



**Pb-free
HEAT**



5066X Series

Single Color High Brightness ϕ 5 Type

Features

| | |
|-------------------------|---|
| Package | ϕ 5 Round shape type, HBG,HPG : Pale Green Clear epoxy HPY,HAY : Pale Yellow Clear epoxy HAA : Pale Orange Clear epoxy HBR : Pale Red Clear epoxy |
| Product features | <ul style="list-style-type: none"> • Outer Dimension ϕ 5 Round shape type • Operation temperature range. Storage Temperature : -30°C~100°C Operating Temperature : -30°C~85°C • No lead package and lead-free soldering compatible • RoHS compliant |
| Dominant wavelength | Green : 558nm (HBG) : 567nm (HPG) Yellow Green : 572nm (HPY) Yellow : 590nm (HAY) Orange : 606nm (HAA) Red : 647nm (HBR) |
| Half Intensity Angle | HBG, HPG,HAY,HAA : 8 deg. HPY : 10 deg. HBR : 6 deg. |
| Die materials | HBG,HPG,HPY : GaP HAY,HAA : GaAsP HBR : 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 |
| | | | | | HBG5066X | GaP | Green | Pale Green | Clear |
| HPG5066X | GaP | Green | 567 | 20 | 150 | 200 | 20 | | |
| HPY5066X | GaP | Yellow Green | Pale Yellow | 572 | 20 | 200 | 300 | 20 | |
| HAY5066X | GaAsP | Yellow | | 590 | 20 | 100 | 150 | 20 | |
| HAA5066X | GaAsP | Orange | Pale Orange | 606 | 20 | 160 | 250 | 20 | |
| HBR5066X | GaAlAs | Red | Pale Red | 647 | 20 | 200 | 300 | 20 | |

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | | | | | | Unit |
|---------------------------------|--------------|--------------------------|------|------|------|------|------|-------|
| | | HBG | HPG | HPY | HAY | HAA | HBR | |
| Power Dissipation | P_d | 125 | 125 | 125 | 125 | 125 | 100 | mW |
| Forward Current | I_F | 50 | 50 | 50 | 50 | 50 | 50 | mA |
| Pulse Forward Current ※1 | I_{FRM} | 100 | 100 | 100 | 100 | 100 | 300 | mA |
| Derating (Ta=25°C or higher) | ΔI_F | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | mA/°C |
| Reverse Voltage | V_R | 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

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | | | | | | Unit |
|--------------------------|----------------------|----------------|-----------------|-----|-----|-----|-----|-----|-----|------|
| | | | | HBG | HPG | HPY | HAY | HAA | HBR | |
| Forward Voltage | I _F =20mA | V _F | TYP. | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 1.7 | V |
| | | | MAX. | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.0 | |
| Reverse Current | V _R =4V | I _R | MAX. | 20 | 20 | 20 | 20 | 20 | 100 | μ A |
| Peak Wavelength | I _F =20mA | λ _p | TYP. | 555 | 560 | 570 | 580 | 605 | 660 | nm |
| Dominant Wavelength | I _F =20mA | λ _d | TYP. | 558 | 567 | 572 | 590 | 606 | 647 | nm |
| Spectral Line Half Width | I _F =20mA | Δλ | TYP. | 30 | 30 | 30 | 30 | 30 | 30 | nm |
| Half Intensity Angle | I _F =20mA | 2θ 1/2 | TYP. | 8 | 8 | 10 | 8 | 8 | 6 | deg. |

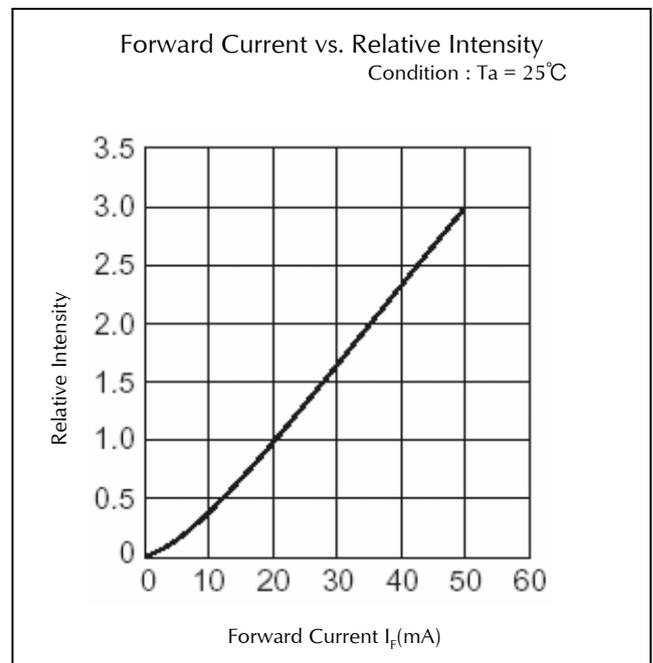
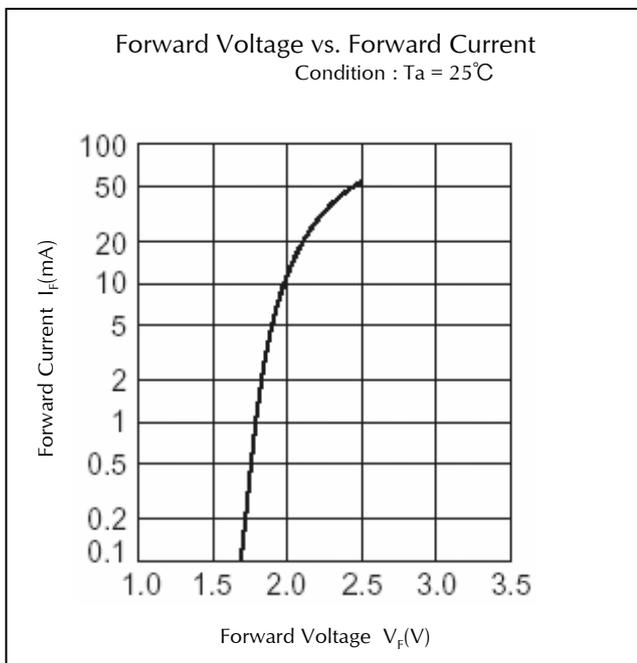
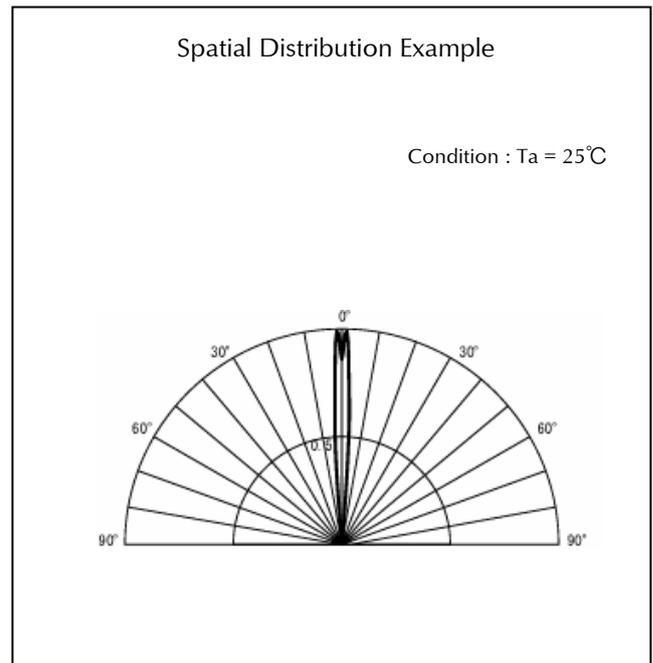
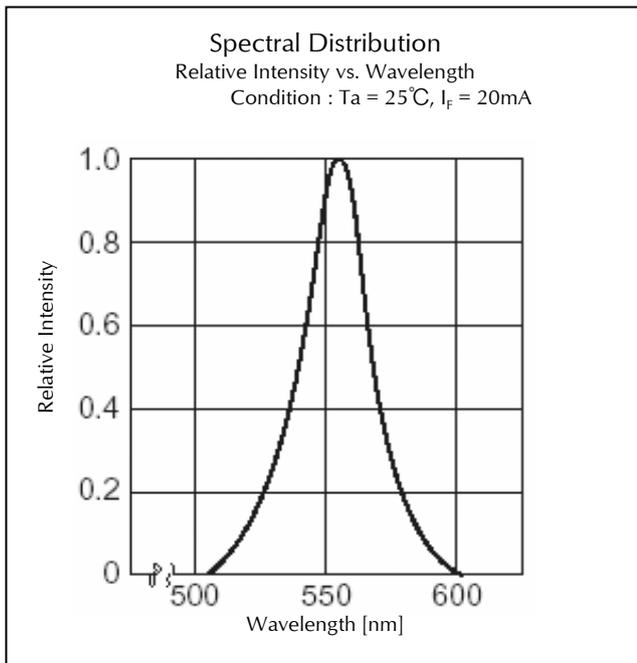
Luminous Intensity Rank

(Ta=25°C)

