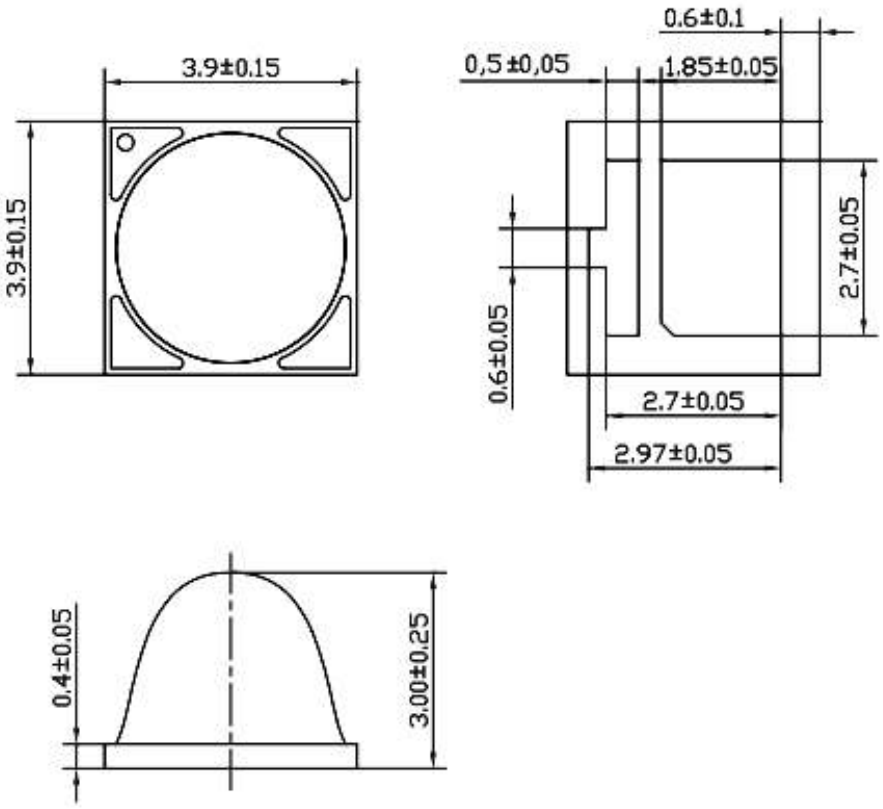
American Opto Plus LED Corp.
IRP4-810C-45D
3.9 x 3.9 x 3.0mm High Power IR LED

PACKAGE OUTLINES



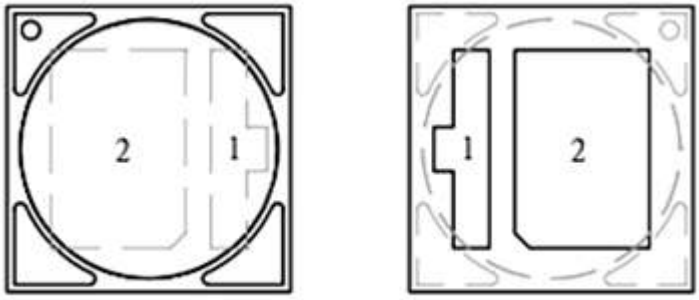
FEATURES

1. Dimensions: 3.9mm(L)×3.9mm(W).
2. High Radiant Flux type.
3. All Metal Design Cu Substrate with Silicone Lens.
4. Exceed narrow beam angle 45°.
5. Ultra-low thermal resistance.
6. Dual-Junction IR chip ν MSL Level: 3.

Note:

1. Units are in millimeters.

PAD CONFIGURATION



TOP BOTTOM

Pad	Function
1	Cathode
2	Anode, Thermal

Note:

1. Please do not put conductive material on the top surface of the LEDs.

ABSOLUTE MAXIMUM RATINGS **Tj=25ºC**

Parameter	Symbol	Rating	Unit
Power Dissipation	P	2.5	W
Forward Current	I_F	1000	mA
Reverse Voltage	V_R	5	V
LED Junction Temperature	Tj	125	ºC
Operating Temp. Range	T_{opr}	-40ºC~+85ºC	
Storage Temp. Range	T_{stg}	-40ºC~+120ºC	
Soldering Condition	T_{sol}	260ºC for 10 sec.	

