

GP1A08 High Sensitivity Type OPIC Photointerrupter

T-41-73

Features

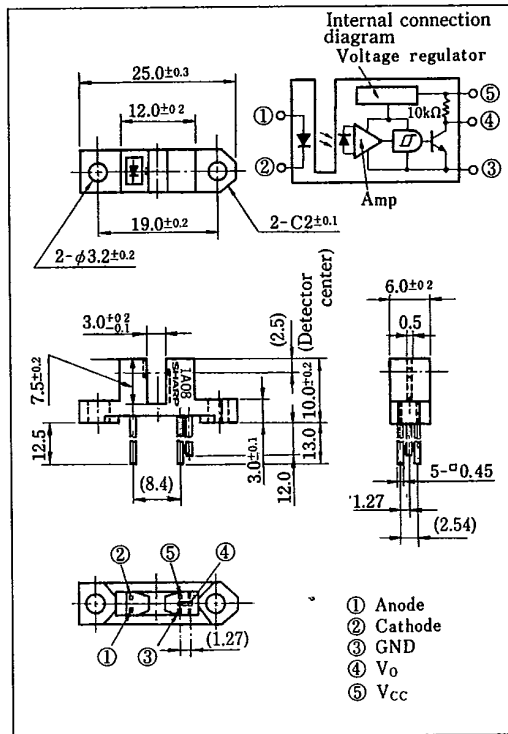
1. Low threshold input current (I_{FLH} : MAX. 5mA)
2. A wide range of operating supply voltage (V_{CC} : 4.5~17V)
3. High sensing accuracy (Slit width: 0.5mm)
4. LSTTL and TTL compatible output

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

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

	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	$^\circ\text{C}$
	Storage temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
	**2 Soldering temperature	T_{sol}	260	$^\circ\text{C}$

*1 Pulse width $\leq 100\mu\text{s}$, 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	μA	
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
	*4 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	μs
		"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

