

Pb-free
HEAT

STANLEY

G□□3809X

φ3 Flush Mount Type LED

Features

| | |
|--------------------------|---|
| Package | φ3 Flush Mount Type. Water clear resin |
| Product features | <ul style="list-style-type: none"> • Outer Dimension φ3 Flush Mount Type. • Low power consumption type (recommended operating conditions: $I_f=5\text{mA}$) • Operation temperature range Storage Temperature Operating Temperature • Lead-free soldering compatible • RoHs compliant |
| Chromaticity coordinates | $x = 0.31\text{TYP.}, y = 0.32\text{TYP. (GSW)}$ |
| Dominant wavelength | Blue : 470nm(GSB) Green : 525nm(GSG) |
| Spatial distribution | GSW : 100deg. GSB : 90deg. GSG : 90deg. |
| Die materials | InGaN |
| Rank grouping parameter | Sorted by luminous intensity rank and chromaticity rank (GSW) Sorted by luminous intensity rank (GSB,GSG) |
| Soldering methods | TTW (Through The Wave) soldering and manual soldering |
| ESD-withstand voltage | Up to 1kV (HBM) |
| Packing | Bulk : 200pcs(MIN.) |

Recommended Applications

Amusement Equipment, OA/FA, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

| Part No. | Material | Emitted Color | Lens Color | Chromaticity Coordinates x,y | | Dominant Wavelength λd (nm) | | Luminous Intensity Iv (mcd) | | |
|----------|----------|---------------|-------------|---------------------------------|---------------------|--------------------------------|---------------------|--------------------------------|------|---------------------|
| | | | | TYP. | I _F (mA) | TYP. | I _F (mA) | MIN. | TYP. | I _F (mA) |
| GSW3809X | InGaN | White | Water Clear | 0.31,0.32 | 5 | — | — | 100 | 200 | 5 |
| GSB3809X | | Blue | | — | — | 470 | 5 | 35 | 75 | 5 |
| GSG3809X | | Green | | — | — | 530 | 5 | 90 | 180 | 5 |

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | | | Unit |
|---------------------------------|------------------|--------------------------|-------|-------|-------|
| | | GSW | GSB | GSG | |
| Power Dissipation | P_d | 36 | 38 | 38 | mW |
| Forward Current | I_F | 10 | 10 | 10 | mA |
| Pulse Forward Current ※1 | I_{FRM} | 20 | 20 | 20 | mA |
| Derating (Ta=25°C or higher) | ΔI_F | 0.133 | 0.133 | 0.133 | mA/°C |
| | ΔI_{FRM} | 0.267 | 0.267 | 0.267 | mA/°C |
| Reverse Voltage | V_R | 5 | | | V |
| Operating Temperature | T_{opr} | -40 ~ +85 | | | °C |
| Storage Temperature | T_{stg} | -40 ~ +100 | | | °C |

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

Electro-Optical Characteristics

(Ta=25°C)

| Item | Condition | Symbol | Characteristics | | | Unit | |
|--------------------------|-----------|-----------------|-----------------|------|-----|------|------|
| | | | GSW | GSB | GSG | | |
| Forward Voltage | $I_F=5mA$ | V_F | TYP. | 2.9 | 3.0 | 3.0 | V |
| | | | MAX. | 3.3 | 3.5 | 3.5 | |
| Reverse Current | $V_R=5V$ | I_R | MAX. | 100 | 100 | 100 | μA |
| Chromaticity Coordinates | $I_F=5mA$ | x | TYP. | 0.31 | - | - | - |
| | | y | TYP. | 0.32 | - | - | - |
| Peak Wavelength | $I_F=5mA$ | λ_p | TYP. | - | 465 | 520 | nm |
| Dominant Wavelength | $I_F=5mA$ | λ_d | TYP. | - | 470 | 525 | nm |
| Spectral Line Half Width | $I_F=5mA$ | $\Delta\lambda$ | TYP. | - | 25 | 35 | nm |
| Half Intensity Angle | $I_F=5mA$ | 2θ1/2 | TYP. | 100 | 90 | 90 | deg. |

Luminous Intensity Rank

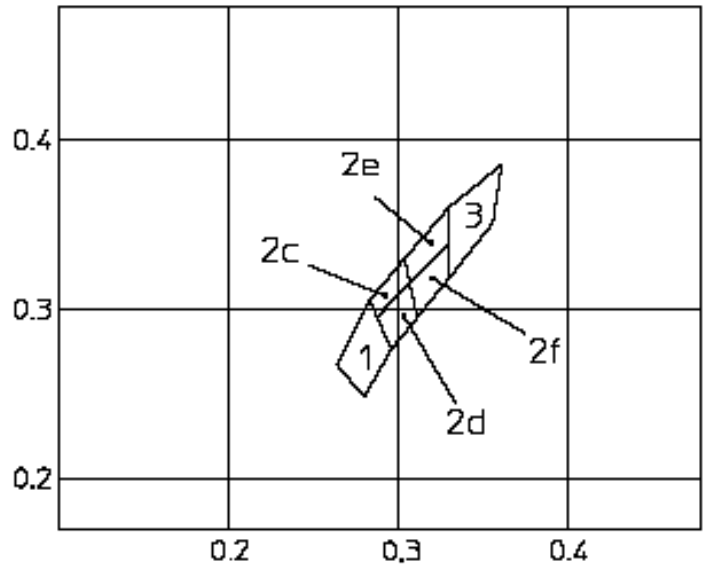
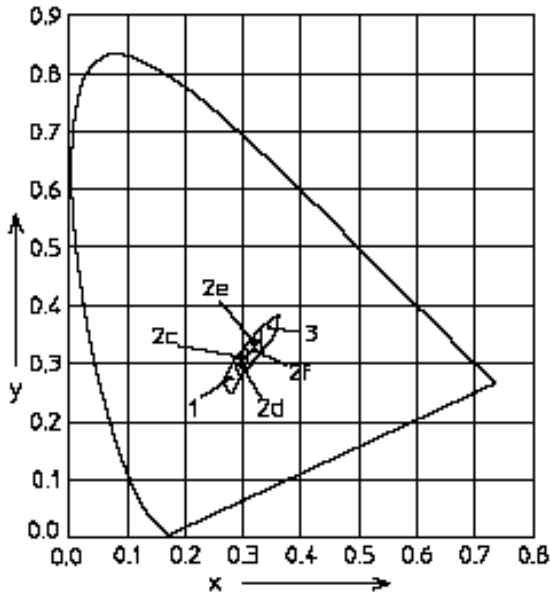
(Ta=25°C)

