

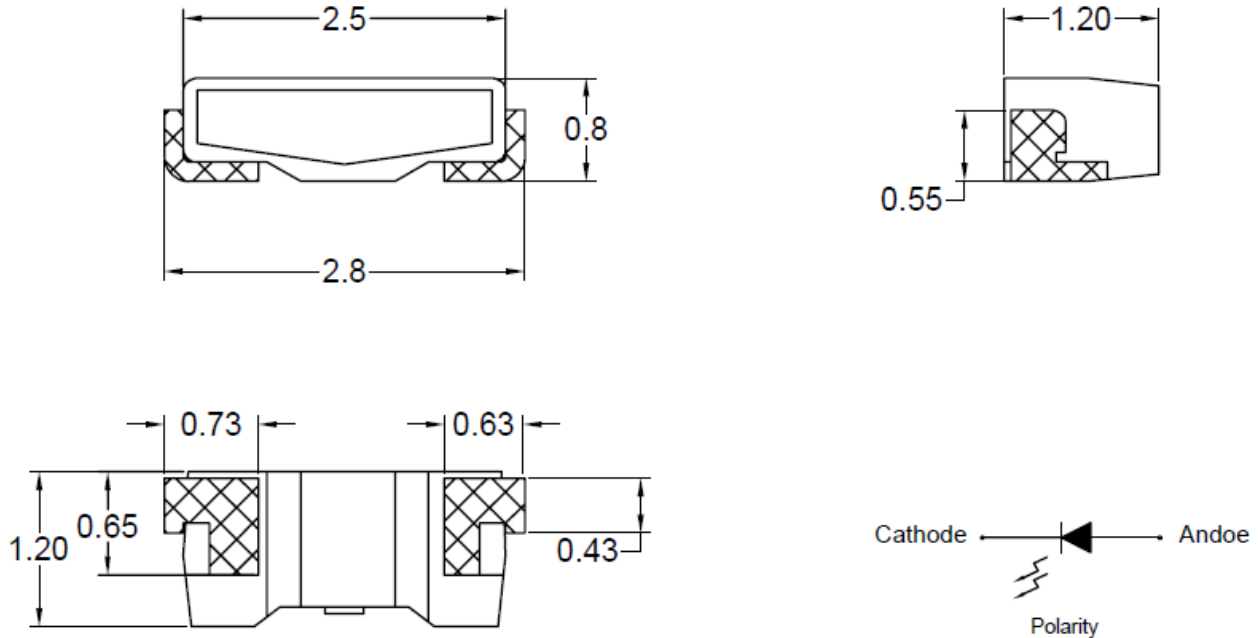


American Opto Plus LED Corp.

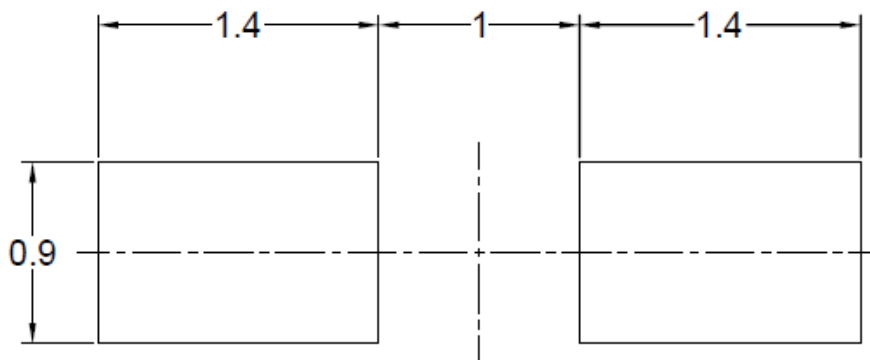
L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

PACKAGE OUTLINES



RECOMMENDED SOLDERING PAD DIMENSIONS



| Part Number | Material | Lens Color | |
|-------------|----------|------------|-------------|
| | | Emitted | Lens |
| L233QBC-TR | InGaN | Blue | Water Clear |

Notes:

1. All dimension is in millimeter;
2. Tolerance $\pm 0.1\text{mm}$ unless, angle $\pm 0.5\text{mm}$ unless otherwise noted



American Opto Plus LED Corp.

