PARA LIGHT ELECTRONICS CO., LTD.
11F., No. 8, Jiankang Rd., Zhonghe Dist., New Taipei City 235, Taiwan,
Tel: 886-2-2225-3733 Fax: 886-2-2225-4800
E-mail: para@para.com.tw http://www.para.com.tw

DATA SHEET

PART NO. : PA-ITRLT9813

REV : A / 0

CUSTOMER'S APPROVAL : _____ DCC : _____

Descriptions

The PA-ITRLT9813 consist of an infrared emitting diode andan NPN silicon phototransistor, encased side-by-side onconverging optical axis in a black thermoplastic housing, The phototransistor receives radiation from the IR LED only . This is the normal situation. But when an object is in between , phototransistor could not receives the radiation. For additional component information , please refer to IR and PT.

Features

- Fast response time
- High analytic
- Cut-off visible wavelength λp=940nm
- High sensitivity
- Pb free
- This product itself will remain within RoHS compliant version

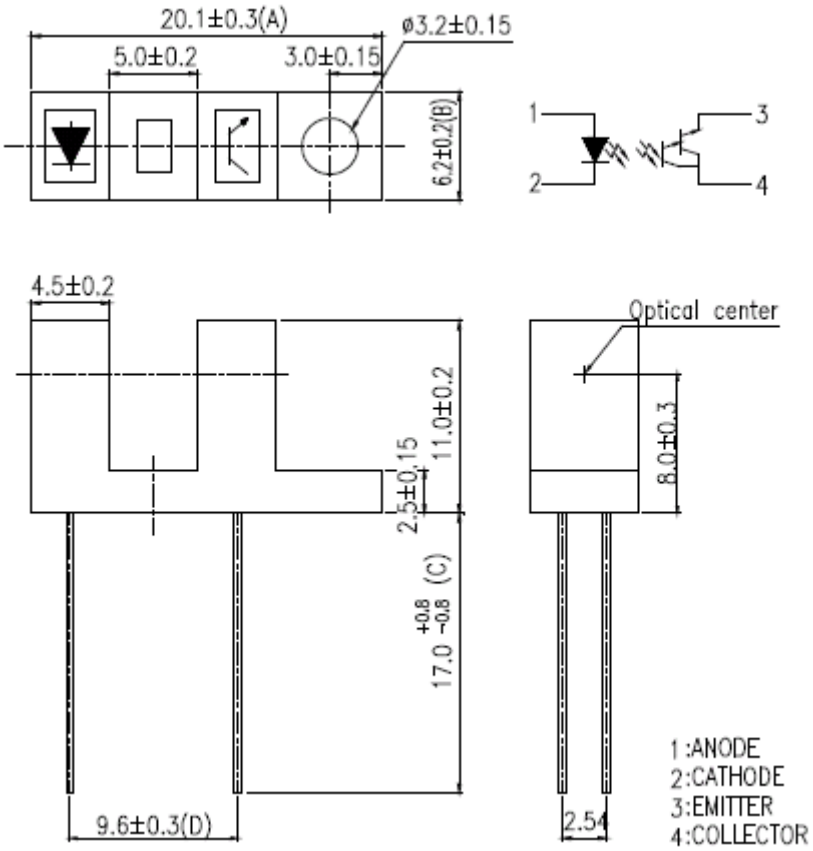
Applications

- Mouse Copier
- Switch Scanner
- Floppy disk driver
- Non-contact Switching
- For Direct Board

Device Selection Guide

Device No.	Chip Material	LENS COLOR
IR	GaAlAs	Water clear
PT	Silicon	Water clear

Package Dimension



Note:

1.All dimensions are in millimeters.

2.Tolerances unless dimensions ±0.25mm.

