

**Pb-free
HEAT**



H□W1142L□ Series

Right Angle Type White LED

Features

| | |
|--------------------------|---|
| Package | Right Angle Type, Diffused pale yellow resin |
| Product features | <ul style="list-style-type: none"> • Outer Dimension 2.8 x 1.2 x 0.8mm (L x W x H) • Temperature range Storage Temperature : -40°C~100°C Operating Temperature : -30°C~85°C • Lead-free soldering compatible • RoHS compliant |
| Chromaticity coordinates | x = 0.299YP., y = 0.296TYP. (Condition : I _F =20mA) |
| Spatial distribution | $\theta_x = 110 \text{ deg.}, \theta_y = 105 \text{ deg.}$ |
| Die materials | InGaN |
| Rank grouping parameter | Sorted by luminous intensity and chromaticity per rank taping |
| Assembly method | Auto pick & place machine (Auto Mounter) |
| Soldering methods | Recommendation of Reflow soldering / Flow Soldering (Dip Soldering) is impossible. |
| Taping and reel | 3,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: ϕ 180mm |
| ESD | 1kV (HBM) |

Recommended Applications

Cellular Phone, Mobile Equipment, Electric Household Appliances, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

| Part No. | Material | Emitted Color | Lens Color | Luminous Intensity | | | Luminous Flux | |
|-----------|----------|---------------|-------------|----------------------|-------|----------------|---------------------|----------------|
| | | | | I _v (mcd) | | | φ _v (lm) | |
| | | | | MIN. | TYP. | I _f | TYP. | I _f |
| HKW1142LT | InGaN | White | Pale Yellow | 1,440 | 1,720 | 20 | 4.2 | 20 |
| HEW1142LS | InGaN | White | Pale Yellow | 860 | 1,200 | 20 | 3.2 | 20 |

※Note : The above luminous intensity(I_v) is the setup values of the sorting machine.
 (Tolerance : I_v...±10%)

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | | Unit |
|---------------------------------|------------------|--------------------------|------|-------|
| | | HKW | HEW | |
| Power Dissipation | P_d | 114 | 120 | mW |
| Forward Current | I_F | 30 | 30 | mA |
| Pulse Forward Current ※1 | I_{FRM} | 100 | 100 | mA |
| Derating (Ta=25°C or higher) | ΔI_F | 0.4 | 0.4 | mA/°C |
| | ΔI_{FRM} | 1.33 | 1.33 | mA/°C |
| Reverse Voltage | V_R | 5 | 5 | V |
| Operating Temperature | T_{opr} | -30~+85 | | °C |
| Storage Temperature | T_{stg} | -40~+100 | | °C |

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

Electro-Optical Characteristics

(Ta=25°C)

| Item | Condition | Symbol | Characteristics | | Unit | |
|--------------------------|----------------------|----------------|-----------------|----------|----------|------|
| | | | HKW | HEW | | |
| Forward Voltage※1 | I _F =20mA | V _F | TYP. | 3.2 | 3.2 | V |
| | | | MAX. | 3.5 | 3.7 | |
| Reverse Current | V _R =5V | I _R | MAX. | 50 | 50 | μ A |
| Half Intensity Angle | I _F =20mA | 2θ 1/2 | TYP. | 110(θ x) | 110(θ x) | deg. |
| | | | | 105(θ y) | 105(θ y) | |
| Chromaticity Coordinates | I _F =20mA | x | TYP. | 0.299 | 0.299 | - |
| | | y | TYP. | 0.296 | 0.296 | - |

※1 Forward Voltage Tolerance Range : ±0.1V

Luminous Intensity Rank (HKW)

(Ta=25°C)

| Rank | I _v (mcd) | | Condition |
|------|----------------------|-------|----------------------|
| | MIN. | MAX. | |
| VA | 1,440 | 1,580 | I _F =20mA |
| VB | 1,580 | 1,720 | |
| VC | 1,720 | 1,860 | |
| VD | 1,860 | 2,000 | |

Intensity Tolerance each Rank : +/-10%

Please contact our sales staff concerning rank designation.

Luminous Intensity Rank (HEW)

(Ta=25°C)

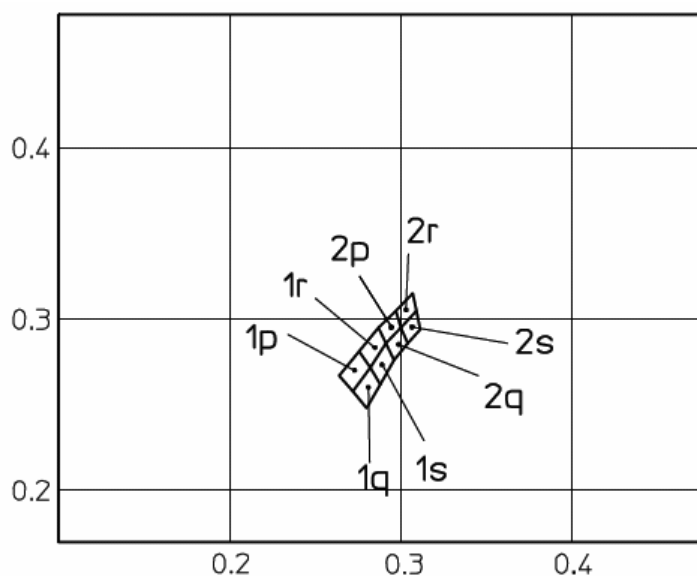
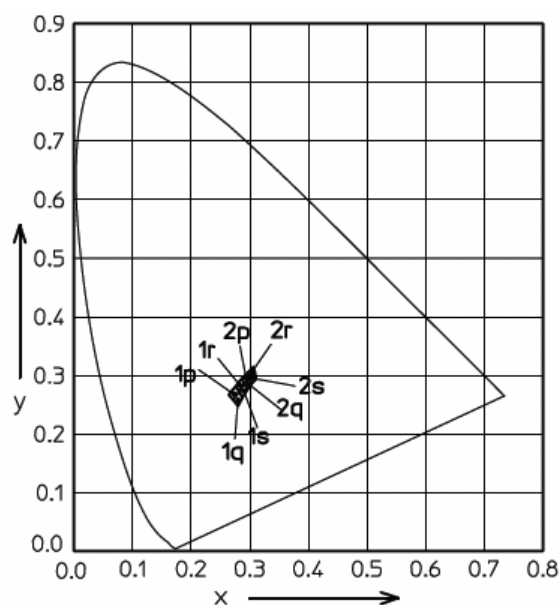
| Rank | I _v (mcd) | | Condition |
|------|----------------------|-------|----------------------|
| | MIN. | MAX. | |
| T2 | 860 | 1,000 | I _F =20mA |
| U1 | 1,000 | 1,200 | |
| U2 | 1,200 | 1,440 | |
| VI | 1,440 | 1,720 | |
| V2 | 1,720 | 2,000 | |

