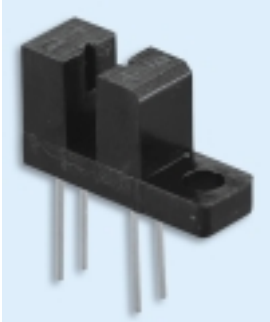
Technical Data Sheet ITR8103

Silicon Planar PIN Photodiode



Features

- Wide gap between light emitter and detector (3.1)mm
- High sensing accuracy
- PWB mounting type package

Descriptions

- The ITR8103(Slot Optical Switch) is a gallium arsenide infrared emitting diode which is coupled with a silicon photo transistor in a plastic housing the packaging system is designed to optimizes the mechanical resolution ,coupling efficiency, and insulates ambient light. The slot in the housing a provides a means of interrupting the signal with printer, scanner, copier, or other opaque material, switching the output from an “ON” to “OFF” state.

Features

- Wide gap between light emitter and detector (3.1mm)
- High sensing accuracy
- PWB mounting type package

Applications

- Copier
- Printer
- Facsimile
- Ticket vending machine
- Opto-electronic switch

■Supplements

1.Parts

(1) Chip

Type	Material	Peak Wavelength
IR	GaAs or GaAlAs	940 nm
PT	Silicon	860 nm

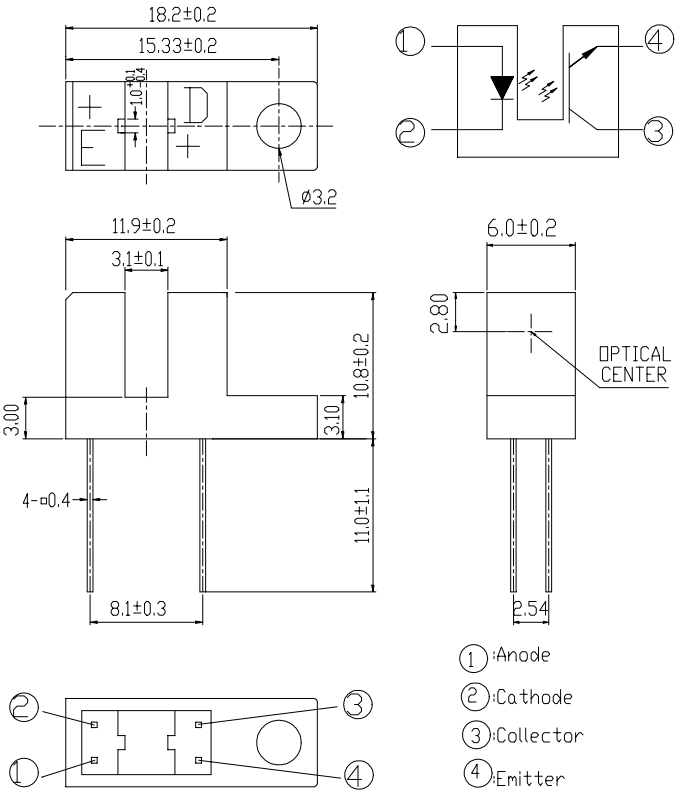
(2)Material

Type	Lead frame	Wire	Part Package	Holder
Material	SPCC	Gold	Epoxy	P.C

Device No:DRX-081-005

Package Dimensions

ITR8103



Notes:

1. All dimensions are in millimeter.
2. General Tolerance:± 0.2mm
3. Lead spacing is measured where the lead emerge from the package.
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
5. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
6. When using this product , please observe the absolute maximum ratings and the instructions for use 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.

