

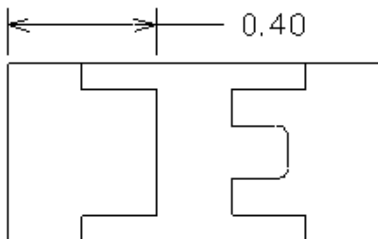
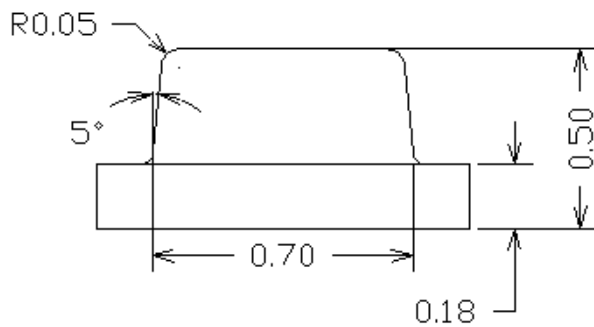
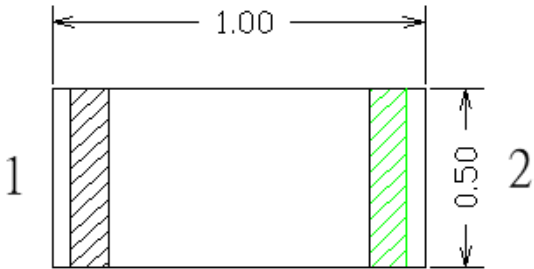


# American Opto Plus LED Corp.

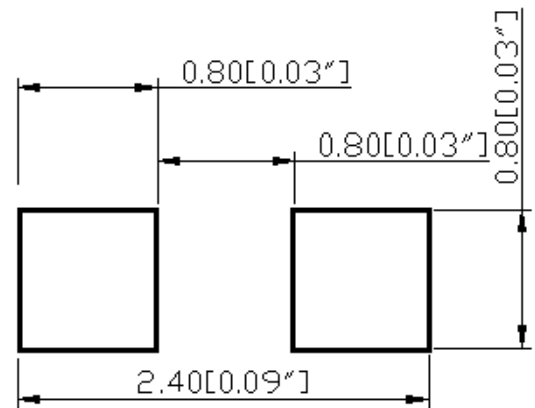
## L199QBC-TR

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.

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## L199QBC-TR

1.0 x 0.5 x 0.5mm Blue SMD LED

### ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

	Symbol	Value	Unit
Forward Current	I <sub>F</sub>	30	mA
Reverse Voltage	V <sub>r</sub>	5	V
Power Dissipation	P <sub>D</sub>	111	mW
Operating Temperature Range	T <sub>op</sub>	-40~+80	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+85	°C
Peak Pulsing Current (1/8 duty f=1kHz)	I <sub>fp</sub>	125	mA

### OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at Peak Emission	IF=20mA	λ <sub>p</sub>	--	460	--	nm
Spectral Half Bandwidth		Δλ	--	25	--	nm
Dominant Wavelength		λ <sub>d</sub>	460	465	470	nm
Forward Voltage		V <sub>f</sub>	2.8	3.1	3.7	V
Luminous Intensity		I <sub>v</sub>	50	85	160	mcd
Viewing Angle at 50% I <sub>v</sub>	IF=10mA	2Θ1/2	--	140	--	deg
Reverse Current	V <sub>r</sub> =5V	I <sub>r</sub>	--	--	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)	$\lambda$ d (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  $\pm 15\%$
2. Tolerance of Dominant wavelength is  $\pm 1.5\text{nm}$
3. This specification is preliminary