Intensity Tolerance each Rank : +/-10%

Please contact our sales staff concerning rank designation.

Sorting Chart for Chromaticity Coordinates (HKW)

(Ta=25°C)



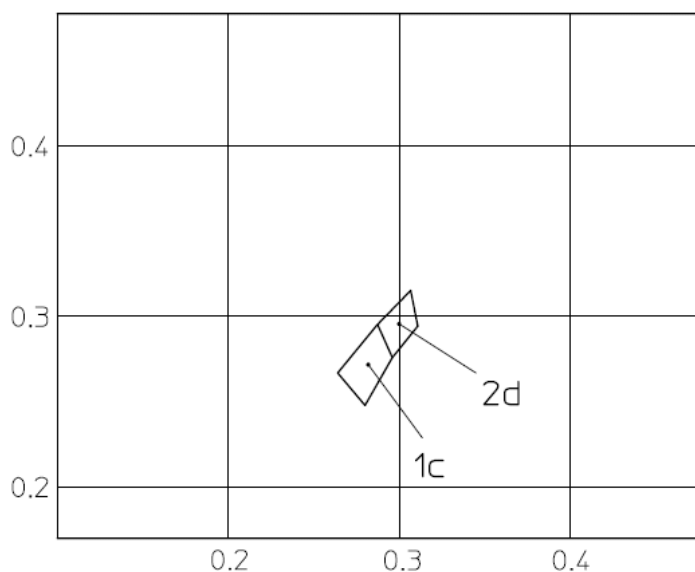
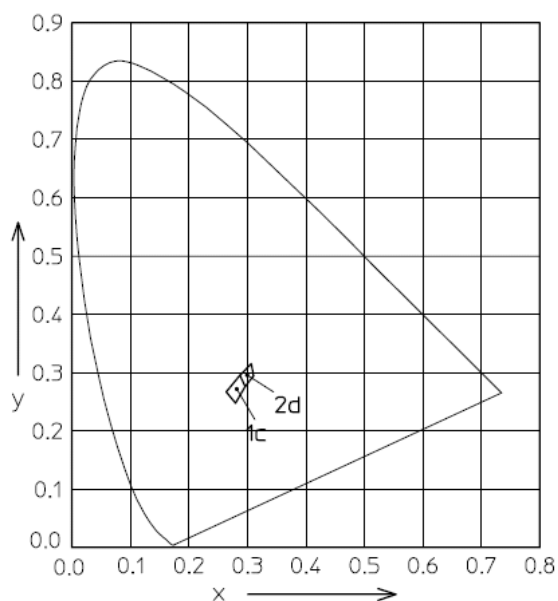
Chromaticity Coordinates Tolerance Each Rank : +/-0.01

| Rank | LEFT DOWN point | | LEFT UP point | | RIGHT UP point | | RIGHT UP point | |
|------|-----------------|-------|---------------|-------|----------------|-------|----------------|-------|
| | x | y | x | y | x | y | x | y |
| 1p | 0.272 | 0.258 | 0.264 | 0.267 | 0.276 | 0.281 | 0.282 | 0.272 |
| 1q | 0.280 | 0.248 | 0.272 | 0.258 | 0.282 | 0.272 | 0.288 | 0.262 |
| 1r | 0.282 | 0.272 | 0.276 | 0.281 | 0.287 | 0.295 | 0.292 | 0.286 |
| 1s | 0.288 | 0.262 | 0.282 | 0.272 | 0.292 | 0.286 | 0.296 | 0.276 |
| 2p | 0.292 | 0.286 | 0.287 | 0.295 | 0.297 | 0.305 | 0.300 | 0.295 |
| 2q | 0.296 | 0.276 | 0.292 | 0.286 | 0.300 | 0.295 | 0.304 | 0.285 |
| 2r | 0.300 | 0.295 | 0.297 | 0.305 | 0.307 | 0.315 | 0.309 | 0.305 |
| 2s | 0.304 | 0.285 | 0.300 | 0.295 | 0.309 | 0.305 | 0.311 | 0.294 |

Please contact our sales staff concerning rank designation.

