
SILICON NPN PHOTO TRANSISTOR

AT405-PT-01

DATA SHEET

REV. : 1.0

DATE : 20-Apr.-2005

FEATURE:

- Fast Response Time.
- High Photo Sensitivity.
- Lead Free product, in compliance with RoHS.

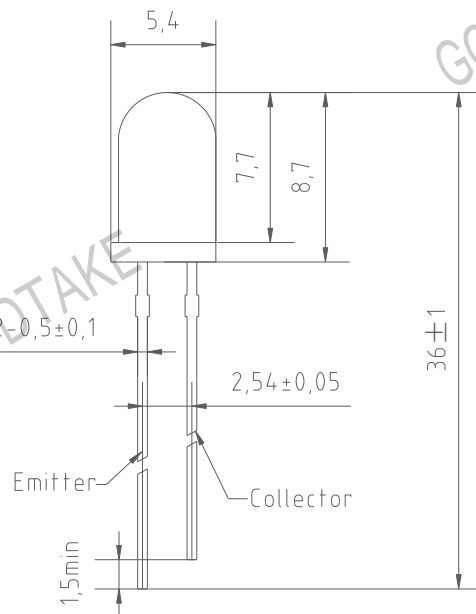
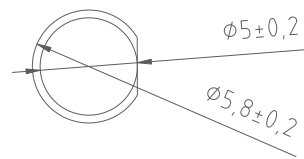
DESCRIPTIONS:

- AT405-PT-01 is a high speed and high sensitive silicon NPN phototransistor with exceptionally stable characteristics and high illumination sensitivity.
- Mounted in 5mm diameter water clear epoxy package. Due to is water clear epoxy the device is sensitive to visible and near infrared radiation.

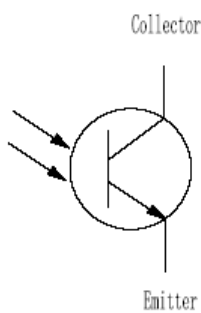
APPLICATIONS:

- Infrared Applied System.
- Floppy Disk Drive.
- Opto-Electronic Switch.

DIMENSIONS:



INTERNAL CIRCUIT:



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°C

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	T _{opr}	-40~+85	°C
Storage Temperature	T _{stg}	-55~+100	°C
Soldering Temperature	T _{sol}	270°C for 6 sec Max (2mm from Body)	

■ TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Min.	Type	Max.	Unit	Test Condition
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	30			V	I _C =100μA E _e =0mW/cm ²
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5			V	I _E =100μA E _e =0mW/cm ²
Collector-Emitter Saturation Voltage	V _{CE(sat)}			0.2	V	I _C =2mA I _B =100μA
Rise Time	T _r		5		μS	V _{CE} =5V I _C =1mA R _L =1000Ω
Fall Time	T _f		5		μS	
Collector Dark Current	I _{CEO}			100	nA	V _{CE} =10V E _e =0mW/cm ²
On State Collector Current	I _{C(on)}	1		2	mA	5V E _e =1mW/cm ² λ _p =940nm
		2		4		
		4		8		
		8				
Peak Wavelength of Sensitive	λ _p		940		nm	

■ RELIABILITY TEST ITEMS AND CONDITIONS:

NO	Item	Test Conditions	Test Hours/Cycle	Sample Quantity	Test Result
1	Solder Heat	TEMP: 270°C ± 3°C	10 SEC	11 pcs	0 DEFECT
2	Temperature Cycle	H: +85°C 180min ↓ 10min L: -25°C 180min	16 cycles	22 pcs	0 DEFECT
3	Thermal Shock	H: +85°C 30min ↓ 30sec L: -25°C 30min	10 cycles	11 pcs	0 DEFECT
4	High Temperature Storage	TEMP: +25°C	1000 HRS	22 pcs	0 DEFECT
5	Low Temperature Storage	TEMP: -25°C	1000 HRS	22 pcs	0 DEFECT
6	High Temperature High Humidity Storage	85°C / 93% RH	1000HRS	22 pcs	0 DEFECT

■ TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES:

