

AT412-ITR-02

DATA SHEET

REV. : 1.0

DATE : 20-Apr.-2007

■ FEATURE:

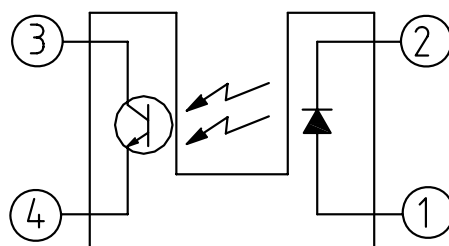
- Fast Response Time.
- High Analytic.
- Cut-Off Visible Wavelength $\lambda_p=940\text{nm}$
- High sensitivity.
- Lead Free product, in compliance with RoHS.

■ DESCRIPTIONS:

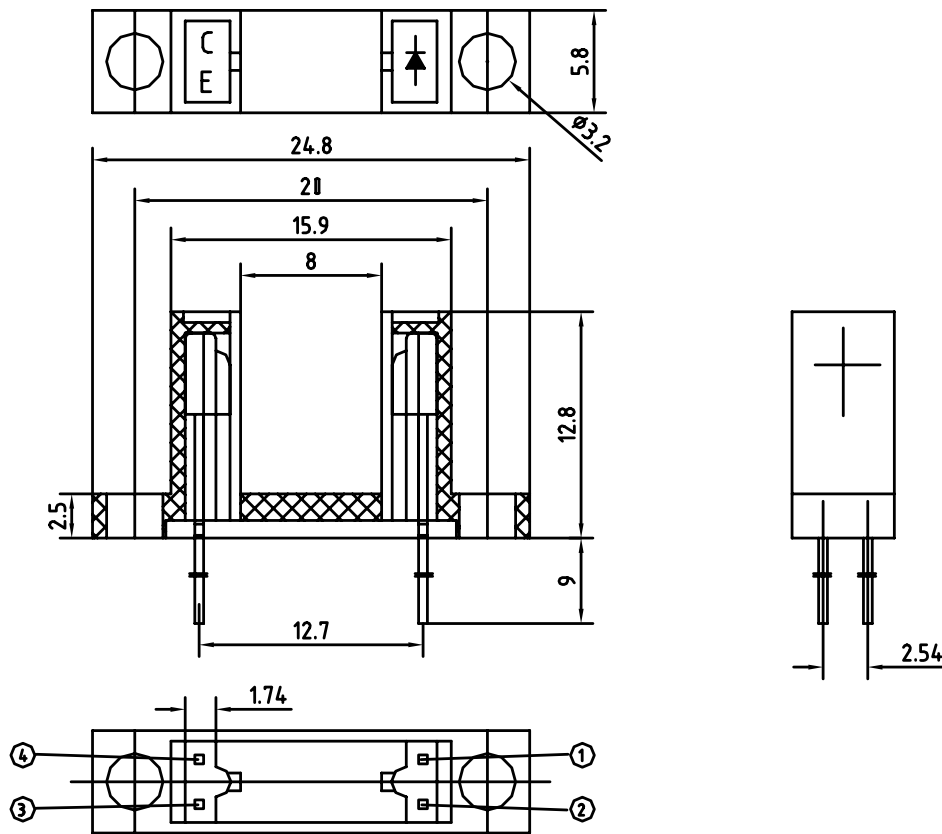
- AT412-ITR-02 consist of an infrared emitting diode and a phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing the phototransistor receives radiation from the IRED only. This is the normal situation. But when an object is in between, the phototransistor could not receive the radiation. For additional component information, please refer to AT412-SN-CL/BL and AT212-SN-01.

■ APPLICATIONS:

- Mouse copier.
- Switch scanner.
- Floppy disk driver.
- Non contact switching.

■ INTERNAL CIRCUIT:

■ DIMENSIONS



NOTE: 1. All dimensions are in millimeter.
 2. Tolerance is ± 0.2 unless otherwise noted.

