

TAITRON

components incorporated

OPTO INTERRUPTER

TQIL-BTS2413-006

Opto Interrupter

Features

- Wide gap between light emitter and detector (3.8mm)
- High sensing accuracy
- PWB mounting type package

Applications

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



QRILTS37



Descriptions

The device (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 optimize the mechanical resolution, coupling efficiency, and insulates ambient light. The slot in the housing provides a means of interrupting the signal with printer, scanner, copier, or other opaque material, switching the output from an "ON" to "OFF" state.



Absolute Maximum Ratings (Ta=25°C)

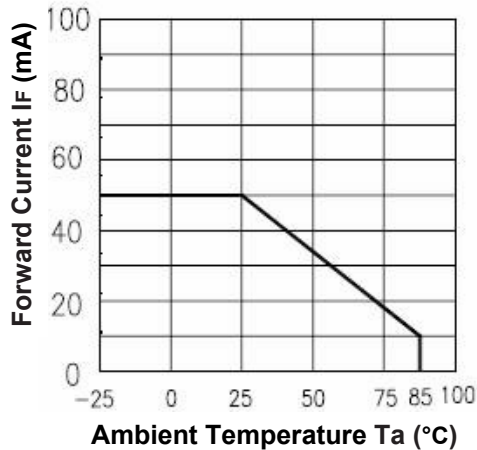
Parameter		Symbol	Ratings	Unit
Input	Power Dissipation (or below) 25°C Free Air Temperature	P_d	75	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current (Pulse width ≤ 100 μs, Duty cycle = 1%)	I_{FP}	1	A
Output	Collector Power Dissipation	P_c	75	mW
	Collector Current	I_c	20	mA
	Collector – Emitter Voltage	V_{CEO}	30	V
	Emitter – Collector Voltage	V_{ECO}	5	V
Lead Soldering Temperature (1/16 inch from body for 5 seconds)		T_{sol}	260	°C
Operating Temperature		T_{opr}	-25 ~ +85	°C
Storage Temperature		T_{stg}	-40 ~ +85	°C

Electro-Optical Characteristics (Ta=25°C)

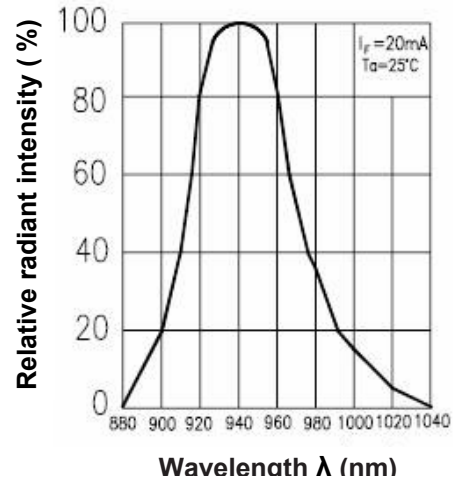
Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V_F	-----	1.2	1.6	V	I _F = 20mA
	Reverse Current	I_R	-----	-----	10	μA	V _R = 5V
	Peak Wavelength	λ_P	-----	940	-----	nm	I _F = 20mA
	Viewing Angle	2θ_{1/2}	-----	60	-----	deg	I _F = 20mA
Output	Collector Dark Current	I_{CEO}	-----	-----	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)}	0.5	-----	-----	mA	V _{CE} = 5 V I _F = 20mA
	Rise time	t_r	-----	20	-----	μsec	V _{CE} = 5V I _C = 1mA R _L = 1KΩ
	Fall time	t_f	-----	20	-----	μsec	

