

## Photointerrupter, Ultraminiature SMD 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	$V_{CEO}$	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	$T_{stg}$	-30 to +85	°C

### Applications

DSC(Digital steal camera)  
DVC(Digital video camera)  
Digital handy phone

### Features

- 1) Ultraminiature SMD type.
- 2) Gap 1.2mm.

### 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	$I_F=50\text{mA}$
	Reverse current	$I_R$	-	-	10	$\mu\text{A}$	$V_R=5\text{V}$
Output characteristics	Dark current	$I_{CEO}$	-	-	0.5	$\mu\text{A}$	$V_{CE}=10\text{V}$
	Peak sensitivity wavelength	$\lambda_P$	-	800	-	nm	-
Transfer characteristics	Collector current	$I_C$	0.95	-	4.95	mA	$V_{CE}=5\text{V}, I_F=20\text{mA}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_F=20\text{mA}, I_C=0.1\text{mA}$
	Response time	Rise time	$t_r$	-	10	-	$\mu\text{s}$
Fall time		$t_f$	-	10	-	$\mu\text{s}$	
Infrared light emitter diode	Cut-off frequency	$f_c$	-	1	-	MHz	$I_F=50\text{mA}$ * Non-coherent Infrared light emitting diode used.
	Peak light emitting wavelength	$\lambda_P$	-	950	-	nm	-
Photo transistor	Response time	$t_r \cdot t_f$	-	10	-	$\mu\text{s}$	$V_{CC}=5\text{V}, I_C=1\text{mA}, R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength	$\lambda_P$	-	800	-	nm	-

### Electrical and optical characteristics curves

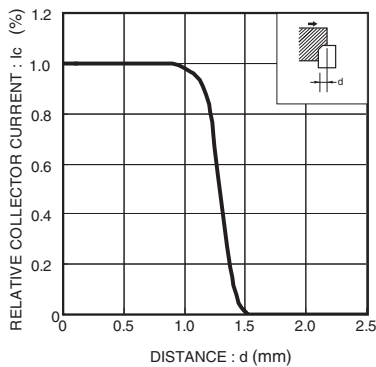


Fig.1 Relative output current vs. distance (I)

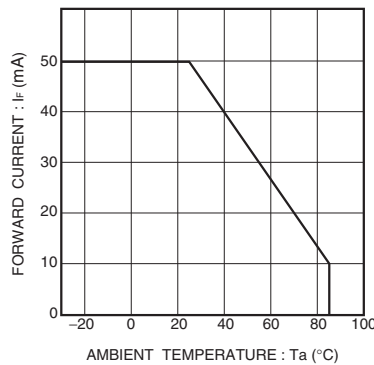


Fig.2 Forward current falloff

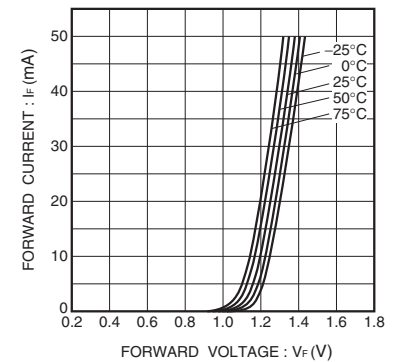


Fig.3 Forward current vs. forward voltage

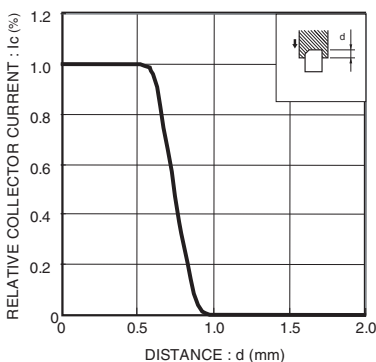


Fig.4 Relative output current vs. distance (II)

