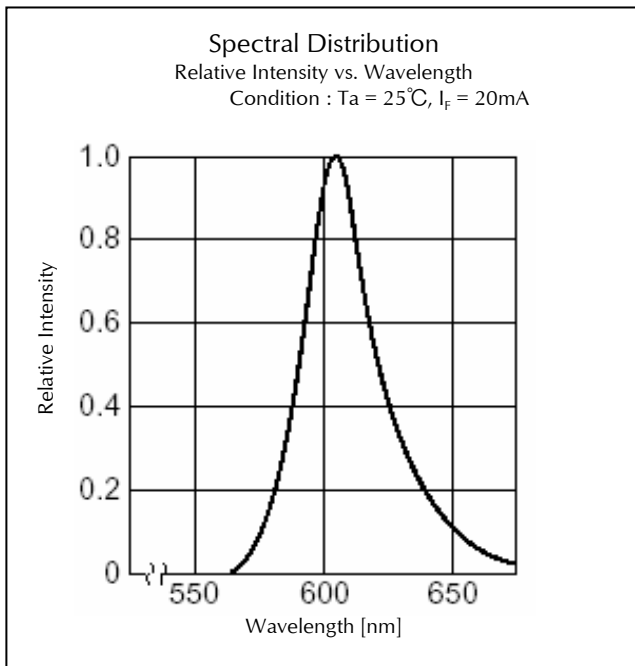
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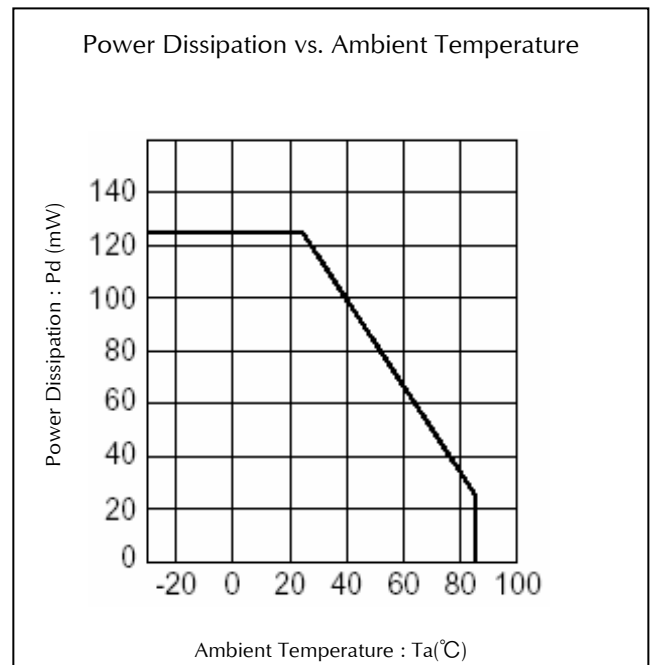
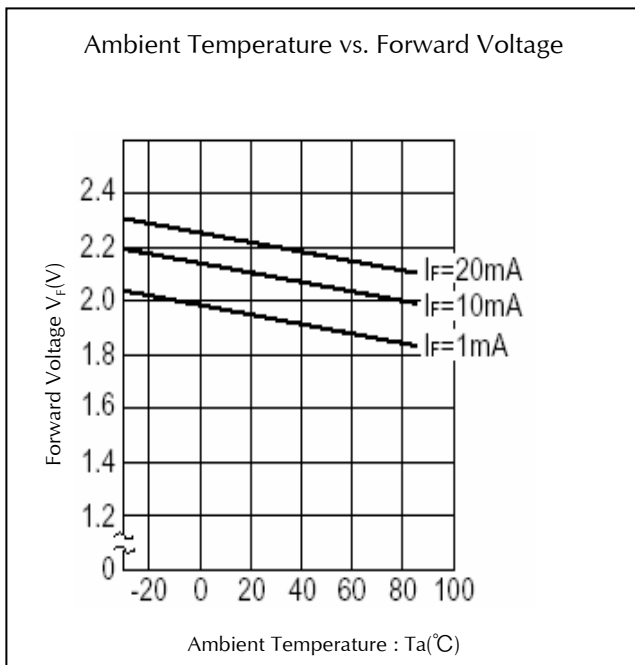
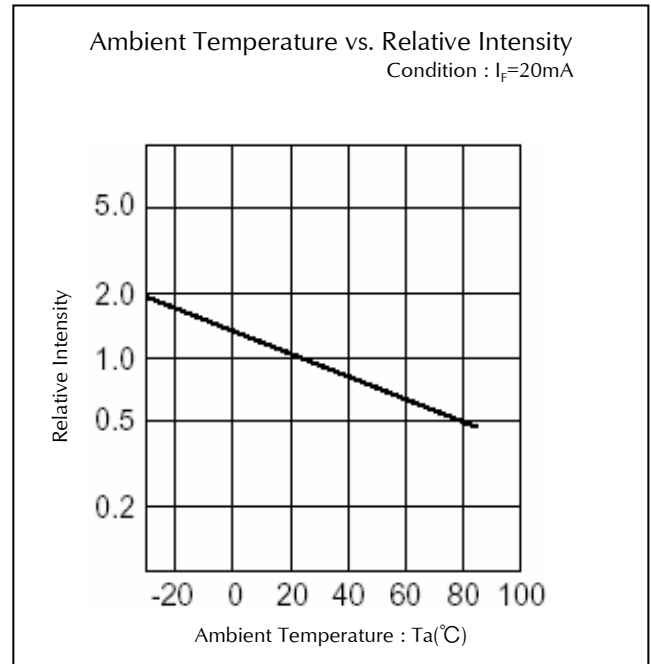
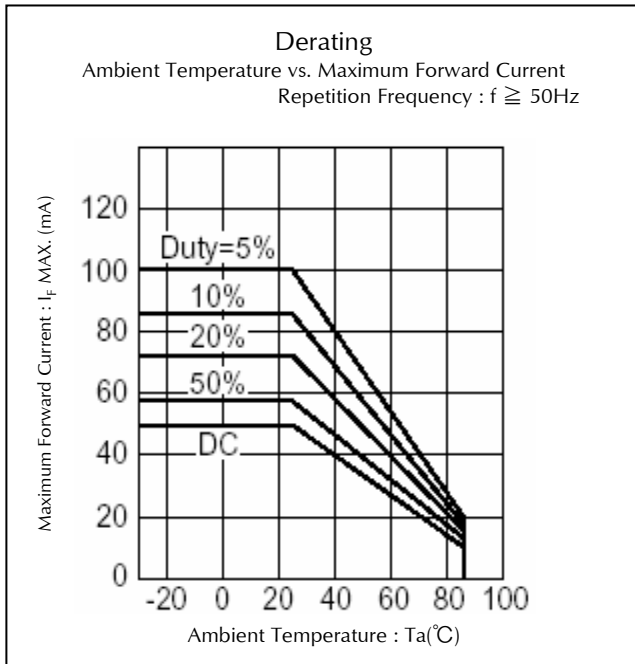
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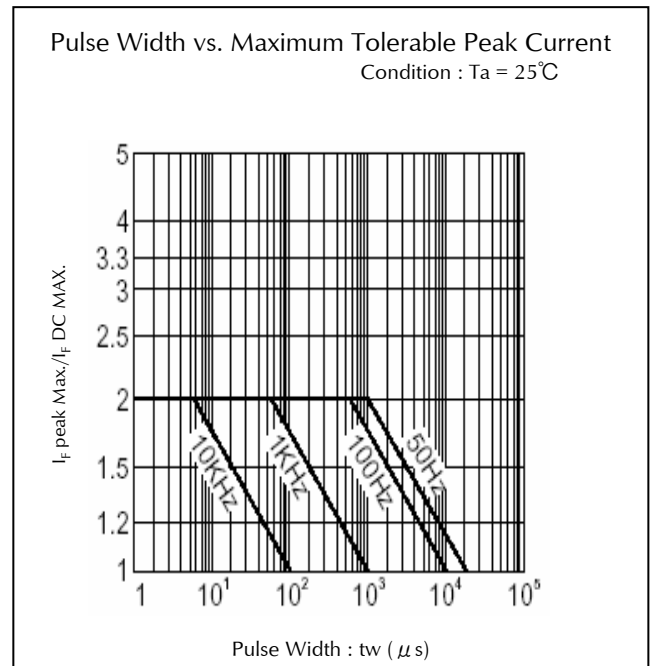
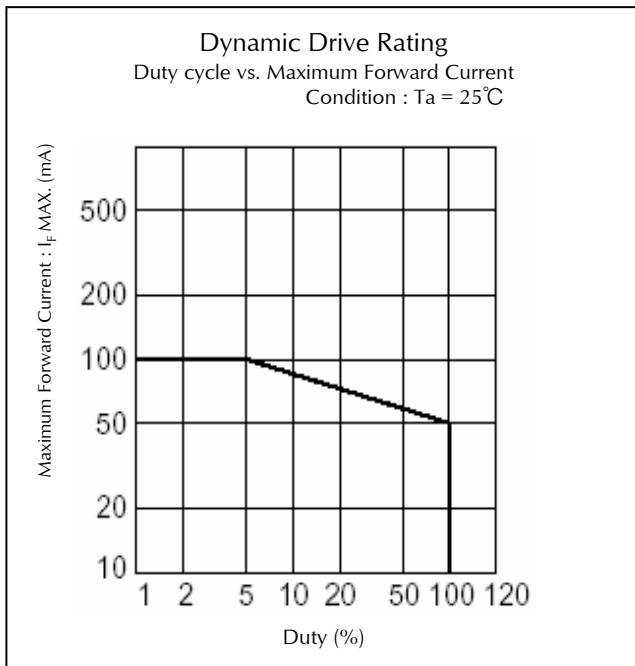
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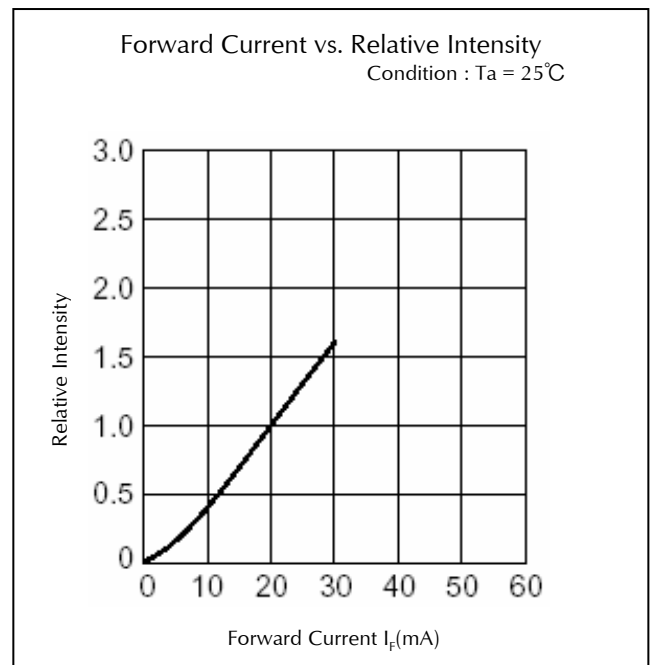
