

ITR20510/TR8



Features

- Fast response time
- High sensitivity
- Cut-Off visible wavelength
- Thin
- Compact
- Pb free
- This product itself will remain within RoHS compliant version.

Description

ITR20510/TR8 is a light reflection switch which includes a GaAs IR-LED transmitter and a NPN photo-transistor with a high photosensitive receiver for short distance, operating in the infrared range. Both components are mounted side-by-side in a plastic package.

Applications

- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

Device Selection Guide

Device No.	Chip Material
IR	GaAlAs
PT	Silicon

Absolute Maximum Ratings (Ta=25 °C)

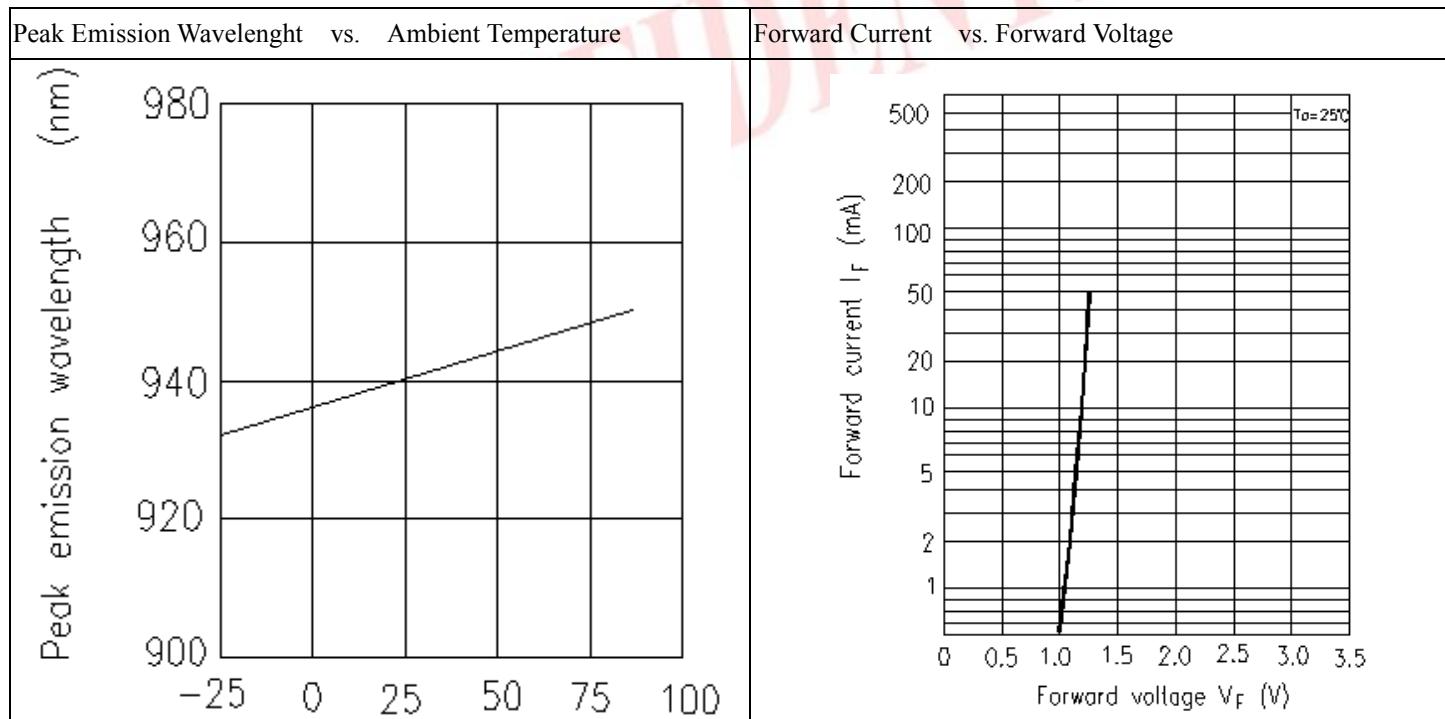
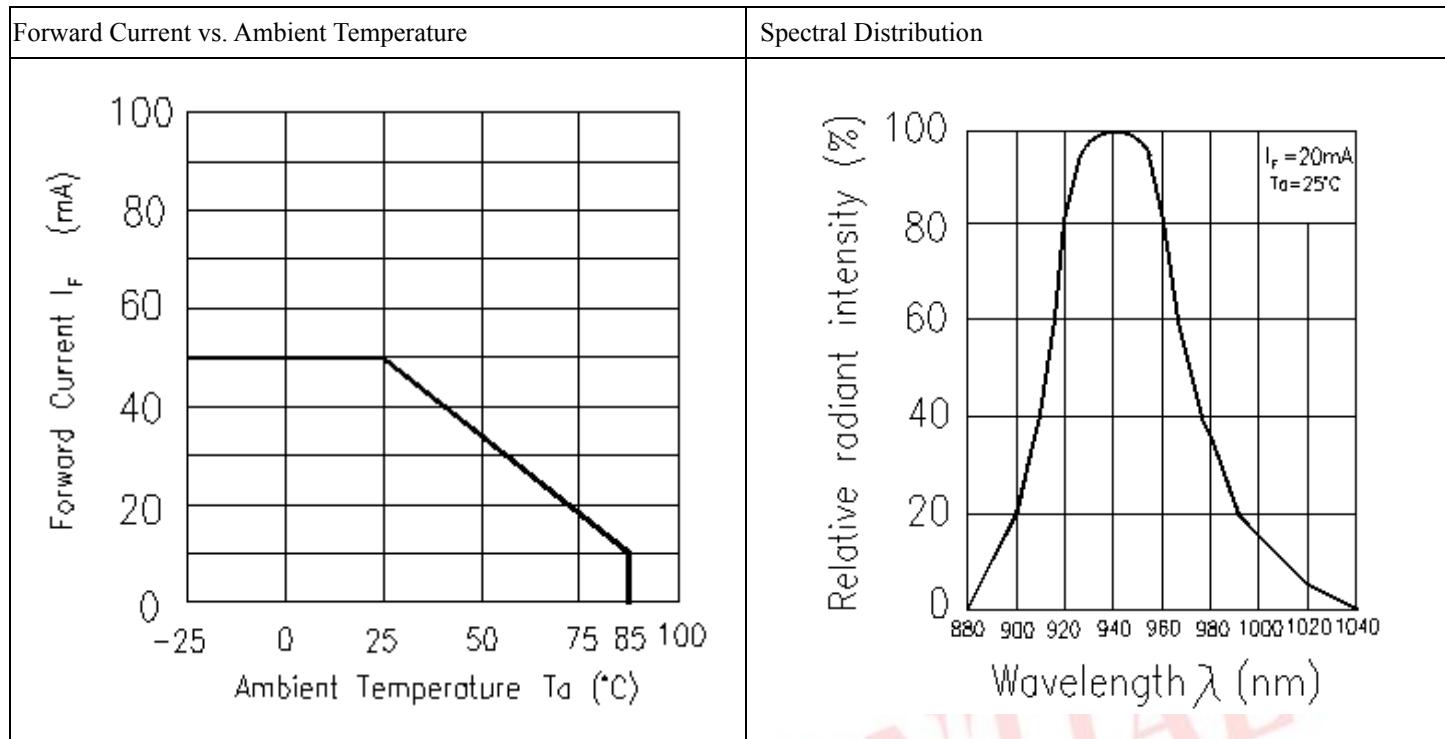
	Parameter	Symbol	Rating	Unit
Input	Power Dissipation at(or below) 25 Free Air Temperature	Pd	75	mW
	Reverse Voltage	V _R	5	V
	Forward Current	I _F	50	mA
	Peak Forward Current (*1) Pulse width 100μs, Duty cycle=1%	I _{FP}	1	A
Output	Collector Power Dissipation	P _C	75	mW
	Collector Current	I _C	50	mA
	Collector-Emitter Voltage	B V _{CEO}	30	V
	Emitter-Collector Voltage	B V _{ECO}	5	V
Operating Temperature		Topr	-40~+85	
Storage Temperature		Tstg	-40~+90	
Lead Soldering Temperature (*2)		Tsol	260	

