GP1A67L/GP1A67H

Subminiature **OPIC** Photointerrupter

■ Features

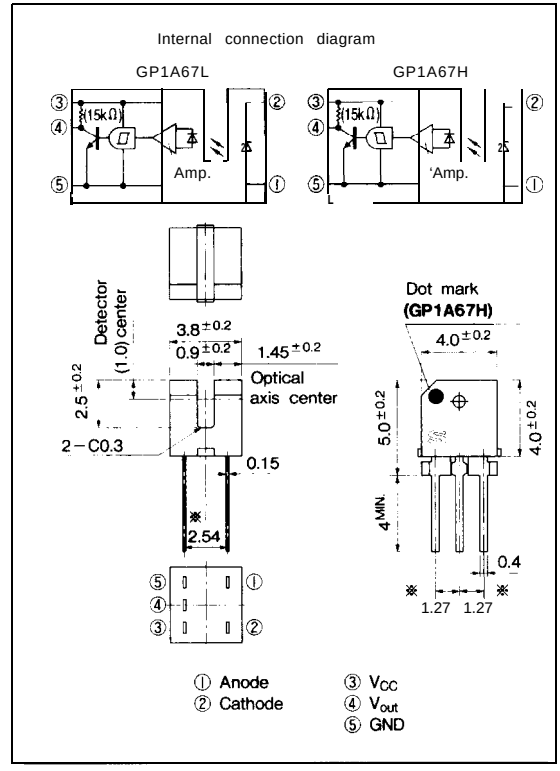
1. Ultra-compact (3.8X 4.0X 4.0mm)
2. TTL compatible output
3. Low operating voltage, low dissipation current suitable for battery-driven applica tions (Vcc : 2.2 to 7.0V, I_{CCL}: TYP. 1.3mA)

■ Applications

1. Compact personal OA equipment
2. Floppy disk drives
3. Auto-focus cameras
4. VCRs

■ Outline Dimensions

(Unit : mm)



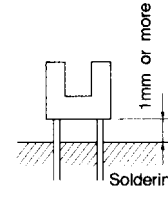
* "OPIC" (Optical IC) is a trademark of the SHARP Corporation An OPIC consists of a light-detecting element and signal processing circuit integrated onto a single chip.

* The dimensions indicated by ✱ refer to those measured from tke lead base.

■ 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
	Output current	I_O	8	mA
	Power dissipation	Po	80	mW
Operating temperature		T_{opr}	−25 to +85	‘c
Storage temperature		T_{stg}	−40 to +100	℃
*’Soldering temperature		T_{sol}	260	“c



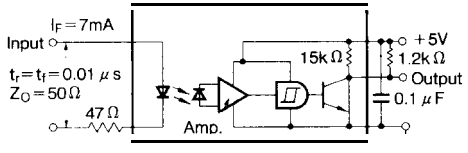
*1 For 5 seconds

■ Electro-optical Characteristics (Ta = 25°C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX,	Unit
Input	Forward voltage		V_F	I_F=20mA	—	1,2	1.4	v
	Reverse current		I_R	V_R=3V	—	—	10	μA
output	Operating supply voltage		V_{CC}		2.2		7.0	v
	Low level output voltage	GP1 A67L	V_{OL}	V_{CC}=5V, 101.= 4mA, I_F=5mA		0.15	0.4	v
		GP1A67H		V_{CC}=5V, I_{OL} =4mA, I_F=0				
	High level output voltage	GP1 A67L	V_{OH}	V_{CC}=5V, I_F=0	4.9	—		v
		GP1A67H		V_{CC}=5V, I_F=5mA				
	Low level supply current	GP1A67L	I_{CCL}	V_{CC}=5V, I_F=5mA		1.3	3.8	mA
		GP1A67H		V_{CC}=5V, I_F=0				
	High level supply current	GP1A67L	I_{CCH}	V_{CC}=5V, I_F=0		1.0	3.0	mA
		GP1A67H		V_{CC}=5V, I_F=5mA				
Transfer characteristics	*2 "High→Low" threshold input current	GP1A67L	I_{FHL}	V_{CC}=5V	—	0.9	2.5	mA
	*3 "Low→High" threshold input current	GP1A67H	I_{FLH}					
	*4 Hysteresis	GP1A67L	I_{FLH}/I_{FHL}	V_{CC}=5V	0.55	0.8	0.95	–
		GP1 A67H	I_{FHL}/I_{FLH}					
	*Response time "Low→High" propagation delay time	GP1 A67L	t_{PLH}	V_{CC}=5V I_F=5mA R_L=1.2kΩ		9.0	30	μs
		GP1A67H			—	3.0	15	
	"High, Low" propagation delay time	GP1 A67L	t_{PHL}			3.0	15	
		GP1A67H			--	9.0	30	
	Rise time		t_r			0.1	0.5	
	Fall time		tf		—	0.05	0.5	

*2 $I_{F\ HH}$ represents forward current when output changes from "High" to "LOW-
*3 I_{FLH} represents forward current when output changes from "LOW-" to "High"
*4 Hysteresis stands for I_{FLH}/I_{FHL}(**GP1A67L**) or I_{FHL}/I_{FLH}(**GP1A67H**).
*5 Test circuit for response time shall be shown below.

