

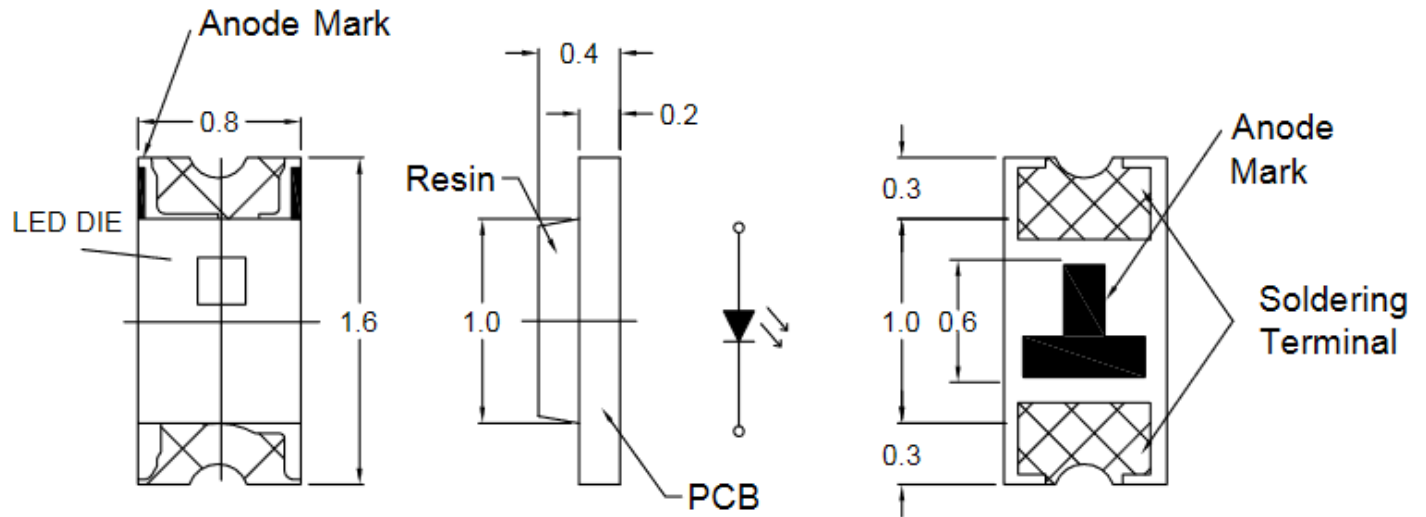


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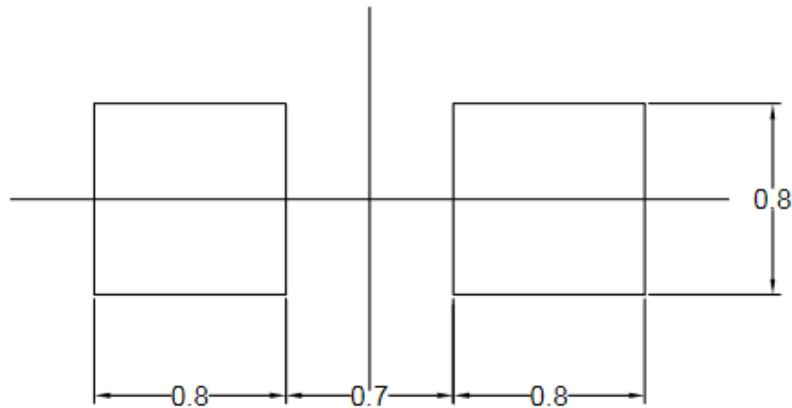
L196L-UEC-TR

1.6 x 0.8 x 0.4 mm Red SMD LED

PACKAGE OUTLINES



PAD LAYOUT



NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are ± 0.1 mm unless otherwise noted.