Typical Characteristics for Infrared LED

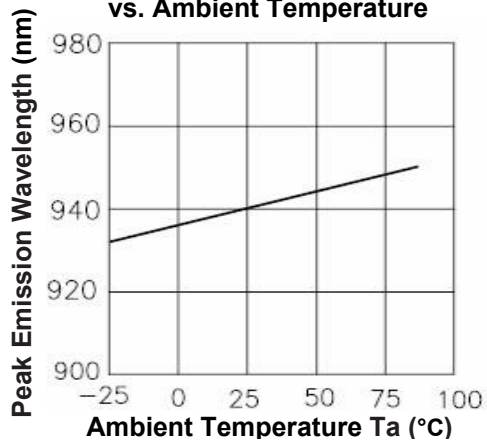
Forward Current vs. Ambient Temperature



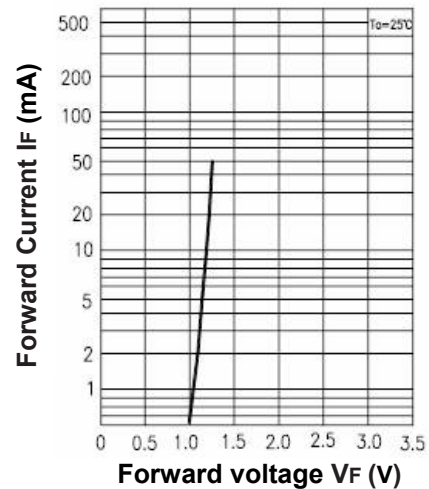
Spectral Distribution



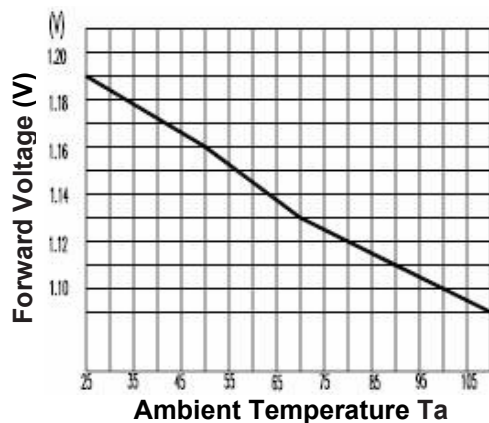
Peak Emission Wavelength vs. Ambient Temperature



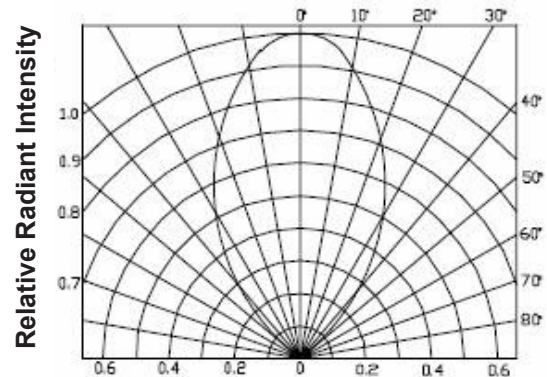
Forward Current vs. Forward Voltage



Forward Voltage vs. Ambient Temperature

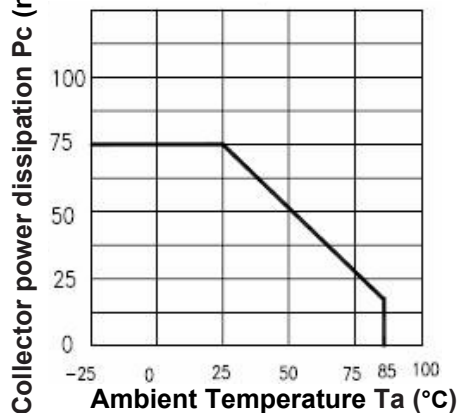


Relative Radiant Intensity vs. Angle Displacement

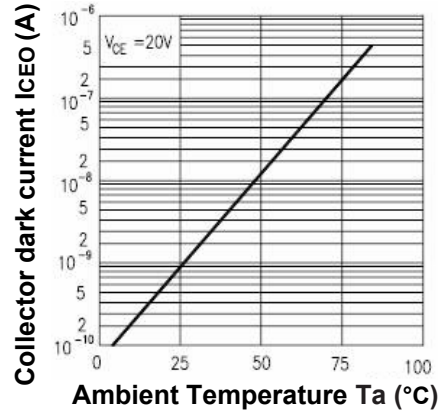


Typical Characteristics for Phototransistor

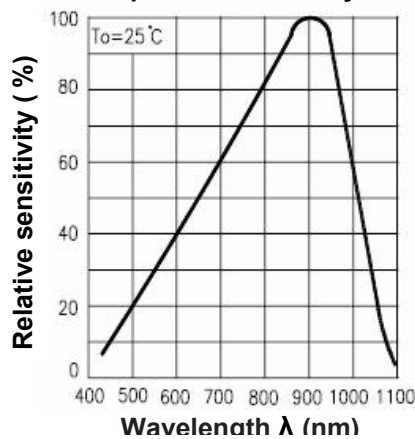
Collector Power Dissipation vs. Ambient Temperature