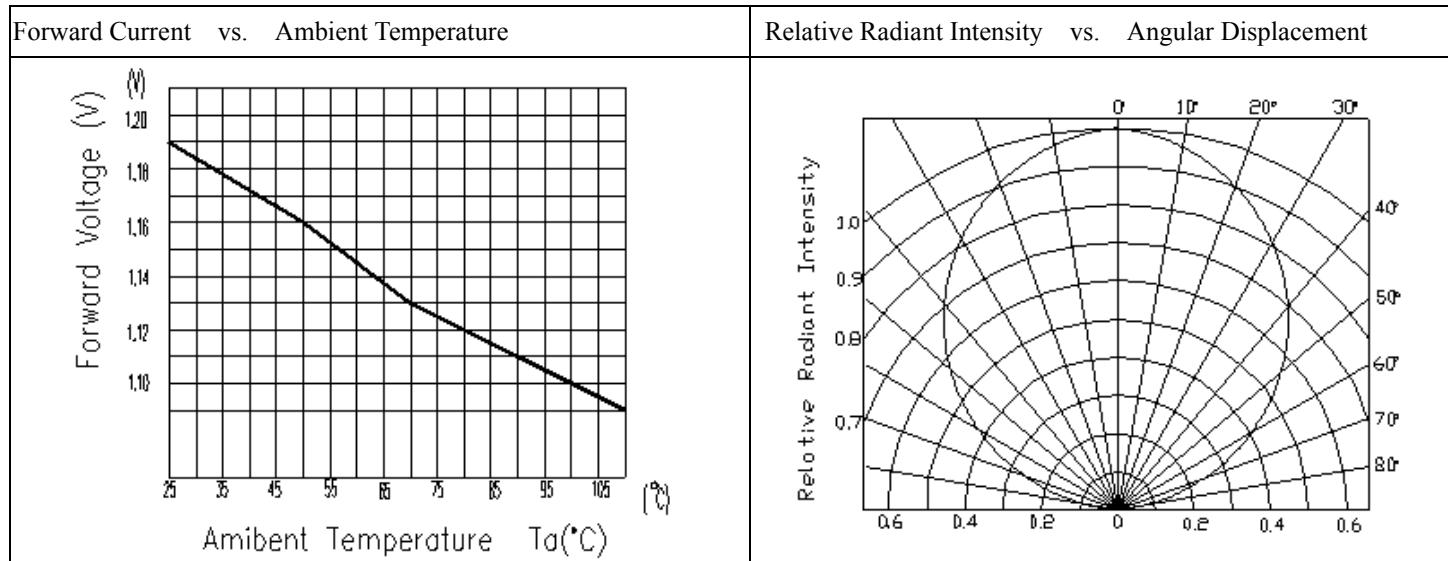
Notes: (* 1) tw=100 μsec., T=10 msec. (* 2) t=5 Sec

