

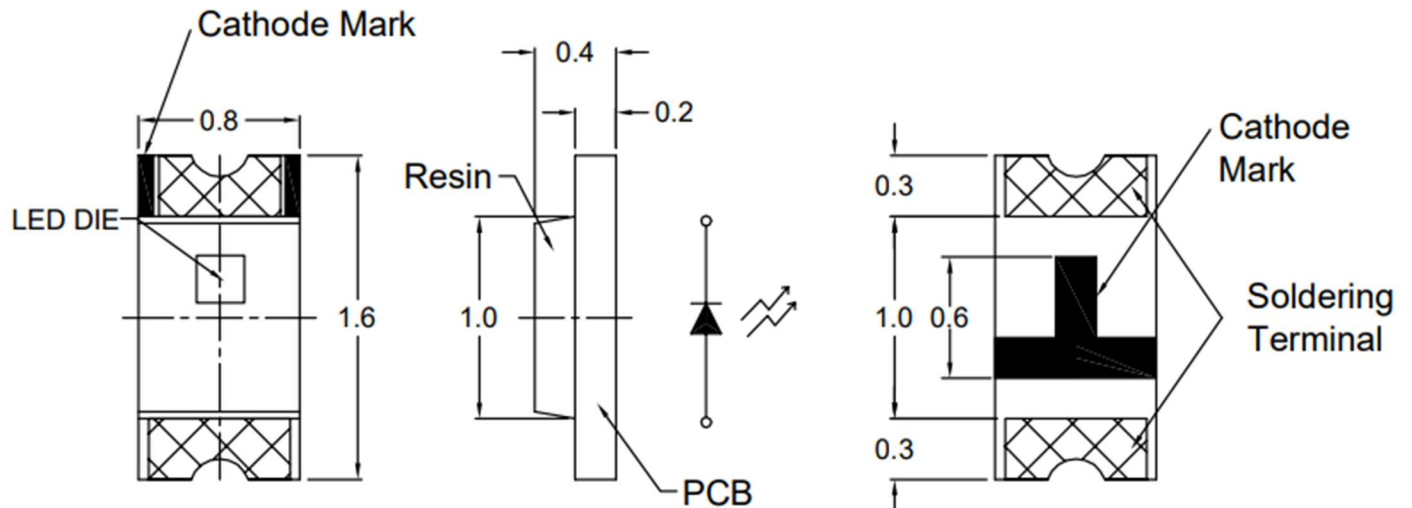


American Opto Plus LED Corp.

L196L-NWC-TR

1.6 x 0.8 x 0.4mm White SMD LED

PACKAGE DIMENSION

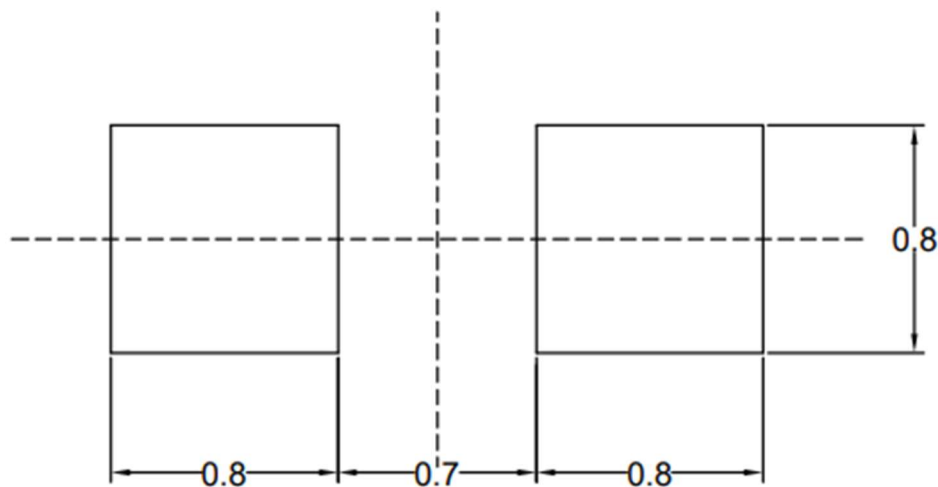


Notes:

1. All dimension are in millimeter tolerance is ± 0.1 mm unless otherwise noted.
2. Specifications are subject to change without notice.

