

GP1A57HR

Wide Gap Type OPIC Photointerrupter

■ Features

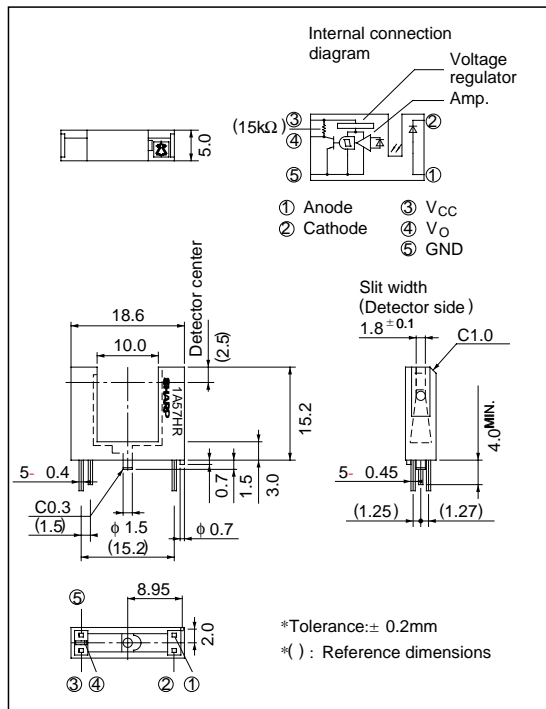
1. Wide gap between LED and detector (10mm)
2. High accuracy mounting type with positioning pin
3. Built-in schmidt-trigger circuit
4. PWB mounting type package

■ Applications

1. Cameras, video cameras
2. OA equipmet, such as copiers etc.
3. Facsimiles

■ Outline Dimensions

(Unit : mm)



**"OPIC" (Optical IC) is a trademark of the SHARP Corporation.
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Absolute Maximum Ratings

(T_a = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	*1 Peak forward current	I _{FM}	1	A
	Reverse voltage	V _R	6	V
	Power dissipation	P	75	mW
Output	Supply voltage	V _{CC}	- 0.5 to + 17	V
	Output current	I _O	50	mA
	Power dissipation	P _O	250	mW
Operating temperature		T _{opr}	- 25 to + 85	°C
Storage temperature		T _{stg}	- 40 to + 100	°C
*2 Soldering temperature		T _{sol}	260	°C

*1 Pulse width <= 100 μs, Duty ratio = 0.01

*2 For 5 seconds

Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F = 7\text{mA}$	-	1.1	1.4	V	
	Reverse current	I_R	$V_R = 3\text{V}$	-	-	10.0	μA	
Output	Operating supply voltage	V_{CC}		4.5	-	17.0	V	
	Low level output voltage	V_{OL}	$V_{CC} = 5\text{V}, I_F = 0, I_{OL} = 16\text{mA}$	-	0.15	0.4	V	
	High level output voltage	V_{OH}	$V_{CC} = 5\text{V}, I_F = 7\text{mA}$	4.9	-	-	V	
	Low level supply current	I_{CCL}	$V_{CC} = 5\text{V}, I_F = 0$	-	1.7	3.8	mA	
	High level supply current	I_{CCH}	$V_{CC} = 5\text{V}, I_F = 7\text{mA}$	-	0.7	2.2	mA	
	Transfer characteristics	^{*3} “Low→High” threshold input current	I_{FLH}	$V_{CC} = 5\text{V}$	-	1.0	7.0	mA
^{*4} Hysteresis		I_{FHL}/I_{FLH}	$V_{CC} = 5\text{V}$	0.55	0.75	0.95	-	
Response time		“Low→High” propagation delay time	t_{PLH}	$V_{CC} = 5\text{V}, I_F = 7\text{mA}$ $R_L = 280\Omega$	-	3.0	9.0	μs
		“High→Low” propagation delay time	t_{PHL}		-	5.0	15.0	
		Rise time	t_r		-	0.1	0.5	
		Fall time	t_f		-	0.05	0.5	

*3 I_{FLH} represents forward current when output changes from low to high.

*4 I_{FHL} represents forward current when output changes from high to low.

Hysteresis stands for I_{FHL}/I_{FLH} .