Electro-Optical Characteristics (Ta=25 °C)

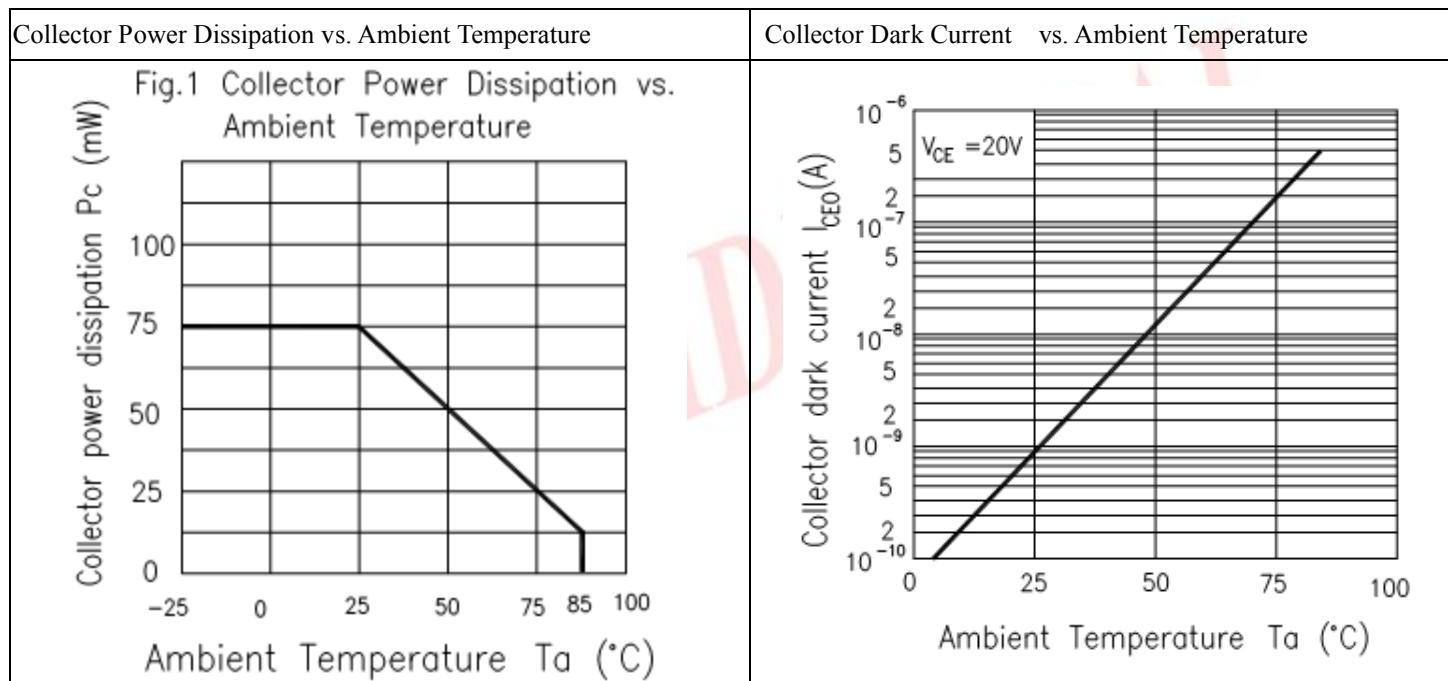
Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V _F	---	1.2	1.6	V	I _F =20mA
	Reverse Current	I _R	---	---	10	µA	V _R =5V
	Peak Wavelength	λ _P	---	940	---	nm	---
Output	Dark Current	I _{CEO}	---	---	100	nA	V _{CE} =10V
	C-E Saturation Voltage	V _{CE(sat)}	---	---	0.4	V	I _C =2mA, E _e =1mW/cm ²
Transfer Characteristics	Light Current	I _{C(ON)}	0.1	---	---	mA	V _{CE} =5V I _F =20mA
	Leakage Current	I _{CEOD}	---	---	1	µA	
	Rise time	t _r	---	20	---	µsec	V _{CE} =2V I _C =100µA R _L =1KΩ
	Fall time	t _f	---	20	---	µsec	

