

NMOP-10096-PT

AXIAL TYPE LED LAMPS

Features:

1. Fast response time
2. High photo sensitivity
3. Small junction capacitance
4. Compatible with infrared and vapor phase reflow solder process.
5. Pb free
6. The product itself will remain within RoHS compliant version.
7. Compliance with EU REACH.
8. Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Description:

The NMOP-10096-PT is a phototransistor in miniature package which is molded in water clear plastic with spherical top view lens. The device is spectrally matched to infrared emitting.

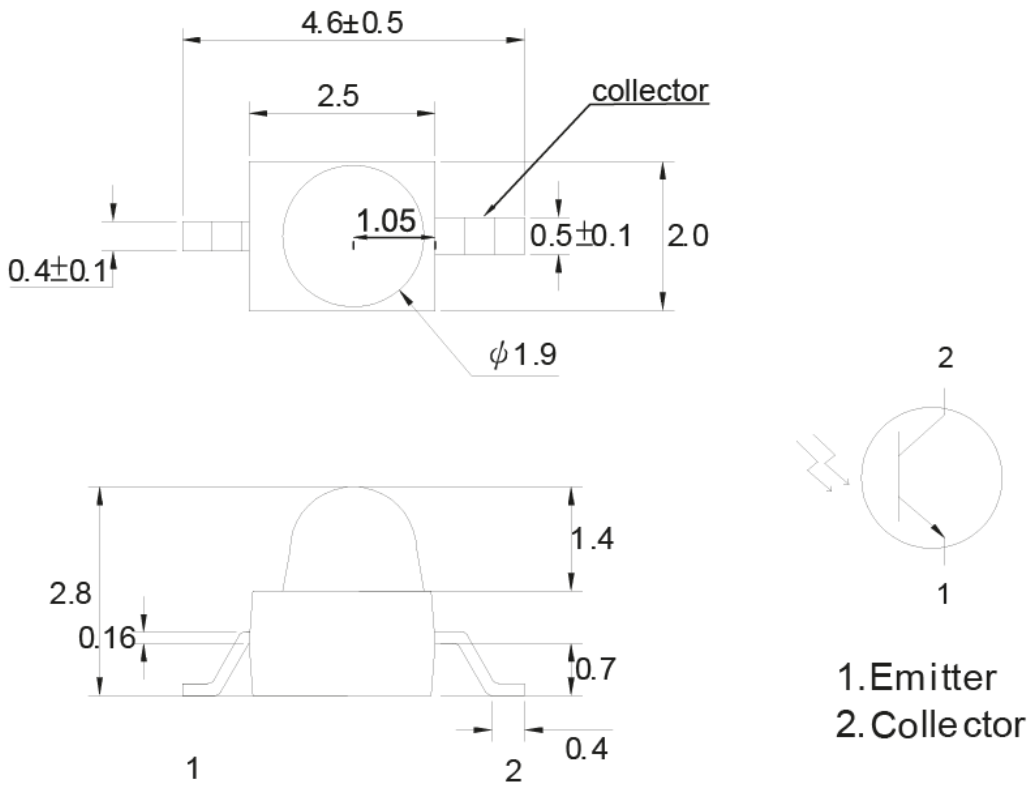
Applications

1. Miniature switch
2. Position sensor
3. Counters and sorter
4. Infrared applied system

Device Selection Guide

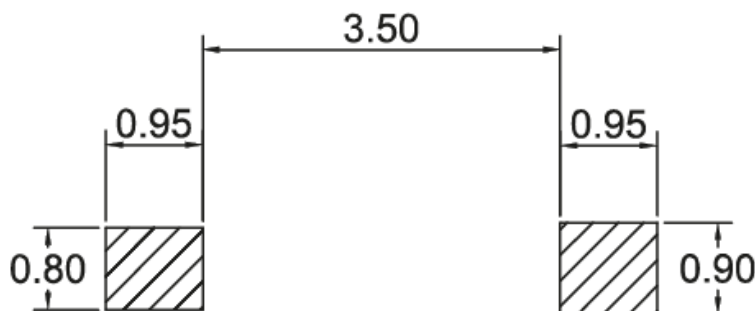
Part No	Material	Lens
NMOP-10096-PT	Silicon	Water Clear