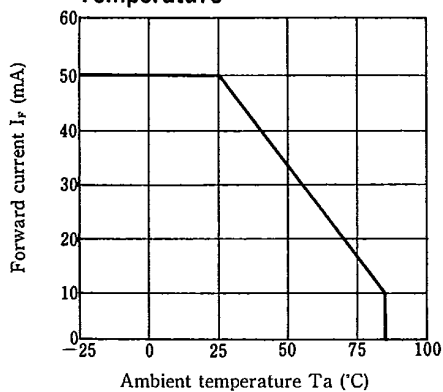


Fig. 2 Output Power Dissipation vs. Ambient Temperature

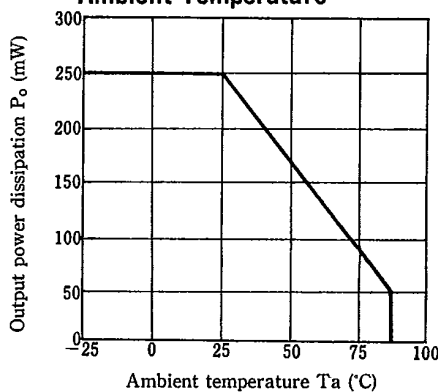


Fig. 3 Forward Current vs. Forward Voltage

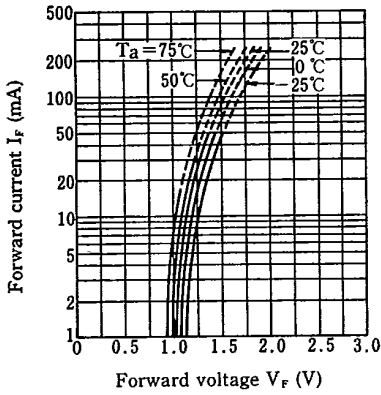


Fig. 4 Relative Threshold Input Current vs. Supply Voltage

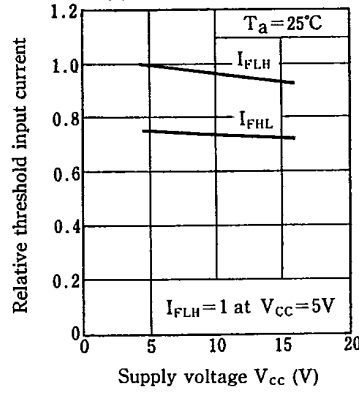


Fig. 5 Relative Threshold Input Current vs. Ambient Temperature

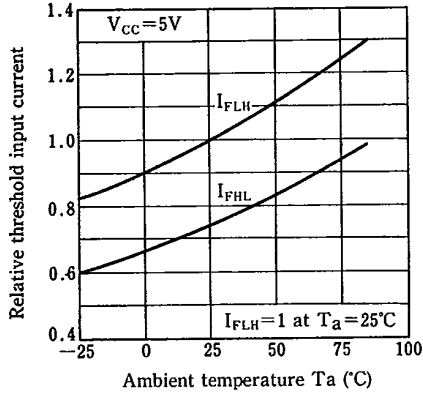


Fig. 6 Low Level Output Voltage vs. Low Level Output Current

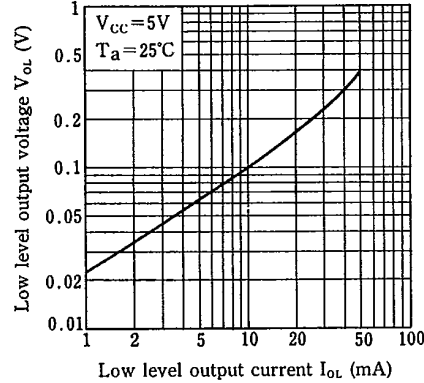


Fig. 7 Low Level Output Voltage vs. Ambient Temperature

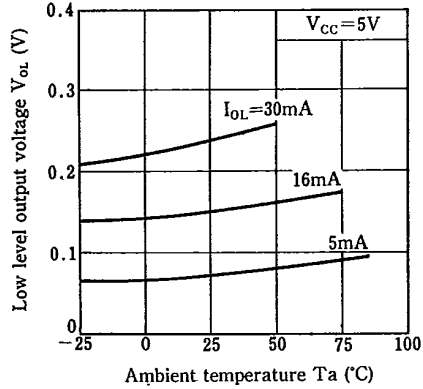
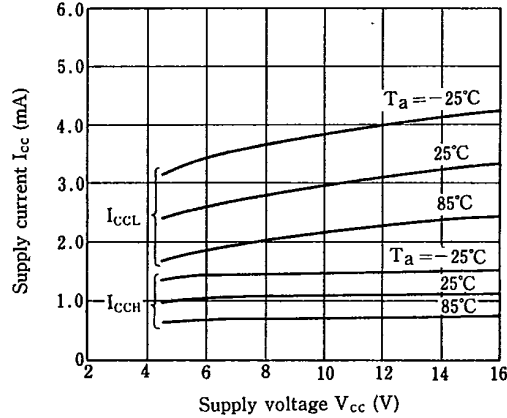


Fig. 8 Supply Current vs. Supply Voltage



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Fig. 9 Propagation Time vs. Forward Current

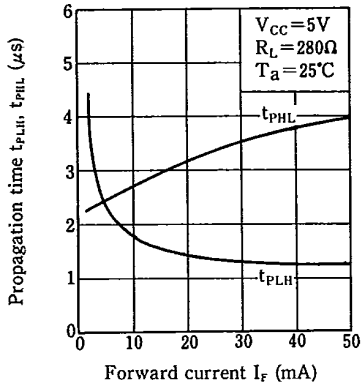
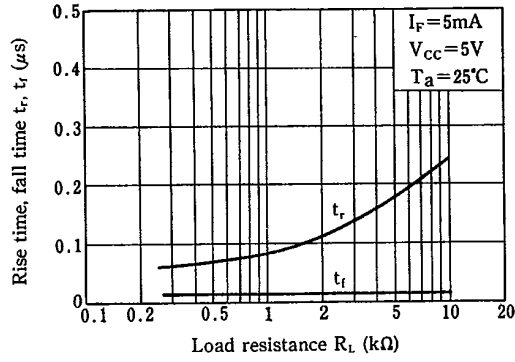
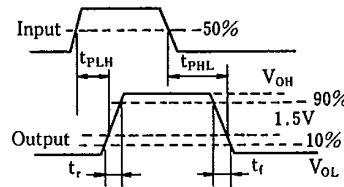
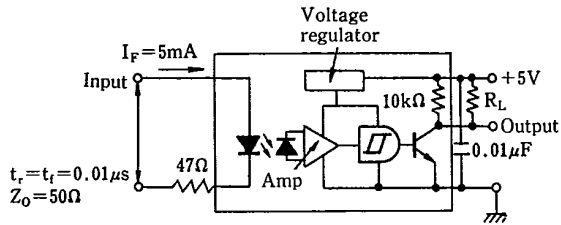


Fig. 10 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time



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