Test Circuit for Response Time



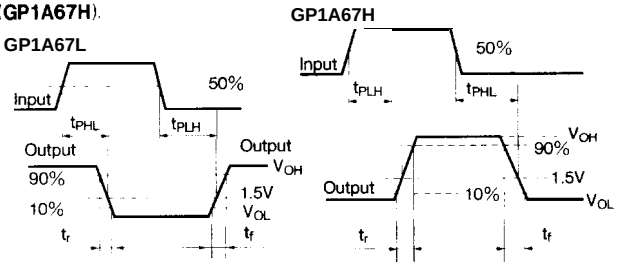


Fig. 1 Forward Current vs. Ambient Temperature

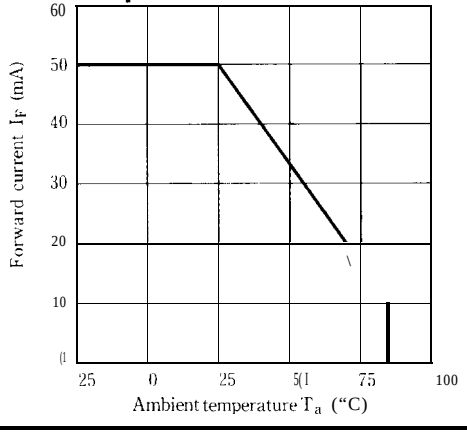


Fig. 2 Power Dissipation vs. Ambient Temperature

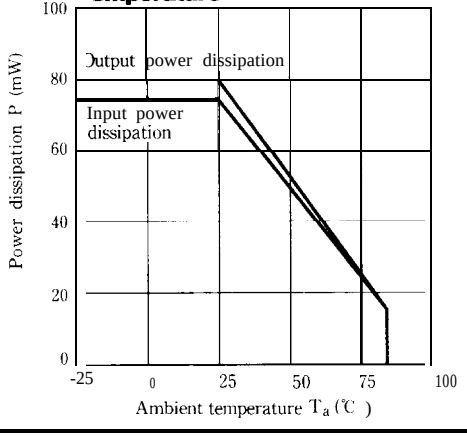


Fig. 3 Low Level Output Current vs. Ambient Temperature

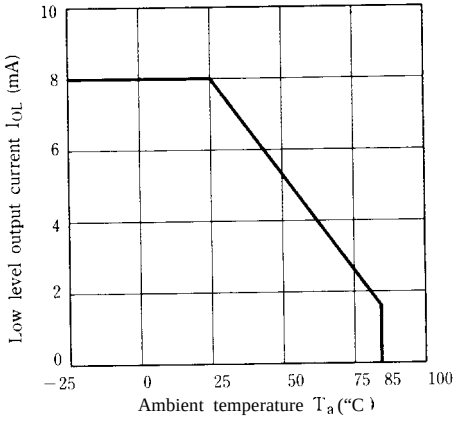


Fig. 4 **Forward** Currant va. **Forward** Voltage

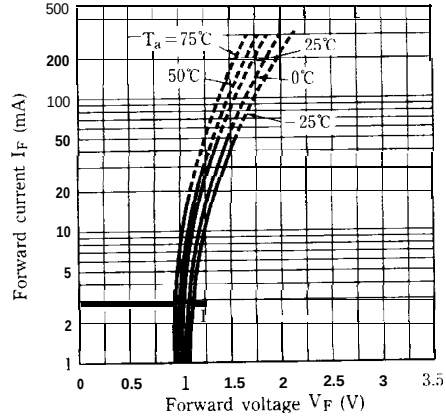


Fig. 5 Relative Threshold Input Current vs. Supply Voltage

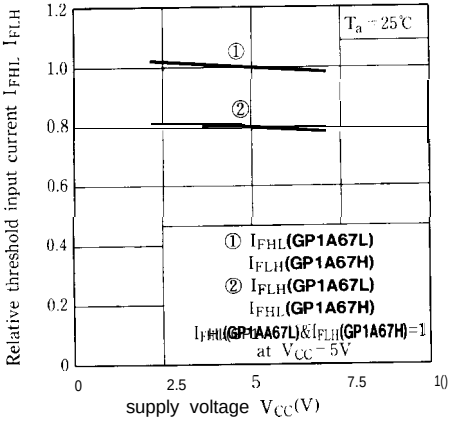


Fig. 6 Relative Threshold Input Current vs. Ambient Temperature

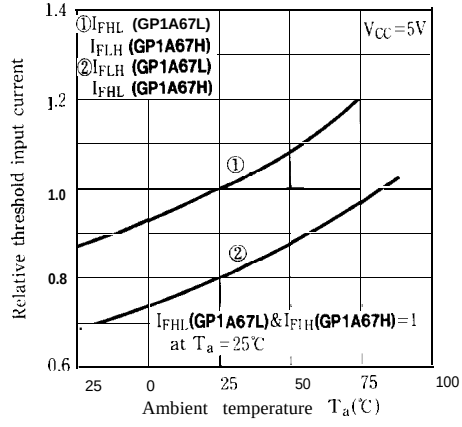


Fig. 7 Low Level Output Voltage vs. Low Level output Current

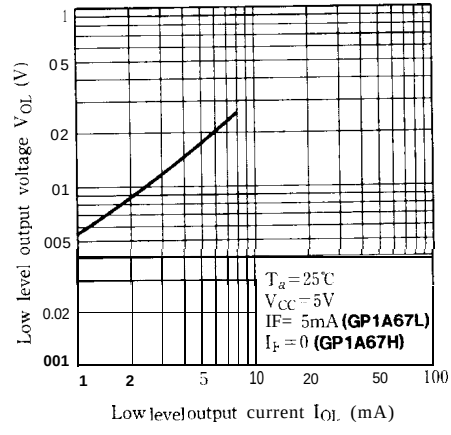