| Rank | I _v (mcd) | | | | | | | |
|------|----------------------|------|---------------------|------|---------------------|------|---------------------|------|
| | GSW | | GLW | | GSB | | GSG | |
| | I _F =5mA | | I _F =5mA | | I _F =5mA | | I _F =5mA | |
| | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| A | 100 | 200 | 15 | 30 | 30 | 60 | 90 | 180 |
| B | 140 | 280 | 21 | 42 | 42 | 84 | 130 | 260 |
| C | 200 | 400 | 30 | 60 | 60 | 120 | 180 | 360 |
| D | 280 | 560 | 42 | 84 | 84 | 168 | 260 | 520 |
| E | 400 | - | 60 | - | 120 | - | 360 | - |

※Please contact our sales staff concerning rank designation.

Sorting Chart for Chromaticity Coordinates (GSW)

(Ta=25°C)

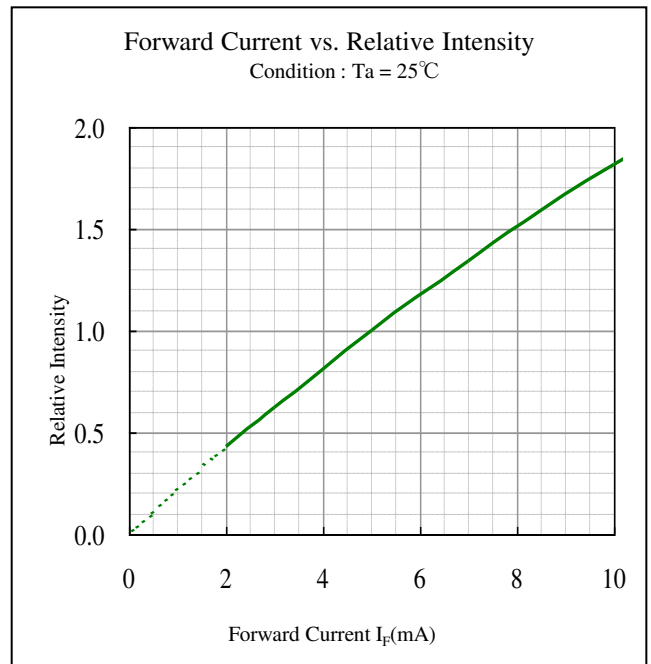
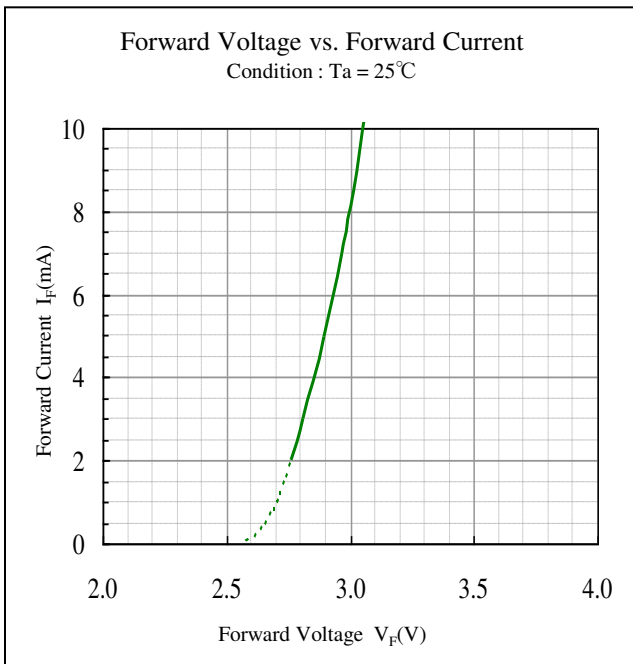
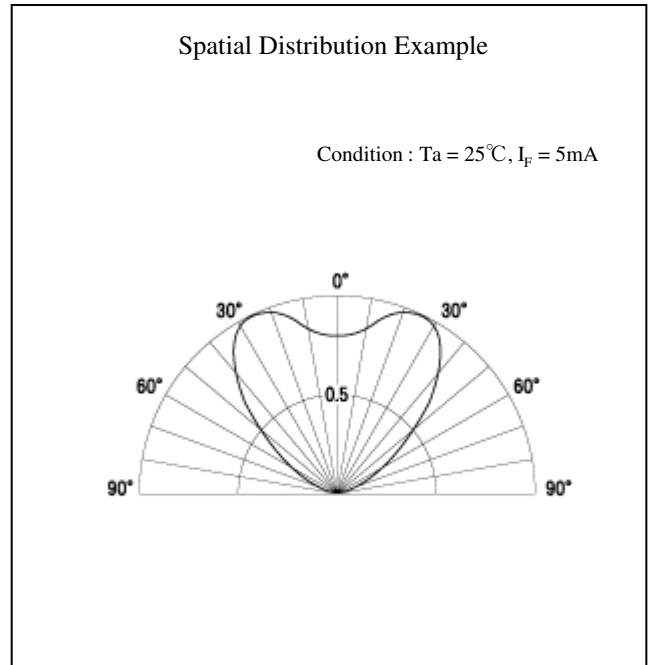
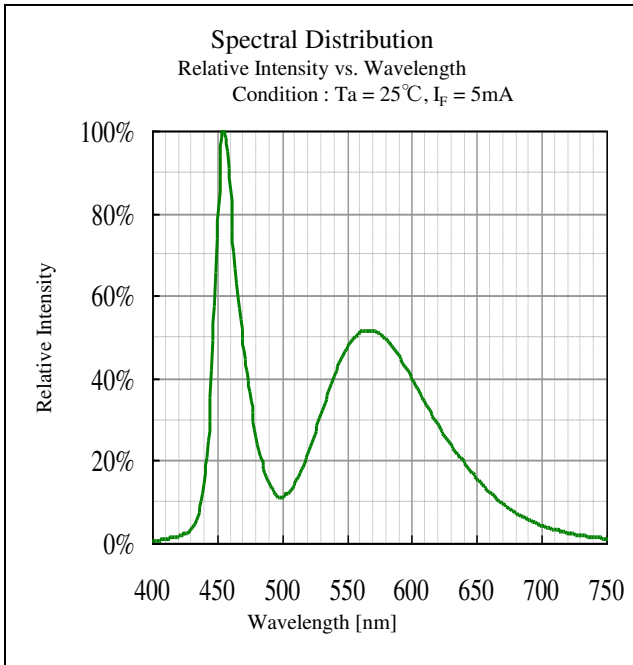


