RPI-1133

Photointerrupter, Small type

Applications

Optical control equipment

Features

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

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		Topr	−20 to +60	°C
Storage temperature		Tstg	−40 to +100	°C

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=10mA
	Reverse current		I_R	–	–	10	μA	V_R=5V
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}=3V, I_{OL}=2mA
	Output high level voltage		V_{OH}	2.8	–	3.0	V	V_{CC}=3V, I_F=0mA
	Low level power supply current		I_{CCL}	–	0.35	1.5	mA	V_{CC}=3V, I_F=5mA
	High level power supply current		I_{CCH}	–	0.35	1.5	mA	V_{CC}=3V, I_F=0mA
Transfer characteristics	High → Low Threshold input current		I_{FHL}	0.25	–	2.5	mA	V_{CC}=3V
	Hysteresis		I_{FLH} / I_{FHL}	0.4	0.7	0.9	–	V_{CC}=3V
	Response time	Low → High Propagation delay time	t_{PLH}	–	22	66	μs	V_{CC}=3V, I_F=5mA, R_L=100Ω
		High → Low Propagation delay time	t_{PHL}	–	5.5	16		
		Rise time	tr	–	5	15		
		Fall time	tf	–	0.05	0.15		
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 IC	Response time		tr	–	5	15	μs	V_{CC}=3V, I_F=5mA, R_L=100Ω * This product is not designed to be protected against electromagnetic wave.
			tf	–	0.05	0.15		

Electrical and optical characteristics curves

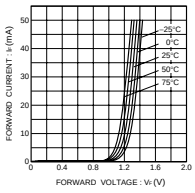


Fig.1 Forward current vs. forward voltage

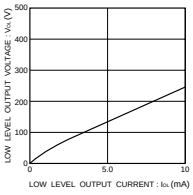


Fig.2 Low level output voltage vs. low level output current

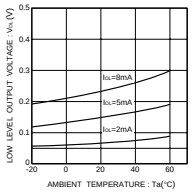
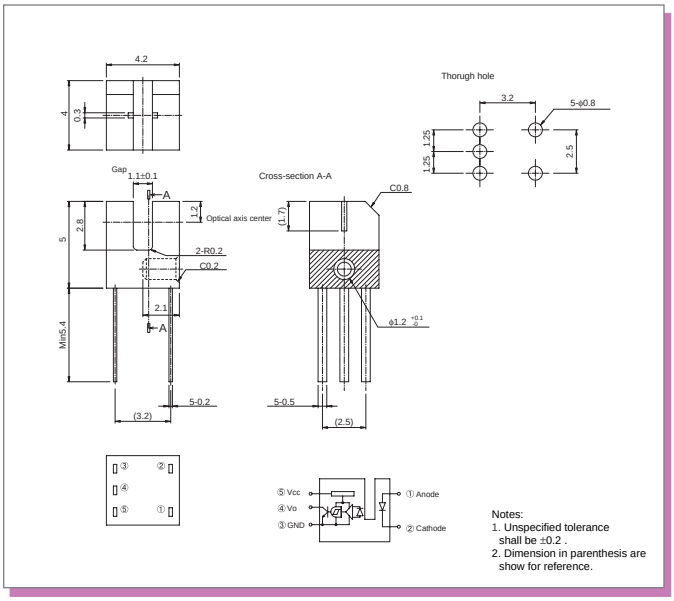


Fig.3 Low level output voltage vs. ambient temperature

External dimensions (Unit : mm)



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

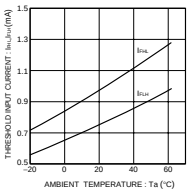


Fig.4 Threshold input current vs. ambient temperature

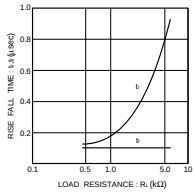


Fig.5 Response time vs. load resistance

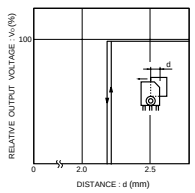


Fig.6 Relative output voltage vs. distance characteristics

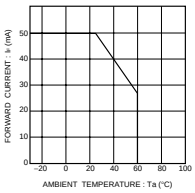


Fig.7 Forward current falloff

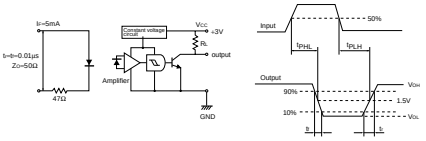


Fig.8 Response time measurement circuit

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