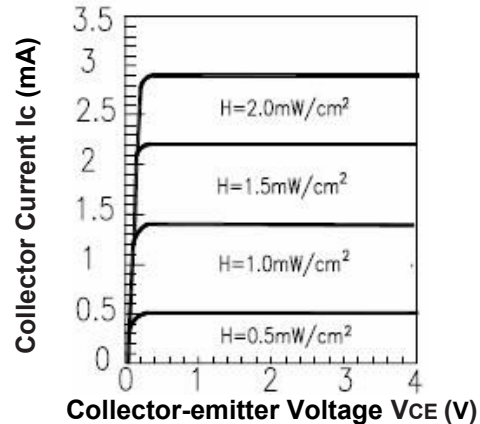
Collector Dark Current vs. Ambient Temperature



Spectral Sensitivity

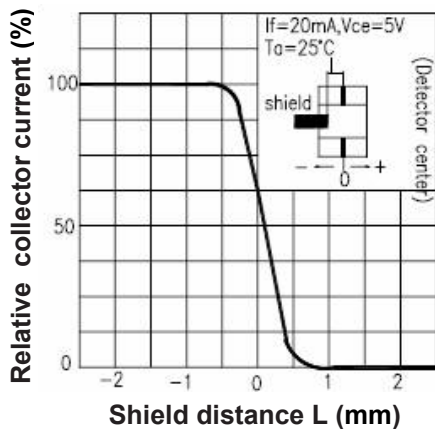


Collector Current vs. Collector-emitter Voltage

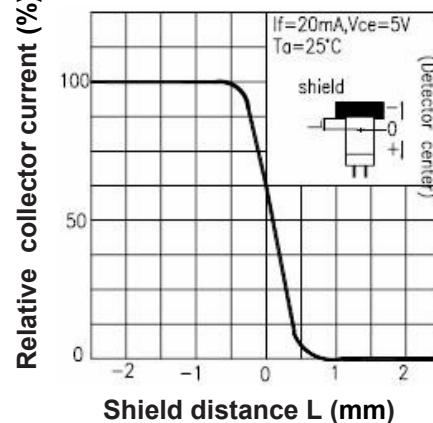


Typical Characteristics for Opto Interrupter

Relative Collector Current vs. Shield Distance (1)



Relative Collector Current vs. Shield Distance (2)



Reliability Test Items and Conditions

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

Confidence level: 90%,

LTPD: 10%

No.	Parameter	Test Condition	Test Hours / Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp.: 260°C ±5°C	10 seconds	22 PCS.	0/1
2	Temperature Cycle	H: +85°C 30min ↓ +25°C 5min ↓ L: -55°C 30min ↓ +25°C 5min	50 Cycles	22 PCS.	0/1
3	Thermal Shock	H: +85°C 5min ↓ L: -55°C 5min	50 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp: 100°C	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp: -55°C	1000 Hrs.	22 PCS.	0/1
6	Operating Life Test	V _{CE} = 5 V I _F = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C / 85%RH	1000 Hrs.	22 PCS.	0/1

Supplements

1. Parts

(1) Chip

Type	Material	Peak Wavelength
Infrared LED	GaAs or GaAlAs	940nm
Phototransistor	Silicon	860nm