ELECTRICAL/OPTICAL CHARACTERISTICS **Tj=25ºC**

Parameter	Symbol	Min	Typ	Max	Test Condition	Unit
Peak Wavelength	λp	800	810	820	IF=1000mA	nm
Radiant Flux	Φe	700	850	--		mW
Radiant Intensity	Ie	--	770	--		mW/Sr
Forward Voltage	VF	1.5	1.7	2		V
Spectral Half-Width	Δλ	--	40	--		nm
Beam Angle	2θ ½	--	45	--		deg
Temp. Coefficient of Brightness	TC_I	--	-0.3	--	--	%/K
Temp. Coefficient of Voltage	TC_V	--	-1	--	--	mV/K
Temp. Coefficient of Wavelength	TCλ	--	0.3	--	--	nm/K
Thermal Resistance, Junction Case	Rth, J-C1	--	5	--	--	ºC/W

The thermal resistance value is measured with MCPCB (star).

BIN CODE LIST **Tj=25ºC**

Item	Bin Code	Symbol	Condition	Min	Max	Unit
Forward Voltage	B	V_F	IF=1000mA	1.59	1.83	V
	C			1.83	2.07	
Radiant Flux	H	Φe		700	800	mW
	J			800	900	
	K			900	1000	
Wavelength	J0	λp		800	810	nm
	J1			810	820	

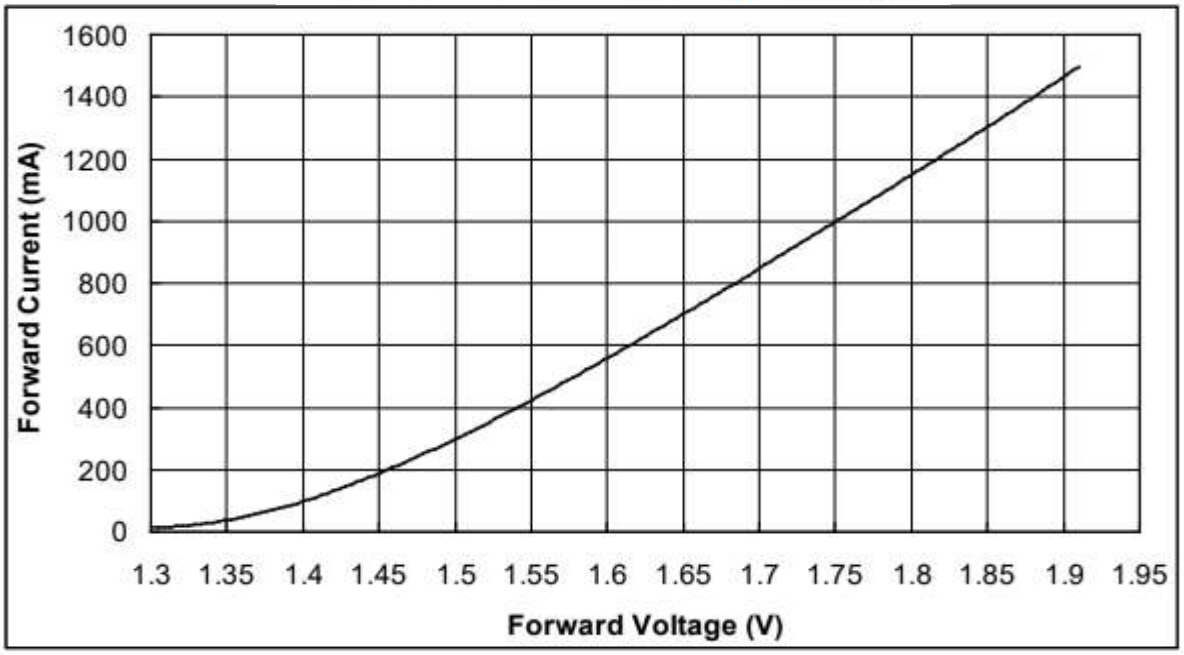
Forward voltage measurement allowance is ± 0.1V.

Radiant flux measurement allowance is ± 10%.

