Features:

- Thin.
- Compact.
- High sensitivity.
- Fast response time.
- Cutting wavelength under λ=840nm.
- The product itself will remain within RoHS compliant Version.

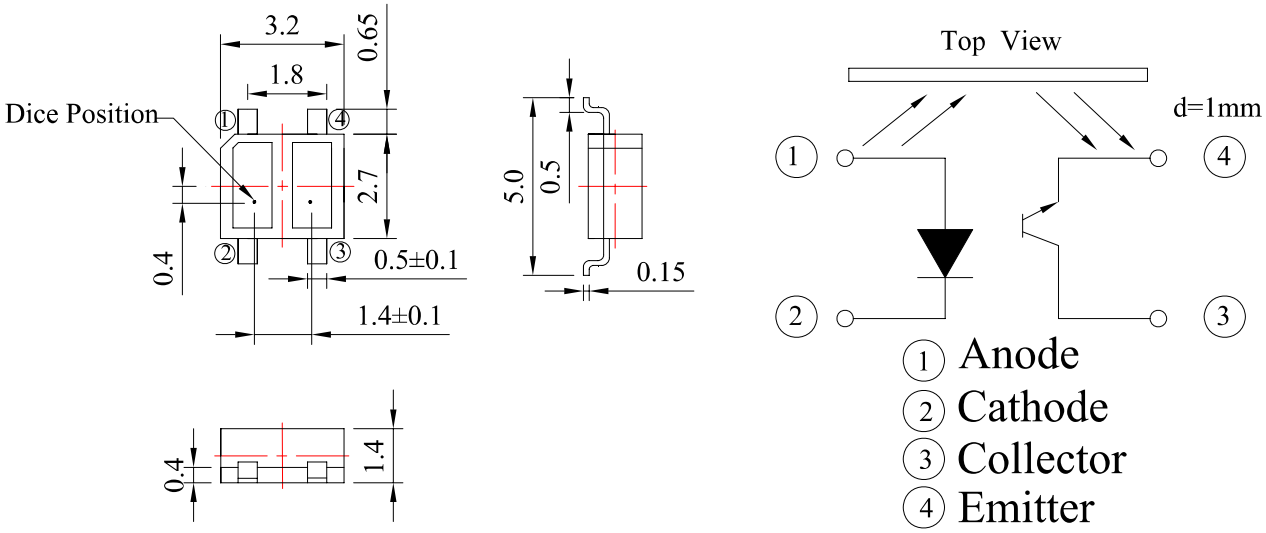
Descriptions:

- The ITR105S is a reflective type interrupter so the optimum detection distance: 1mm or less. This type (ITR105S) is a black tint plastic package with top view and no lens, the epoxy package spectrally matched to IR emitter (λp=940mm), cutting wavelength under λ=840nm.

Applications:

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

Package Dimension:



Part No.	Material		Color	Source Color
ITR105S	Chip	GaAs	---	Infrared
		Silicon	---	Infrared Receiver
	Lead Frame	SPCC	Silver White	---
	Wire	Gold	Golden	---
	Compound	Epoxy	Black	Infrared
			Black	Infrared Receiver

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25mm (.010”) unless otherwise specified.
3. Specifications are subject to change without notice.

Absolute Maximum Ratings at Ta=25 δ

Parameters		Symbol	Ratings	Unit
Input	Power Dissipation at (or below) 25 δ Free Air Temperature	P_D	75	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current (*1) Pulse width 炔100μs, Duty cycle=1%	I_{FP}	1.00	A
Output	Collector Power Dissipation	P_C	100	mW
	Collector Current	I_C	20	mA
	Collector-Emitter Voltage	V_{CEO}	30	V
	Emitter-Collector Voltage	V_{ECO}	5	V
Operating Temperature		Topr	-20~+70	δ
Storage Temperature		Tstg	-30~+80	δ
Lead Soldering Temperature (*2) [2mm (.079") From Body]		Tsol	260 δ for 5 Seconds	

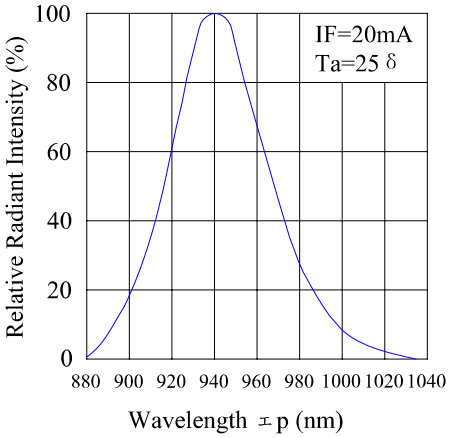
(*1) tw=100μsec., T=10msec. (*2) t=5secs.

