SILICON NPN PHOTO TRANSISTOR

AT405-PT-02

DATA SHEET

REV. : 1.0

DATE : 20-Apr.-2005

■FEATURE:

■Fast Response Time.

■High Photo Sensitivity.

■Visible Light Cut-Off Type.

■Lead Free product, in compliance with RoHS.

■DESCRIPTIONS:

■AT405-PT-02 is a high speed and high sensitive silicon NPN phototransistor with exceptionally stable characteristics and high illumination sensitivity.

■Mounted in 5mm diameter black epoxy package.

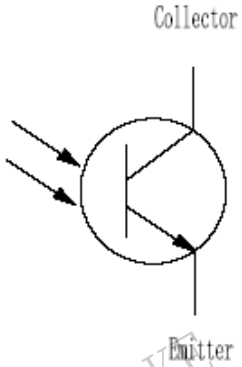
■APPLICATIONS:

■Infrared Applied System.

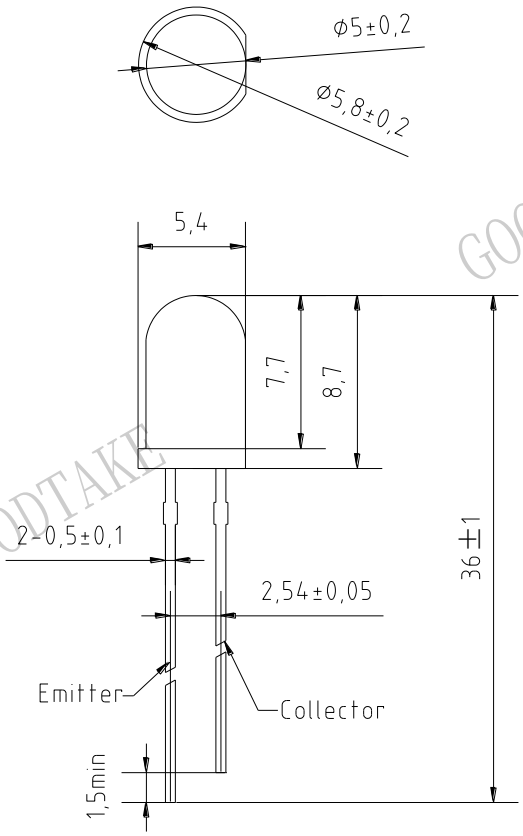
■Floppy Disk Drive.

■Opto-Electronic Switch.

■ INTERNAL CIRCUIT:



■ DIMENSIONS:



NOTE：1. All dimensions are in millimeter, tolerance is ±0.5 unless otherwise noted.
2. Epoxy meniscus extends ≤1 mm down to the lead is allowed.

■ABSOLUTE MAXIMUM RATINGS AT Ta=25℃

Parameter	Symbol	Ratings	Unit
Power Dissipation	P_D	100	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 (2mm from Body)	

■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	$V_{CE(sat)}$			0.2	V	Ic=2mA I_B=100μA
Rise Time	**Tr**		5		μS	V_{CE}=5V Ic=1mA R_L=1000Ω
Fall Time	T_f		5		μS	
Collector Dark Current	I_{CEO}			100	nA	V_{CE}=10V Ee=0mW/cm^2
On State Collector Current	$I_{C(on)}$	8			mA	5V Ee=1mW/cm^2 λp=940nm
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℃ 180min ↕ 10min L:-25℃ 180min	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：+25℃	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:

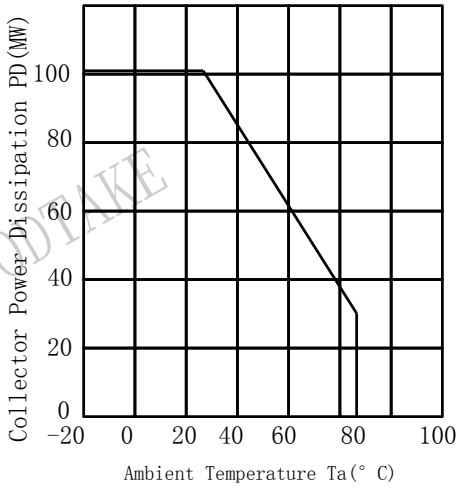


FIG.1 Collector PD VS Ta

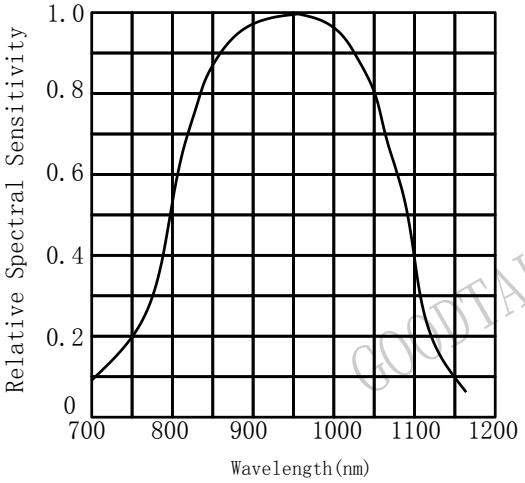


FIG.2 Spectral Sensitivity

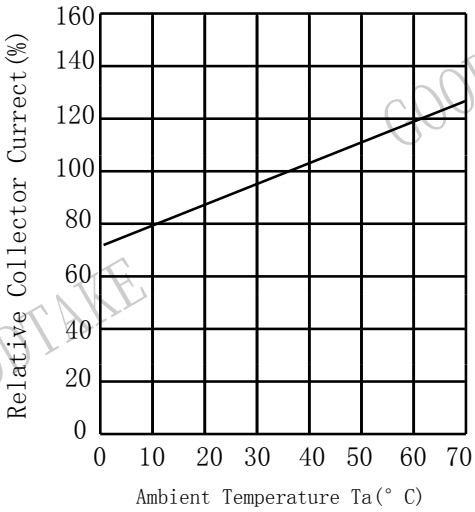


FIG.3 Relative Ic VS.Ta

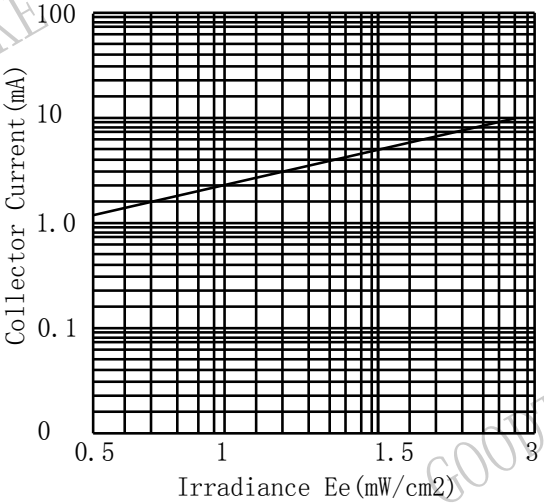


FIG.4 Ic VS Iv

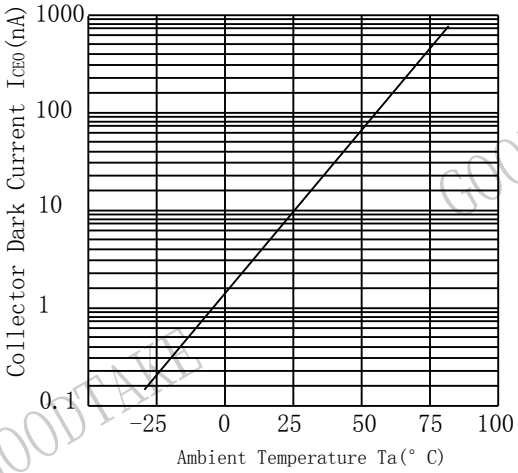


FIG.5 ID VS Ta