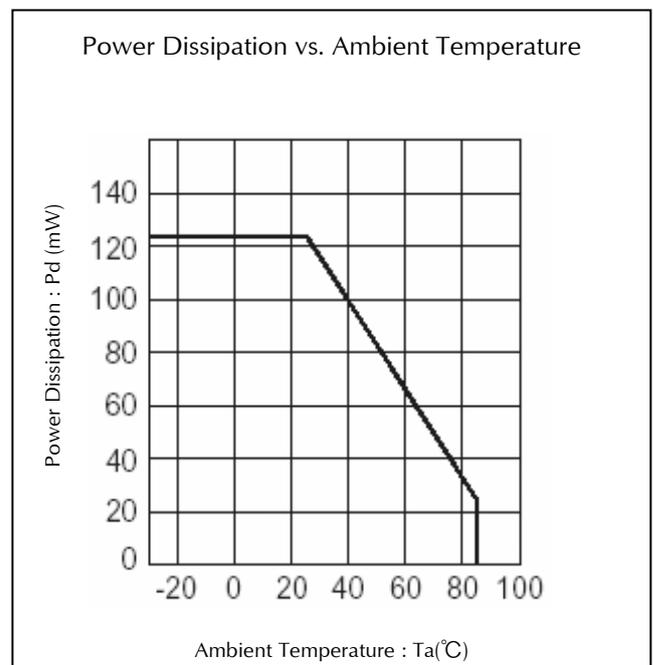
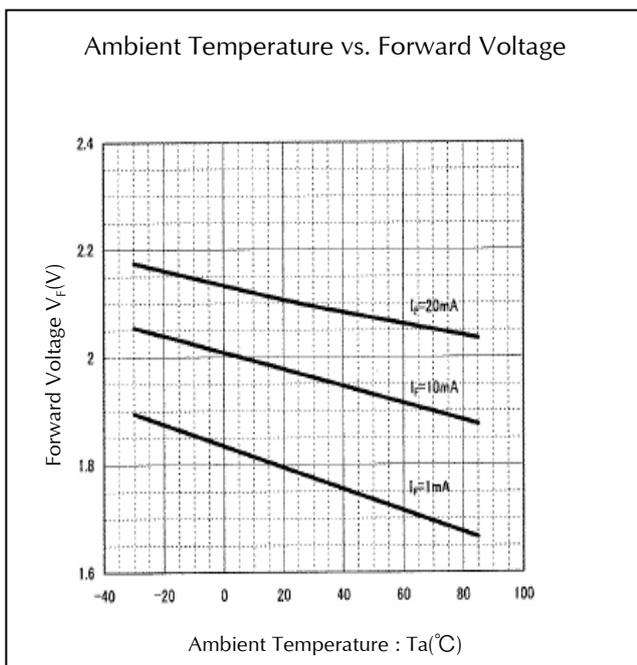
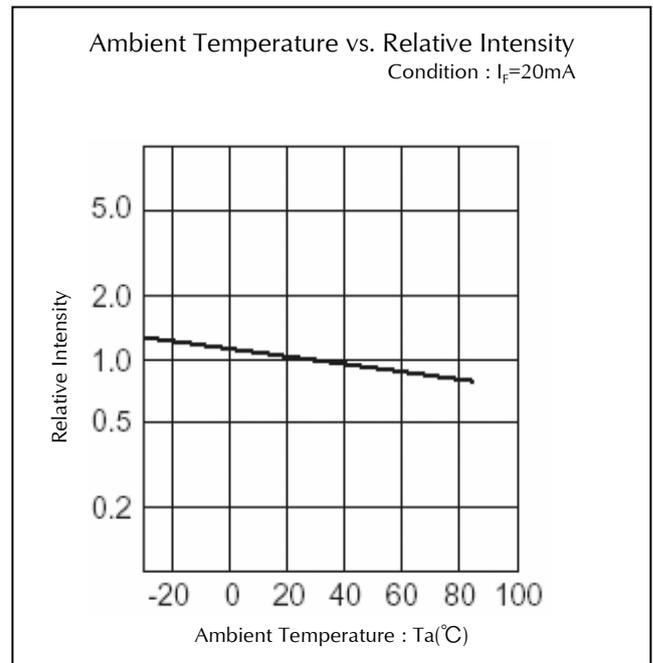
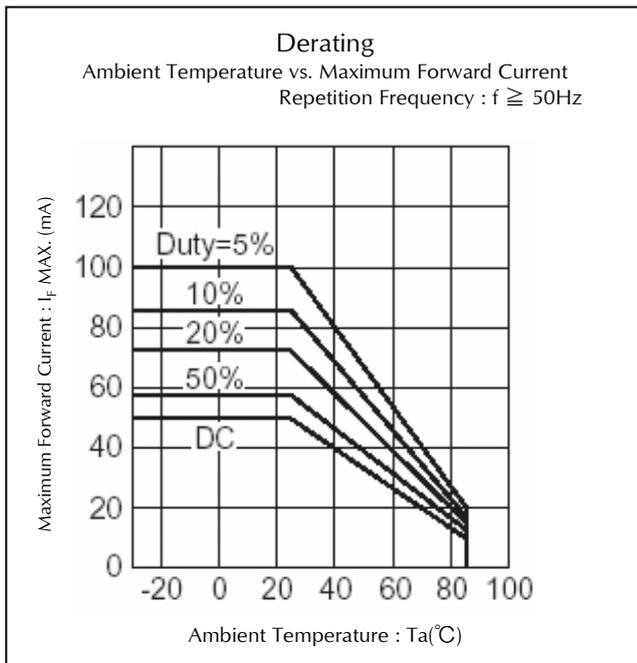
| Rank | I _v (mcd) | | | | | | | | | | | |
|----------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|----------------------|------|
| | HBG | | HPG | | HPY | | HAY | | HAA | | HBR | |
| | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | | I _F =20mA | |
| | MIN. | MAX. |
| A | 100 | 200 | 150 | 300 | 200 | 400 | 100 | 200 | 160 | 320 | 200 | 400 |
| B | 140 | 280 | 210 | 420 | 280 | 560 | 140 | 280 | 224 | 448 | 280 | 560 |
| C | 200 | 400 | 300 | 600 | 400 | 800 | 200 | 400 | 320 | 640 | 400 | 800 |
| D | 280 | 560 | 420 | 840 | 560 | 1120 | 280 | 560 | 448 | 896 | 560 | 1120 |
| E | 400 | - | 600 | - | 800 | - | 400 | - | 640 | - | 800 | 1600 |

※Please contact our sales staff concerning rank designation.