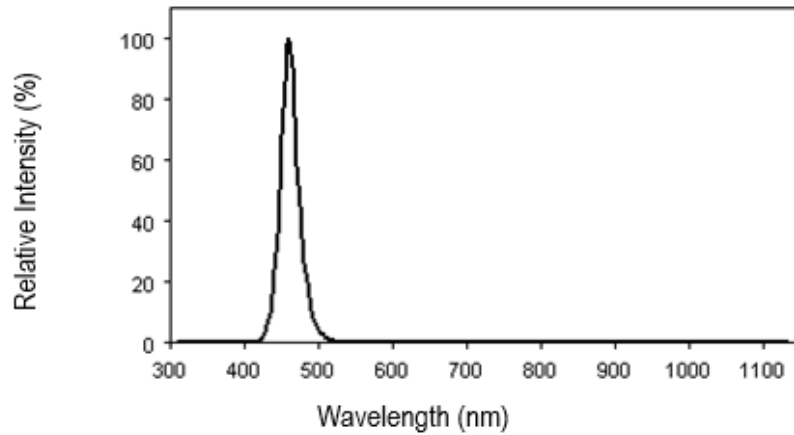
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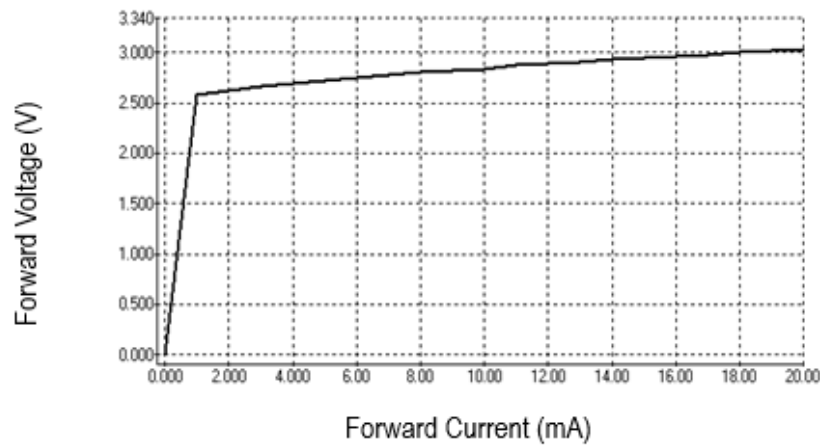
1.0 x 0.5 x 0.5mm Blue SMD LED

### OPTICAL CHARACTERISTIC CURVES

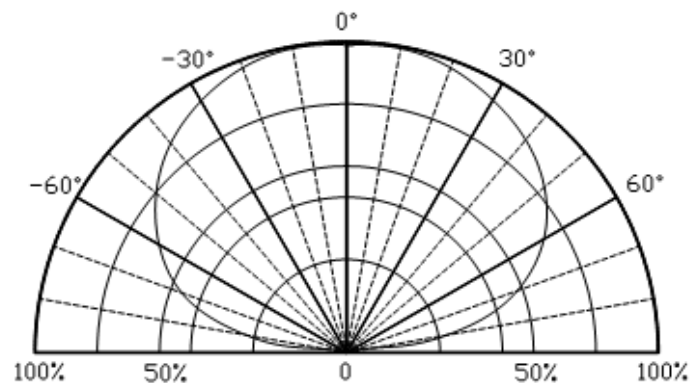
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage



Directive Characteristics





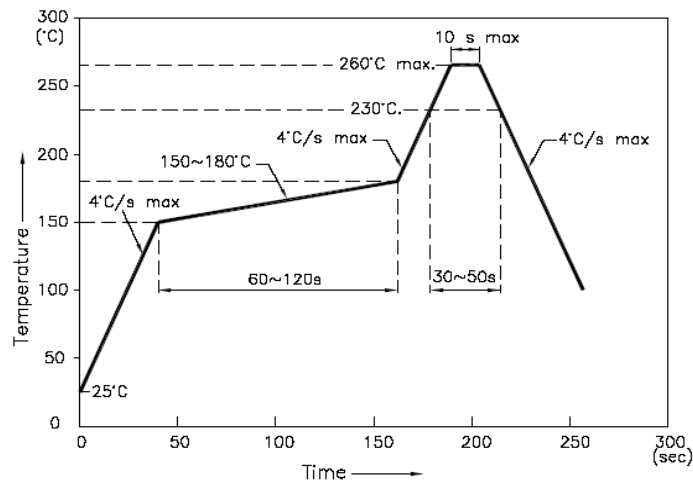
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### REFLOW PROFILE

