

# GP1A68L

## Low Voltage Driven Low Current Consumption Type OPIC Photointerrupter

### ■ Features

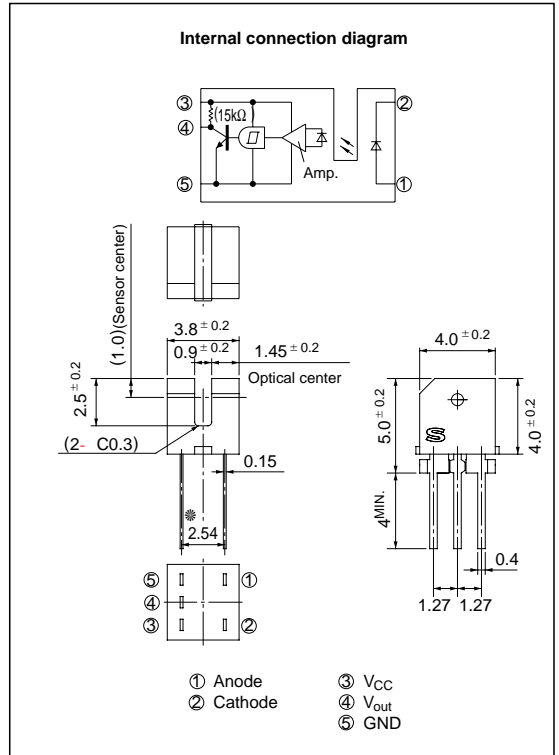
1. Ultra-compact type (3.8 x 4.0 x 4.0 mm)
2. C-MOS and microcomputer compatible
3. Low voltage driven, low current consumption  
(Operating supply voltage : 1.4 to 7.0V,  
Standby current consumption : MAX. 0.5mA)

### ■ Applications

1. Cameras
2. Floppy disk drives

### ■ Outline Dimensions

(Unit : mm)

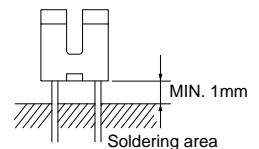


\* "OPIC" (Optical IC) is a trademark of the SHARP Corporation.  
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

### ■ Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	75	mW
Output	Supply voltage	V <sub>CC</sub>	7	V
	Low level output current	I <sub>OL</sub>	2	mA
	Power dissipation	P <sub>O</sub>	80	mW
Operating temperature		T <sub>opr</sub>	- 25 to + 85	°C
Storage temperature		T <sub>sig</sub>	- 40 to + 100	°C
*1 Soldering temperature		T <sub>sol</sub>	260	°C



\*1 For 5 seconds

Electro-optical Characteristics

(Ta=25 °C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F = 5\text{mA}$	-	1.15	1.25	V	
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	10	$\mu\text{A}$	
Output	Operating supply voltage	$V_{CC}$	-	1.4	-	7.0	V	
	Low level output voltage	$V_{OL}$	$V_{CC} = 3\text{V}, I_{OL} = 1\text{mA}, I_F = 5\text{mA}$	-	0.1	0.4	V	
	High level output voltage	$V_{OH}$	$V_{CC} = 3\text{V}, I_F = 0$	2.9	-	-	V	
	Low level supply current	$I_{CCL}$	$V_{CC} = 3\text{V}, I_F = 5\text{mA}$	-	0.7	1.2	mA	
	High level supply current	$I_{CCH}$	$V_{CC} = 3\text{V}, I_F = 0$	-	0.3	0.5	mA	
	Transfer characteristics	*2 "High →Low" threshold input current	$I_{FHL}$	$V_{CC} = 3\text{V}$	-	0.9	2.5	mA
*3 Hysteresis		$I_{FLH} / I_{FHL}$	$V_{CC} = 3\text{V}$	0.55	0.8	0.95	-	
Response time		"Low →High" propagation delay time	$t_{PLH}$	$V_{CC} = 3\text{V}$ $I_F = 5\text{mA}$ $R_L = 3\text{k}\Omega$	-	10	30	$\mu\text{s}$
		"High→Low" propagation delay time	$t_{PHL}$		-	3.0	15	
		Rise time	$t_r$		-	0.6	3	
		Fall time	$t_f$		-	0.2	1.0	

\*2  $I_{FHL}$  represents forward current when output goes from "High" to "Low".

\*3 Hysteresis stands for  $I_{FLH}/I_{FHL}$ .

