

GP1A20

OPIC Photointerrupter with cover Case

Features

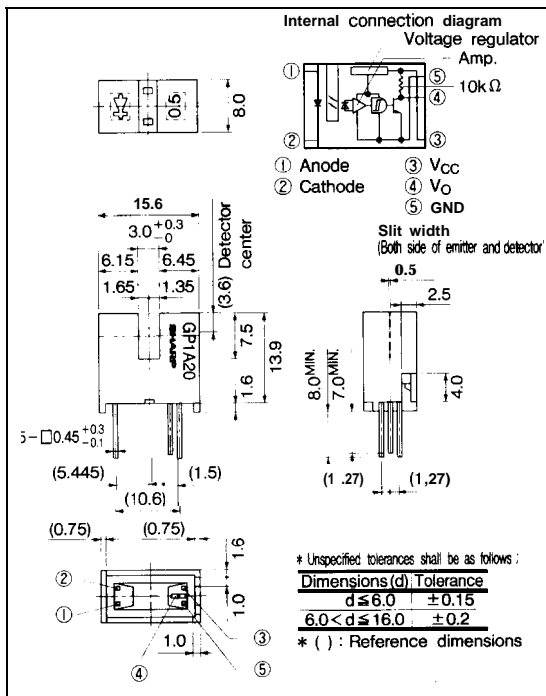
1. With cover case
2. High sensing accuracy (Slit width: 0.5mm)
3. Operating supply voltage V_{CC} : 4.5 to 17V
4. PWB mounting type package

Applications

1. Printers
2. Ticket vending machines

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
	*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	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +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

Electro-optical Characteristics

(Ta = 25°C)

		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V _F	I _F = 10mA	—	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, I _F = 0	—	0.15	0.4	V	
	High level output voltage	V _{OH}	V _{CC} = 5V, I _F = 10mA	4.9	—	—	v	
	Low level supply current	I _{OCL}	V _{CC} = 5V, I _F = 0	—	2.5	5.0	mA	
	High level supply current	I _{CCH}	V _{CC} = 5V, I _F = 10mA	—	Lo	3.6	mA	
Transfer characteristics	*3 "Low → High" threshold input Current	I _{FLH}	V _{CC} = 5V	—	2.0	9.5	μA	
	*4 Hysteresis	I _{FHL} /I _{FLH}	V _{CC} = 5V	0.55	0.75	0.95		
	Response time	"Low → High" propagation delay time	t _{PLH}	V _{CC} = 5V I _F = 10mA R _L = 280 Ω	—	3	9	μs
		"High → Low" propagation delay 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 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}.

Recommended Operating Conditions

Parameter	Symbol	Operating temperature	MIN.	MAX	Unit
Low level output current	I _{OL}	Ta = 0 to +70°C	—	16	mA
Forward current	I _F		10	20	mA

