Preliminary

ITR1502SR40A/TR

Features

- High sensitivity
- Cut-Off visible wavelength
- Compliance Halogen Free(Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)
- Compliance with EU REACH
- This product itself will remain within RoHS compliant version.
- Optimal Sensing Distance: 4 mm
- Package size : 4.0*3.0*2.0 mm

Description

- **ITR1502SR40A/TR8** is a compact-package, phototransistor output, reflective photo interrupter, with emitter and detector facing the same direction in a molding that provides non-contact sensing. The compact package series is a result of unique technology, combing transfer and injection molding, that also blocks visible light to minimize false detection. This device has a long focal distance for this family of devices and has a leadless (T&R) package, suitable for reflow soldering.

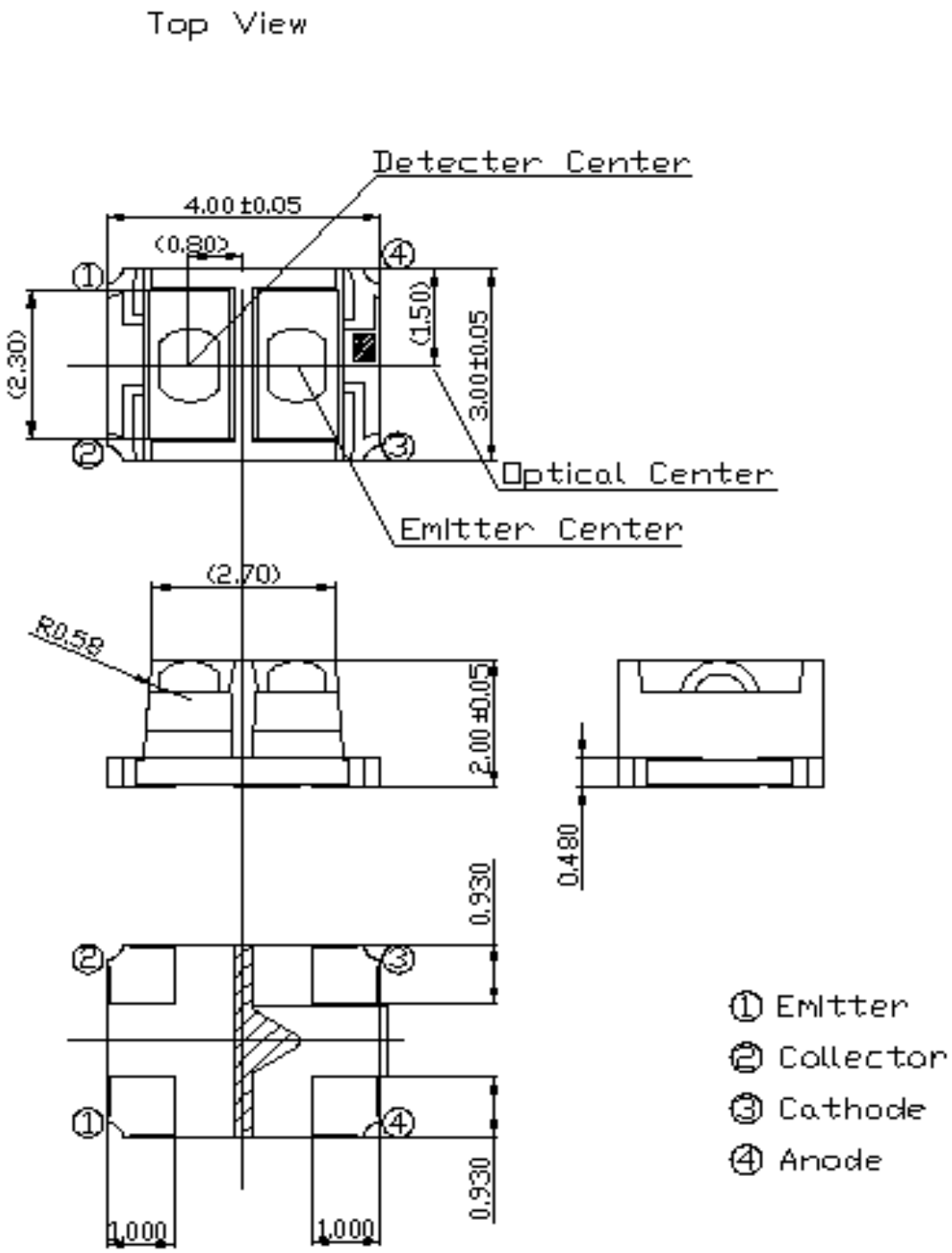
Applications

- Detection of object presence or motion.
- Example : printer, optical storage, Projector

Device Selection Guide

Device No.	Chip Material	Lens Color
IR	GaAs	Black clear
PT	Silicon	Black clear

Package Dimensions



- Notes:
  1. All dimensions are in millimeters
  2. Tolerances unless dimensions ±0.1mm