Test Circuit for Response Time

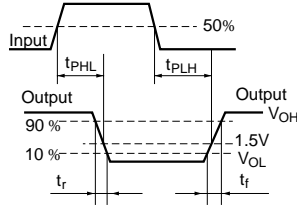
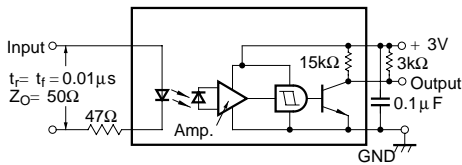


Fig. 1 Forward Current vs. Ambient Temperature

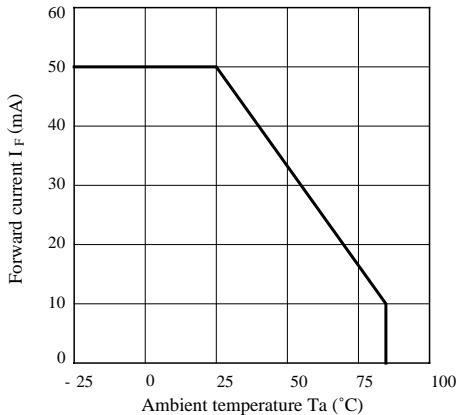
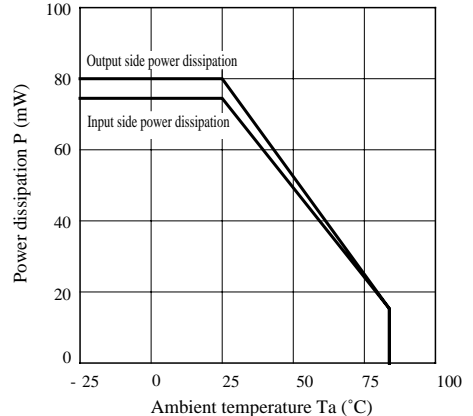
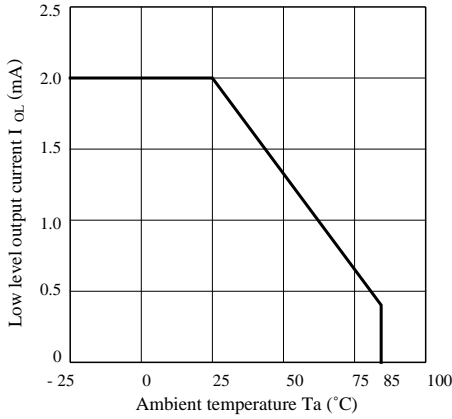


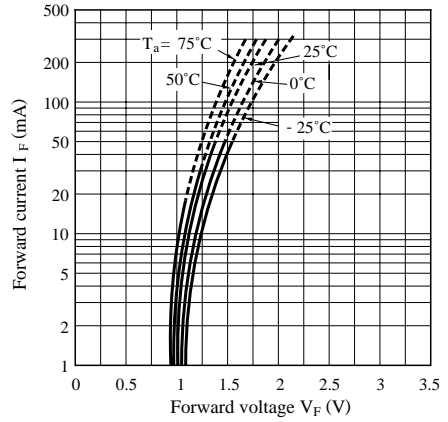
Fig. 2 Power Dissipation vs. Ambient Temperature



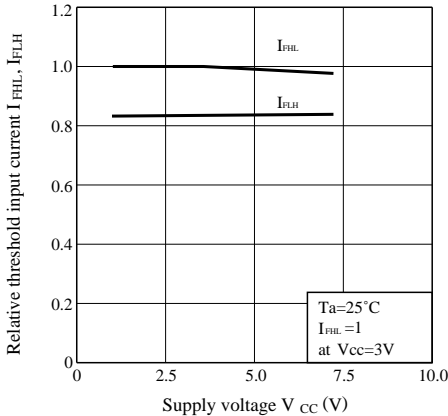
**Fig. 3 Low Level Output Current vs. Ambient Temperature**



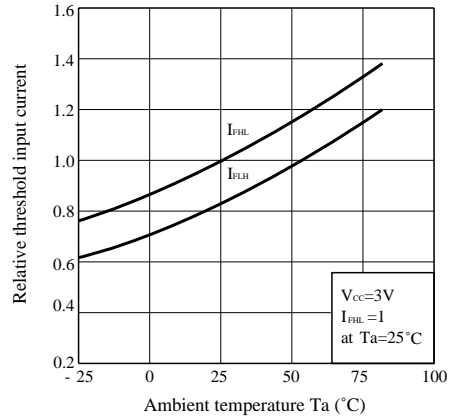
**Fig. 4 Forward Current vs. Forward Voltage**