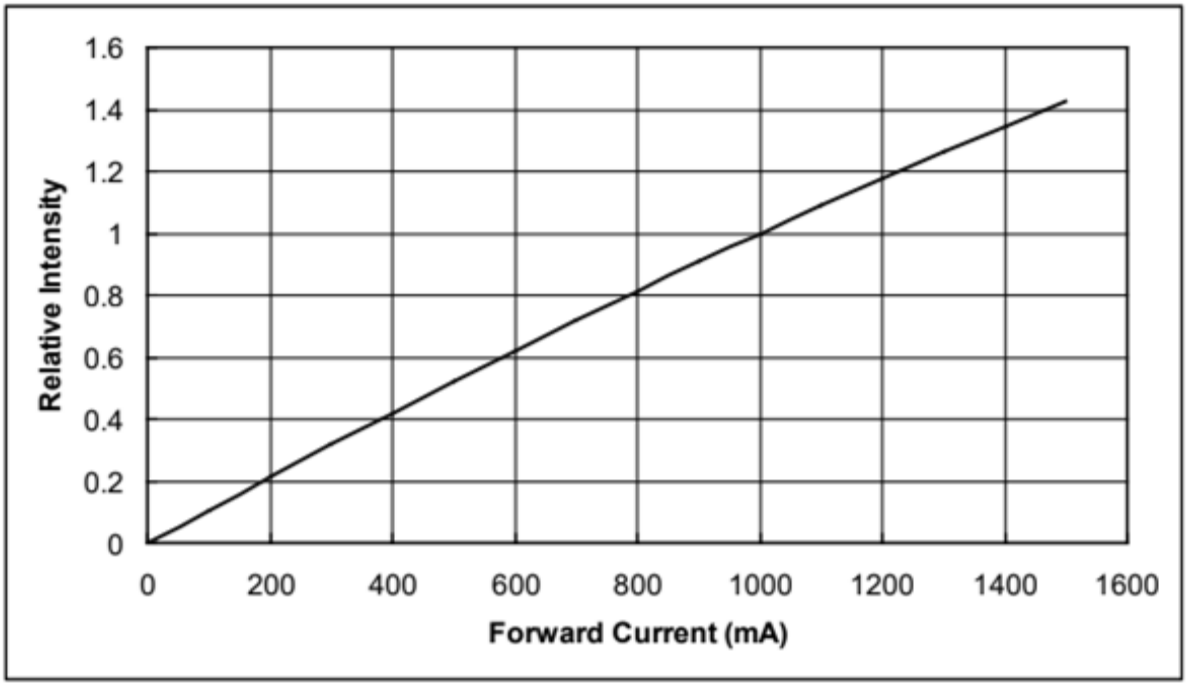
Wavelength measurement allowance is ± 2nm.

