

# GP1A08 High Sensitivity Type OPIC Photointerrupter

T-41-73

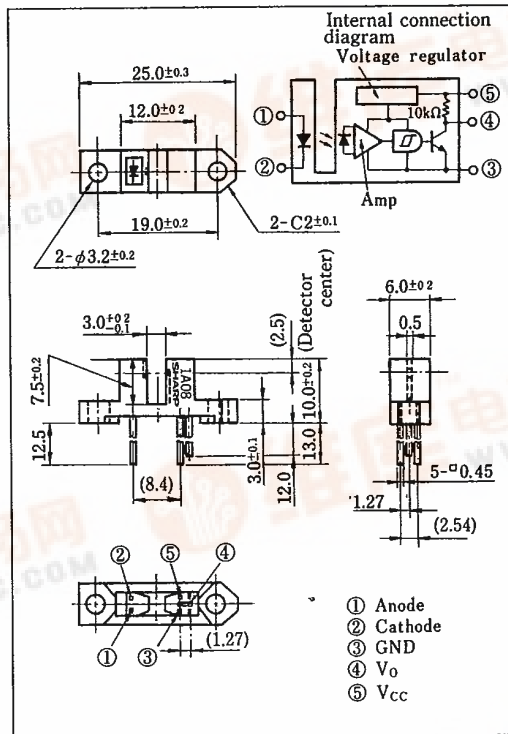
## Features

1. Low threshold input current ( $I_{FLH}$ : MAX. 5mA)
2. A wide range of operating supply voltage ( $V_{CC}$ : 4.5~17V)
3. High sensing accuracy (Slit width: 0.5mm)
4. LSTTL and TTL compatible output

## Applications

1. Copiers, printers, facsimiles
2. Optoelectronic switches, optoelectronic counters

## Outline Dimensions (Unit : mm)



\* OPIC is a registered trademark of Sharp and stands for Optical IC. It has a light detecting element and signal processing circuitry integrated onto a single chip.

## Absolute Maximum Ratings (Ta=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	$V_{CC}$	17 V
	Low level output current	$I_{OL}$	50 mA
	Power dissipation	$P_O$	250 mW
	Operating temperature	$T_{opr}$	-25 ~ +85 °C
	Storage temperature	$T_{stg}$	-40 ~ +100 °C
*2 Soldering temperature	$T_{sol}$	260 °C	

\*1 Pulse width ≤ 100μs, Duty ratio = 0.01

\*2 For 5 seconds



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(Ta=25°C)

Electro-optical Characteristics

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F=5mA$	—	1.1	1.4	V	
	Reverse current	$I_R$	$V_R=3V$	—	—	10	$\mu A$	
Output	Operating supply voltage	$V_{CC}$		4.5	—	17	V	
	Low level output voltage	$V_{OL}$	$I_{OL}=16mA, V_{CC}=5V$	—	0.15	0.4	V	
	High level output current	$V_{OH}$	$V_{CC}=5V, I_F=5mA$	4.9	—	—	V	
	Low level supply current	$I_{CCL}$	$V_{CC}=5V, I_F=0$	—	2.5	5	mA	
	High level supply current	$I_{CCH}$	$V_{CC}=5V, I_F=5mA$	—	1	3	mA	
Transfer characteristics	*3"Low→High" threshold input current	$I_{FLH}$	$V_{CC}=5V$	—	1	5	mA	
	**Hysteresis	$I_{FHL}/I_{FLH}$	$V_{CC}=5V$	0.55	0.75	0.95	—	
	Response time	"Low→High" propagation time	$t_{PLH}$	$V_{CC}=5V$ $I_F=5mA$ $R_L=280\Omega$	—	3	9	$\mu s$
		"High→Low" propagation time	$t_{PHL}$		—	5	15	
		Rise time	$t_r$		—	0.1	0.5	
		Fall time	$t_f$		—	0.05	0.5	

\*3  $I_{FLH}$  represents forward current when output goes from low to high  
\*4  $I_{FHL}$  represents forward current when output goes from high to low

(Precautions for Use)

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.