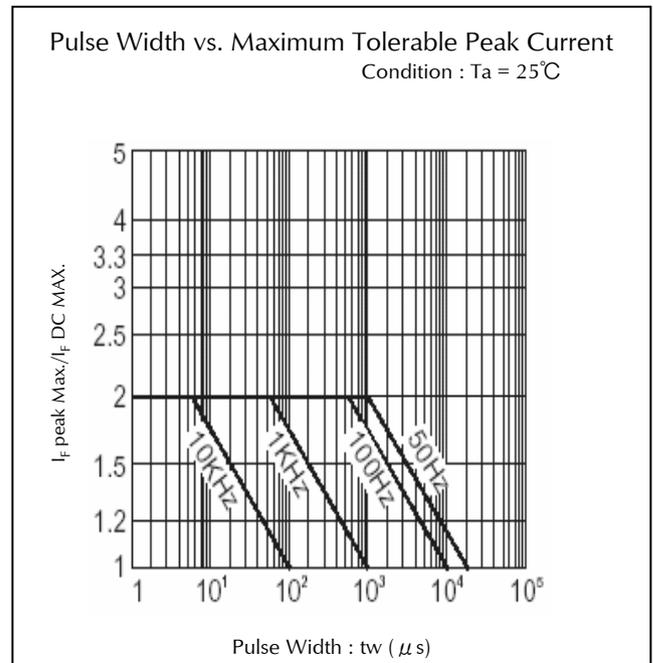
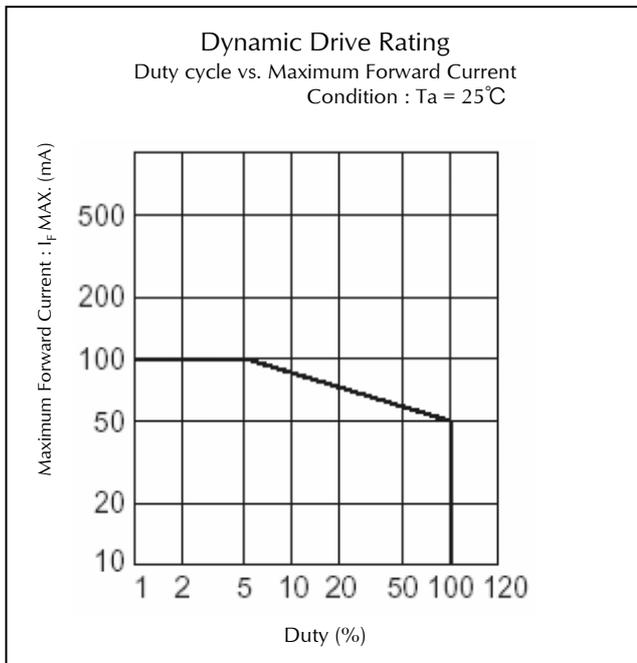
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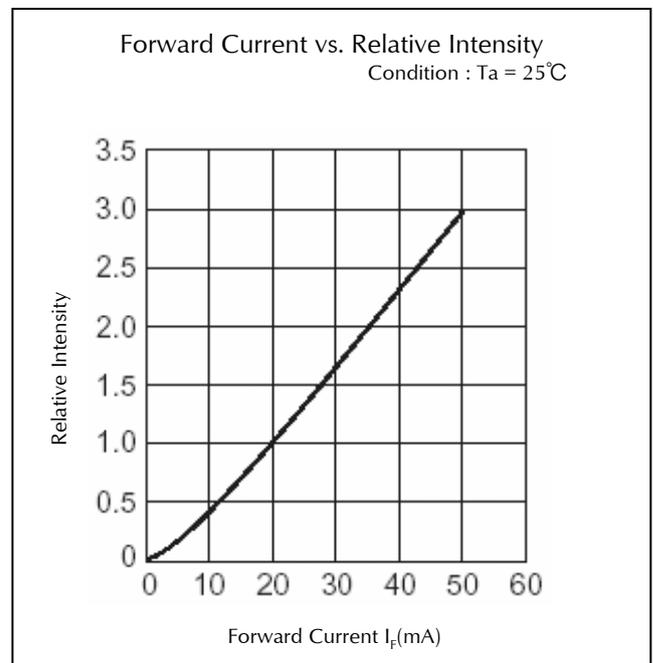
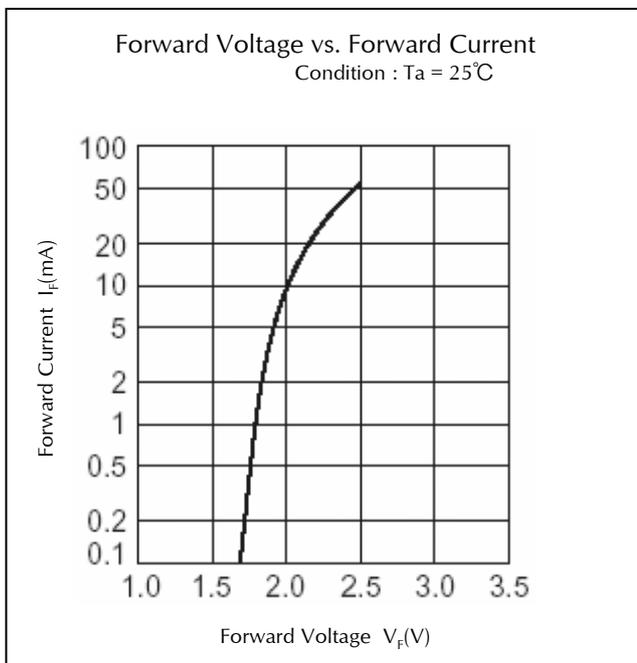
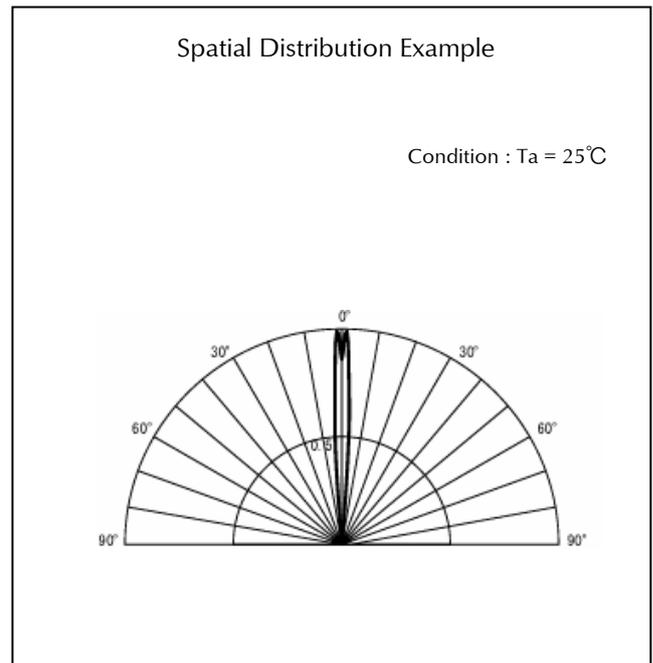
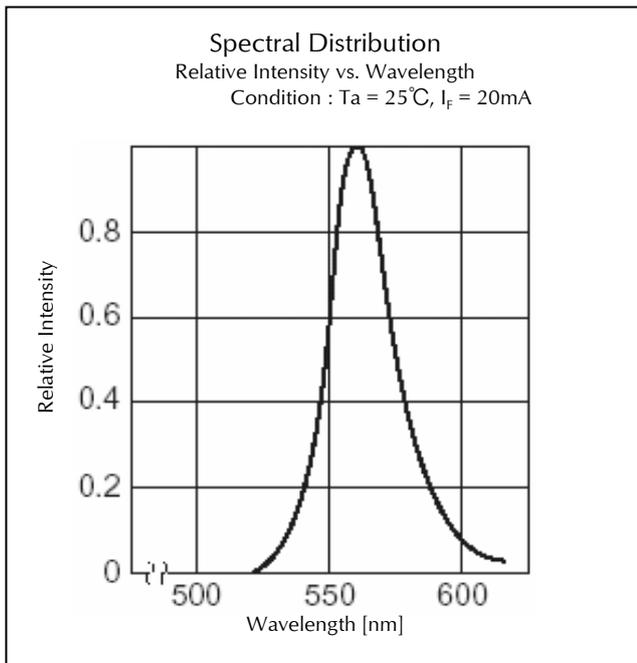
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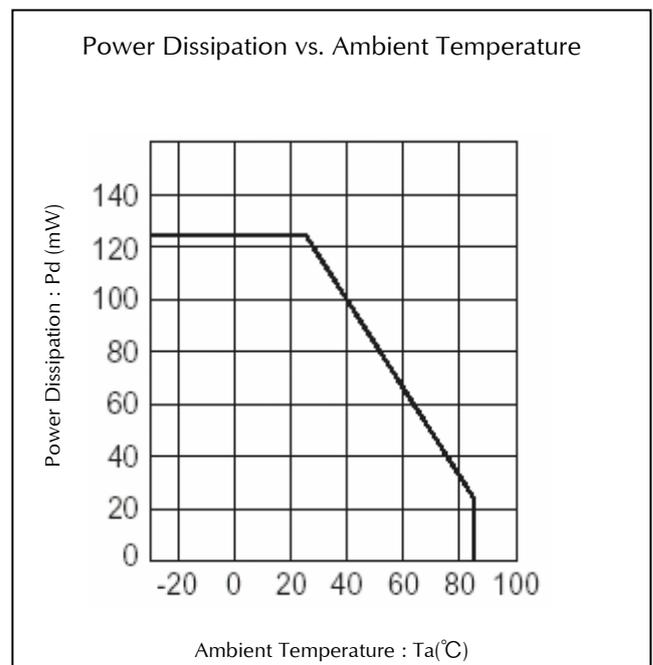
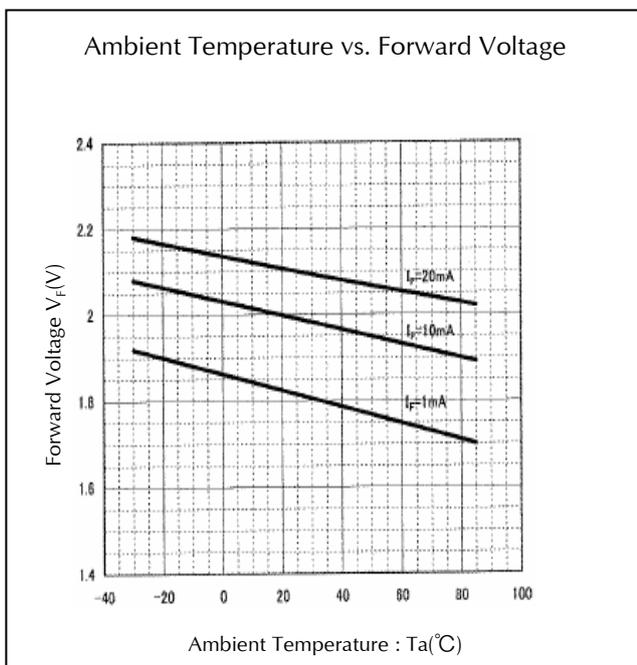
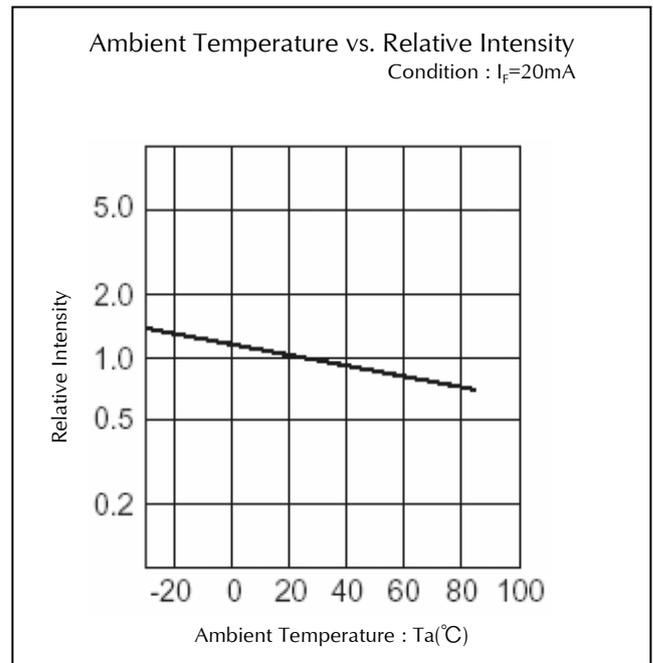
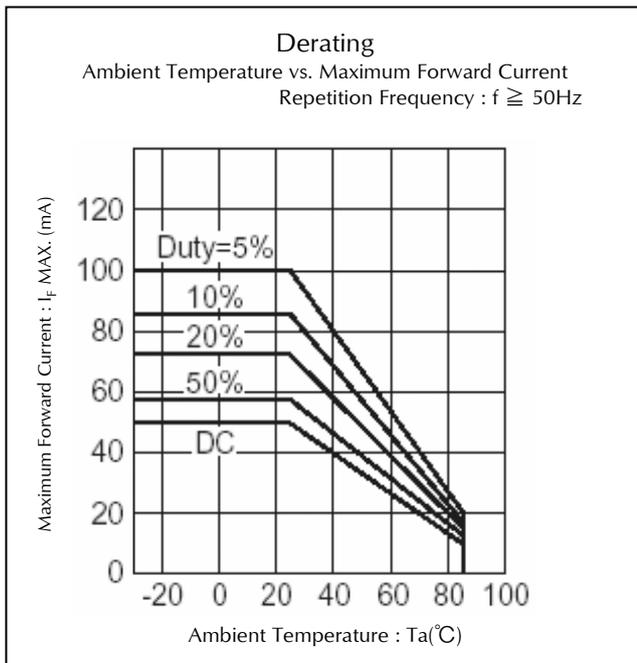
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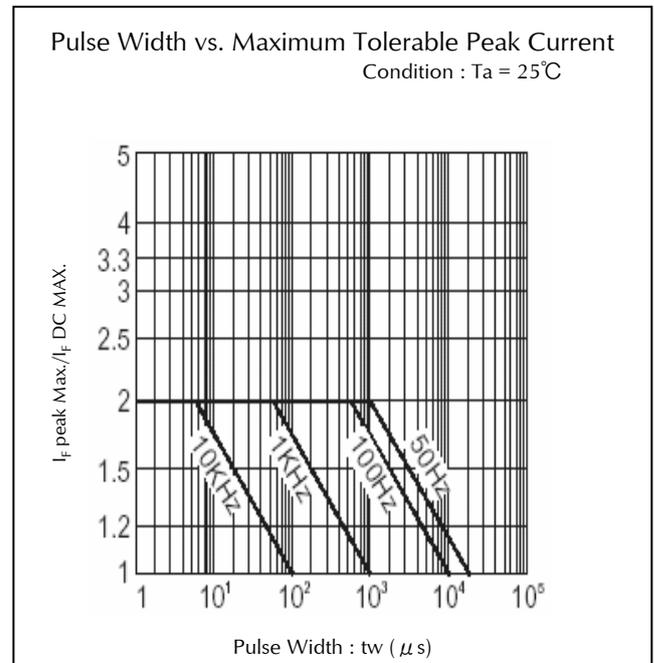
