



**Pb-free
HEAT**



AN1101W

Surface Mount IRED/Flat Lenz Type

Features

| | |
|-------------------------|--|
| Package | 3216 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) •Flat Lenz type •Total Output Power : 2mW TYP. ($I_F=20mA$) •No lead package •Lead-free soldering compatible |
| Peak Wavelength | 950nm |
| Half Intensity Angle | 135 deg. |
| Die materials | GaAs |
| Rank grouping parameter | Sorted by radiant intensity per rank taping |
| Assembly method | Auto pick & place machine (Auto Mounter) |
| Soldering methods | Reflow soldering, TTW (Through The Wave) soldering and manual 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 | 2kV (HBM) |

Recommended Applications

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

Absolute Maximum Ratings

(Ta=25°C)

| Item | Symbol | Absolute Maximum Ratings | Unit |
|------------------------------------|------------------|--------------------------|------|
| Power Dissipation | Pd | 75 | mW |
| Forward Current | I _F | 50 | mA |
| Pulse Forward Current ¹ | I _{FRM} | 300 | mA |
| Derating (Ta=25 or higher) | I _F | 0.67 | mA/ |
| | I _{FRM} | 4 | mA/ |
| Reverse Voltage | V _R | 5 | V |
| Operating Temperature | T _{opr} | -30 ~ +85 | |
| Storage Temperature | T _{stg} | -40 ~ +100 | |

1 IFRM Measurement condition : Pulse Width 100 μ s, Duty 1/100

Electro-Optical Characteristics

(Ta=25°C)

| Item | Conditions | Symbol | Characteristics | | Unit |
|----------------------|--|-------------------|-----------------|------|-------|
| | | | | | |
| Forward Voltage | I _F =20mA | V _F | TYP. | 1.22 | V |
| | | | MAX. | 1.4 | |
| Reverse Current | V _R =5V | I _R | MAX. | 10 | μ A |
| Radiant Intensity | I _F =20mA | I _E | MIN. | 0.2 | mW/sr |
| | | | TYP. | 0.4 | |
| Total Output Power | I _F =20mA | Po | TYP. | 2 | mW |
| Peak Wavelength | I _F =20mA | λ _p | TYP. | 950 | nm |
| Spectral Half-width | I _F =20mA | | TYP. | 45 | nm |
| Half Intensity Angle | I _F =20mA | 2θ _{1/2} | TYP. | 135 | deg. |
| Cut-off Frequency | I _F =20mA _{DC} ±5mA, -3db from 0.1MHz | fc | MIN. | - | MHz |
| | | | TYP. | 0.5 | |
| Response Time | I _F =20mA | tr/ta | TYP. | 700 | ns |

