
PHOTO INTERRUPTER

CTT-ZCQ25X13-MD

DATA SHEET

REV. : 1.0

DATE : 20-JUN.-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.

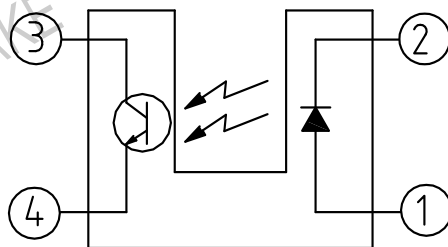
■ DESCRIPTIONS:

- CTT-ZCQ25X13-MD 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 emitting diode and the phototransistor, the phototransistor could not receive the radiation.

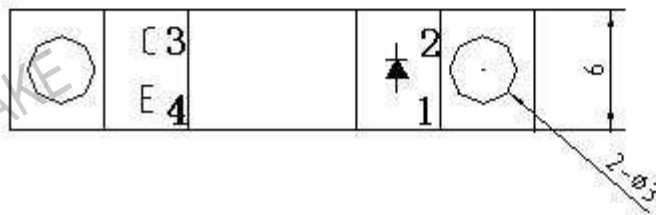
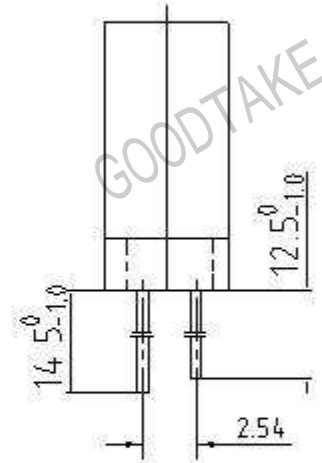
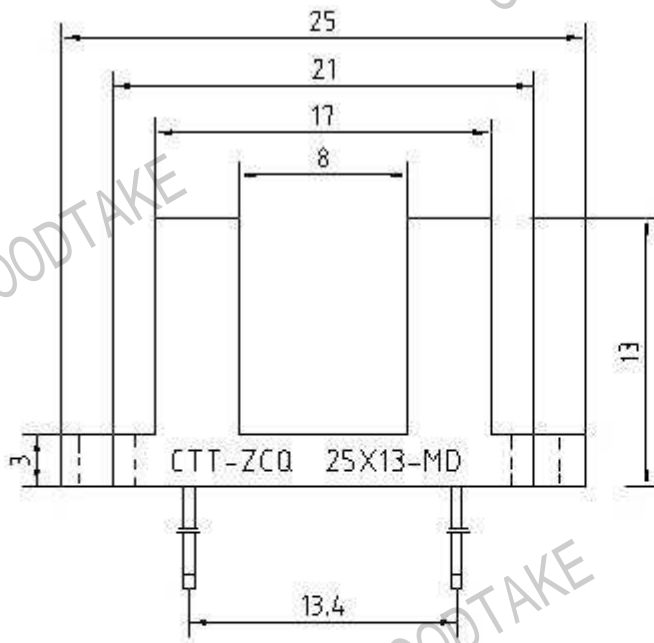
■ APPLICATIONS:

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

■ INTERNAL CIRCUIT:



■ DIMENSIONS



- 1. Anode
- 2. Cathode
- 3. Collector
- 4. Emitter

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	P _D	75	mW
	Reverse Voltage	V _R	5	V
	Forward Current	I _F	50	mA
	Peak Forward Current	I _{FP}	1	A
Output	Collector Power Dissipation	P _C	100	mW
	Collector Current	I _C	20	mA
	Collector-Emitter Breakdown Voltage	BV _{CEO}	30	V
	Emitter-Collector Breakdown Voltage	BV _{ECO}	5	V
Operating Temperature		T _{opr}	-25~+85	°C
Storage Temperature		T _{stg}	-40~+85	°C
Soldering Temperature		T _{sol}	270°C for 6 sec Max (2mm from Body)	

NOTES: I_{FP} 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	V _F		1.25	1.5	V	I _F =50 mA
	Reverse Current	I _R			10	μA	V _F =5V
	Peak Wavelength	λ _P		940		nm	
	View Angle	2θ _{1/2}		60		Deg	
Output	Collector Dark Current	I _{CEO}			100	nA	V _{CE} =10V
	Collector-Emitter Saturation Voltage	V _{CE(sat)}			0.4	V	I _C =0.15mA I _F =8mA
Transfer Characteristics	On State Collector Current	I _{C(on)}	0.5		5	mA	5V I _F =10mA
	Rise Time	T _r		15		μS	V _{CE} =5V I _C =1mA
	Fall Time	T _f		15		μS	R _L =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 ↓ 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 FOR IR:

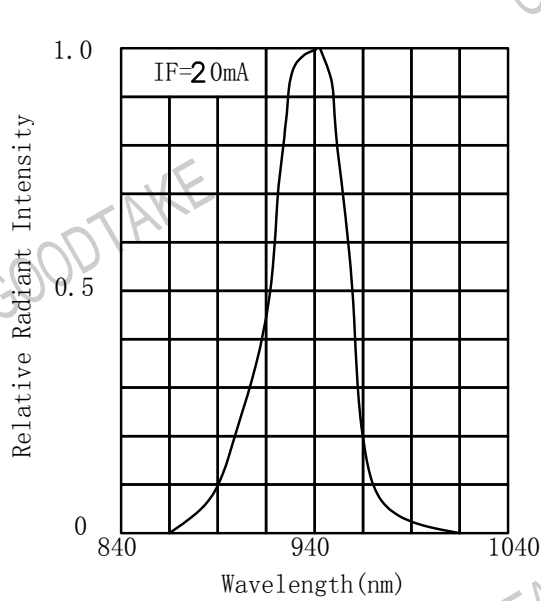


Fig. 1 Spectral Distribution

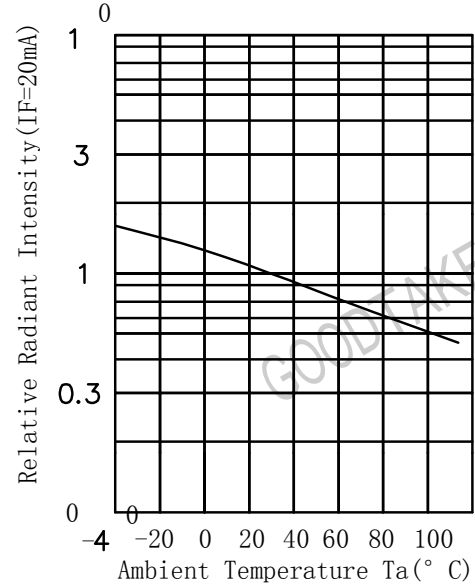


Fig. 2 Relative Radiant Intensity Vs Ambient Temperature

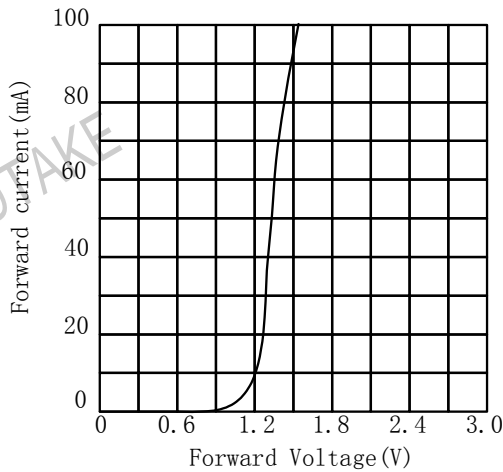


Fig. 3 Forward Current Vs Forward Voltage

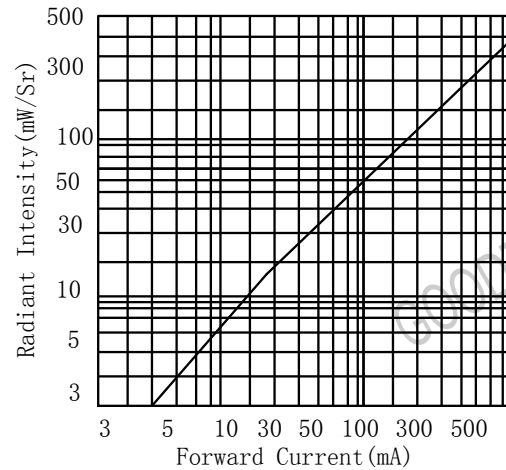


Fig. 4 Forward Current Vs Radiant Intensity

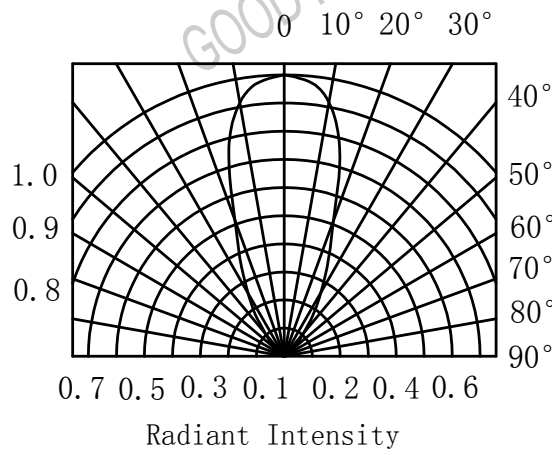


Fig. 5 Angle Vs Radiant Intensity

■ TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES FOR PT