Material	Color	
	Emitted	Lens
InGaN/GaN	White	Yellow Diffused

RECOMMENDED SOLDERING PAD PATTERN



Notes:

1. The tolerances unless mentioned is ± 0.1 mm, angle ± 0.5 .
2. Unit = mm.



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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Value	Unit
Forward Current	If	20	mA
Peak Forward Current Duty 1/10 @ 10KHz	Ifp	100	mA
Power Dissipation	Pd	80	mW
Reverse Current @ 5V	Ir	50	µA
Electrostatic Discharge	ESD	150	V
Operating Temperature Range	Topr	-40~+85	°C
Storage Temperature Range	Tstg	-40~+90	°C
Soldering Temperature	Tsol	Max 260°C for 5 sec Max	

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Luminous intensity	Iv	IF = 20mA	200	500	--	--
Dominant Wavelength	X		0.21	--	0.35	--
	Y		0.15	--	0.4	--
Spectral Half-Width	Δλ		--	30	--	nm
Forward Voltage	Vf		--	3.5	4.0	V
Viewing angle	2θ ½		--	140	--	Deg

Notes:

1. The forward voltage data did not including ±0.1V testing tolerance.
2. The luminous intensity data did not including ±15% testing tolerance.
3. The dominant wavelength data did not including ±1nm testing tolerance.



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CHROMATICITY COORDINATES SPECIFICATION FOR BIN GRADING

Bin	X	Y	Bin	X	Y	Bin	X	Y
A1	0.21	0.19	B1	0.26	0.265	C1	0.31	0.34
	0.21	0.15		0.26	0.225		0.31	0.30
	0.22	0.165		0.27	0.24		0.32	0.315
	0.22	0.205		0.27	0.28		0.32	0.355
Bin	X	Y	Bin	X	Y	Bin	X	Y
A2	0.22	0.205	B2	0.27	0.28	C2	0.32	0.355
	0.22	0.165		0.27	0.24		0.32	0.315
	0.23	0.18		0.28	0.255		0.33	0.33
	0.23	0.22		0.28	0.295		0.33	0.37
Bin	X	Y	Bin	X	Y	Bin	X	Y
A3	0.23	0.22	B3	0.28	0.295	C3	0.33	0.37
	0.23	0.18		0.28	0.255		0.33	0.33
	0.24	0.195		0.29	0.27		0.34	0.345
	0.24	0.235		0.29	0.31		0.34	0.385
Bin	X	Y	Bin	X	Y	Bin	X	Y
A4	0.24	0.235	B4	0.29	0.31	C4	0.34	0.385
	0.24	0.195		0.29	0.27		0.34	0.345
	0.25	0.21		0.30	0.285		0.35	0.36
	0.25	0.25		0.30	0.325		0.35	0.40
Bin	X	Y	Bin	X	Y			
A5	0.25	0.25	B5	0.30	0.325			
	0.25	0.21		0.30	0.285			
	0.26	0.225		0.31	0.30			
	0.26	0.265		0.31	0.34			