CHARACTERISTIC DIAGRAMS

Forward Current vs. Forward Voltage

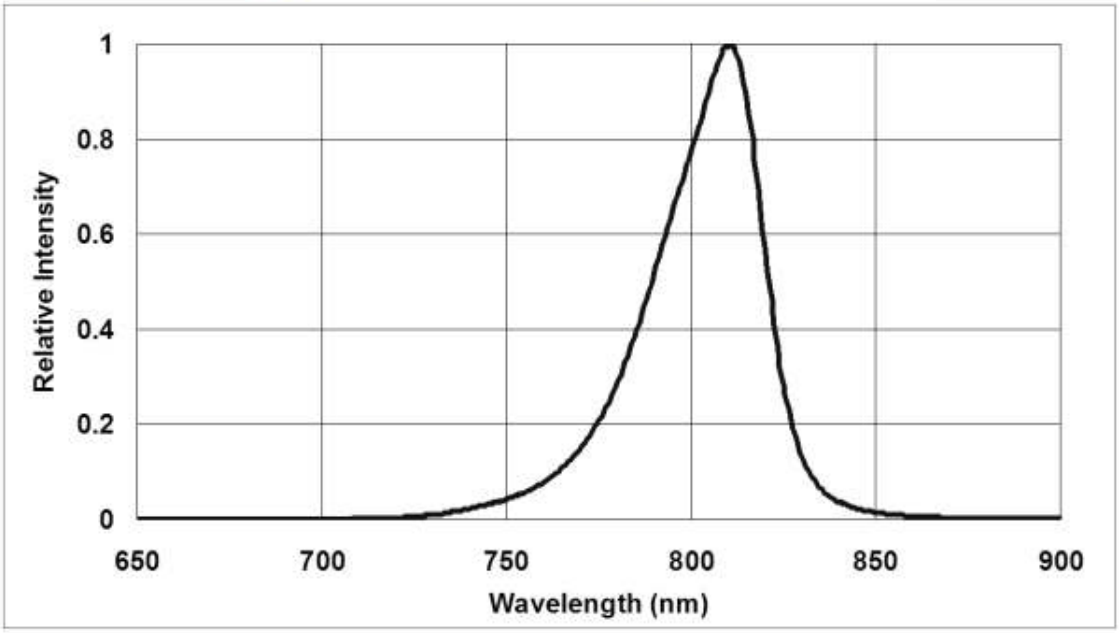


Relative Intensity vs. Forward Current

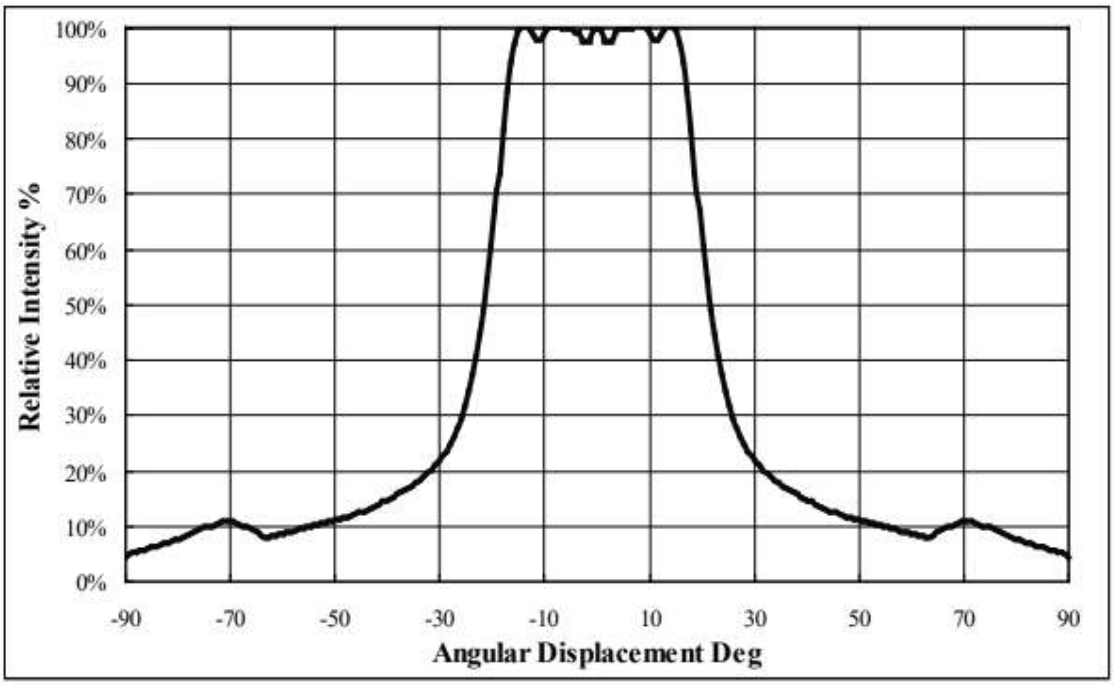


CHARACTERISTIC DIAGRAMS

Typical Relative Intensity vs. wavelength