3.Lead spacing is measured where the lead emerge from the package

Absolute Maximum Ratings

Parameter		Symbol	Ratings	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 ≦100 μs, 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	℃
Storage Temperature		Tstg	-40~+100	℃
Lead Soldering Temperature (*2) (1/16 inch form body for 5 seconds)		Tsol	260	℃

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

Electro-Optical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward Voltage	V_F	---	1.2	1.5	V	I_F=20mA
	Reverse Current	I_R	---	---	10	μA	V_R=5V
	Peak Wavelength	λ_P	---	940	---	nm	I_F=20mA
	View Angle	2θ1/2	---	60	---	Deg	I_F=20mA
Output	Dark C urrent	I_{CEO}	---	---	100	nA	V_{CE}=20V,Ee=0mW/cm^2
	C-E Saturation Voltage	V_{CE}(sat)	---	---	0.4	V	I_C=2mA Ee=1mW/cm^2
Transfer Characteristics	Collect Current	I_C(ON)	0.50	---	---	mA	V_{CE}=5V I_F=20mA
	Rise time	t_r	---	15	---	μ sec	V_{CE}=5V I_C=1mA R_L=1KΩ
	Fall time	t_f	---	15	---	μ sec	

Typical Electrical/Optical/Characteristics Curves for IR

Fig.1 Forward Current vs. Ambient Temperature

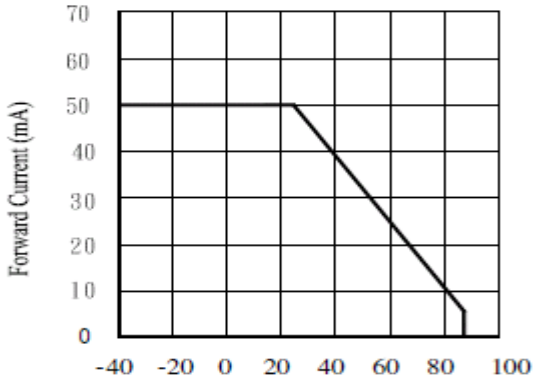


Fig.2 Spectral Distribution

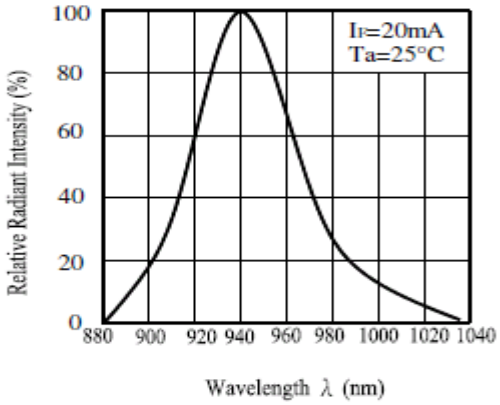


Fig.3 Peak Emission Wavelength Ambient Temperature

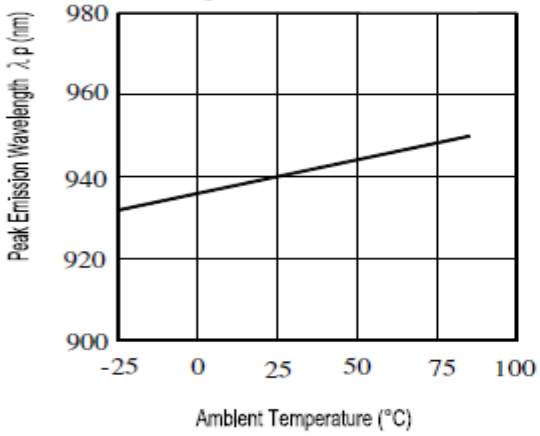


Fig.4 Forward Current vs. Forward Voltage

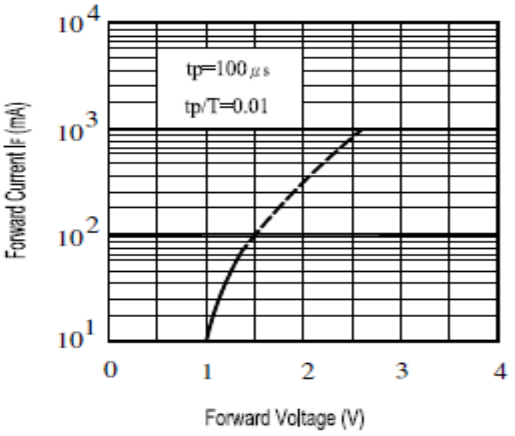


Fig.8 Forward Current vs. Ambient Temperature(°C)