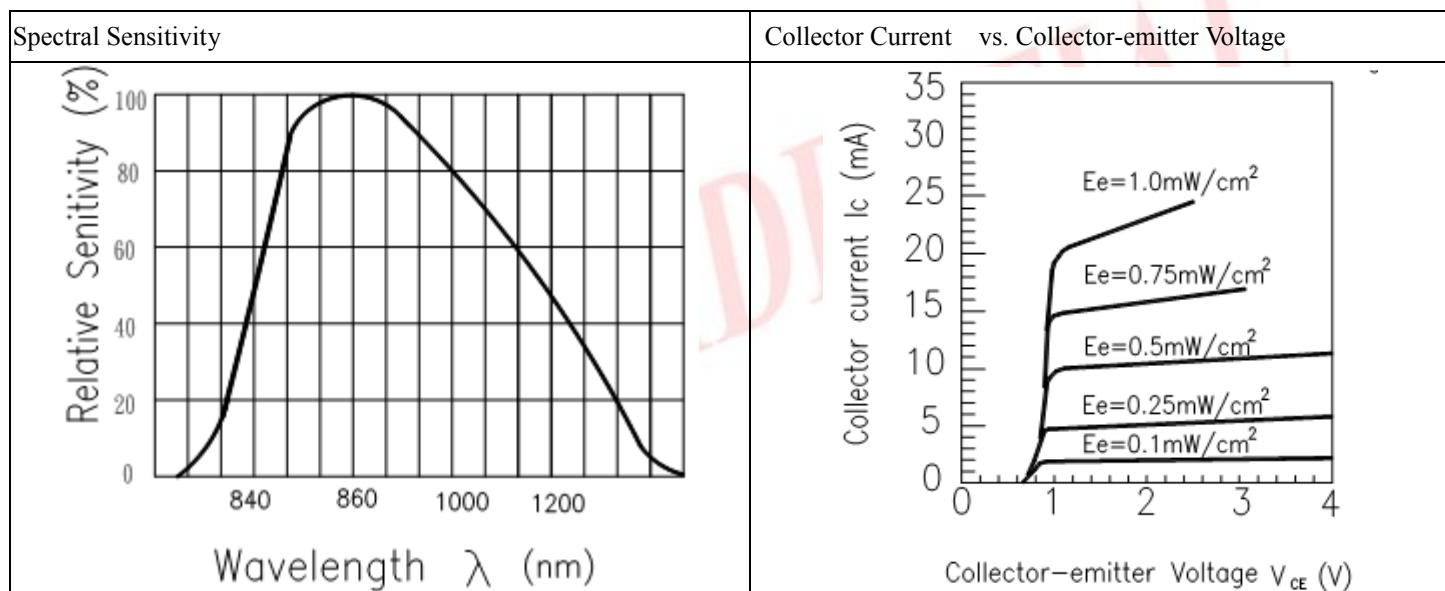
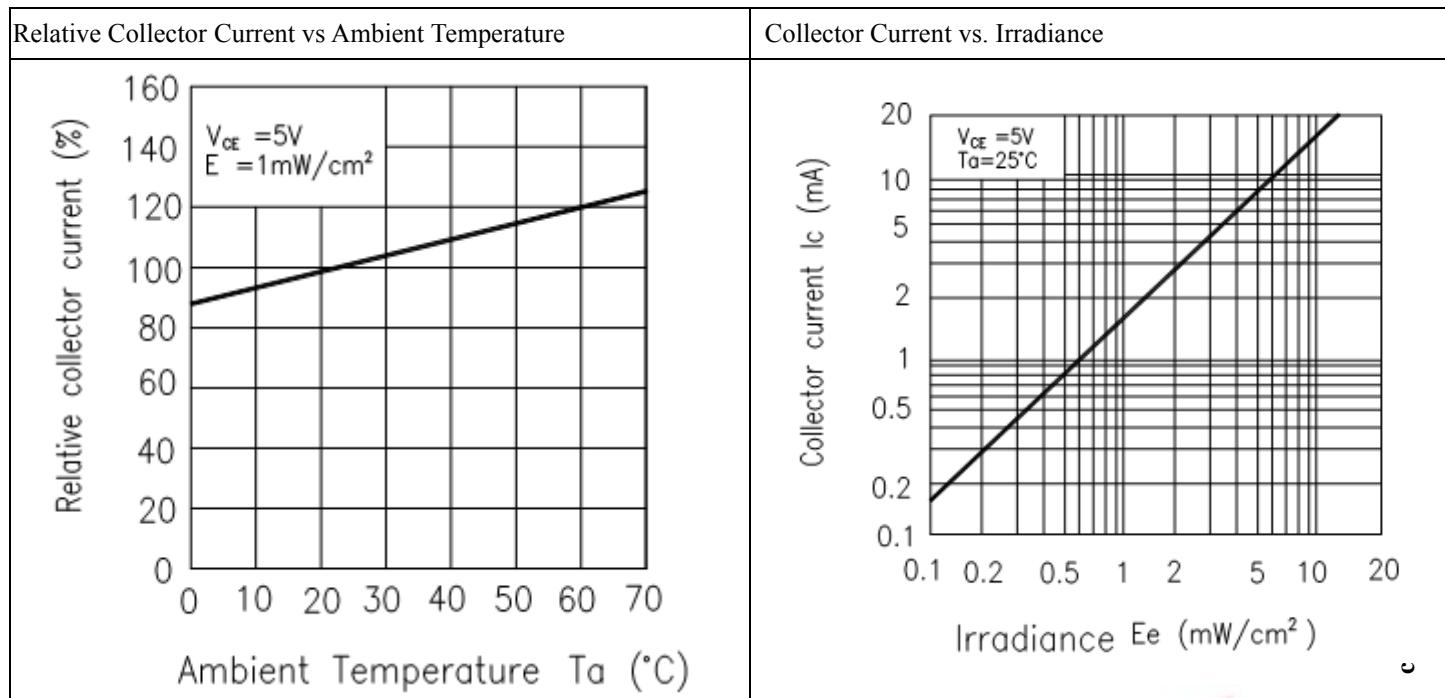
Typical Electrical/Optical/Characteristics Curves for IR



