

GP1A58HR

OPIC Photointerrupter

■ Features

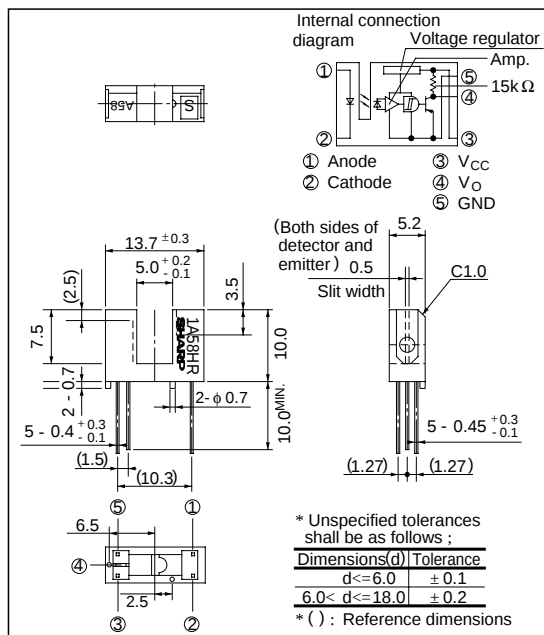
1. High sensing accuracy (Slit width: 0.5mm)
2. PWB mounting type

■ Applications

1. OA equipment such as printers, facsimiles, etc.
2. VCRs

■ 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

($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1Peak 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	mA
	Output current	I_O	50	mA
	Power dissipation	P_O	250	mW
Operating temperature		T_{opr}	- 25 to + 85	°C
Storage temperature		T_{sig}	- 40 to + 100	°C
*2Soldering temperature		T_{sol}	260	°C

*1 Pulse width $\leq$ 100 μ s, 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	$I_F = 8\text{mA}$	-	1.14	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}	$V_{CC} = 5\text{V}, I_F = 0\text{mA}, I_{OL} = 16\text{mA}$	-	0.15	0.4	V
	High level output voltage	V_{OH}	$V_{CC} = 5\text{V}, I_F = 8\text{mA}$	4.9	-	-	V
	Low level supply current	I_{CCL}	$V_{CC} = 5\text{V}, I_F = 0\text{mA}$	-	1.7	3.8	mA
	High level supply current	I_{CCH}	$V_{CC} = 5\text{V}, I_F = 8\text{mA}$	-	0.7	2.2	mA
	*1 "Low→High" threshold input current	I_{FLH}	$V_{CC} = 5\text{V}$	-	1.5	8.0	mA
Transfer characteristics	*2 Hysteresis	I_{FHL} / I_{FLH}	$V_{CC} = 5\text{V}$	0.55	0.75	0.95	-
	Response time	"Low→High" propagation delay time	$V_{CE} = 5\text{V}, I_F = 8\text{mA}$ $R_L = 280\Omega$	-	3.0	9.0	μs
		"High→Low" propagation delay time		-	5.0	15.0	μs
		Rise time		-	0.1	0.5	μs
		Fall time		-	0.05	0.5	μs

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

Recommended Operating Conditions

Parameter	Symbol	Operating temperature range	MIN.	MAX.	Unit
Output current	I_O	$T_a = 0 \text{ to } +70^\circ\text{C}$	-	16.0	mA
Forward current	I_F		10.0	20.0	mA

