

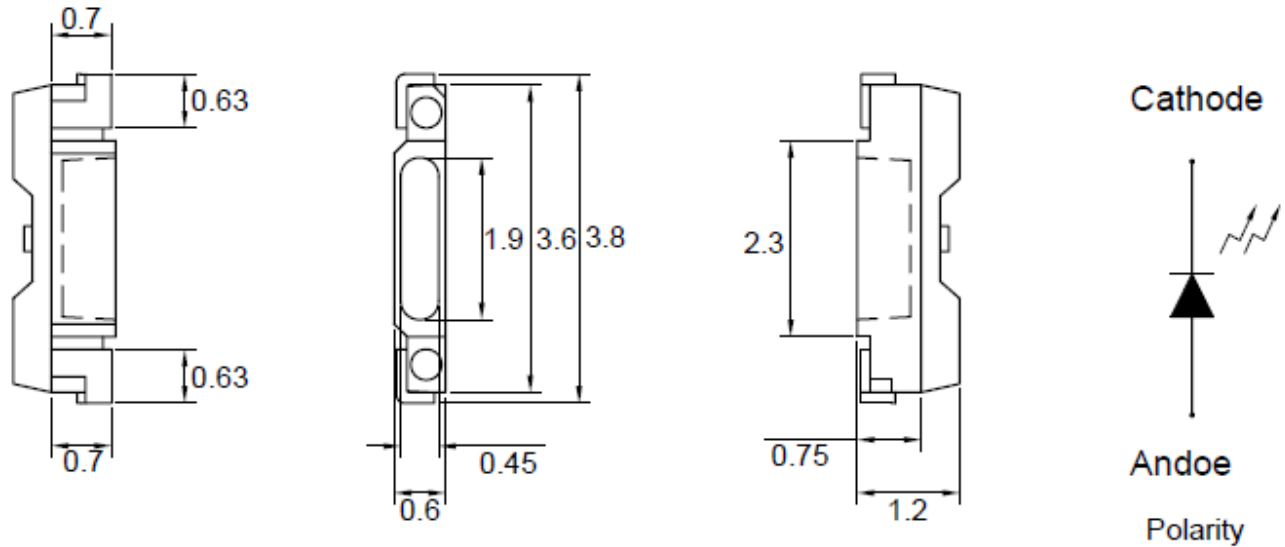


# American Opto Plus LED Corp.

## L234QBC-TR

3.8 x 1.2 x 0.6 Blue Right Angle SMD, Tape and Reel

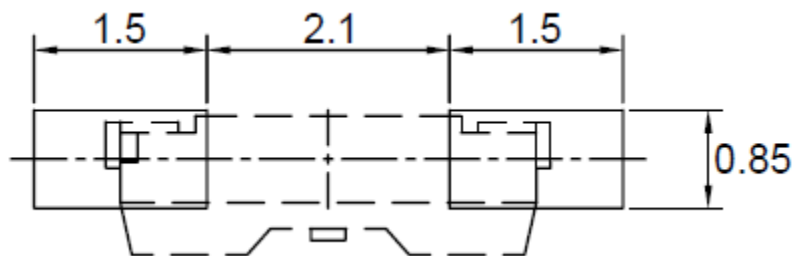
### PACKAGE OUTLINES



#### NOTES:

1. All dimension is in millimeter; tolerance  $\pm 0.2\text{mm}$  unless otherwise noted;
2. Specifications are subject to change without notice.

### RECOMMENDED SOLDERING PAD DIMENSIONS



NOTES: All dimensions are in millimeter; tolerance  $\pm 0.1\text{mm}$  unless otherwise noted

Part Number	Material	Lens Color	
		Emitted	Lens
L234QBC- TR	InGaN	Blue	Water Clear



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### ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
Power Dissipation	$P_D$	108	mW
Peak Forward Current (Duty 1/10@10KHz)	$I_{fp}$	100	mA
Forward Current	$I_f$	30	mA
Reverse Current @ 5V	$I_r$	50	$\mu$ A
Electrostatic Discharge	ESD	500	V
Operating temperature range	$T_{opr}$	-20~+80	°C
Storage temperature range	$T_{stg}$	-30~+100	°C
LED Junction Temperature	$T_j$	115	°C
Thermal Resistance	$R_{th}^{j-s}$	60	°C/W

### OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Luminous Intensity	$I_v$	$I_F=20mA$	125	200	--	mcd
Dominant Wavelength	$\lambda_D$		--	455	--	nm
Spectral Line Half-Width	$\Delta\lambda$		--	30	--	nm
Forward Voltage	$V_f$		2.8	--	3.6	V
Viewing angle	$2\theta \frac{1}{2}$		--	120	--	Deg

\*Note: 1. The forward voltage data did not include  $\pm 0.1V$  testing tolerance.  
 2. The luminous intensity data did not include  $\pm 15\%$  testing tolerance.