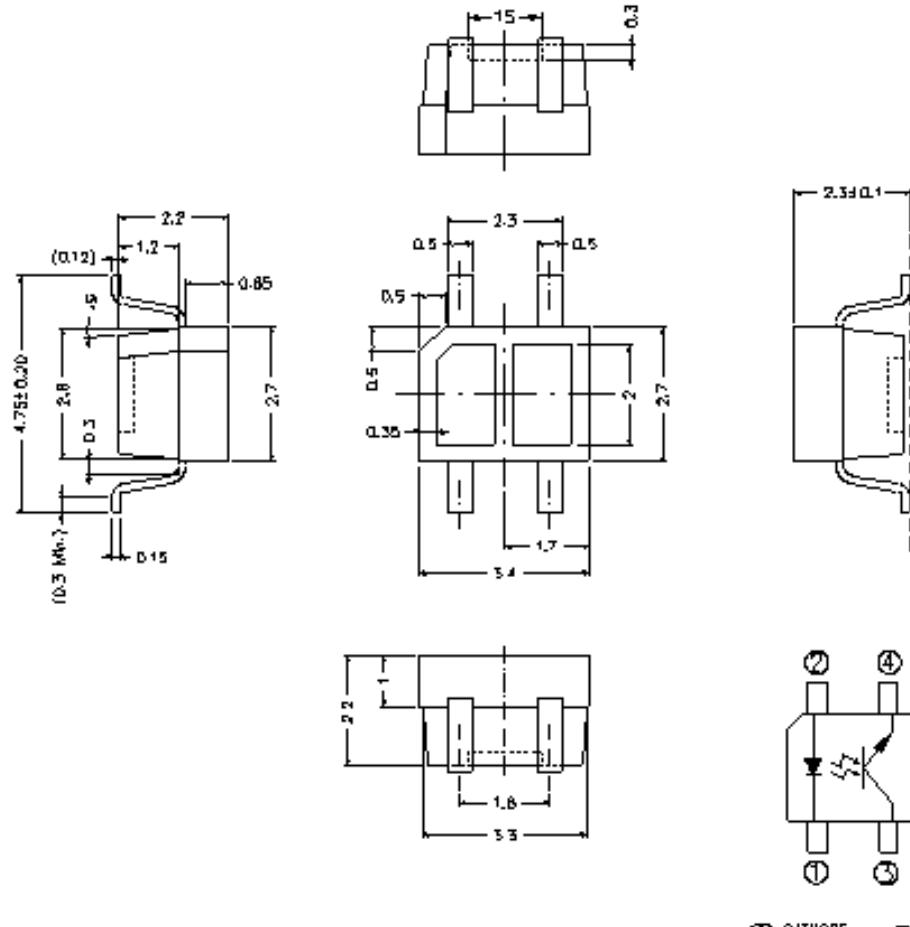


Typical Electro/Optical/Characteristics Curves for PT