Fig. 1 Forward Current vs. Ambient Temperature

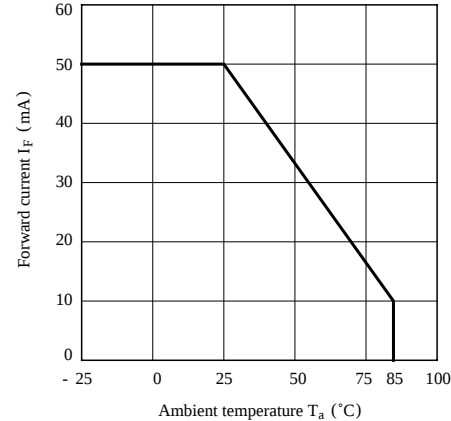


Fig. 2 Output Power Dissipation vs. Ambient Temperature

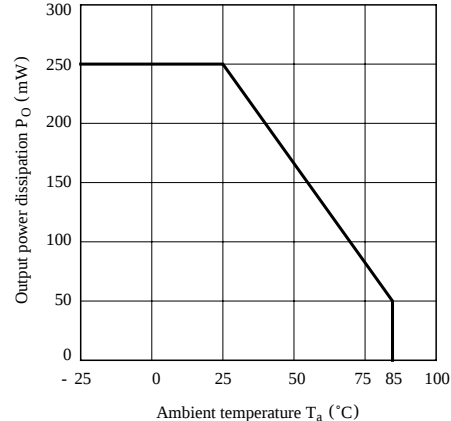


Fig. 3 Low Level Output Current vs. Ambient Temperature

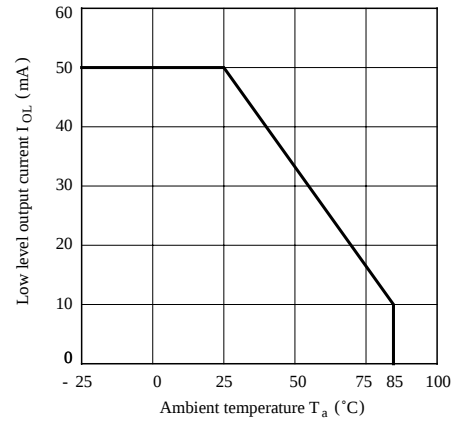


Fig. 4 Forward Current vs. Forward Voltage

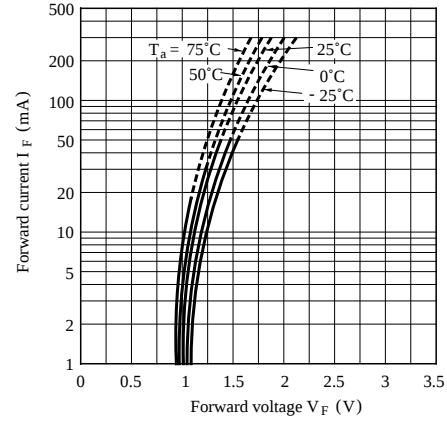


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

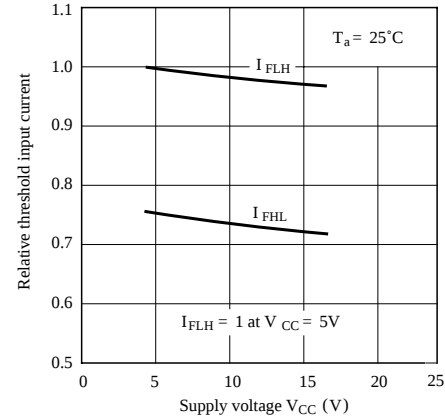


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

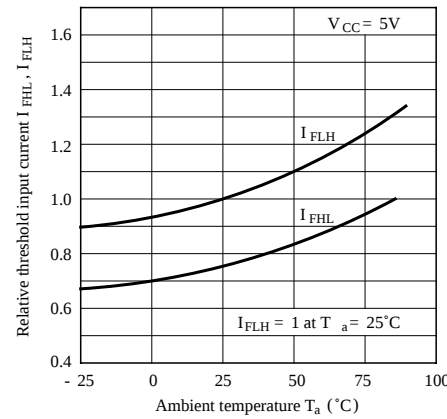


Fig. 7 Low Level Output Voltage vs. Low Level Output Current

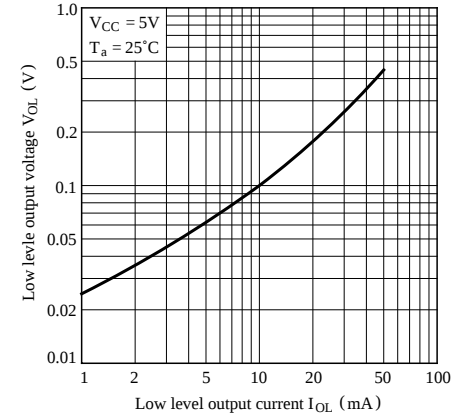


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

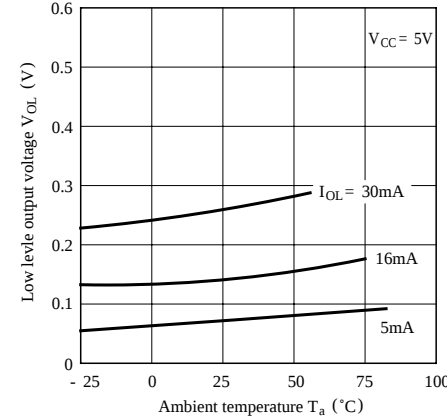