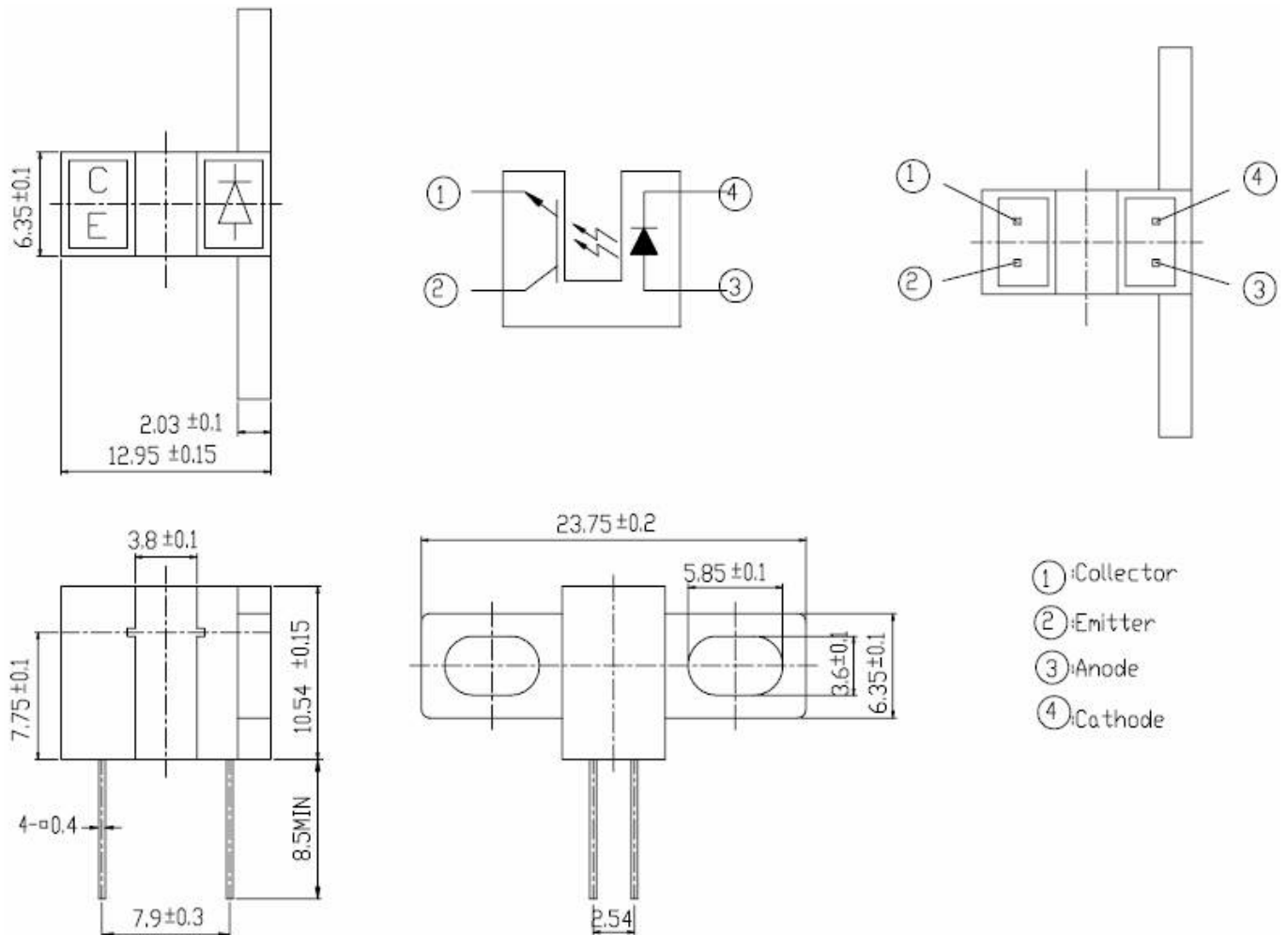
(2) Material

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

Opto Interrupter

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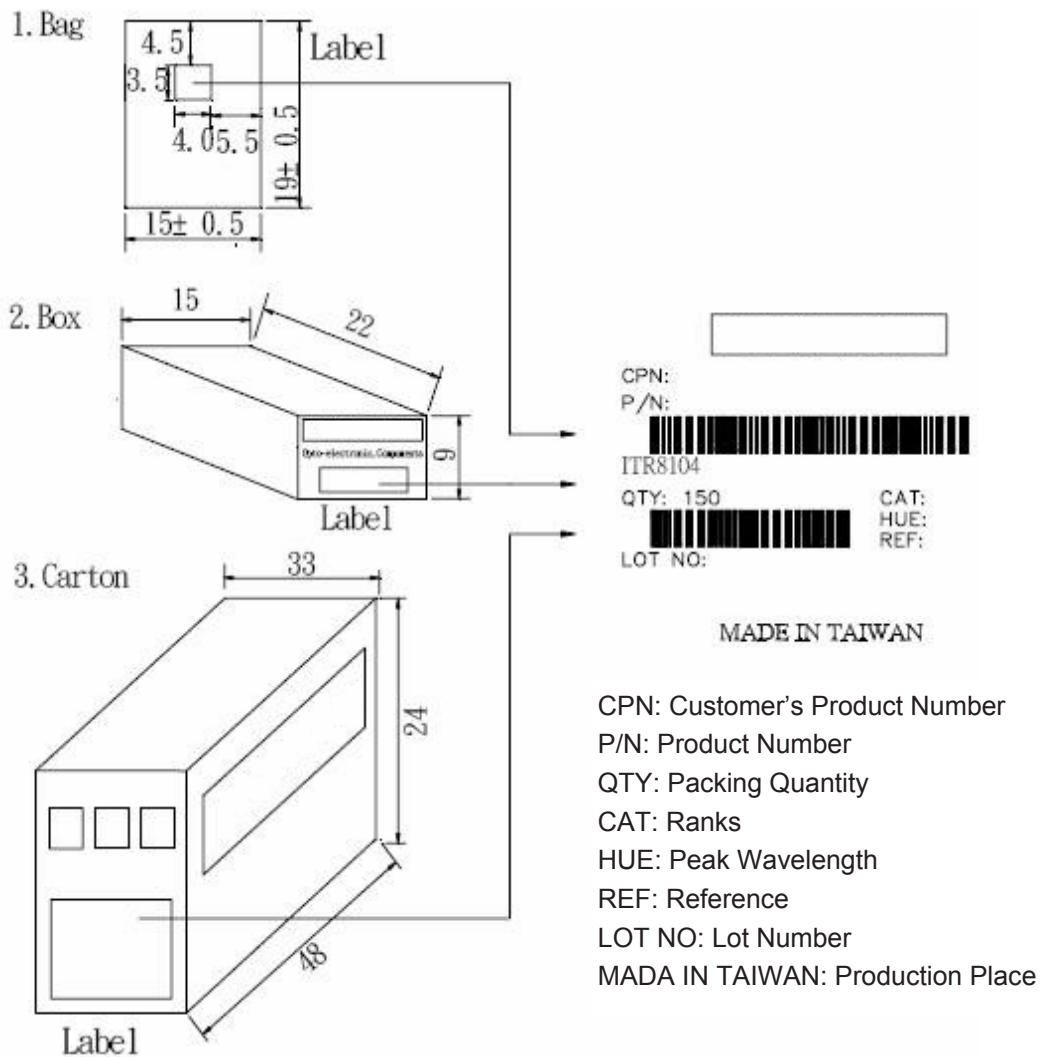
Package Dimensions (In mm)



Opto Interrupter

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Packing Specifications (In cm)



