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RPI-221

Photointerrupter, Small 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 +100	°C

Electrical and optical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input charac-teristics	Forward voltage	V _F	−	1.3	1.6	V	I _F =50mA
	Reverse current	I _R	−	−	10	μA	V _R =5V
Output charac-teristics	Dark current	I _{CEO}	−	−	0.5	μA	V _{CE} =10V
	Peak sensitivity wavelength	λ _P	−	800	−	nm	−
Transfer charac-teristics	Collector current	I _C	0.2	1.0	−	mA	V _{CE} =5V, I _F =20mA
	Collector-emitter saturation voltage	V _{CE(sat)}	−	−	0.4	V	I _F =20mA, I _C =0.1mA
	Response time	t _r +t _f	−	10	−	μs	V _{CC} =5V, I _F =20mA, R _L =100Ω
Infrared light emitter diode	Cut-off frequency	f _c	−	1	−	MHz	I _F =50mA * Non-coherent Infrared light emitting diode used.
	Peak light emitting wavelength	λ _P	−	950	−	nm	−
Photo transistor	Response time	t _r +t _f	−	10	−	μs	V _{CC} =5V, I _C =1mA, R _L =100Ω * This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength	λ _P	−	800	−	nm	−

Electrical and optical characteristics curves

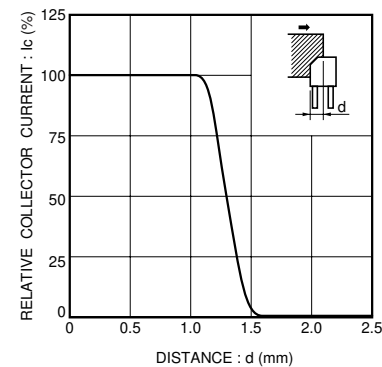


Fig.1 Relative output current vs. distance (I)

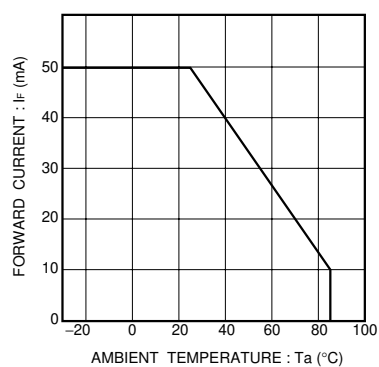


Fig.2 Forward current falloff

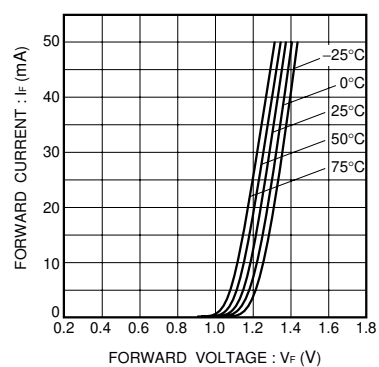


Fig.3 Forward current vs. forward voltage

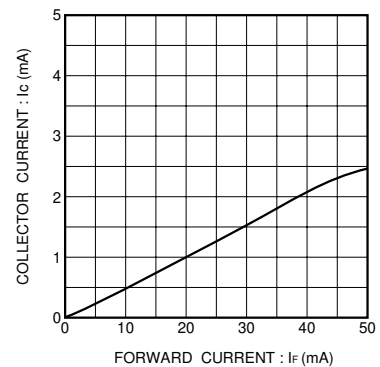


Fig.7 Collector current vs. forward current

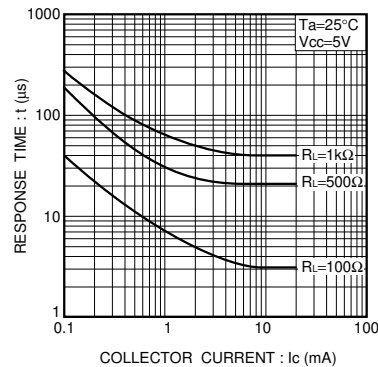


Fig.8 Response time vs. collector current

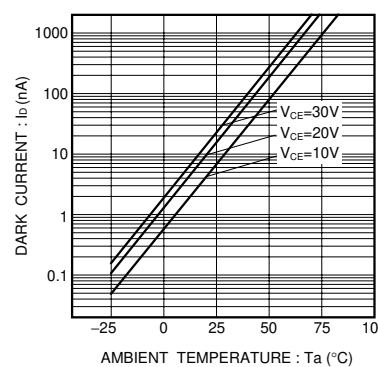


Fig.9 Dark current vs. ambient temperature

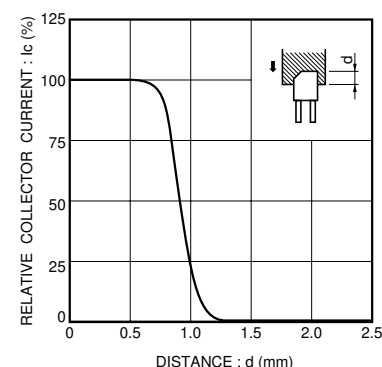


Fig.4 Relative output current vs. distance (II)