L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| Parameter | Symbol | Value | Unit |
|--|-----------|----------|---------|
| Forward Current | I_F | 30 | mA |
| Peak Forward Current (Duty 1/11 @ 10Khz) | I_{FP} | 100 | mA |
| Reverse Current @ 5V | I_R | 50 | μ A |
| Power Dissipation | P_D | 108 | mW |
| Electrostatic Discharge | ESD | 500 | V |
| Operating Temperature Range | T_{OPR} | -20~+80 | °C |
| Storage Temperature Range | T_{STG} | -30~+100 | °C |

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|--------------------------|-----------------------|---------------------|-----|-----|-----|------|
| Luminous Intensity | I_V | $I_F = 20\text{mA}$ | 200 | 260 | -- | mcd |
| Dominant Wavelength | λ_D | | 465 | -- | 477 | nm |
| Spectral Line Half-Width | $\Delta\lambda$ | | -- | 30 | -- | nm |
| Viewing Angle | $2\theta \frac{1}{2}$ | | -- | 115 | -- | deg |
| Forward Voltage | V_F | | 2.8 | -- | 3.6 | V |

1. Forward voltage data did not include $\pm 0.1\text{V}$ testing tolerance.
2. Luminous intensity data did not include $\pm 15\%$ testing tolerance.



American Opto Plus LED Corp.

L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

LUMINOUS INTENSITY CLASSIFICATION

| BIN CODE | | Iv(mcd) at 20mA | |
|----------|----|-----------------|------|
| | | Min. | Max. |
| S | S1 | 200 | 230 |
| | S2 | 230 | 260 |
| | S3 | 260 | 290 |
| | S4 | 290 | 320 |

DOMINANT WAVELENGTH CLASSIFICATION

| BIN CODE | λ_D (nm) at 20mA | |
|----------|--------------------------|------|
| | Min. | Max. |
| 0D | 465 | 468 |
| 0C | 468 | 471 |
| 0B | 471 | 474 |
| 0A | 474 | 477 |

FORWARD VOLTAGE CLASSIFICATION

| BIN CODE | Vf(v) at 20mA | |
|----------|---------------|------|
| | Min. | Max. |
| 1 | 2.8 | 2.9 |
| 2 | 2.9 | 3.0 |
| 3 | 3.0 | 3.1 |
| 4 | 3.1 | 3.2 |
| 5 | 3.2 | 3.3 |
| 6 | 3.3 | 3.4 |
| 7 | 3.4 | 3.5 |
| 8 | 3.5 | 3.6 |



American Opto Plus LED Corp. L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

