

Photointerrupter, General type



Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Input (LED)	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	5	V
	Power dissipation	$P_D$	80	mW
Output (photo-transistor)	Collector-emitter voltage	$V_{CE0}$	30	V
	Emitter-collector voltage	$V_{ECO}$	4.5	V
	Collector current	$I_C$	30	mA
	Collector power dissipation	$P_C$	80	mW
Operating temperature	$T_{opr}$	-25 to +85	°C	
Storage temperature	$T_{stg}$	-40 to +85	°C	
Soldering temperture	$T_{sol}$	260 / 3 *	°C / s	

\* 1mm from the body bottom.

Electrical and optical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Input characteristics	Forward voltage	$V_F$	-	1.3	1.6	V	$I_F=50mA$
	Reverse current	$I_R$	-	-	10	$\mu A$	$V_R=10V$
Output characteristics	Dark current	$I_{CE0}$	-	-	0.5	$\mu A$	$V_{CE}=10V$
	Peak sensitivity wavelength	$\lambda_P$	-	800	-	nm	-
Transfer characteristics	Collector current	$I_C$	0.5	-	-	mA	$V_{CE}=5V, I_F=20mA$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	-	0.1	0.5	V	$I_F=20mA, I_C=0.1mA$
Response time	Rise time	$t_r$	-	10	-	$\mu s$	$V_{CC}=5V, I_F=20mA, R_L=100\Omega$
	Fall time	$t_f$	-	10	-	$\mu s$	
Infrared light emitter diode	Cut-off frequency	$f_c$	-	1	-	MHz	$I_F=50mA$
	Peak light emitting wavelength	$\lambda_P$	-	950	-	nm	* Non-coherent Infrared light emitting diode used.
Photo transistor	Response time	$t_r \cdot t_f$	-	10	-	$\mu s$	$V_{CC}=5V, I_C=1mA, R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength	$\lambda_P$	-	800	-	nm	-