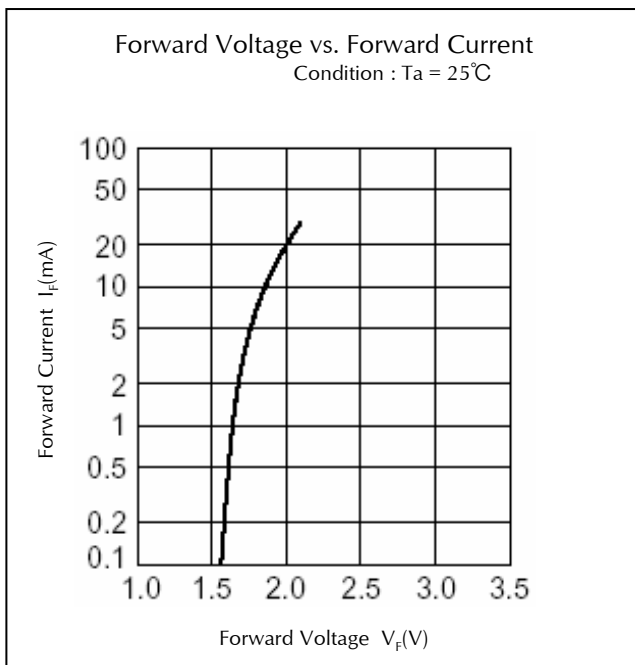
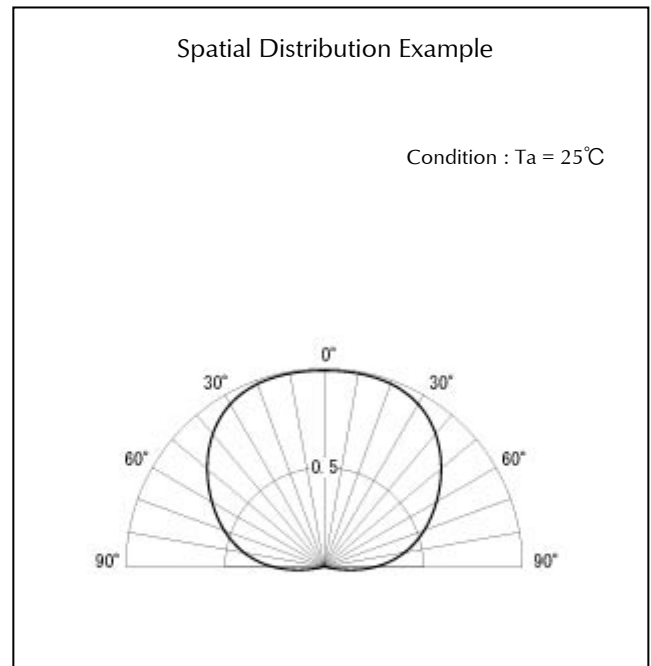
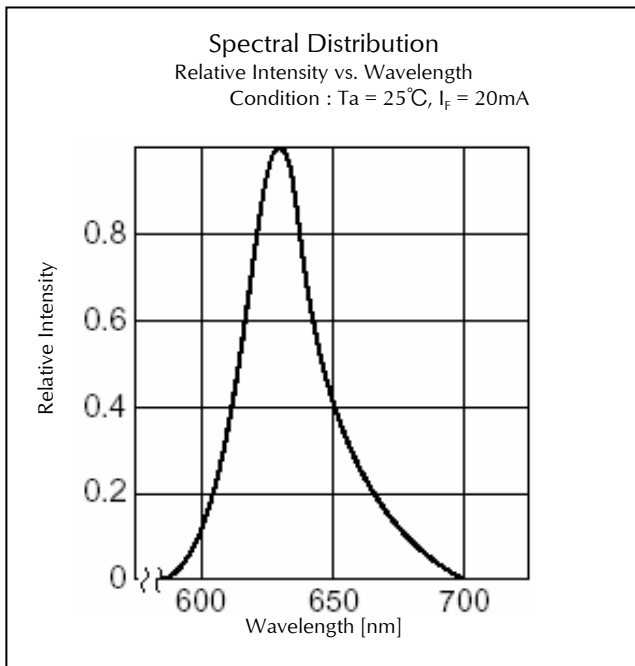
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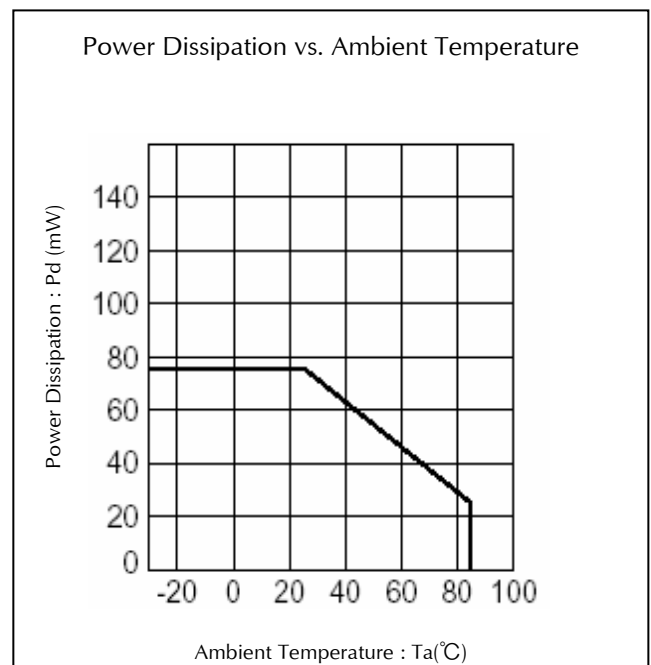
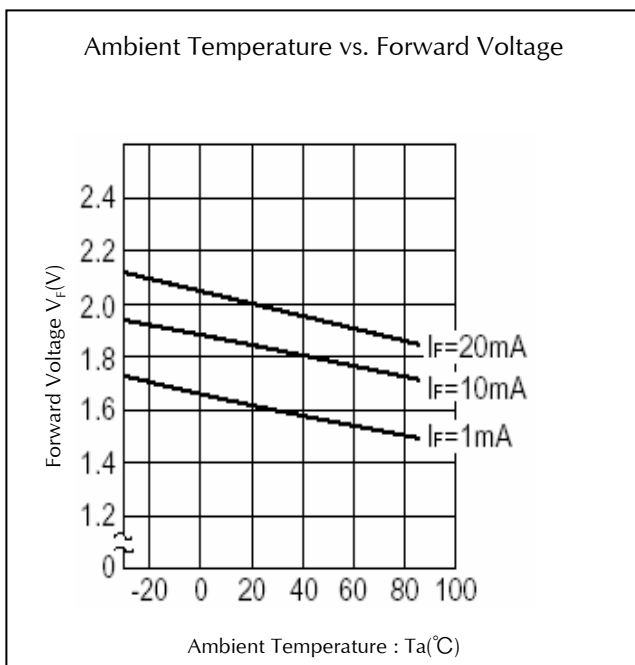
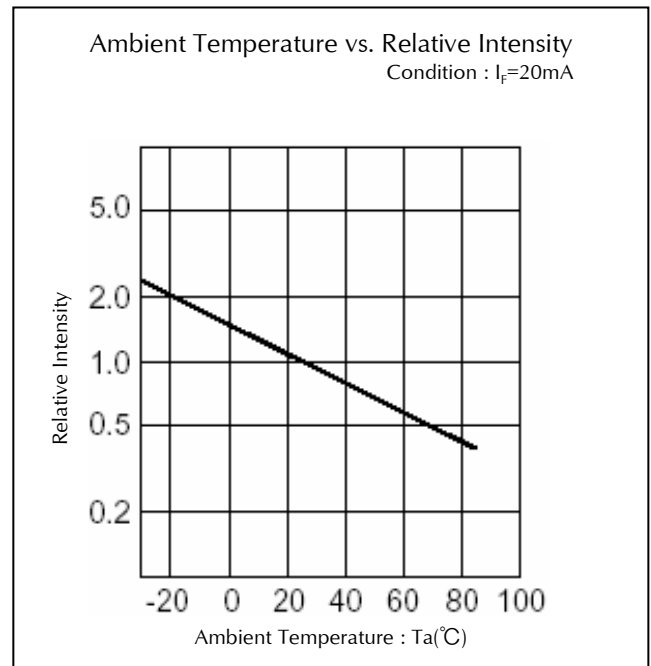
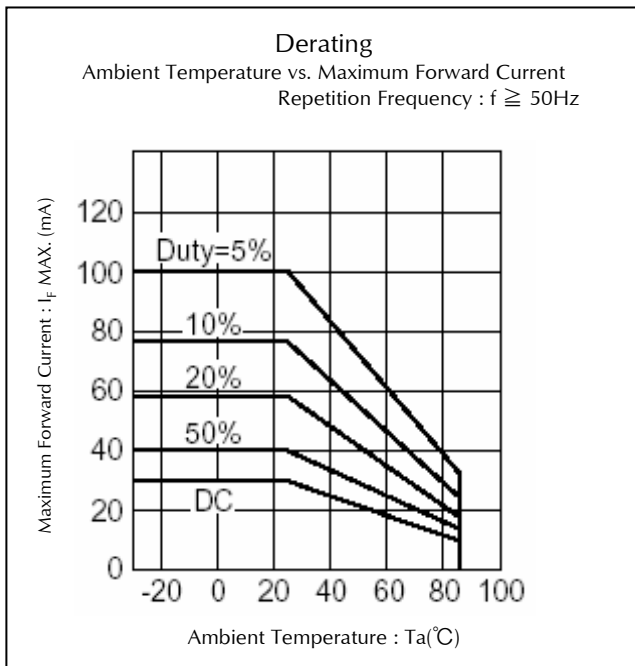
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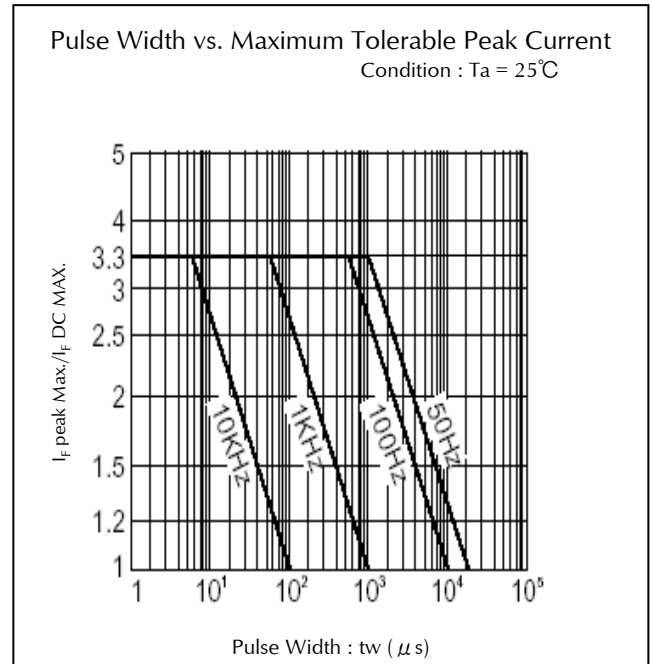