Package Outline Dimensions



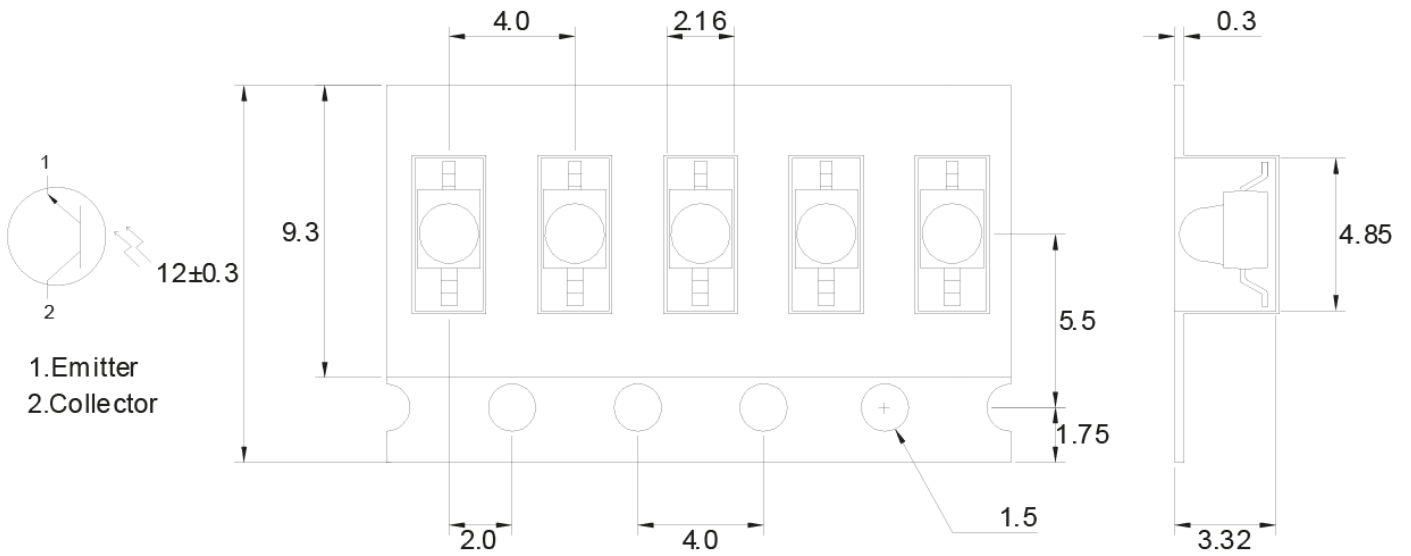
Note : 1. All dimension are in millimeter tolerance is ± 0.2 mm unless otherwise noted.
 2. Specifications are subject to change without notice.
 3. Net weight: 0.0157g/pcs

Recommended Soldering Pad Dimensions



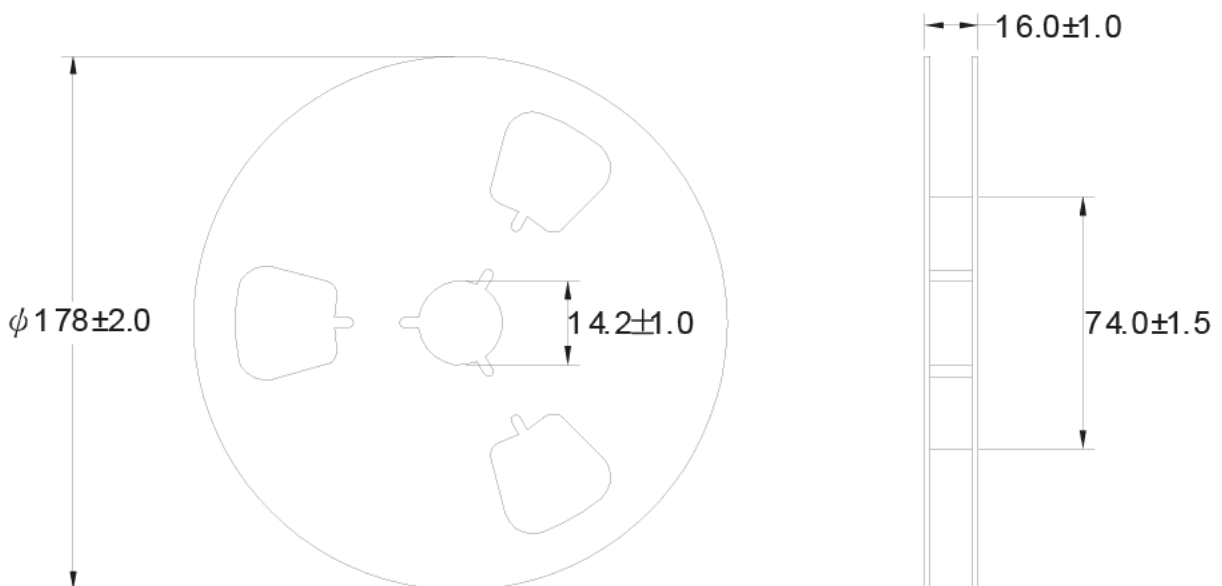
Note : The tolerances unless mentioned is ± 0.1 mm, Unit=mm.