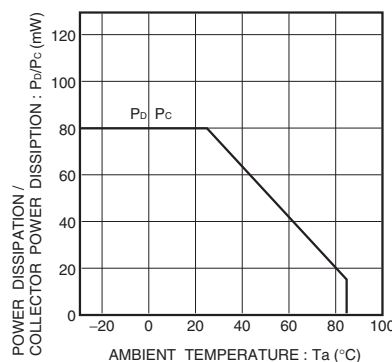


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

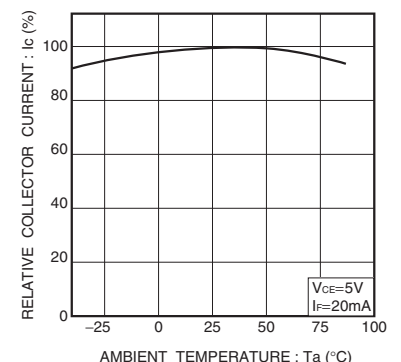
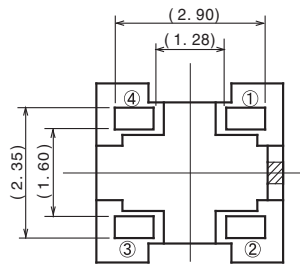
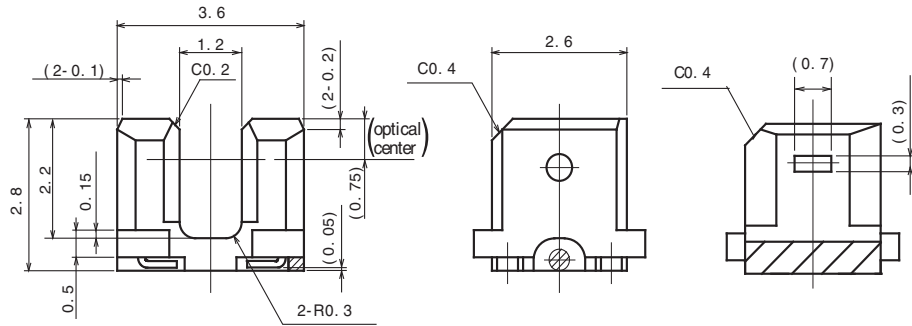
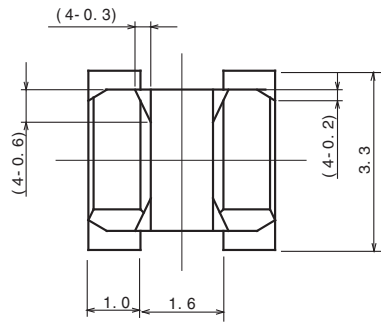


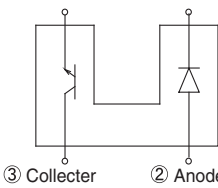
Fig.6 Relative output vs. ambient temperature

# Dimensions (Unit : mm)



Internal Connection diagram

④ Emitter ① Cathode



Notes:

1. Unspecified tolerance shall be  $\pm 0.2$ .
2. Dimension in parenthesis are show for reference.

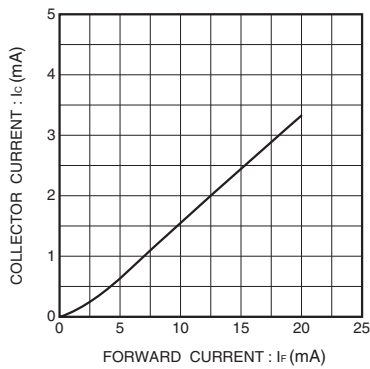


Fig.7 Collector current vs. forward current

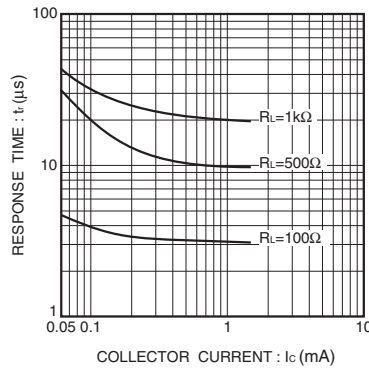


Fig.8 Response time vs. collector current

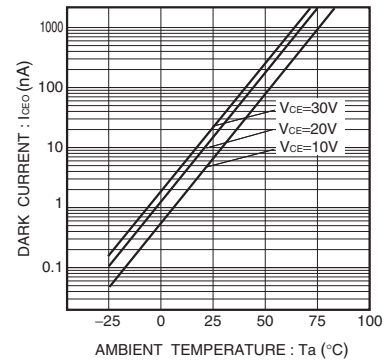


Fig.9 Dark current vs. ambient temperature

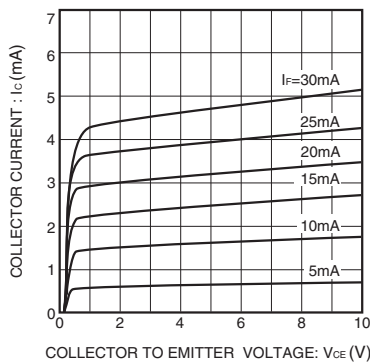


Fig.10 Output characteristics

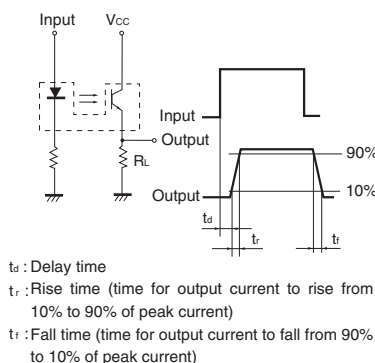


Fig.11 Response time measurement circuit

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