

ITR2006ST30A/TR(ES)

Features

- Fast response time
- High sensitivity
- Thin and small package
- Pb free
- This product itself will remain within RoHS compliant version
- Compliance with EU REACH
- Compliance Halogen Free(Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)



Description

- The ITR2006ST30A/TR(ES) consists of an infrared emitting diode and a silicon phototransistor encased in a black thermo-plastic housing.
- The advantage of the device is the small package.
- Phototransistor receives radiation from the IR LED only, and avoids the noise from ambient light.

Applications

- Camera
- Copier
- Scanner
- Non-contact Switching

Device Selection Guide

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

Absolute Maximum Ratings (Ta=25°C)

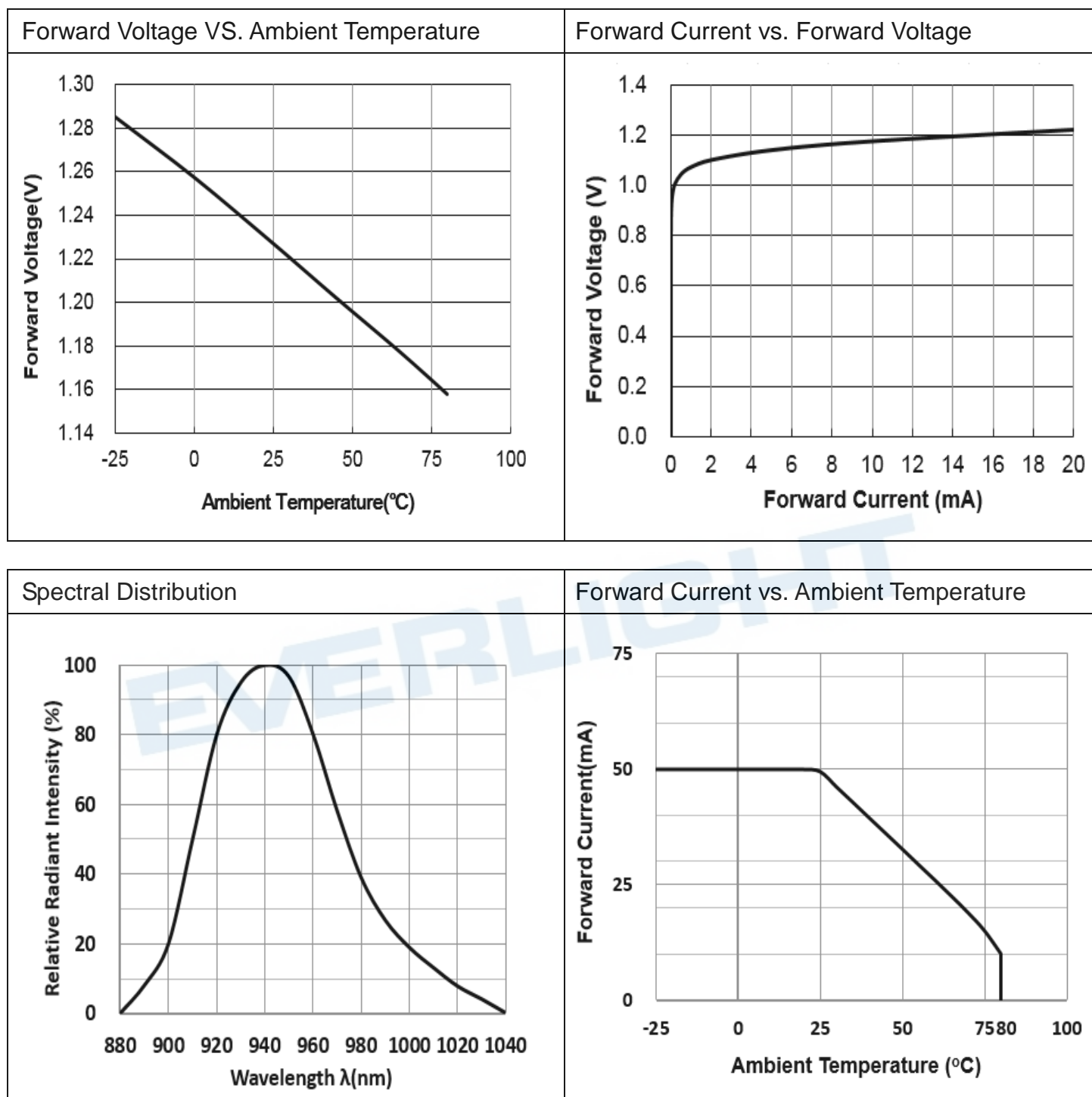
Parameter		Symbol	Ratings	Units
Input	Power Dissipation at (or below) 25°C Free Air Temperature	Pd	75	mW
	Reverse Voltage	V _R	5	V
	Continuous Forward Current	I _F	50	mA
Output	Power Dissipation at (or below) 25°C Free Air Temperature	Pd	75	mW
	Collector Current	I _C	20	mA
	Collector-Emitter Voltage	BV _{CEO}	30	V
	Emitter-Collector Voltage	BV _{ECO}	5	V
Operating Temperature		Topr	-25~+80	°C
Storage Temperature		Tstg	-40~+85	°C
Lead Soldering Temperature *1 (3mm from the package)		Tsol	260	°C