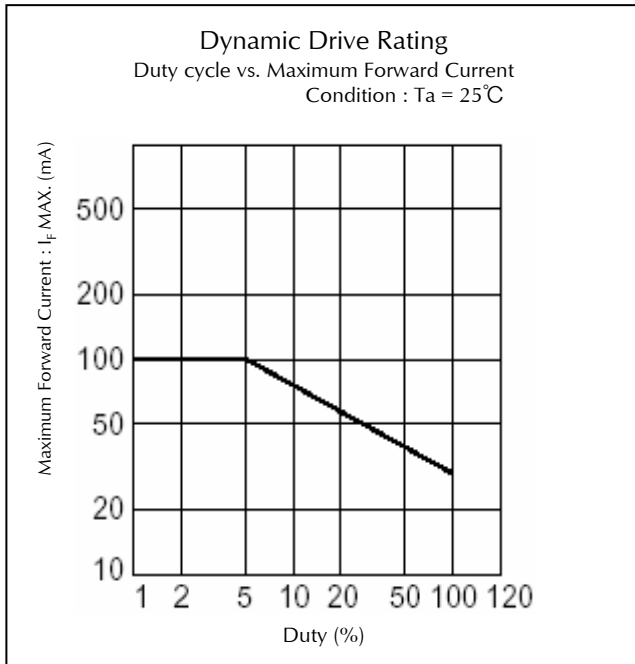
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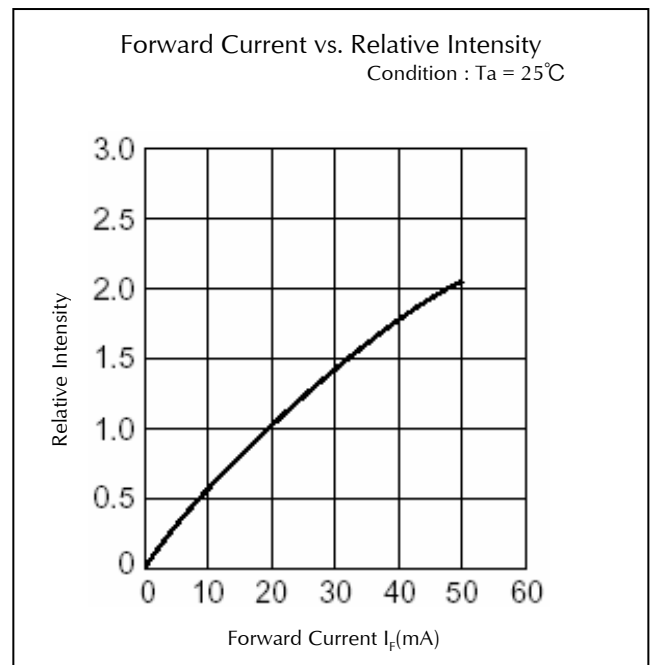
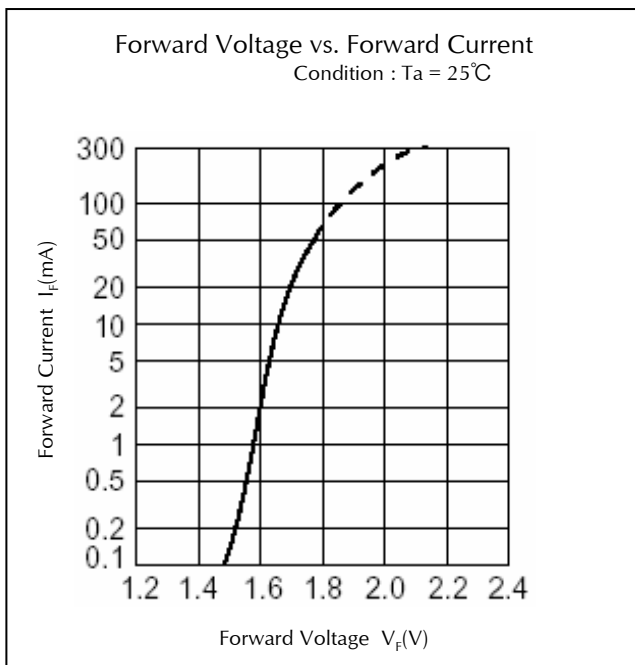
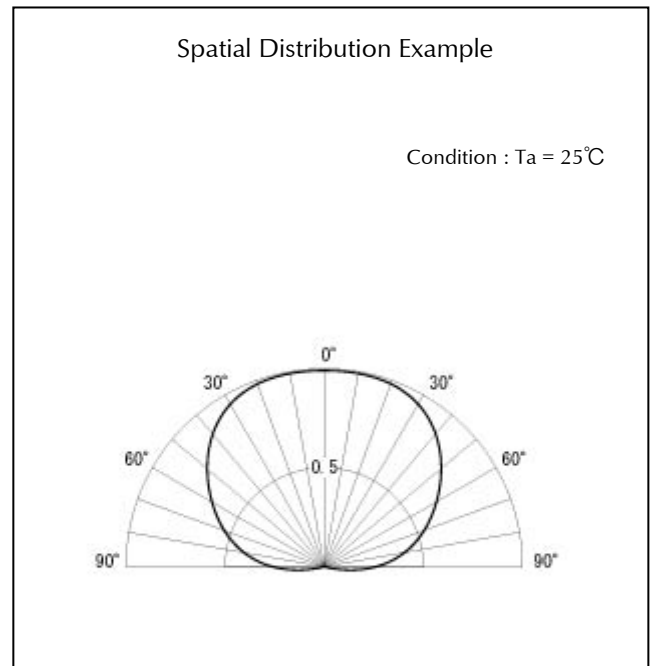
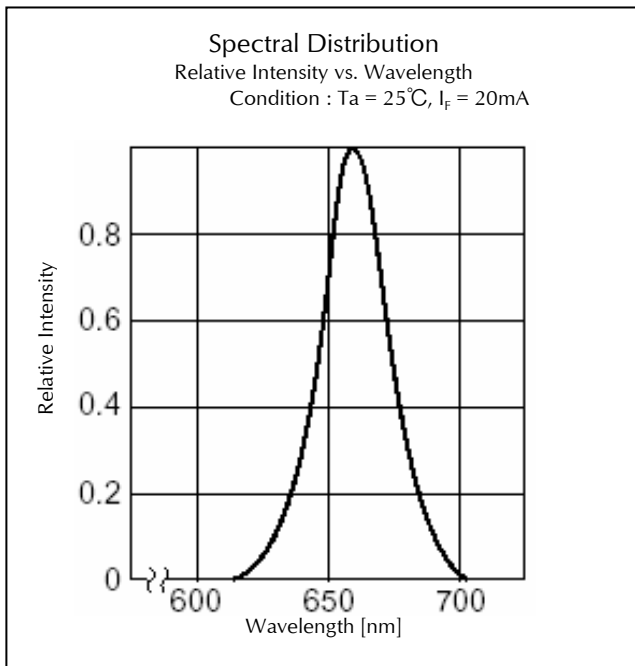
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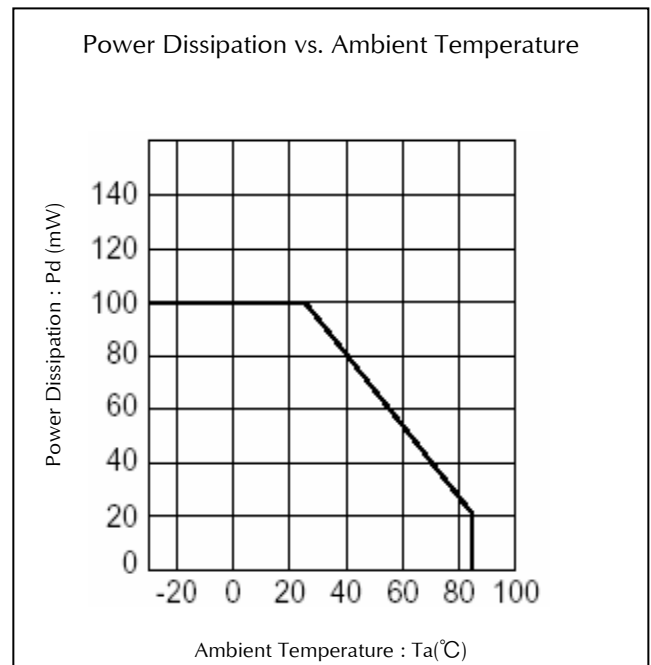
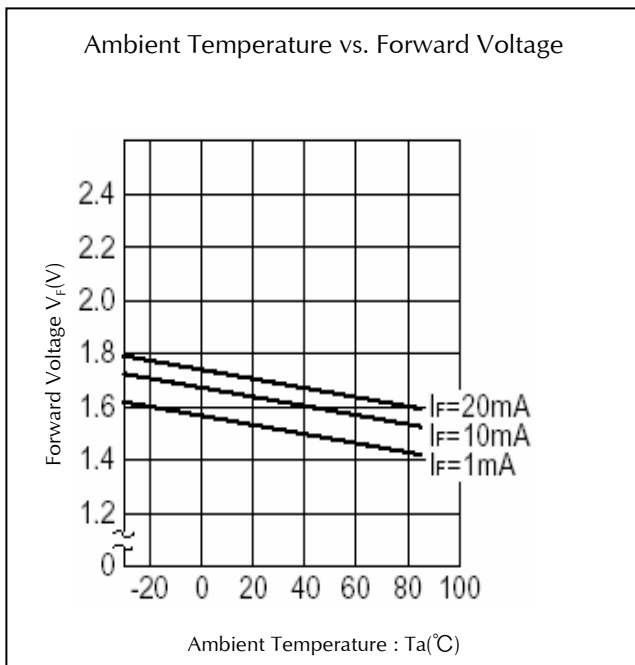
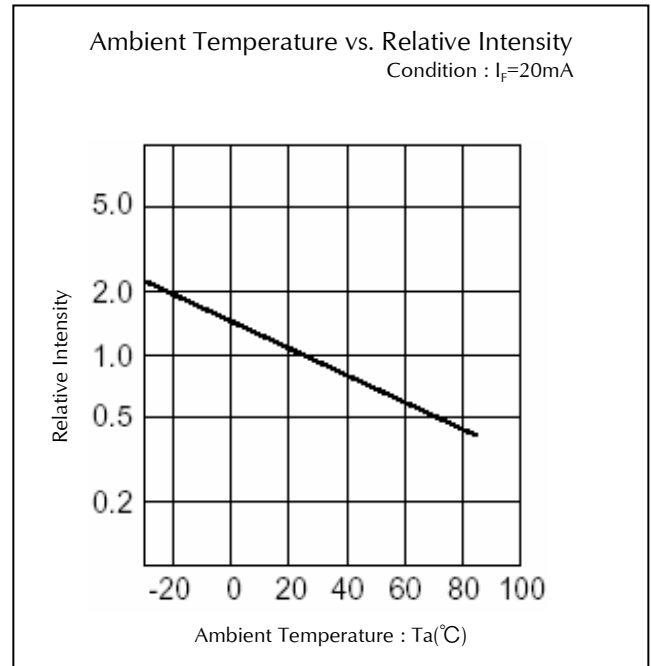