Electrical Optical Characteristics (Ta=25 δ)

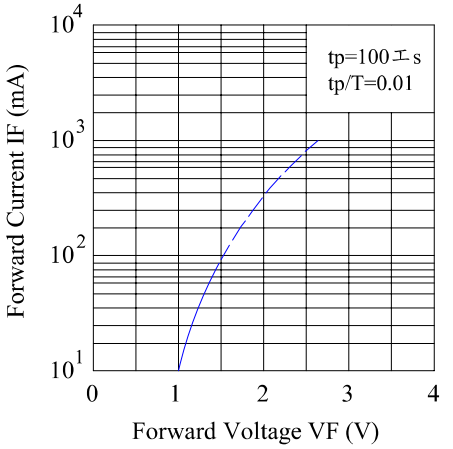
Parameters		Symbol	Min.	Typ.	Max.	Unit	Test condition
Input	Forward Voltage	VF	---	1.20	1.60	V	IF=20mA
	Reverse Current	IR	---	---	10	μA	V_R=5V
	Peak Wavelength	λp	---	940	---	nm	
Output	Collector Dark Current	I_D	---	---	200	nA	VCE=10V
	Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	---	---	0.40	V	I_C=0.25mA, IF=10mA
Light Current		$I_{C(ON)}$	80	---	1920	μA	V_{CE}=5V, IF=10mA D=1mm
Response Time	Rise Time (10% to 90%)	T_R	---	20	---	μs	V_{CE}=5V, IF=20mA R_L=1000Ω
	Fall Time (90% to 10%)	T_F	---	20	---		

Typical Electrical/Optical/Characteristics Curves for IR
(25 δ Ambient Temperature Unless Otherwise Noted)

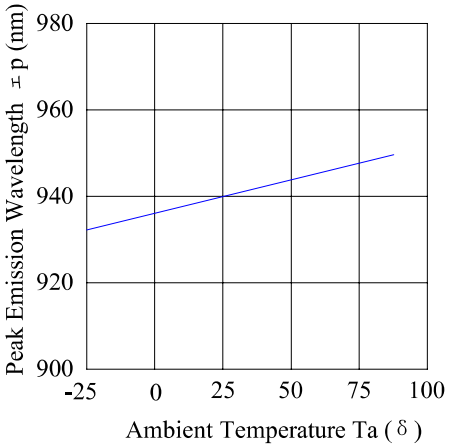
Spectral Distribution



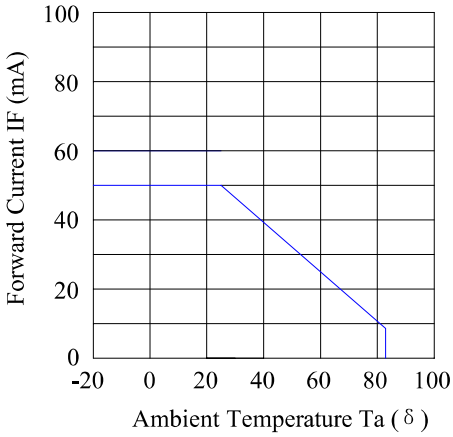
Forward Current & Forward Voltage



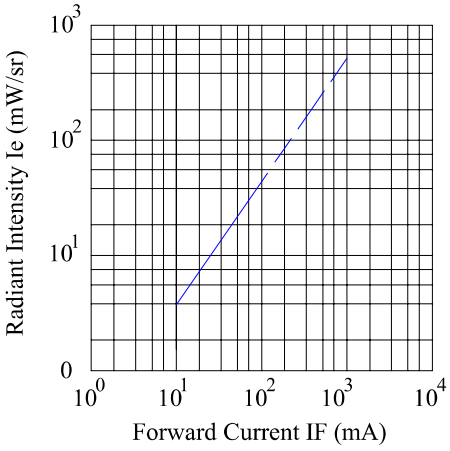
Peak Emission Wavelength & Ambient Temperature



