### **Features**

- **♦** Fast response time
- **♦** High linearity
- ♦ High photo sensitivity
- **♦** Available in groups
- **♦** The product itself will remain within RoHS compliant version

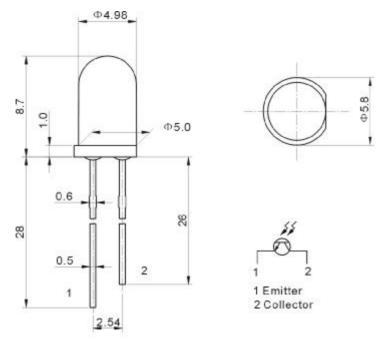
## **Description**

- PT-5038H is a high speed and high sensitive NPN silicon phototransistor molded in a standard Φ5mm package.
- **♦** Due to is black epoxy the device is sensitive to visible and infrared radiation.

### **Applications**

- **♦** Infrared applied system **♦** Camera **♦** Printer **♦** Photo interrupters **♦** Optoelectronic switch
- **◆** Industrial electronics **♦**For control and drive circuits

## **Package Dimension:**



NOTE: TOLERANCE ± 0.5 mm

Part NO.	Chip	Lens Color	
	Material	Lens Color	
PT-5038H	Silicon	Black	

### **Notes:**

- 1. All dimensions are in millimeters (inches).
- 2. Tolerances unless dimensions ±0.25mm.
- 3. Lead spacing is measure where the lead emerges from the package.

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## **Absolute Maximum Ratings**

Parameter	Symbol	Rating	Unit
Power Dissipation at (or below) 25°C Free Air Temperature	Pc	150	mW
Collector-Emitter Voltage	$V_{CEO}$	32	V
Emitter-Collector Voltage	V <sub>ECO</sub> 5		V
Operating Temperature	Topr	-25~+85	°C
Storage Temperature	Tstg	-30~+90	ပ
Soldering Temperature (1/16 inch from body for 5 seconds)	Tsol	260	°C

# **Electrical Optical Characteristics:**

Para	Parameter		Min.	Тур.	Max.	Unit	Co	ondition
	lector-Emitter Leakage Current			0.5		uA	V	<sub>CE</sub> =10V
	-Collector on Voltage	V <sub>CE(Sat)</sub>			400	mV	Ic=5mA / I <sub>b</sub> =1mA	
	th Of Peak itivity	λp		940		nm		
Rang Of Spec	tral Bandwidth	λ 0.5	600		1000	nm		
Collector-Emitter Breakdown Voltage		BVCEO	40			V	I <sub>EC</sub>	=500 µ A
C-B Breakdown Voltage		ВУсво	50				Icв=50 µ А	
E-B Breakdown Voltage		ВУево	6				Іев=50 µ А	
	-Collector wn Voltage	BVECO	6.5			V	Iec=50 µ А	
Response Time	Rise Time	$\mathbf{t_r}$		10		μS	$V_{CE}$ =5V,Ic=1mA R <sub>L</sub> =1000 Ω	
	Fall Time	$\mathbf{t_{f}}$		10		μS		
Half sensitivity angle		$\triangle \lambda$		±35		deg		
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#### **Typical Electrical-Optical Characteristics Curves** Fig. 1 Collector Power Dissipation vs. Fig.2 Spectral Sensitivity Ambient Temperature Collector Power Dissipation Pd (mW) Relative Spectral Sensitivity (%) 100 100 80 80 60 60 40 40 20 20 0 1000 1200 20 40 60 80 85 100 Ambient Temperature Ta (°C) Wavelength $\lambda$ (nm) Fig.4 Relative Collector Current Fig.3 Normalized Collector Current Vs. Ambient Temperature Vs. Irradiance 200 Vce=5V Ee=1mW/cm<sup>2</sup> Relative Collector Current Normalized Collector Current V ... = 5 V 180 @λ.=940nm 160 4.0 140 3.0 120 100 80 2.0 60 40 1.0 20 0 -50 -25 0 25 50 75 100 125 2 3 Irradiance Ee (mW/cm²) Ambient Temperature Ta (°C) Fig.5 Collector Dark Current Fig.6 Collector Current vs. Vs. Ambient Temperature Collector-Emitter Voltage Collector Dark Current Icto (A) 100 Collector Current Ic (mA) 14 10 12 10 1 Ke=1.50mW/cw 8 Ee-1.25 mW/cw 0.1 6 4 0.01 2 Re-0.5mW/cw 0 40 2 3 Ambient Temperature Ta (°C) Collector-Emitter Voltage Vce (V)

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Part No.