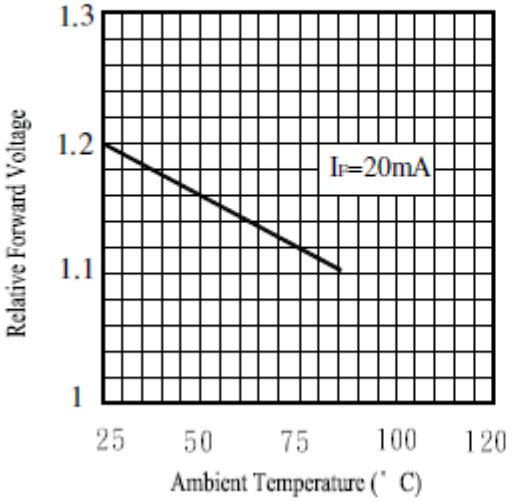
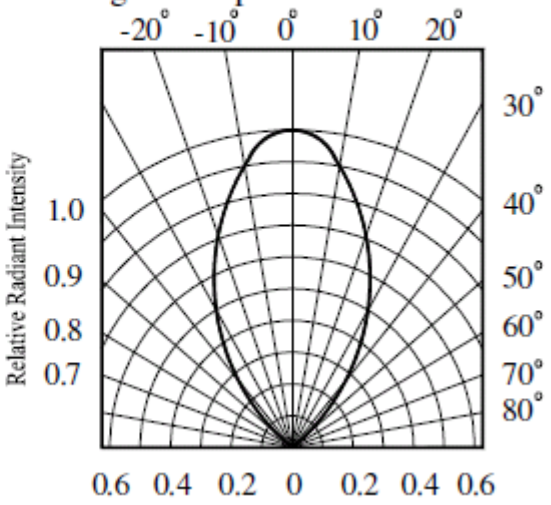