  3. Lead spacing is measured where the lead emerge from the package
  4. Product mass : approx. 0.025g

Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation at(or below) 25 ℃ Free Air Temperature	Pd	75	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current (*1) Pulse width ≦100μs, Duty cycle=1%	I_{FP}	1	A
Output	Collector Power Dissipation	P_C	75	mW
	Collector Current	I_C	25	mA
	Collector-Emitter Voltage	B V_{CEO}	30	V
	Emitter-Collector Voltage	B V_{ECO}	5	V
Operating Temperature		Topr	-25~+85	℃
Storage Temperature		Tstg	-40~+100	℃
Lead Soldering Temperature (*2) (1/16 inch form body for 5 seconds)		Tsol	260	℃

- Notes:
  (*1) tw=100 μsec., T=10 msec.
  (*2) t=10 Sec

Electro-Optical Characteristics (Ta=25℃)

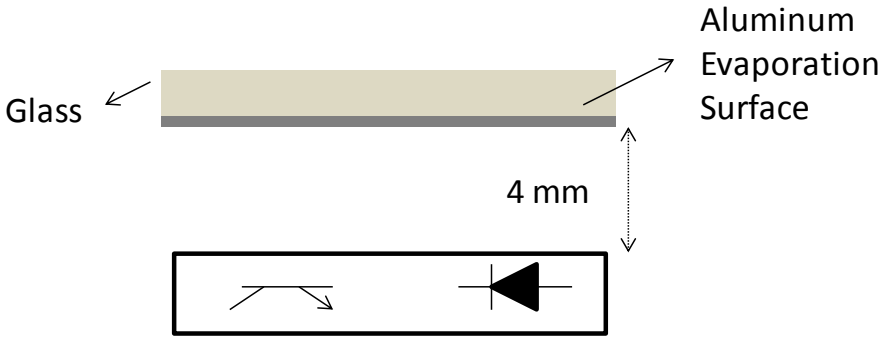
Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward Voltage	V_F	–	1.2	1.4	V	I_F=20mA
	Reverse Current	I_R	–	–	10	μA	V_R=6V
	Peak Wavelength	λ_P	–	940	–	nm	I_F=10mA
Output	Dark Current	I_{CEO}	–	1	100	nA	V_{CE}=20V
Transfer Characteristics	Collect Current	I_C(ON)	60	–	450	μA	V_{CE}=2V I_F=4mA d=4mm
		I_C(OFF)	–	–	600	nA	V_{CE}=2V I_F=4mA
	Response time	tr	–	20	100	μs	V_{CE}=2V, I_C=100μA, RL=1kΩ, d=4mm
		tf	–	20	100	μs	