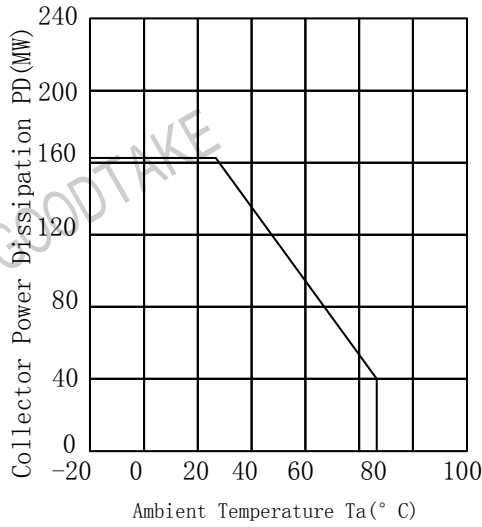


FIG. 1 Collector Pd vs Ta

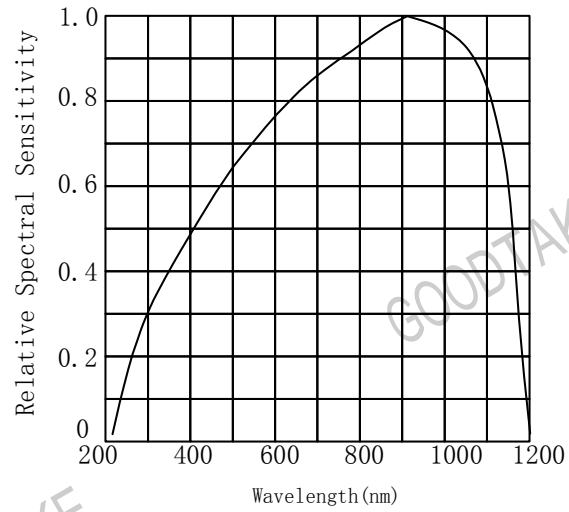


FIG. 2 Spectral Sensitivity

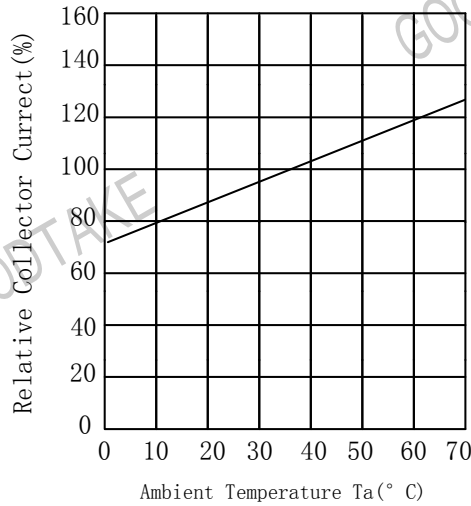


FIG. 3 Relative Ic vs. Ta

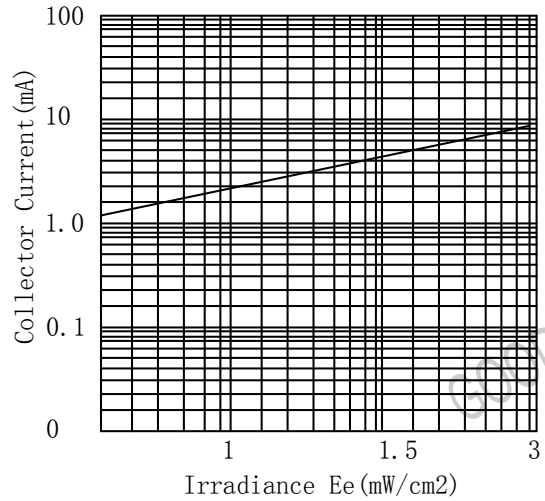


FIG. 4 Ic vs Iv

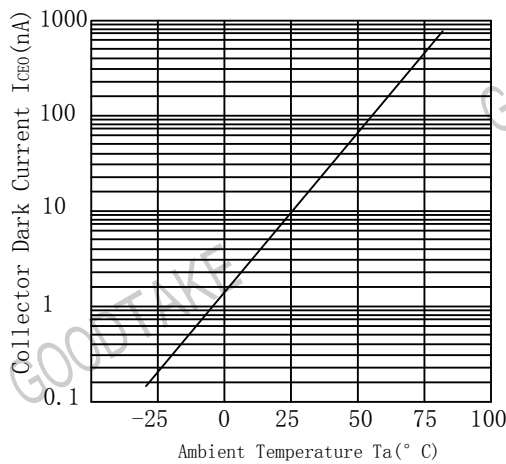


FIG. 5 Id vs Ta

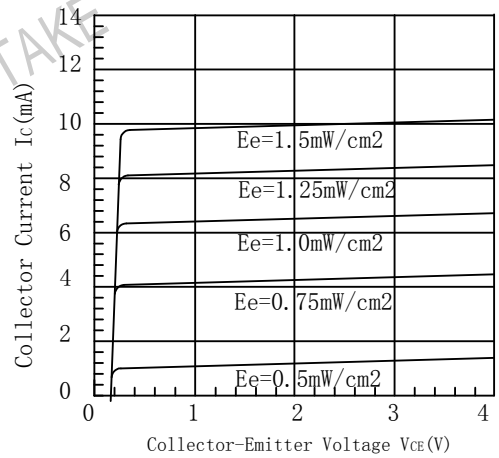


FIG. 6 Collector Current VS Collector-Emitter Voltage