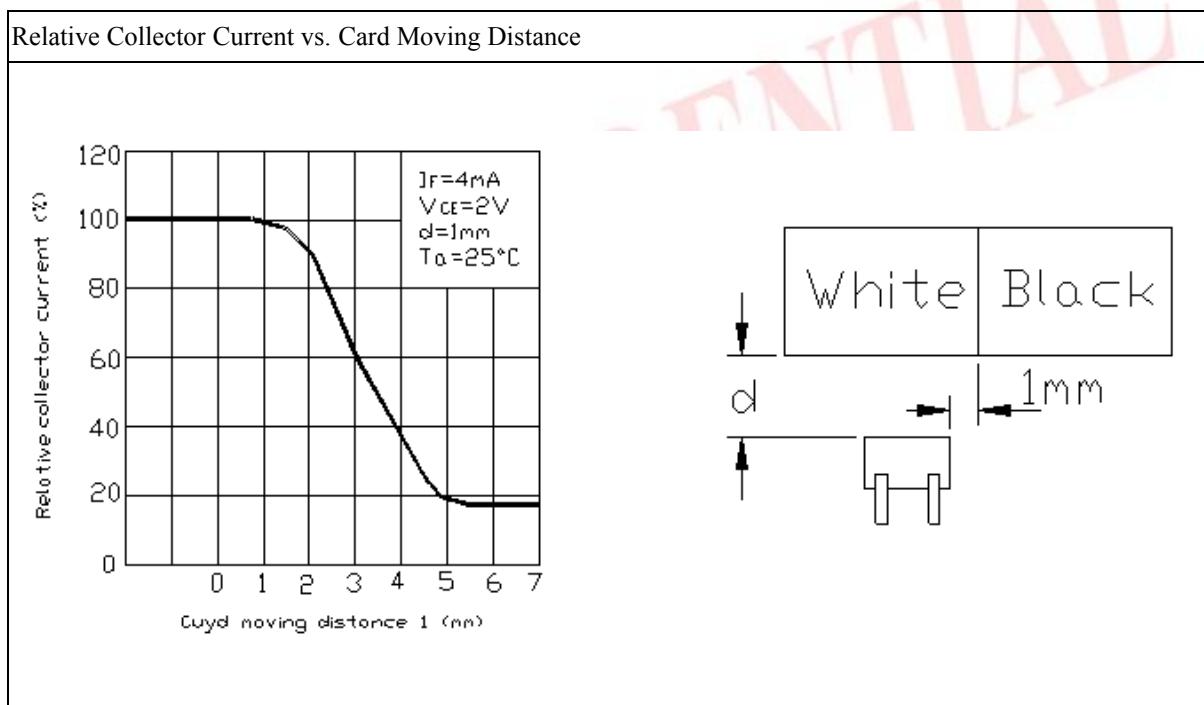
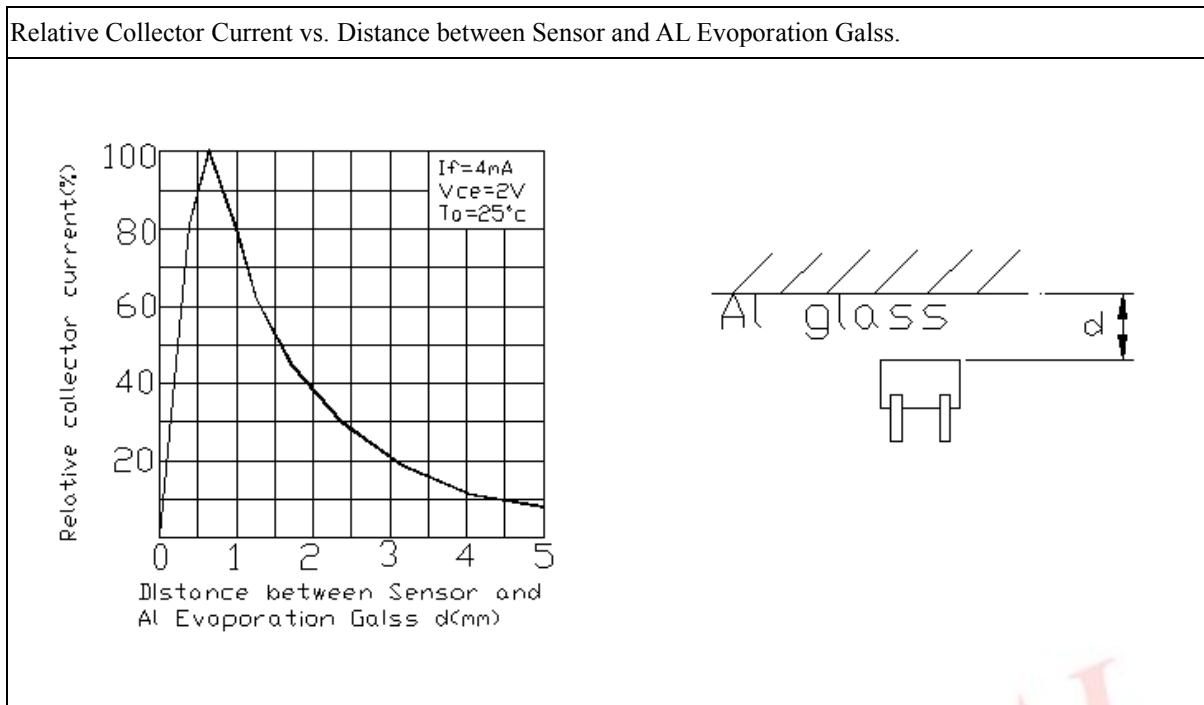
Package Dimension