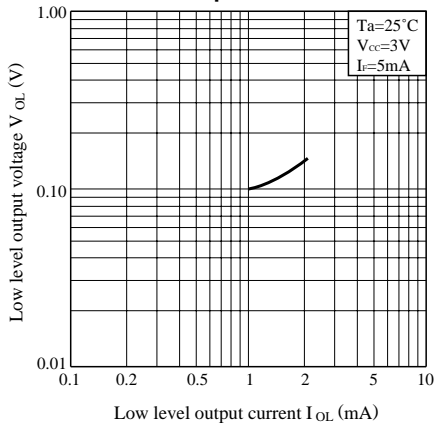
**Fig. 5 Relative Threshold Input Current vs. Supply Voltage**



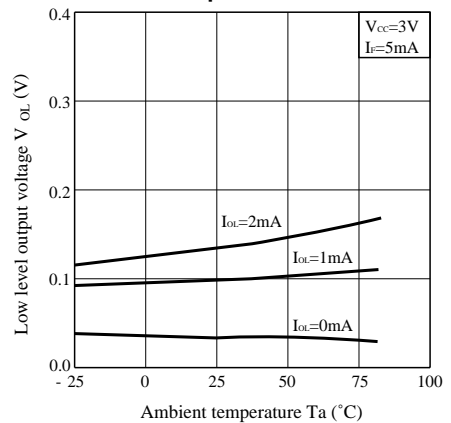
**Fig. 6 Relative Threshold Input Current vs. Ambient Temperature**



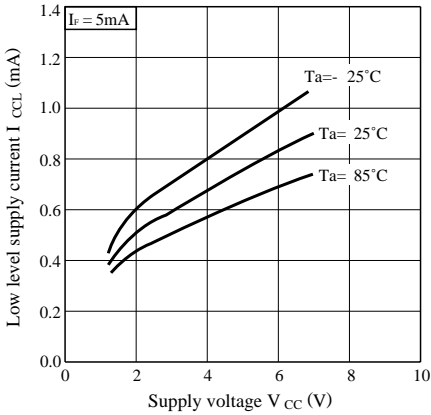
**Fig. 7 Low Level Output Voltage vs. Low Level Output Current**



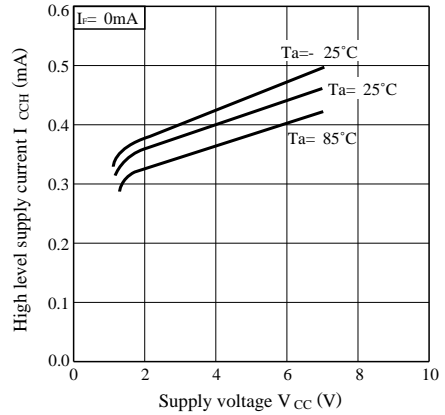
**Fig. 8 Low Level Output Voltage vs. Ambient Temperature**



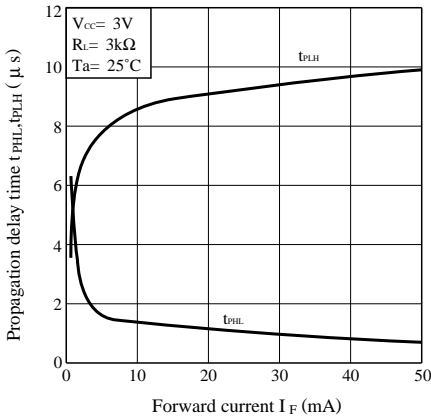
**Fig. 9 Low Level Supply Current vs. Supply Voltage**



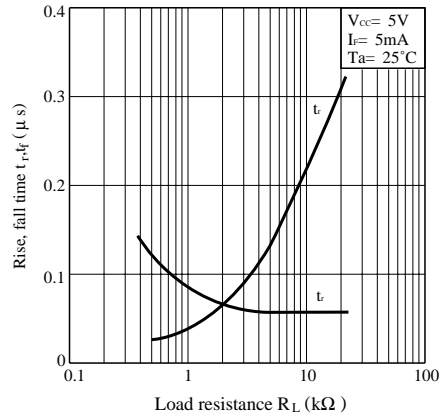
**Fig. 10 High Level Supply Current vs. Supply Voltage**



**Fig. 11 Propagation Delay Time vs. Forward Current**



**Fig. 12 Rise, Fall Time vs. Load Resistance**



**(Precautions for Operation)**

- 1) It is recommended that a by-pass capacitor of 0.1  $\mu F$  or more between  $V_{CC}$  and GND near the device in order to stabilize power supply line.
- 2) As for other general precautions, refer to the the chapter "Precautions for Use".