

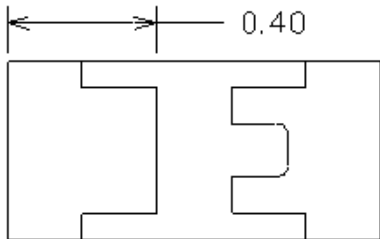
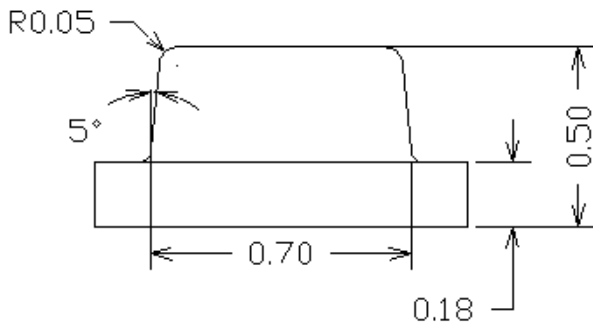
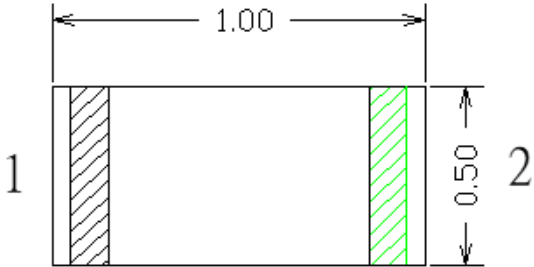


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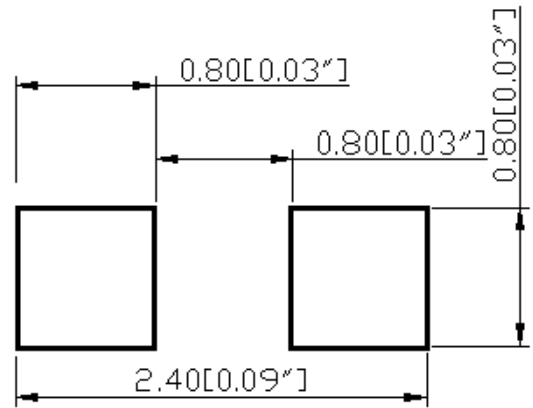
L199QBC-TR

1.0 x 0.5 x 0.5mm Blue SMD LED

PACKAGE OUTLINES



RECOMMEND PAD LAYOUT



| Item | Material |
|---------------|-------------------|
| Resin(Mold) | Epoxy |
| Lens Color | Water Transparent |
| Dice | InGaN |
| Emitted Color | Blue |

Notes:

1. All dimensions are in millimeters (inches)
2. Tolerances are $\pm 0.1\text{mm}$ (0.004inch) unless otherwise noted

Version 1.0 Date: 10-30-2017 Specifications are subject to change without notice.

American Opto Plus LED Corp. 1206 E. Lexington Ave., Pomona CA 91766 Tel: 909-465-0080 Fax: 909-465-0130 www.aopled.com



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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| | Symbol | Value | Unit |
|--|------------------|---------|------|
| Forward Current | I _F | 30 | mA |
| Reverse Voltage | V _r | 5 | V |
| Power Dissipation | P _D | 111 | mW |
| Operating Temperature Range | T _{op} | -40~+80 | °C |
| Storage Temperature Range | T _{stg} | -40~+85 | °C |
| Peak Pulsing Current (1/8 duty f=1kHz) | I _{fp} | 125 | mA |

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

| | Test Condition | Symbol | Value | | | Unit |
|-------------------------------------|--------------------|-------------------|-------|-----|-----|------|
| | | | Min | Typ | Max | |
| Wavelength at Peak Emission | IF=20mA | λ _p | -- | 460 | -- | nm |
| Spectral Half Bandwidth | | Δλ | -- | 25 | -- | nm |
| Dominant Wavelength | | λ _d | 460 | 465 | 470 | nm |
| Forward Voltage | | V _f | 2.8 | 3.1 | 3.7 | V |
| Luminous Intensity | | I _v | 50 | 85 | 160 | mcd |
| Viewing Angle at 50% I _v | IF=10mA | 2θ _{1/2} | -- | 140 | -- | deg |
| Reverse Current | V _r =5V | I _r | -- | -- | 10 | μA |