Fig. 1 Forward Current vs. Ambient Temperature

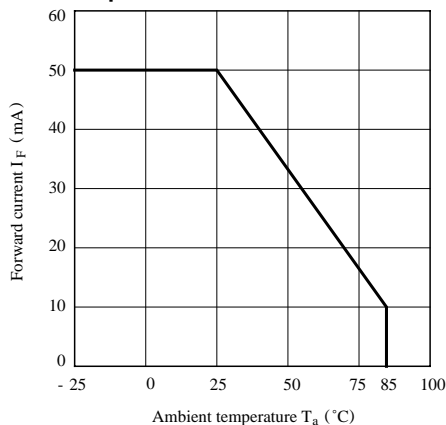


Fig. 2 Output Power Dissipation vs. Ambient Temperature

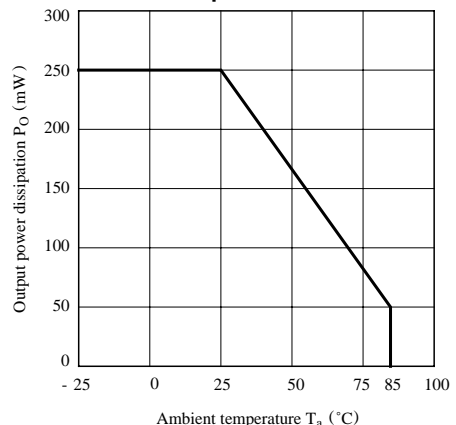


Fig. 3 Low Level Output Current vs. Ambient Temperature

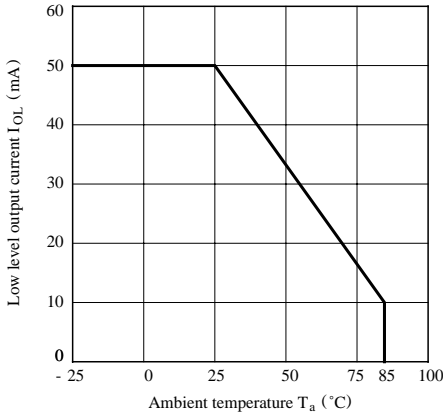


Fig. 4 Forward Current vs. Forward Voltage

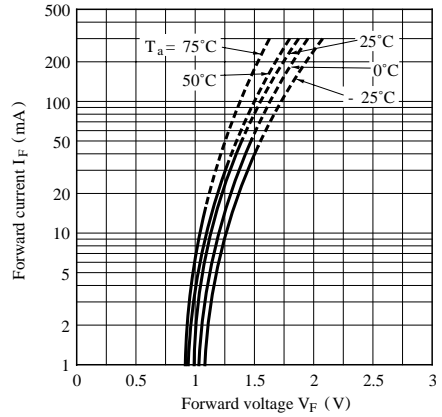


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

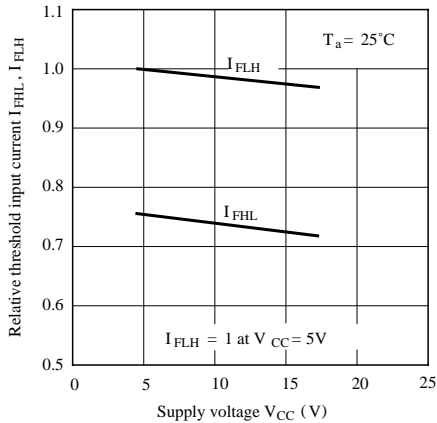


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

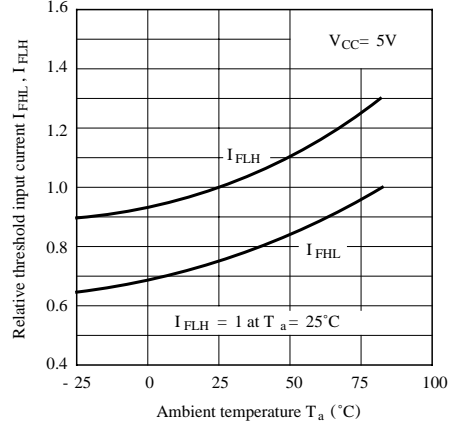


Fig. 7 Low Level Output Voltage vs. Low Level Output Current

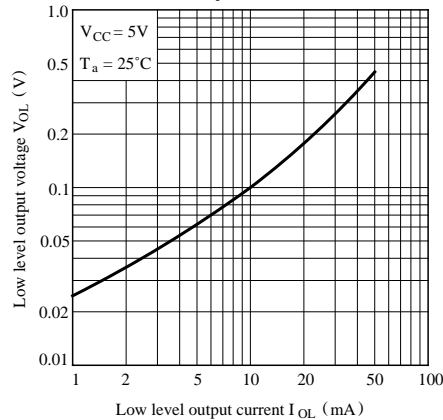


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

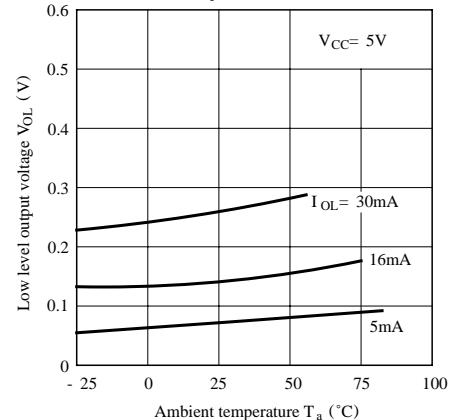