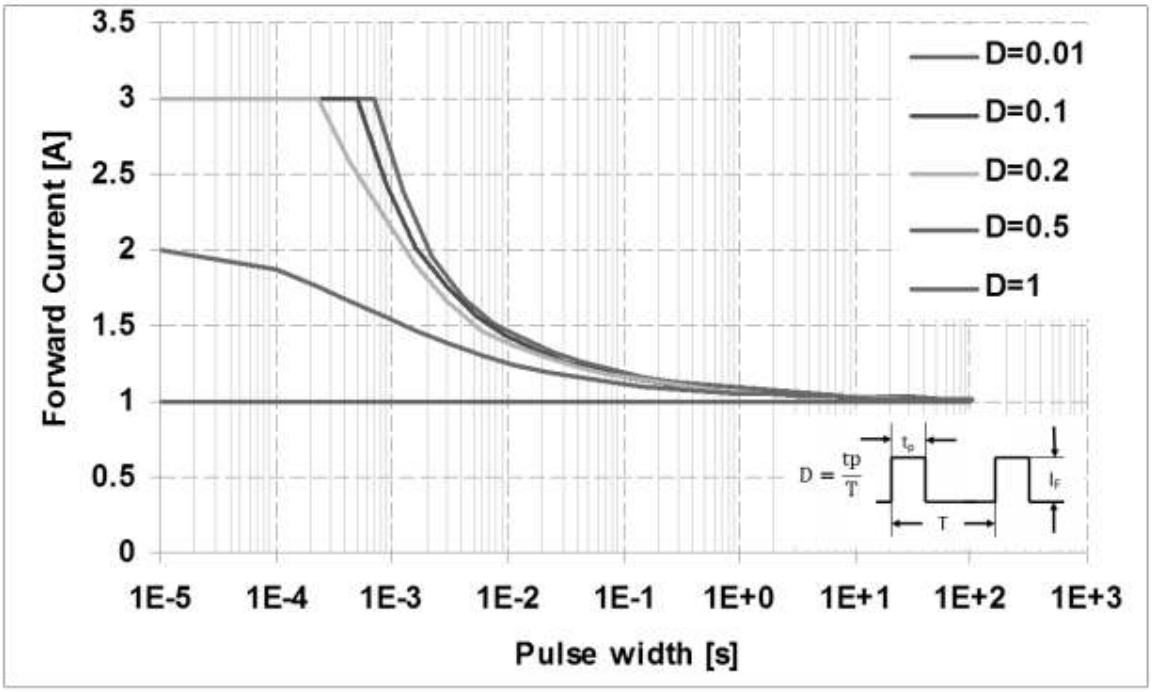


Typical Representative Spatial Radiation Pattern



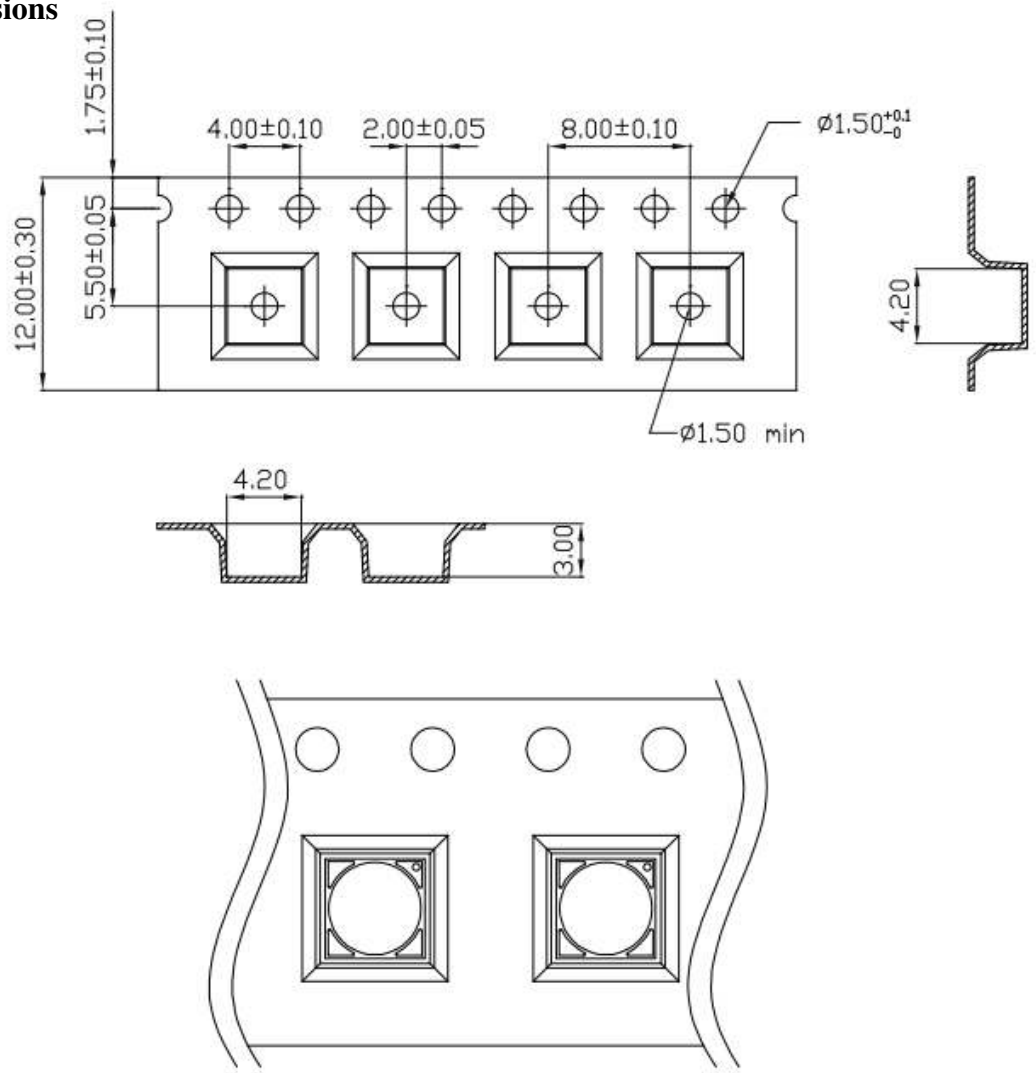
CHARACTERISTIC DIAGRAM

Permissible pulse handling capability at Tj=85°C for various duty cycles (D)