Sorting Chart for Chromaticity Coordinates (HEW)

(Ta=25°C)

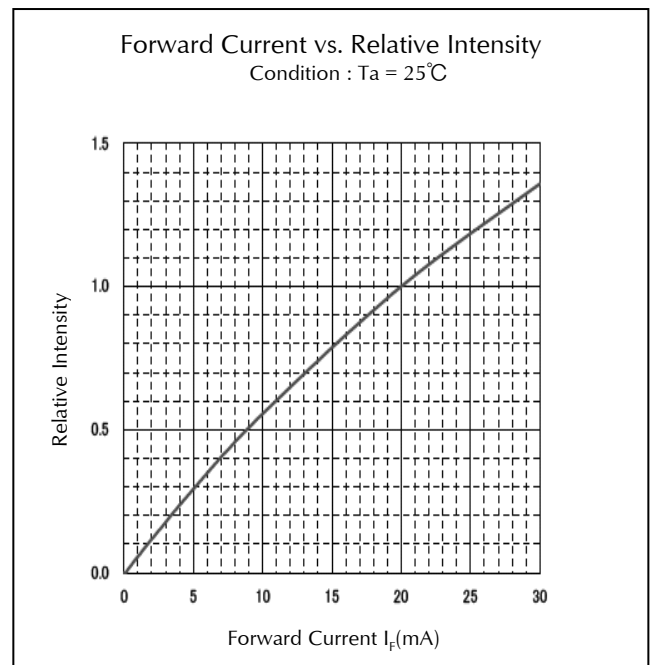
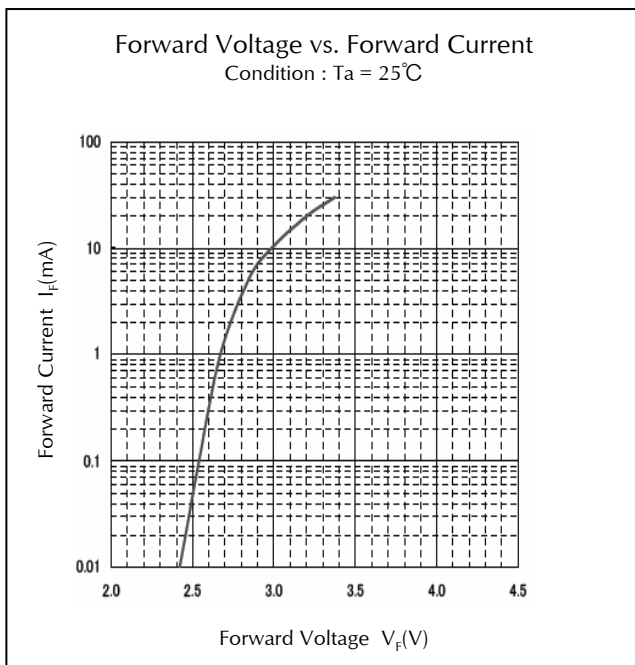
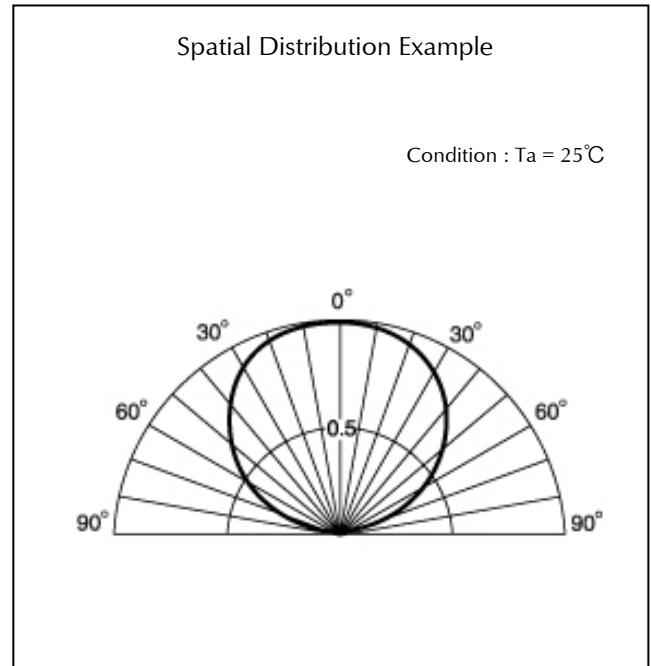
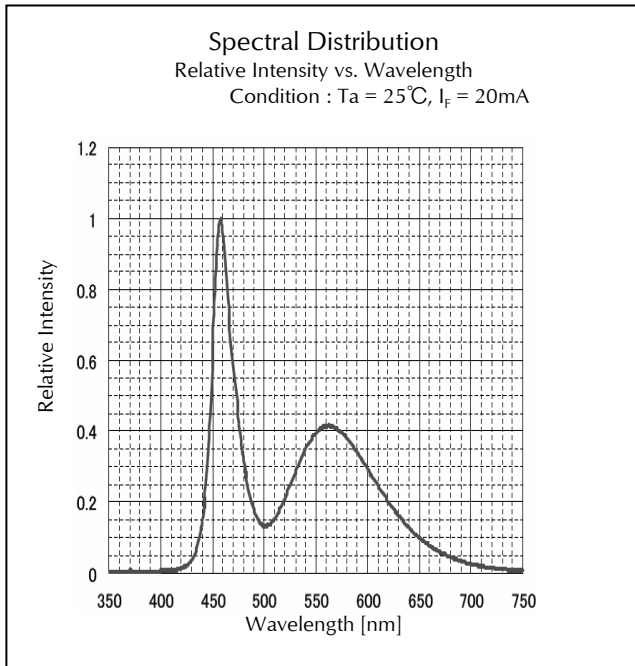