Chip Material	Chip Emitted	Lens Color	Viewing Angle
AlGaInP	Red	Water Clear	130



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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Value	Unit
Forward current	I _f	25	mA
Reverse current @ 5V	I _r	10	μA
Power dissipation	P _d	65	mW
Operating temperature range	T _{op}	-40~+85	°C
Storage temperature range	T _{stg}	-40~+100	°C
Peak pulsing current (1/10 duty f= 10KHz)	I _{fp}	75	mA
Electrostatic Discharge	ESD	2000	V

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Spectral half bandwidth	Δλ	I _F = 20mA	-	20	-	nm
Dominant wavelength	λ _{dom}	I _F = 20mA	-	625	-	Nm
Forward Voltage	V _f	I _F = 20mA	1.7	-	2.6	V
Luminous intensity	I _v	I _F = 20mA	125	320	-	mcd
Viewing angle at 50% I _v	2Θ ½	I _F = 20mA	-	130	-	Deg



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LUMINOUS INTENSITY CLASSIFICATION

(IF=20mA)

Bin Code	Min	Max	Unit
R	125	200	mcd
S	200	320	
T	320	500	
U	500	800	

DOMINANT WAVELENGTH CLASSIFICATION

(IF=20mA)

Bin Code	Min	Max	Unit
28	621	624	nm
29	624	627	
30	627	630	
31	630	633	
32	633	636	

FORWARD VOLTAGE CLASSIFICATION

(IF=20mA)

Bin Code	Min	Max	Unit
1	1.7	1.8	V
2	1.8	2.0	
3	2.0	2.2	
4	2.2	2.4	
5	2.4	2.6	



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OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