| Rank | LEFT DOWN point | | LEFT UP point | | RIGHT UP point | | RIGHT UP point | | Conditions |
|------|-----------------|-------|---------------|-------|----------------|-------|----------------|-------|---------------------|
| | x | y | x | y | x | y | x | y | |
| 1 | 0.280 | 0.248 | 0.264 | 0.267 | 0.283 | 0.305 | 0.296 | 0.276 | I _F =5mA |
| 2c | 0.287 | 0.295 | 0.283 | 0.305 | 0.304 | 0.330 | 0.307 | 0.315 | |
| 2d | 0.296 | 0.276 | 0.287 | 0.295 | 0.307 | 0.315 | 0.311 | 0.294 | |
| 2e | 0.307 | 0.315 | 0.304 | 0.330 | 0.330 | 0.360 | 0.330 | 0.339 | |
| 2f | 0.311 | 0.294 | 0.307 | 0.315 | 0.330 | 0.339 | 0.330 | 0.318 | |
| 3 | 0.330 | 0.318 | 0.330 | 0.360 | 0.361 | 0.385 | 0.356 | 0.351 | |

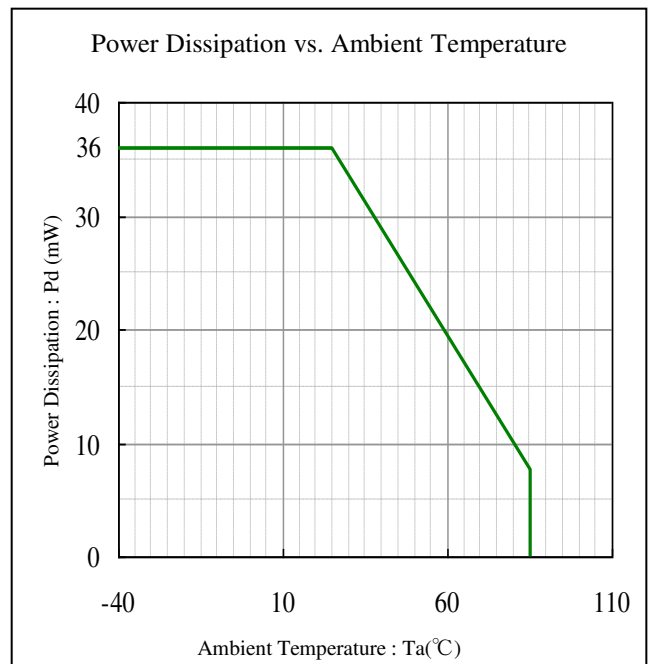
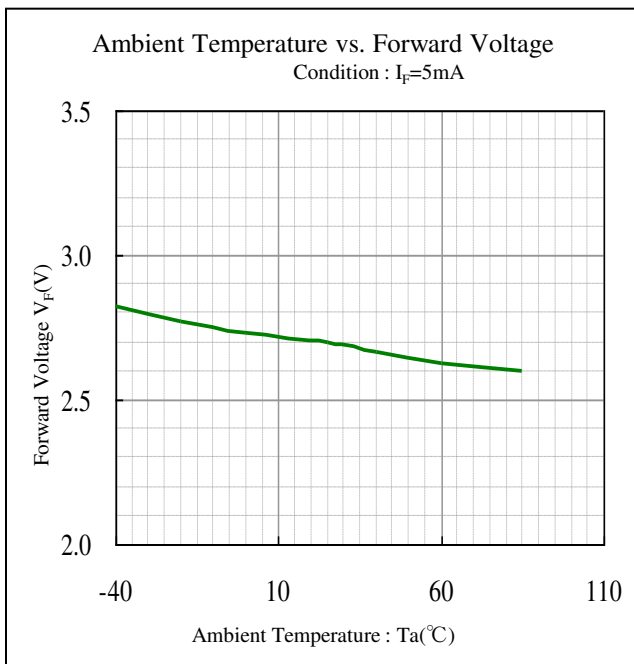
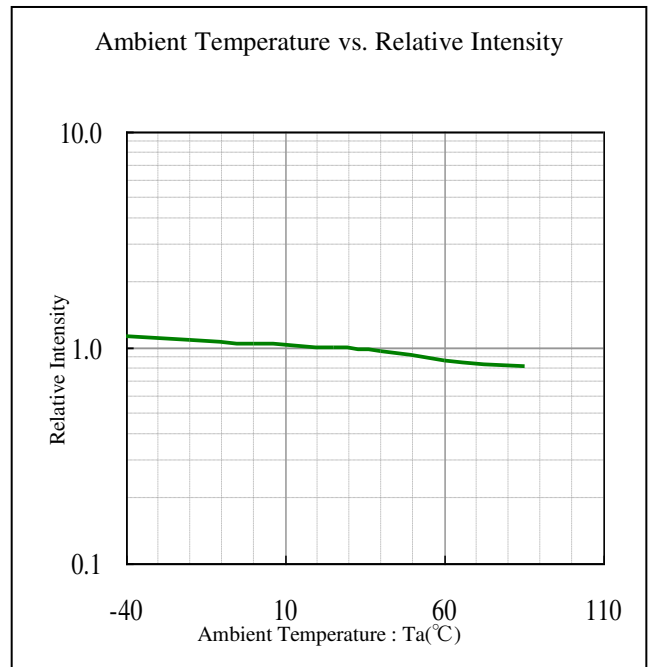
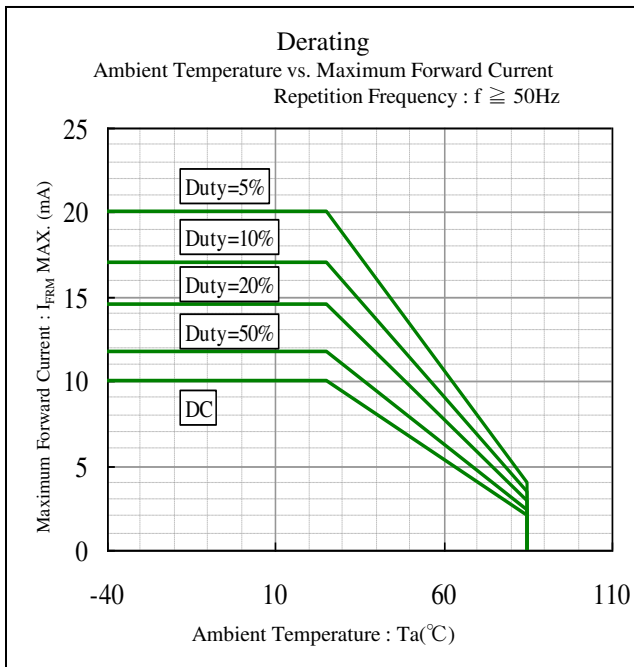
Chromaticity Coordinates Tolerance Each Rank : +/-0.02

※Please contact our sales staff concerning rank designation.