Chromaticity Coordinates Tolerance Each Rank : +/-0.01

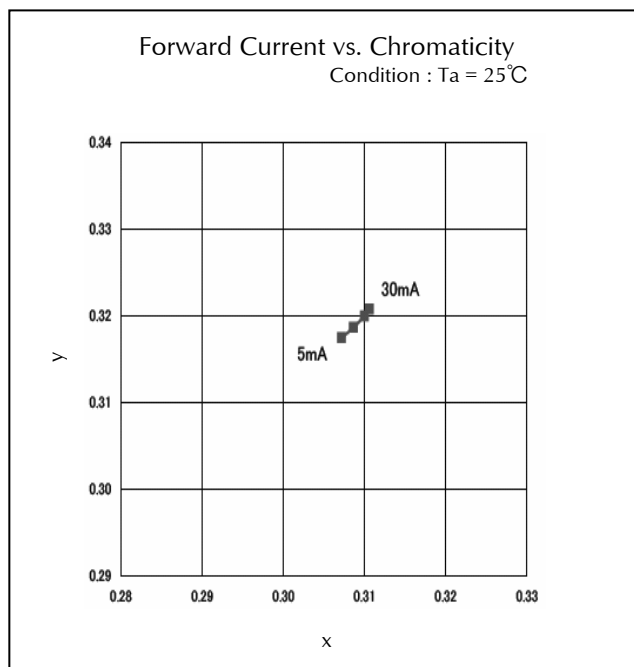
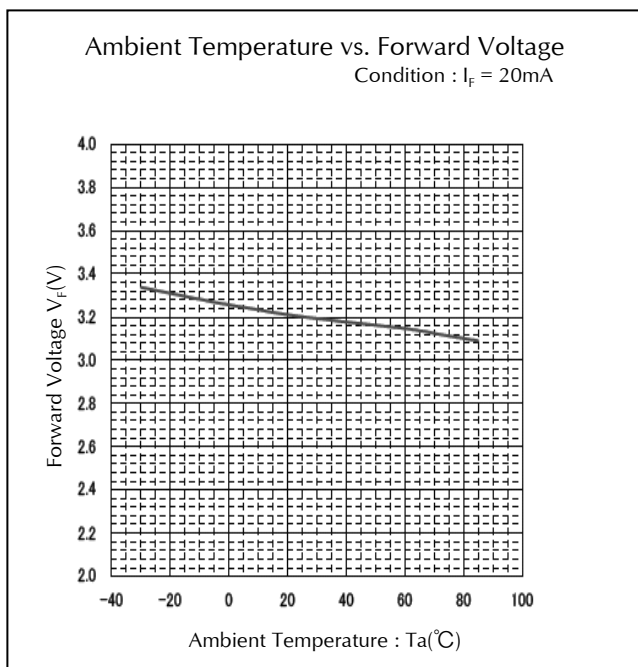
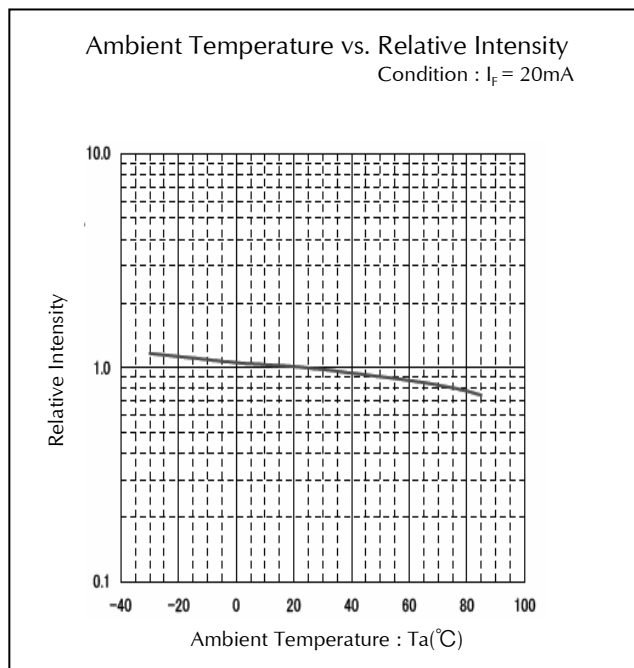
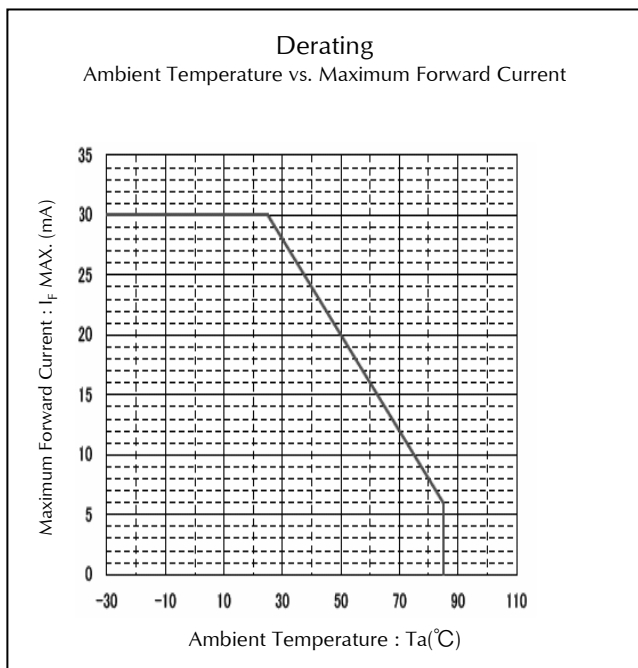
| Rank | LEFT DOWN point | | LEFT UP point | | RIGHT UP point | | RIGHT UP point | |
|------|-----------------|-------|---------------|-------|----------------|-------|----------------|-------|
| | x | y | x | y | x | y | x | y |
| 1c | 0.280 | 0.248 | 0.264 | 0.267 | 0.287 | 0.295 | 0.296 | 0.276 |
| 2d | 0.296 | 0.276 | 0.287 | 0.295 | 0.307 | 0.315 | 0.311 | 0.294 |

Please contact our sales staff concerning rank designation.

