



American Opto Plus LED

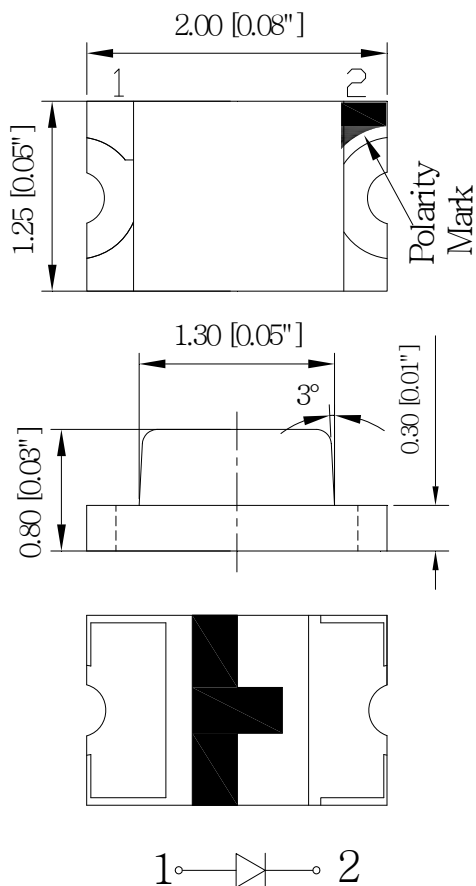
L170B-QPGC-TR

2.0 x 1.25 x 0.8mm SMD LED

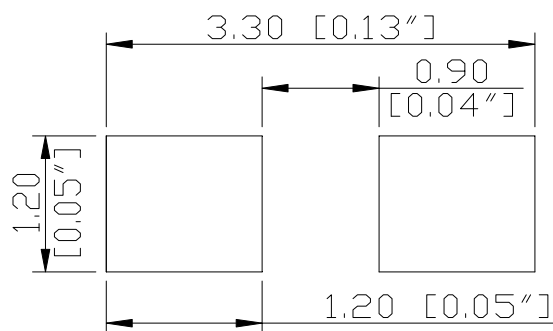
MAIN FEATURES:

- ◆ LOW CURRENT REQUIREMENT
- ◆ WIDE VIEWING ANGLE
- ◆ LOW POWER CONSUMPTION
- ◆ I.C. COMPATIBLE

PACKAGE DIMENSIONS



RECOMMEND PAD LAYOUT



ITEM	MATERIALS
Resin (mold)	Epoxy
Lens color	Water transparent
Dice	InGaN
Emitted color	Pure Green

Notes:

1. All dimensions are in millimeters (inches);
2. Tolerances are $\pm 0.1\text{mm}$ (.004) unless otherwise noted.



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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Max Rating	Unit
Forward Current	I_F	30	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	111	mW
Operating Temperature Range	T_{OPR}	-40~+80	°C
Storage Temperature Range	T_{STG}	-40~+85	°C
Pulse Forward Current (1/10 Duty Cycle)	I_{PF}	125	mA

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Peak Wavelength	λ_p	$I_F = 20\text{mA}$	--	520	--	nm
Spectral half bandwidth	$\Delta\lambda$	$I_F = 20\text{mA}$	--	33	--	nm
Dominant Wavelength	λ_D	$I_F = 20\text{mA}$	520	525	530	nm
Forward Voltage	V_F	$I_F = 20\text{mA}$	2.8	3.2	3.7	V
Luminous Intensity	I_V	$I_F = 20\text{mA}$	250	450	800	mcd
Viewing Angle at 50%	2θ1/2	$I_F = 10\text{mA}$	--	140	--	deg.
Reverse Current	I_R	$V_R = 5\text{V}$	--	--	10	uA



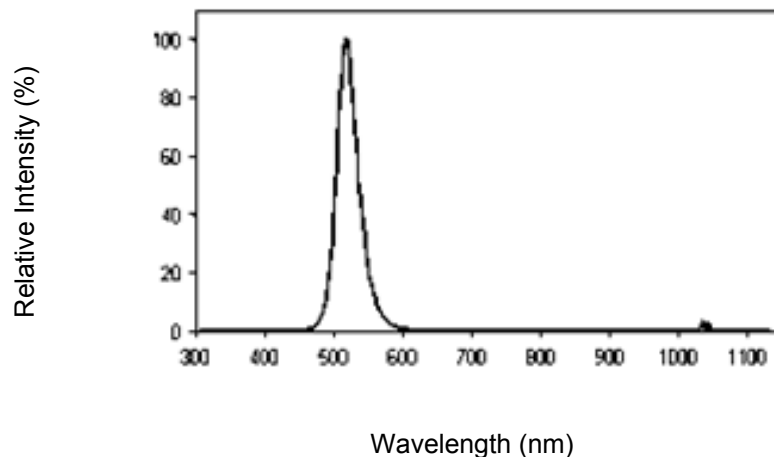
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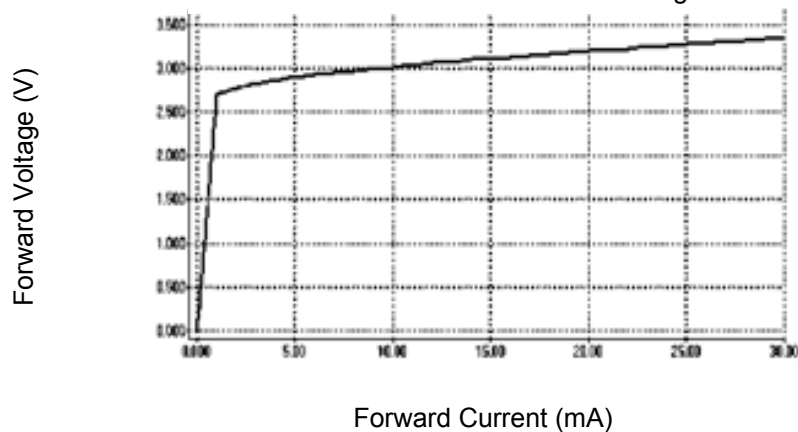
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Typical Electro-Optical Characteristic Curves

