

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 IC)	Power supply voltage	V_{CC}	7	V
	Output current	I_O	10	mA
	Power dissipation	P_D	80	mW
Operating temperature		T_{opr}	-20 to +60	°C
Storage temperature		T_{stg}	-40 to +100	°C

Applications

Optical control equipment

Features

- 1) Small slit width (0.3mm) for high precision.
- 2) Fast response.
- 3) Built-in visible light filter.

Electrical and optical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input characteristics	Forward voltage	V_F	—	1.1	1.3	V	$I_F=10\text{mA}$
	Reverse current	I_R	—	—	10	μA	$V_R=5\text{V}$
Output characteristics	Power supply voltage	V_{CC}	2.0	—	7.0	V	—
	Output low level voltage	V_{OL}	—	0.08	0.35	V	$V_{CC}=3\text{V}$, $I_{OL}=2\text{mA}$
	Output high level voltage	V_{OH}	2.8	—	3.0	V	$V_{CC}=3\text{V}$, $I_F=0\text{mA}$
	Low level power supply current	I_{CCL}	—	0.35	1.5	mA	$V_{CC}=3\text{V}$, $I_F=5\text{mA}$
	High level power supply current	I_{CCH}	—	0.35	1.5	mA	$V_{CC}=3\text{V}$, $I_F=0\text{mA}$
Transfer characteristics	High $\rightarrow$ Low Threshold input current	I_{FHL}	0.25	—	2.5	mA	$V_{CC}=3\text{V}$
	Hysteresis	I_{FLH} / I_{FHL}	0.4	0.7	0.9	—	$V_{CC}=3\text{V}$
	Response time	Low $\rightarrow$ High Propagation delay time	t_{PLH}	—	22	μs	$V_{CC}=3\text{V}$, $I_F=5\text{mA}$, $R_L=100\Omega$
		High $\rightarrow$ Low Propagation delay time	t_{PHL}	—	5.5	μs	
		Rise time	t_r	—	5	μs	
		Fall time	t_f	—	0.05	μs	
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	λ_P	—	950	—	nm	
Photo IC	Response time	t_r	—	5	15	μs	$V_{CC}=3\text{V}$, $I_F=5\text{mA}$, $R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave.
		t_f	—	0.05	0.15	μs	

