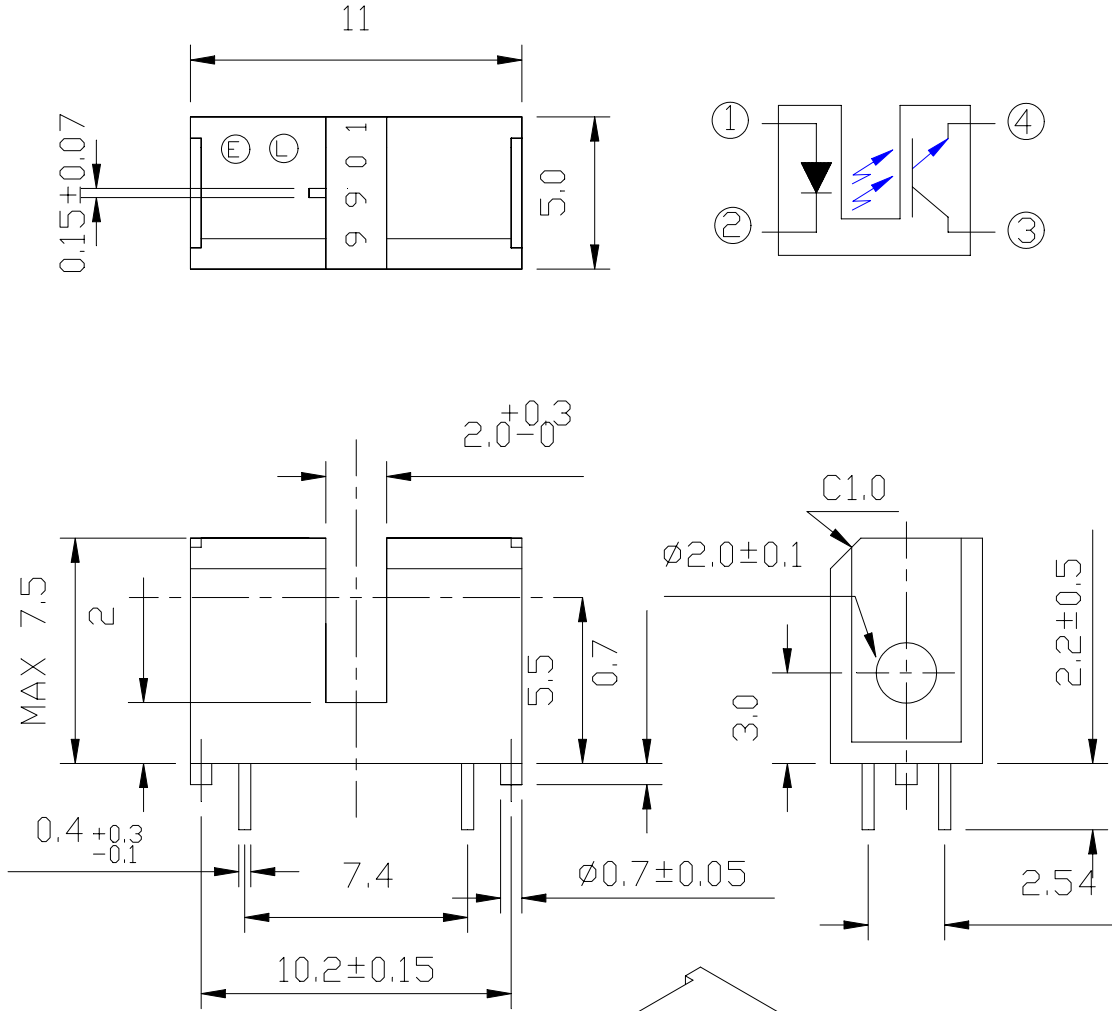


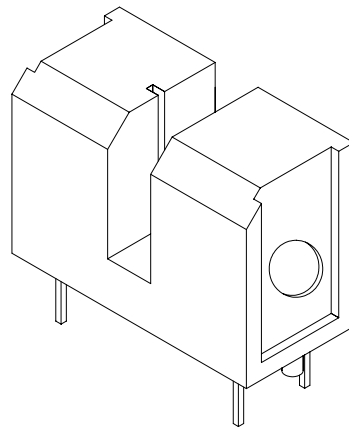


MODEL NO: DS-9901

Package Dimensions :