Notes: *1. Soldering time ≤ 5 sec.

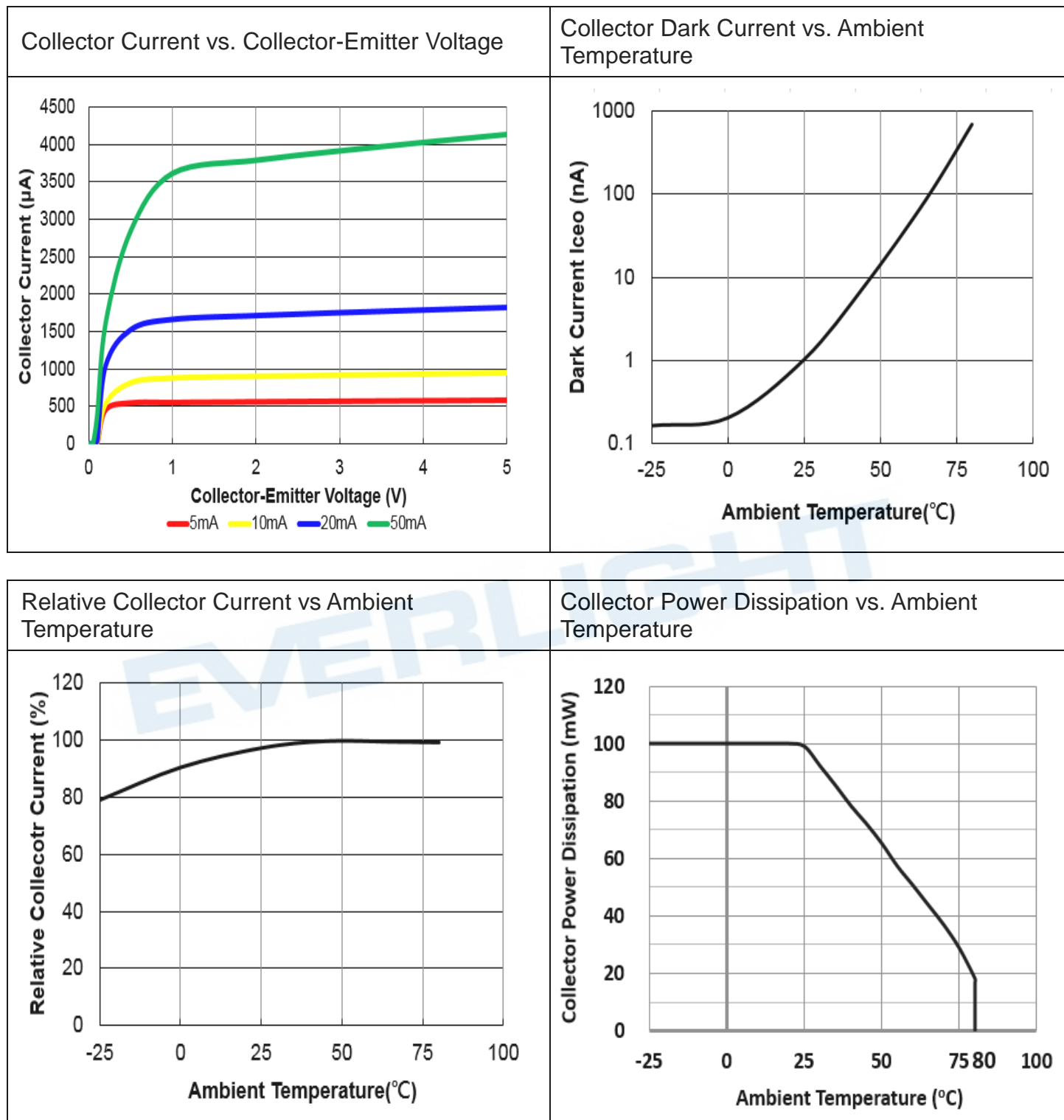
Electro-Optical Characteristics (Ta=25°C)