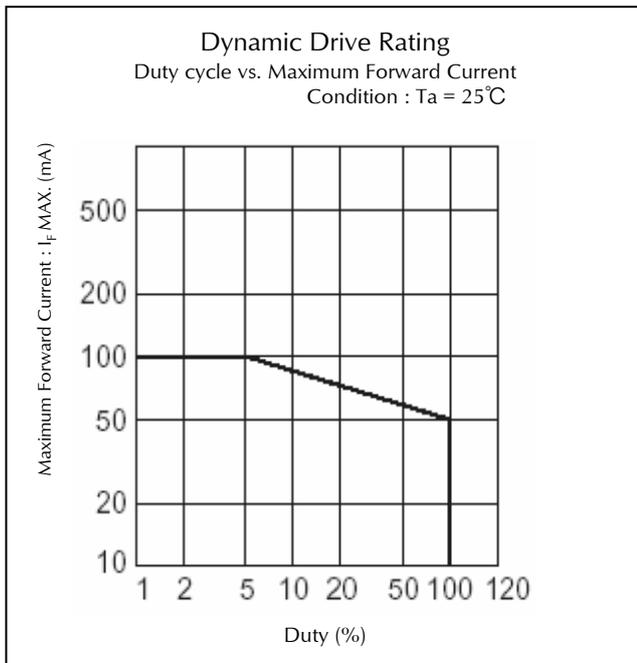
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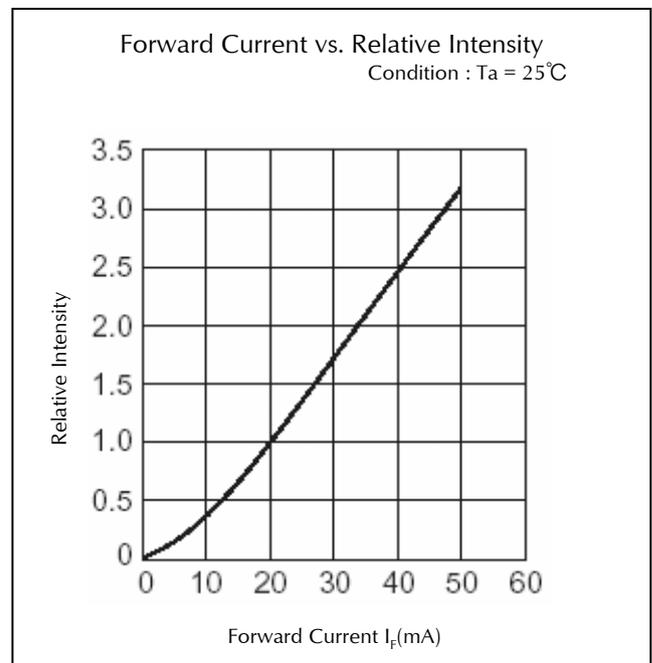
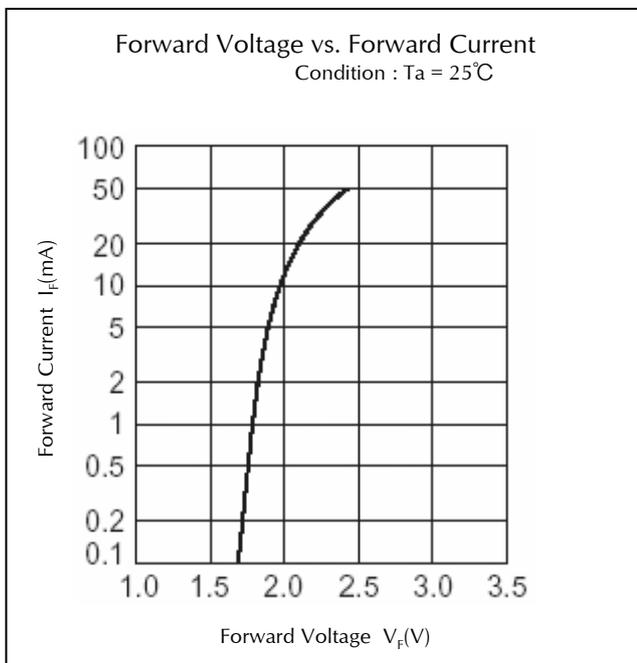
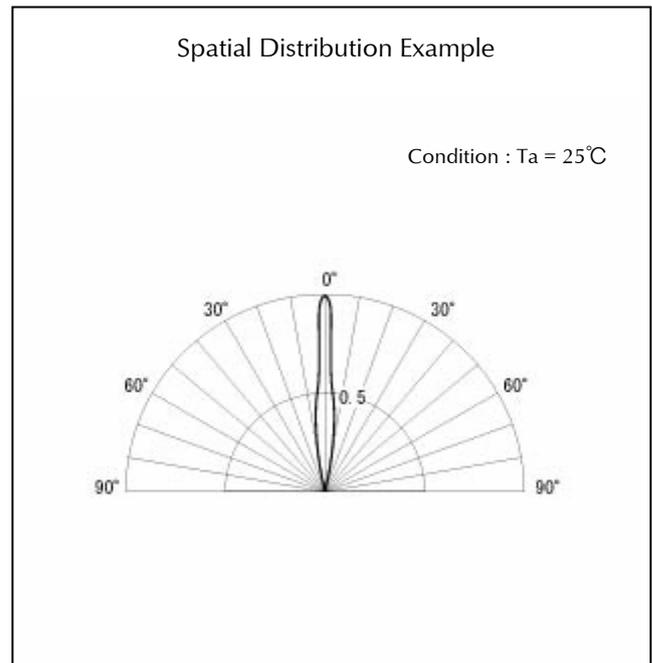
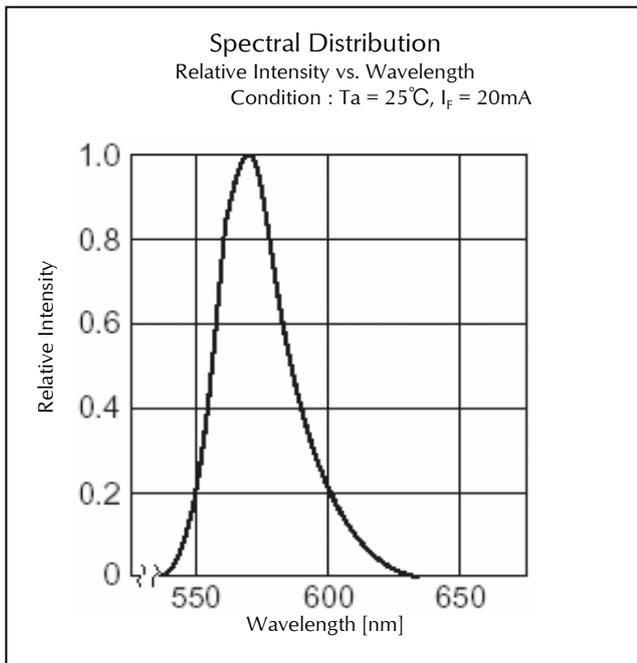
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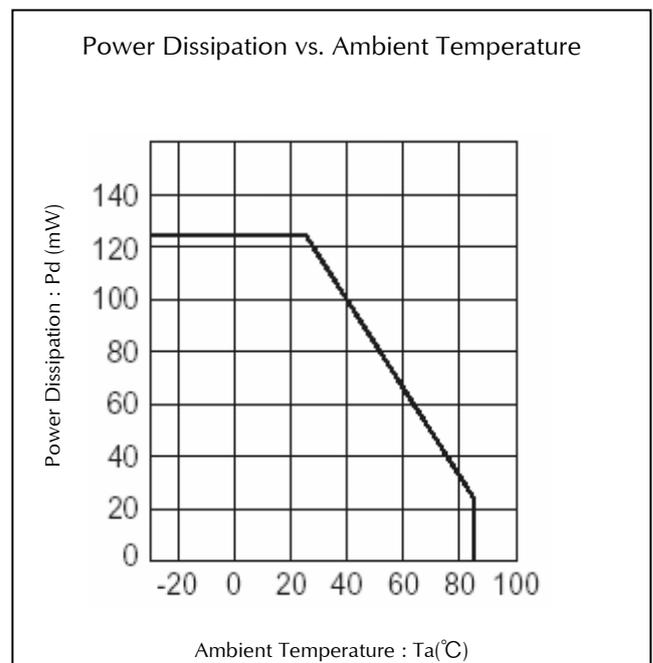
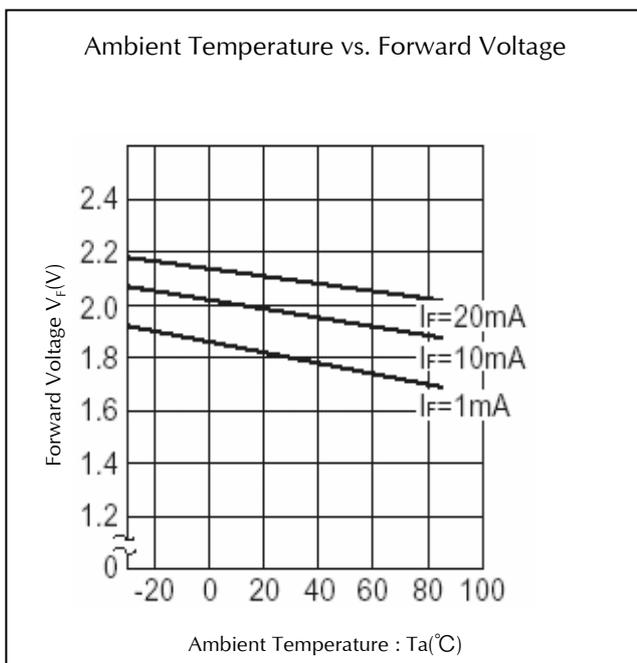
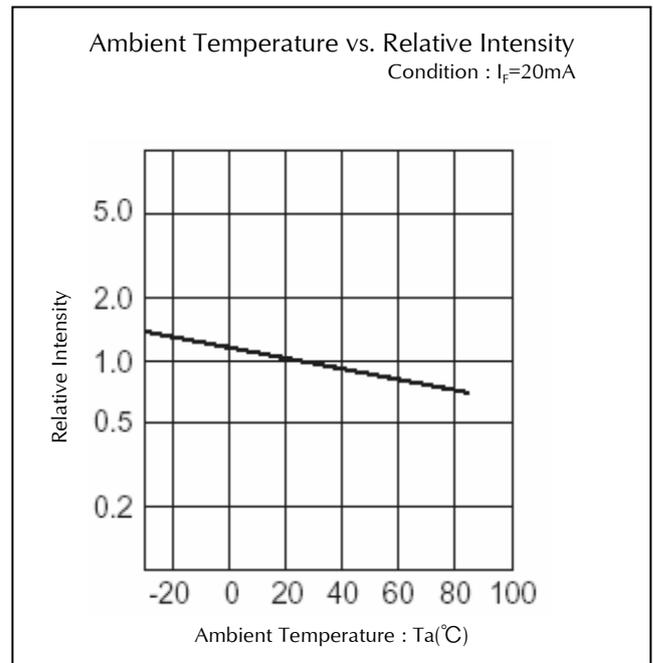
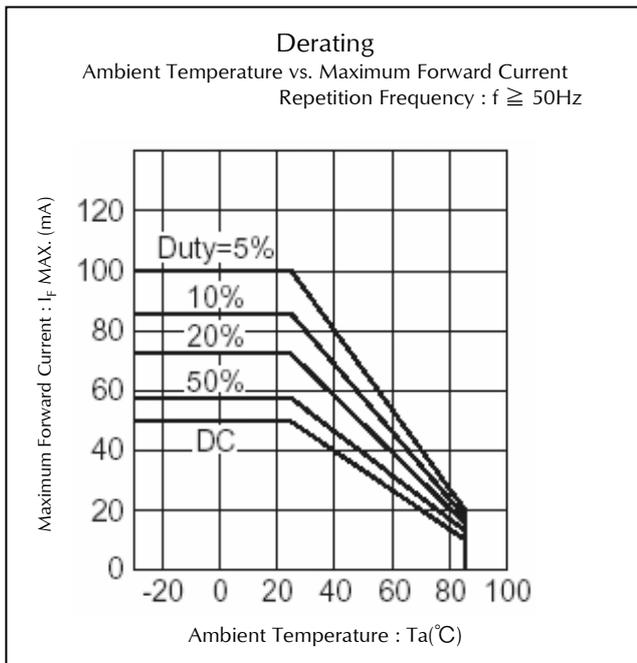
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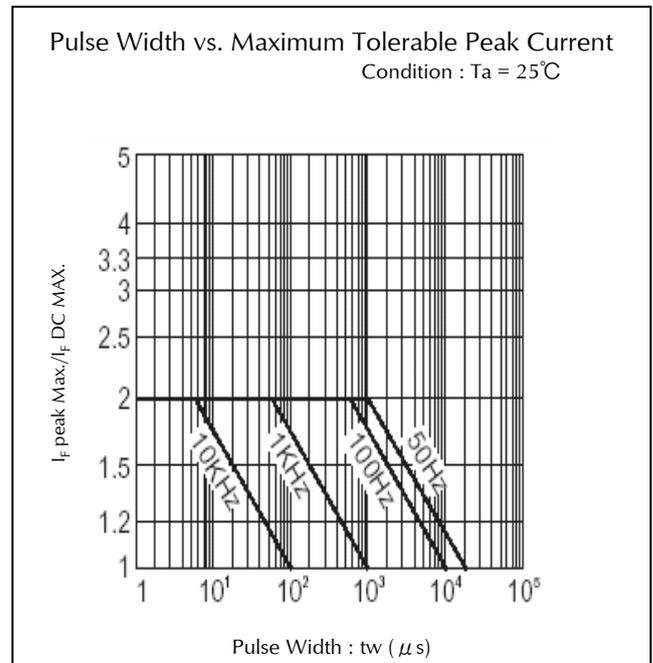
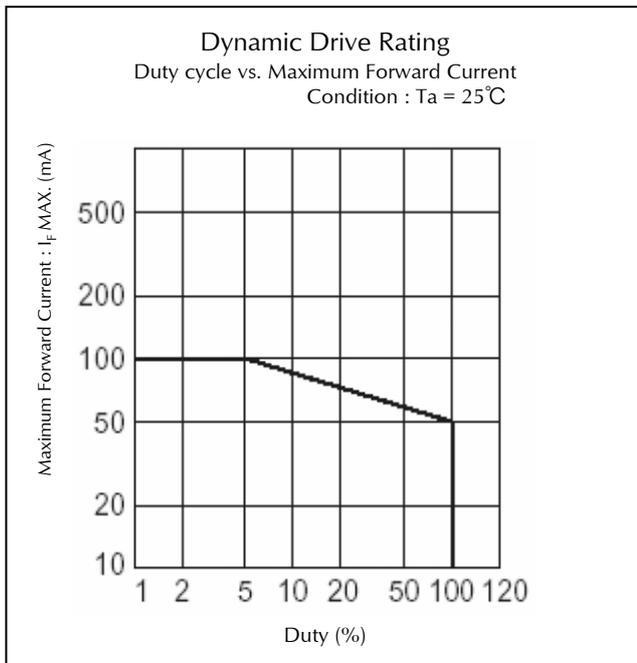