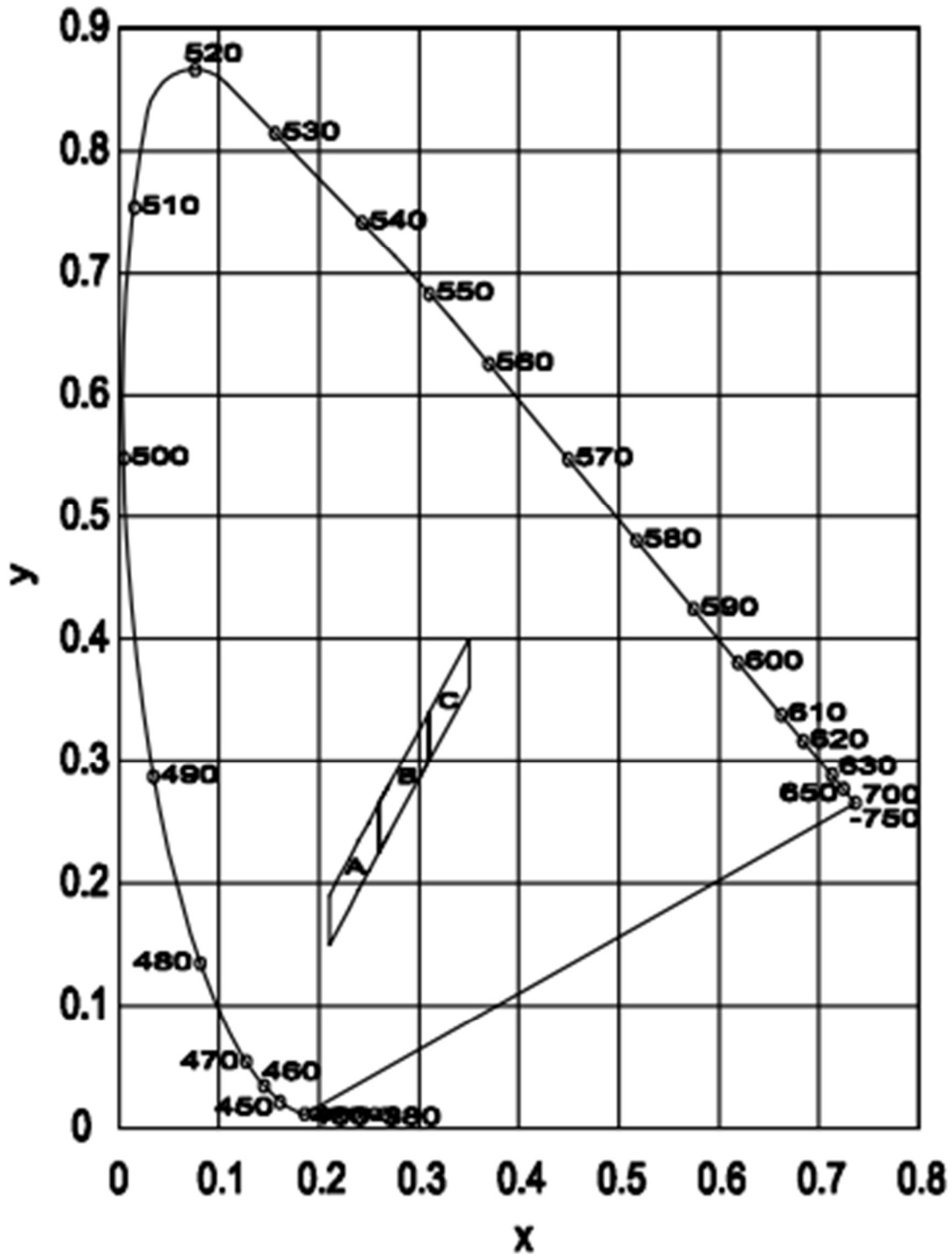


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CIE CHROMATICITY DIAGRAM





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ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

(Ta=25°C)