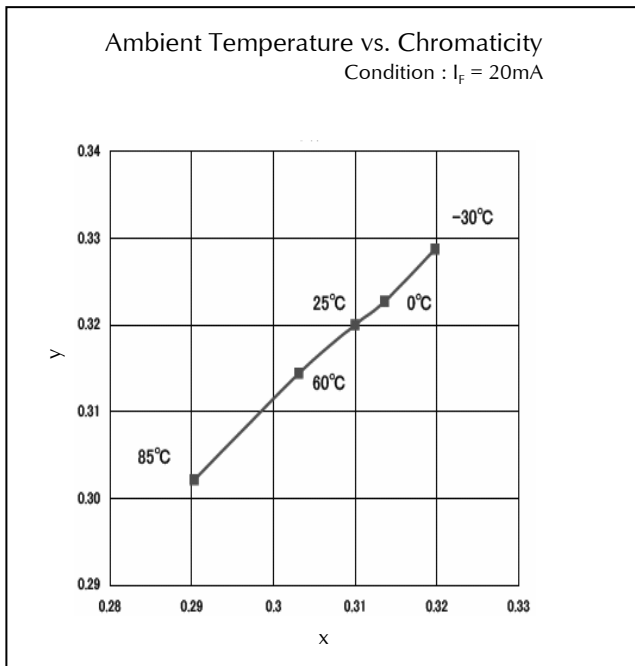
Technical Data (HKW)