Fig. 9 Supply Current vs. Ambient Temperature

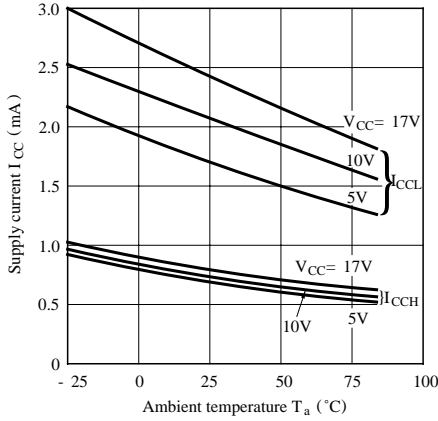


Fig.10 Propagation Delay Time vs. Forward Current

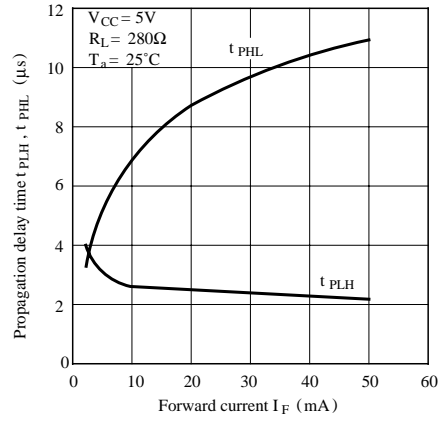
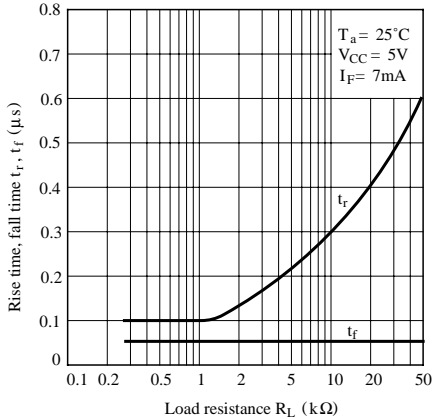
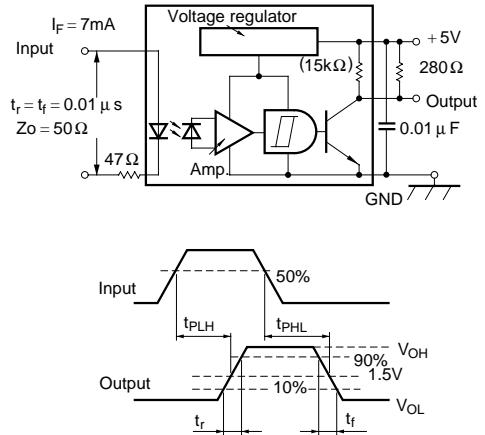


Fig.11 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time



■ Precautions for Use

- (1) In case of cleaning, use only the following type of cleaning solvent.
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
- (2) In order to stabilize power supply line, connect a by-pass capacitor of more than 0.01 µF between Vcc and GND near the device.
- (3) As for other general cautions, refer to the chapter “Precautions for Use”.



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