PACKAGING SPECIFICATIONS

Taping Dimensions

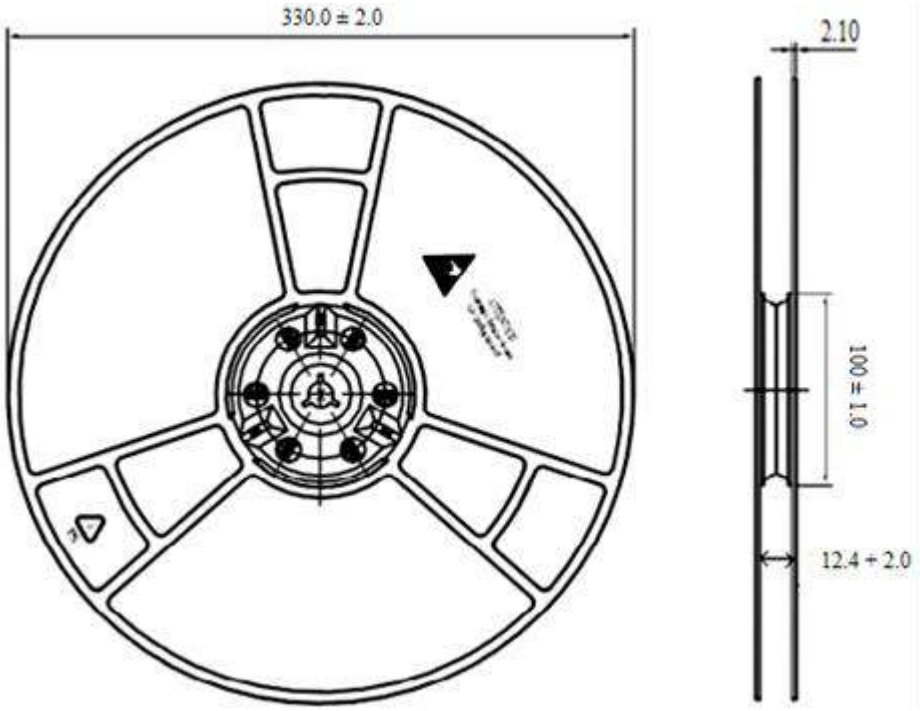


Note:

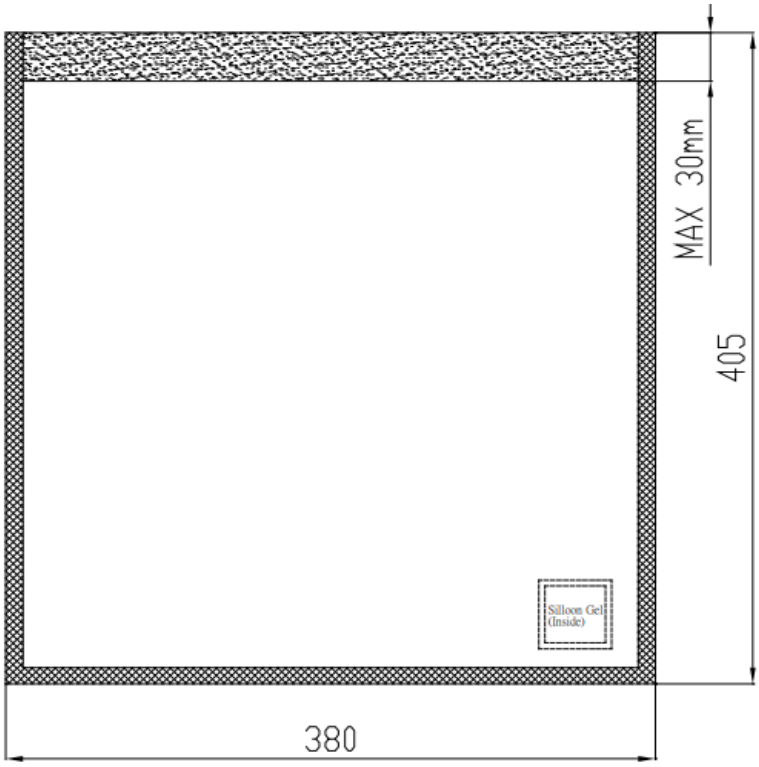
1. 1 Reel/bag.
2. 2500pcs/reel.
3. Units are in millimeters.
4. Moisture proof bag.

