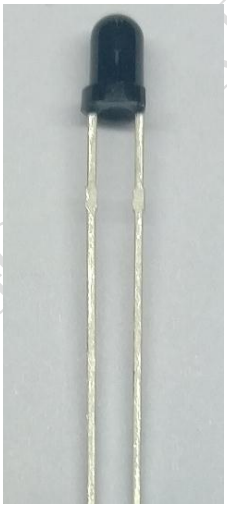
NPN SILICON PHOTO TRANSISTOR



1. DESCRIPTIONS:

AT403-PT-02 is a high speed and high sensitive silicon NPN phototransistor with exceptionally stable characteristics and high illumination sensitivity.

Mounted in black Epoxy package with filter for visible light cut-off.

2. FEATURES:

1) Phototransistor molded in a standard 3 mm package.
2) Fast Response Time.
3) High Photo Sensitivity.
4) Lead Free Product, in compliance with RoHS.
5) ESD:5000V（HBM）, 500V（MM）.
6) MSL 2, acc. J-STD-020.

3.Applications :

1) Optoelectronic switch.
2) VCRs ,Video camera.
3) Floppy disk drive.
4) Infrared applied system.

4. ABSOLUTE MAXIMUM RATINGS At Ta=25℃

Parameter	Symbol	Ratings	Unit
Power Dissipation	PD	100	mW
Collector Current	IC	20	mA
Collector-Emitter Breakdown Voltage	V_{CEO}	30	V
Emitter-Collector Breakdown Voltage	V_{ECO}	5	V
Operating Temperature	Topr	-25～+85	℃
Storage Temperature	Tstg	-40～+85	℃
Soldering Temperature	Tsol	260℃ for 5 seconds max. (1.6 mm from Body)	

5. TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS（Ta=25℃）

Parameter	Symbol	Min.	Type	Max.	Unit	Test Condition
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30	-	-	V	Ic=0.5 mA 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 Ee=1mW/cm^2
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 Ee=0mW/cm^2
On State Collector Current	$I_{C(on)}$	3.0	-	6.6	mA	5V Ee=1mW/cm^2 λp=940nm
Angular Response	2θ1/2	-	±30	-	deg	
Peak Wavelength of Sensitive	λp	-	940	-	nm	-
Rang of Spectral	λ0.5	875	-	1000	nm	-

6. TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES

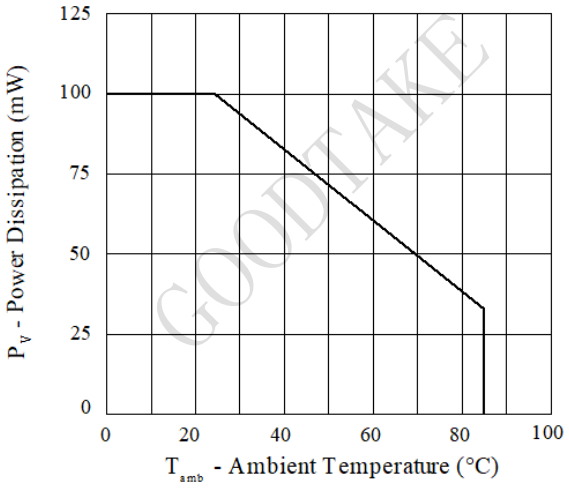


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

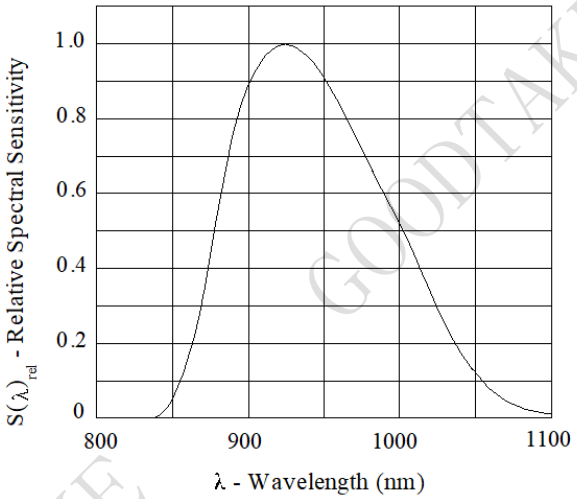


Fig. 2 - Relative Spectral Sensitivity vs. Wavelength

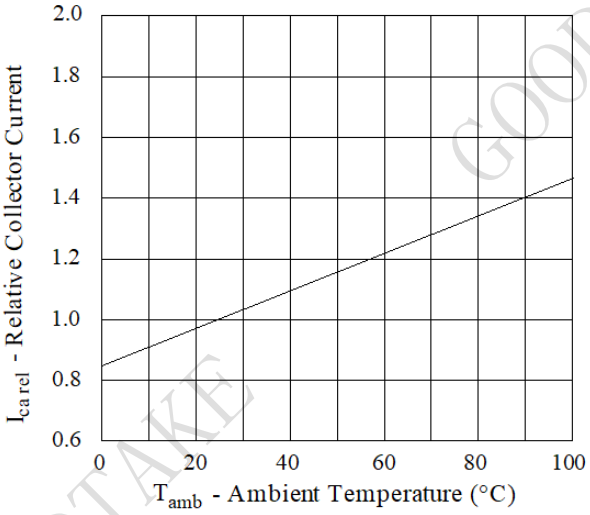


Fig. 3 - Relative Collector Current vs. Ambient Temperature