*****Operating dark current may be affected by surrounding situation

Bin Range of Collect Current

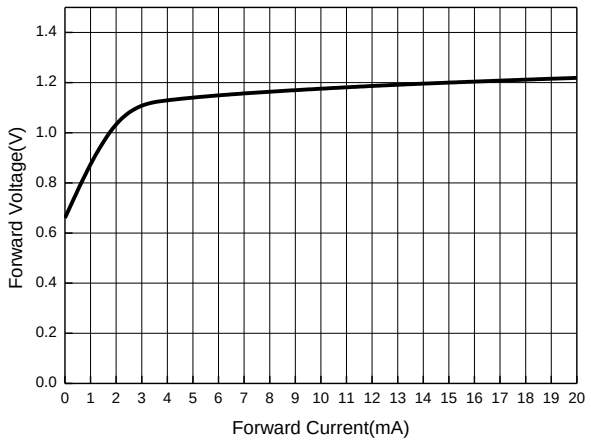
Bin number	Min	Max
A	60	120
B	100	220
C	180	350
D	310	450

Test Condition and Arrangement for Collector Current

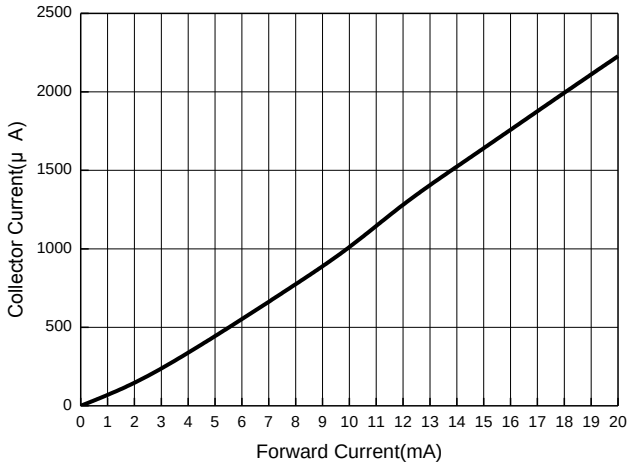


Typical Electro-Optical Characteristics Curves

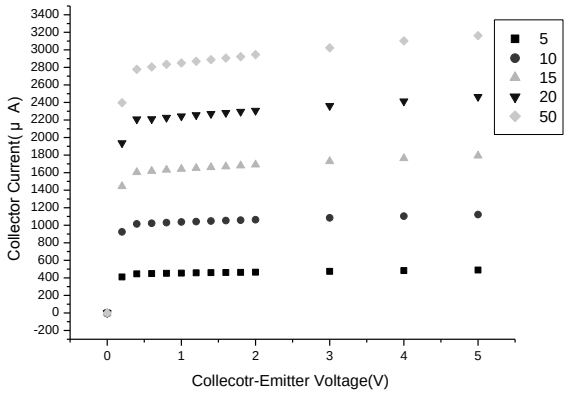
Forward Current VS. Forward Voltage



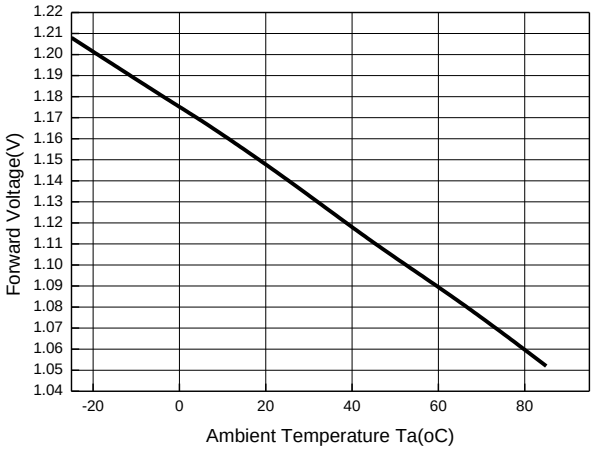
Forward Current V.S Collector Current



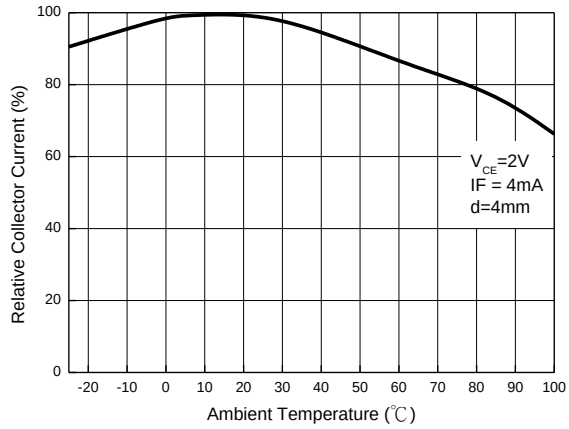
Collector Current V.S Collector-Emitter Voltage