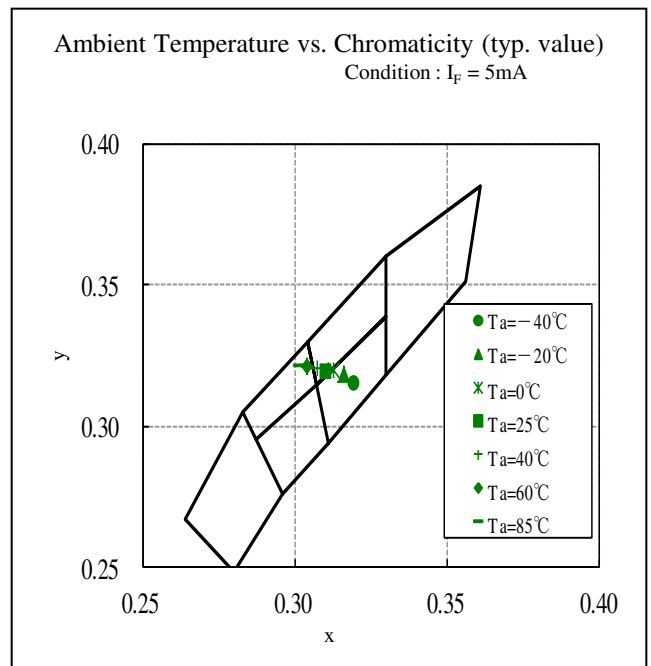
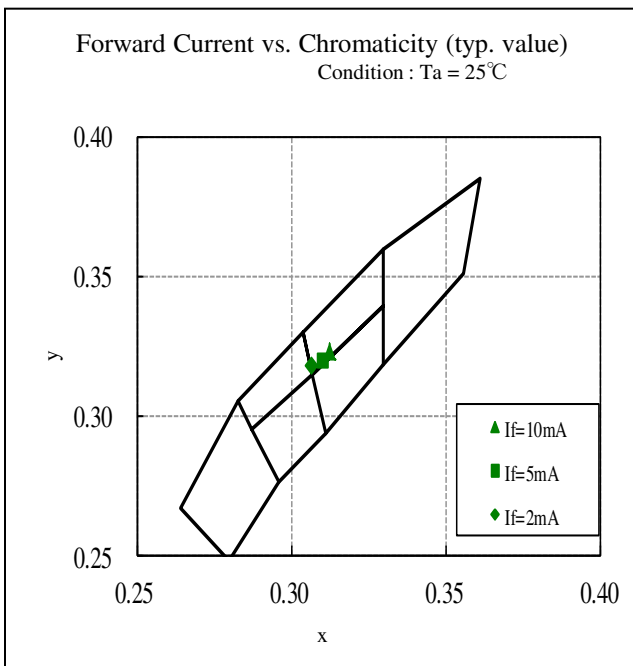
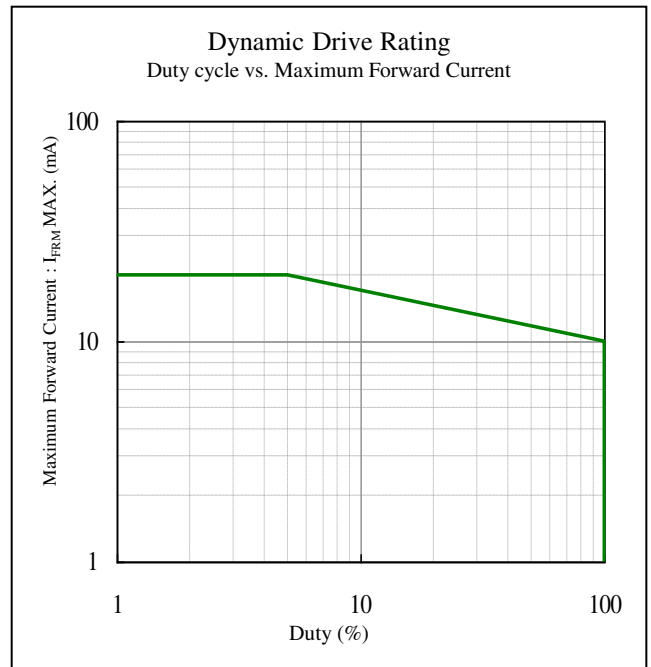
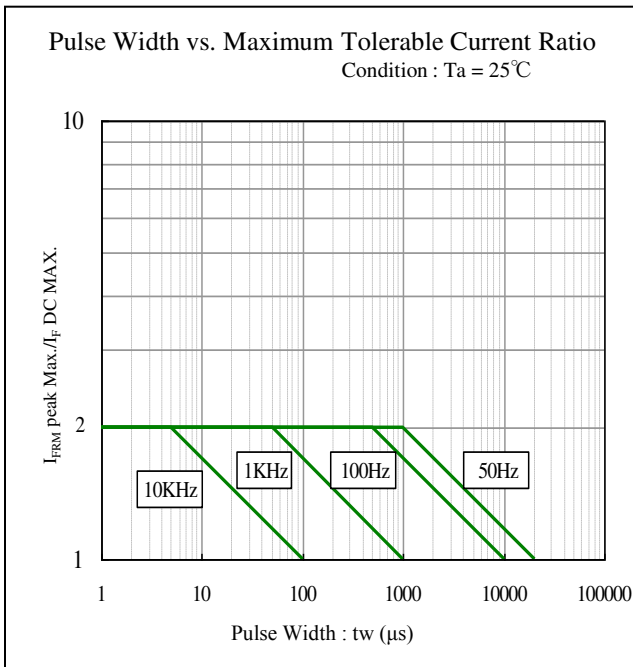
Technical Data (GSW)