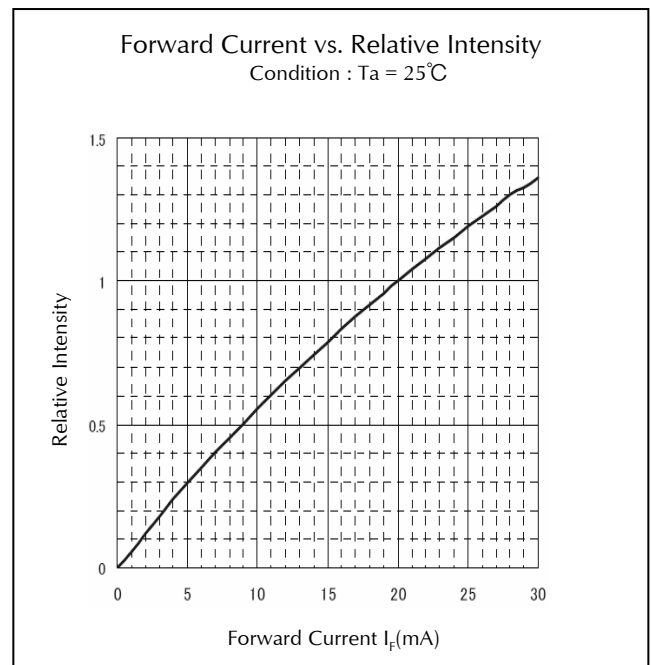
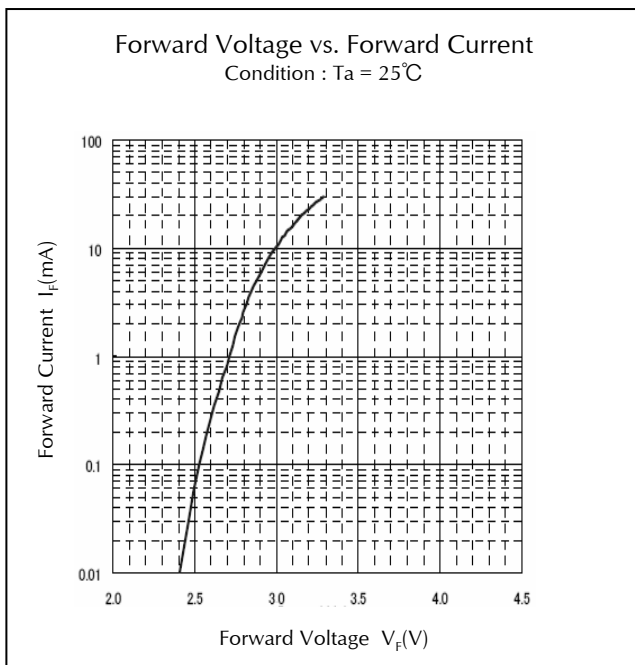
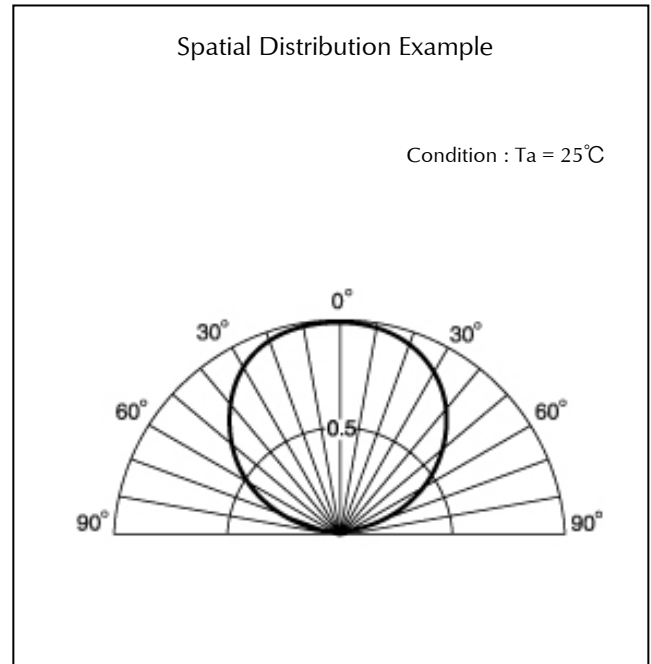
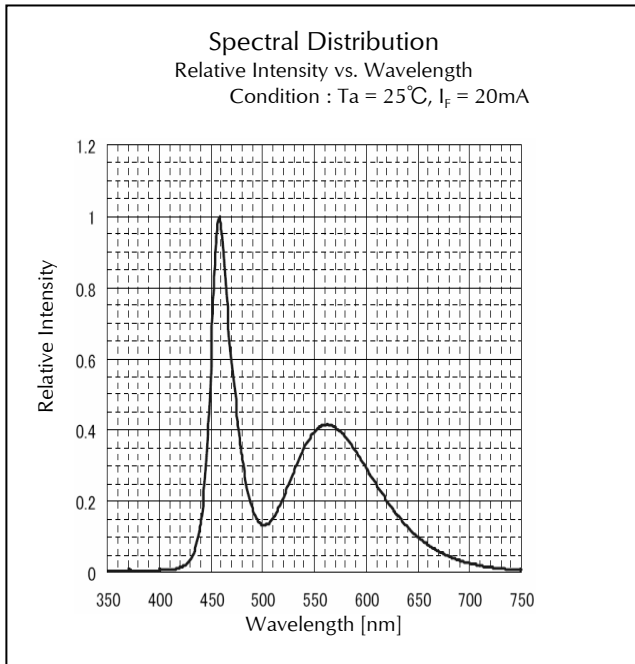
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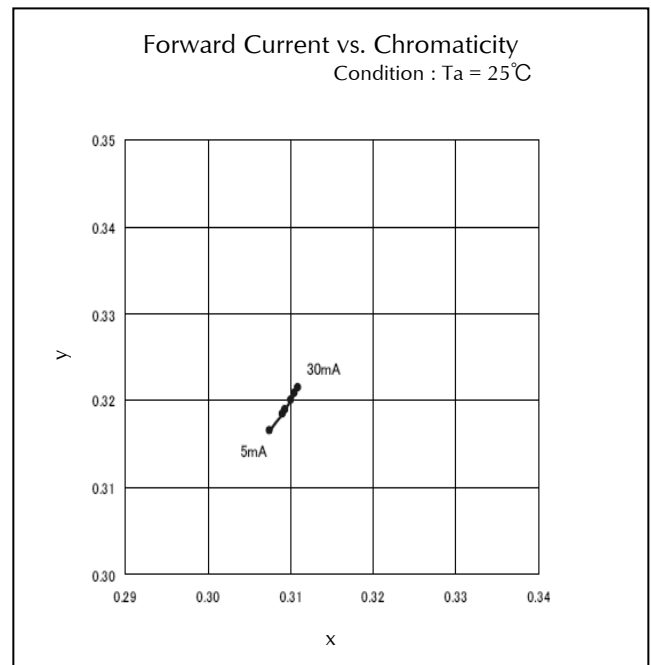
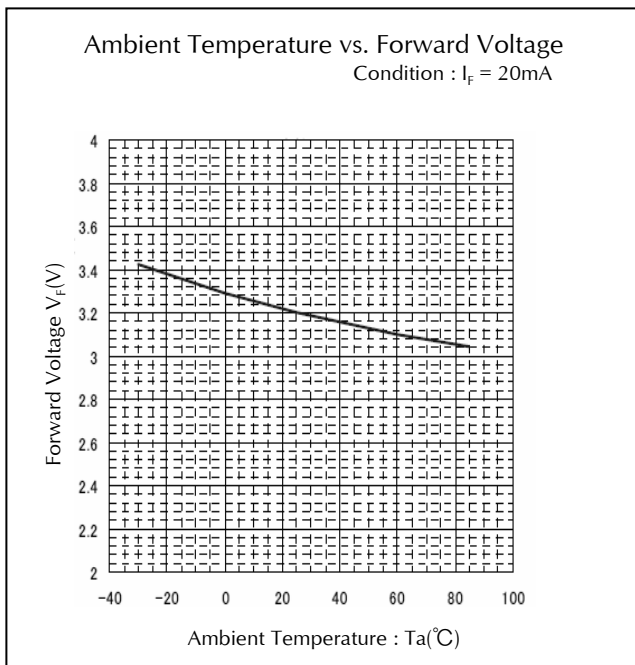
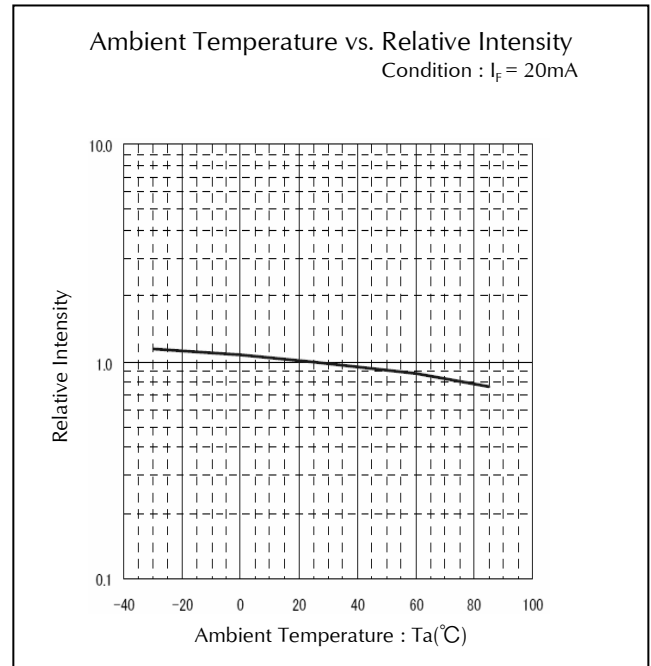
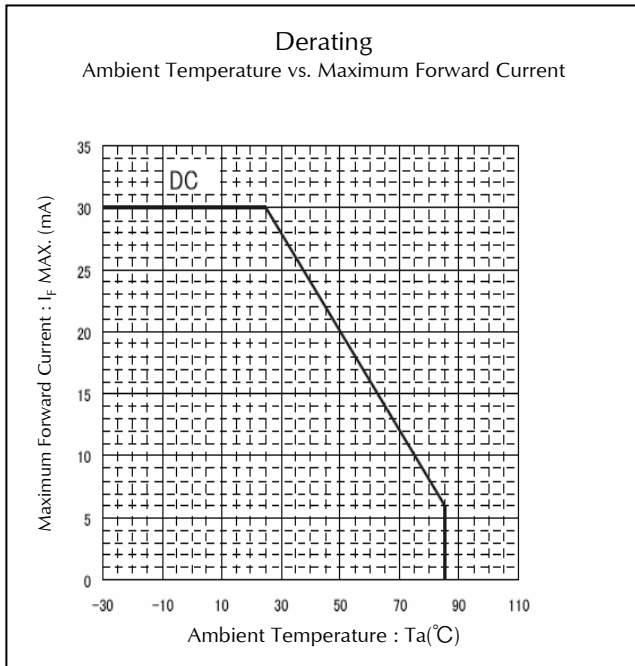
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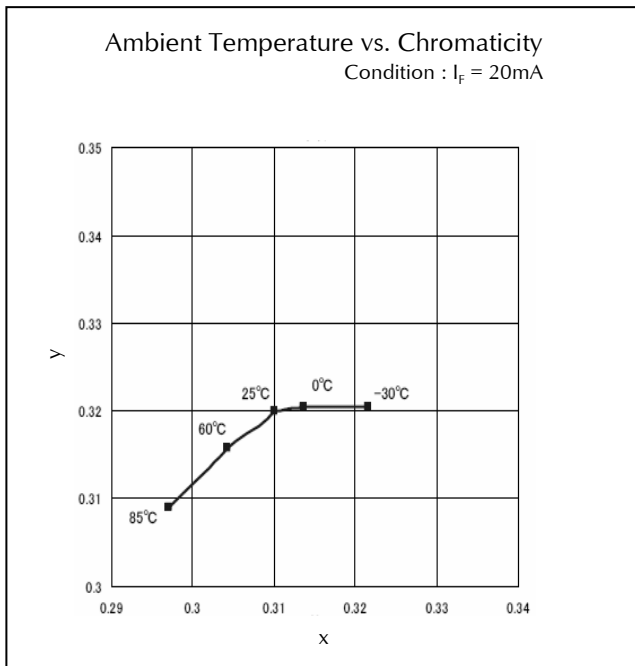
Technical Data (HEW)