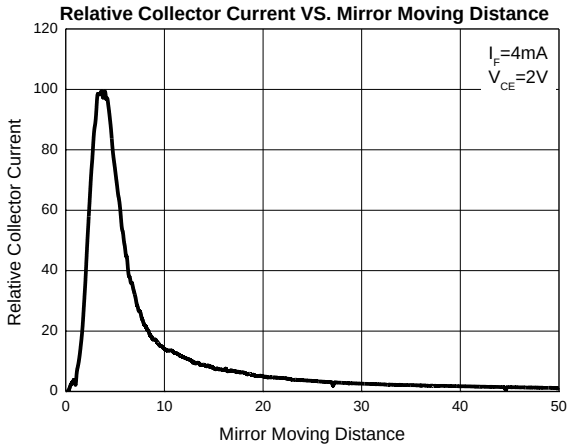
Forward Voltage V.S Ambient Temperature



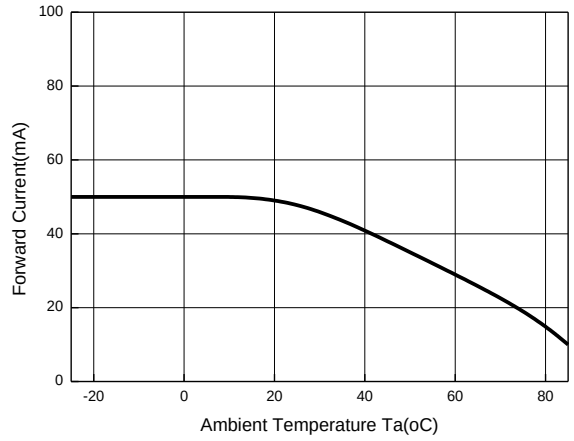
Relative Collector Current V.S Ambient Temperature



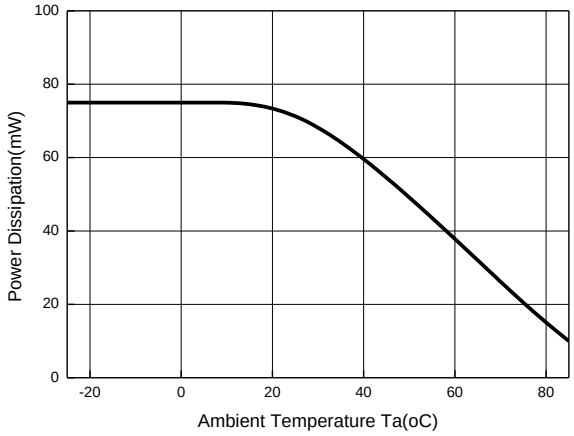
Relative Collector Current V.S Z-Moving Distance
Condition : I_F=4 mA、V_{CE}=2 V



