Photointerrupter, encased type

RPI-1391

The RPI-1391 is a transmissive-type photointerrupter that uses a photo IC. A positioning pin is provided on the external case to allow precise snap-in mounting on the PC board.

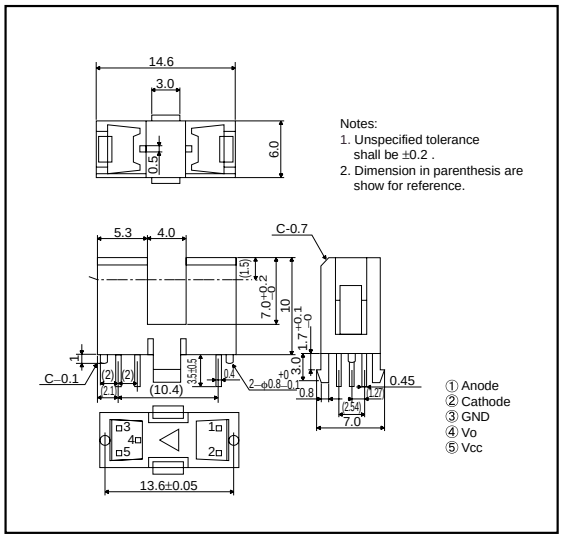
●Applications

Optical control equipment

●Features

1) Small slit width (0.5mm) for high precision.
2) Fast response.

●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-transistor)	Power supply voltage	V_{CC}	17	V
	Output voltage	I_O	20	mA
	Power dissipation	P_D	80	mW
Operating temperature		Topr	–20~+85	°C
Storage temperature		Tstg	–40~+100	°C

●Electrical and optical characteristics (Ta=25°C)

Parameter			Symbol	Min.	Typ.	Max.	Unit	Conditions
Input characteristics	Forward voltage		V_F	–	1.3	1.6	V	I_F=50mA
	Reverse current		I_R	–	–	10	μA	V_R=5V
Output characteristics	Power supply voltage		V_{CC}	4.5	5	17	V	–
	Output low level voltage		V_{OL}	–	0.14	0.4	V	V_{CC}=5V, I_{OL}=16mA
	Output high level voltage		V_{OH}	3.5	–	–	V	V_{CC}=5V, R_L=1kΩ
	Low level power supply current		I_{CCL}	–	1.8	5.0	mA	V_{CC}=5V
	High level power supply current		I_{CCH}	–	1.7	3.0	mA	V_{CC}=5V
Transfer characteristics	Low → High Threshold input current		I_{FLH}	–	1.3	5.0	mA	V_{CC}=5V
	Hysteresis		I_{FHL} / I_{FLH}	–	0.7	–	–	V_{CC}=5V
	Response time	Low → High Propagation delay time	t_{PLH}	–	1.6	–	μs	V_{CC}=5V, I_F=10mA, R_L=680Ω
		High → Low Propagation delay time	t_{PHL}	–	2.2	–		
		Rise time	t_r	–	0.28	–		
		Fall time	t_f	–	0.12	–		

●Electrical and optical characteristic curves

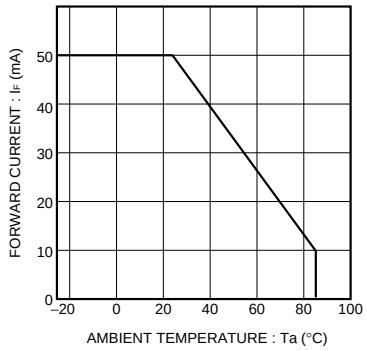


Fig.1 Forward current falloff

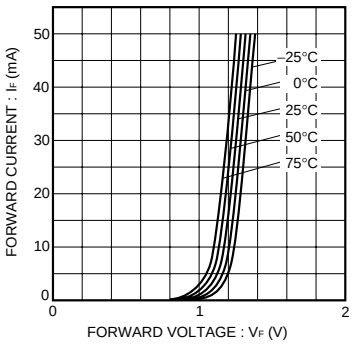


Fig.2 Forward current vs. forward voltage

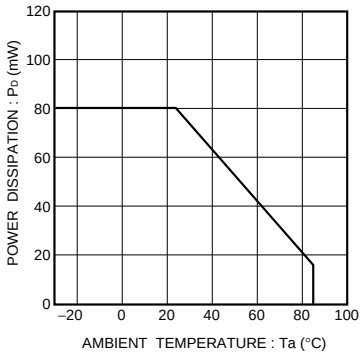


Fig.3 Power dissipation vs. ambient temperature

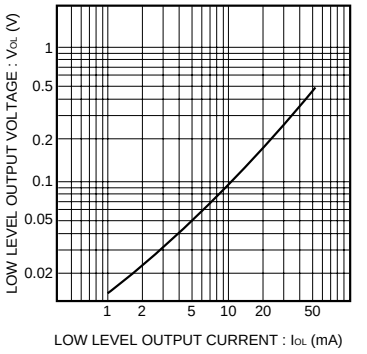


Fig.4 Low level output voltage vs. low level output current

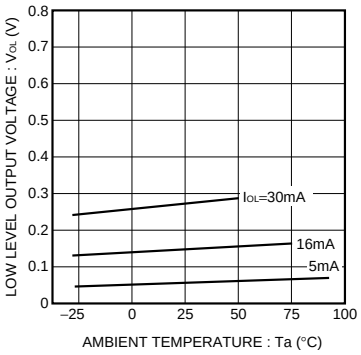


Fig.5 Low level output voltage vs. ambient temperature

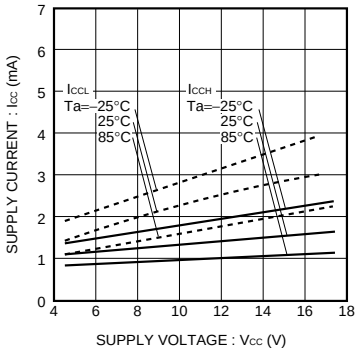


Fig.6 Supply current vs. supply voltage

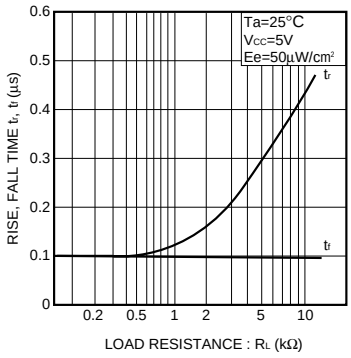


Fig.7 Rise and fall time vs. load resistance

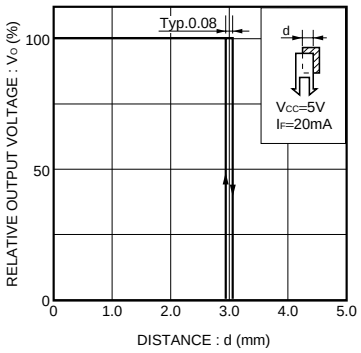
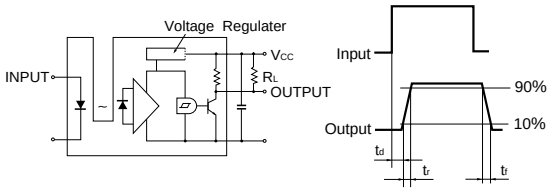


Fig.8 Relative output voltage vs. distance



t_d : Delay time
t_r : Rise time (time for output current to rise from 10% to 90% of peak current)
t_f : Fall time (time for output current to fall from 90% to 10% of peak current)

Fig.9 Response time measurement circuit