GP1A68L

Low Voltage Driven Low Current Consumption Type OPIC Photointerrupter

■ Features

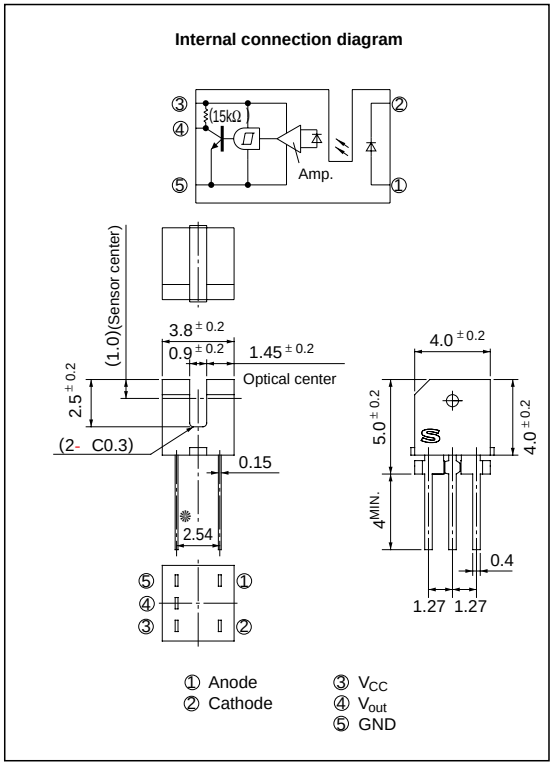
1. Ultra-compact type (3.8 x 4.0 x 4.0 mm)
2. C-MOS and microcomputer compatible
3. Low voltage driven, low current consumption
   (Operating supply voltage : 1.4 to 7.0V,
   Standby current consumption : MAX. 0.5mA)

■ Applications

1. Cameras
2. Floppy disk drives

■ Outline Dimensions

(Unit : mm)

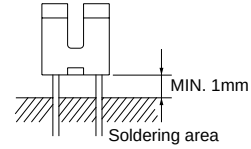


* "OPIC" (Optical IC) is a trademark of the SHARP Corporation.
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ 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