Parameter		Conditions	Symbol	Min.	Typ.	Max.	Unit
Input	Forward Voltage	$I_F=20\text{mA}$	V_F	---	1.23	1.6	V
	Reverse Current	$V_R=5\text{V}$	I_R	---	---	10	μA
	Peak Wavelength	$I_F=20\text{mA}$	λ_P	---	940	---	nm
Output	Collector Dark Current	$V_{CE}=20\text{V}$	I_{CEO}	---	---	100	nA
	Collector-Emitter Saturation Voltage	$I_F=10\text{mA}$ $I_C=0.1\text{mA}$	$V_{CE(sat)}$	---	---	0.4	V
Transfer Characteristics	On State Collector Current	$V_{CE}=5\text{V}$ $I_F=20\text{mA}$	$I_{C(on)}$	0.2	---	5.0	mA
	Rise time	$V_{CC}=5\text{V}$ $I_C=1\text{mA}$	t_r	---	15	---	μsec
	Fall time	$R_L=1\text{K}\Omega$	t_f	---	15	---	μsec

Typical Electrical/Optical/Characteristics Curves for IR

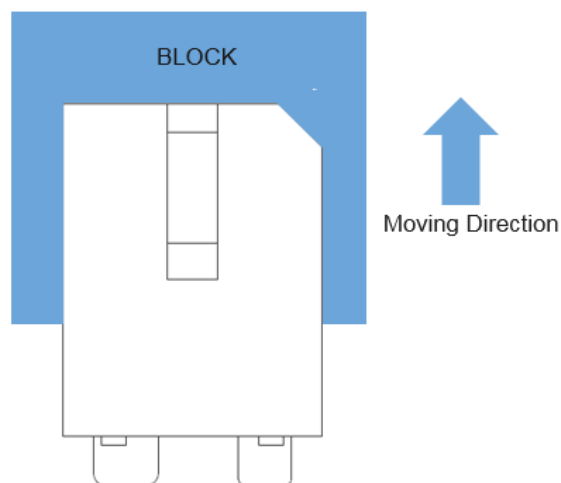
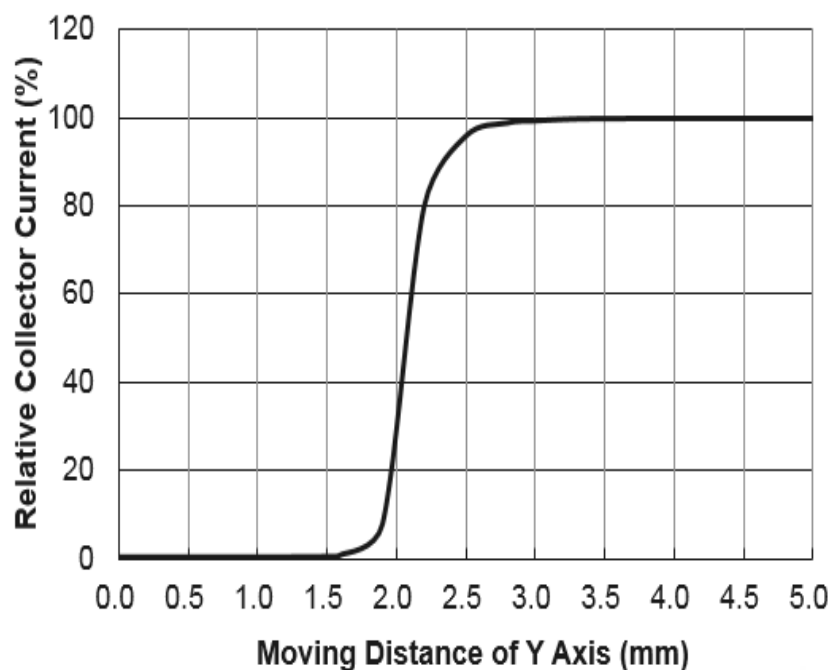