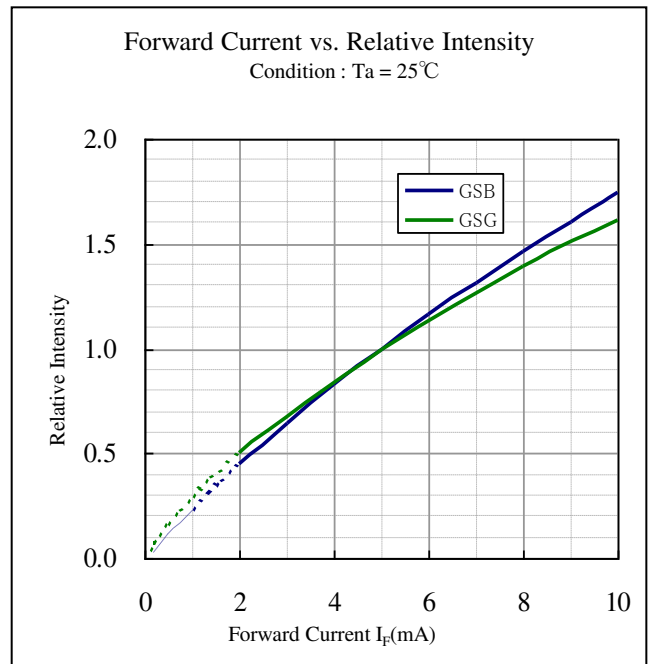
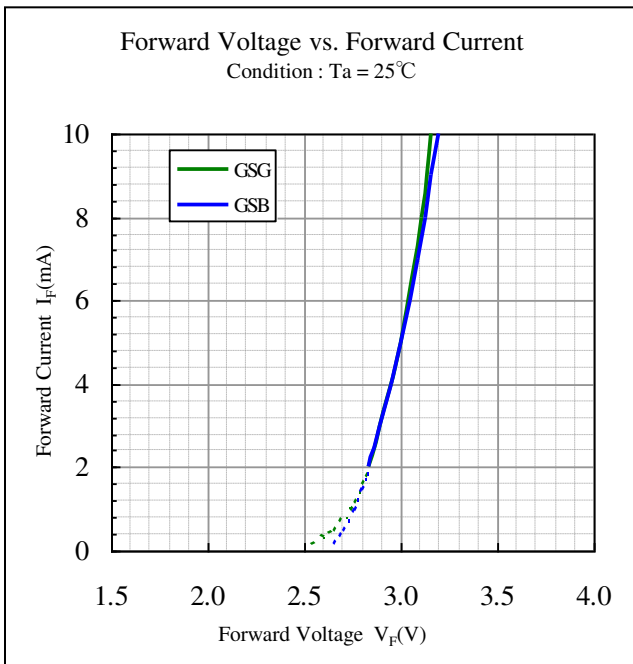
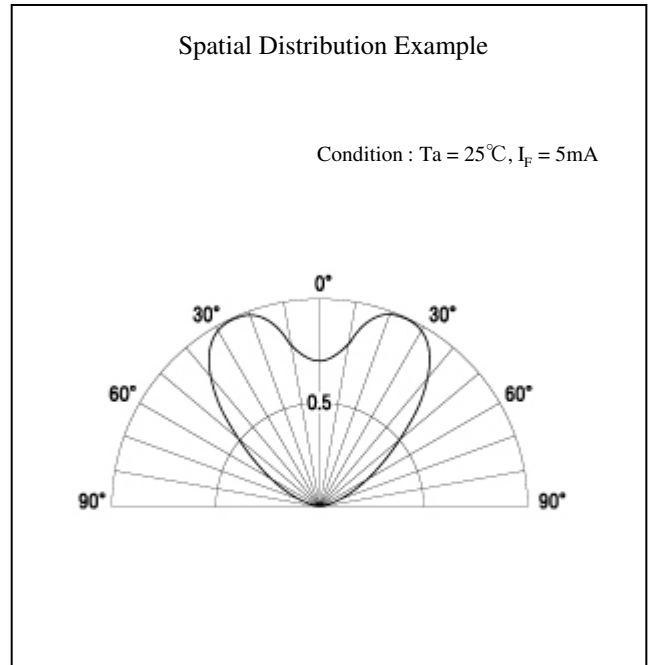
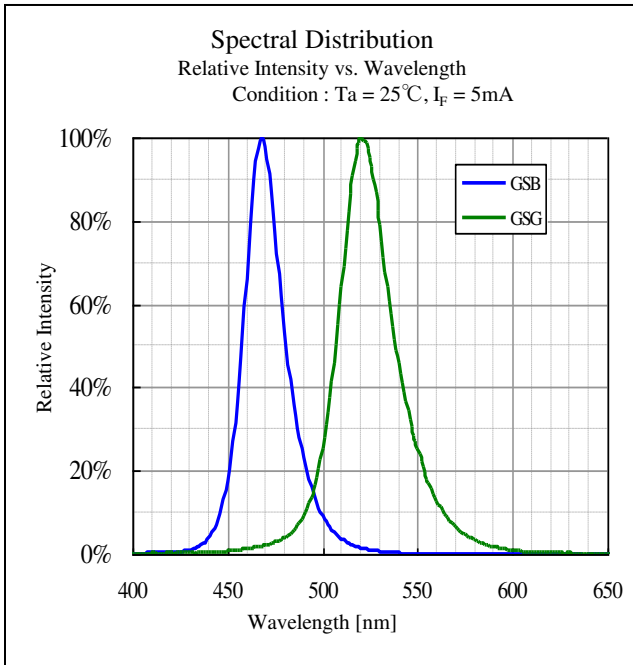
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