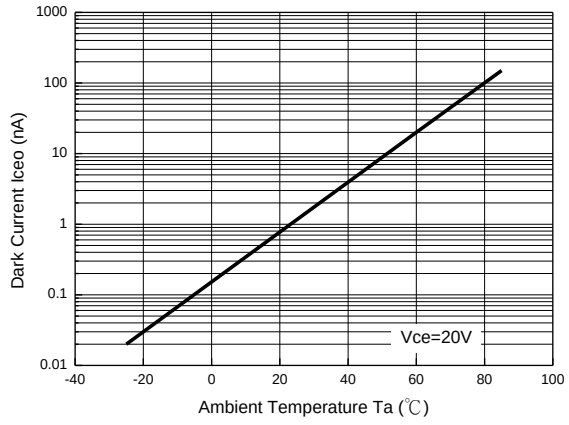
Forward Current V.S Ambient Temperature



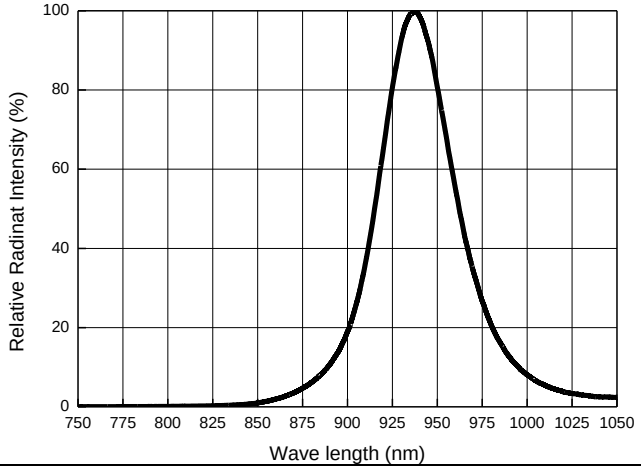
Power Dissipation vs. Ambient Temperature



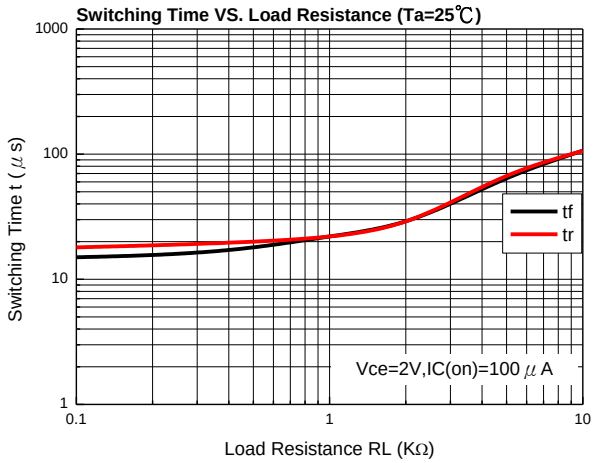
Collector Dark Current vs. Ambient Temperature