Fig. 9 Supply Current vs. Ambient Temperature

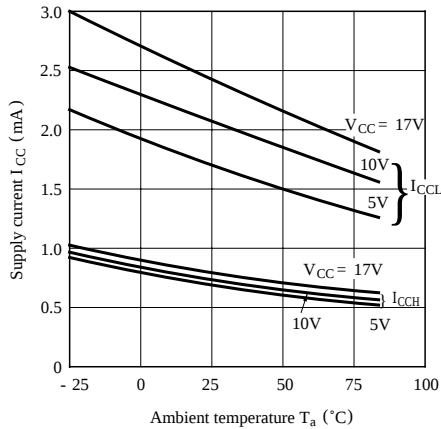


Fig.10 Propagation Delay Time vs. Forward Current

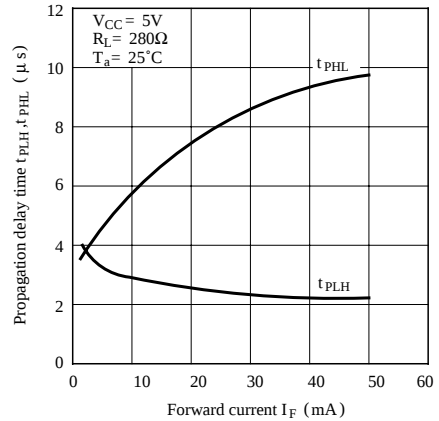
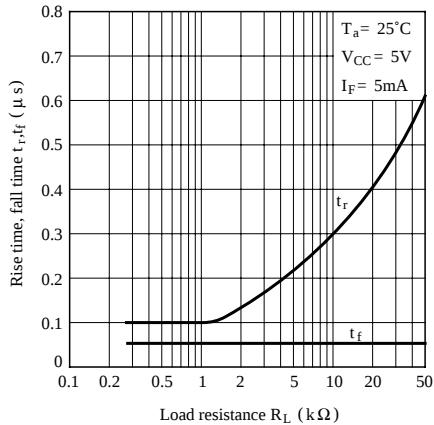
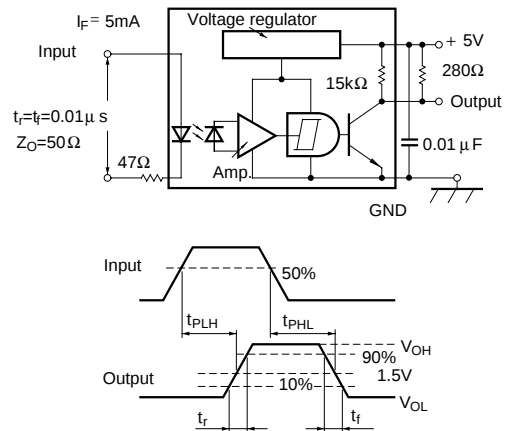


Fig.11 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time



■ Precautions for Use

- (1) In order to stabilize power supply line, connect a by-pass capacitor of more than $0.01\mu F$ between V_{CC} and GND near the device.
- (2) In case of cleaning, use only the following type of cleaning solvent.
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
- (3) As for other general cautions, refer to the chapter "Precautions for Use".

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