GP1A68L

Low Voltage Driven Low Current Consumption Type OPIC Photointerrupter

■ Features

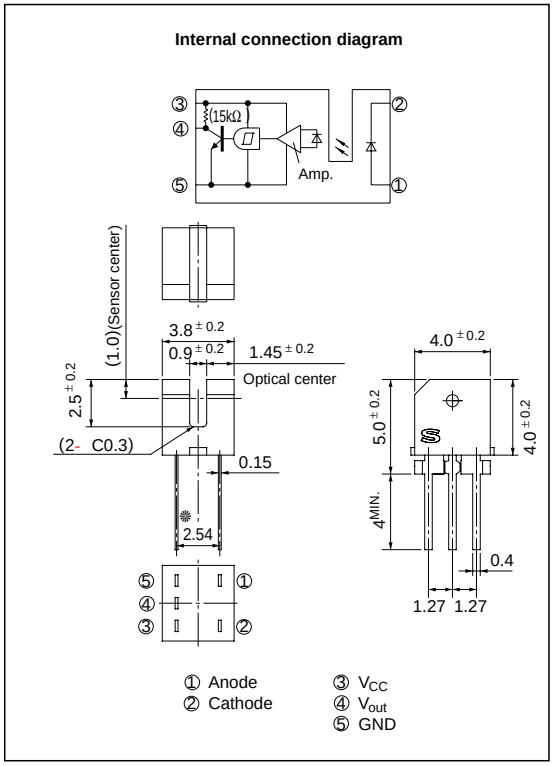
1. Ultra-compact type (3.8 x 4.0 x 4.0 mm)
2. C-MOS and microcomputer compatible
3. Low voltage driven, low current consumption
   (Operating supply voltage : 1.4 to 7.0V,
   Standby current consumption : MAX. 0.5mA)

■ Applications

1. Cameras
2. Floppy disk drives

■ Outline Dimensions

(Unit : mm)

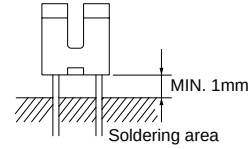


* "OPIC" (Optical IC) is a trademark of the SHARP Corporation.
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Absolute Maximum Ratings

(Ta=25˚C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Supply voltage	V_{CC}	7	V
	Low level output current	I_{OL}	2	mA
	Power dissipation	P_O	80	mW
Operating temperature		T_{opr}	- 25 to + 85	˚C
Storage temperature		T_{stg}	- 40 to + 100	˚C
*1Soldering temperature		T_{sol}	260	˚C



*1 For 5 seconds

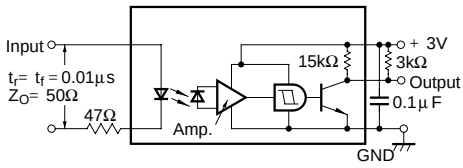
■ Electro-optical Characteristics

(Ta=25 ˚C)