Carrier Type Dimensions



Note : The tolerances unless mentioned is ± 0.2 mm, Angle ± 0.5 . Unit=mm.

Reel Dimensions



Absolute Maximum Ratings at Ta=25° C

Parameter	Maximum Ratings	UNIT
Power Dissipation	100	mW
Collector-Emitter Voltage	30	V
Emitter-Collector Voltage	5	V
Collector Current	20	mA
Operating Temperature	-25°C to +85°C	
Storage Temperature	-40°C to +85°C	

* 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.

Typical Electrical & Optical Characteristics (Ta=25° C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Range Of Spectral Bandwidth	$\lambda_{0.5}$	400		1100	nm	
Wavelength Of Peak Sensitivity	λ_p		940		nm	
Collector-Emitter Breakdown Voltage	V(BR)ECO	30			V	Ic=1mA Ee=0mw/cm ²
Emitter-Collector Breakdown Voltage	V(BR)ECO	5			V	IE=100 μ A Ee=0mw/cm ²
Collector-Emitter Saturation Voltage	VCE(sat)			0.4	V	IE=0.5mA Ee= 1mW/cm ²
Rise Time	Tr		5		μ S	VCE=30V IC=800 μ A,RL=1K Ω
Fall Time	Tf		5		μ S	
Collector Dark Current	Iceo			100	nA	VCE=10V Ee=0mw/cm ²
On State Collector Current	Ip(on)	1		2	mA	VCE=5v Ee=1mw/cm ² λ P=940nm
		2		4	mA	
		4		8	mA	
		8			mA	

Note : 1. The forward voltage data did not including $\pm 0.1V$ testing tolerance.
2. The radiant intensity data did not including $\pm 15\%$ testing tolerance.ance.

Typical Electro-Optical Characteristics Curve PT Chip

Fig.1 Collector Power Dissipation vs Ambient Temperature

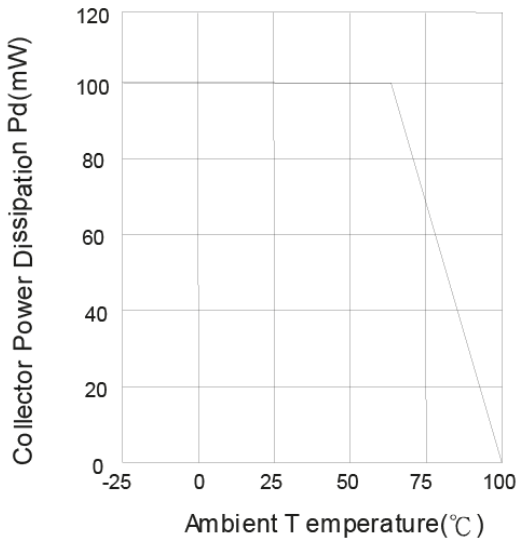


Fig.2 Spectral Sensitivity

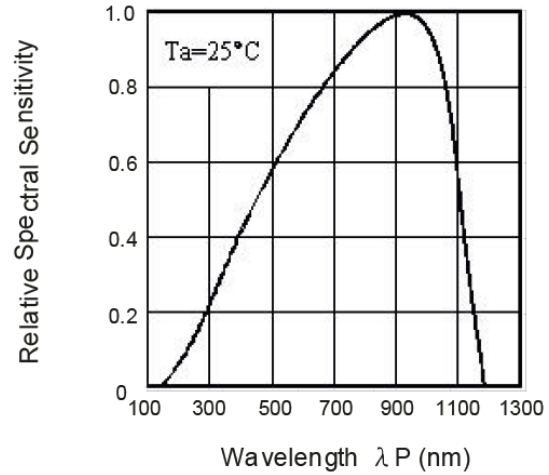
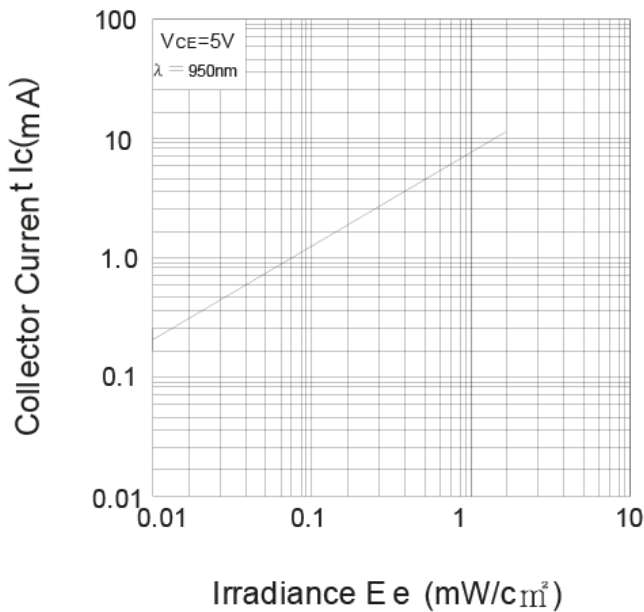