Fig.6 Relative Radiant Intensity vs. Angular Displacement



Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

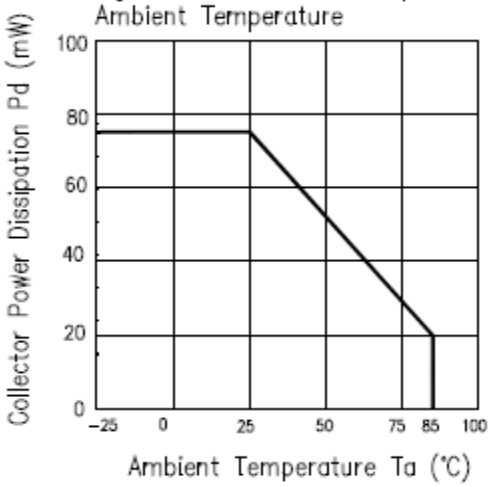


Fig.2 Collector Dark Current vs.Ambient Temperature

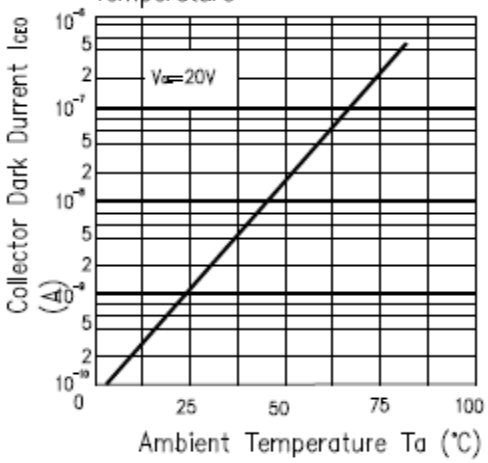


Fig.3 Relative Collector Current vs. Ambient Temperature

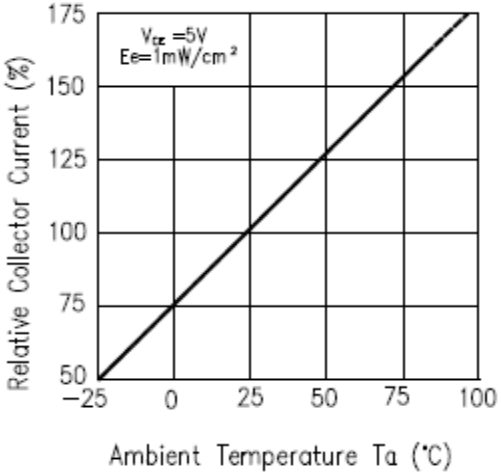


Fig.4 Collector Current vs. Irradiance

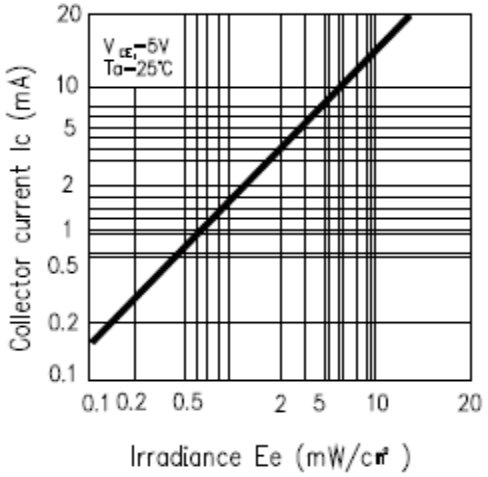


Fig.5 Spectral Sensitivity

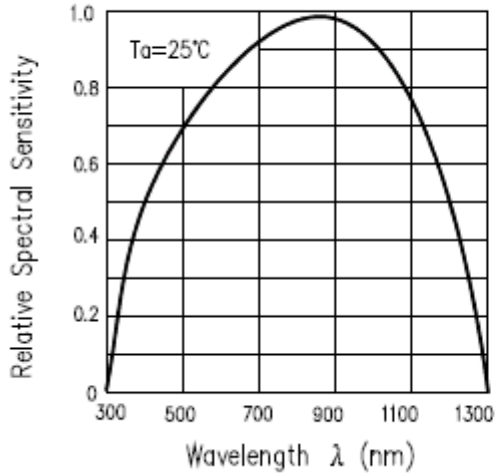
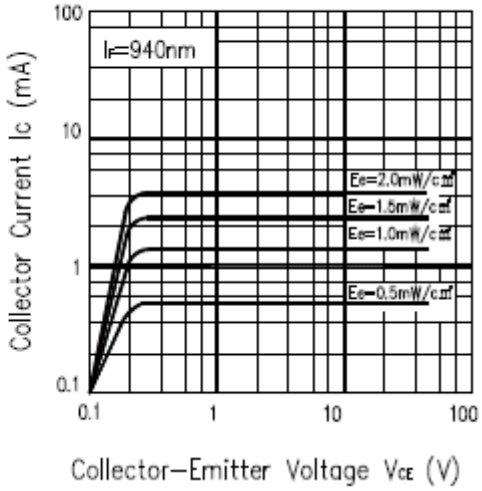


Fig.6 Collector Current vs. Collector Current Ic (mA)



Reliability Test Item And Condition

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

Confidence level：90%

LTPD：10%

NO.	Item	Test Condition	Test Hours/ Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP：260℃ ±5 ℃	10 sec	22 PCs	Attenuation of Light Current value>20%	0/1
2	Temperature Cycle	H：+100℃ 15 min ↕ 5 min L：-40℃ 15 min	300 cycle	22 PCs		0/1
3	Thermal Shock	H：+100℃ 5 min ↕ 10 sec L：-10℃ 5 min	300 cycle	22 PCs		0/1
4	High Temperature Storage	TEMP.：+100℃	1000 hrs	22 PCs		0/1
5	Low Temperature Storage	TEMP.：-40℃	1000 hrs	22 PCs		0/1
6	DC Operating Life	V_{CE}=5V I_F=20mA	1000 hrs	22 PCs		0/1
7	High Temperature / High Humidity	85℃ / 85% R.H.	1000 hrs	22 PCs		0/1

Notes

1. Above specification may be changed without notice. WE will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instruction for using outlined in these specification sheets. Para light 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.
3. These specification sheets include materials protected under copyright of corporation.Please don't reproduce or cause anyone to reproduce them without Para light's consent.