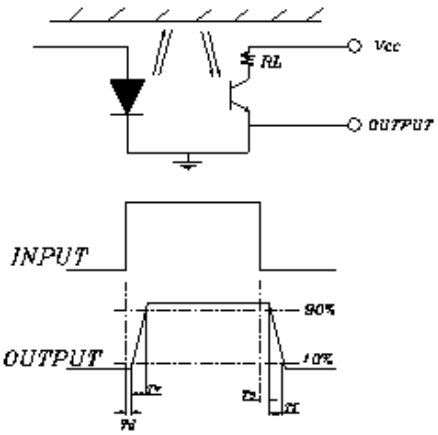


Wave length

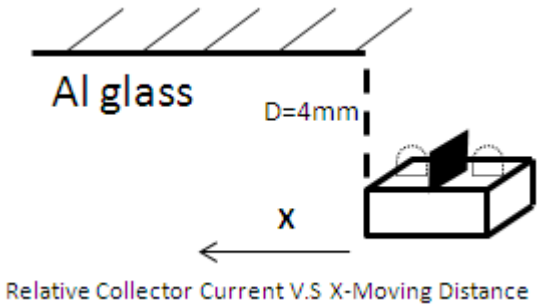


Measuring Circuit For Response Time

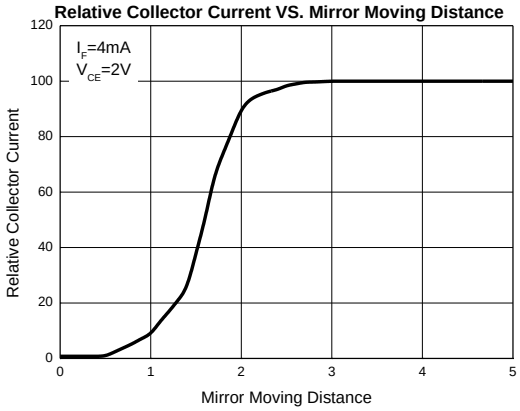


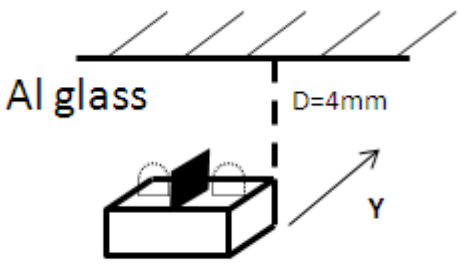


Test Condition and Arrangement for Collector Current

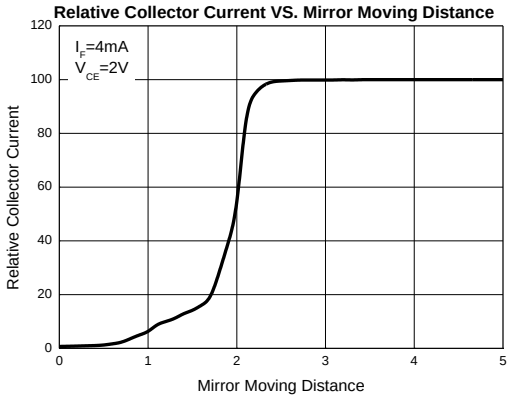


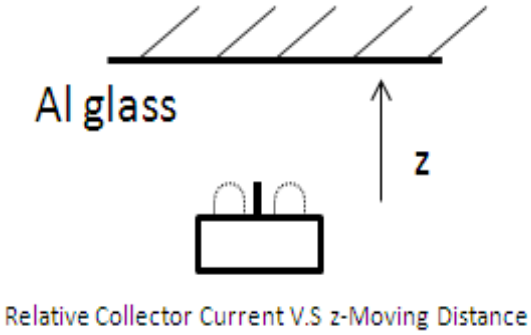
Relative Collector Current V.S X-Moving Distance