■ ABSOLUTE MAXIMUM RATINGS AT Ta=25°C

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation	PD	75	mW
	Reverse Voltage	VR	5	V
	Forward Current	IF	30	mA
	Peak Forward Current	IFP	1	A
Output	Collector Power Dissipation	Pc	75	mW
	Collector Current	Ic	20	mA
	Collector-Emitter Breakdown Voltage	BVCEO	30	V
	Emitter-Collector Breakdown Voltage	BVECO	5	V
Operating Temperature		Topr	-25~+85	°C
Storage Temperature		Tstg	-40~+85	°C
Soldering Temperature		Tsol	270°C for 6 sec Max (2mm from Body)	

NOTES:IFP CONDITIONS--PULSE WIDTH ≤ 100μS AND DUTY ≤ 1%.

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

Parameter		Symbol	Min.	Type	Max.	Unit	Test Condition
Input	Forward Voltage	VF		1.25	1.5	V	IF=50 mA
	Reverse Current	IR			10	μA	VF=5V
	Peak Wavelength	λP		940		nm	
	View Angle	2θ1/2		60		Deg	
Output	Collector Dark Current	ICEO			100	nA	VCE=10V
	Collector-Emitter Saturation Voltage	VCE(sat)			0.4	V	Ic=2mA IB=100μA
Transfer Characteristics	On State Collector Current	IC(on)	0.5		10	mA	5V Ee=1mW/cm ² λp=940nm
	Rise Time	Tr		15		μS	VCE=5V Ic=1mA
	Fall Time	Tf		15		μS	RL=1000Ω

■ 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 \updownarrow 10min L:-25°C 180min	16 cycles	22 pcs	0 DEFECT
3	Thermal Shock	H:+85°C 30min \updownarrow 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 FOR IR:

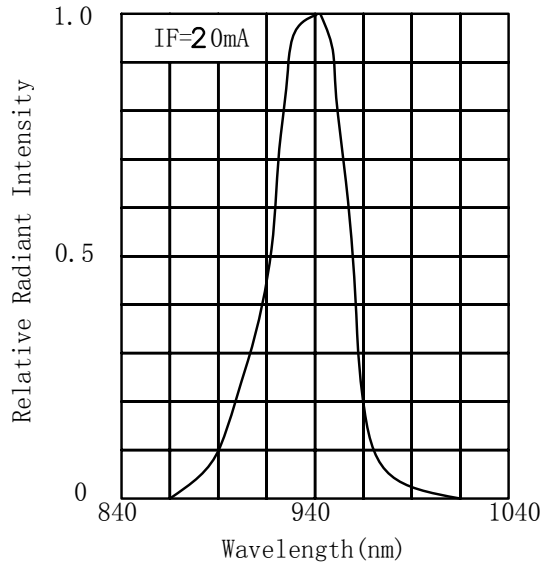


Fig. 1 Spectral Distribution

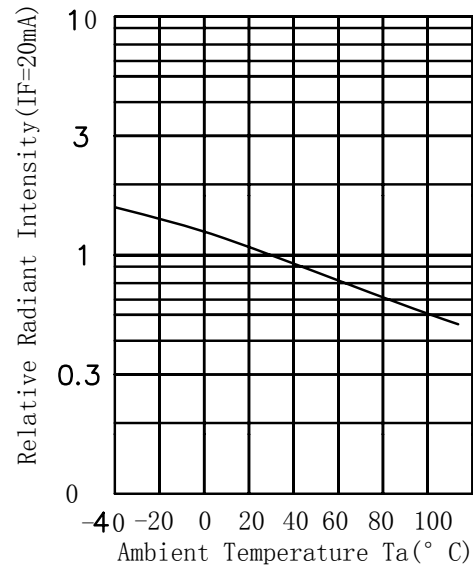


Fig. 2 Relative Radiant Intensity Vs Ambient Temperature

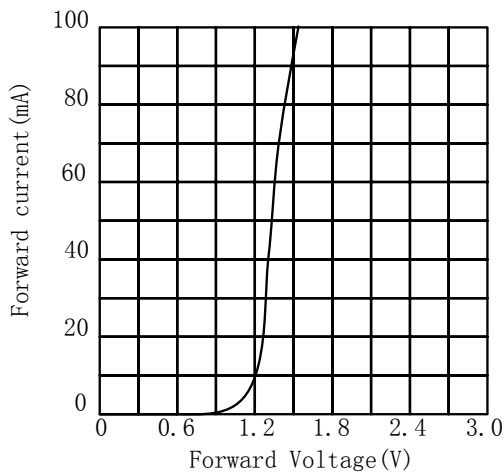


Fig. 3 Forward Current Vs Forward Voltage

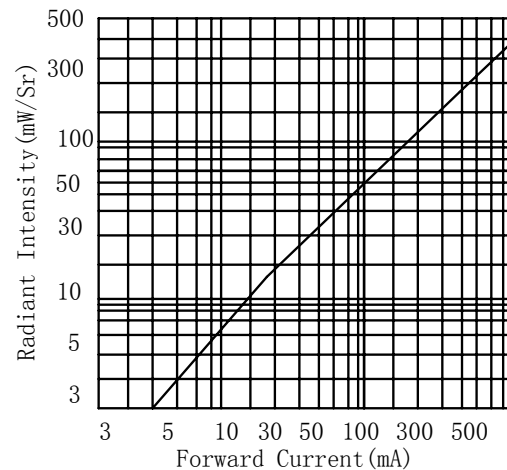


Fig. 4 Forward Current Vs Radiant Intensity

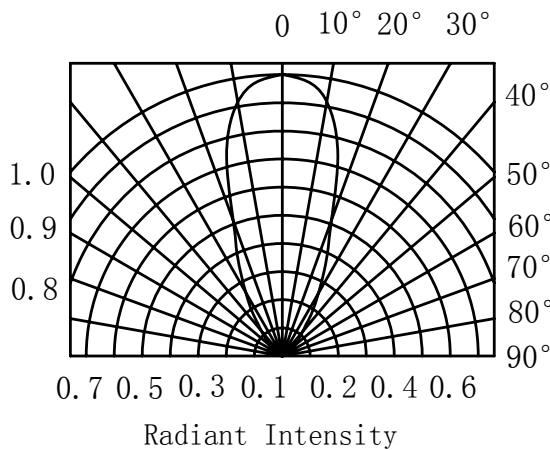


Fig. 5 Angle Vs Radiant Intensity

■ TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES FOR PT