Forward Current & Ambient Temperature

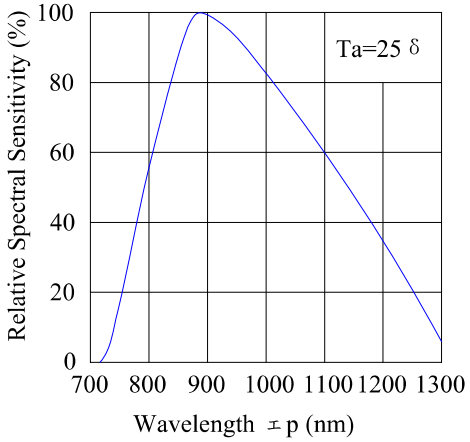


Relative Intensity & Forward Current

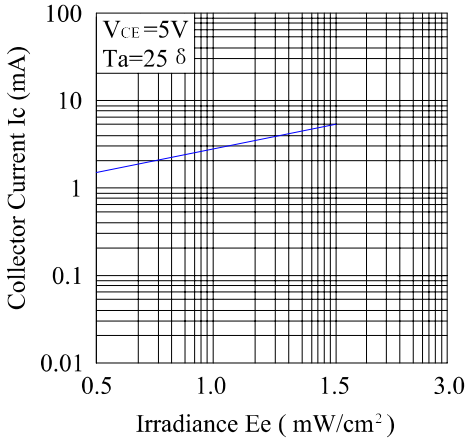


Typical Electrical/Optical/Characteristics Curves for PT
(25 δ Ambient Temperature Unless Otherwise Noted)

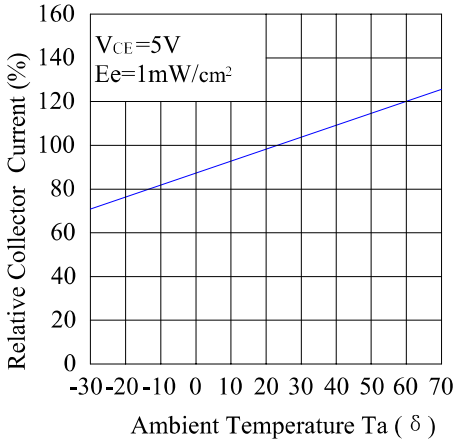
Spectral Sensitivity



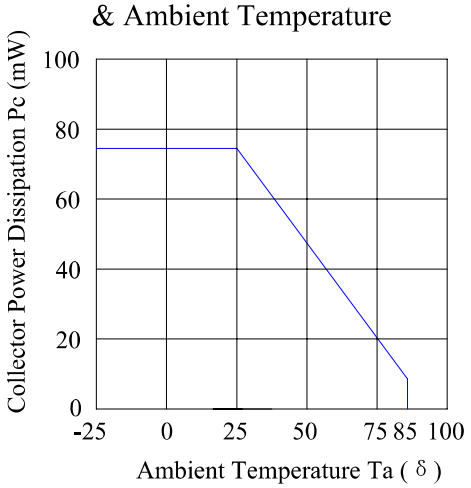
Collector Current & Irradiance



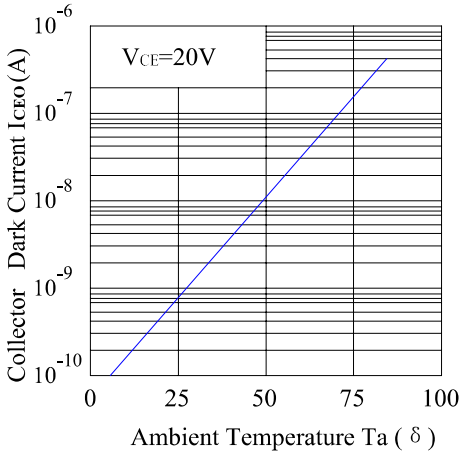
Relative Collector Current & Ambient Temperature