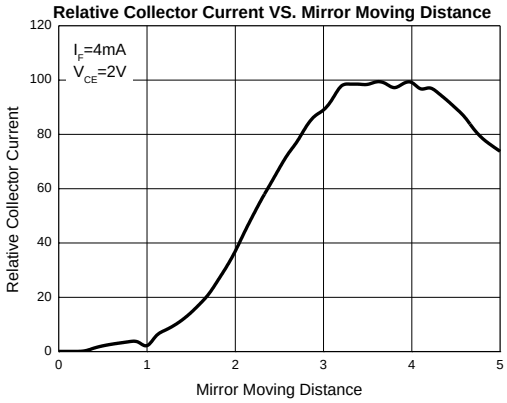


Relative Collector Current V.S Y-Moving Distance

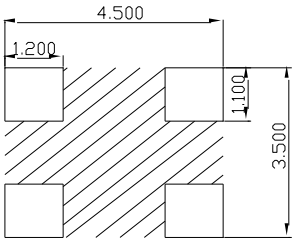




Relative Collector Current V.S z-Moving Distance



Recommended pattern



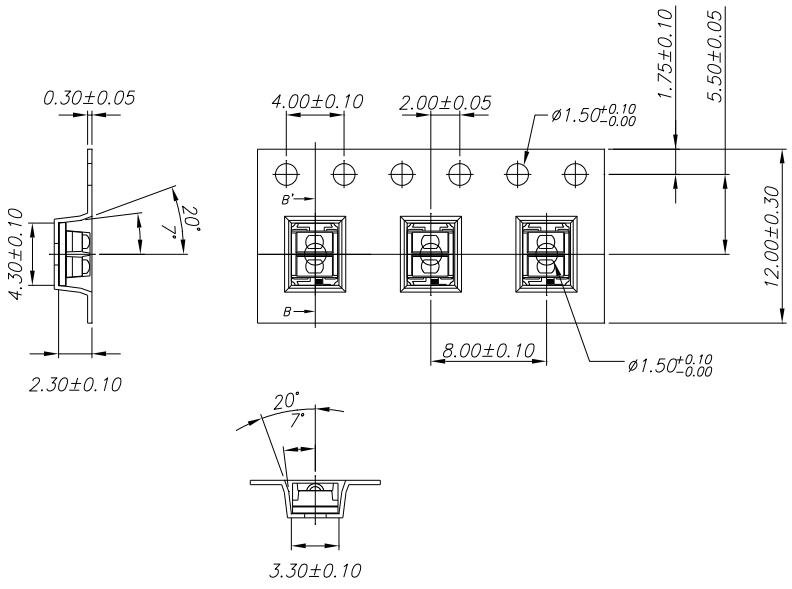
area : Please do not apply the pattern wiring to avoid the possibility of short circuit.

Regarding amount of solder, if there is solder leakage in terminal wiring pattern between PCB and housing main body, the reliability will be deteriorated.

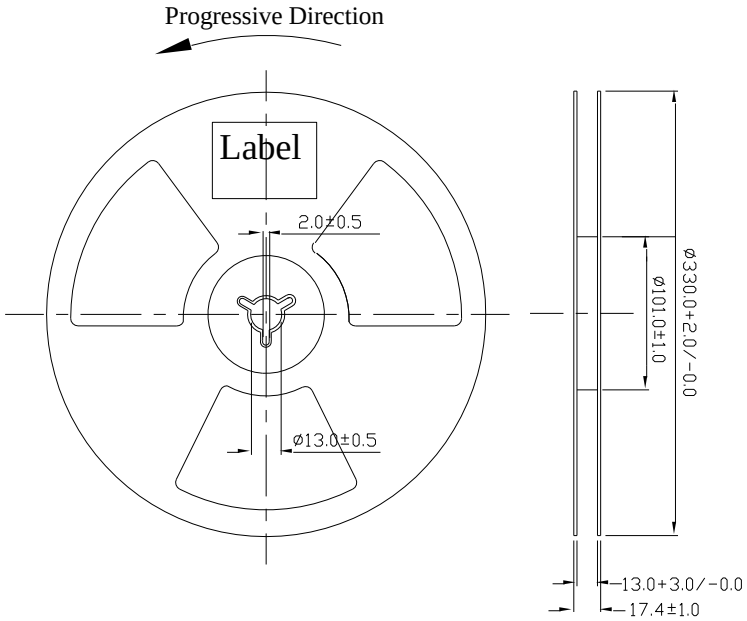
Please check the proper amount of solder in advance not to have solder leakage into terminal wiring pattern between PCB and housing main body.