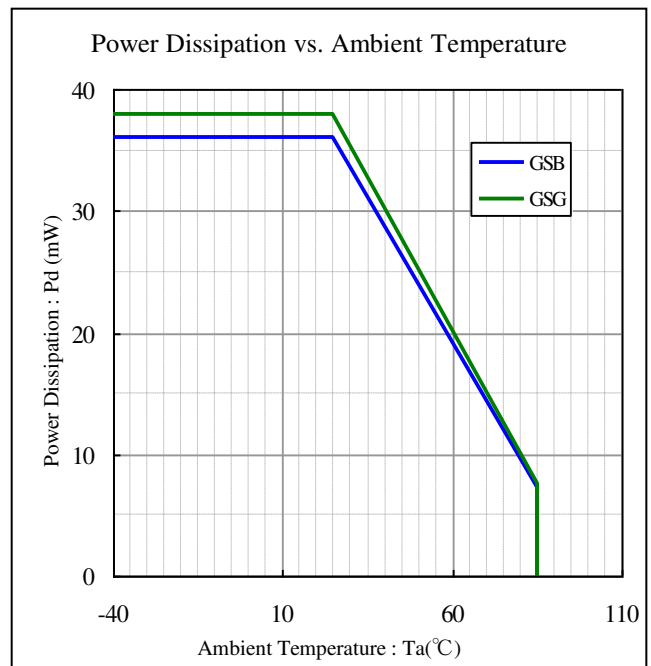
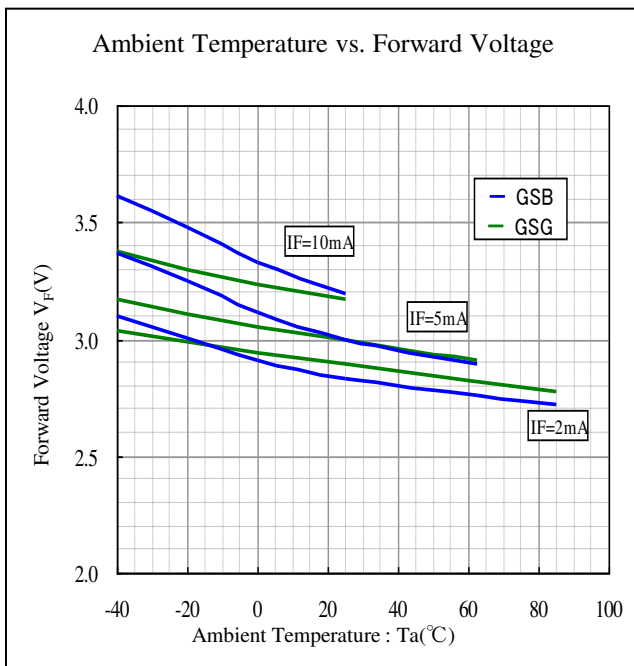
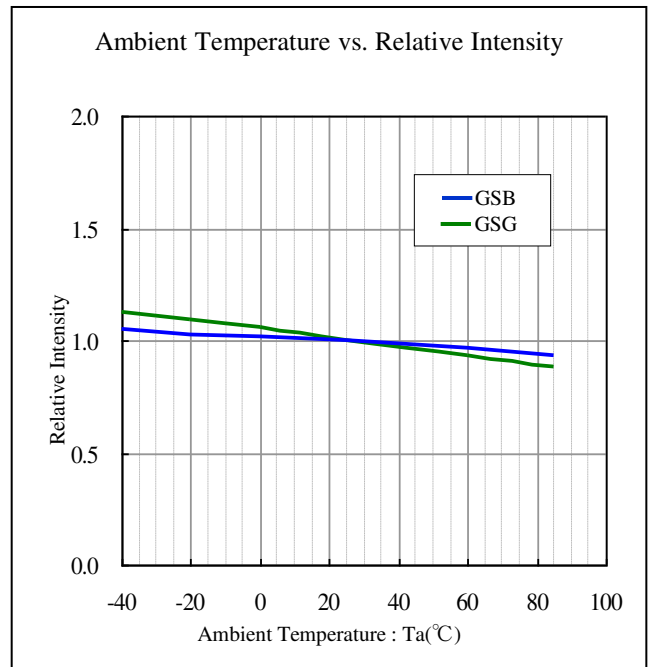
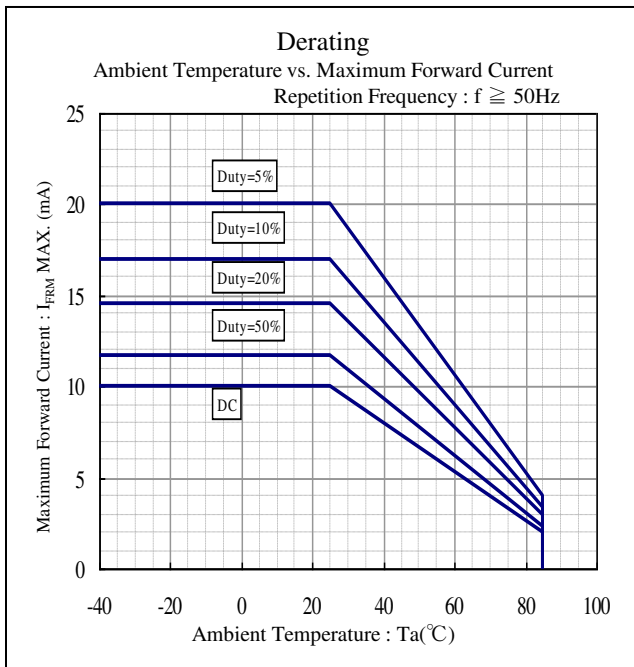
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