Fig. 8 Low Level Output Voltage vs. Ambient Temperature

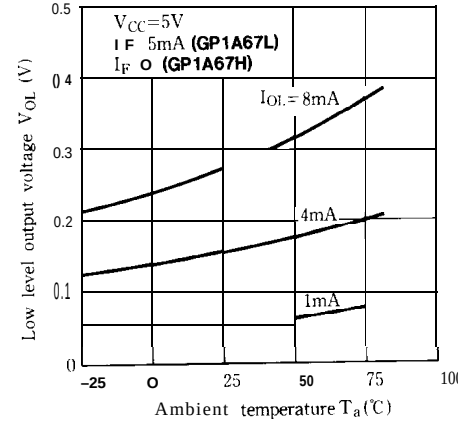


Fig. 9 Low Level Supply Current vs. Supply Voltage

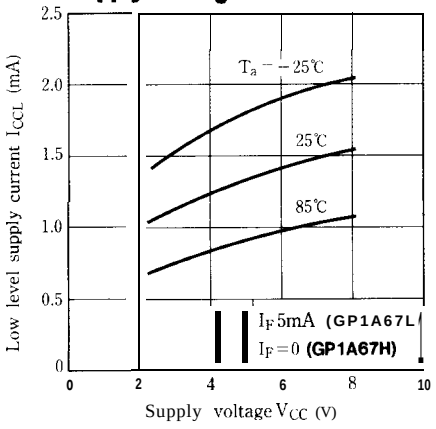


Fig.10 High Level Supply Current vs. Supply Voltage

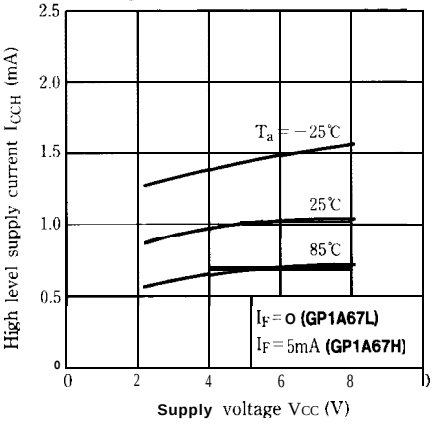


Fig.11 Propagation Delay Time vs. Forward Currant

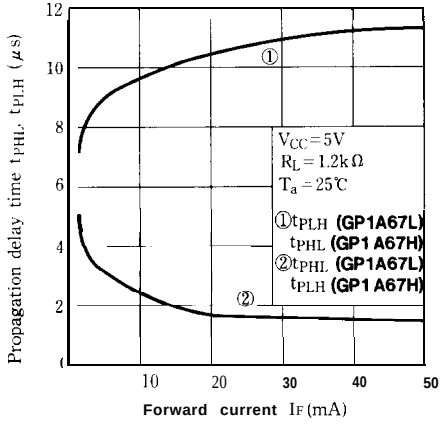
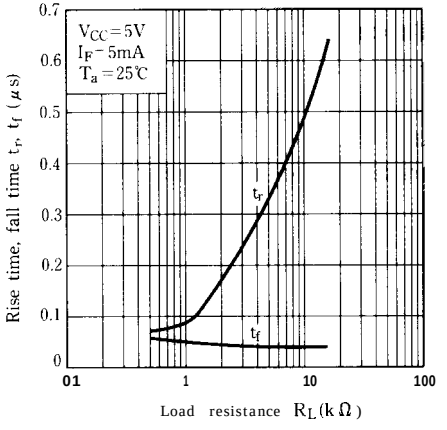


Fig.12 Rise Time, Fall Time vs. Load Resistance



■ Precautions for Use

(1) In order to stabilize power supply line, connect a by-pass capacitor of more than 0.1 μF between V_{CC} and GND near the device.

(2) Ultrasonic cleaning is prohibited.

(3) As for other general cautions, refer to the chapter "Precautions for Use." (Page 78 to 93)