Package specification

● Tape and Reel package



Reel Dimensions

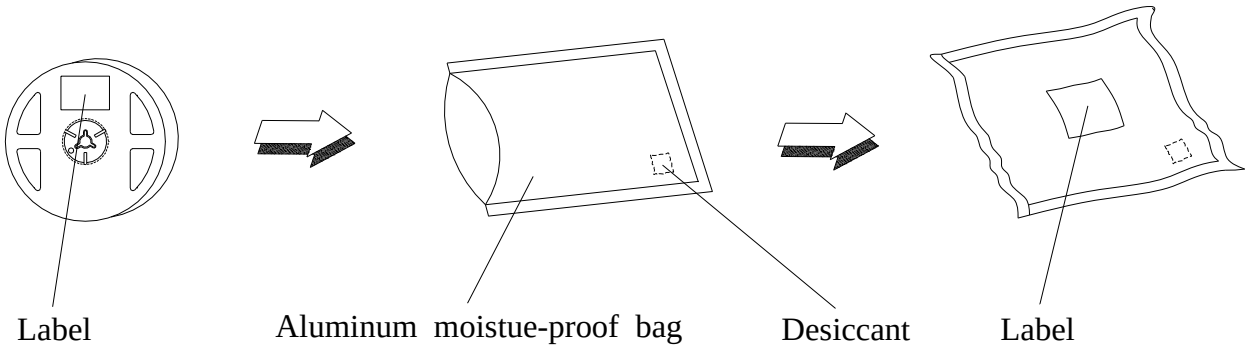


Note: The tolerances unless mentioned is ±1.0mm ,Unit = mm

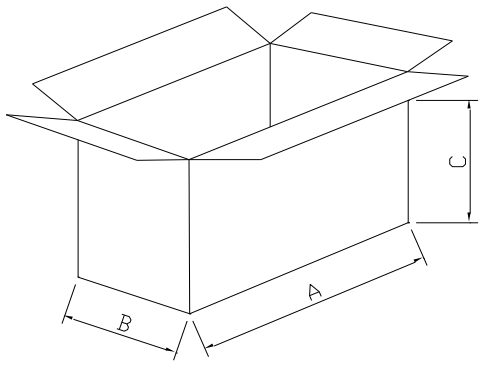
Packing Quantity Specification

- 800pcs / 1 Reel
- 38 Reels / 1 Carton

Packing Procedure



Outer Carton Dimension : 409mm(A)*245mm(B)*360mm(C)



Recommended Method of Storage

The following are general recommendations for moisture sensitive level (MSL) 3 storage and use：

1. Storage

1.1 Do not open moisture proof bag before the products are ready to use.

1.2 Before opening the package, the device should be kept at 30℃ or less and 90%RH or less.

1.3 The device should be used within a year.

1.4 After opening the package, the device should be kept at 30℃ or less and 70%RH or less.

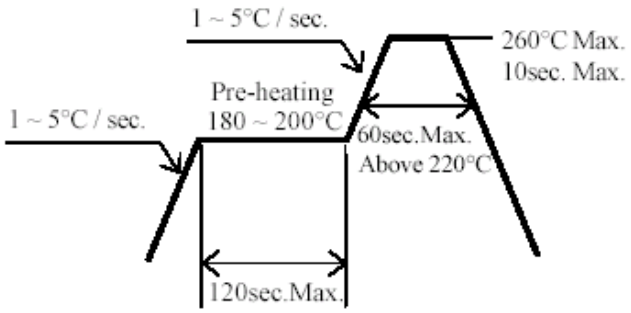
1.5 The device should be used within 168 hours (7 days) after opening the package.

1.6 If the moisture absorbent material (silica gel) has faded away or the device have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5℃ for 24 hours.

2. Soldering Condition

a) Pb-free solder temperature profile



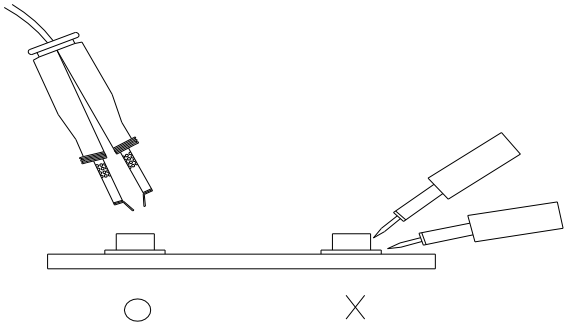
b) Reflow soldering should not be done more than two times.

c) When soldering, do not put stress on the LEDs during heating.

d) After soldering, do not warp the circuit board.

Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



CPN: Customer's Production Number
P/N : Production Number
QTY: Packing Quantity
CAT: Ranks
HUE: Peak Wavelength
REF: Reference
LOT No: Lot Number
MADE IN TAIWAN: Production Place

Disclaimer

1.XI BNANG reserves the right(s) on the adjustment of product material mix for the specification.

2.The product meets XI BNANG published specification for a period of twelve (12) months from date of shipment.

3.The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.

4.When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. XI BNANG assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.

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