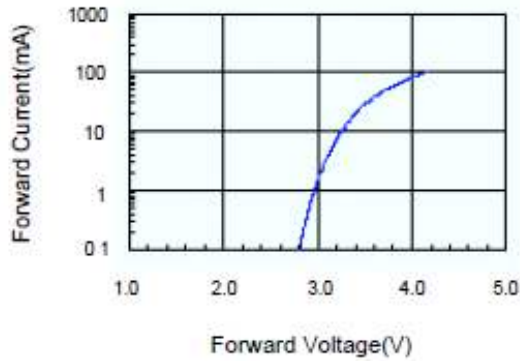


Fig.2 Relative Intensity vs. Forward Current

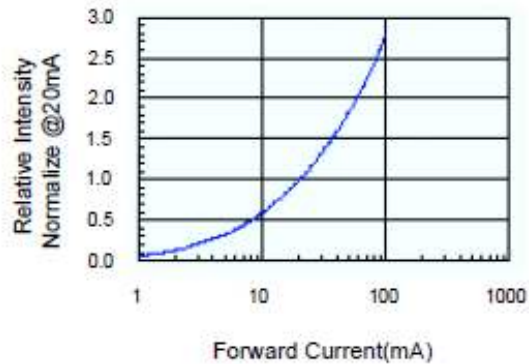


Fig.3 Forward Voltage vs. Temperature

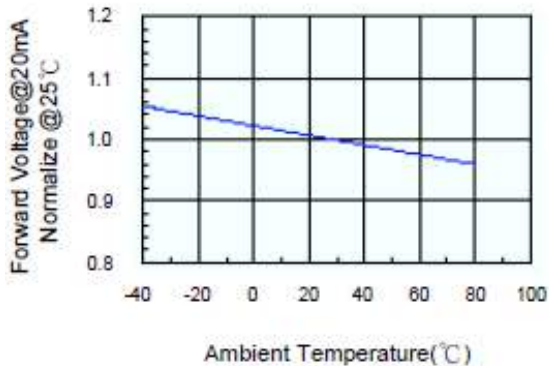


Fig.4 Relative Intensity vs. Temperature

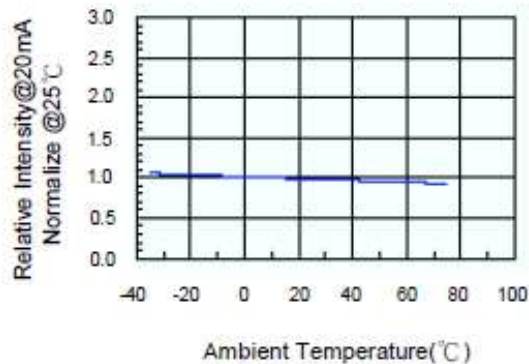


Fig.5 Relative Intensity vs. Wavelength

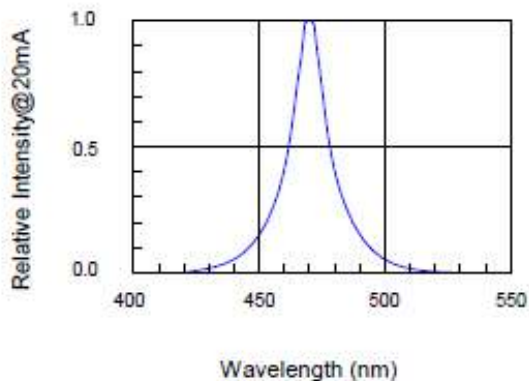
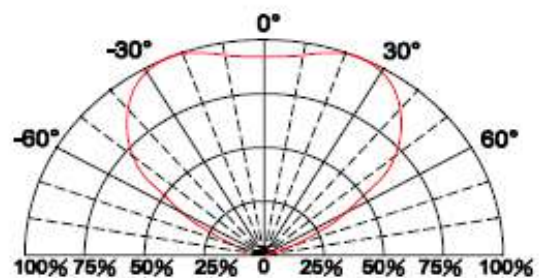