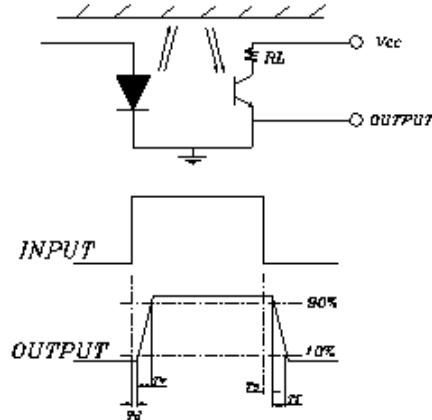
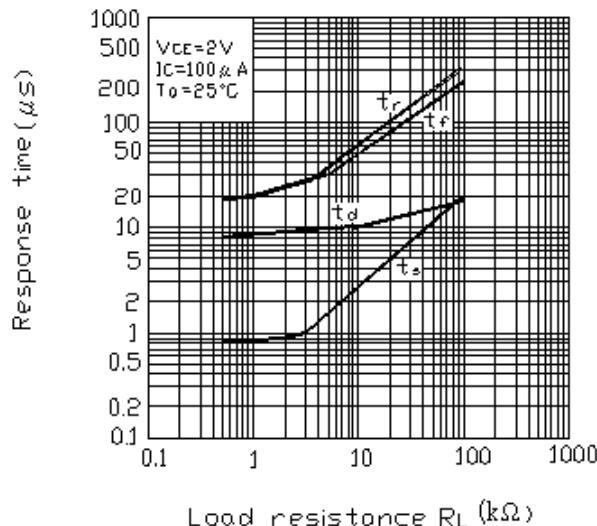
Notes:

1. All dimensions are in millimeters
2. Tolerances unless dimensions $\pm 0.15\text{mm}$

Typical Electrical/Optical/Characteristics Curves For ITR



Response Time vs. Load Resistance



Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

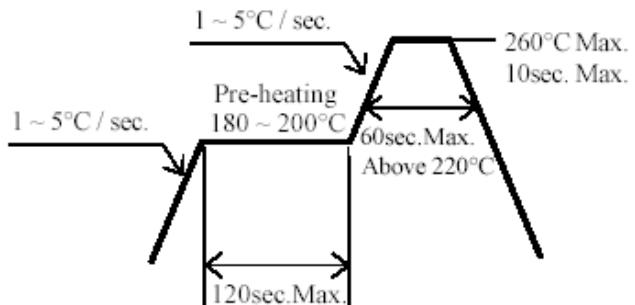
LTPD : 10%

NO.	Item	Test Conditions	Test Hours/Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP. : 260 ± 5	10secs	22pcs		0/1
2	Temperature Cycle	H : +85 L : -30	30mins 5mins 30mins	50Cycles	$I_R \text{ Ux2}$ $I_{ON} \text{ Lx0.8}$ $V_F \text{ Ux1.2}$	0/1
3	Thermal Shock	H : +85 L : -10	5mins 10secs 5mins	50Cycles	U : Upper Specification Limit L : Lower Specification Limit	0/1
4	High Temperature Storage	TEMP. : +90	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -30	1000hrs	22pcs		0/1
6	DC Operating Life	$I_F=20\text{mA}$	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85 / 85% R.H	1000hrs	22pcs		0/1

Recommended Method of Storage

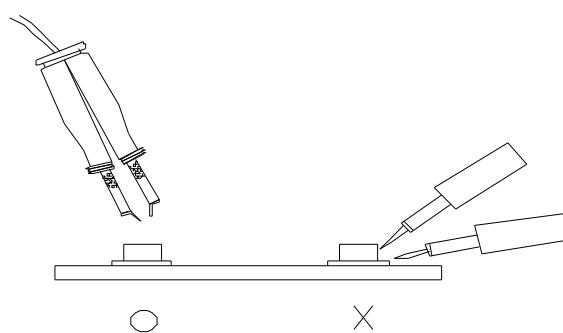
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