- ①: Anode
- ②: Cathode
- ③: Collector
- ④: Emitter





MODEL NO: DS-9901

■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation at(or below) 25°C Free Air Temperature	Pd	75	mW
	Reverse Voltage	V <sub>R</sub>	6	V
	Forward Current	I <sub>F</sub>	50	mA
	Peak Forward Current Pulse width ≤100 μs, Duty cycle=1%	I <sub>FP</sub>	1	A
Output	Collector Power Dissipation	P <sub>C</sub>	75	mW
	Collector Current	I <sub>C</sub>	20	mA
	Collector-Emitter Voltage	V <sub>CEO</sub>	35	V
	Emitter-Collector Voltage	V <sub>ECO</sub>	6	V
Operating Temperature		Topr	-25~+85	°C
Storage Temperature		Tstg	-40~+85	°C
Lead Soldering Temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

■ Electro-Optical Characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V <sub>F</sub>	-	1.2	1.5	V	I <sub>F</sub> =20mA
	Reverse Current	I <sub>R</sub>	-	-	10	μA	V <sub>R</sub> =3V
	Peak Wavelength	λ <sub>p</sub>	-	940	-	nm	I <sub>F</sub> =20mA
Output	Collector Dark Current	I <sub>CEO</sub>	-	1	100	nA	V <sub>CE</sub> =20V Ee=0mW/cm <sup>2</sup>
Transfer Characteristic	C-E Saturation Voltage	V <sub>CE(sat)</sub>	-	-	0.4	V	I <sub>C</sub> =0.25mA I <sub>F</sub> =40mA
	Collector Current	I <sub>C(ON)</sub>	0.4	-	-	mA	V <sub>CE</sub> =5V I <sub>F</sub> =20mA
	Rise time	t <sub>r</sub>	-	-	80	μsec	V <sub>CE</sub> =4.4V
	Fall time	t <sub>f</sub>	-	-	800	μsec	I <sub>C</sub> =13mA R <sub>L</sub> =47KΩ



**MODEL NO: ITR9901**

**Typical Characteristics For IR**

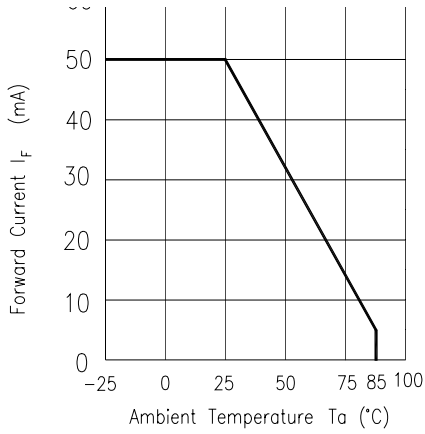


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

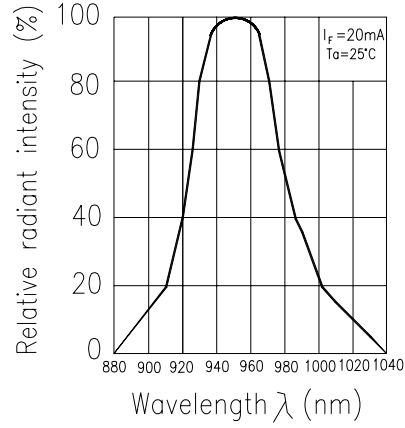
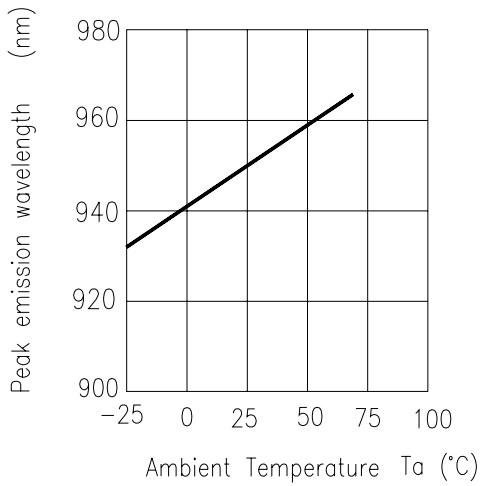