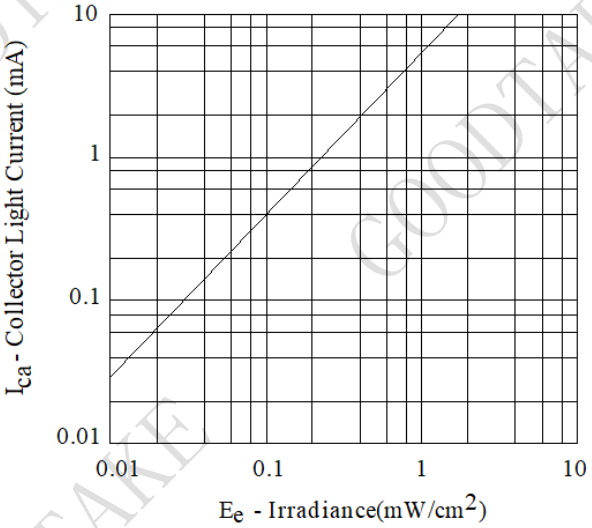


Fig. 4 - Collector Light Current vs. Irradiance

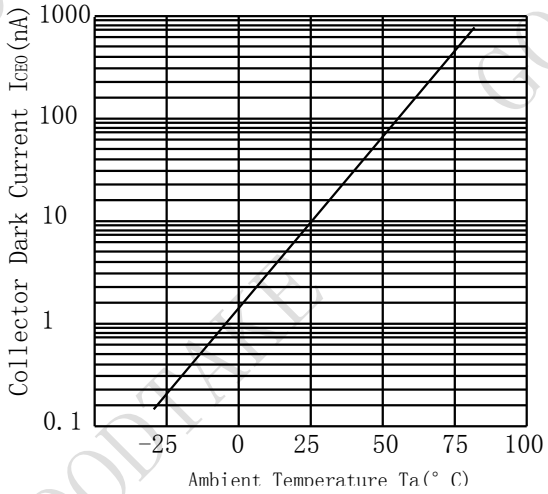


Fig.5 - I_D VS Ta

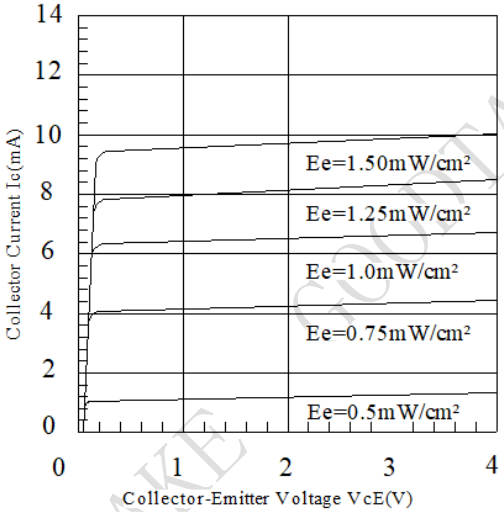


Fig.6 – Collector Current VS Collector-Emitter Voltage

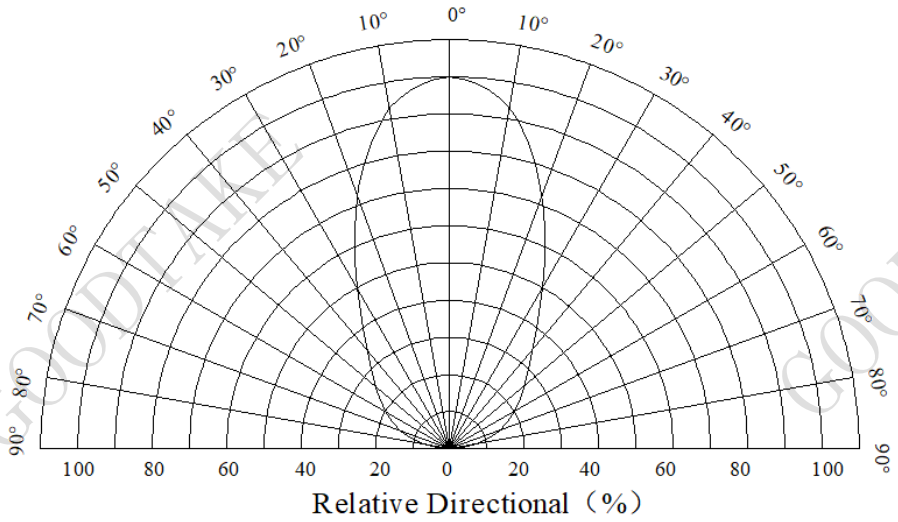
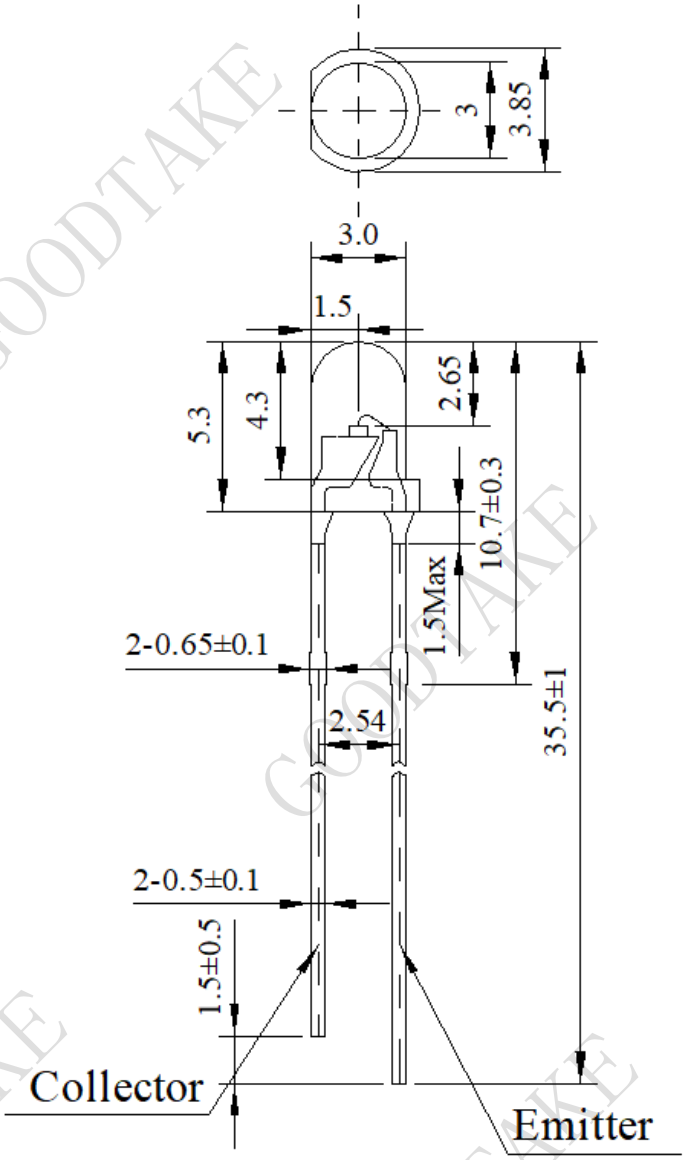