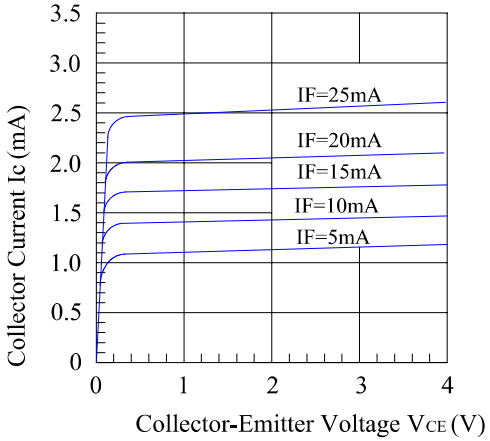
Collector Power Dissipation & Ambient Temperature



Collector Dark Current & Ambient Temperature

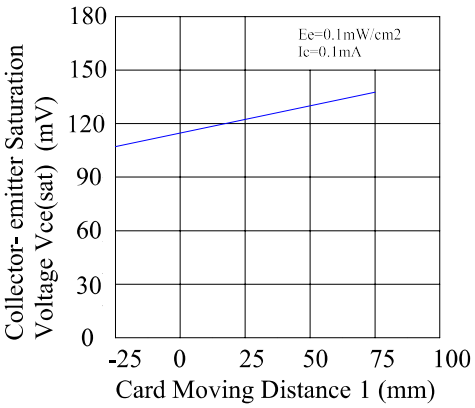


Collector Current & Collector-Emitter Voltage

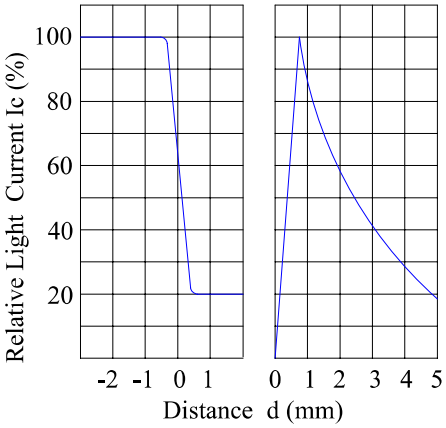


Typical Characteristics For ITR

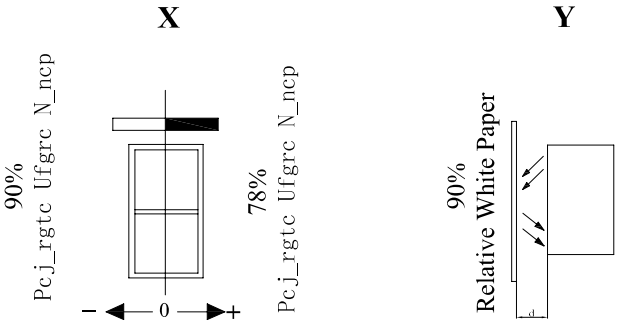
Collector- emitter Saturation Voltage
& Ambient Temperature



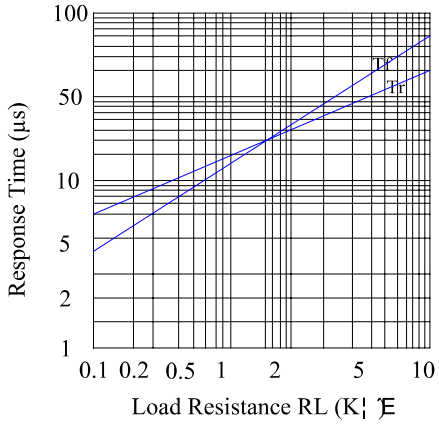
Sensing Position Characteristics

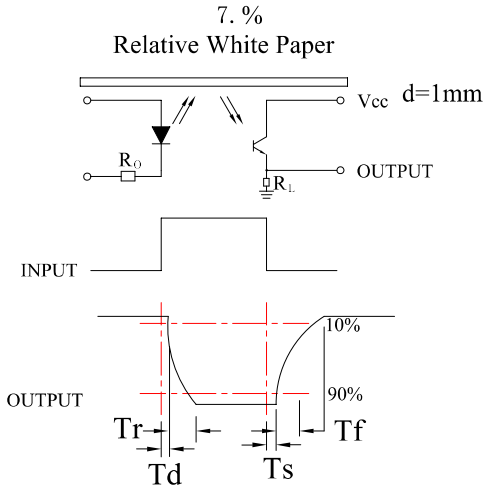


Center of Optical axis



Response Time & Load Resistance





Reliability Test Items And Conditions:

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

Confidence level: 90%.