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Forward Voltage Rank

(IF=20mA)

| Rank | Min. | Max. | Unit |
|------|------|------|------|
| f | 2.8 | 3.1 | V |
| g | 3.1 | 3.4 | |
| h | 3.4 | 3.7 | |

Luminous Intensity Rank

(IF=20mA)

| Rank | Min. | Max. | Unit |
|------|------|------|------|
| G | 50 | 63 | mcd |
| H | 63 | 80 | |
| I | 80 | 100 | |
| J | 100 | 125 | |
| K | 125 | 160 | |

Dominant Wavelength Rank

(IF=20mA)

| Rank | Min. | Max. | Unit |
|------|-------|-------|------|
| E | 460 | 462.5 | nm |
| F | 462.5 | 465 | |
| G | 465 | 467.5 | |
| H | 467.5 | 470 | |

Group Name on Label (Example DATA: gIF 20)

| DATA: gIF 20 | Vf(V) | Iv (mcd) | λd (nm) | Test Condition |
|--------------|---------|----------|-----------|----------------|
| g→ I→ F →20 | 2.8~3.1 | 80~100 | 462.5~465 | IF= 20mA |

Notes:

1. Tolerance of luminous intensity (Iv) is ±15%
2. Tolerance of Dominant wavelength is ± 1.5nm
3. This specification is preliminary



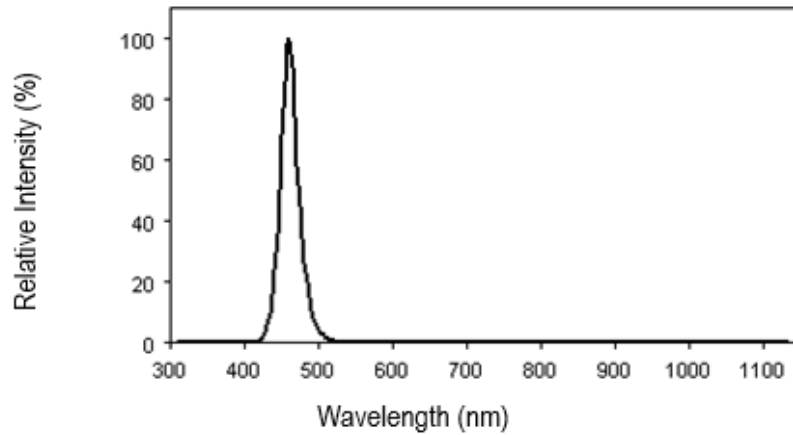
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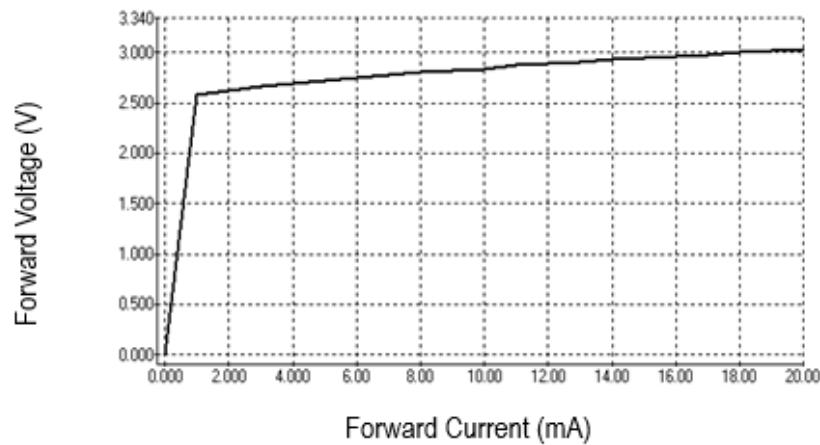
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OPTICAL CHARACTERISTIC CURVES