Fig.7 - Relative Directional Sensitivity

7. RELIABILITY

NO	Item	Test Conditions	Test Hours/Cycle	Sample Quantity	Test Result
1	Solder Heat	TEMP：260℃ ±3℃	5 Seconds / 2 times	22 pcs	0 DEFECT
2	Temperature Cycle	H:+85℃ 60min ↕ 10min L:-25℃ 60min	100 cycles	22 pcs	0 DEFECT
3	Thermal Shock	H:+85℃ 30min ↕ 30sec L:-25℃ 30min	100 cycles	22 pcs	0 DEFECT
4	High Temperature Storage	TEMP：+85℃	1000 HRS	22 pcs	0 DEFECT
5	Low Temperature Storage	TEMP：-40℃	1000 HRS	22 pcs	0 DEFECT
6	High Temperature High Humidity Storage	85℃/85% RH	1000HRS	22 pcs	0 DEFECT

8. PACKAGE DIMENSIONS



NOTE：1. All dimensions are in millimeter.
2. tolerance is ±0.20unless otherwise noted.

9. SOLDERING INSTRUCTION

1. Machine flow soldering – Solder temperature 260 ± 5 ℃ for 5 seconds, max. 2 times.
2. Manual Soldering –with condition:
   - 2.1 Temperature controlled soldering iron with tip temperature not more than 350 degree ℃;
   - 2.2 Finished soldering within 3 seconds;
   - 2.3 Device inserted into PC board of 1.6mm thickness, apply the heated solder tip between the copper pad and wire terminal;
   - 2.4 Do not apply any force to the resin body during soldering and no pre-heat required.
   - 2.5 Solvent cleaning not recommended before cool down of the board assembly.

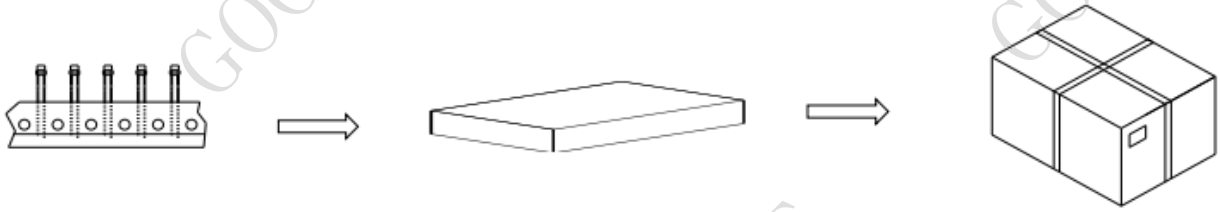
10.PACKING

Ammo pack radial taped

1.Fixed quantity(3000pcs) of the products are packed into inner box

2.Ten inner boxes are put into #box(max30.000pcs)

3. Packing slit is pasted on the out box



Taping Specification

NOTE: **1.**All dimensions are in millimeters.

2.Tolerance is±0.3 unless otherwise noted.