Typical Electrical/Optical/Characteristics Curves for PT

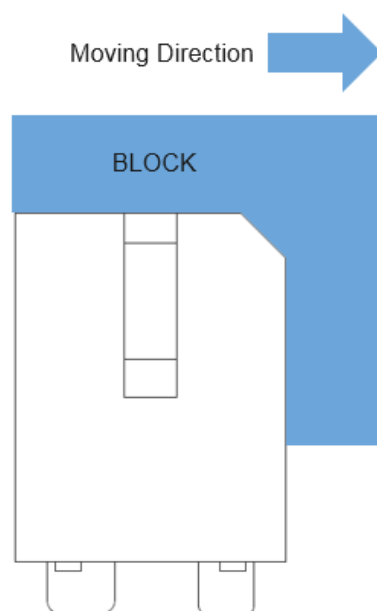
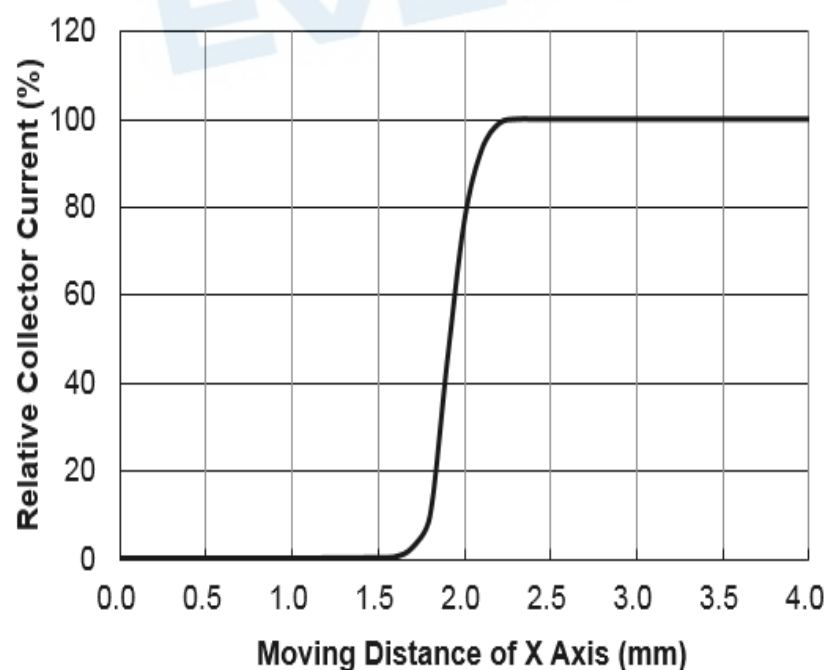