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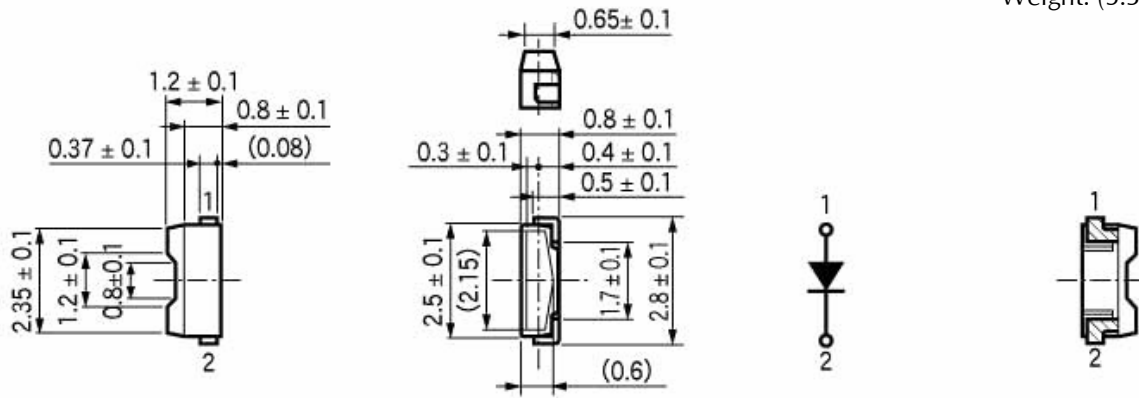
Technical Data (HEW)



Package Dimensions

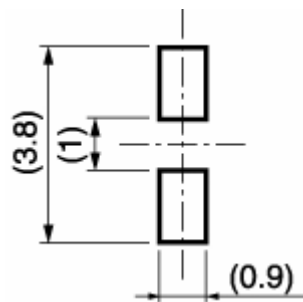
(Unit: mm)