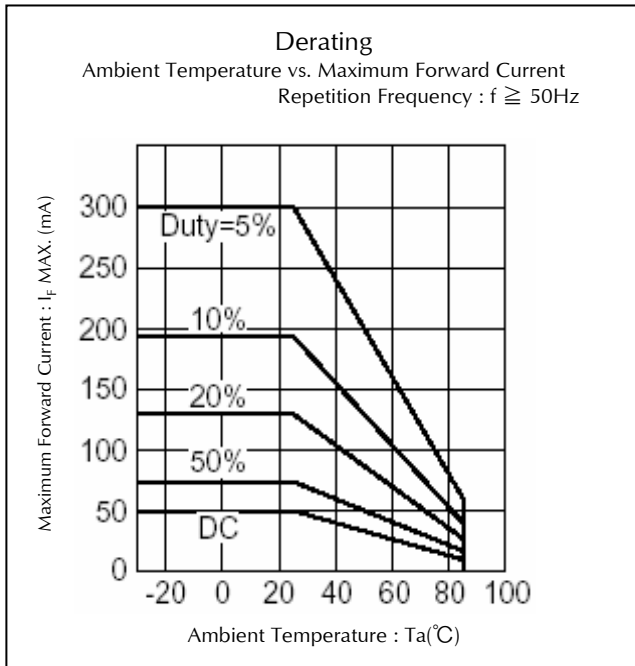
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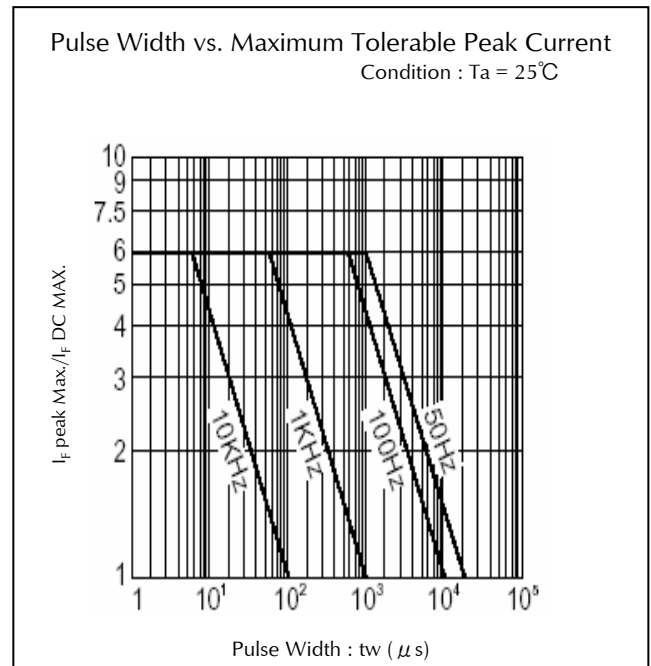
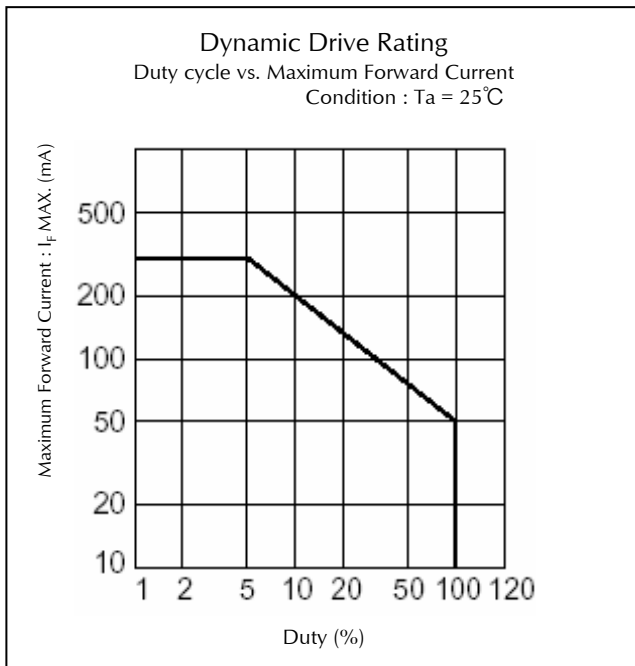
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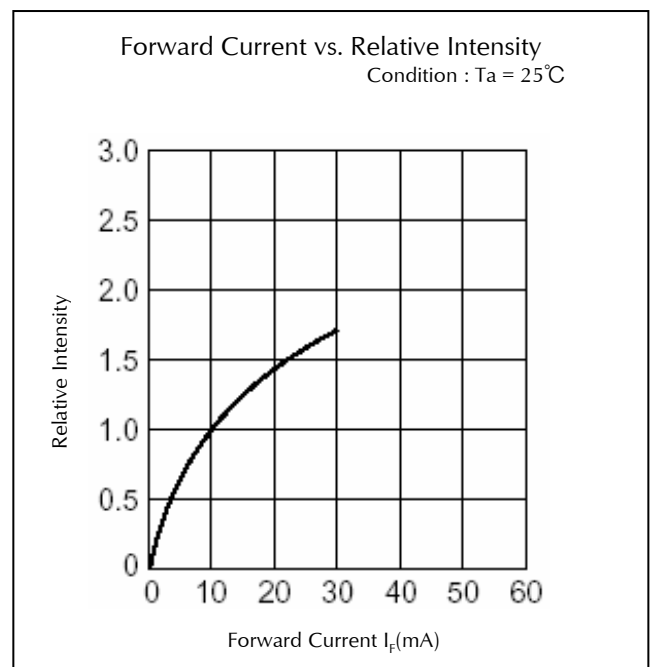
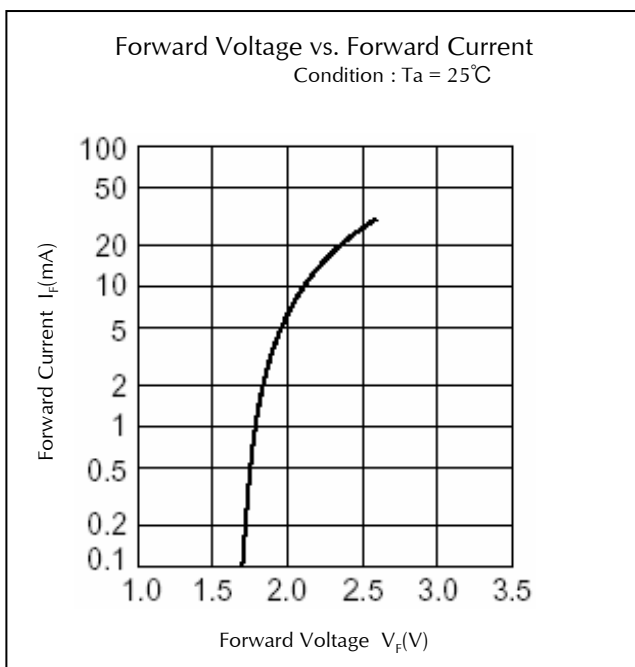
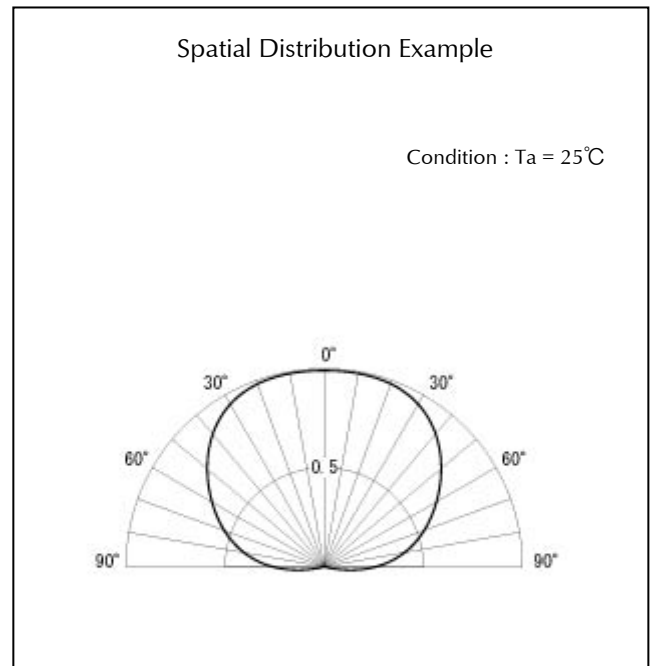
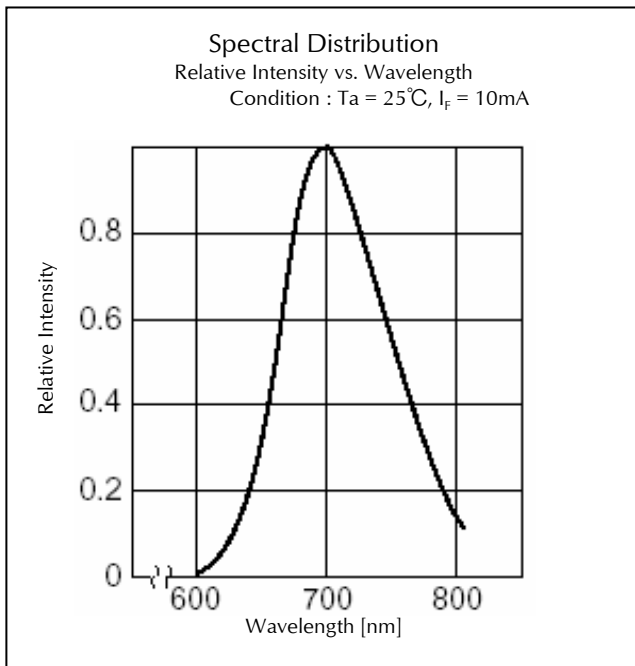
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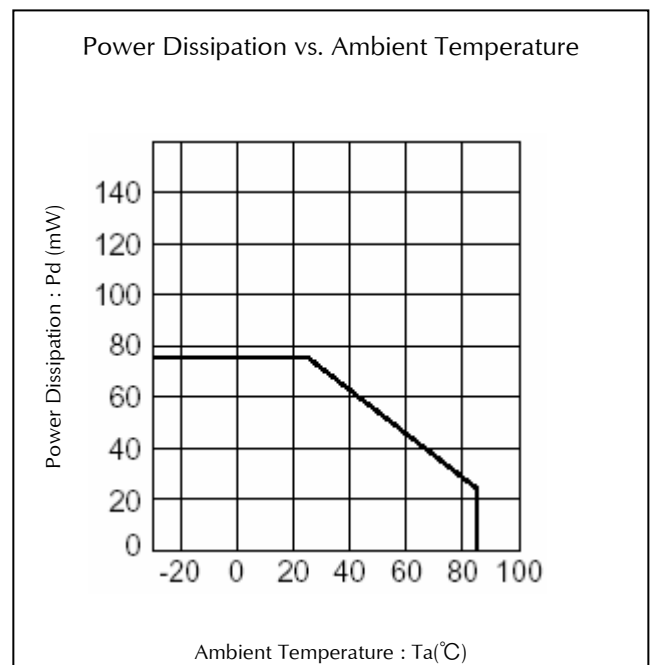