Fig.3 Collector Current vs. Irradiance

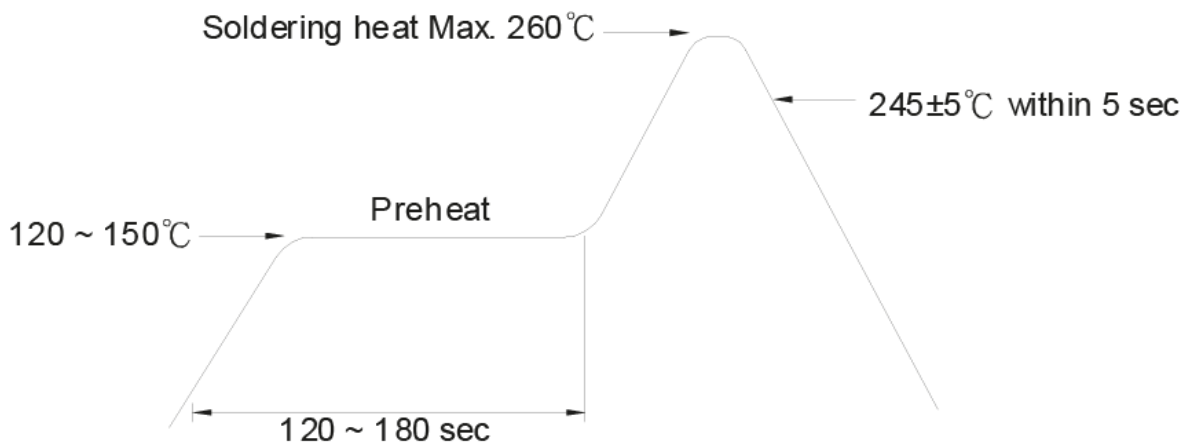


Recommended Soldering Conditions

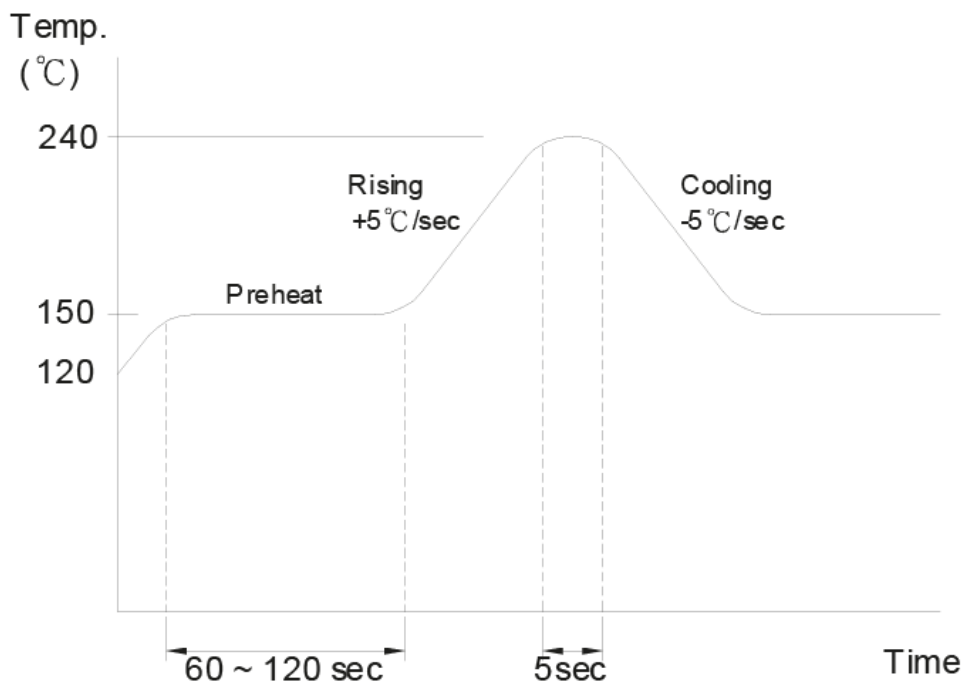
1. Hand Solder

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

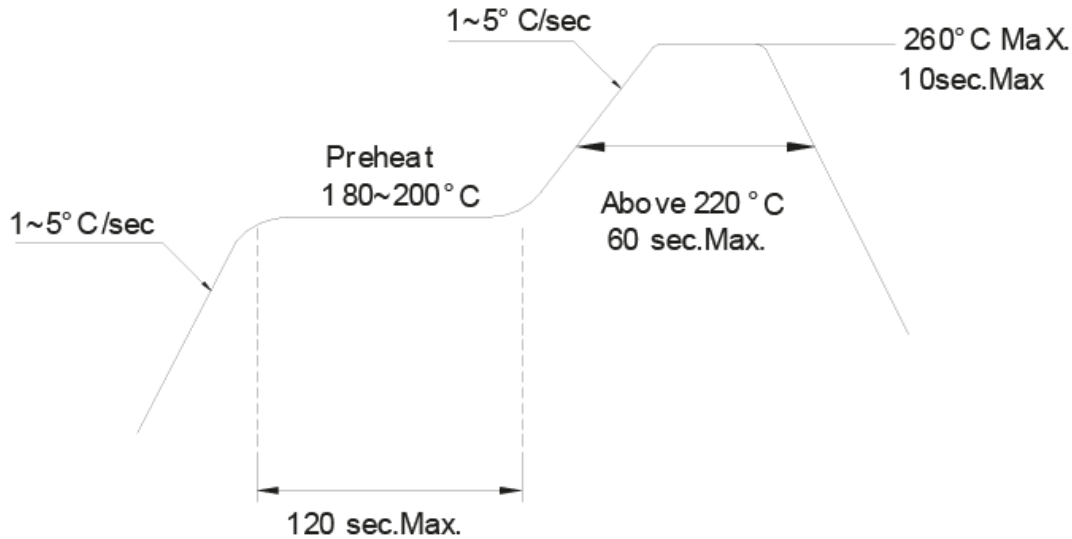
2. Wave Solder



3-1. LEAD Reflow Solder



3-2 PB-Free Reflow Solder



- Note:
1. Wave solder and reflowsoldering should not be made more than one time.
 2. You can just only select one of the soldering conditions as above.

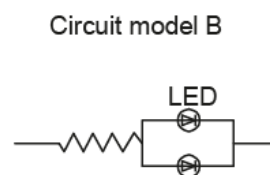
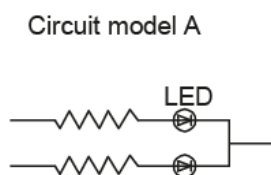
Precautions For Use:

Storage time:

1. The operation of Temperatures and RH are : 5°C~35°C,RH<60%.
2. Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp 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,RH<60%, they should be treated at 60°C±5°C for 15hrs

Drive Method

LED is a current operated device, and therefore, requires 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 that could occur across the current limiting resistor. The forward current should not be allowed to change by more than 10% of its desired 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-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=20mA 3.t =1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of determining the resistance of a part in electrical and themal stressed.	MIL-STD-750:1026 MIL-STD-883:1005 JISC 7021: B-1
High Temperature Storage Test	1. Ta = 105°C ± 5°C 2. t = 1000hrs (-24hrs, +72 hrs)	The purpose of this is the resistance of the device which is laid under ondition of high temperature for hours.	MI L-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1. Ta = -40° C ±5° C 2. t = 1000hrs (-24hrs, +72 hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1. Ta = 65° C ±5° C 2. RH = 90%~95% 3. t = 240hrs (±2hrs)	The purpose of this test is the resistance of the device under tropical for hous.	MIL-STD-202:103B JISC 7021: B-11
Thermal Shock Test	1. Ta = 105° C ±5°C & -40°C ±5°C (10 min) (10 min) 2. total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750:1051 MIL-STD-883:1011
Solder Resistance Test	1. T.sol = 260°C ± 5°C 2. Dwell time = 10 ± 1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JISC 7021: A-1
Solderability Test	1. T.sol = 230°C ±5°C 2. Dwell time = 5 ± 1sec.	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MI L-STD-750: 2026 MI L-STD-883: 2003 JIS C 7021: A-2