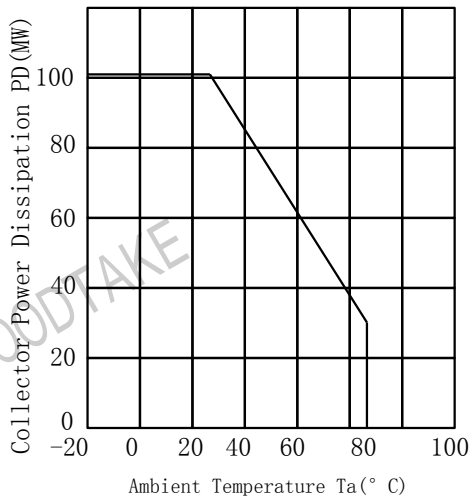


FIG. 1 Collector Pd vs Ta

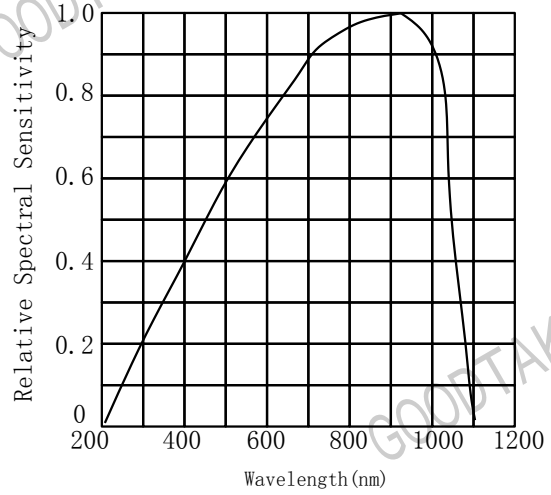


FIG. 2 Spectral Sensitivity

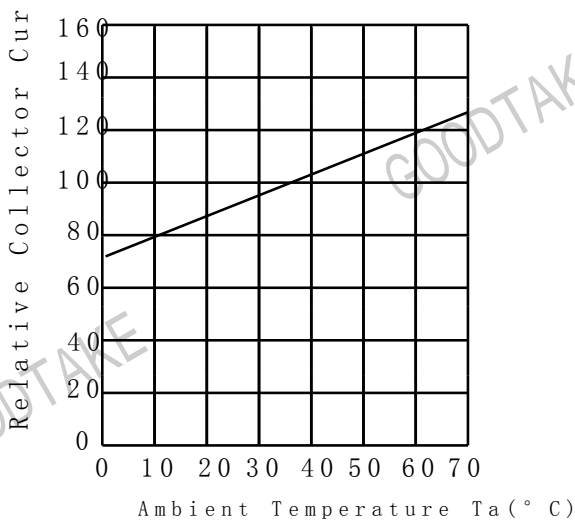


FIG. 3 Relative Collector Current vs Ta

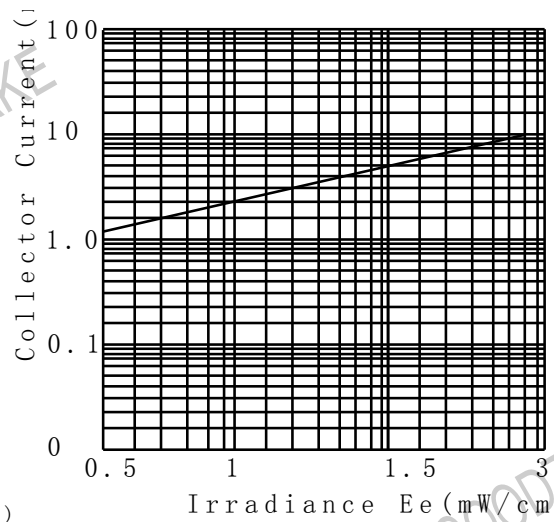


FIG. 4 Collector Current vs Irradiance

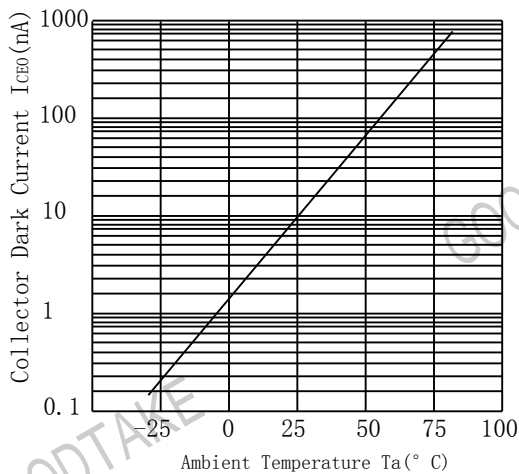


FIG. 5 Collector Dark Current vs Ta