Typical Electro/Optical/Characteristics Curves for ITR

Output Current vs Moving Distance of Y Axis



Output Current vs Moving Distance of X Axis



Response Time vs Load Resistance

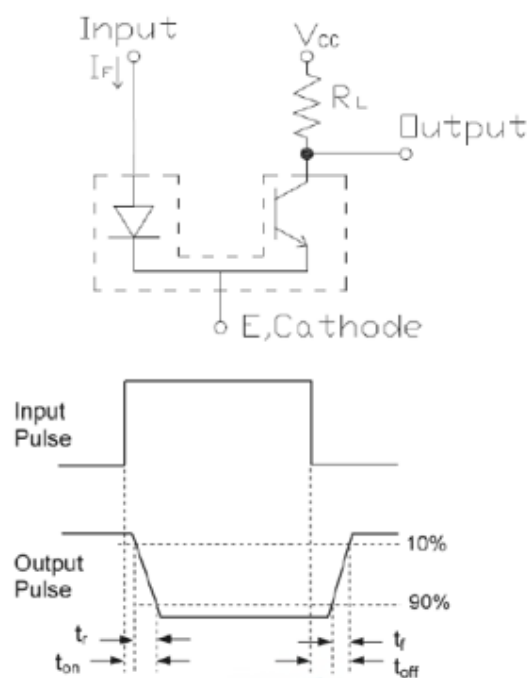
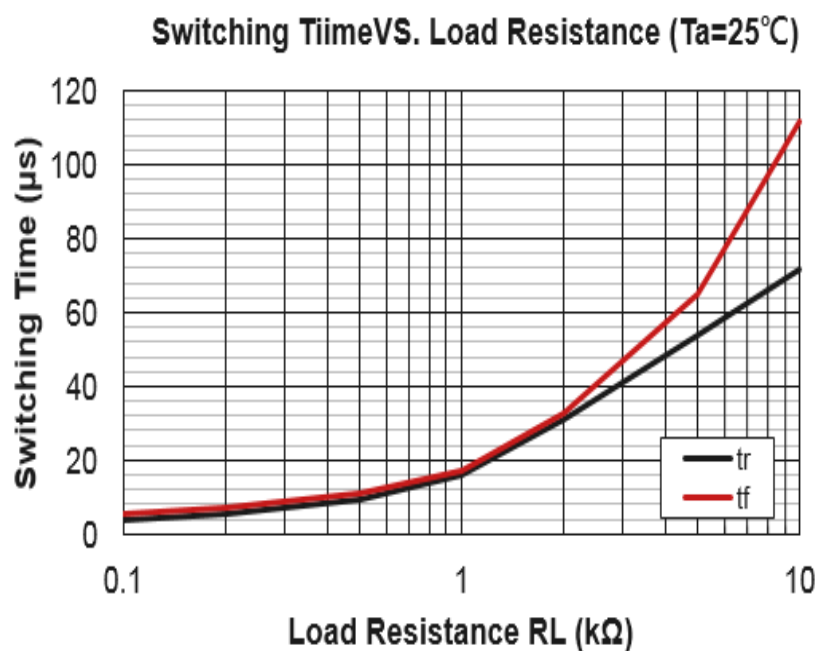
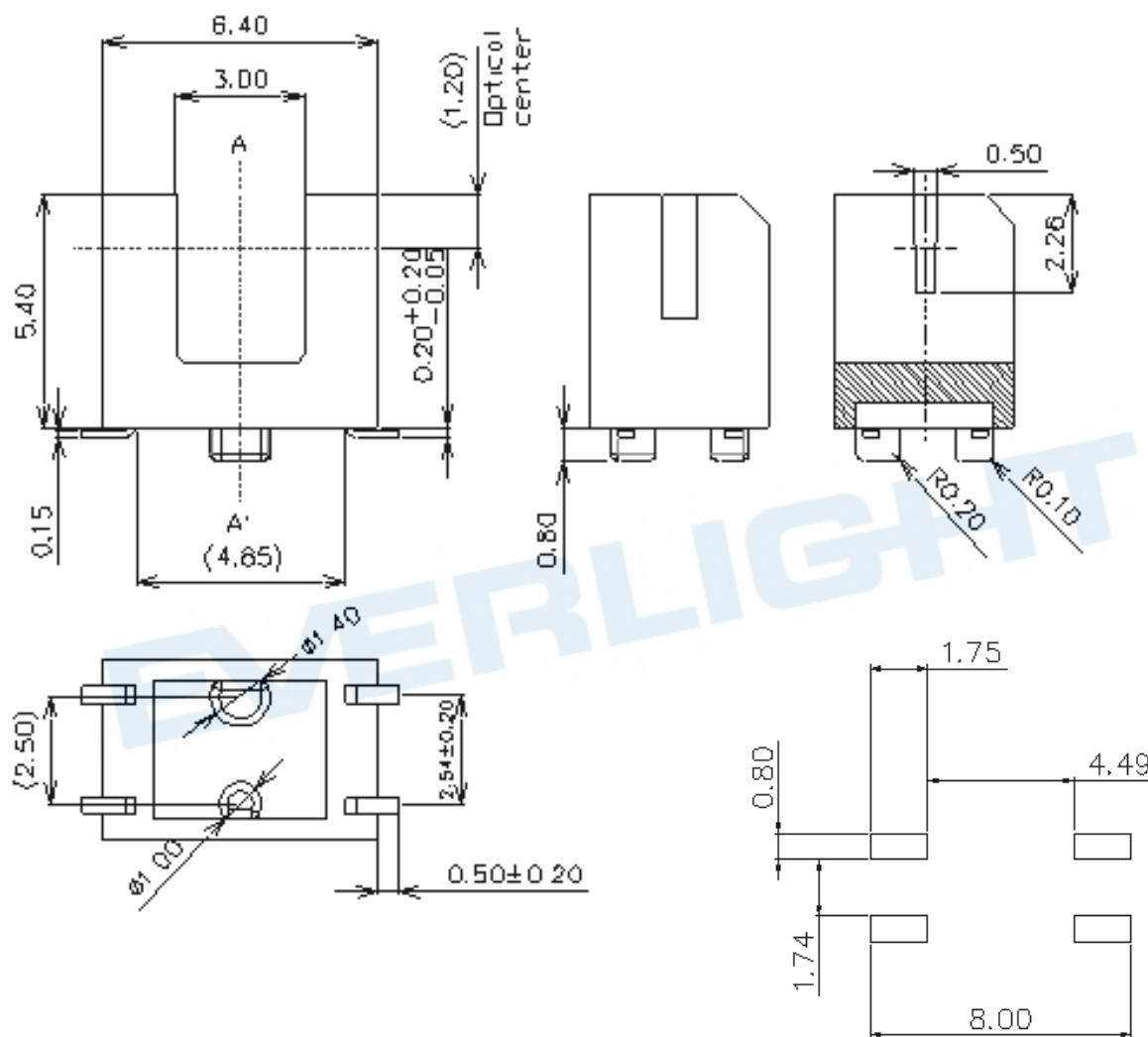
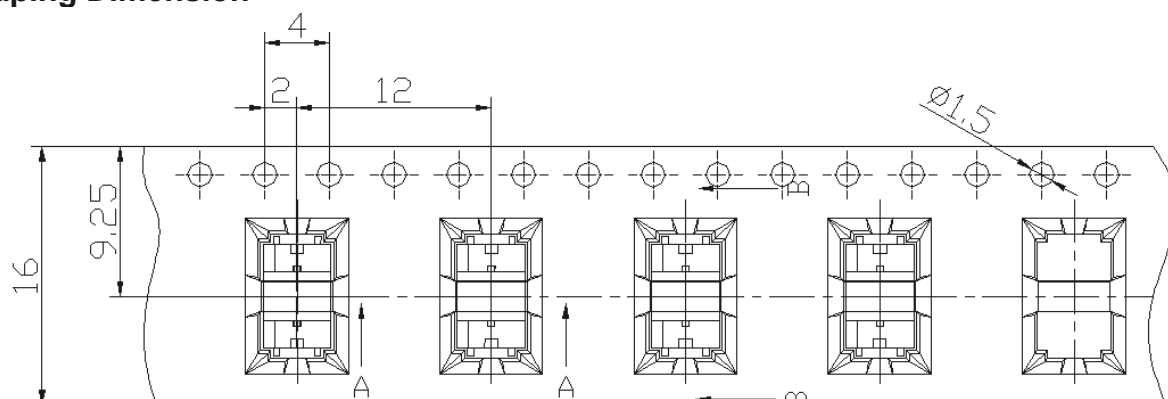