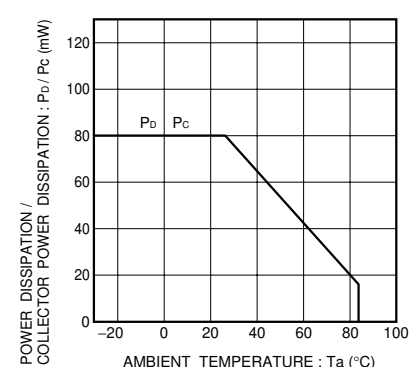


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

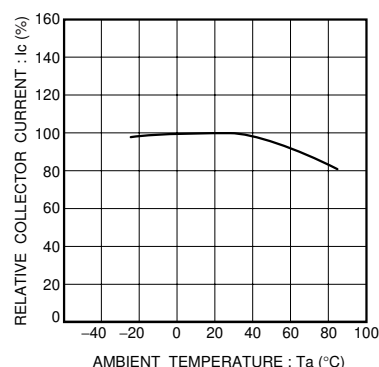


Fig.6 Relative output vs. ambient temperature

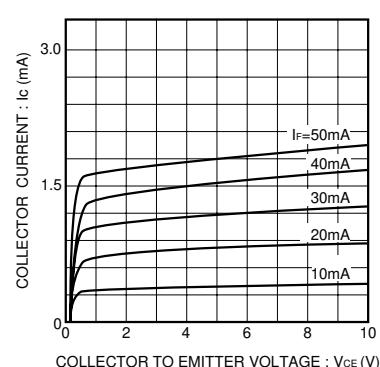


Fig.10 Output characteristics

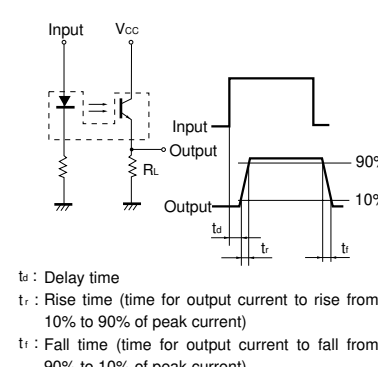
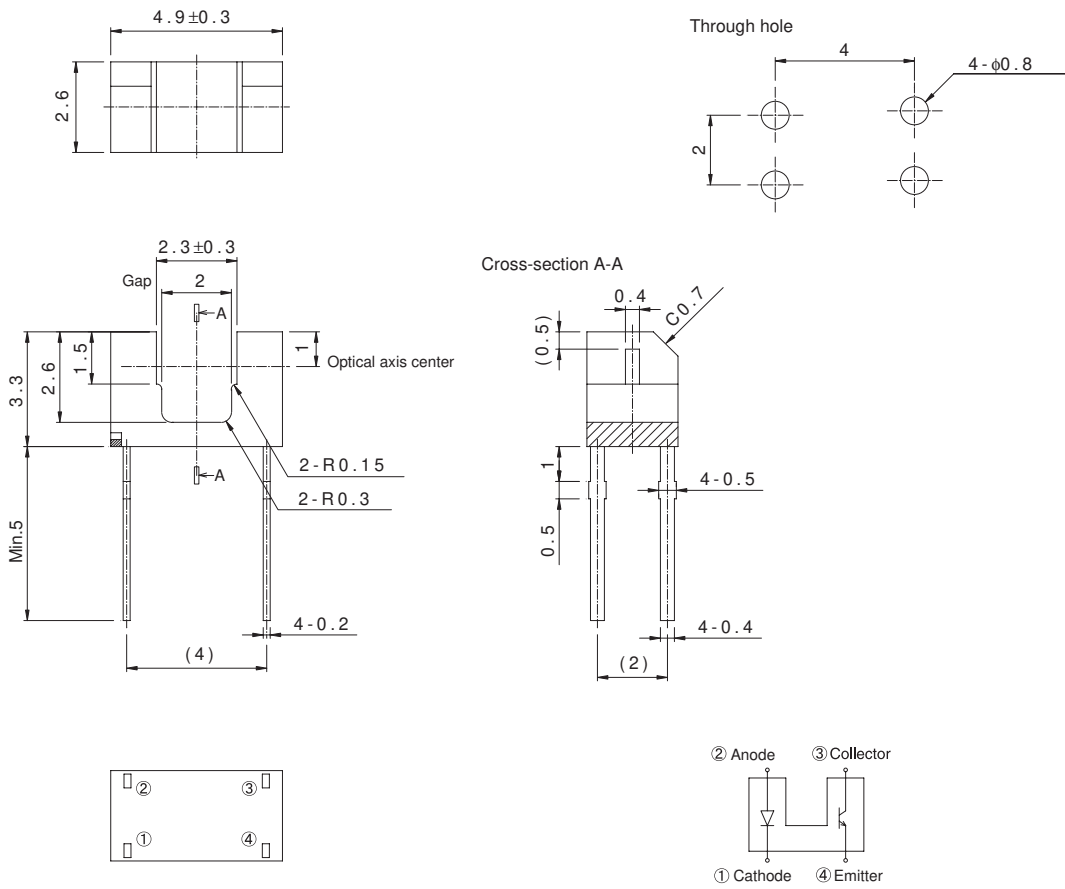


Fig.11 Response time measurement circuit

External dimensions (Unit : mm)



Notes:
1. Unspecified tolerance shall be ±0.2 .
2. Dimension in parenthesis are show for reference.

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