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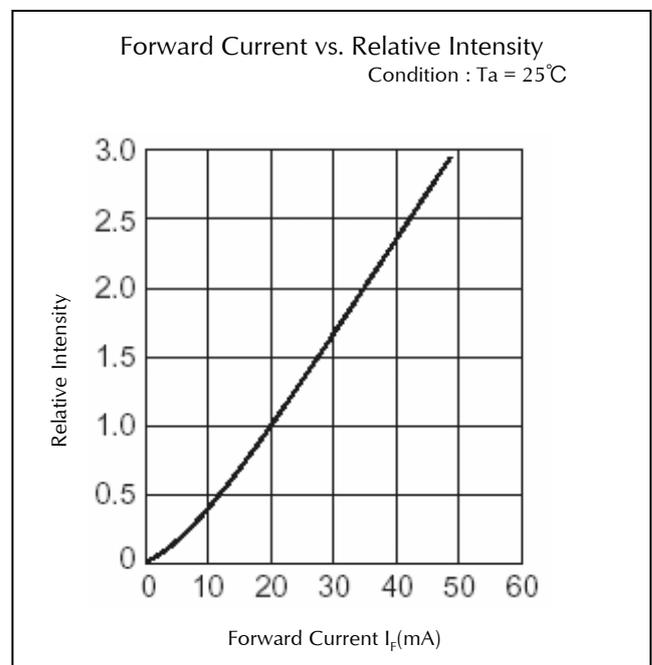
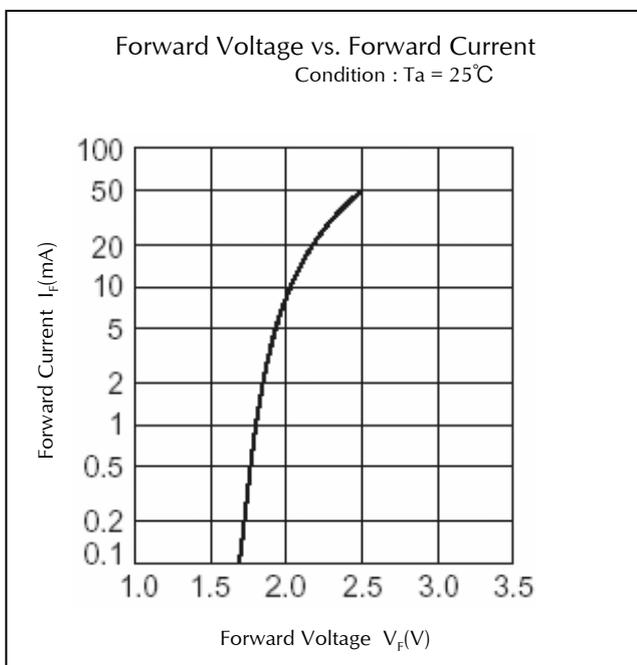
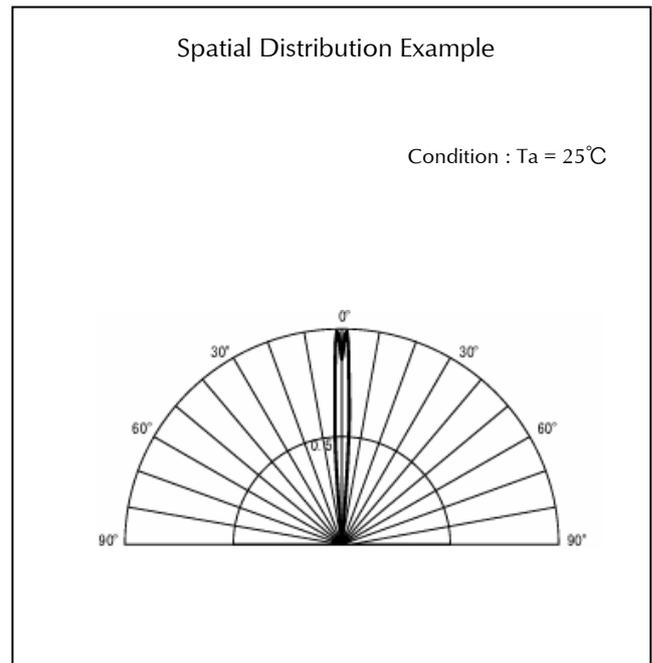
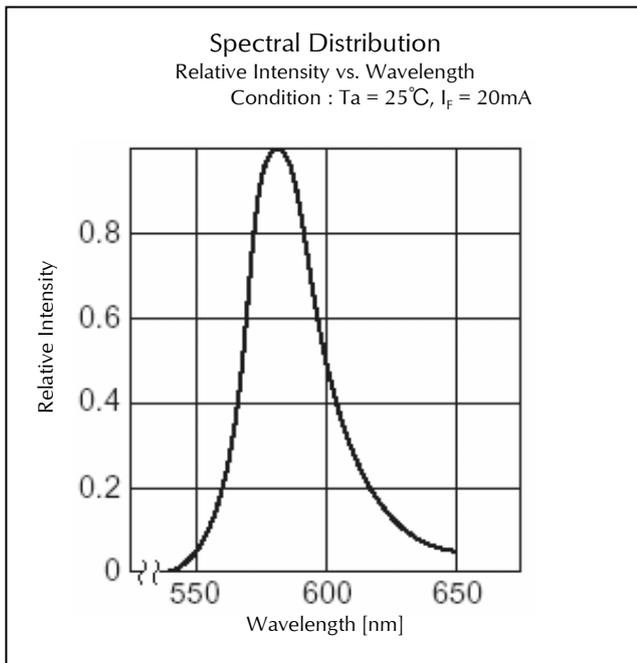
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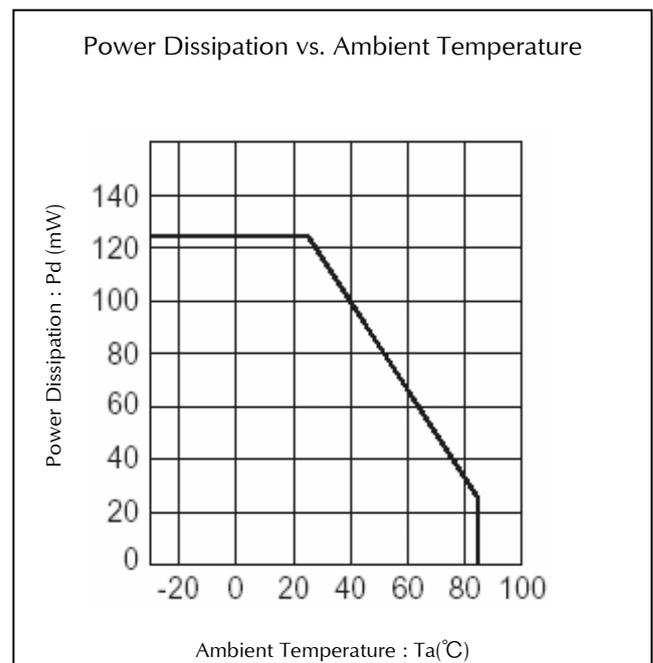
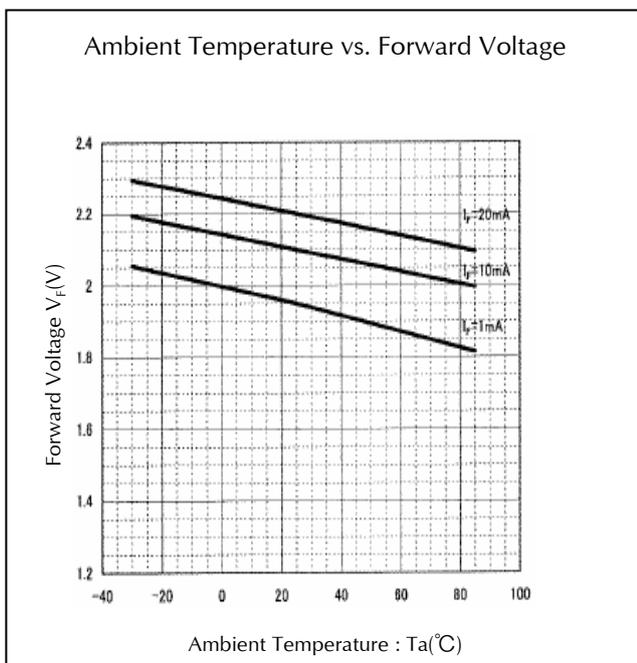
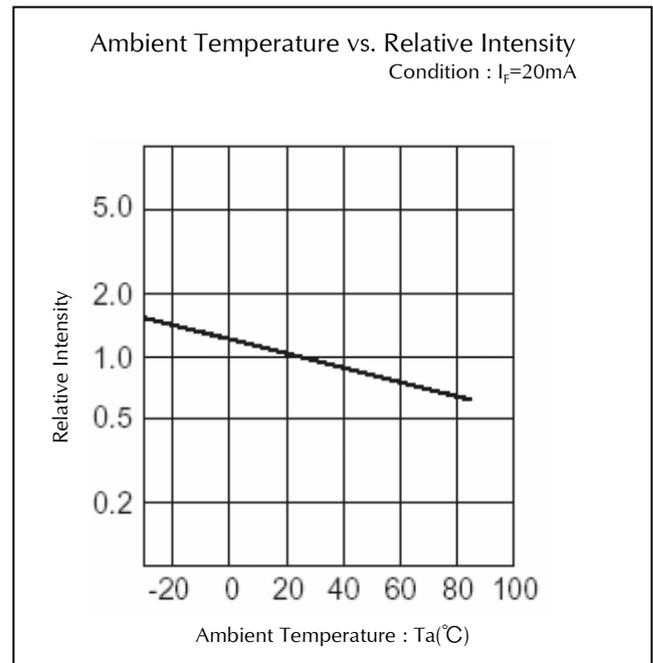
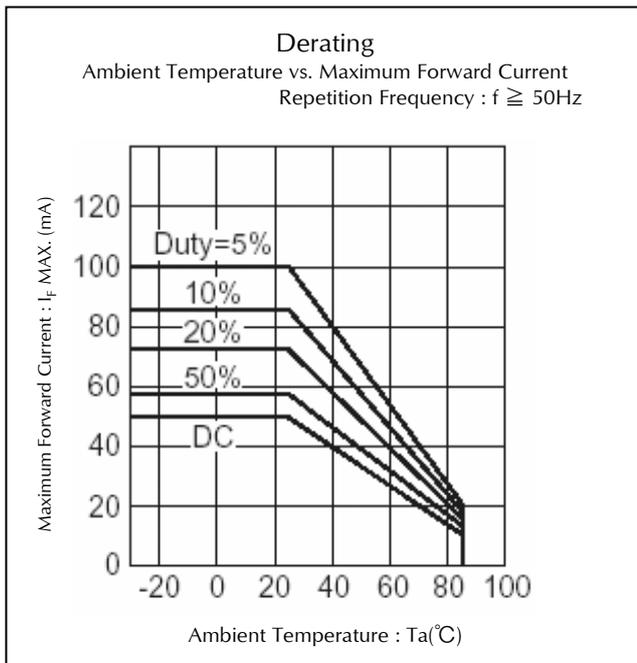
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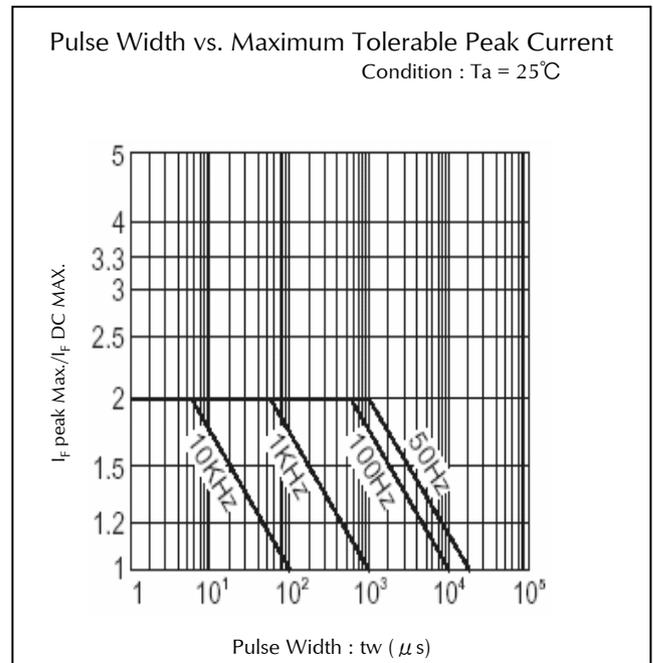
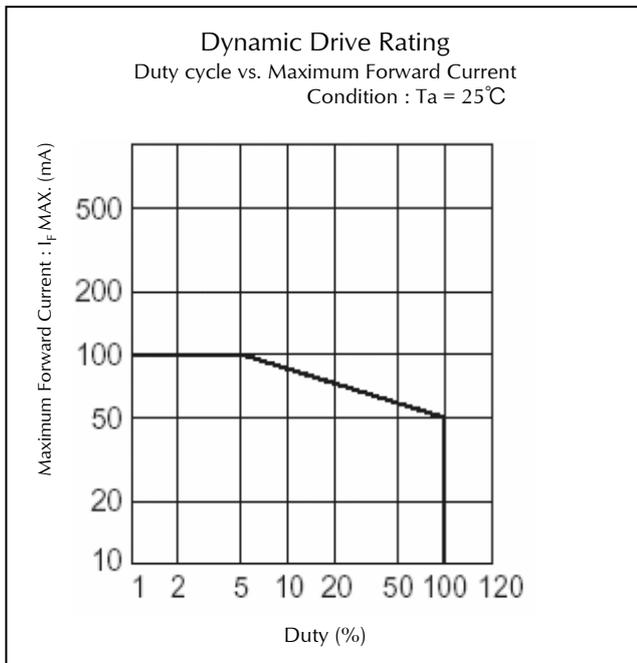