Fig. 5 Forward Voltage vs. Ambient Temperature

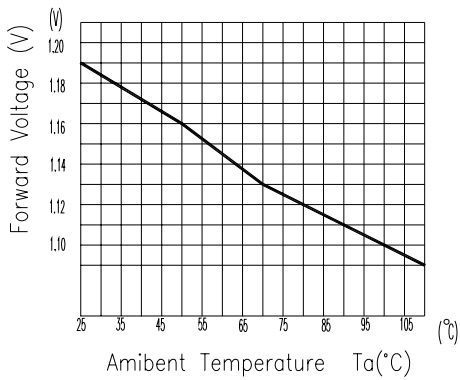


Fig. 6 Relative Radiant Intensity vs. Angular Displacement

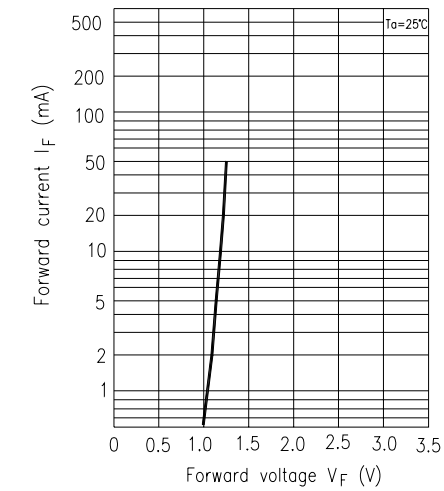


Fig. 4 Forward Current vs. Forward Voltage



## MODEL NO: DS-9901

### Typical Characteristics For PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

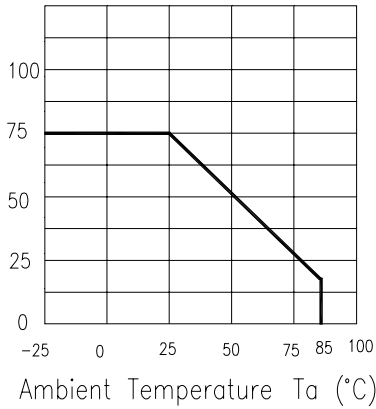


Fig.2 Collector Dark Current vs. Ambient Temperature

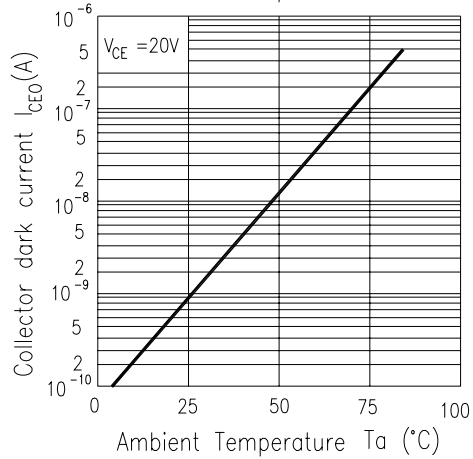


Fig.3 Spectral Sensitivity

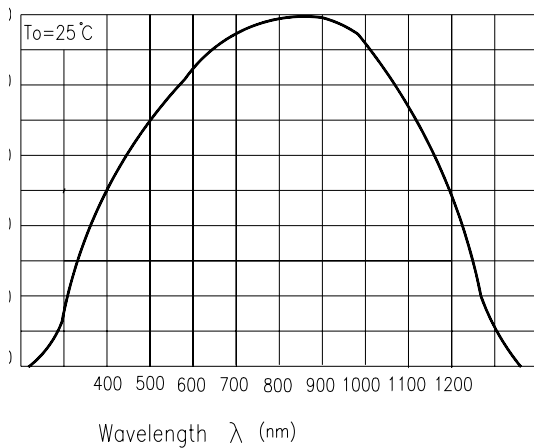
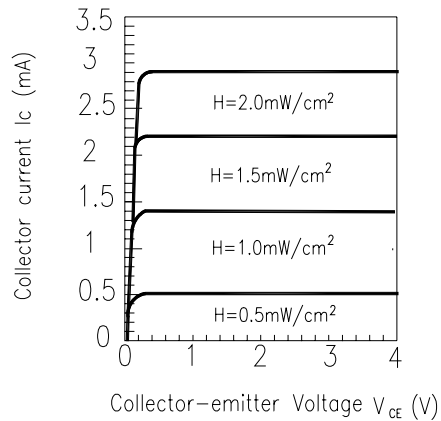