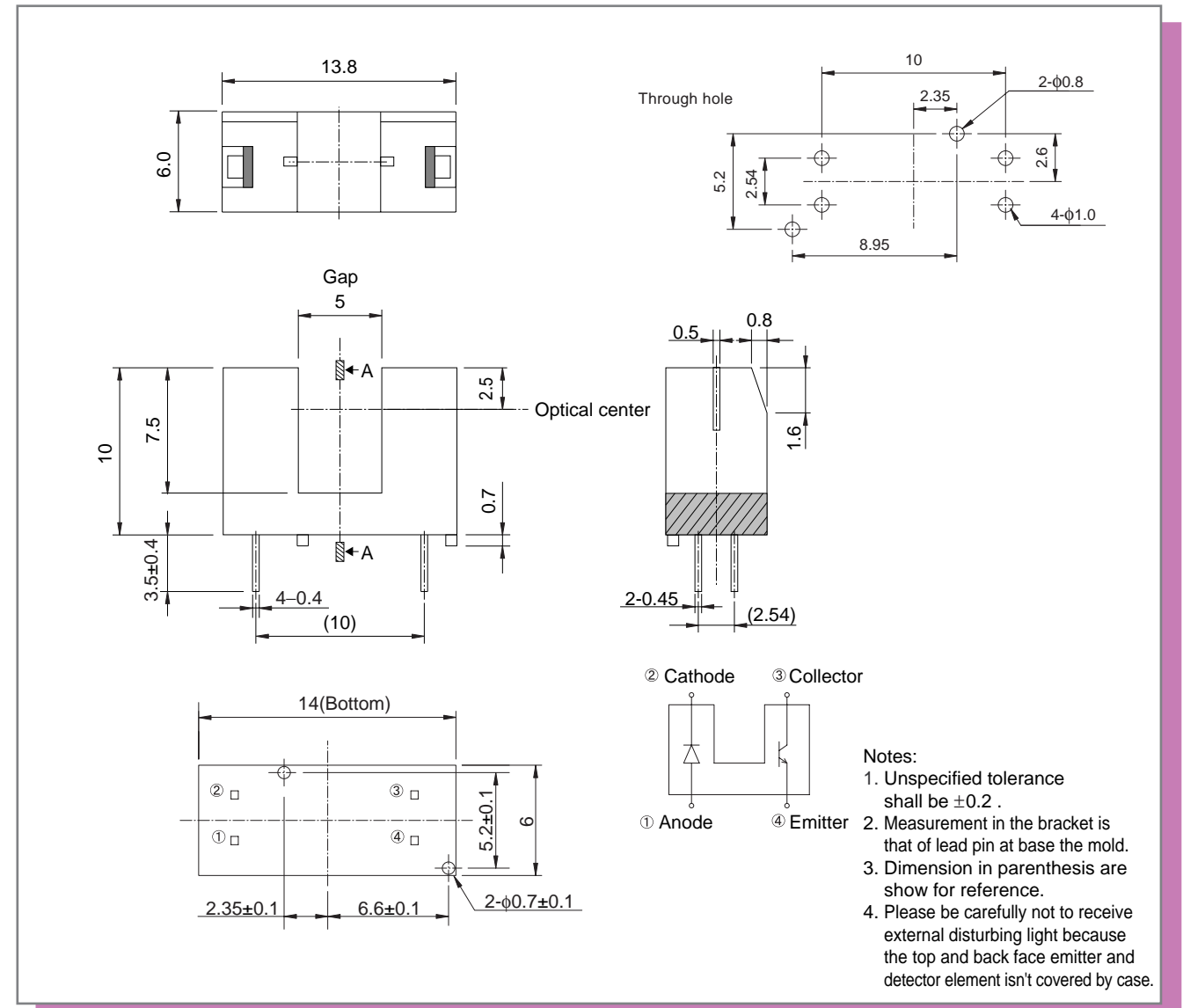
Applications

Printers  
Facsimiles  
AV equipment

Features

- 1) Heat resistance (170°C).
- 2) Small gap (0.5mm) and good accuracy.
- 3) Quick response time.
- 4) Filter against visible ray is built-in.

External dimensions (Unit : mm)



- Notes:
1. Unspecified tolerance shall be  $\pm 0.2$ .
  2. Measurement in the bracket is that of lead pin at base mold.
  3. Dimension in parenthesis are show for reference.
  4. Please be carefully not to receive external disturbing light because the top and back face emitter and detector element isn't covered by case.

Electrical and optical characteristics curves

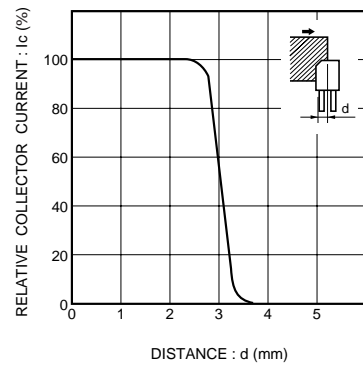


Fig.1 Relative output vs. distance (I)