Packing Quantity Specification

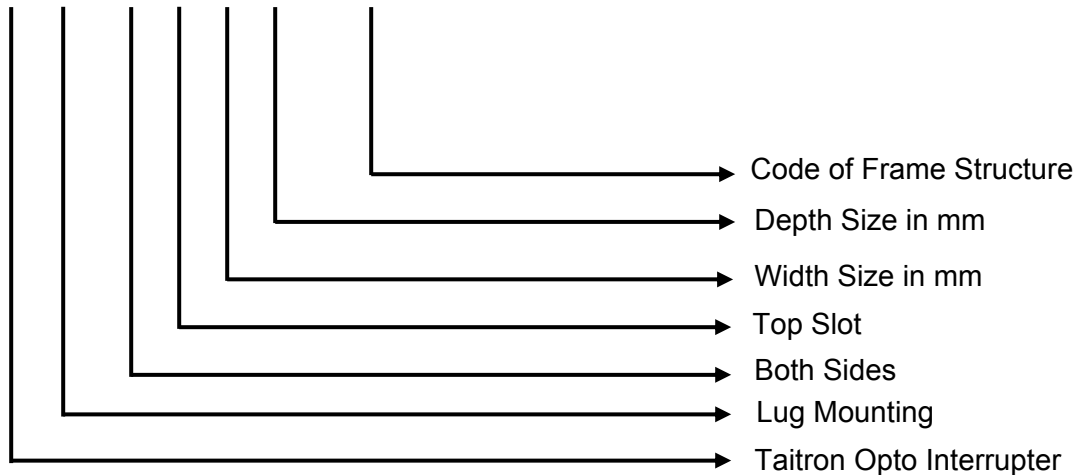
1. 150 Pcs / 1Bag, 4Bags / 1Box
2. 10Boxes / 1 Carton

Opto Interrupter

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Ordering Information

TQI L - B TS 24 13 - 006



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