Fig.4 Collector Current vs. Collector-emitter Voltage



### Typical Characteristics For ITR

Fig.1 Relative Collector Current vs. Shield Distance(1)

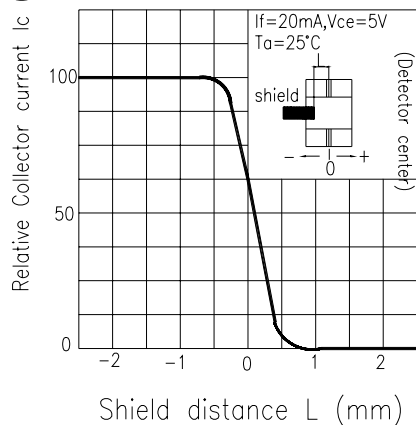
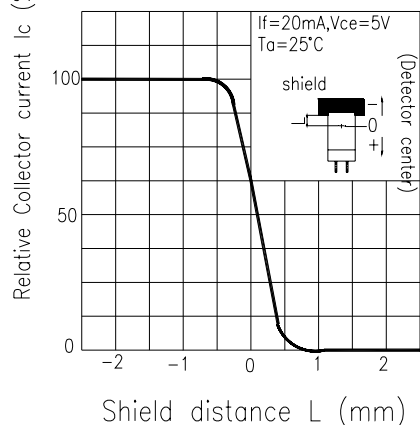


Fig.2 Relative Collector Current vs. Shield Distance(2)





**MODEL NO: DS-9901**

■ Reliability test item and condition

The reliability of products shall be satisfied with item listed below:

Parameter	Purpose & Condition	Failure Judgement 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: $\begin{array}{cccc} 85^{\circ}\text{C} & \sim & 25^{\circ}\text{C} & \sim & -55^{\circ}\text{C} & \sim & 25^{\circ}\text{C} \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 30\text{min} & & 5\text{min} & & 30\text{min} & & 5\text{min} \end{array}$ 50 cycle	$I_R \geq U \times 2$ $I_{c(on)} \leq L \times 0.8$ $V_F \geq U \times 1.2$  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: $85^{\circ}\text{C} \sim -55^{\circ}\text{C}$ $\begin{array}{cc} 5\text{min} & 5\text{min} \end{array}$ 50cycle		n =22 , c=0
High Temperature Storage	Evaluates product's ability to withstand prolonged storage at high temperature Standard test Condition: Temperature : $100^{\circ}\text{C}$ Time : 1000hrs		n =22 , c=0
Low Temperature Storage	Evaluates product's ability to withstand prolonged storage at low temperature Standard test Condition: Temperature : $-55^{\circ}\text{C}$ Time : 1000hrs		n =22 , c=0



MODEL NO: DS-9901

Parameter	Purpose & Condition	Failure Judgement Criteria	Samples(n) Defective(c)
Operating Life Test	Evaluates product's endurance to prolonged electrical or temperature stresses. Standard test Condition:  $V_{CE}=5V$ $I_F=20mA$ Time : 1000hrs	$I_R \geq U \times 2$ $I_{c(on)} \leq L \times 0.8$ $V_F \geq U \times 1.2$  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	L : Lower specification limit	n =22 , c=0
Soldering Heat	Evaluates product's ability to withstand soldering heat  Standard test conditions  Solder temperature : 260±5°C Solder time : 10 seconds		n =22 , c=0

■Supplements

1.Parts

(1) Chip

Type	Material	Peak Wavelength
DR	GaAs	940 nm
DT	Silicon	860 nm

(2)Material

Type	Lead frame	Wire	Part Package	Holder
Material	SPCC	Gold	Epoxy	Noryl