Fig.6 Directive Radiation

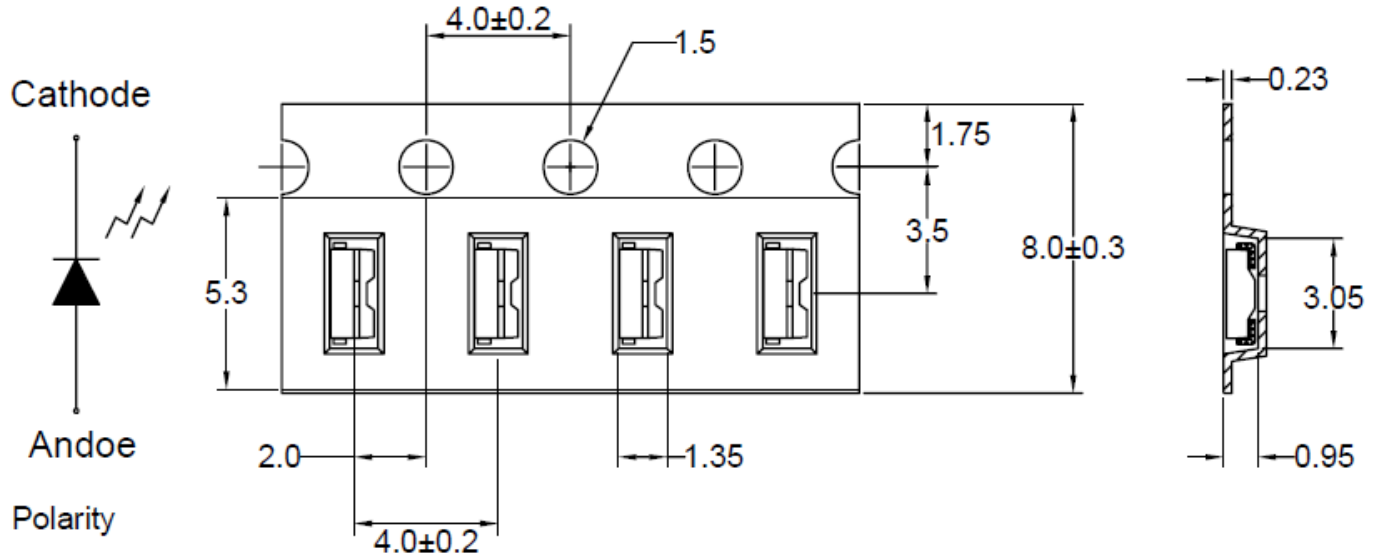




American Opto Plus LED Corp. L233QBC-TR

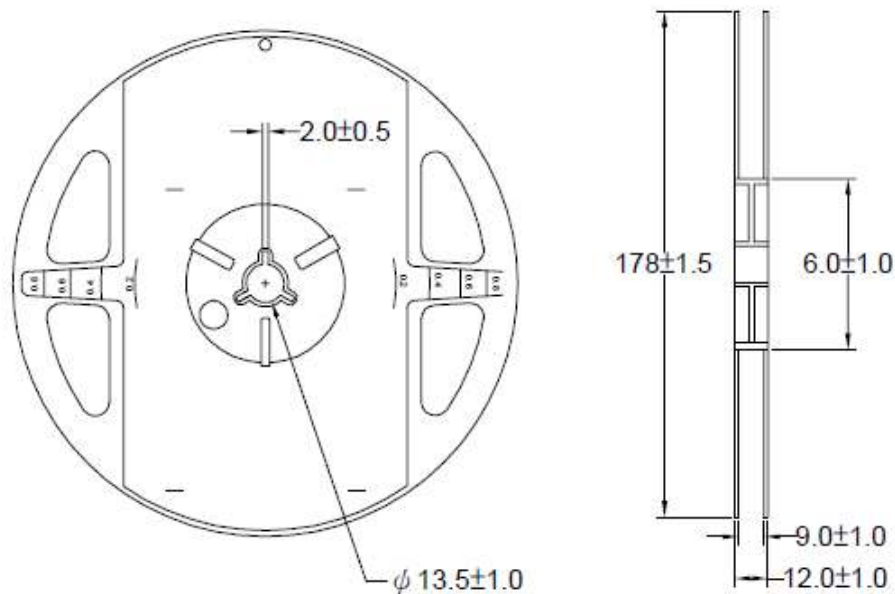
2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

CARRIER TAPE DIMENSION



Note: The tolerances unless mentioned are ±0.1mm, Angle ±0.5mm

REEL DIMENSIONS



Note: 8.0mm tape, 7: reel / 3000 devices per reel.



American Opto Plus LED Corp. L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

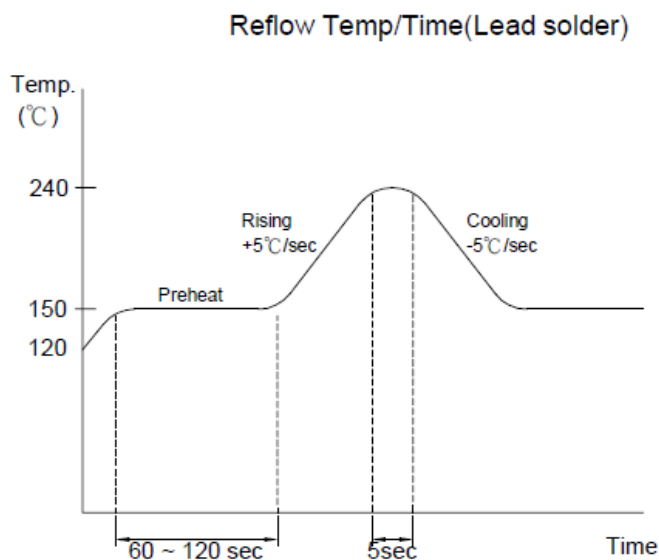
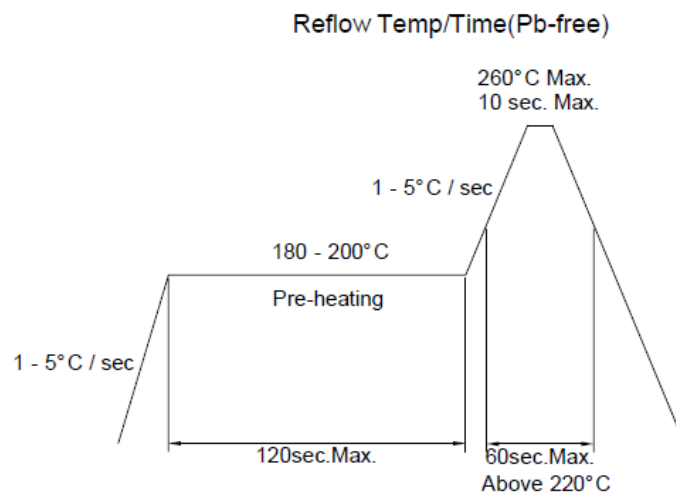
RECOMMENDED SOLDERING CONDITIONS