PACKAGING SPECIFICATIONS

Reel Dimensions (Unit: mm)



Anti-Statistic Bag (Unit: mm)



QUALIFICATION RELIABILITY TEST

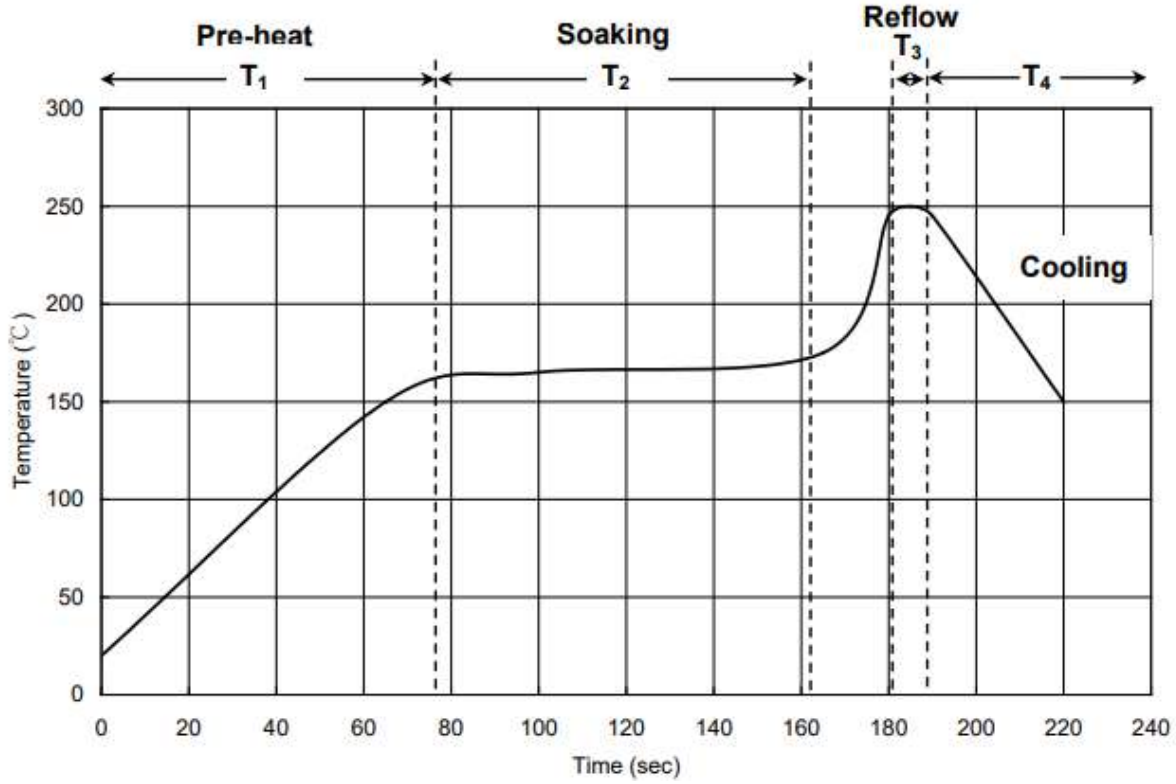
Classification	Test Item	Test Conditions	Reference Standard
Endurance Test	Operation Life	IF = 1000mA Ta = 25°C Test Duration = 1000hrs	MIL – STD – 750: 1026 MIL – STD – 883: 1005 JIS C 7021: B-1
	High Temp. High Humidity Storage	Ta = 85 ± 5°C RH = 85 ± 5% Test Duration = 1000hrs	MIL – STD – 202: 103B JIS C 7021: B-11
	High Temperature Storage	Ta = 105 ± 5°C Test Duration = 1000hrs	MIL – STD – 202: 1008 JIS C 7021: B-10
	Low Temperature Storage	Ta = -40 ± 5°C Test Duration = 1000hrs	JISC 7021: B-12
Environmental Test	Temperature Cycling	-30°C ~ 25°C ~ 105°C ~ 25°C 30min – 5min – 30min – 5 min Test Duration = 10 cycles	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1010 JIS C 7021: A-4
	Thermal Shock	-30 ± 5°C ~ 105 ± 5°C 30min ~ 30min Test Duration = 10 cycles	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
	Solder Resistance	Tsol = 260 ± 5°C Dwell Time: 10	MIL-STD-202: 210A MIL-STD-750: 2031