Fig.1 Forward current vs. Forward Voltage

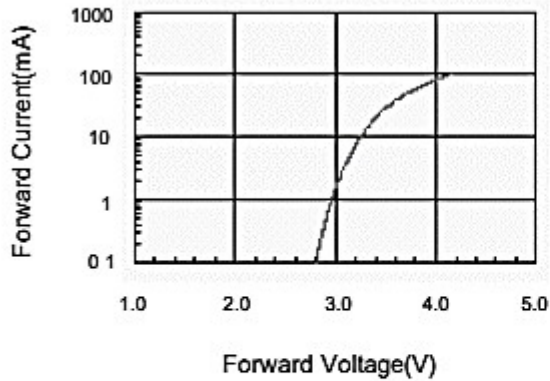


Fig.2 Relative Intensity vs. Forward Current

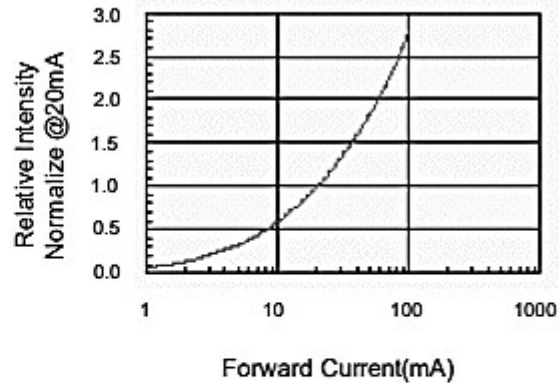


Fig.3 Forward Voltage vs. Temperature

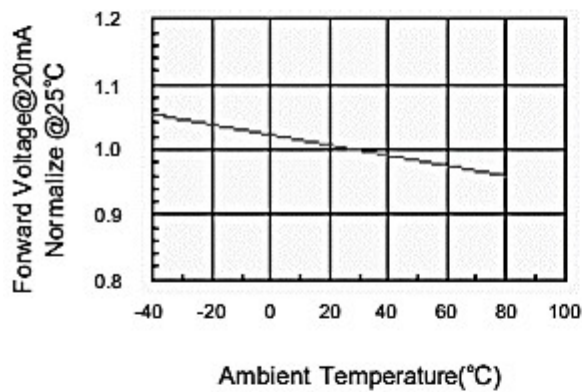


Fig.4 Relative Intensity vs. Temperature

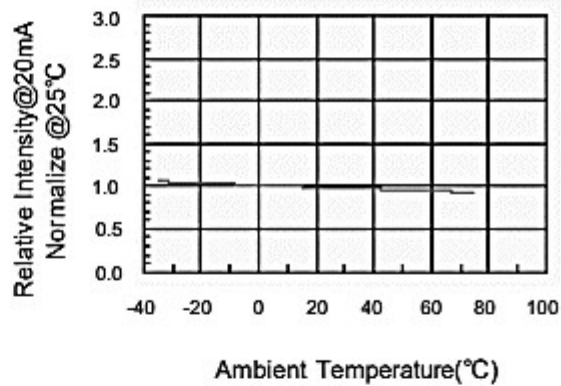


Fig.5 Luminous Spectrum (Ta=25°C)

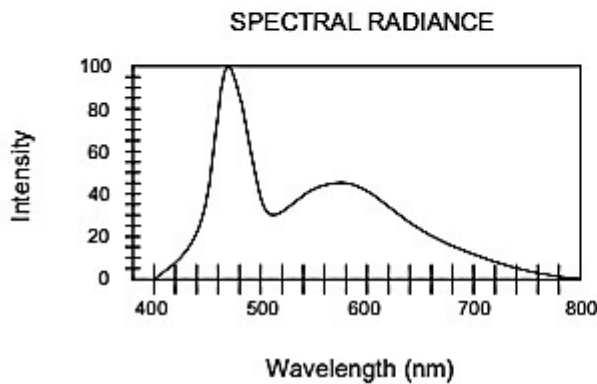
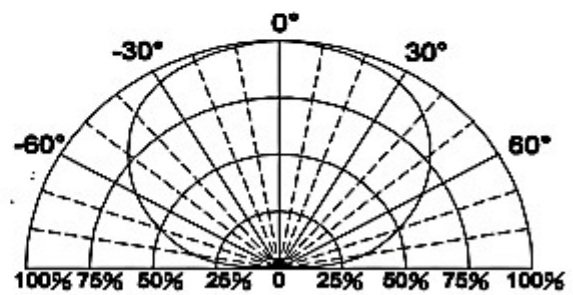