LTPD: 10%.

Parameters	Purpose & Condition	Failure Judgment Criteria	Samples (n) Defective (c)
Temperature Cycle	Evaluates product's ability to withstand exposure to high temperature, low temperature, and temperature variation between two limit temperature. Standard test Condition: 85°C~25°C~-55°C~25°C ↓ 30min ↓ 5min ↓ 30min ↓ 5min 50 cycles	IR炕Ux2 IC(on) 炔Lx0.8 VF炕Uz1.2 U: Upper specification limit L: Lower specification limit	N=22, c=0
Thermal Shock	Evaluates product's ability to withstand rapid temperature change. Standard test Condition: 85°C~-55°C 5min 5min 50 cycles		N=22, c=0
High Temperature Storage	Evaluates product's ability to withstand prolonged storage at high temperature. Standard test Condition: Temperature: 100°C Time: 1000hrs		N=22, c=0
Low Temperature Storage	Evaluates product's ability to withstand prolonged storage at low temperature. Standard test Condition: Temperature:-55°C Time: 1000hrs		N=22, c=0

Parameters	Purpose & Condition	Failure Judgment Criteria	Samples (n) Defective (c)
Operating Life Test	Evaluates product's endurance to prolonged electrical or temperature stress. Standard test Condition: V_{CE}=5V I_F=20mA Time: 1000hrs	IR炕Ux2 IC(on) 炔Lx0.8 VF炕Uz1.2 U: Upper specification limit L: Lower specification limit	N=22, c=0
High Temperature High Humidity	Evaluates product's ability to withstand prolonged storage at high temperature and high humidity. Standard test Condition: Temperature: 85°C Relative humidity: 85% Time: 1000hrs		N=22, c=0
Soldering Heat	Evaluates product's ability to withstand soldering heat. Standard test Condition: Solder temperature: 26. i 3°C Solder time: 10 seconds		N=22, c=0

Please read the following notes before using the product:

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

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

2.2 Before opening the package, the LEDs should be kept at 30δ or less and 80%RH or less.

2.3 The LEDs should be used within a year.

2.4 After opening the package, the LEDs should be kept at 30δ or less and 60%RH or less.

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

2.6 If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5δ for 24 hours.

3. Soldering Condition

When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point.

To avoided the Epoxy climb up on lead frame and was impact to non-soldering problem, dipping the lens into the solder must be avoided.

Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering conditions:

Soldering Iron		Wave Soldering	
Temperature Soldering Time	300δ Max. 3 sec. Max. (one time only)	Pre-heat Pre-heat Time Solder Wave Soldering Time	100δ Max. 60 sec. Max. 260δ Max. 5 sec. Max.

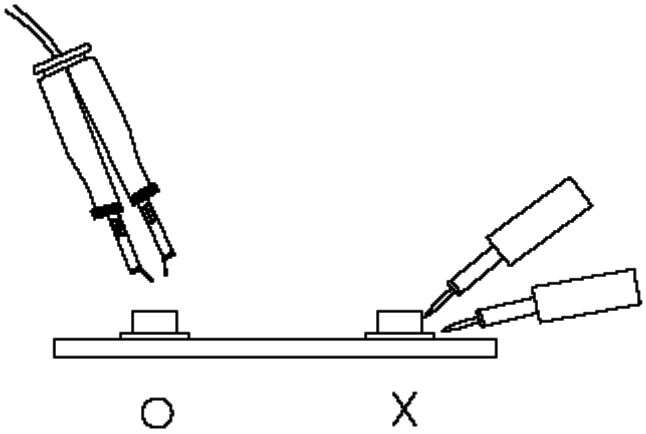
Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260δ for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. 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.



6. Caution in ESD

Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.