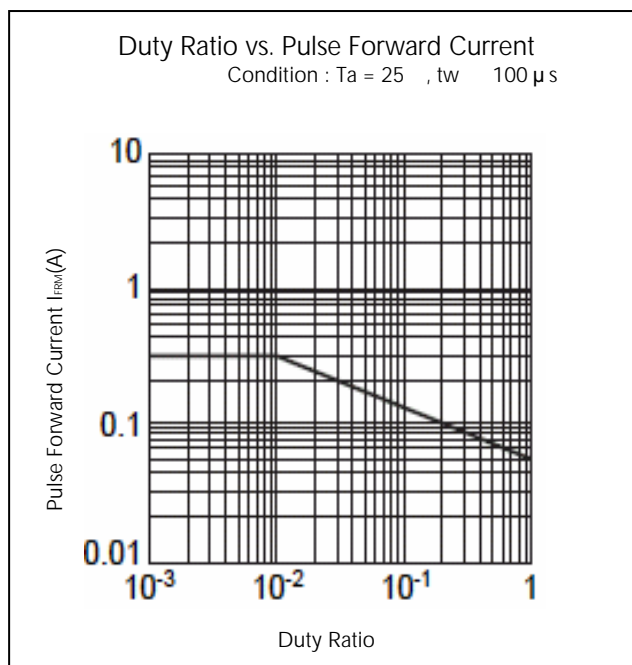
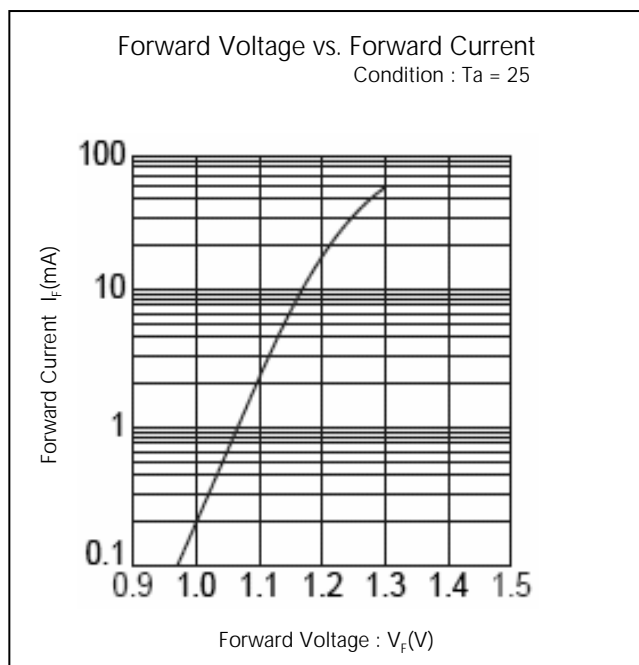
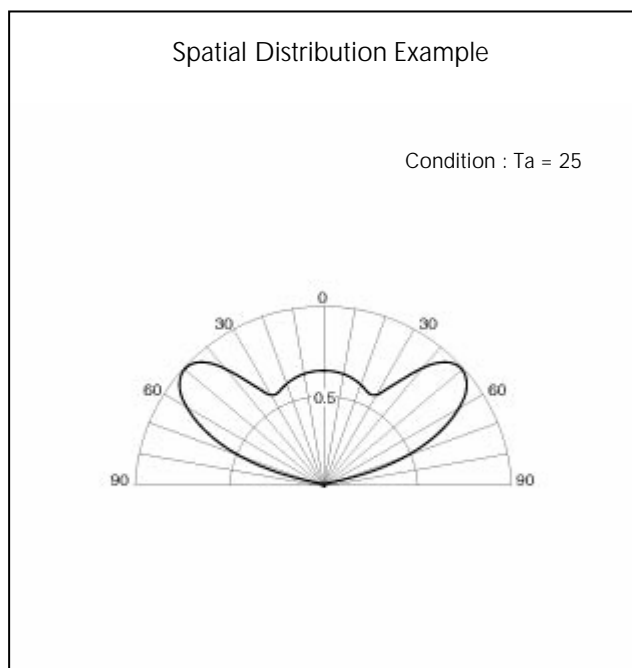
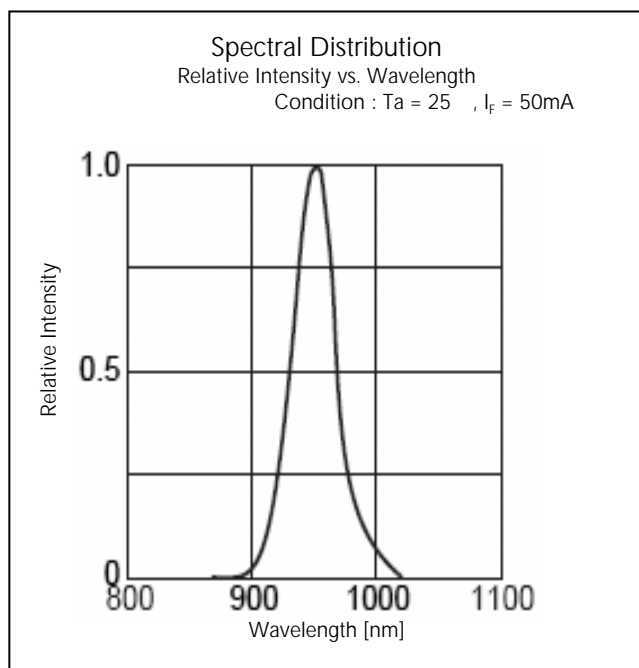
Radiant Intensity Rank

(Ta=25°C)

| Rank | I _E (mW/sr) | | Condition |
|------|------------------------|------|-----------------------|
| | MIN. | MAX. | |
| A | 0.2 | 0.4 | I _F = 20mA |
| B | 0.28 | 0.56 | |
| C | 0.4 | 0.8 | |
| D | 0.56 | 1.13 | |
| E | 0.8 | - | |

