SILICON NPN PHOTO TRANSISTOR

AT40S-PT-02

DATA SHEET

REV. : 1.0

DATE: 20-Apr.-2007

■ FEATURES:

- ■ Fast Response Time.
- ■ High Photo Sensitive.
- ■ Small Junction Capacitance.
- ■ Lead free product, in compliance with RoHS.

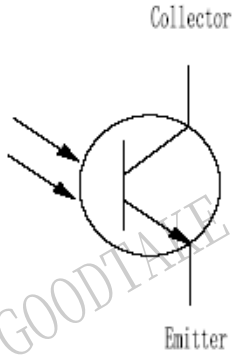
■ DESCRIPTIONS:

- ■ AT40S-PT-02 is a high response speed and high sensitive silicon NPN phototransistor with exceptionally stable characteristics and high illumination sensitivity.
- ■ Molded in a compact surface-mountable package.

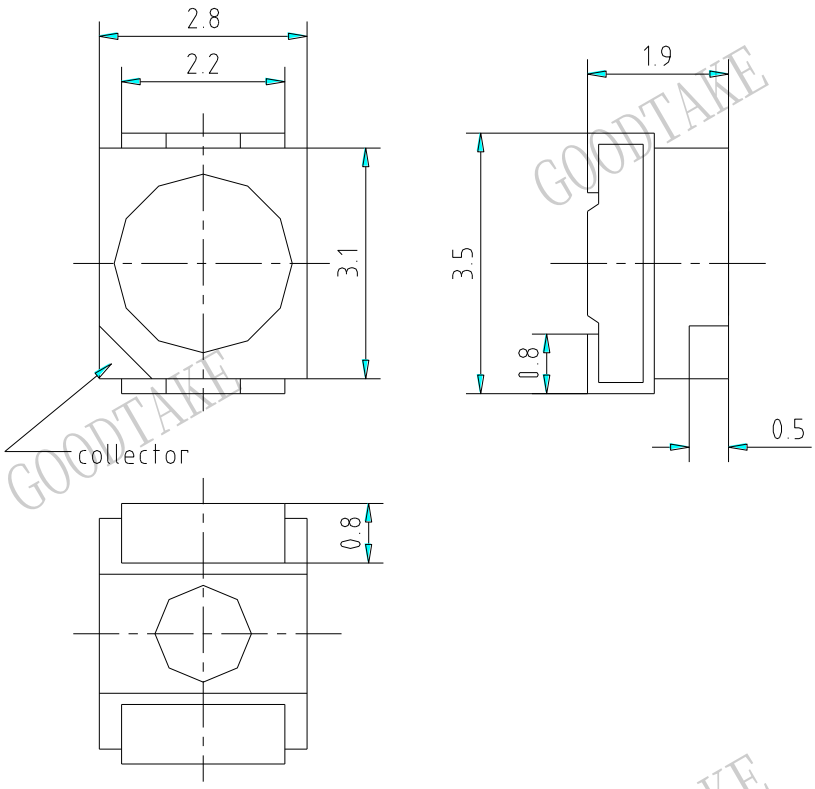
■ APPLICATIONS:

- ■ Miniature switch.
- ■ Counters and sorter.
- ■ Position sensors.
- ■ Infrared applied system.

■ INTERNAL CIRCUIT:



■ DIMENSIONS:



NOTE： All dimensions are in millimeter, tolerance is ±0.2 unless otherwise noted.

■ ABSOLUTE MAXIMUM RATINGS AT Ta=25℃

Parameter	Symbol	Ratings	Unit
Power Dissipation	P_D	75	mW
Collector-Emitter Breakdown Voltage	V_{CEO}	30	V
Emitter-Collector Breakdown Voltage	V_{ECO}	5	V
Operating Temperature	Topr	-40～+85	℃
Storage Temperature	Tstg	-55～+100	℃
Soldering Temperature	Tsol	270℃ for 6 sec Max	

■ TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS（Ta=25℃）

Parameter	Symbol	Min.	Type	Max.	Unit	Test Condition
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	Ic=100μA Ee=0mW/cm^2
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5			V	I_E=100μA Ee=0mW/cm^2
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.4	V	Ic=2mA I_B=100μA
Rise Time	Tr		15		μS	V_{CE}=5V Ic=1mA R_L=1000Ω
Fall Time	T_f		15		μS	
Collector Dark Current	I_{CEO}			100	nA	V_{CE}=10V
On State Collector Current	$I_{C(on)}$	0.3	1.0		mA	5V Ee=1mW/cm^2
Range Of Spectral Bandwidth	$\lambda_{1/2}$	400		1100	nm	
Peak Wavelength of Sensitive	λp		940		nm	

■ RELIABILITY TEST ITEMS AND CONDITIONS:

NO	Item	Test Conditions	Test Hours/Cycle	Sample Quantity	Test Result
1	Solder Heat	TEMP：270℃±3℃	10 SEC	11 pcs	0 DEFECT
2	Temperature Cycle	H:+85℃ 60min ↕ 10min L:-25℃ 60min	16 cycles	22 pcs	0 DEFECT
3	Thermal Shock	H:+85℃ 30min ↕ 30sec L:-25℃ 30min	10 cycles	11 pcs	0 DEFECT
4	High Temperature Storage	TEMP：+85℃	1000 HRS	22 pcs	0 DEFECT
5	Low Temperature Storage	TEMP：-25℃	1000 HRS	22 pcs	0 DEFECT
6	High Temperature High Humidity Storage	85℃/93% RH	1000HRS	22 pcs	0 DEFECT

■ TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES:

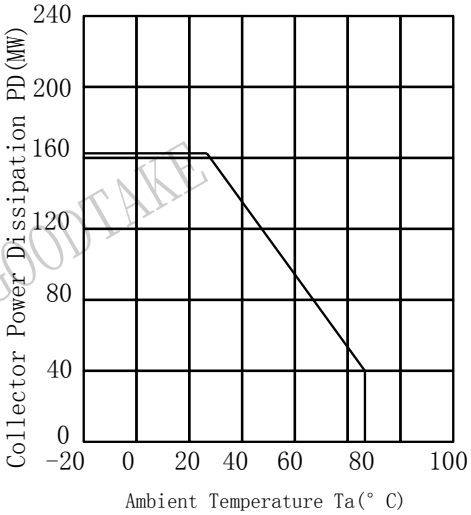


FIG.1 Collector PD VS Ta

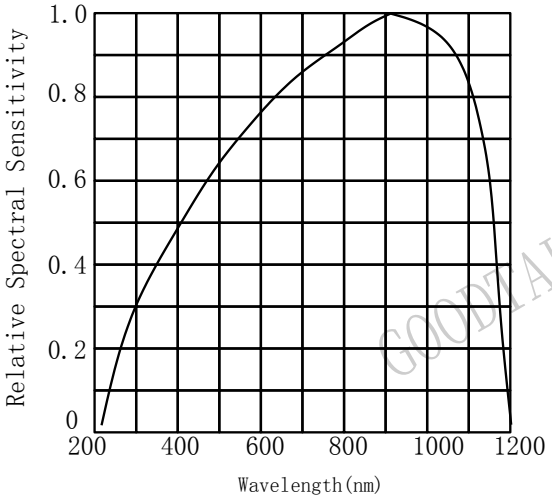


FIG.2 Spectral Sensitivity

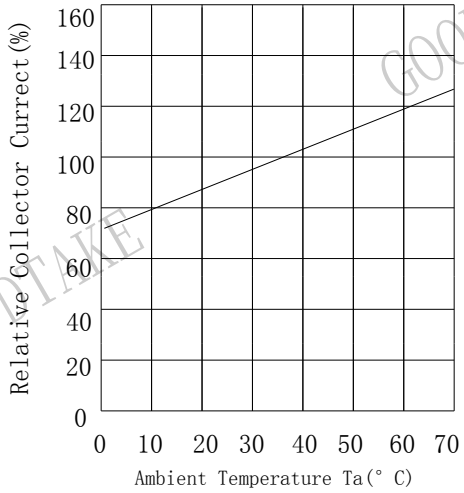


FIG.3 Relative Ic VS.Ta

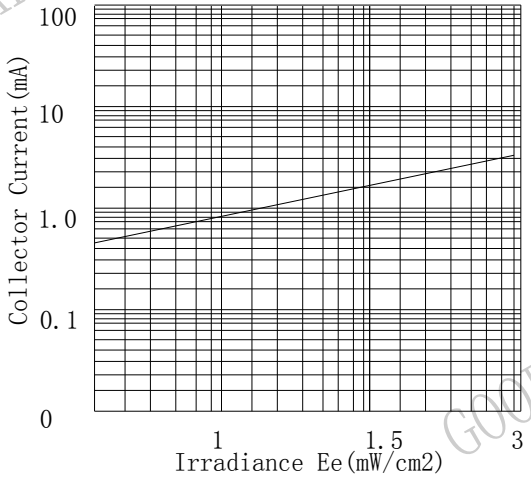


FIG.4 Ic VS Iv

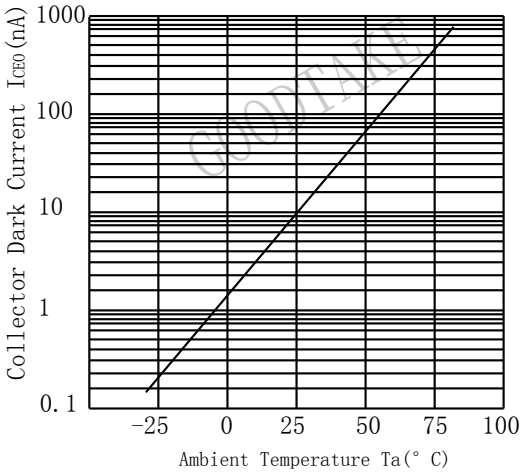


FIG.5 ID VS Ta