

# Photointerrupter double-layer mold type

## RPI-1133

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

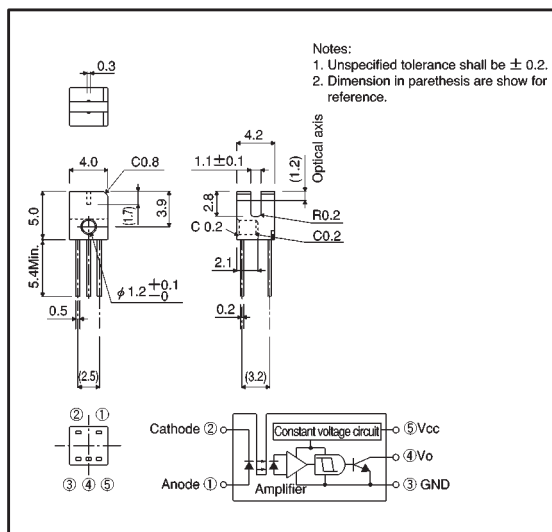
### ●Applications

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 <sub>F</sub>	—	1.1	1.3	V	I <sub>F</sub> =10mA	
	Reverse current	I <sub>R</sub>	—	—	10	μA	V <sub>R</sub> =5V	
Output characteristics	Power supply voltage	V <sub>CC</sub>	2.0	—	7.0	V	—	
	Output low level voltage	V <sub>OL</sub>	—	0.08	0.35	V	V <sub>CC</sub> =3V, I <sub>OL</sub> =2mA	
	Output high level voltage	V <sub>OH</sub>	2.8	—	3.0	V	V <sub>CC</sub> =3V, I <sub>F</sub> =0mA	
	Low level power supply current	I <sub>CCL</sub>	—	0.35	1.5	mA	V <sub>CC</sub> =3V, I <sub>F</sub> =5mA	
	High level power supply current	I <sub>CCH</sub>	—	0.35	1.5	mA	V <sub>CC</sub> =3V, I <sub>F</sub> =0mA	
Transfer characteristics	High → Low Threshold input current	I <sub>FHL</sub>	0.25	—	2.5	mA	V <sub>CC</sub> =3V	
	Hysteresis	I <sub>FLH</sub> / I <sub>FHL</sub>	0.4	0.7	0.9	—	V <sub>CC</sub> =3V	
	Response time	Low → High Propagation delay time	t <sub>PLH</sub>	—	22	66	μs	V <sub>CC</sub> =3V, I <sub>F</sub> =5mA, R <sub>L</sub> =100Ω
		High → Low Propagation delay time	t <sub>PHL</sub>	—	5.5	16		
		Rise time	t <sub>r</sub>	—	5	15		
		Fall time	t <sub>f</sub>	—	0.05	0.15		

## ● Electrical and optical characteristic curves

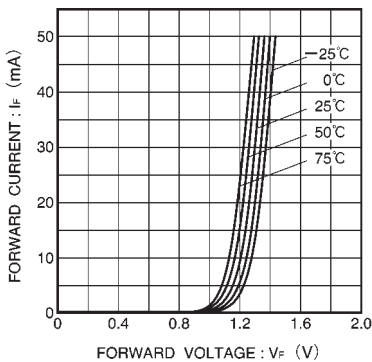


Fig.1 Forward current vs. forward voltage

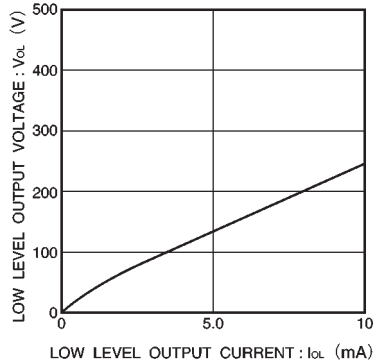


Fig.2 Low level output voltage vs. low level output current

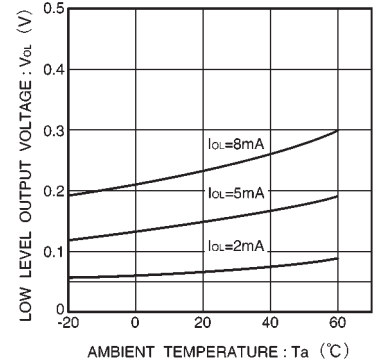


Fig.3 Low level output voltage vs. ambient temperature

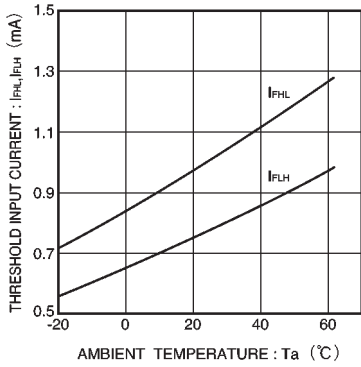


Fig.4 Threshold input current vs. ambient temperature

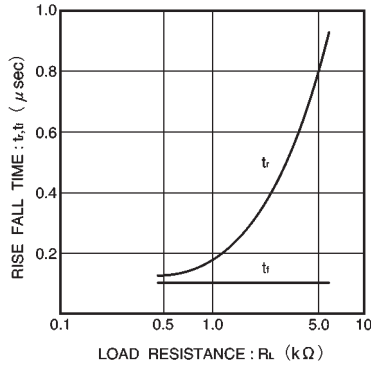


Fig.5 Response time vs. load resistance

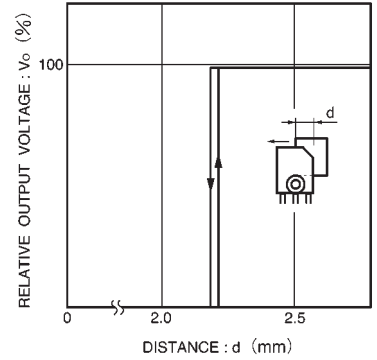


Fig.6 Relative output voltage vs. distance characteristics

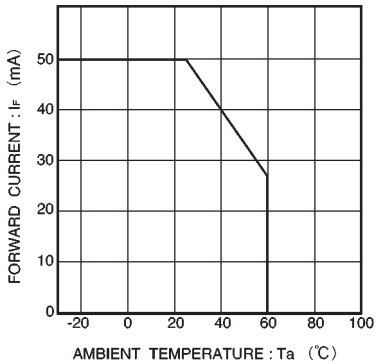


Fig.7 Forward current falloff

● Response time measurement circuit

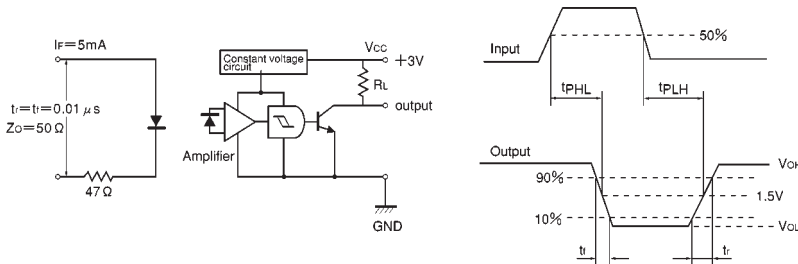


Fig.8