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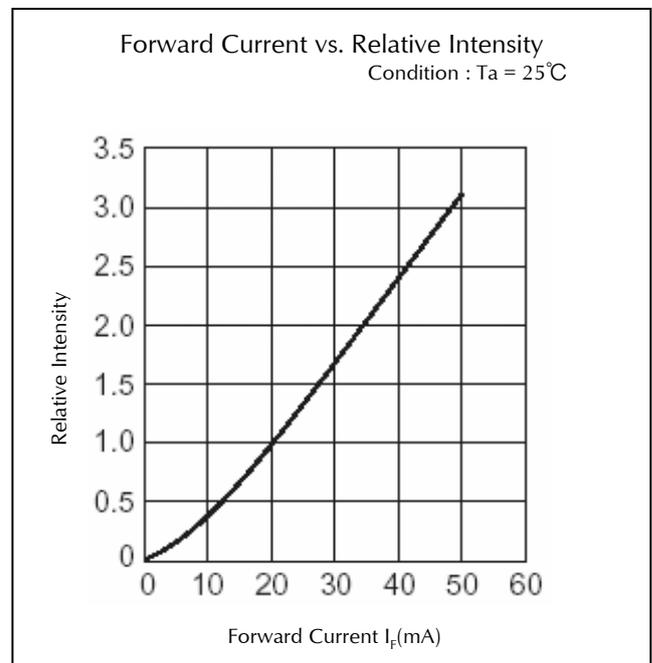
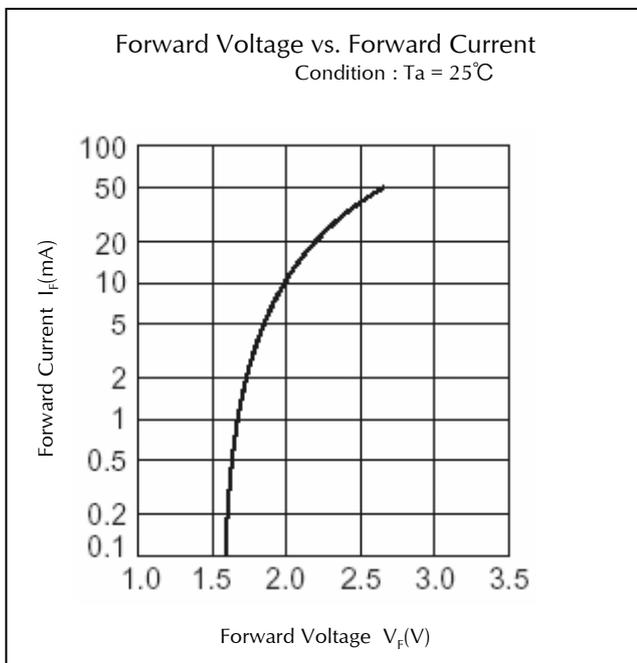
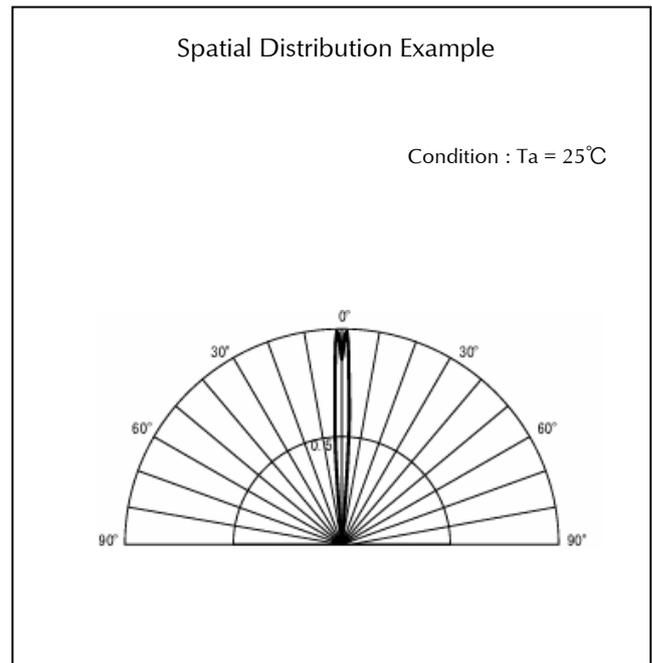
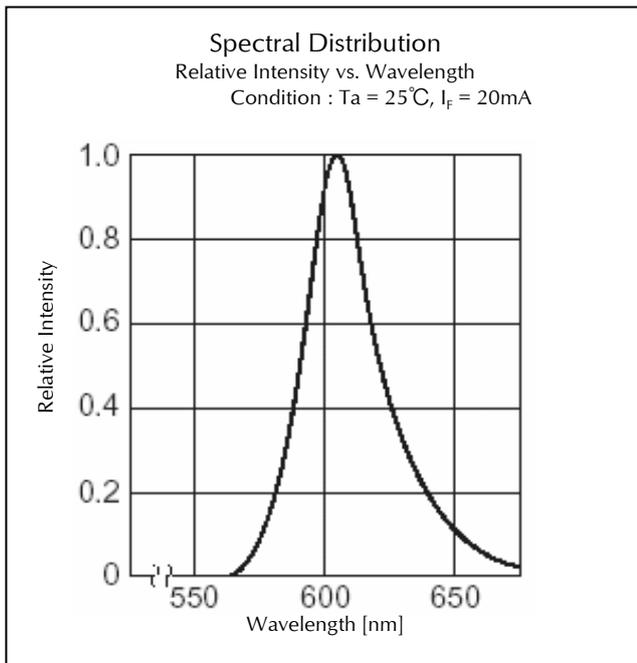
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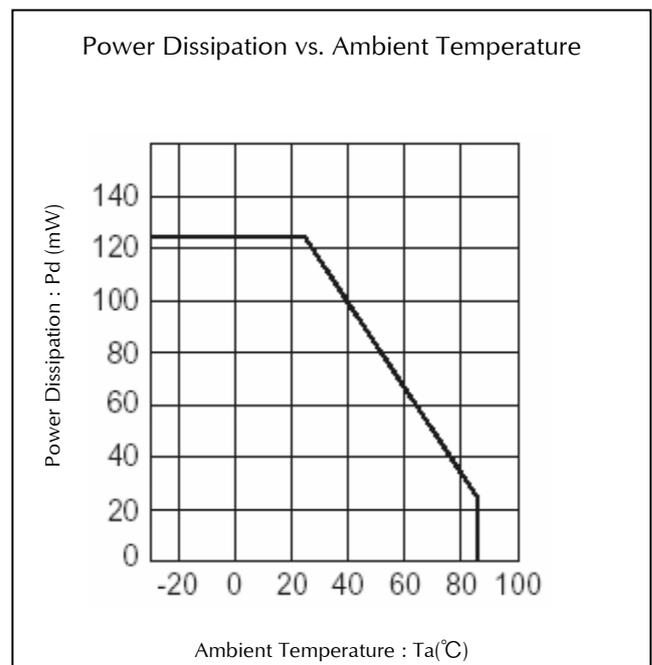
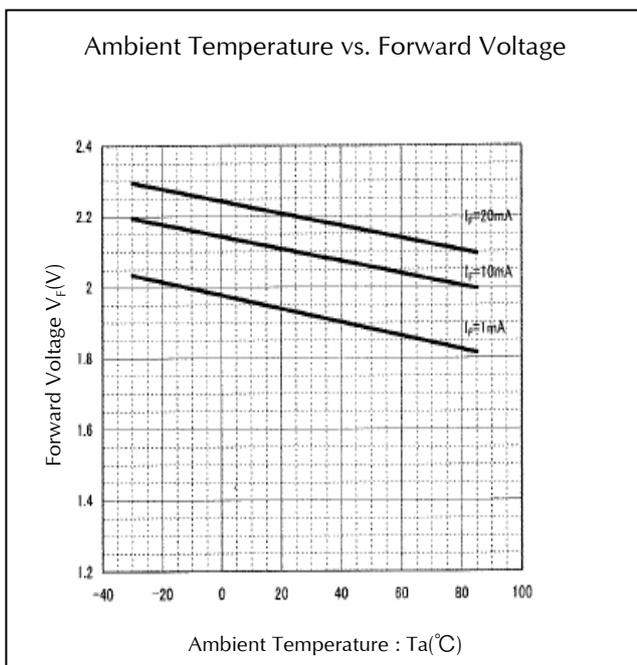
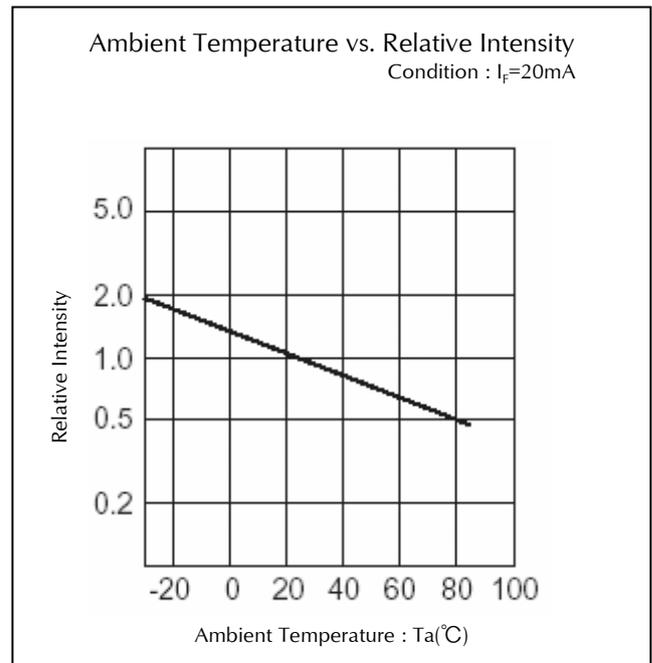
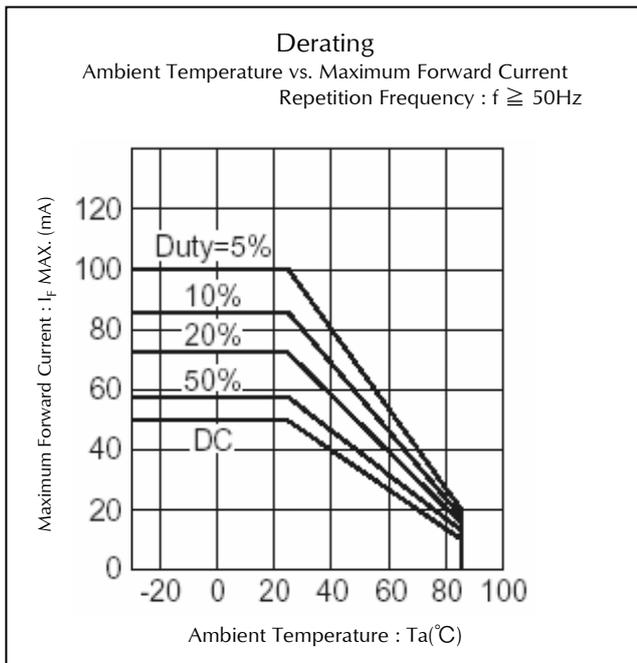
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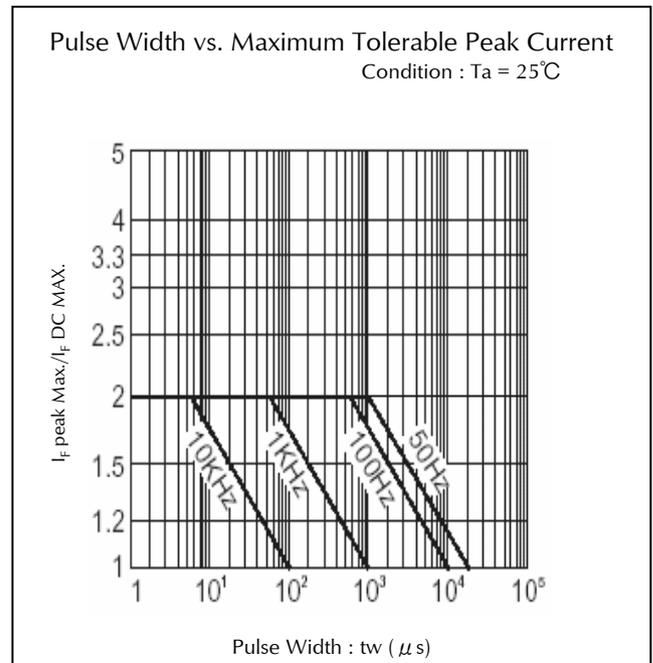
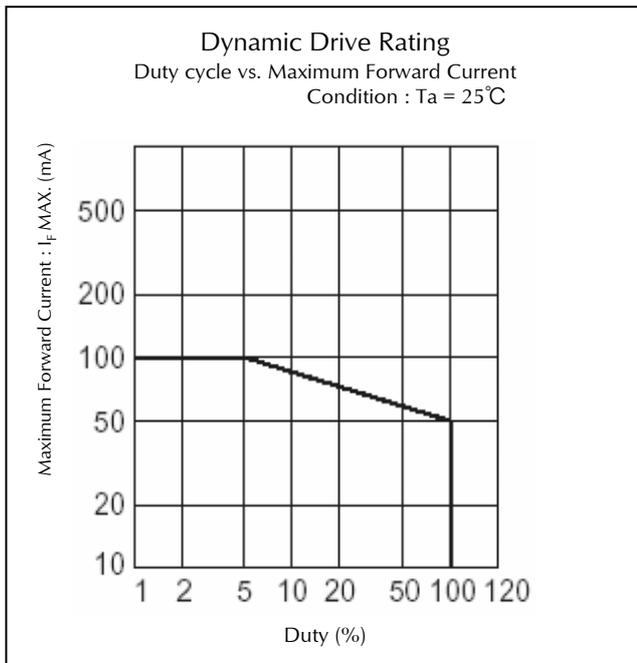