Device No:DRX-081-005

Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation at(or below) 25ºC Free Air Temperature	Pd	75	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current Pulse width ≦100μs, Duty cycle=1%	I_{FP}	1	A
Output	Collector Power Dissipation	P_C	75	mW
	Collector Current	I_C	20	mA
	Collector-Emitter Voltage	V_{CEO}	30	V
	Emitter-Collector Voltage	V_{ECO}	5	V
Operating Temperature		Topr	-25~+85	ºC
Storage Temperature		Tstg	-40~+85	ºC
Lead Soldering Temperature (1/16 inch from body for 5 seconds)		Tsol	260	ºC

■ Electro-Optical Characteristics (Ta=25ºC)

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	I_F=20mA
	View Angle	2□1/2	-	60	-	Deg	I_F=20mA
Output	Collector Dark	I_{CEO}	-	-	100	nA	V_{CE}=10V
Transfer Characteristic	C-E Saturation Voltage	V_{CE}(sat)	-	-	0.4	V	I_C=0.5mA I_F=20mA
	Collector Current	I_C(ON)	0.9	7.5	15	mA	V_{CE}=5V I_F=10mA
	Rise time	t_r	-	20	-	μsec	V_{CE}=5V
	Fall time	t_f	-	20	-	μsec	I_C=1mA R_L=1KΩ

Notes: *1:Soldering time≦5 seconds.

Device No:DRX-081-005

Electro-Optical Characteristics (Ta=25℃)

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: 85°C ~25°C ~-55°C ~25°C 30min 5min 30min 5min 50 cycle	$I_R \geqq U \times 2$ $Ic(on) \leqq L \times 0.8$ $V_F \geqq U \times 1.2$ 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°C ~ -55°C 5min 5min 50cycle		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

Parameter	Purpose & Condition	Failure Judgement	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	$I_R \geqq U \times 2$ $Ic(on) \leqq L \times 0.8$ $V_F \geqq U \times 1.2$ 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℃ Relative humidity:85% Time : 1000hrs		n =22，c=0
Soldering Heat	Evaluates product's ability to withstand soldering heat Standard test conditions Solder temperature : 260±5℃ Solder time : 10 seconds		n =22，c=0