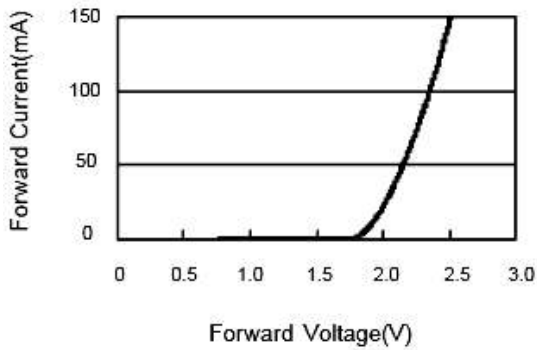


Fig.2 Luminous Intensity vs. Forward Current

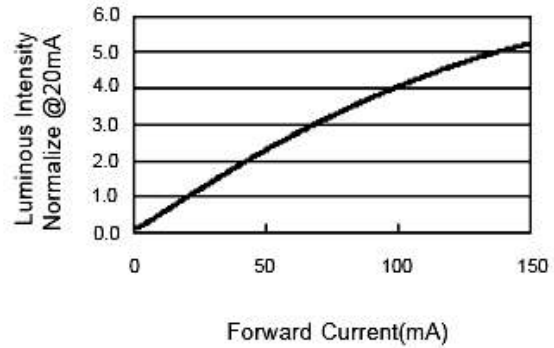


Fig.3 Forward Current vs. Temperature

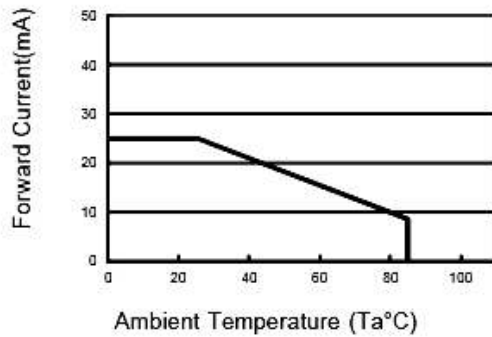


Fig.4 Luminous Intensity vs. Temperature

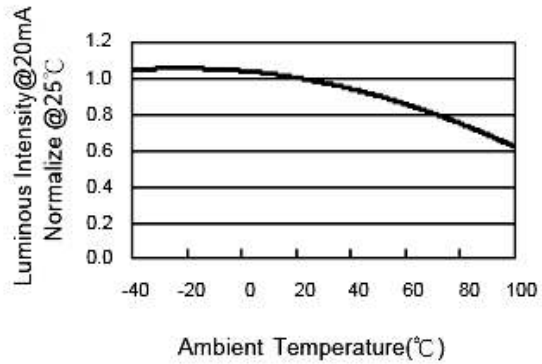


Fig.5 Relative Intensity vs. Wavelength

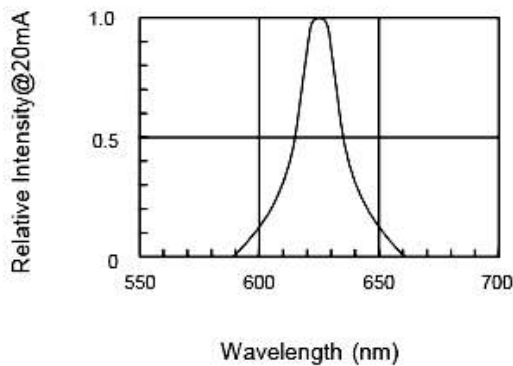
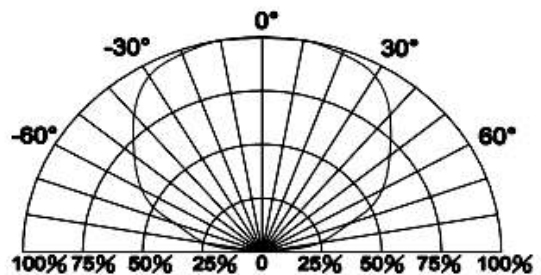