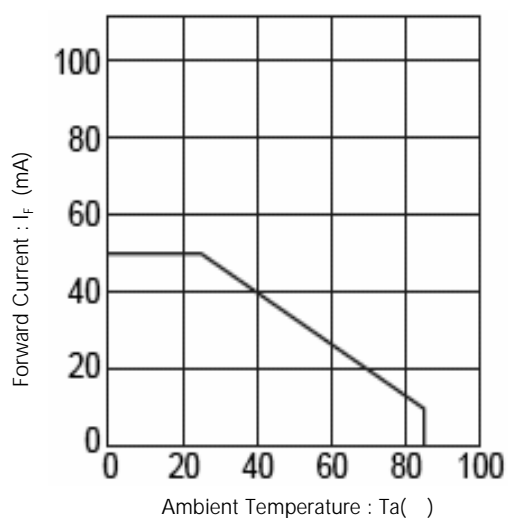
Please contact our sales staff concerning rank designation.

Technical Data



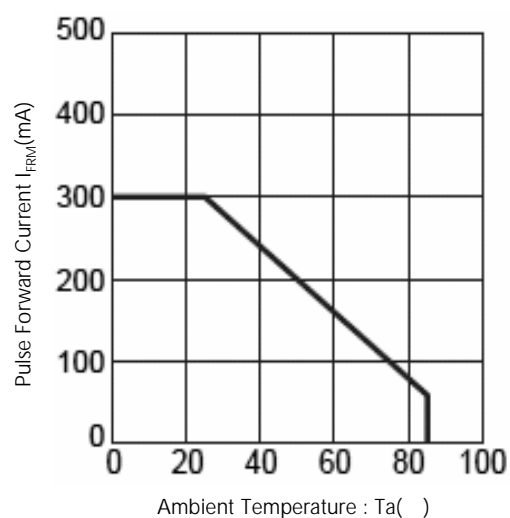
Technical Data

Ambient Temperature vs. Forward Current



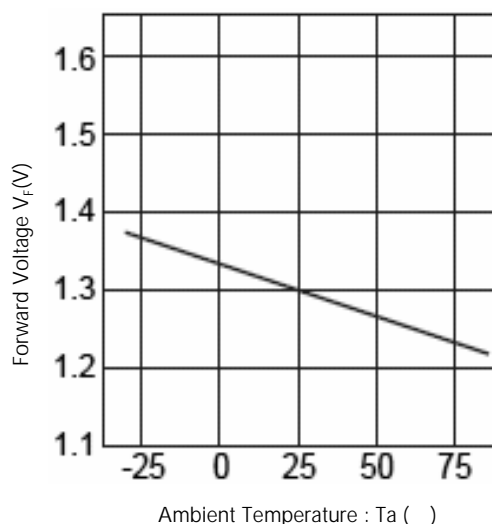
Ambient Temperature vs. Pulse Forward Current

Condition : t_w 100 μs , Duty 1/100



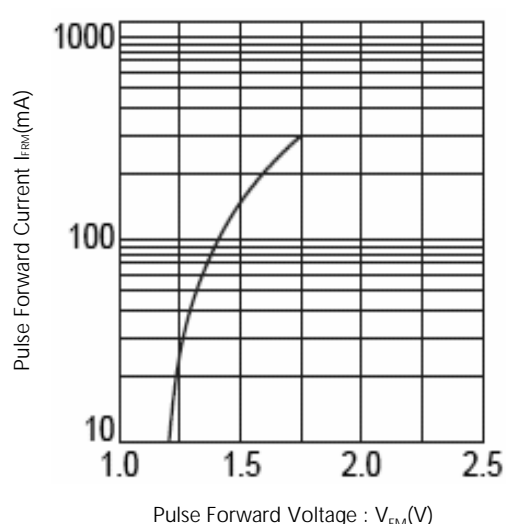
Ambient Temperature vs. Forward Voltage

Condition : $I_F = 50\text{mA}$



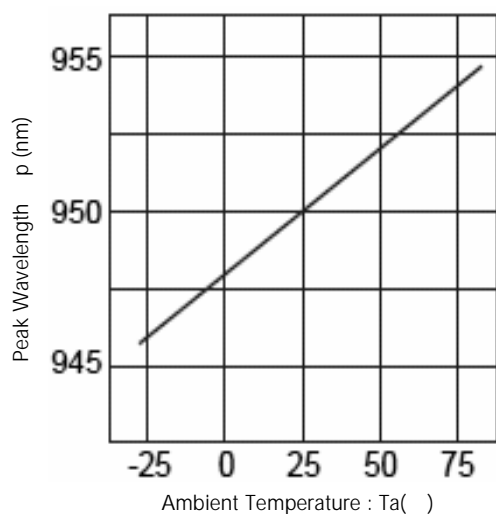
Pulse Forward Voltage vs. Pulse Forward Current