Device No:DRX-081-005

Typical Electro-Optical Characteristics Curves

ITR8103

Fig. 1 Forward Current vs. Ambient Temperature

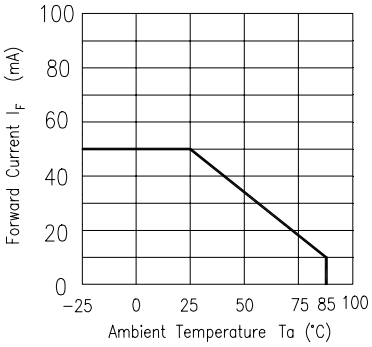


Fig. 2 Spectral Distribution

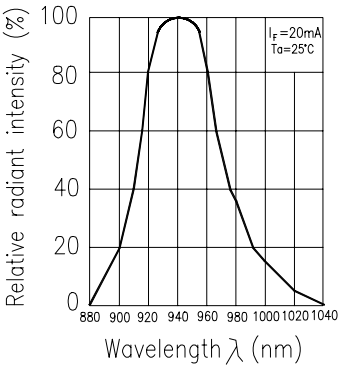


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

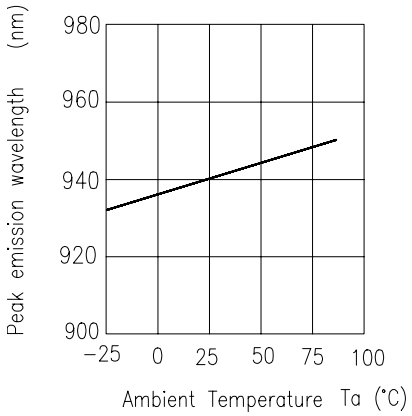


Fig. 4 Forward Current vs. Forward Voltage

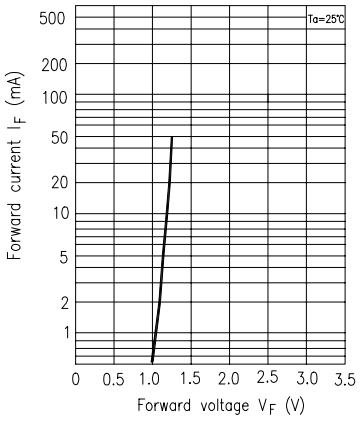


Fig. 5 Forward Voltage vs. Ambient Temperature

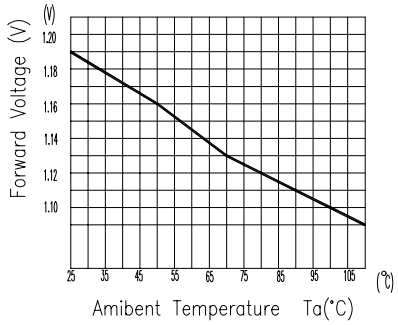
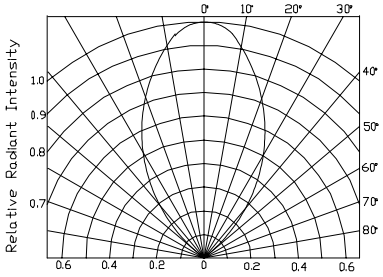


Fig. 6 Relative Radiant Intensity vs Angular Displacement



Device No:DRX-081-005

Fig.1 Collector Power Dissipation vs. Ambient Temperature

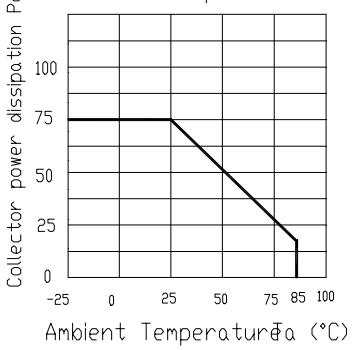


Fig.2 Collector Dark Current vs. Ambient Temperature

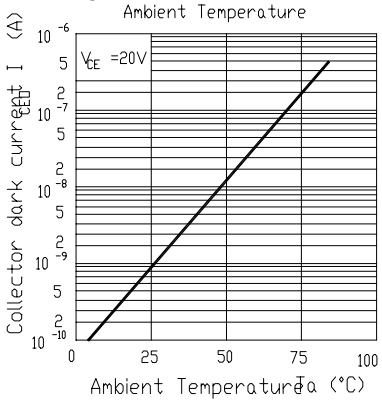


Fig.3 Spectral Sensitivity

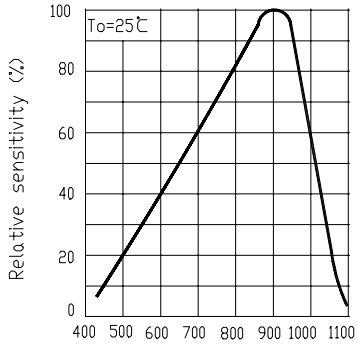


Fig.4 Collector Current vs. Collector-emitter Voltage

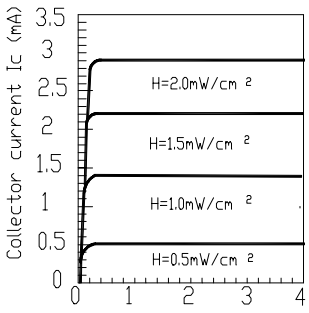


Fig.1 Relative Collector Current vs. Shield Distance(1)

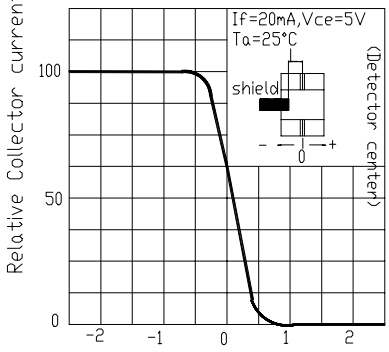
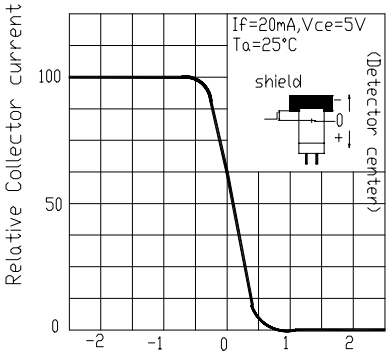


Fig.2 Relative Collector Current vs. Shield Distance(2)



EVERLIGHT ELECTRONICS CO., LTD.
Office: No 25, Lane 76, Sec 3, Chung Yang Rd, Tucheng, Taipei 236, Taiwan, R.O.C
Tel: 886-2-2267-2000, 2267-9936
Fax: 886-2267-6244, 2267-6189, 2267-6306
http:\\www.everlight.com