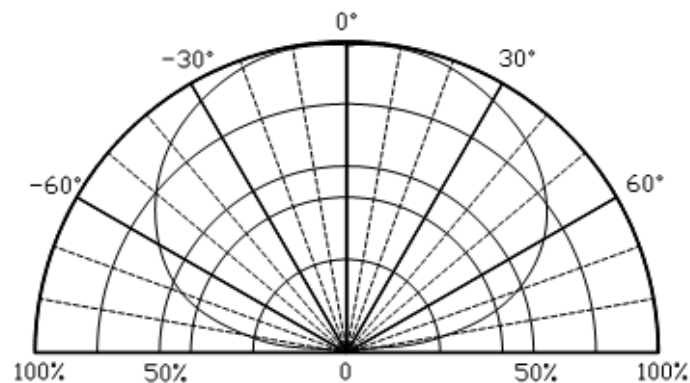
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage



Directive Characteristics





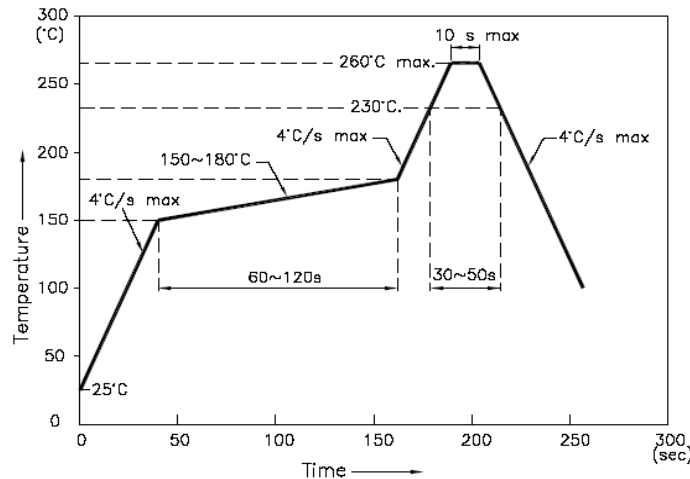
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REFLOW PROFILE

- Reflow Temp/Time



Notes:

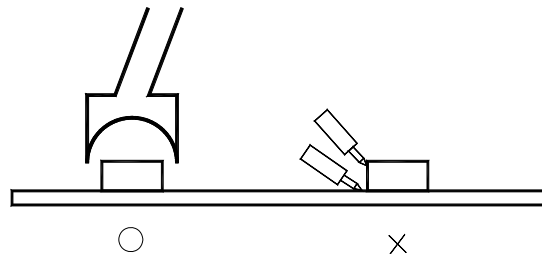
1. We recommend the reflow temperature 245°C ($\pm 5^\circ\text{C}$). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

Soldering iron

- Basic spec is $\leq 5\text{sec}$ when 260°C. If temperature is higher, time should be shorter (+10°C \rightarrow -1sec). Power dissipation of iron should be smaller than 20W, and temperatures should be controllable. Surface temperature of the device should be under 230°C.

Rework

1. Customer must finish rework within 5 seconds under 260°C
2. Head of iron cannot touch copper foil
3. Twin-head type is preferred



- Avoid rubbing or scraping the resin by any object during high temperature, for example, reflow solder etc.



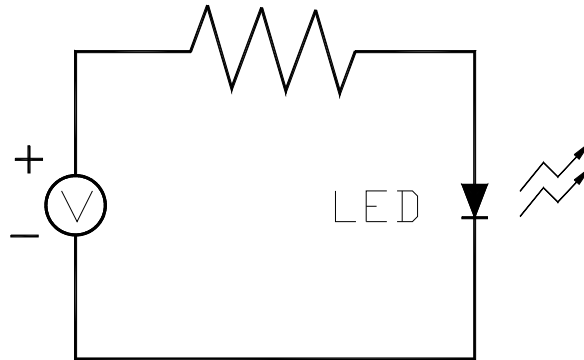
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TEST CIRCUIT AND HANDLING PRECAUTIONS

- **Test circuit**



- **Handling precautions**

1. Over-current-proof
Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).
2. Shelf life in sealed bag: 12 month at 5°C ~30°C and < 60% RH
3. After package is opened:

3.1. It is recommended to baking before the first use:

Baking condition:

- a. 60±5°C x (24~48hrs) and < 5%RH, taped reel type
- b. 110±5°C x (8~16hr), bulk type

3.2 The products should be used within a week and to be stored at ≤20% R.H. with zip-lock sealed:

- a. Baking is required before soldering when the pack is unsealed after 24hrs
- b. Baking condition as 3.1 baking condition



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TEST AND RESULTS OF RELIABILITY

| Type | Test Item | Test Conditions | Note | Number of Damaged |
|------------------------|------------------------------|---|-----------|-------------------|
| Environmental Sequence | Temperature Cycle | -20°C 30min ↑↓ 80°C 30min | 100 cycle | 0/22 |
| | Thermal Shock | -20°C 15min ↑↓ 80°C 15min | 100 cycle | 0/22 |
| | High Humidity Heat Cycle | 30°C ↔ 65°C 90%RH 24hrs/1cycle | 10 cycle | 0/22 |
| | High Temperature Storage | T _a =80°C | 1000 hrs | 0/22 |
| | Humidity Heat Storage | T _a =60°C RH=90% | 1000 hrs | 0/22 |
| | Low Temperature Storage | T _a =-30°C | 1000 hrs | 0/22 |
| Operation Sequence | Life Test | T _a =25°C I _F =20mA | 1000 hrs | 0/22 |
| | High Humidity Heat Life Test | 60°C RH=90% I _F =10mA | 500 hrs | 0/22 |
| | Low Temperature Life Test | T _a =-20°C I _F =20mA | 1000 hrs | 0/22 |



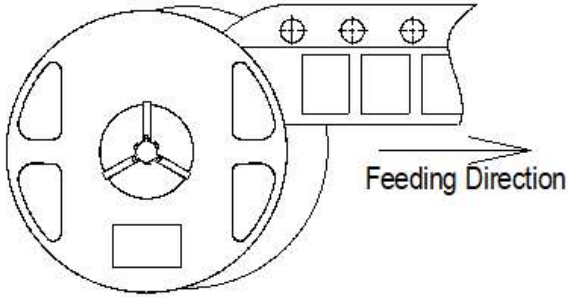
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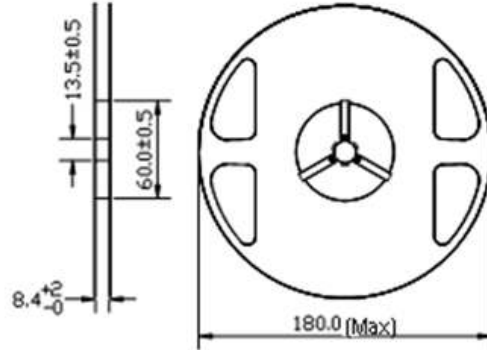
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PACKAGING SPECIFICATION