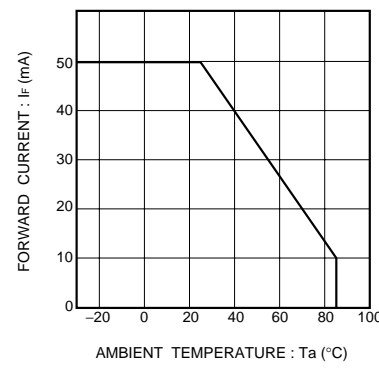


Fig.2 Forward current falloff

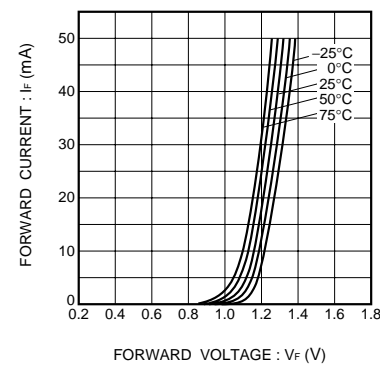


Fig.3 Forward current vs. forward voltage

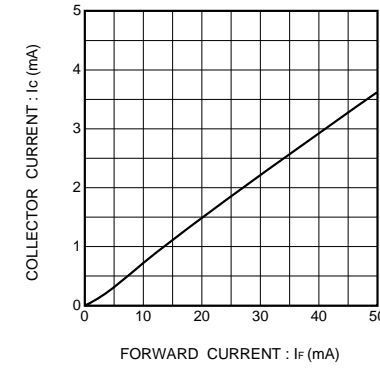


Fig.7 Collector current vs. forward current

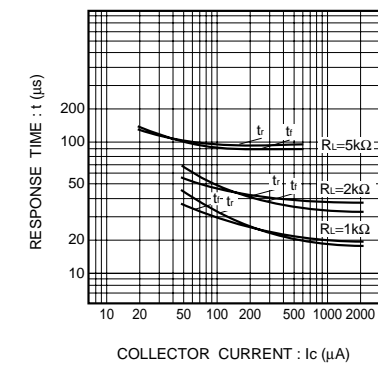


Fig.8 Response time vs. collector current

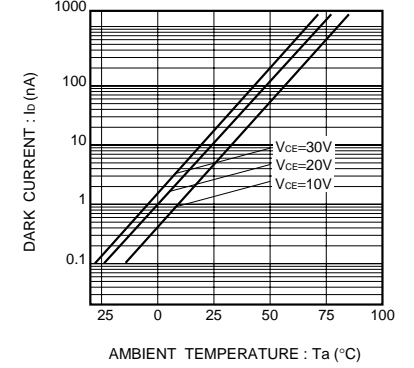


Fig.9 Dark current vs. ambient temperature

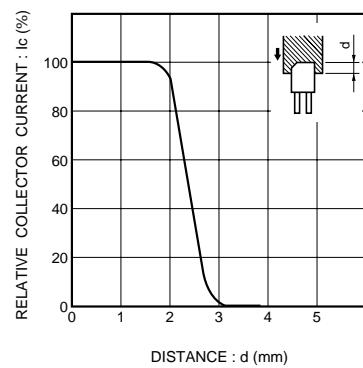


Fig.4 Relative output vs. distance (II)

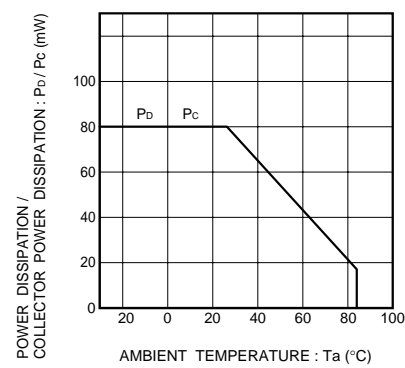


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

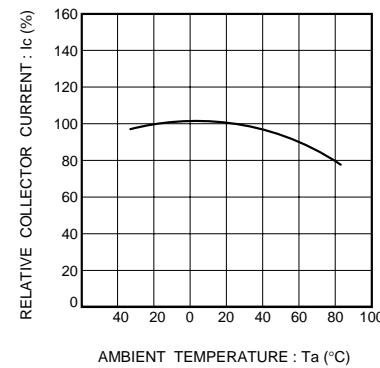


Fig.6 Relative output vs. ambient temperature

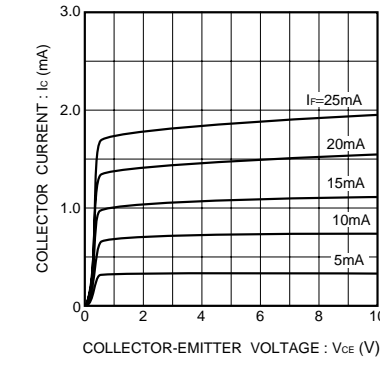


Fig.10 Output characteristics

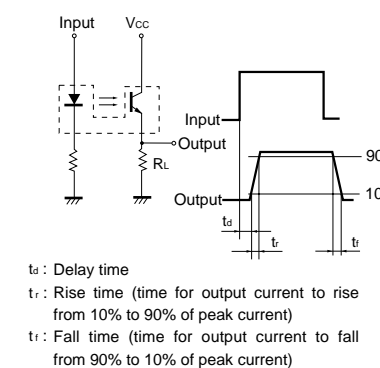


Fig.11 Response time measurement circuit

$t_d$ : Delay time  
 $t_r$ : Rise time (time for output current to rise from 10% to 90% of peak current)  
 $t_f$ : Fall time (time for output current to fall from 90% to 10% of peak current)

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