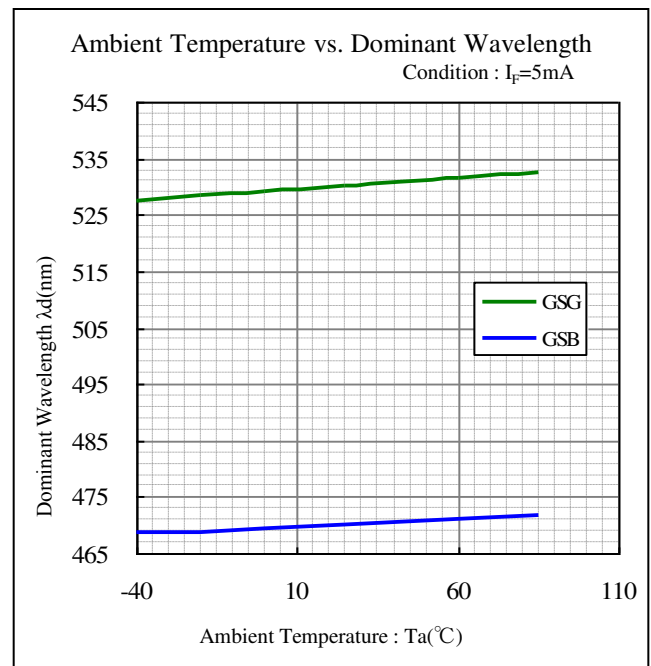
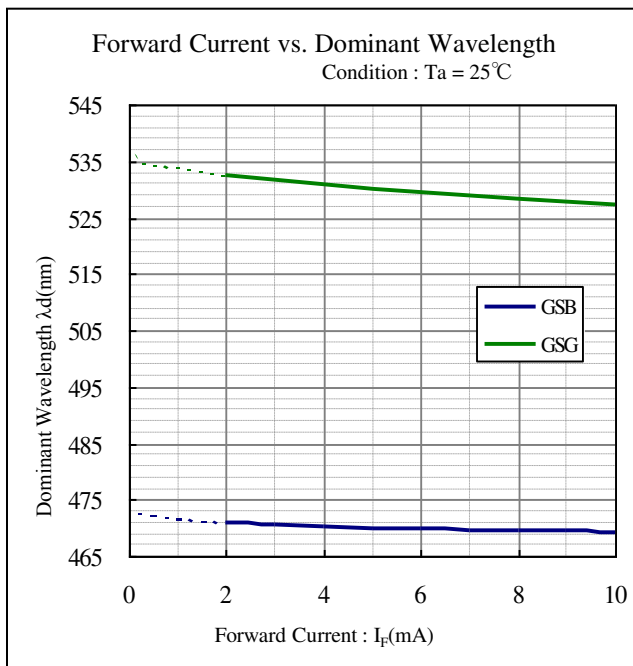
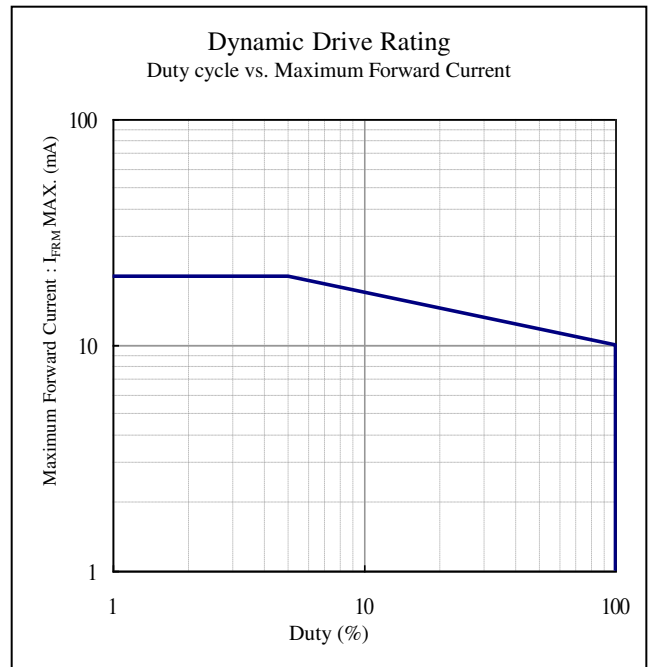
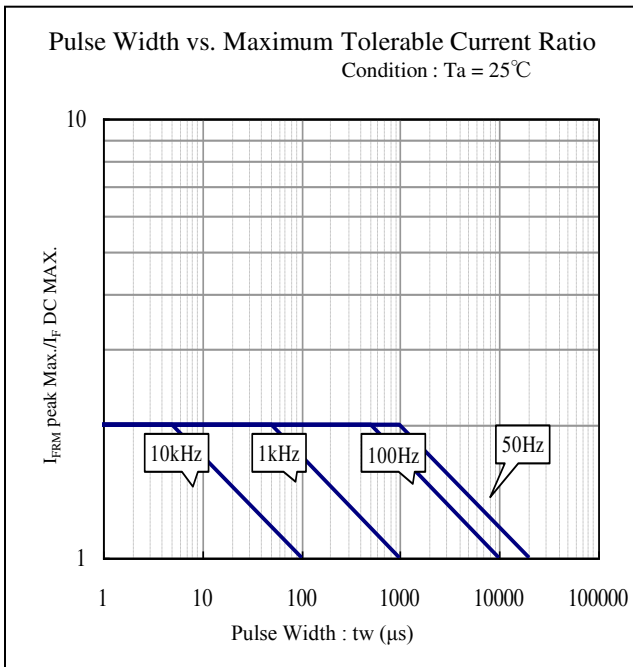
Technical Data (GSB,GSG)