		sec	JIS C 7021: A-1

RELIABILITY TESTING

Measuring Items	Symbol	Measuring Conditions	Failure Criteria
Forward Voltage	VF	IF=1000mA	V_F shift > 10%
Luminous	Iv%	IF=1000mA	Iv% shift > 10%

RECOMMENDED SOLDER PROFILE

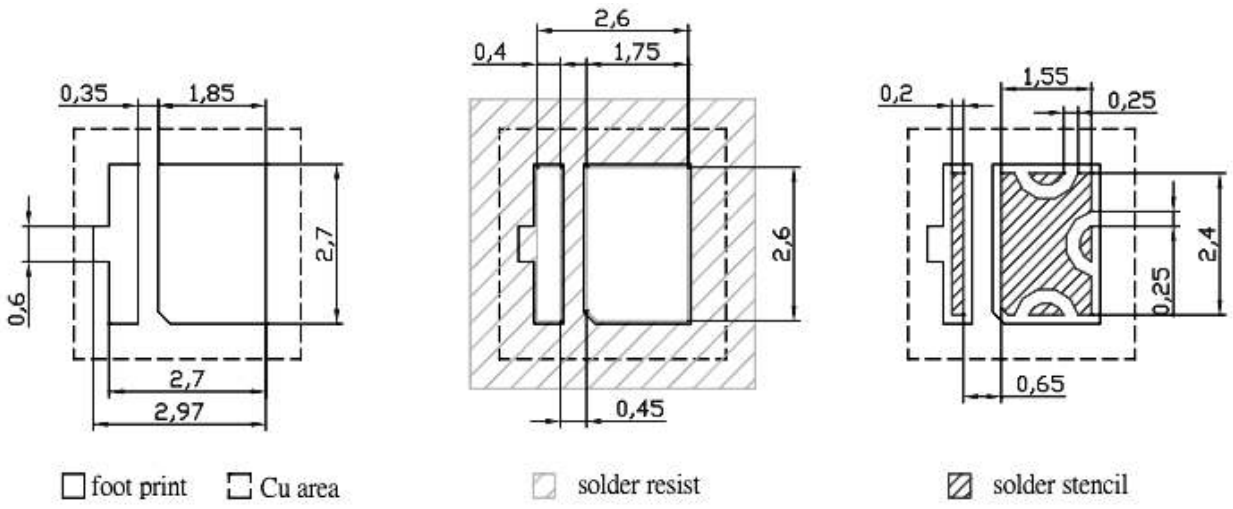


	Parameter	Values
T1	Ramp Up Rate	1.0 ~ 3.0 ℃/sec
	Pre-heat Time	50 ~ 80 sec
T2	Soaking Temperature	155 ~ 185 ℃
	Dwell Time During Soaking	60 ~ 120 sec
T3	Reflow Temperature	240 ~ 250 ℃
	Reflow Time	Max 10 sec
	Ramp Up Rate During Reflow	1.2 ~ 2.3 ℃/sec
T4	Cooling	1.0 ~ 6.0 ℃/sec

Suggest using Sn96Ag3Cu 0.5 lead free solder.

Cleaning: Use alcohol – based cleaning solvents such as isopropyl alcohol to clean the LED if necessary.

RECOMMENDED SOLDER PAD PATTERN



Note:

1. Units are in millimeters.
2. Tolerances are ± 0.05.

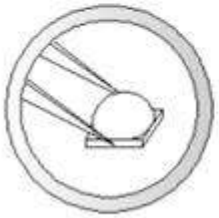
HANDLING PRECAUTIONS

Do not poke the Led Lens with sharp object

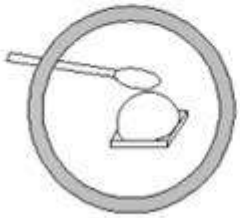
Do not stack assembled PCB

Do not hold the Led with hand

Do not press or push the Led Lens



Hold the Led only by the substrate



Clean the LED surface with cotton bud

Use pick and place nozzle per recommendation in data sheet