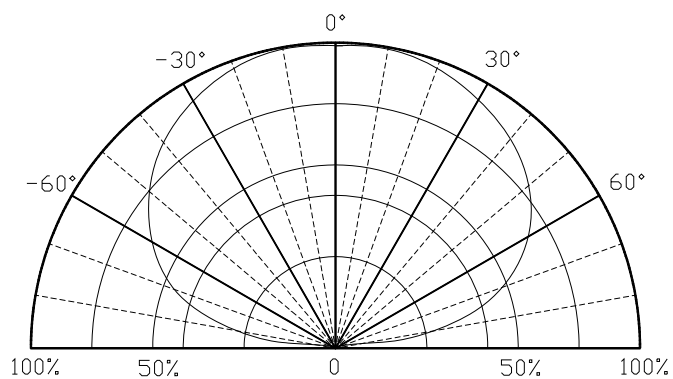
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage



Directive Characteristics



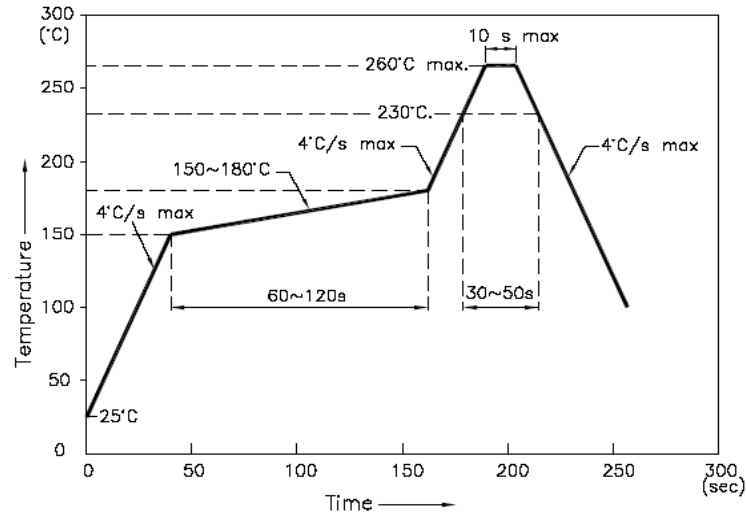


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• Reflow Temp/Time



NOTES:

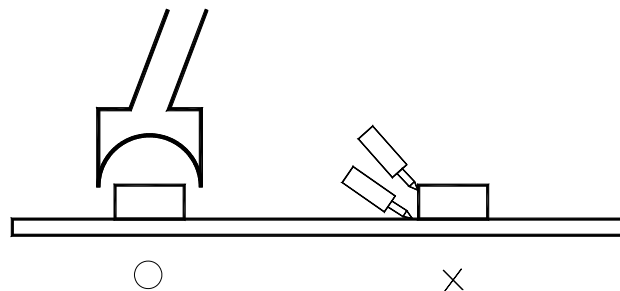
1. We recommend the reflow temperature 245°C(±5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

• Soldering iron

Basic spec is ≤ 5sec when 260°C. If temperature is higher, time should be shorter (+10°C → -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 sec under 260°C.
2. Avoid solder iron contact with 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 items and results of reliability

Type	Test Item	Test Conditions	Note	④ Number of Damaged
Environmental Sequence	Temperature Cycle	-20℃ 30min ↑↓ 80℃ 30min	100 cycle	0/22
	Thermal Shock	-20℃ 15min ↑↓ 80℃ 15min	100 cycle	0/22
	High Humidity Heat Cycle	30℃↔ 65℃ 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	T _a =80℃	1000 hrs	0/22
	Humidity Heat Storage	T _a =60℃ RH=90%	1000 hrs	0/22
	Low Temperature Storage	T _a =-30℃	1000 hrs	0/22
Operation Sequence	Life Test	T _a =25℃ I _F =20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60℃ RH=90% I _F =10mA	500 hrs	0/22
	Low Temperature Life Test	T _a =-20℃ I _F =20mA	1000 hrs	0/22

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. 3,000 pcs/Reel



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SURFACE MOUNT LED LAMPS

Forward Voltage Rank Combination (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 Combination (IF=20mA)

Rank	Min.	Max.	Unit
N	250	320	mcd
O	320	400	
P	400	500	
Q	500	630	
R	630	800	

Dominant wavelength Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
U	520	522.5	nm
V	522.5	525	
W	525	527.5	
X	527.5	530	

Group Name on Label (Example DATA: gPV 20)				
DATA: gPV 20	Vf(V)	Iv (mcd)	λ d (nm)	Test Condition
g→P→V→20	3.1~3.4	400~500	522.5~525	IF=20mA