Fig. 1 Forward Current vs. Ambient Temperature

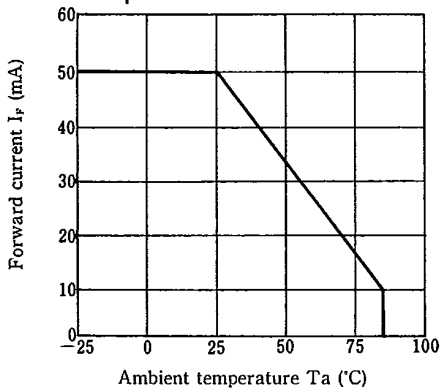


Fig. 2 Output Power Dissipation vs. Ambient Temperature

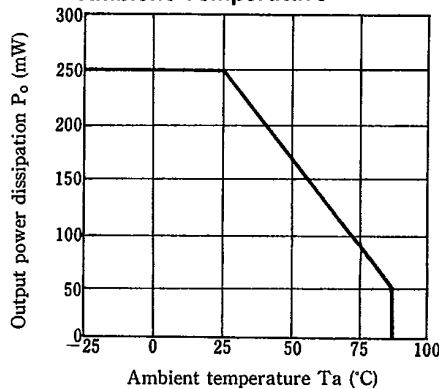


Fig. 3 Forward Current vs. Forward Voltage

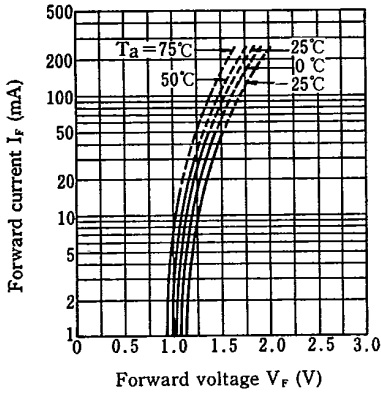


Fig. 4 Relative Threshold Input Current vs. Supply Voltage

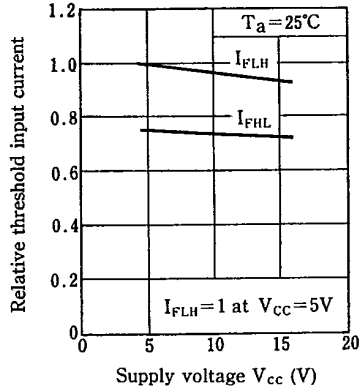


Fig. 5 Relative Threshold Input Current vs. Ambient Temperature

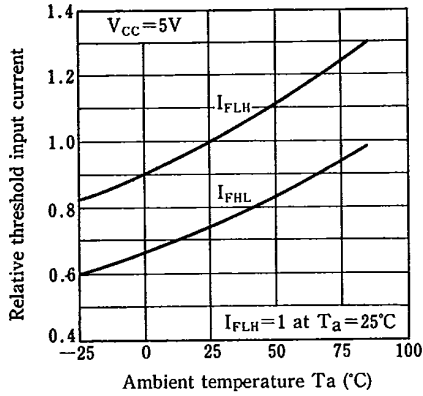


Fig. 6 Low Level Output Voltage vs. Low Level Output Current

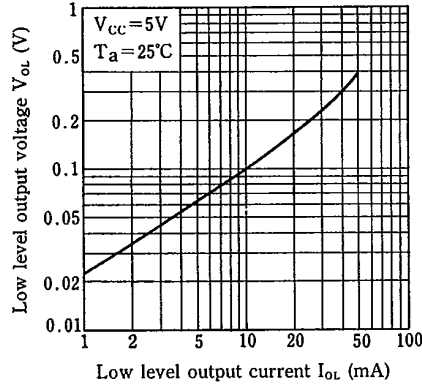


Fig. 7 Low Level Output Voltage vs. Ambient Temperature

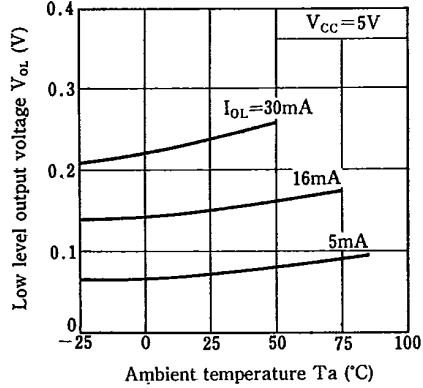
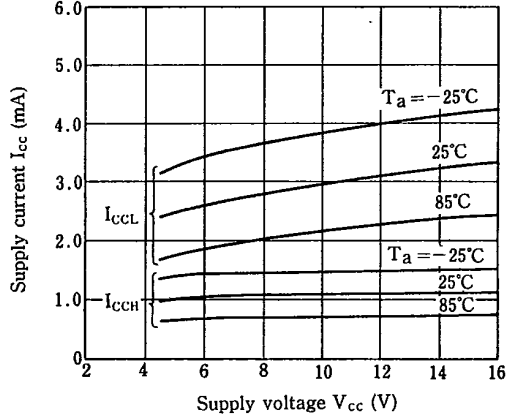


Fig. 8 Supply Current vs. Supply Voltage



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Fig. 9 Propagation Time vs. Forward Current

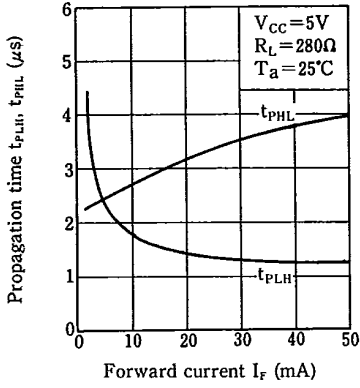
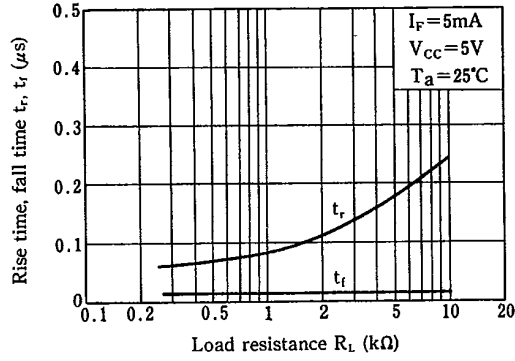


Fig. 10 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time