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### TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

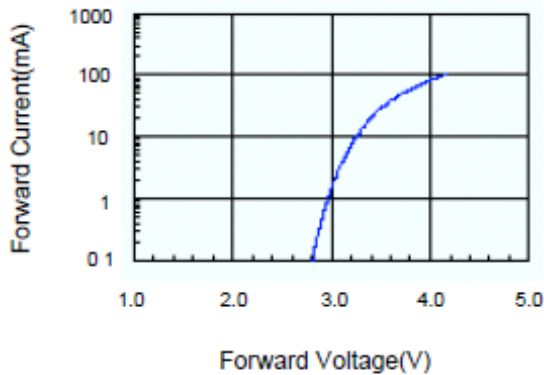


Fig.2 Relative Intensity vs. Forward Current

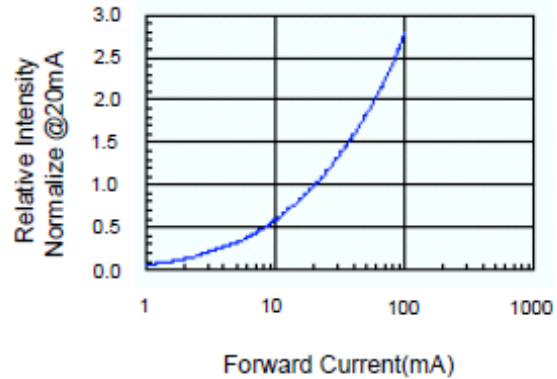


Fig.3 Forward Voltage vs. Temperature

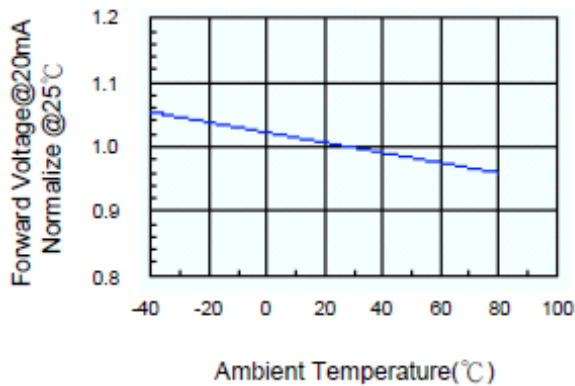


Fig.4 Relative Intensity vs. Temperature

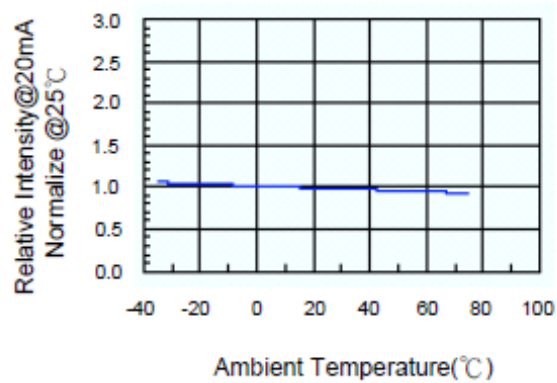


Fig.5 Relative Intensity vs. Wavelength

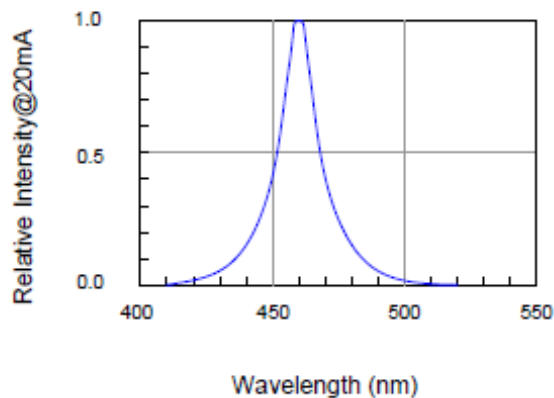
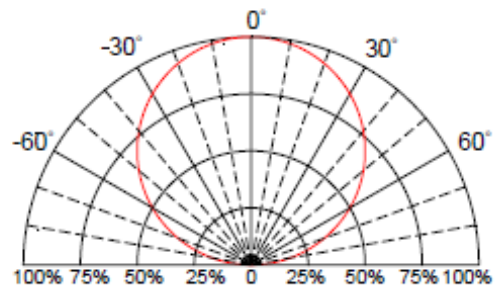