Fig.6 Directive Radiation



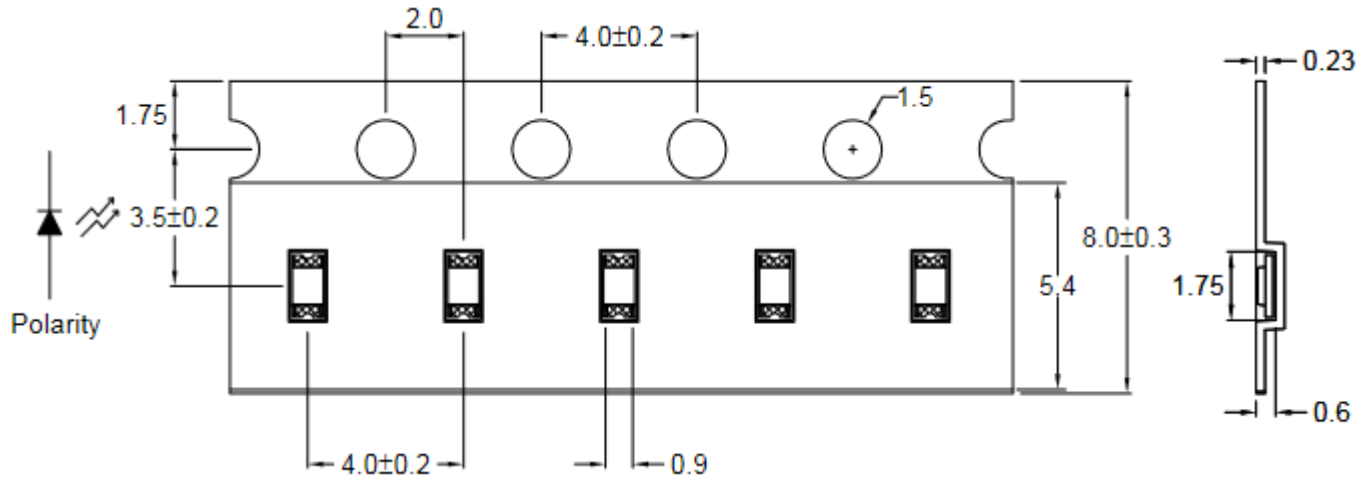


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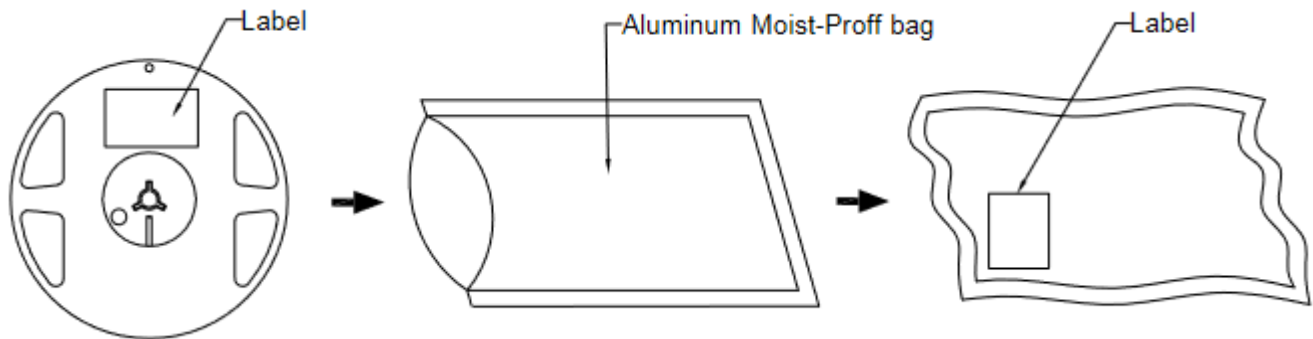
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Dimensions of Tape (Unit: mm)



PACKAGING SPECIFICATION



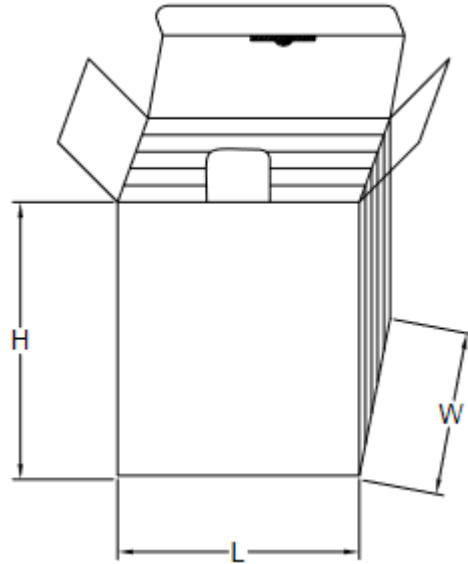


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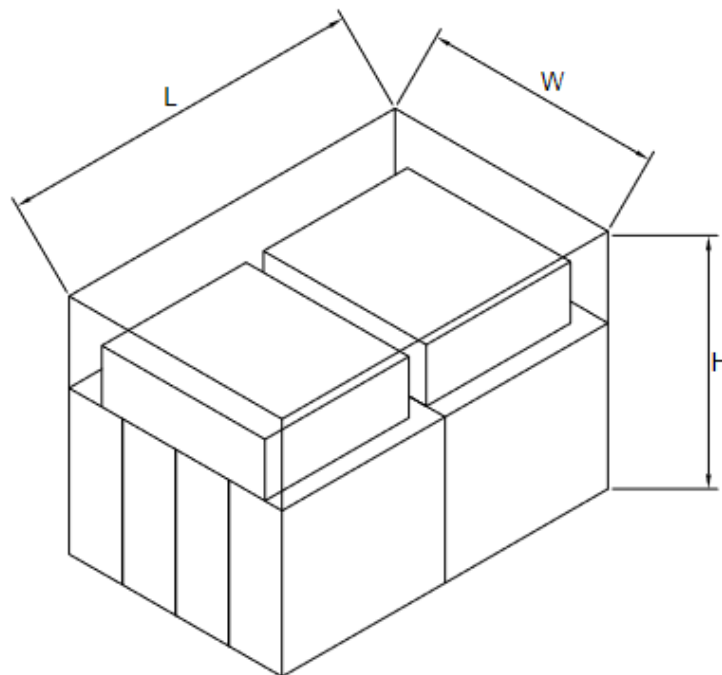
1.6 x 0.8 x 0.4 mm Red SMD LED

BOX EXPLANATION



Notes:

1. 5 bag/inner box
2. Carton size : L x W x H 23cm x 8.5cm x 26cm



Notes:

1. 10 inner boxes/carton
2. Carton size : L x W x H 58cm x 34cm x 35cm



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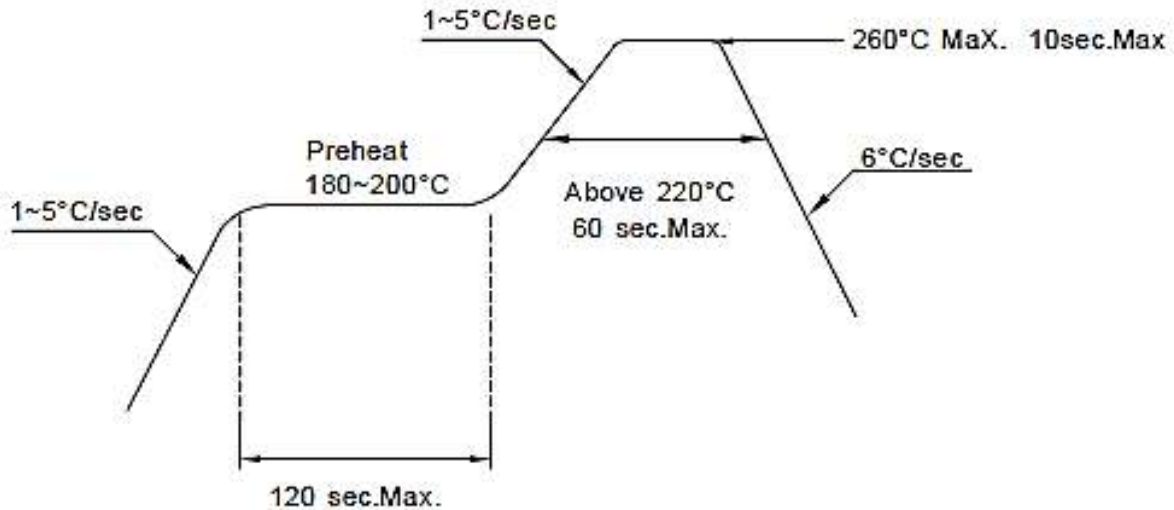
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RECOMMENDED SOLDERING CONDITIONS

1. Hand Solder

Basic spec is $\leq 280^{\circ}\text{C}$ 3 sec one time only

2. PB-Free Reflow Solder



Note:

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



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PRECAUTIONS FOR USE:

Storage time:

1. Calculated shelf life before opening is 18 months at $< 30^{\circ}\text{C}$ and $< 90\%$ relative humidity (RH).
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be:
 - a) Assembled within 1 year in an environment of $\leq 30^{\circ}\text{C}$ / 60% RH, or
 - b) Stored at ambient of 10% RH or less.
3. Devices are required baking before assembly if:
 - a) Humidity Indicator Card reads $>10\%$ (for level 2a -5a) or $>60\%$ (for level 2) at ambient temperature $23\pm 5^{\circ}\text{C}$.
 - b) 2.a) or 2.b) doesn't meet.
4. If baking is required, devices should be baked for >72 hours at $60\pm 5^{\circ}\text{C}$ / 5% RH. Performing baking only once, and using the baked devices within 72 hours.

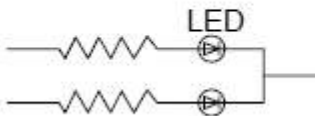
MSL LEVEL 2

Drive method:

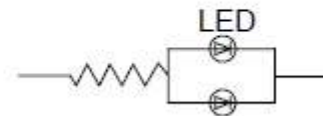
LED is current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

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

Circuit model A



Circuit model B



value

(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 LED. All devices, equipment and machinery must be properly grounded.



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RELIABILITY TEST

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=25°C 2.If=20mA 3.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature Storage Test	1.Ta=100°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature High Humidity Storage Test	1.Ta=85°C 2.RH=85% 3.t=1000hrs(-24hrs,+72hrs)	22
Environmental Test	Thermal Shock Test	1.Ta=100°C±5°C ~ -40°C±5°C 20min/ 10sec / 20min 2.total 100 cycles	22
	Temperature Cycling	1.100°C±5°C - -40°C±5°C 30mins / 5mins / 30mins 2.100 Cyeles	22
	IR Reflow	1.T=260°C Max. 10sec.Max. 2. 6 Min	22