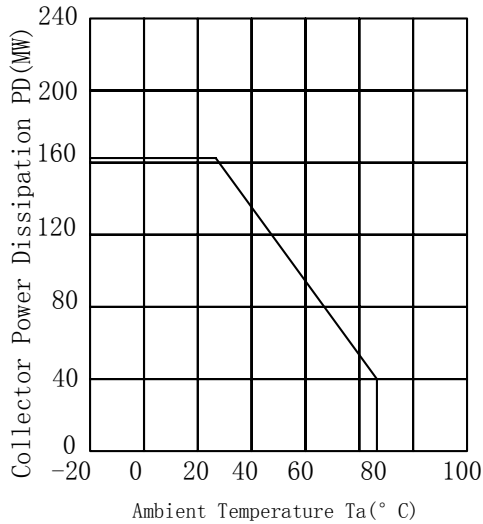


FIG. 1 Collector Pd vs Ta

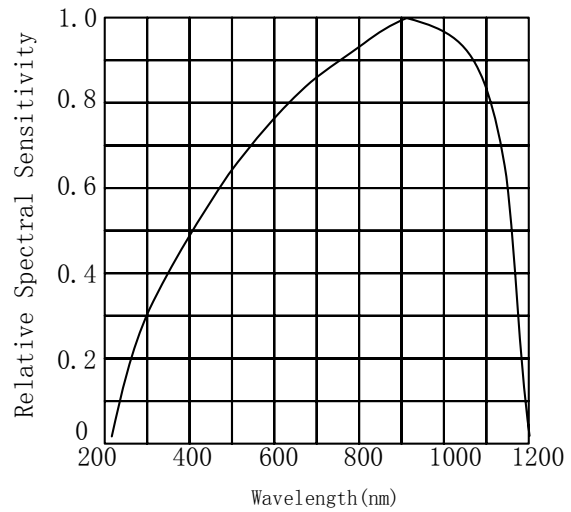


FIG. 2 Spectral Sensitivity

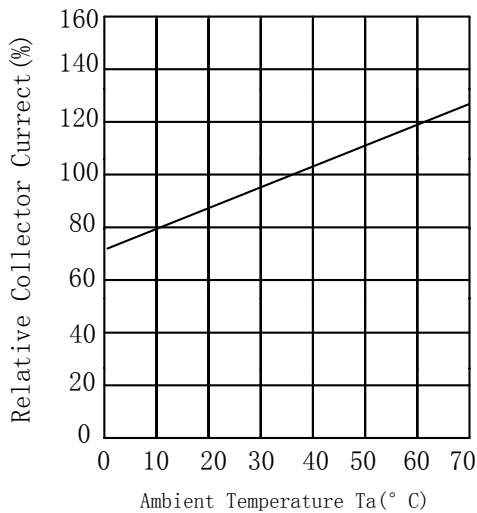


FIG. 3 Relative Ic vs. Ta

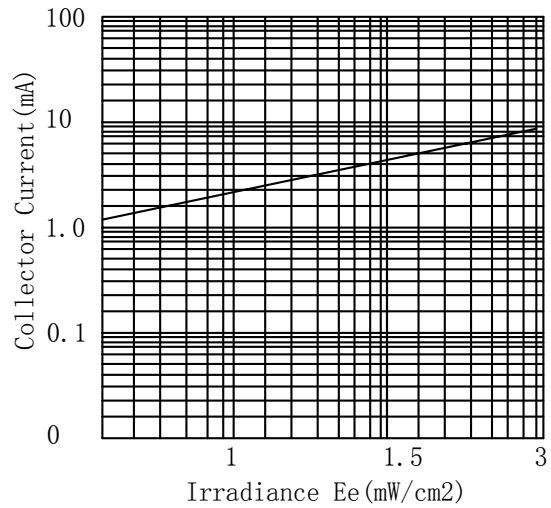


FIG. 4 Ic vs Iv

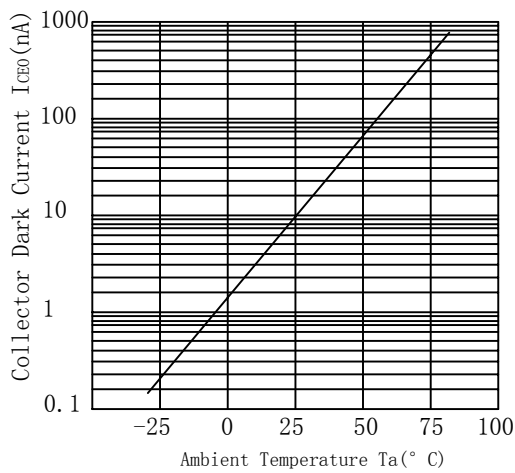


FIG. 5 Id vs Ta

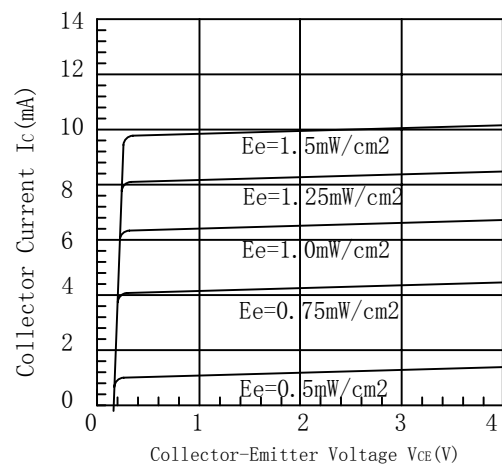


FIG. 6 Collector Current vs Collector-Emitter Voltage