

Photointerrupter double-layer mold type

RPI-1133

The RPI-1133 is a compact photointerrupter that uses a photo IC for the detector.

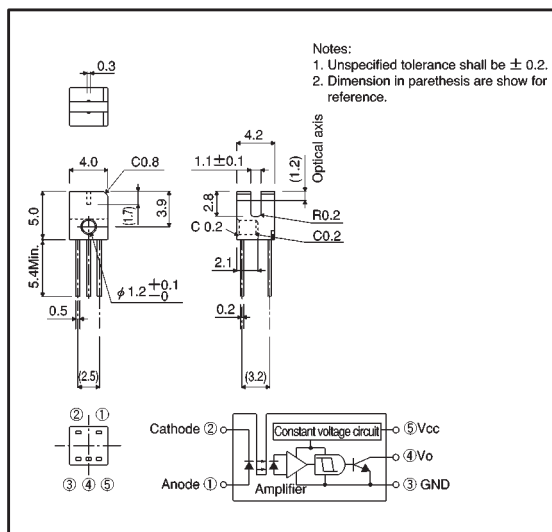
●Applications

Optical control equipment

●Features

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

●External dimensions (Units: mm)



●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~+60	°C
Storage temperature		T_{stg}	-40~+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	$I_F=10\text{mA}$	
	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 → 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 → High Propagation delay time	t_{PLH}	—	22	66	μs	$V_{CC}=3\text{V}$, $I_F=5\text{mA}$, $R_L=100\Omega$
		High → Low Propagation delay time	t_{PHL}	—	5.5	16		
		Rise time	t_r	—	5	15		
		Fall time	t_f	—	0.05	0.15		

● Electrical and optical characteristic curves

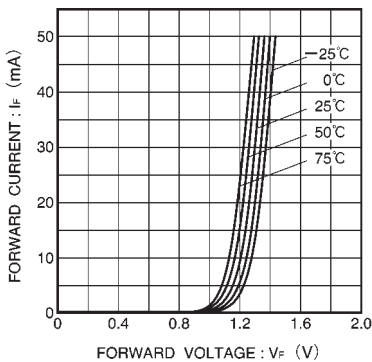


Fig.1 Forward current vs. forward voltage

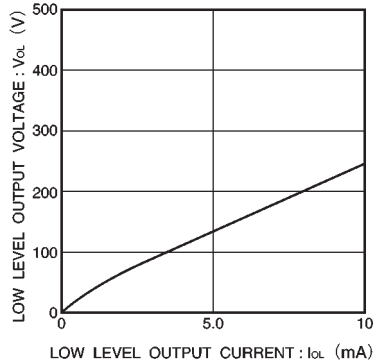


Fig.2 Low level output voltage vs. low level output current

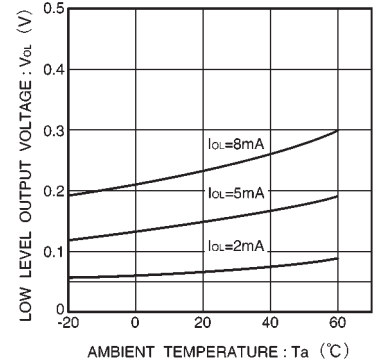


Fig.3 Low level output voltage vs. ambient temperature

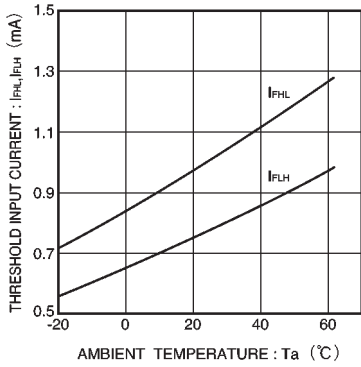


Fig.4 Threshold input current vs. ambient temperature

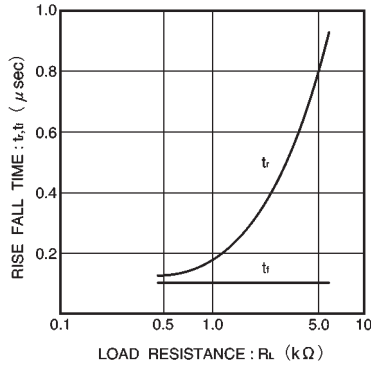


Fig.5 Response time vs. load resistance

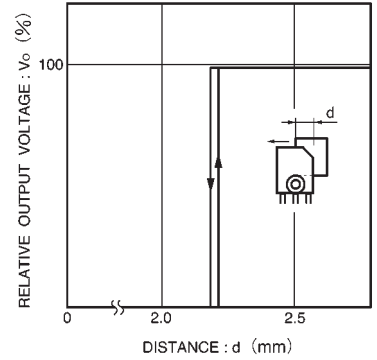


Fig.6 Relative output voltage vs. distance characteristics

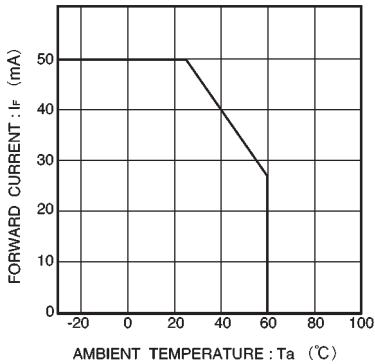


Fig.7 Forward current falloff

● Response time measurement circuit

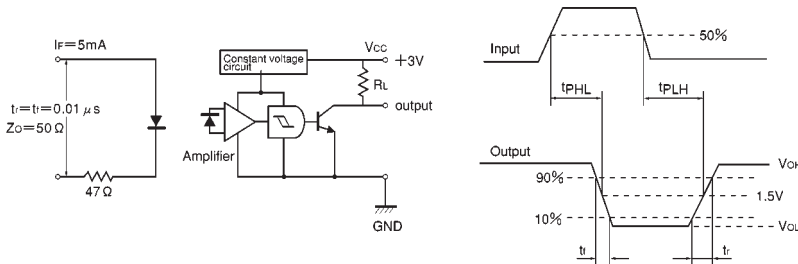


Fig.8