Fig.6 Directive Radiation



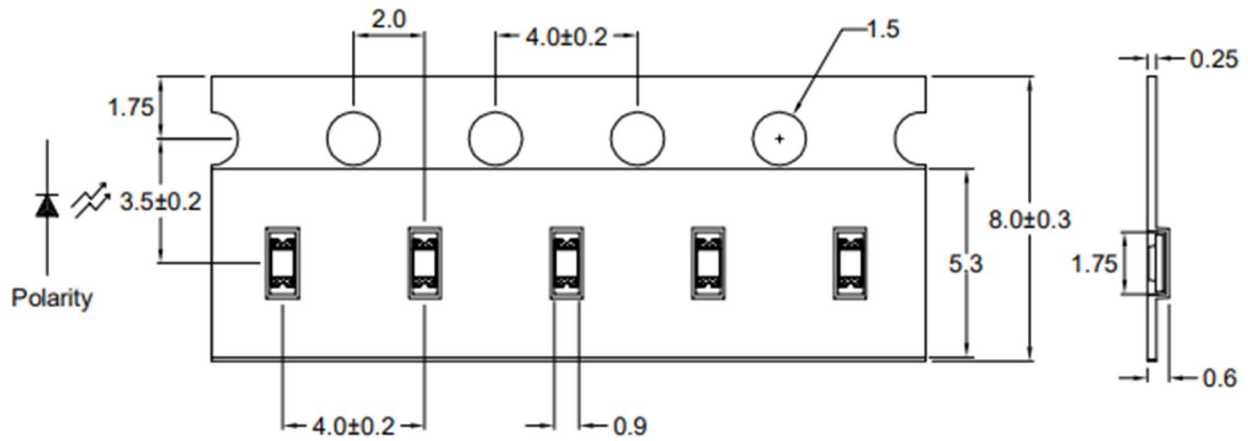


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CARRIER TAPE DIMENSIONS



Note:

1. The tolerances unless mentioned is ± 0.1 mm, Angle ± 0.5 , Unit=mm.

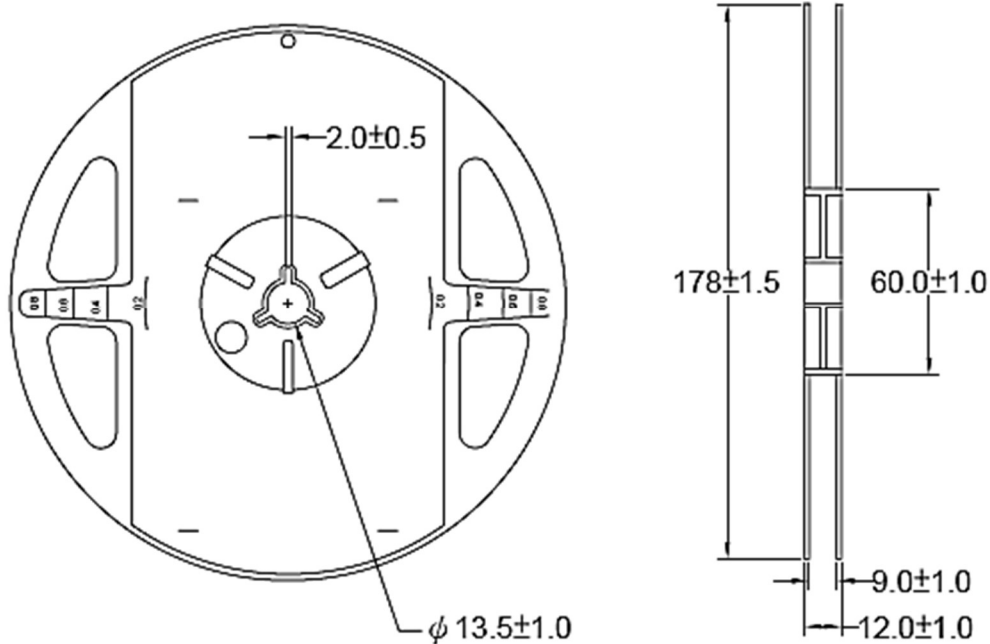


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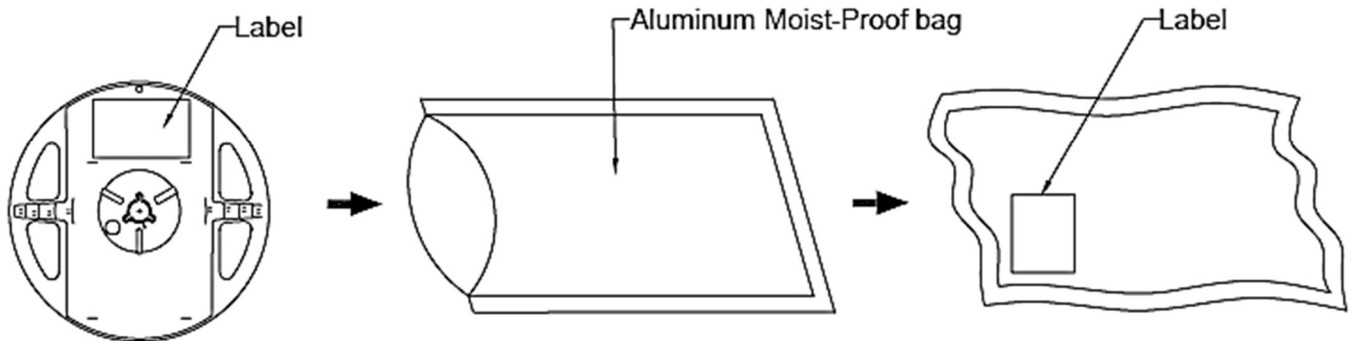
L196L-NWC-TR