Condition : $T_a = 25^{\circ}\text{C}$, t_w 100 μs , Duty 1/100

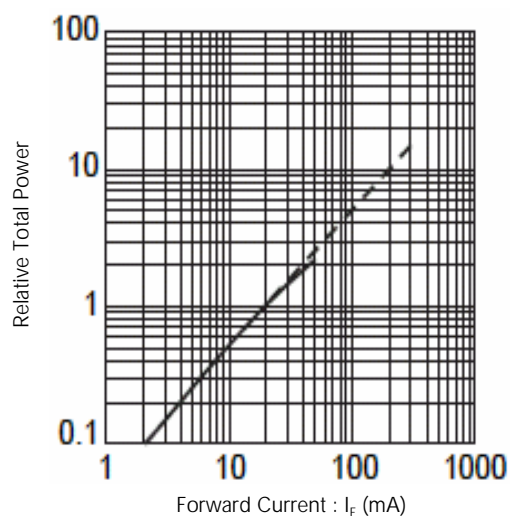


Technical Data

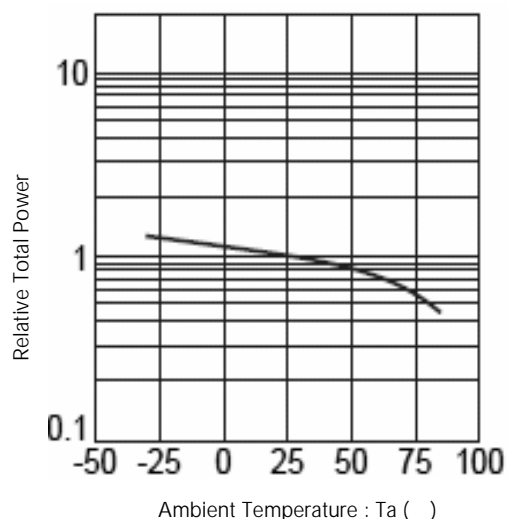
Ambient Temperature vs. Peak Wavelength
Condition : $I_f = 50\text{mA}$



Forward Current vs. Relative Total Power
Condition : - - Pulse, $t_w = 100\mu\text{s}$,
Duty $1/100$, $T_a = 25$



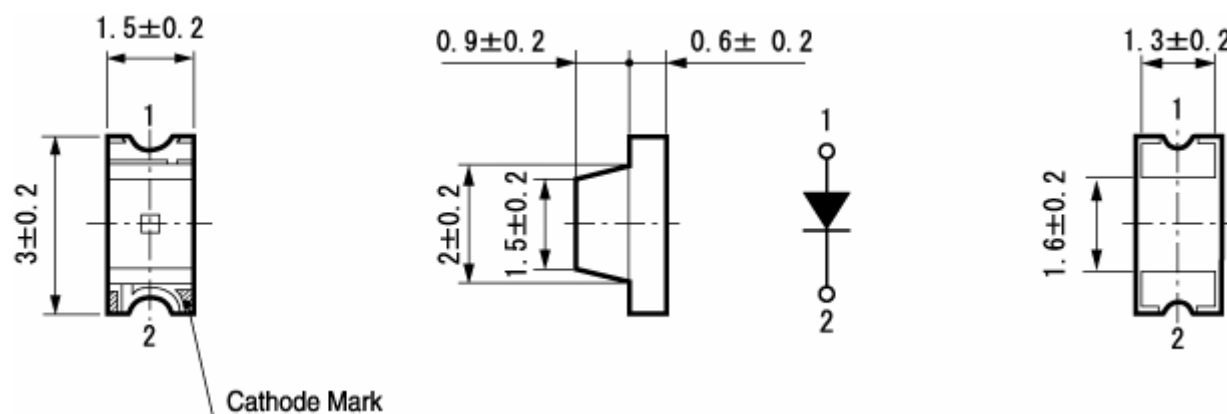
Ambient Temperature vs. Relative Total Power
Condition : $I_f = 50\text{mA}$