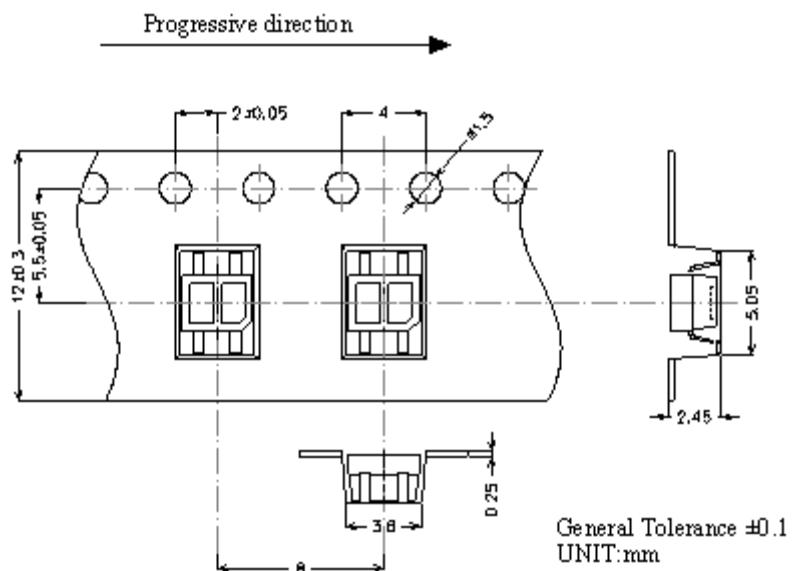
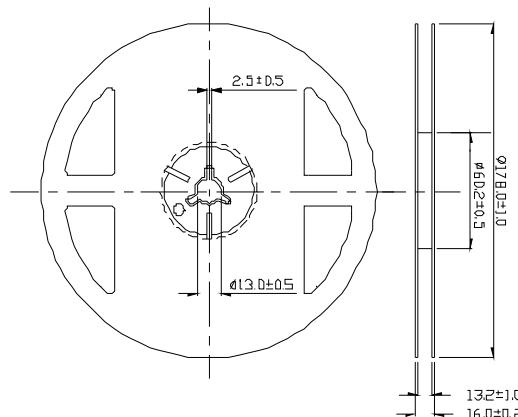
- Shelf life in sealed bag: 12 months at $< 40^{\circ}\text{C}$ and $< 90\%$ relative humidity (RH)
- After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
 - a) Mounted within 72 hours of factory conditions $< 30^{\circ}\text{C}/60\%\text{RH}$, or
 - b) Stored at $< 20\%$ RH
- Devices require bake, before mounting, if:
Humidity Indicator Card is $> 20\%$ when read at $23 \pm 5^{\circ}\text{C}$
- If baking is required, devices may be baked:
 - a) 192 hours at 40°C , and $< 5\%$ RH(dry air/nitrogen) or
 - b) 96 hours at 60°C , and $< 5\%$ RH for all device containers
 - c) 24 hours at 125°C
- Soldering Condition
 - a) Pb-free solder temperature profile



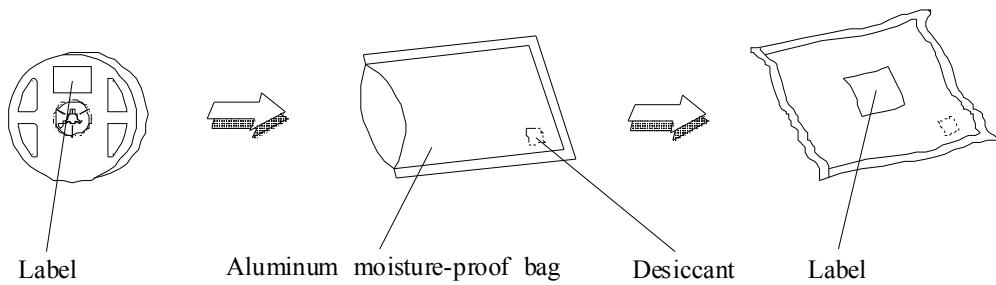
- b) Reflow soldering should not be done more than two times.
- c) When soldering, do not put stress on the LEDs during heating.
- d) After soldering, do not warp the circuit board.
- Repairing

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.



Taping Dimension**Reel Dimensions**

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

Moisture Resistant Packaging

Packing Quantity Specification

1. 1000 Pcs/ 1Reel
2. 15 Reel /1 Box
3. 2 Box/ 1 Carton

Label Form Specification

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number
- X: Month
- Reference: Identify Label Number

Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from 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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