Weight: (5.3)mg



Recommended Soldering Pattern

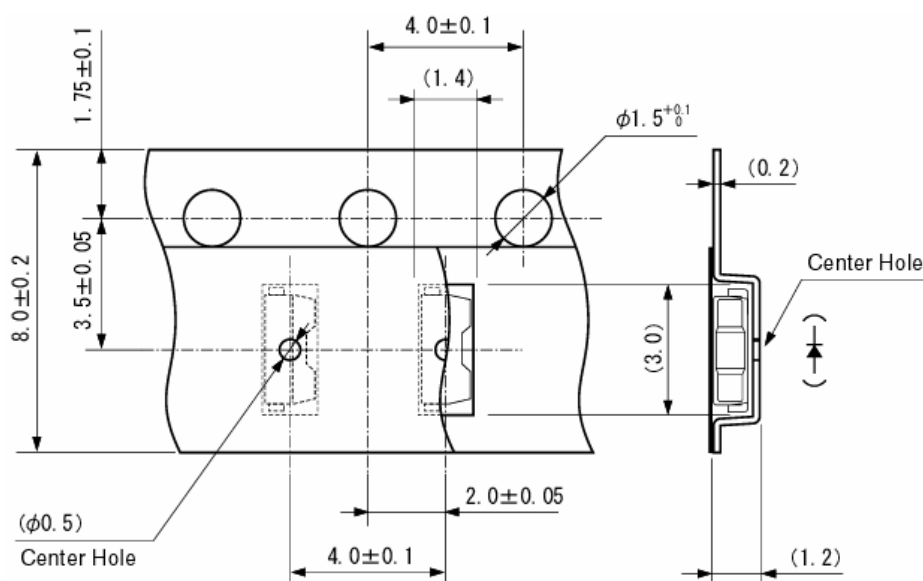
(Unit: mm)



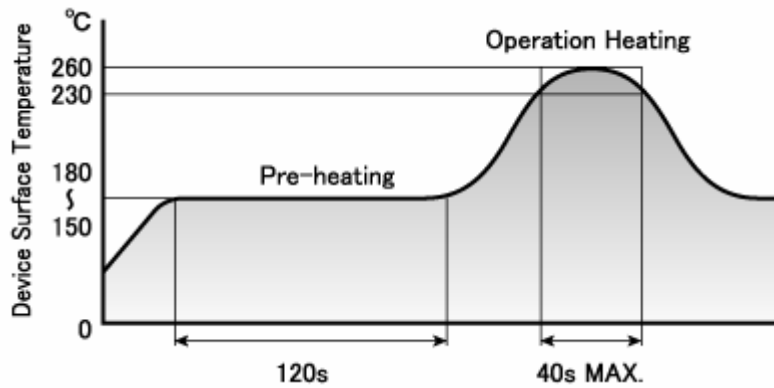
Taping Specification

(Unit: mm)

•Quantity: 3,000pcs/ 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.

Manual Soldering Conditions

| | | |
|------------------------------|--------|--------|
| Iron tip temp. | 350 °C | (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 = 30mA | 1,000 h | 0/20 |
| High Temp. Operating Life | EIAJ ED-4701/100(101) | Ta = 85°C, If = 6mA | 1,000 h | 0/20 |
| Low Temp. Operating Life | EIAJ ED-4701/100(101) | Ta = -30°C, If = 20mA | 1,000 h | 0/20 |
| Wet High Temp. Operating Life | EIAJ ED-4701/100(102) | Ta = 60°C, 90%, If = 16mA | 1,000 h | 0/20 |
| Wet High Temp. Storage Life | EIAJ ED-4701/100(103) | Ta = 60°C, 90% | 1,000 h | 0/20 |
| Thermal Shock | EIAJ ED-4701/100(105) | Ta = -40°C ~ 100°C (each 15min.) | 200 cycles | 0/20 |
| High Temp. Storage Life | EIAJ ED-4701/200(201) | Ta = 100°C | 1,000 h | 0/20 |
| Low Temp. Storage Life | EIAJ ED-4701/200(202) | Ta = -40°C | 1,000 h | 0/20 |
| Cycled Temp. Humidity Life | EIAJ ED-4701/200(203) | Ta = -10°C ~ 65°C, 95%, 24h/cycle | 10 cycles | 0/20 |
| Resistance to Reflow Soldering | EIAJ ED-4701/300(301) | Preheat : 150 ~ 180°C(120s Max.) Soldering Temp. : 260°C(5s) Moisture Soak : 30°C, 70%, 72h | Twice | 0/20 |
| Electric Static Discharge (ESD) | EIAJ ED-4701/300(304) | C = 100pF, R2 = 1.5KΩ, ±1,000V | once each polarity | 0/20 |
| Vibration, Variable Frequency | EIAJ ED-4701/400(403) | 98.1m/s ² (10G), 100 ~ 2KHz, 20min, XYZ each direction | 2 h | 0/20 |

Failure Criteria

| Items | Symbols | Conditions | Failure criteria |
|---------------------|---------|------------|--|
| Luminous Intensity | Iv | If=20mA | Testing Min. Value < Spec. Min. Value x 0.7 |
| Forward Voltage | Vf | If=20mA | Testing Max. Value ≥ Spec. Max. Value x 1.2 |
| Reverse Current | Ir | Vr=5V | Testing Max. Value ≥ Spec. Max. Value x 2.5 |
| Cosmetic Appearance | - | - | Occurrence of notable decoloration, deformation and cracking |

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