Package Dimensions

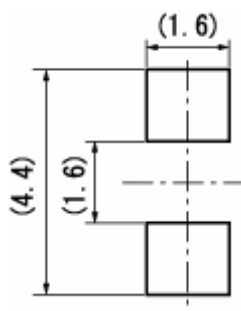
(Unit: mm)

Weight: (7.80)mg



Recommended Soldering Pattern

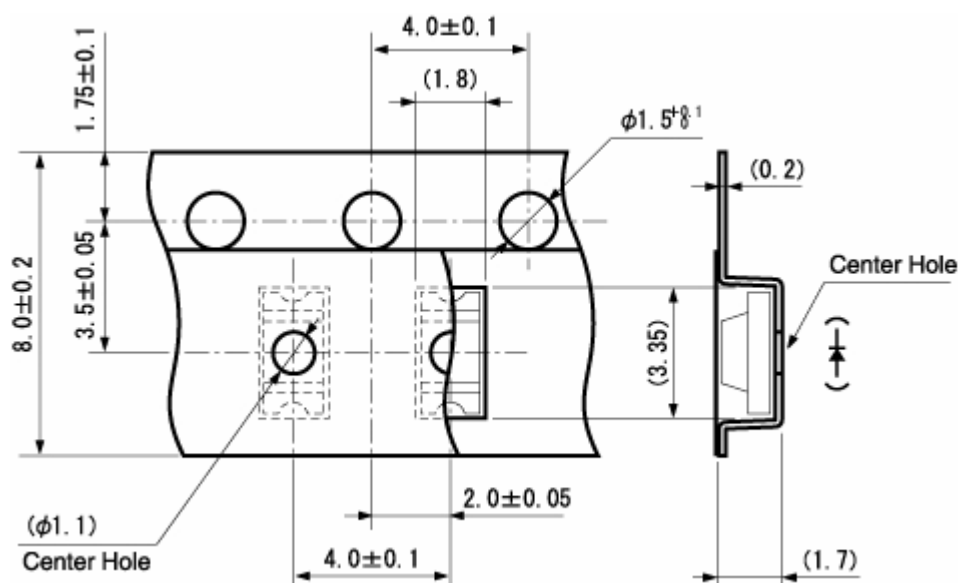
(Unit: mm)



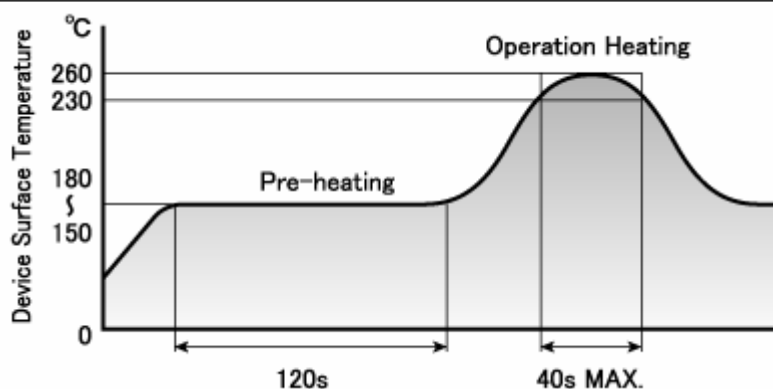
Taping Specification

(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.

TTW (Through The Wave) soldering Conditions

| | | | |
|-------------------|------|---------|--------|
| Pre-heating | 120 | ~ 150 | (MAX.) |
| | 60 s | ~ 120 s | (MAX.) |
| Solder Bath Temp. | 265 | | (MAX.) |
| Dipping Time | 5 s | | (MAX.) |

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

Manual Soldering Conditions

| | | |
|------------------------------|--------|--------------------|
| Iron tip temp. | 350 | (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 120s →Operating Heating 240°C 5s | - | 0/25 |
| | | (Pretreatment) Individual standard (Reflow Soldering) Pre-heating 180°C 120s →Operating Heating 260°C 5s | - | 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 |
| Cosmetic Appearance | - | - | No notable, decoloration, deformation and cracking |

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