- Reflow Temp/Time



#### Notes:

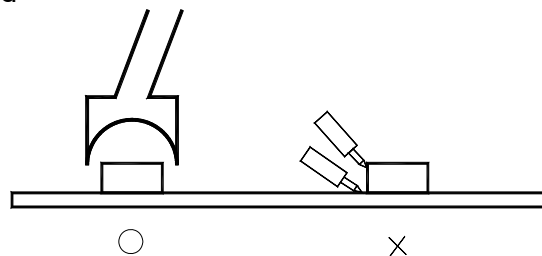
1. We recommend the reflow temperature 245°C ( $\pm 5^\circ\text{C}$ ). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

#### Soldering iron

- Basic spec is  $\leq 5\text{sec}$  when 260°C. If temperature is higher, time should be shorter ( $+10^\circ\text{C} \rightarrow -1\text{sec}$ ). 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.



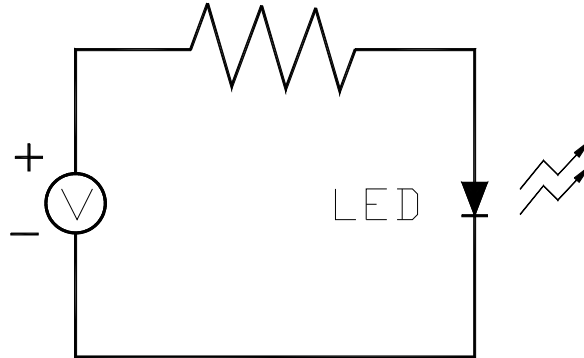
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### TEST CIRCUIT AND HANDLING PRECAUTIONS

- **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 <sub>a</sub> =80°C	1000 hrs	0/22
	Humidity Heat Storage	T <sub>a</sub> =60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	T <sub>a</sub> =-30°C	1000 hrs	0/22
Operation Sequence	Life Test	T <sub>a</sub> =25°C I <sub>F</sub> =20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% I <sub>F</sub> =10mA	500 hrs	0/22
	Low Temperature Life Test	T <sub>a</sub> =-20°C I <sub>F</sub> =20mA	1000 hrs	0/22





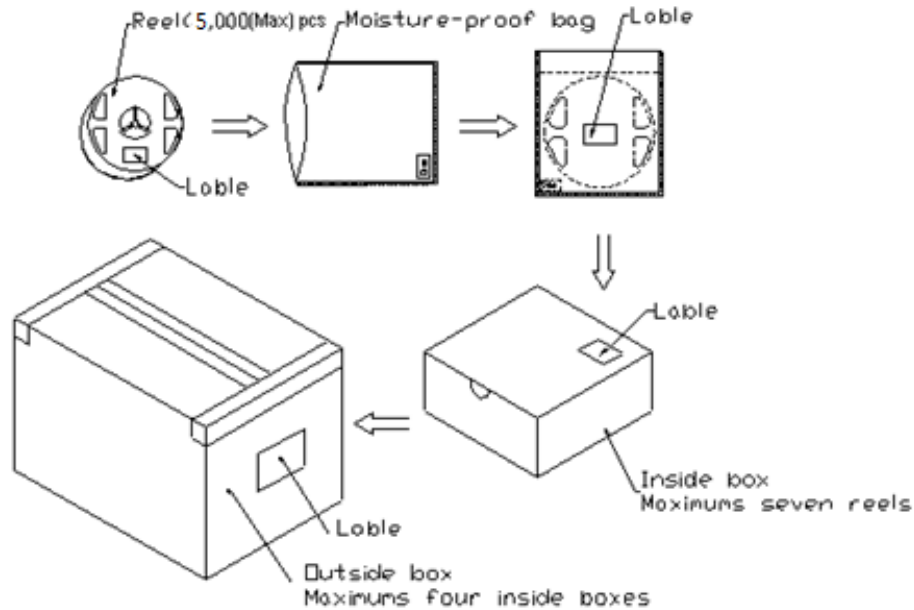


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## PACKAGING SPECIFICATION



### 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.