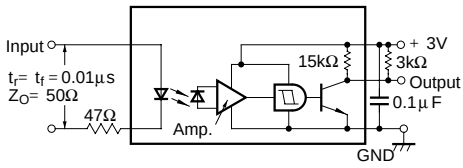
■ Electro-optical Characteristics

(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



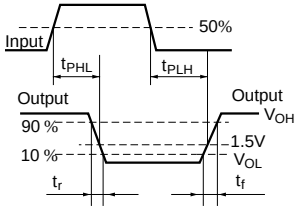


Fig. 1 Forward Current vs. Ambient Temperature

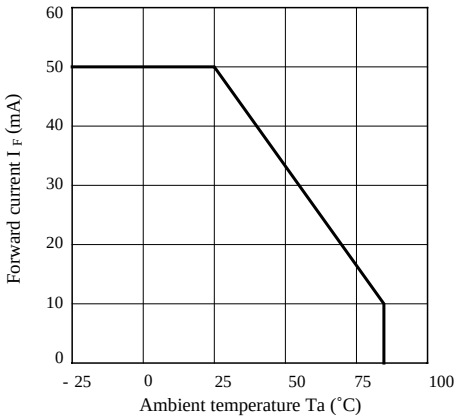


Fig. 2 Power Dissipation vs. Ambient Temperature

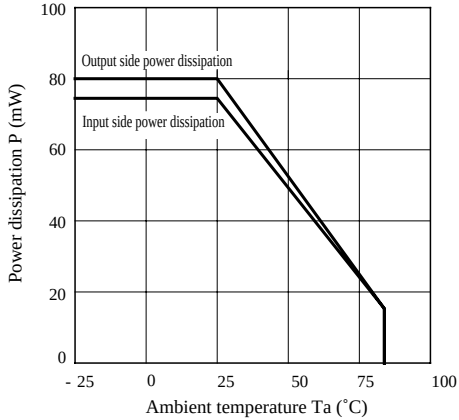


Fig. 3 Low Level Output Current vs. Ambient Temperature

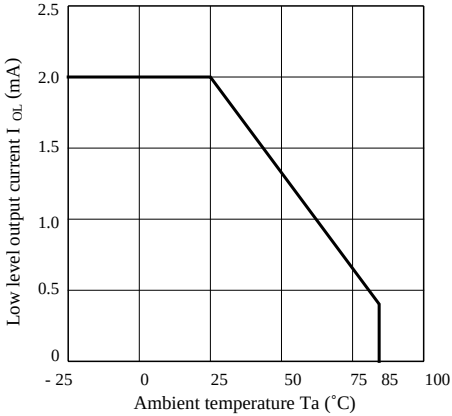


Fig. 4 Forward Current vs. Forward Voltage

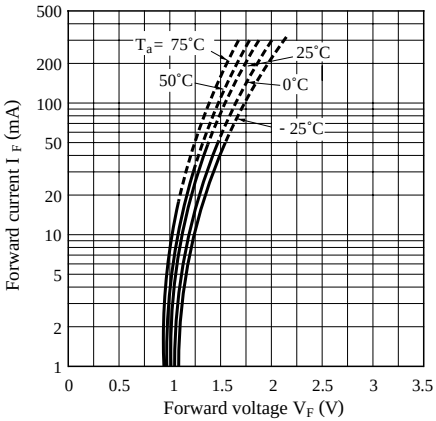


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

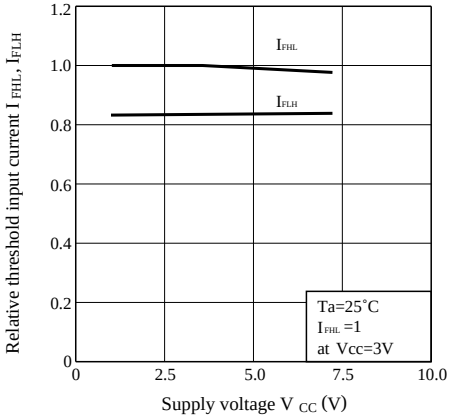


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

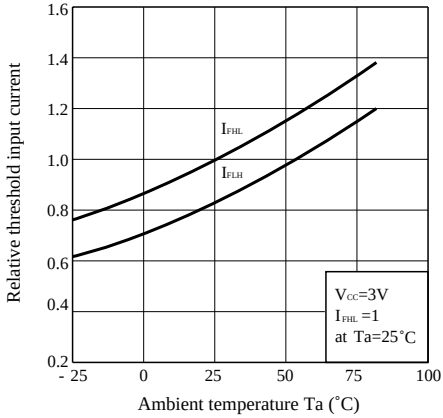


Fig. 7 Low Level Output Voltage vs. Low Level Output Current

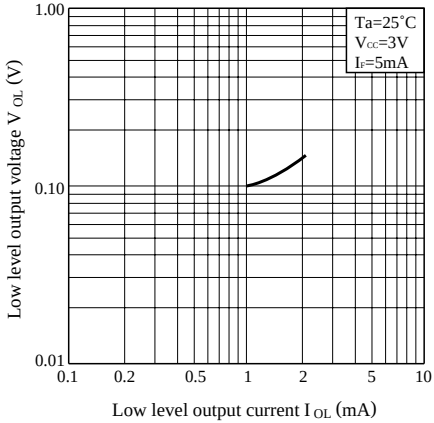


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

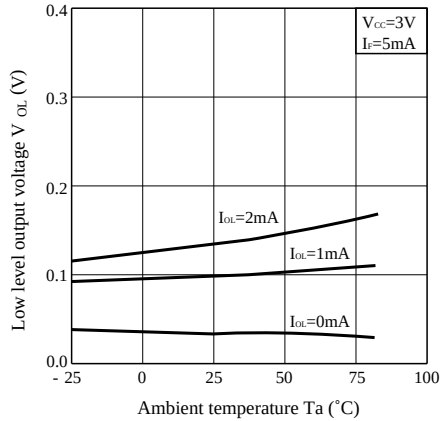


Fig. 9 Low Level Supply Current vs. Supply Voltage

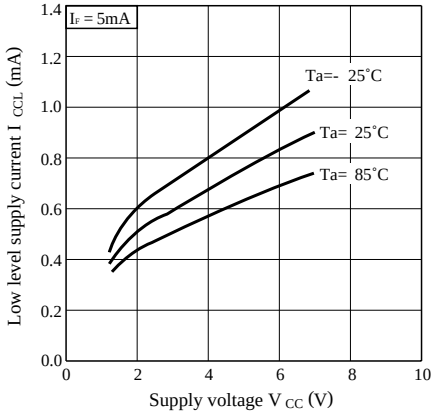


Fig. 10 High Level Supply Current vs. Supply Voltage

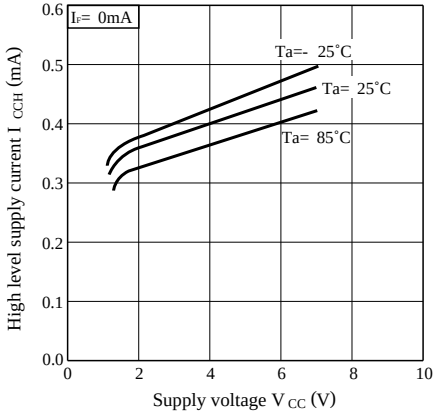


Fig. 11 Propagation Delay Time vs. Forward Current

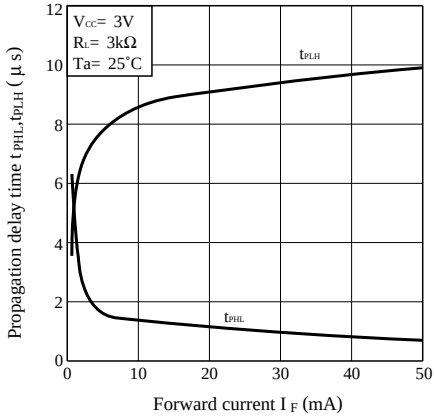
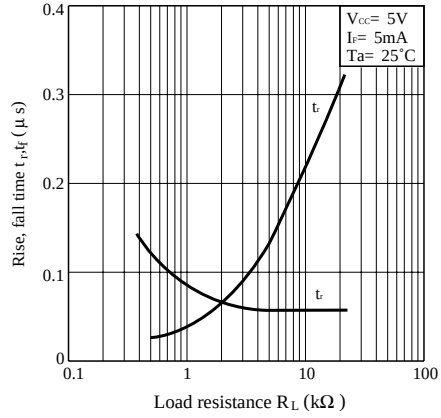


Fig. 12 Rise, Fall Time vs. Load Resistance



(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".

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
— Personal computers
— Office automation equipment
— Telecommunication equipment [terminal]
— Test and measurement equipment
— Industrial control
— Audio visual equipment
— Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
— Traffic signals
— Gas leakage sensor breakers
— Alarm equipment
— Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
— Space applications
— Telecommunication equipment [trunk lines]
— Nuclear power control equipment
— Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.