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REEL DIMENSIONS



PACKING SPECIFICATIONS



Description	Quantity/Reel
8.0mm tape, 7" reel	4,000 PCS

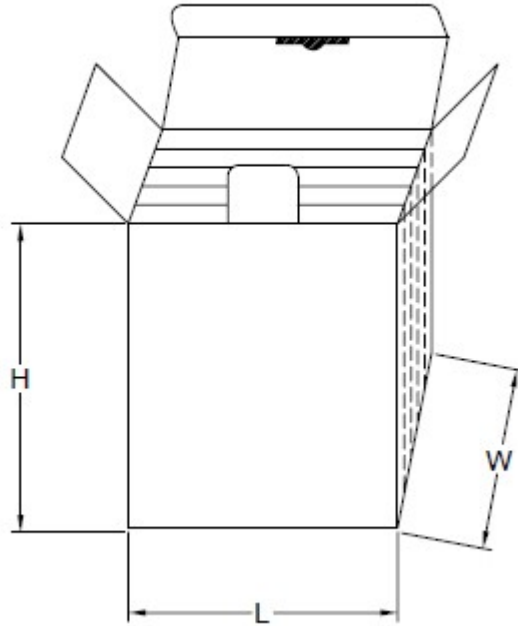


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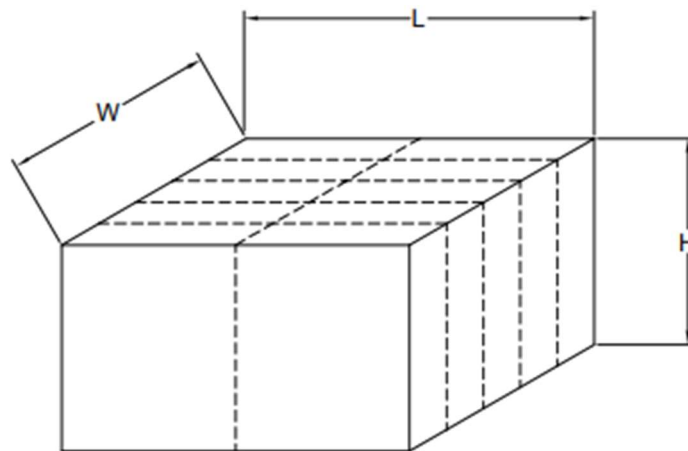
1.6 x 0.8 x 0.4mm White SMD LED

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 49cm x 46cm x 29cm



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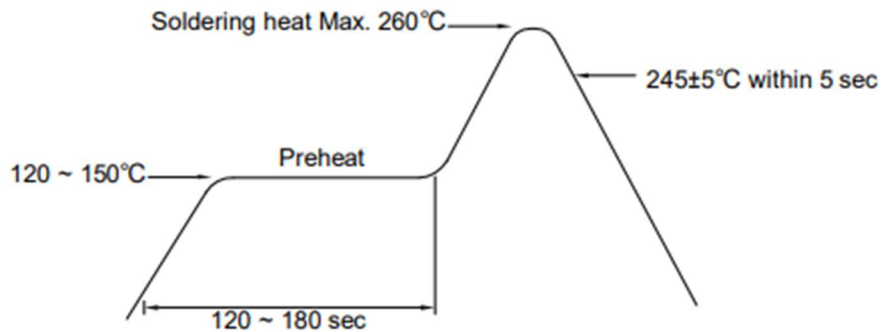
1.6 x 0.8 x 0.4mm White SMD LED