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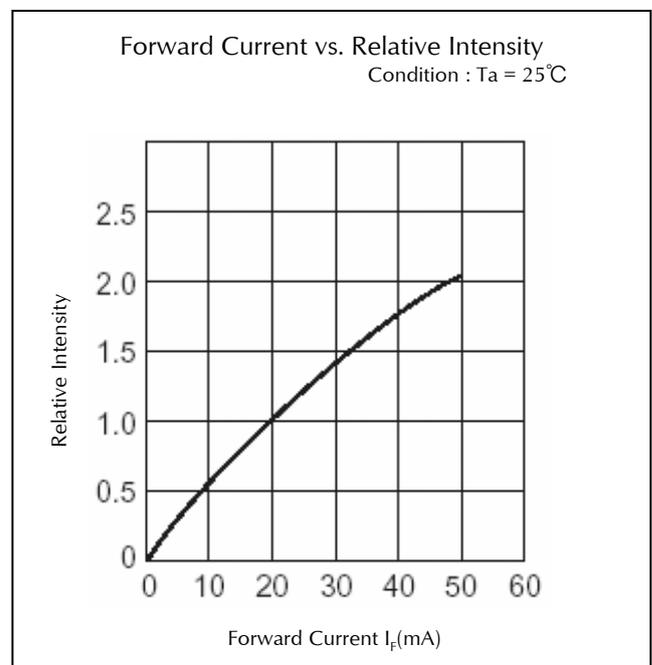
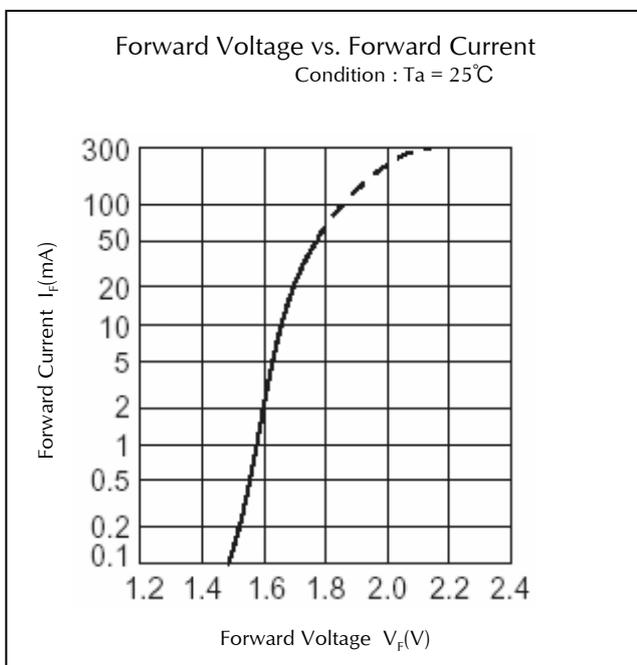
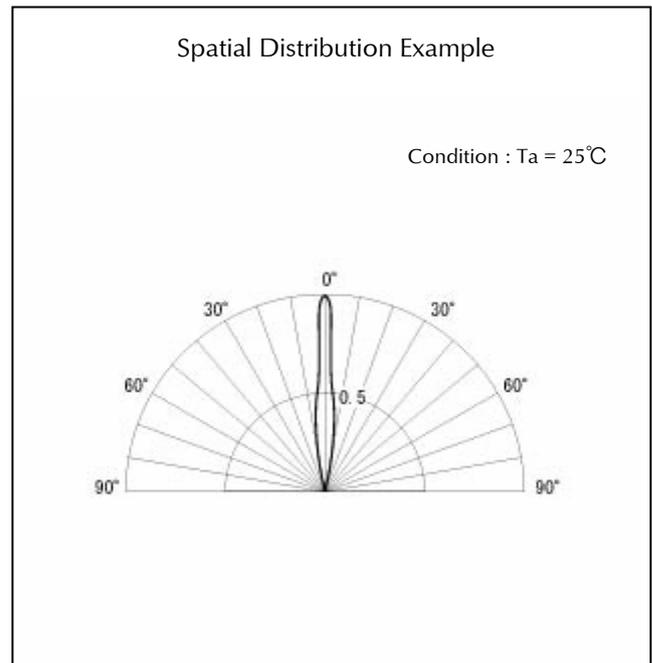
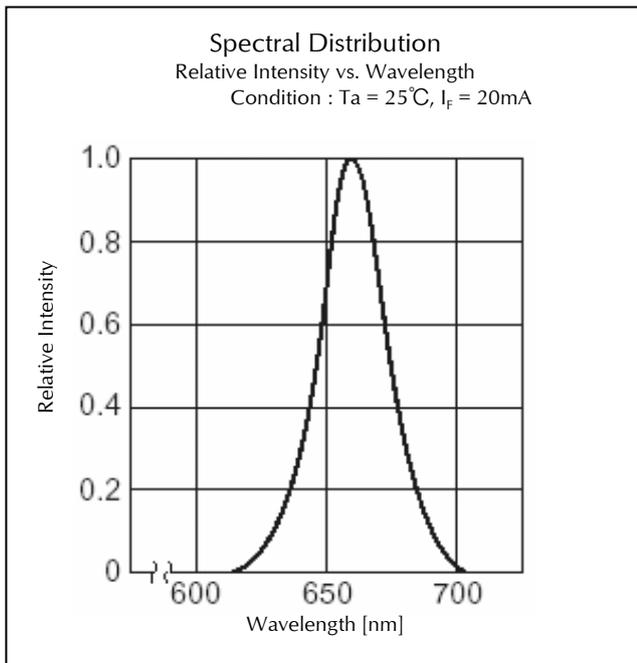
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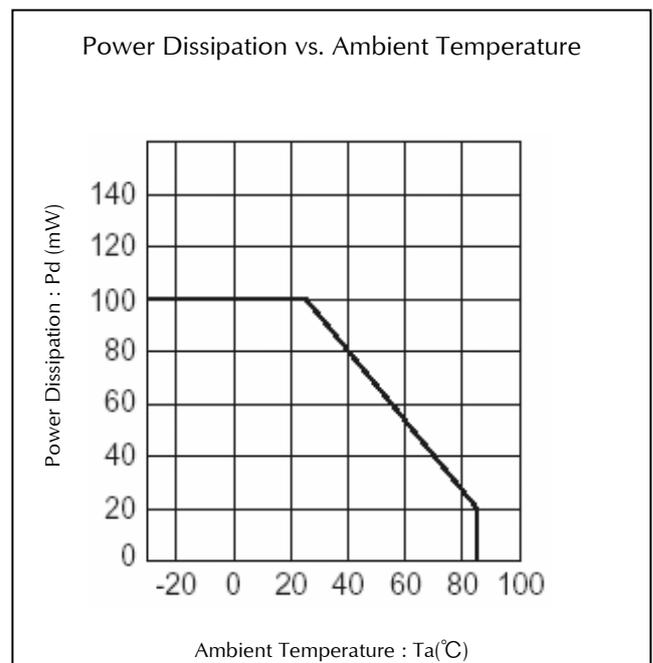
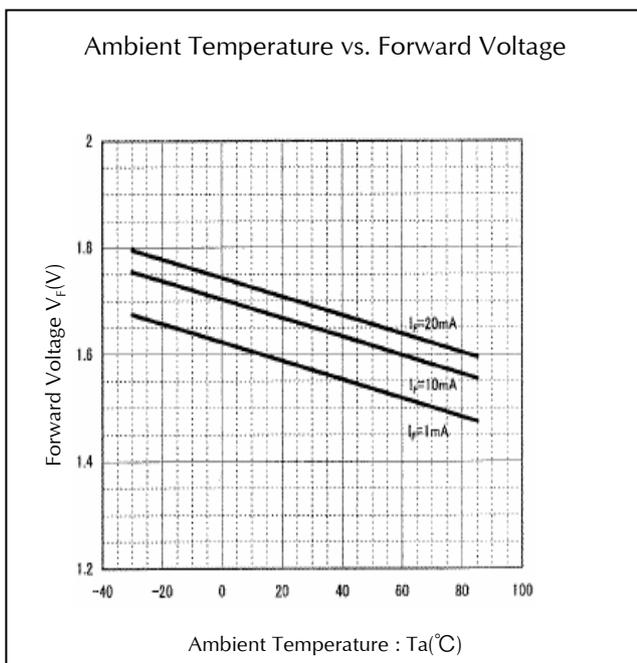
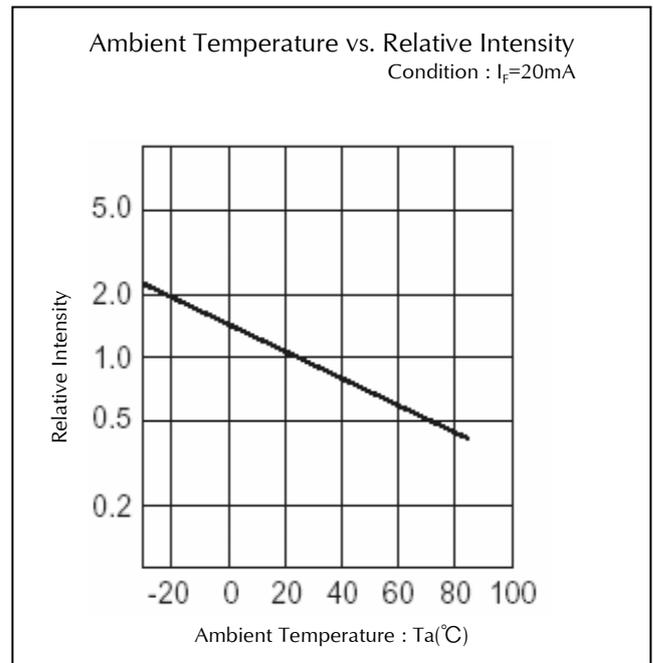
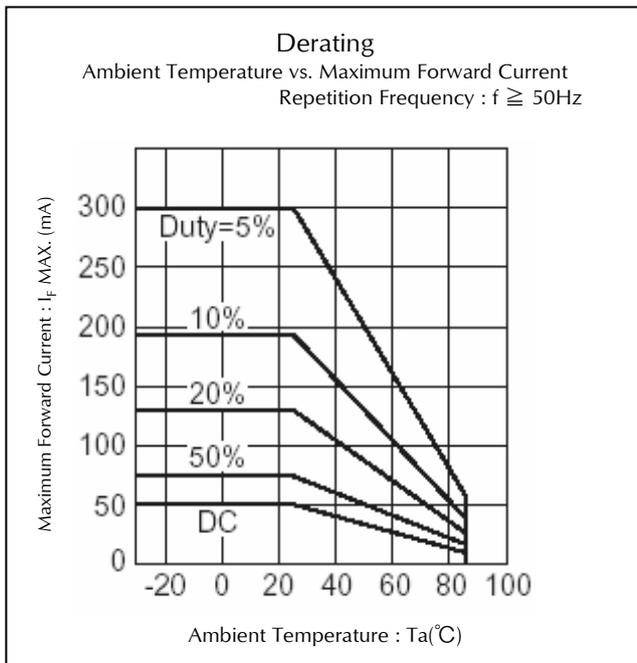
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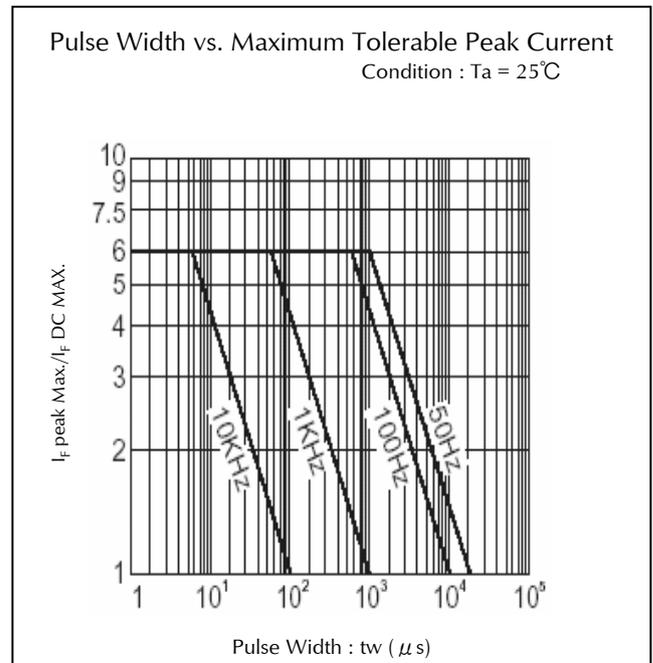
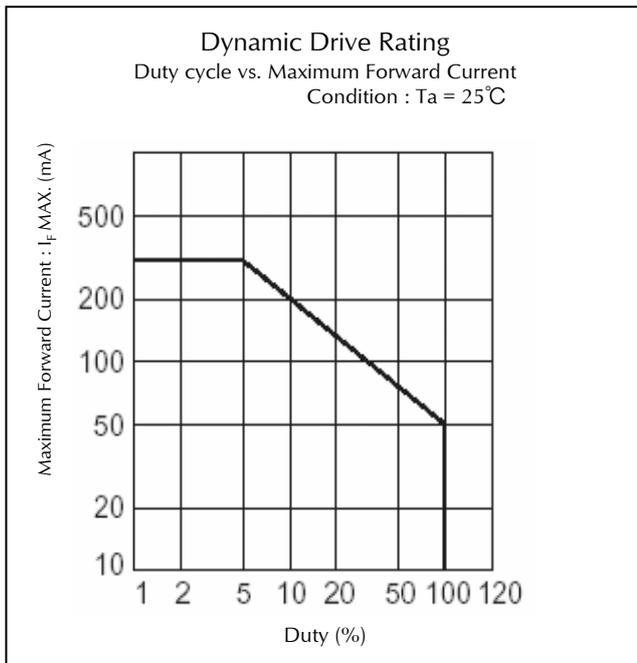
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Technical Data(HBR)

