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**NPN SILICON PHOTO TRANSISTOR**

**AT403-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:**

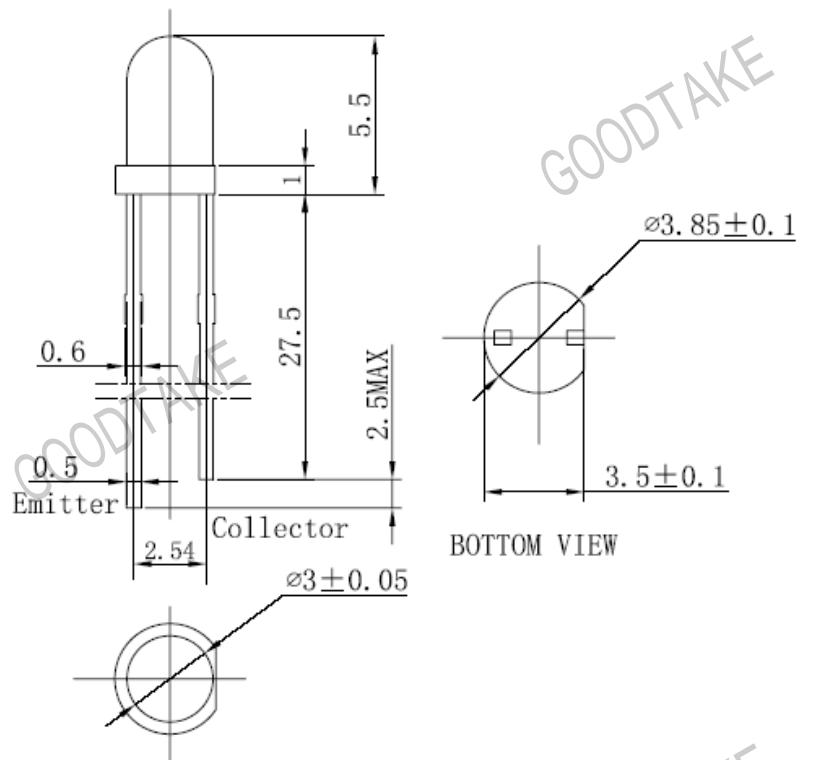
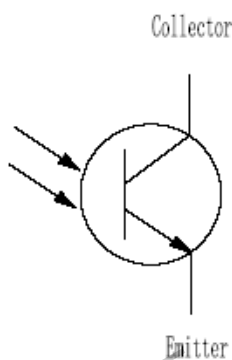
- AT403-PT-02 is a high speed and high sensitive silicon NPN phototransistor with exceptionally stable characteristics and high illumination sensitivity.
- Mounted in 3mm diameter black epoxy package.

**APPLICATIONS:**

- Optical Detectors.
- Floppy Disk Drivers.
- VCR, Camcorders.

**DIMENSIONS:**

**INTERNAL CIRCUIT:**



**NOTE:** 1. All dimensions are in millimeter, tolerance is  $\pm 0.25$  unless otherwise noted.  
 2. Epoxy meniscus extends  $\leq 1$  mm down to the lead is allowed.

### ■ ABSOLUTE MAXIMUM RATINGS AT Ta=25°C

Parameter	Symbol	Ratings	Unit
Power Dissipation	P <sub>D</sub>	80	mW
Collector-Emitter Breakdown Voltage	V <sub>CEO</sub>	33	V
Emitter-Collector Breakdown Voltage	V <sub>ECO</sub>	5	V
Operating Temperature	T <sub>opr</sub>	-40~+85	°C
Storage Temperature	T <sub>stg</sub>	-55~+100	°C
Soldering Temperature	T <sub>sol</sub>	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 <sub>(BR)CEO</sub>	33			V	I <sub>C</sub> =100μA E <sub>e</sub> =0mW/cm <sup>2</sup>
Emitter-Collector Breakdown Voltage	V <sub>(BR)ECO</sub>	5			V	I <sub>E</sub> =100μA E <sub>e</sub> =0mW/cm <sup>2</sup>
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			0.2	V	I <sub>C</sub> =2mA I <sub>B</sub> =100μA
Rise Time	T <sub>r</sub>		5		μS	V <sub>CE</sub> =5V I <sub>C</sub> =1mA R <sub>L</sub> =1000Ω
Fall Time	T <sub>f</sub>		5		μS	
Collector Dark Current	I <sub>CEO</sub>			100	nA	V <sub>CE</sub> =10V E <sub>e</sub> =0mW/cm <sup>2</sup>
On State Collector Current	I <sub>C(on)</sub>	4			mA	5V E <sub>e</sub> =1mW/cm <sup>2</sup> λ <sub>p</sub> =940nm
Peak Wavelength of Sensitive	λ <sub>p</sub>		880		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: +100°C 60min ↑↓ 10min L: -30°C 60min	16 cycles	22 pcs	0 DEFECT
3	Thermal Shock	H: +100°C 30min ↑↓ 30sec L: -30°C 30min	10 cycles	11 pcs	0 DEFECT
4	High Temperature Storage	TEMP: +100°C	1000 HRS	22 pcs	0 DEFECT
5	Low Temperature Storage	TEMP: -30°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:

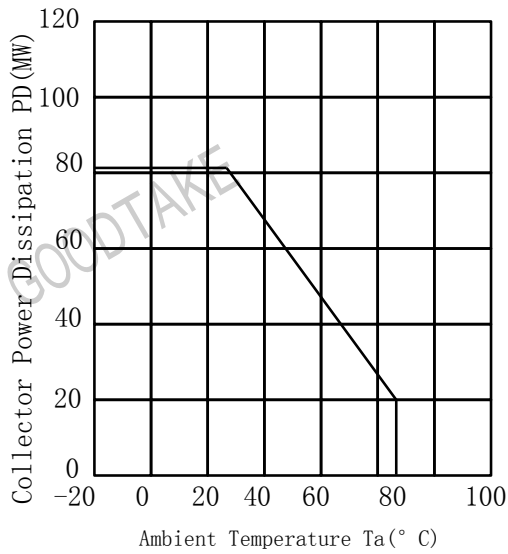


FIG. 1 Collector Pd vs Ta

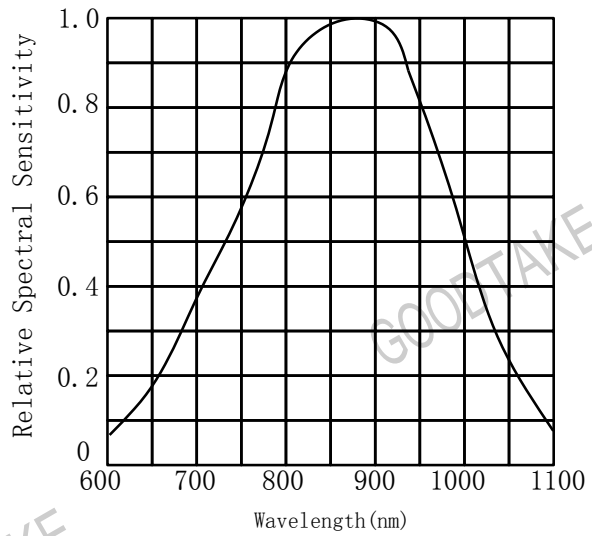


FIG. 2 Relative Spectral Sensitivity vs. λ

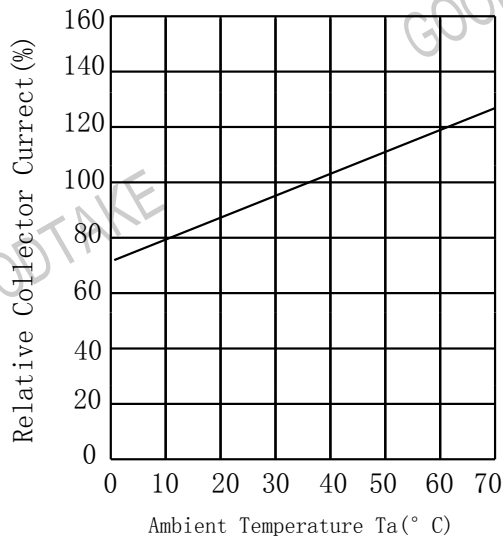


FIG. 3 Relative Ic vs. Ta

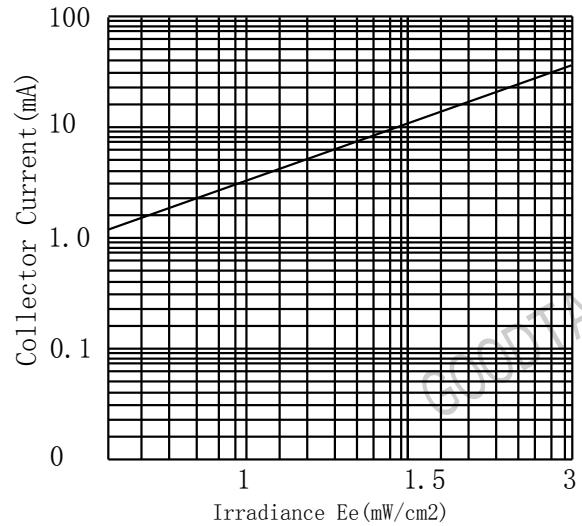


FIG. 4 Ivs Iv

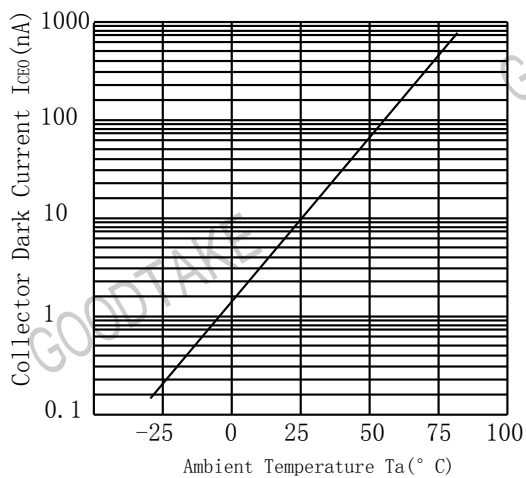


FIG. 5 Id vs Ta