RECOMMENDED SOLDERING CONDITIONS

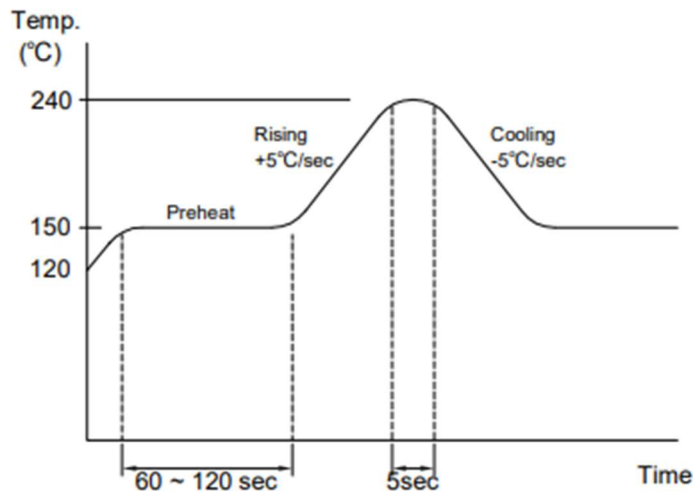
1. Hand Solder

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

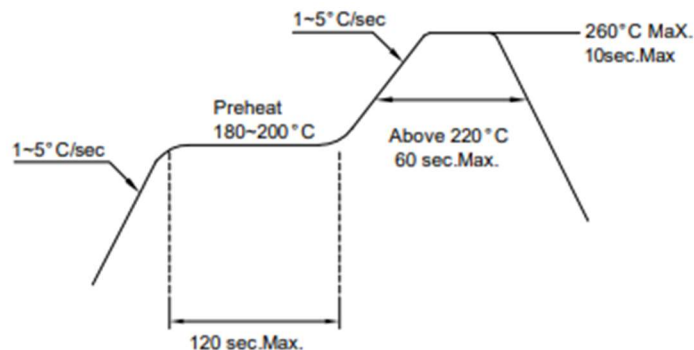
2. Wave solder



3. LEAD Reflow Solder



4. PB-Free Reflow Solder



Note:

1. Reflow soldering should not be done more than two times.



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PRECAUTIONS FOR USE:

Storage time:

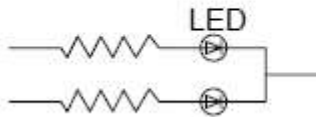
1. The operation of temperatures and RH are: 5°C~35°C, RH60%.
2. Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a proof box with desiccating agent. Considering the tape life, we suggest our customers to use our products within a year (from production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

Drive method:

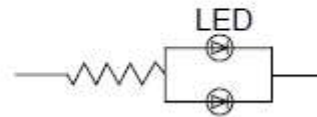
LED is current operated device, and therefore, require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

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



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RELIABILITY TEST

Classification	Test Item	Test Condition	Reference Standard
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-750D: 1026 MIL-STD-883D: 1005 JIS C 7021: B-1
	High Temperature Storage Test	1.Ta=105 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-883D:1008 JIS C 7021: B-10
	Low Temperature Storage Test	1.Ta=-40 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	JIS C 7021: B-12
	High Temperature High Humidity Storage Test	1.Ta=65 °C±5°C 2.RH=90 %~95% 3.t=1000hrs ±2hrs	MIL-STD-202F:103B JIS C 7021: B-11
Environmental Test	Thermal Shock Test	1.Ta=105 °C±5°C&-40°C±5°C (10min) (10min) 2.total 10 cycles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1011
	Solderability Test	1.T.Sol=235 °C±5°C 2.Immersion time 2 ±0.5sec 3.Coverage ≥ 95% of the dipped surface	MIL-STD-202F: 208D MIL-STD-750D: 2026 MIL-STD-883D: 2003 IEC 68 Part 2-20 JIS C 7021: A-2
	Temperature Cycling	1.105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins 5mins 2.10 Cycles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1010 JIS C 7021: A-4
	IR Reflow	1.T=260°C Max. 10sec.Max. 2. 6 Min	MIL-STD-750D:2031.2 J-STD-020