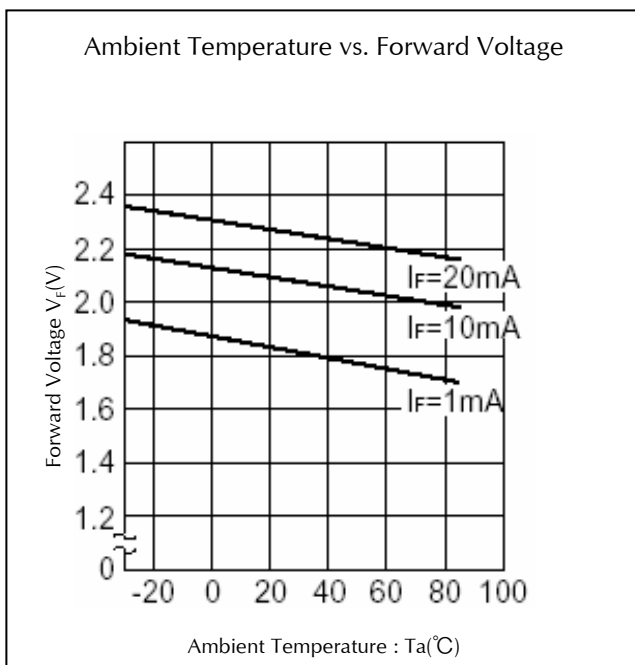
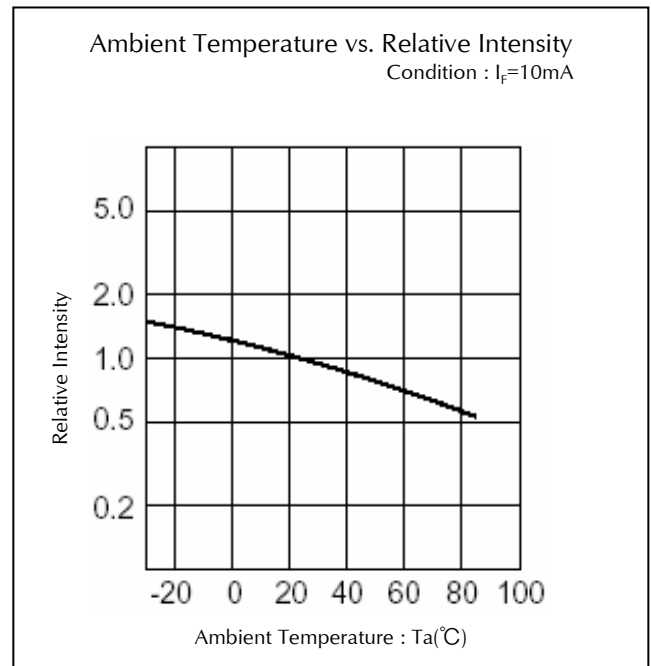
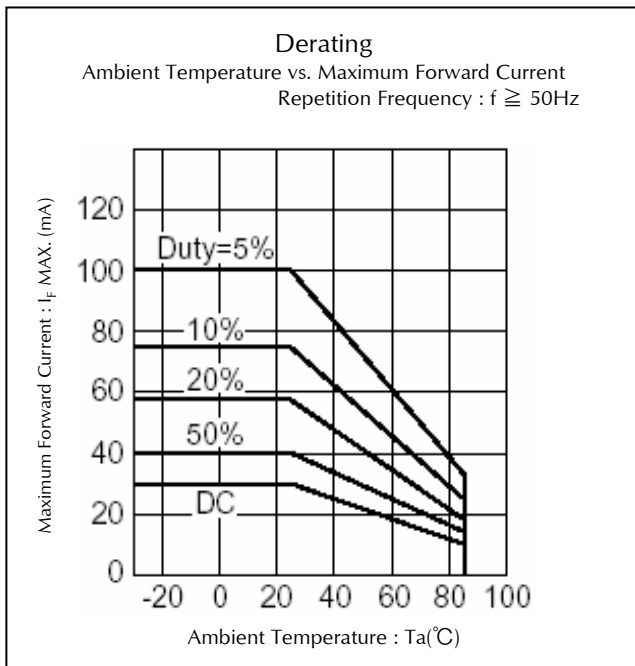
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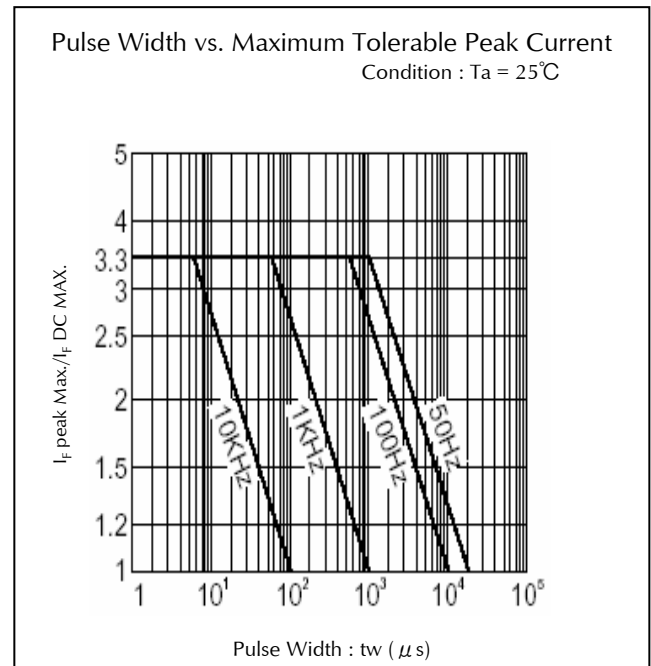
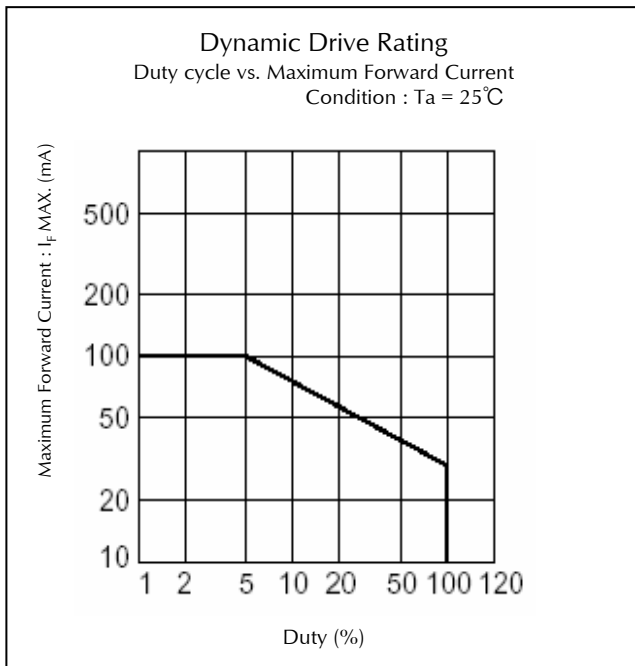
Technical Data(PR)



Technical Data(PR)

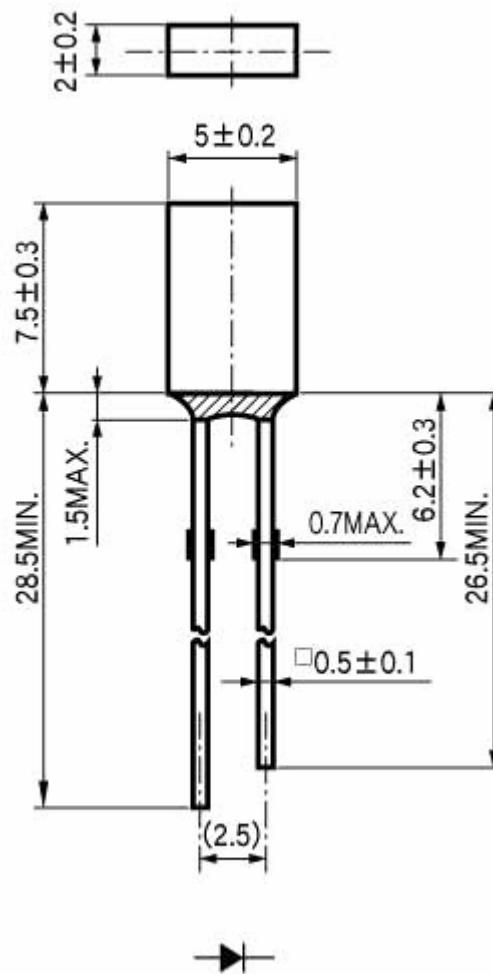


Technical Data(PR)



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

| | | |
|-------------------|--------|--------|
| Pre-heating | 100 °C | (MAX.) |
| Solder Bath Temp. | 265°C | (MAX.) |
| Dipping Time | 5 s | (MAX.) |

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to room temp. before the second dipping process.

※The detail is described to LED and Photodetector handling precautions of home page:
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

Manual Soldering Conditions

| | | |
|------------------------------|---------|--------|
| Iron tip temp. | 400°C | (MAX.) |
| Soldering time and frequency | 3 s | (MAX.) |
| | 2 times | (MAX.) |

※The detail is described to LED and Photodetector handling precautions of home page:
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

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(302) | 260±5°C, 3mm from package base | 10s | 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 |
| Lead Tension | EIAJ ED-4701/400(401) | 10N, 1time (□0.4 and Flat Package : 5N) | 10s | 0/10 |
| 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 |
|---------------------|----------------|---|---|
| Luminous Intensity | Iv | If Value of each product Luminous Intensity | Testing Min. Value < Spec. Min. 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 |
| Cosmetic Appearance | - | - | Occurrence of notable decoloration, deformation and cracking |

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