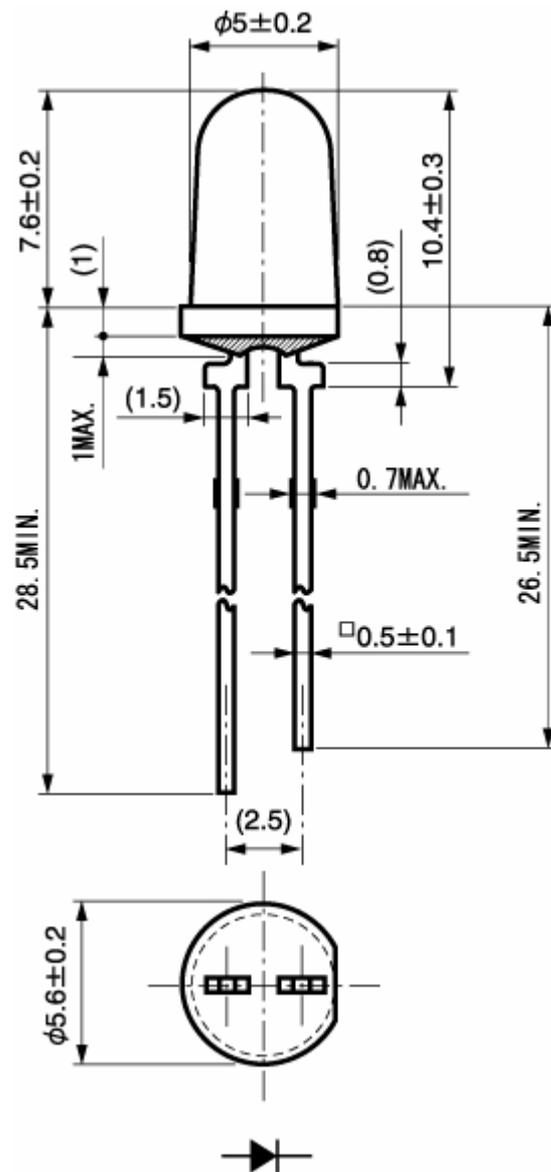


Technical Data(HBR)



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 | 10sec | 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) | 10sec | 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 | - | - | No notable, decoloration, deformation and cracking |

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