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

*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



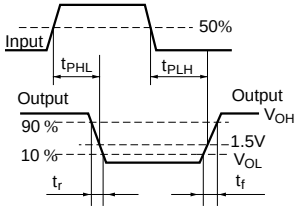


Fig. 1 Forward Current vs. Ambient Temperature

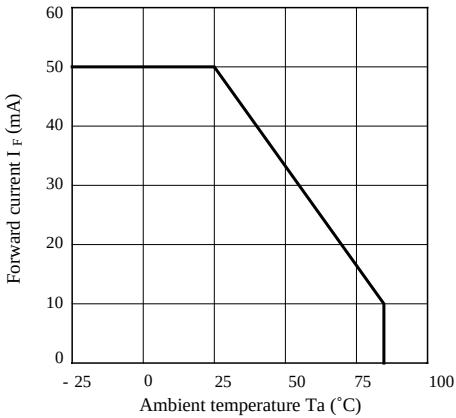


Fig. 2 Power Dissipation vs. Ambient Temperature

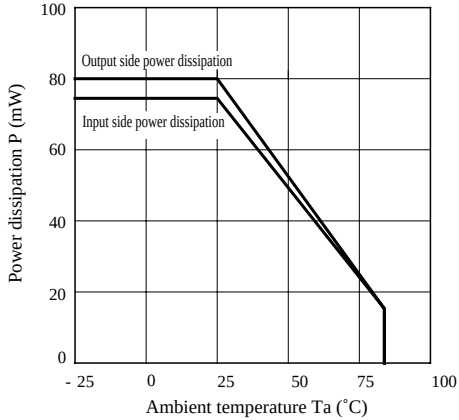


Fig. 3 Low Level Output Current vs. Ambient Temperature

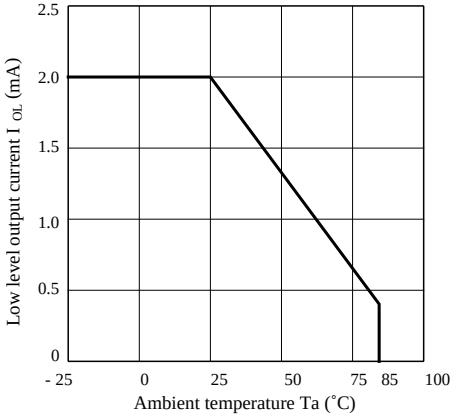


Fig. 4 Forward Current vs. Forward Voltage

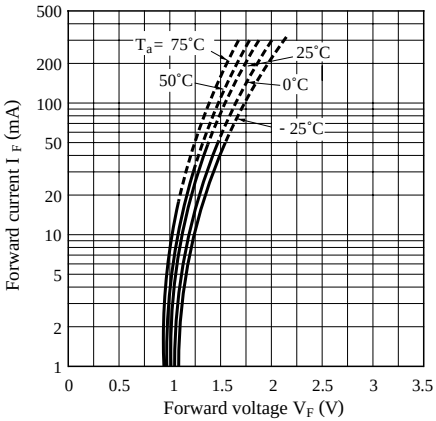


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

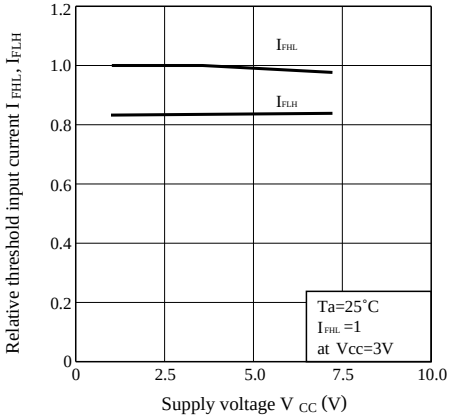


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

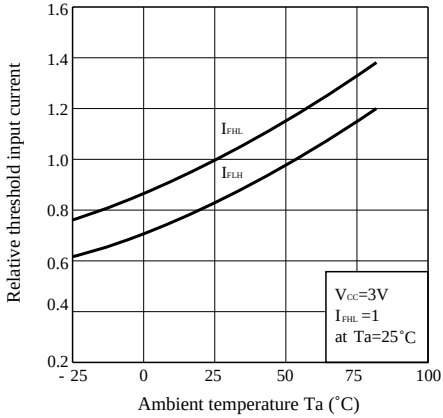


Fig. 7 Low Level Output Voltage vs. Low Level Output Current

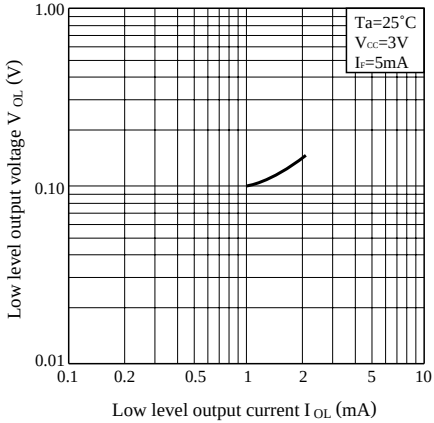


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

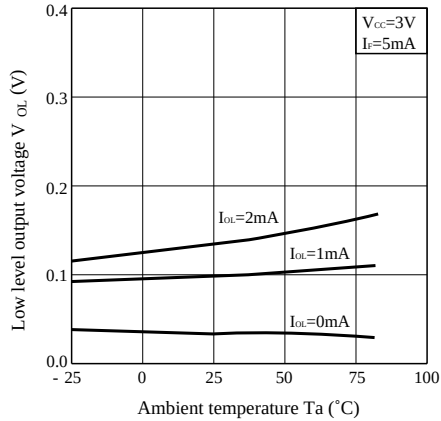


Fig. 9 Low Level Supply Current vs. Supply Voltage

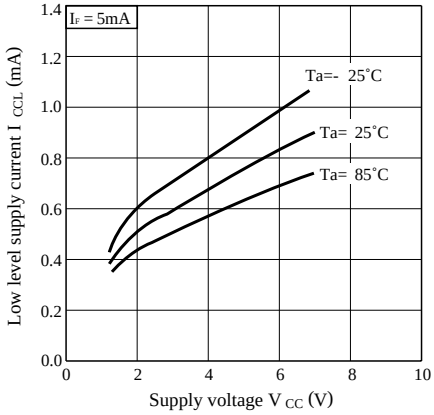


Fig. 10 High Level Supply Current vs. Supply Voltage

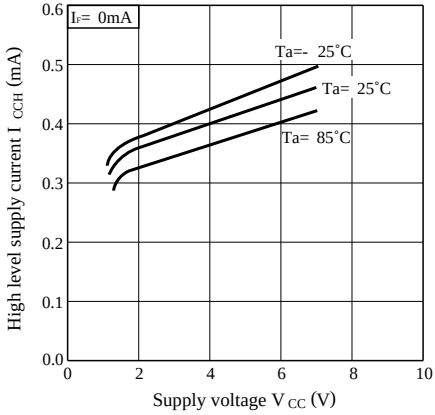


Fig. 11 Propagation Delay Time vs. Forward Current

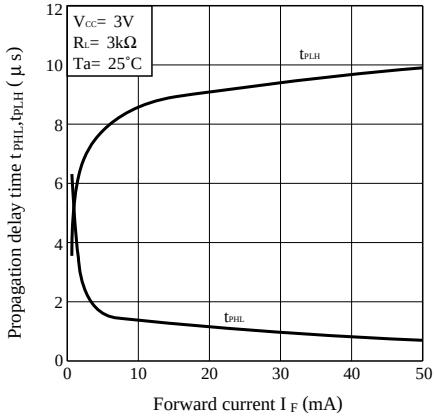
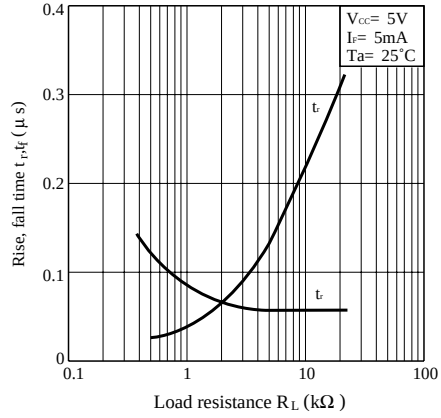


Fig. 12 Rise, Fall Time vs. Load Resistance



(Precautions for Operation)

1) It is recommended that a by-pass capacitor of 0.1 μF or more between Vcc 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".