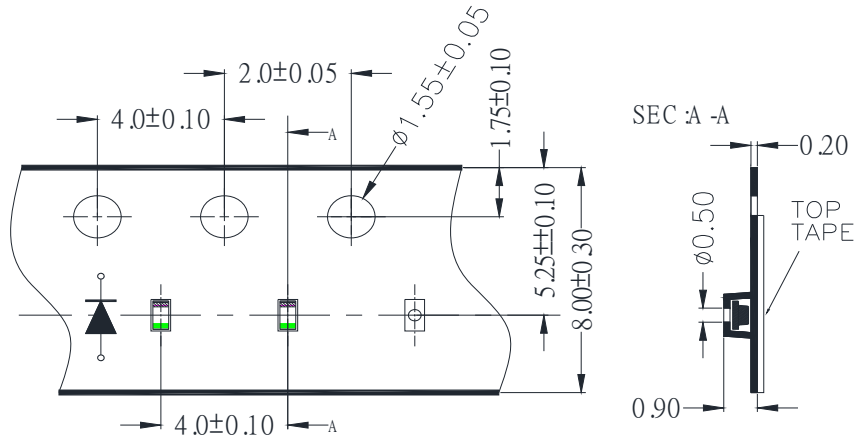
- Feeding Direction



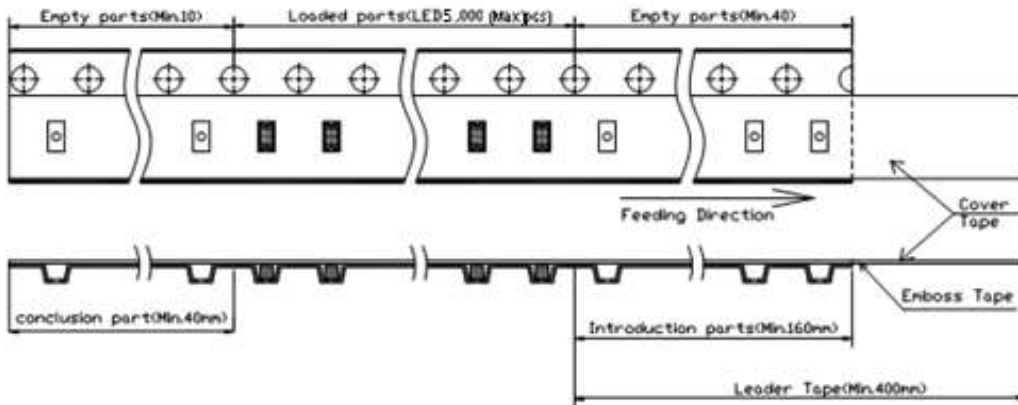
- Dimensions of Reel



- Dimensions of Tape



- Arrangement of Tape



Notes:

1. Empty component pockets are sealed with top cover tape
2. The maximum number of missing lamps is two
3. The cathode is oriented towards the tape sprocket hole
4. 5,000 pcs/Reel

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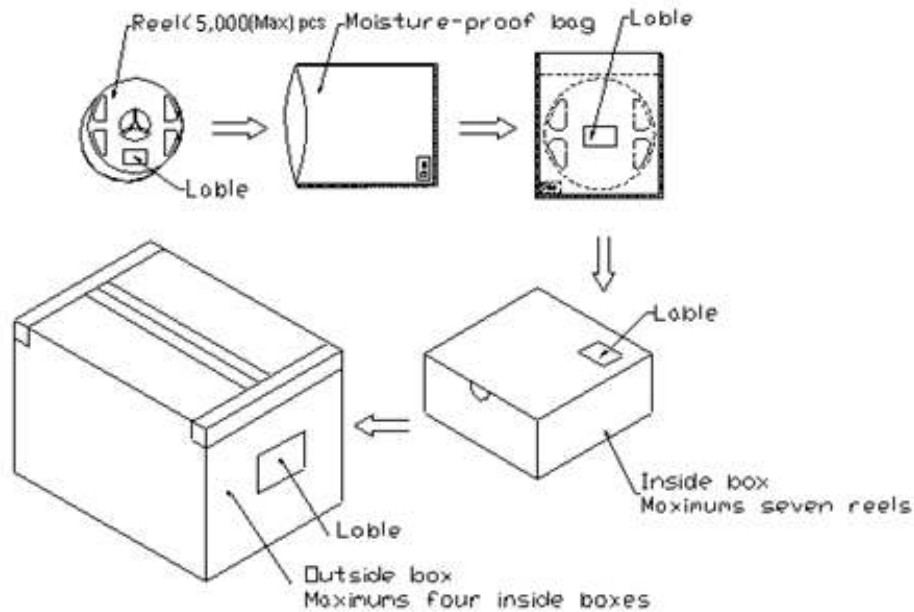


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PACKAGING SPECIFICATION



NOTES:

Reeled products [numbers of products are 5,000(Max)pcs] packed in a seal off moisture-proof bag along with a desiccant one by one, Seven moisture-proof bag of maximums [total maximum number of products are 35,000(Max)pcs] packed in an inside box (size: about 238mm x about 194mm x about 102mm) and four inside boxes of maximums are put in the outside box (size: about 410mm x about 254mm x about 229mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. And quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.