Fig.6 Directive Radiation





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### BIN CODE LIST

$I_F=20\text{mA}$

Luminous Intensity Classification		Unit: mcd
BIN Code	Min.	Max.
R	125	200
S	200	320
T	320	500
U	500	800

$I_F=20\text{mA}$

Dominant Wavelength Classification		Unit: nm
Bin Code	Min.	Max.
0I	450	453
0H	453	456
0G	456	459
0F	459	462

$I_F=20\text{mA}$

Forward Voltage Classification		Unit: V
BIN Code	Min.	Max.
1	2.8	3.0
2	3.0	3.2
3	3.2	3.4
4	3.4	3.6

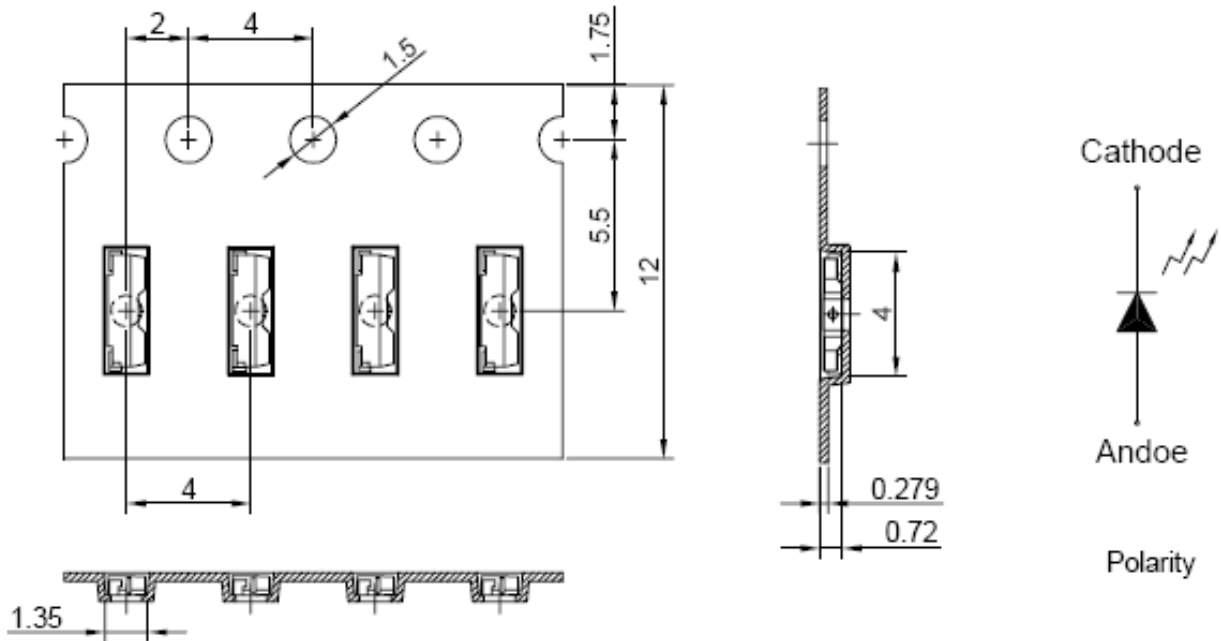


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## L234QBC-TR

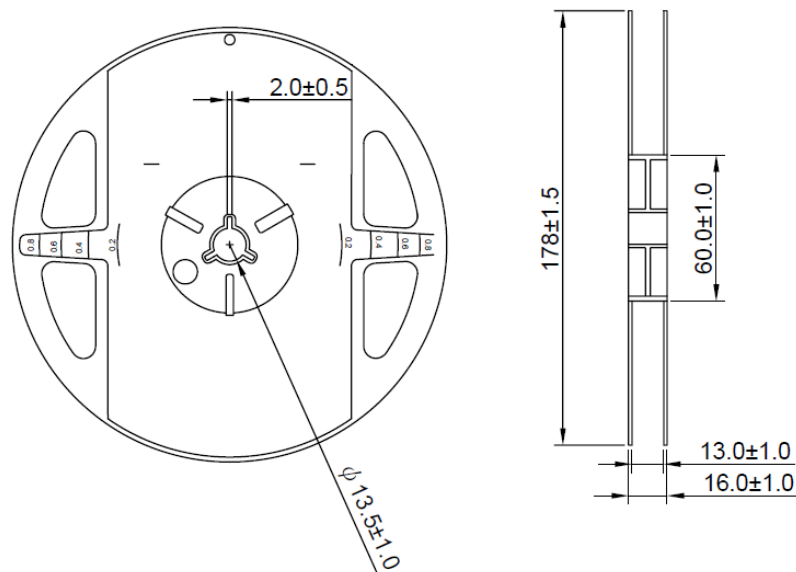
3.8 x 1.2 x 0.6 Blue Right Angle SMD, Tape and Reel

### CARRIER TAPE DIMENSION



Note: The tolerances unless mentioned are  $\pm 0.1\text{mm}$ , Angle  $\pm 0.5$

### REEL DIMENSIONS



Notes:

1. 3000 pieces per reel.