Technical Data (GSB,GSG)



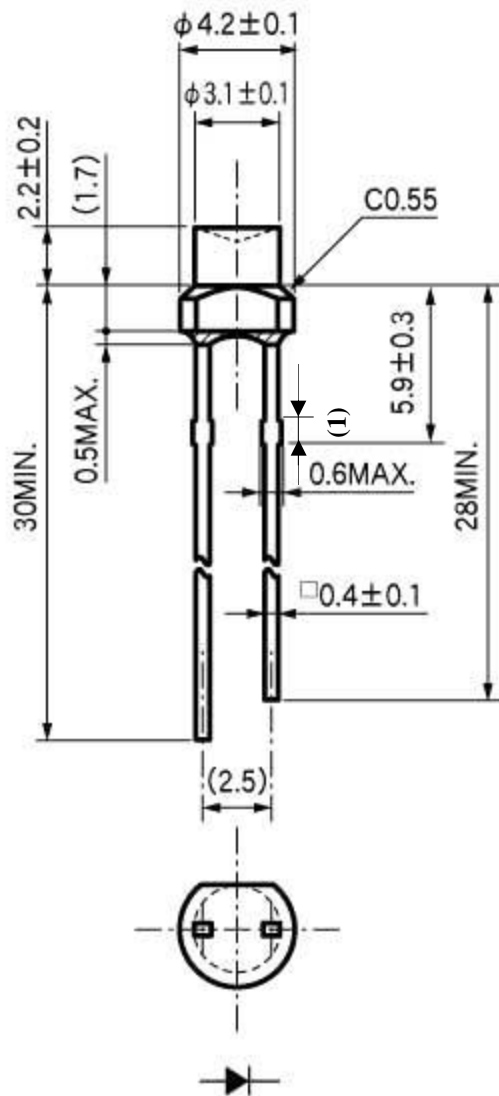
Technical Data (GSB,GSG)



Package Dimensions

(Unit: mm)

Weight: (0.16)g



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. | 360°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, 1.6mm 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 | VF | IF Value of each product Forward Voltage | Testing Max. Value ≥ Spec. Max. Value x 1.2 |
| Reverse Current | IR | VR = 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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