Soldering Iron:

Basic spec is ≤ 5 seconds when 260°C .

Power dissipation of iron should be smaller than 25W, and temperature should be controllable.

Surface temperature of the device should be under 280°C for 3 seconds.



Notes:

1. Reflow soldering should not be done more than two times.
2. When soldering, do not put stress on the LEDs during heating.
3. After soldering, do not warp the circuit board.



American Opto Plus LED Corp.

L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

PRECAUTIONS FOR USE

Storage Time:

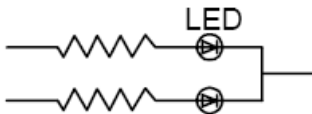
1. The operation of temperatures and RH are: 5°C~35°C, RH60%.
2. Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with desiccating agent. Considering the tape life, we suggest our customers to use our products within a year (from production date).
3. If opened more than one week in an atmosphere 5°C~35°C, RH60%, they should be treated at 60°C±5°C for 15hrs.

Drive Method:

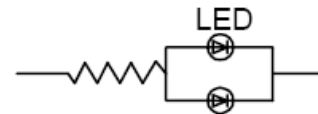
LED is a current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in a series with the LED.

Consider worst case voltage variations that could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LEDs. All devices and machinery must be properly grounded.



American Opto Plus LED Corp. L233QBC-TR

2.8 x 0.8 x 1.2 Right Angle BLUE SMD, Tape and Reel

RELIABILITY TEST:

(1) Test items and results

| Classification | Test Item | Test Conditions | Sample Size |
|---------------------------|---|--|-------------|
| Endurance Test | Operating Life Test | 1. Ta=under room temperature as per data sheet maximum rating 2. If=20mA 3. t=1000 hrs | 22 |
| | High Temperature Storage Test | 1. Ta=105°C±5°C 2. t=500 hrs | 22 |
| | Low Temperature Storage Test | 1. Ta=40°C±5°C 2. t=1000 hrs | 22 |
| | High Temperature High Humidity Storage Test | 1. IR-Reflow in-board, 2 times 2. Ta=85°C±5°C 3. RH=90%~95% 4. t=500hrs±2hrs | 22 |
| Environmental Test | Thermal Shock Test | 1. IR-Reflow in-board, 2 times 2. Ta=105°C±5°C & -40°C±5°C (30min) (30min) 3. Total 100 cycles | 22 |
| | Reflow Soldering Test | 1. Tsol=260°C±5°C 2. Dwell time = 10 max | 22 |
| | Temperature Cycling | 1. 105°C ~ 25°C ~ -40°C 30 mins 15 mins 30 mins 2. 100 cycles | 22 |

(2) Criteria for judging the damage

| Item | Symbol | Test Conditions | Criteria for Judgement | |
|--------------------|----------------|----------------------|------------------------|--------------|
| | | | Min. | Max. |
| Forward Voltage | V _f | I _f =20mA | -- | U.S.L. x 1.2 |
| Reverse Current | I _r | V _r =5V | -- | U.S.L. x 2.0 |
| Luminous Intensity | I _v | I _f =20mA | L.S.L. x 0.5 | -- |

Note:

1. U.S.L.: Upper Standard Level. 2. L.S.L.: Lower Standard Level