Diagram of a PNP transistor with terminals labeled 1 to 4:

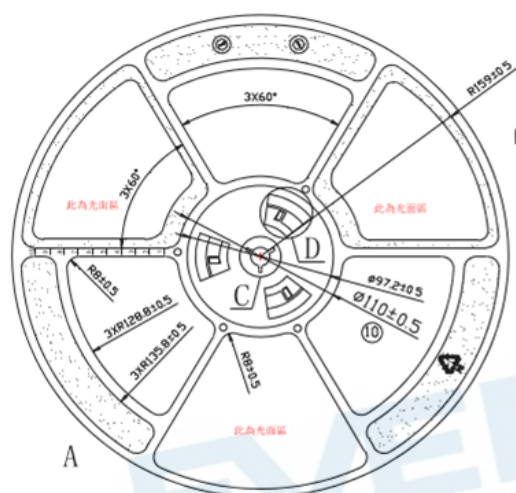
- ② Anode (Top Left)
- ③ Collector (Top Right)
- ① Cathode (Bottom Left)
- ④ Emitter (Bottom Right)



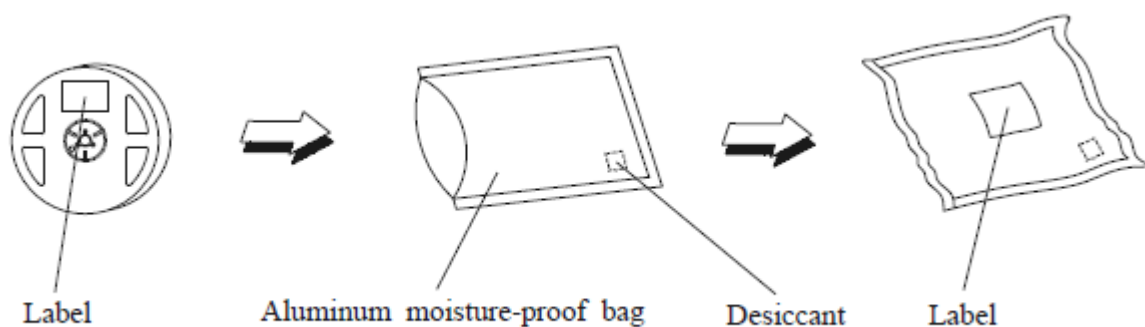
Taping Dimension



Reel Dimensions



Note: The tolerance unless mentioned is $\pm 0.2\text{mm}$, Unit=mm



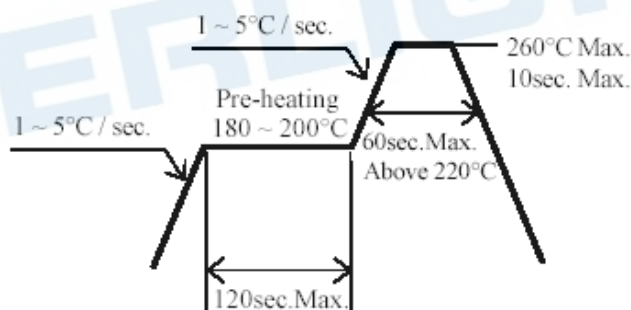
Packing Quantity Specification

1. 800 pcs/ 1 Reel
2. 1 Reel/ 1 Box
3. 5 Box/ 1 Carton

Recommended Method of Storage

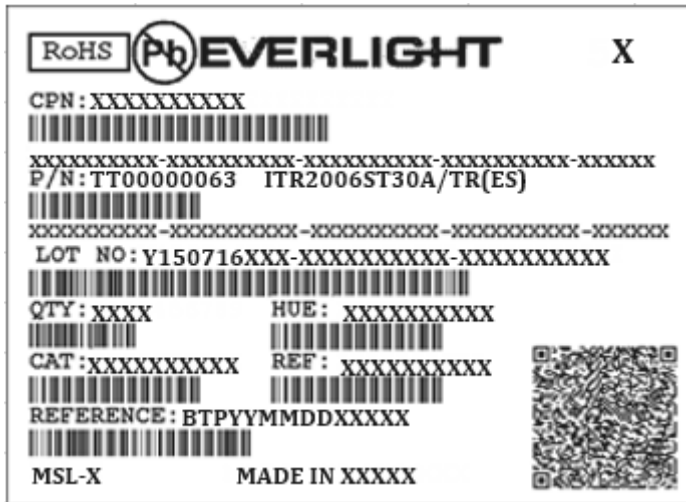
The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

1. Shelf life in sealed bag: 12 months at $< 40^{\circ}\text{C}$ and $< 90\%$ relative humidity (RH)
2. 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
3. Devices require bake, before mounting, if Humidity Indicator Card is $> 20\%$ when read at $23 \pm 5^{\circ}\text{C}$
4. 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
5. 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.

Label Form Specification



PN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN XXXXXX: Production Place

Heat Management

1. Heat management of Photo Interrupter must be taken into consideration during the design stage of Photo Interrupter application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
2. The temperature surrounding the Photo Interrupter in the application should be controlled.

ESD (Electrostatic Discharge)

1. The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability.
2. When handling the products, the following measures against electrostatic discharge are strongly recommended:
 - a. Eliminating the charge
 - b. Grounded wrist strap, ESD footwear, clothes and floors
 - c. Grounded workstation equipment and tools
 - d. ESD table/shelf mat made of conductive materials
3. Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
4. If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:
 - a. Dissipating static charge with conductive materials
 - b. Preventing charge generation with moisture
 - c. Neutralizing the charge with ionizers

DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT 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. EVERLIGHT 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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