Electrical and optical characteristics curves

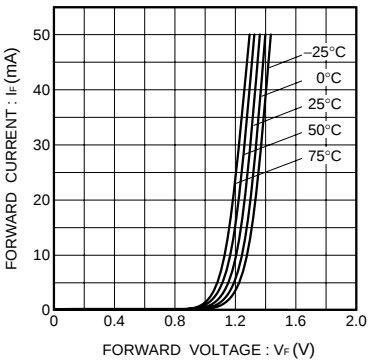


Fig.1 Forward current vs. forward voltage

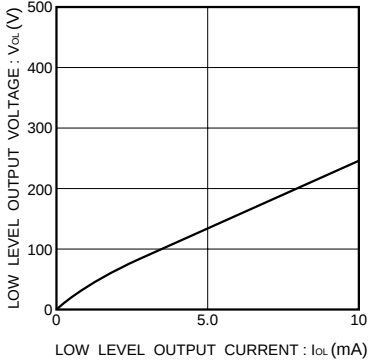


Fig.2 Low level output voltage vs. low level output current

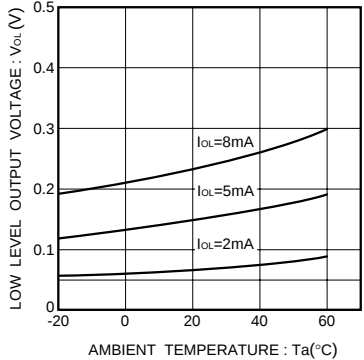


Fig.3 Low level output voltage vs. ambient temperature

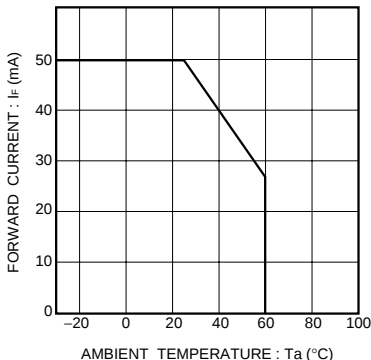


Fig.7 Forward current falloff

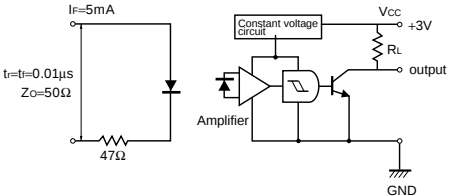


Fig.8 Response time measurement circuit

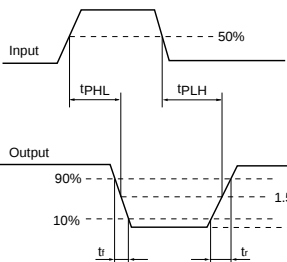


Fig.6 Relative output voltage vs. distance characteristics

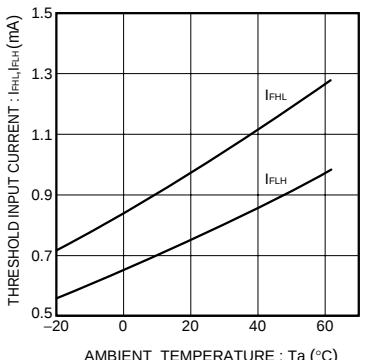


Fig.4 Threshold input current vs. ambient temperature

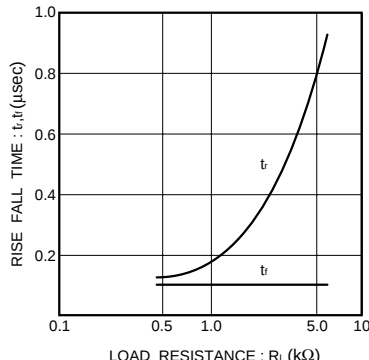
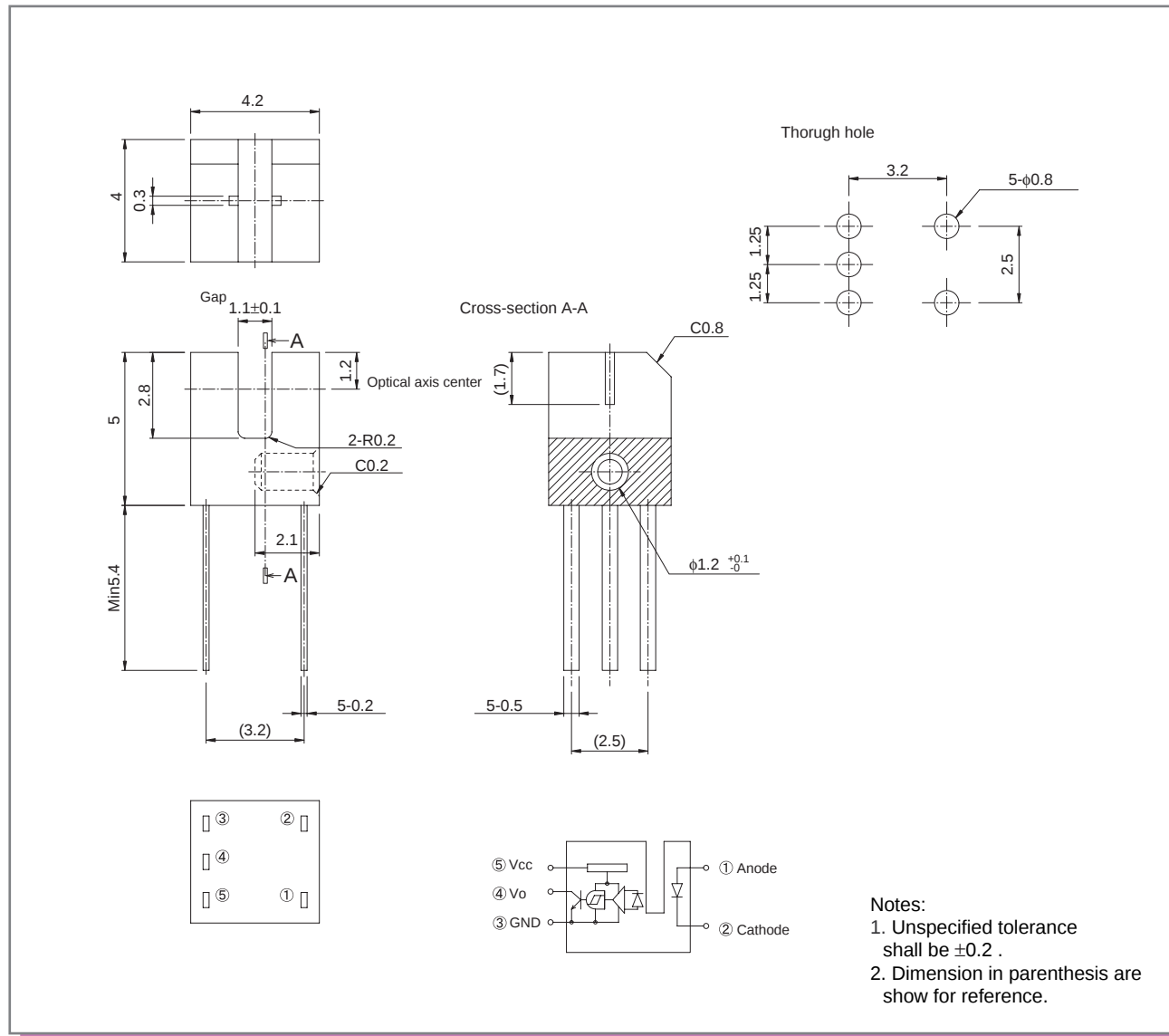
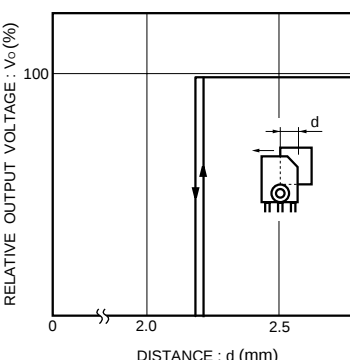


Fig.5 Response time vs. load resistance



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