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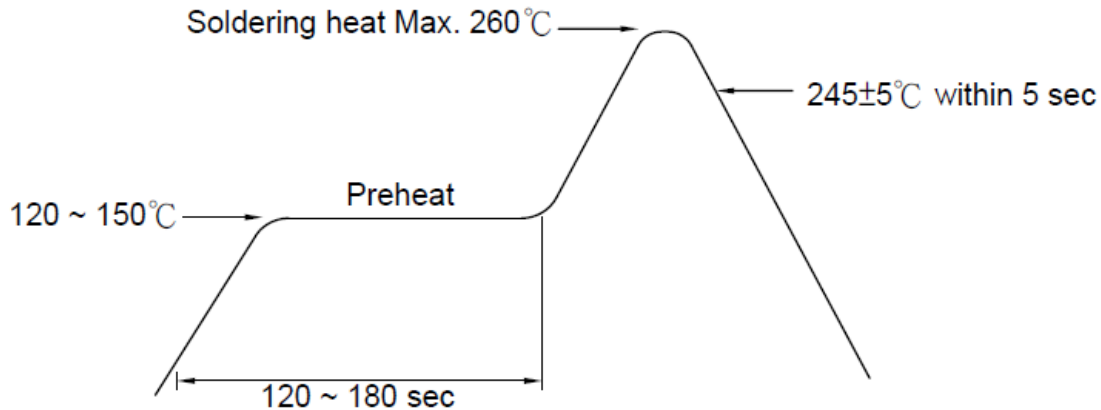
3.8 x 1.2 x 0.6 Blue Right Angle SMD, Tape and Reel

### RECOMMENDED SOLDERING CONDITIONS

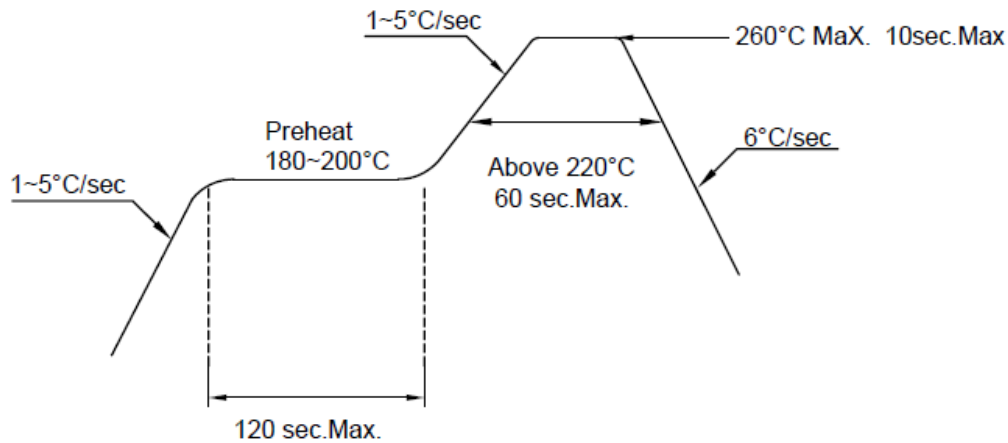
#### 1. Hand Solder

Basis spec is  $\leq 320^{\circ}\text{C}$  for 3 sec

#### 2. Wave Solder



#### 3. PB-Free Reflow Solder



#### 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.



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### PRECAUTIONS FOR USE

#### Storage Time:

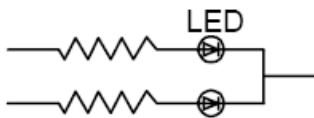
1. The operation of temperatures and RH are: 5°C~35°C, RH60%.
2. Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with desiccating agent. Considering the tape life, we suggest our customers to use our products within a year (from 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:

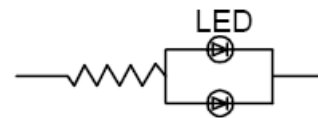
LED is a current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in a series with the LED.

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.



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### 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. T <sub>sol</sub> =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 <sub>f</sub>	I <sub>f</sub> =20mA	--	U.S.L. x 1.2
Reverse Current	I <sub>r</sub>	V <sub>r</sub> =5V	--	U.S.L. x 2.0
Luminous Intensity	I <sub>v</sub>	I <sub>f</sub> =20mA	L.S.L. x 0.5	--

Note:

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