Fig. 1 Forward Current vs. Ambient Temperature

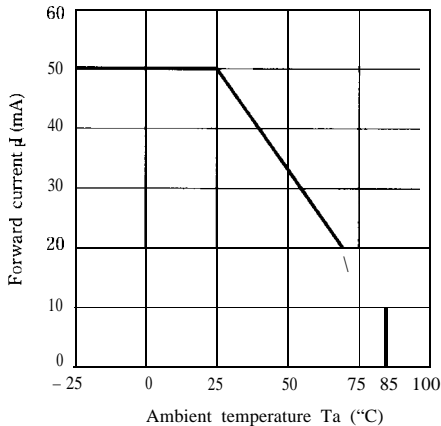


Fig. 2 Output Power Dissipation vs. Ambient Temperature

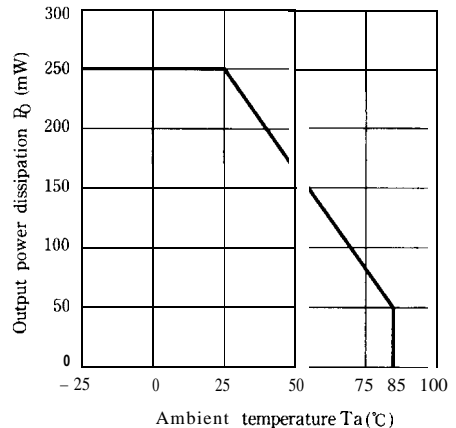


Fig. 3 Low Level Output Current vs. Ambient Temperature

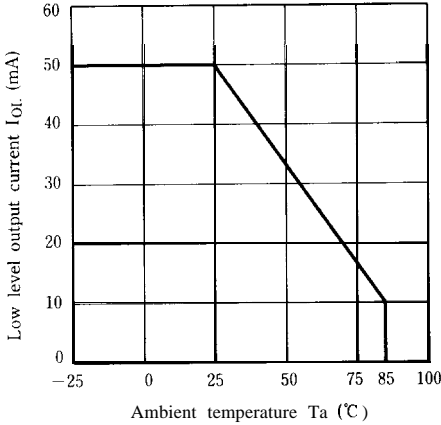


Fig. 4 Forward Current vs. Forward Voltage

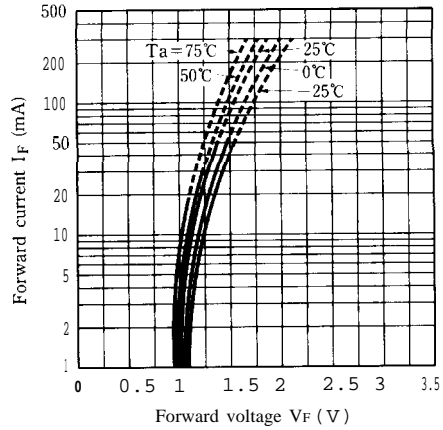


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

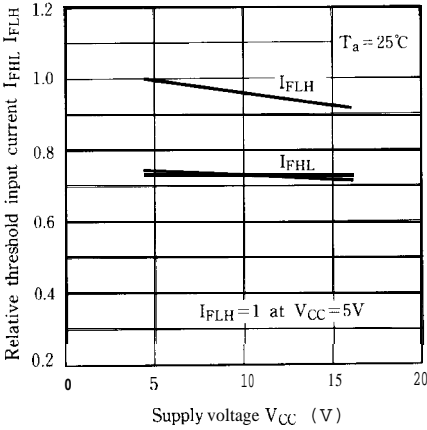


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

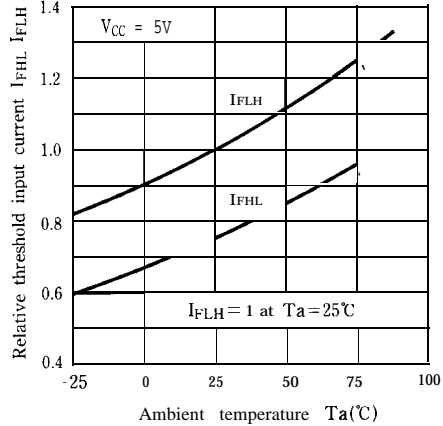


Fig. 7 Low Level Output Voltage vs. Low Level output Current

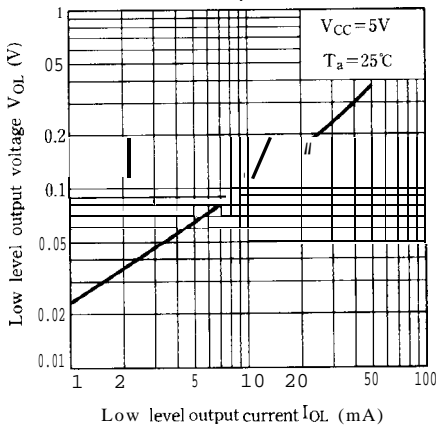


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

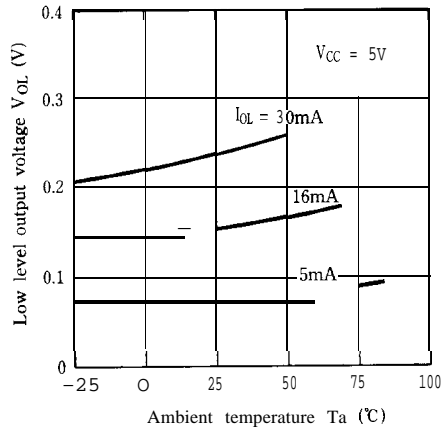


Fig. 9 Supply Current vs. Supply Voltage

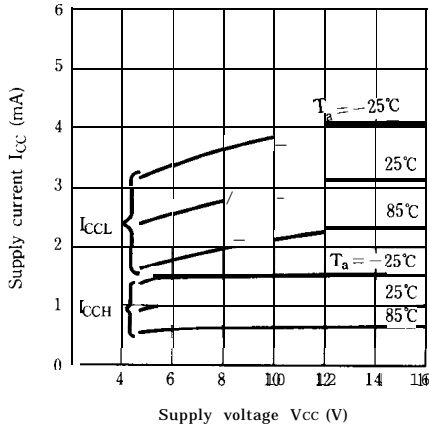


Fig.10 Propagation Delay Time vs. Forward Current

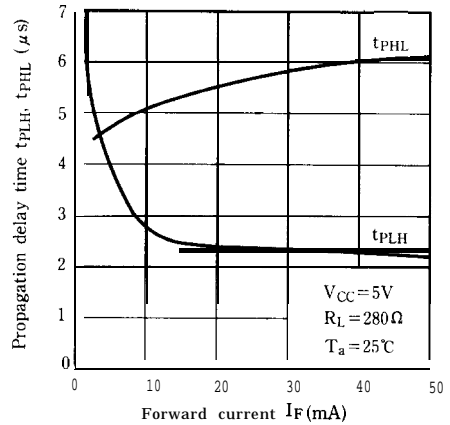
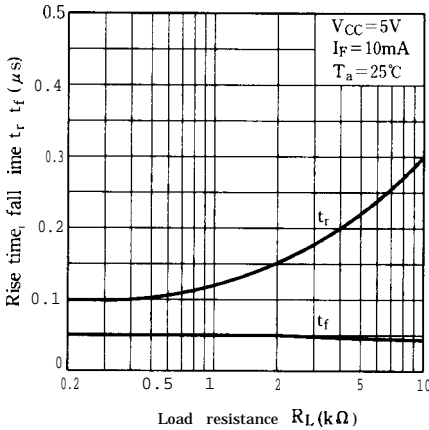
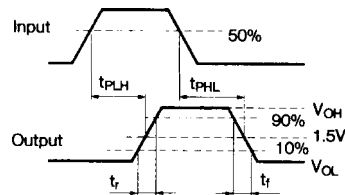
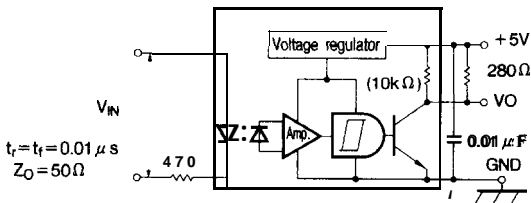


Fig.11 Rise Time, Fall Time vs. Load Resistance



Test Circuit for Response Time



Preca* for use

- (1) In this product, flux in the cleaning solvent may remain inside the slit of holder. It sometimes causes lower output;therefore, cleaning is prohibited.
- (1) 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” (Page 78 to 93).