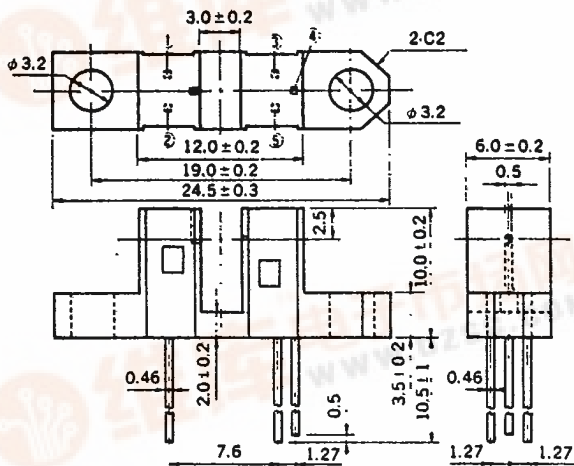


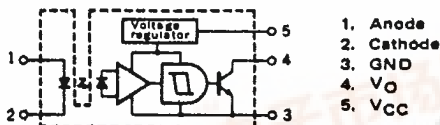
# PHOTO INTERRUPTER PS5001LC

## PHOTO IC INTERRUPTER

PACKAGE DIMENSIONS (Unit: mm)



CONNECTION DIAGRAM



APPLICATIONS

- PPC
- FACSIMILE
- PRINTER
- FDD

DESCRIPTION

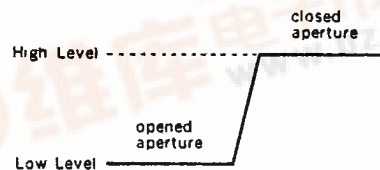
The PS5001LC photo interrupter module is a GaAs Light Emitting Diode coupled to a Si monolithic integrated circuit including a Photo Diode in a plastic housing.

The output incorporates a Schmitt Trigger circuit which provides hysteresis for noise immunity and pulse shaping.

FEATURES

- Built-in Schmitt Trigger circuit
- Low threshold input current ( $I_{FHL} = 5 \text{ mA MAX.}$ )
- TTL, LSTTL, CMOS compatible
- Wide supply voltage capability ( $V_{CC} = 4.5 \text{ to } 17 \text{ V}$ )
- High On/Off resolution (Slit width:  $0.5 \text{ mm}$  (equivalent to  $0.5 \text{ mm}^2$  aperture))
- High speed switching ( $t_{PHL} (t_{PLH}) = 3 \mu\text{s TYP.}$   
 $t_r = 100 \text{ ns}, t_f = 50 \text{ ns TYP.}$   
@  $R_L = 280 \Omega$ )
- Active "Low"
- Open collector output

OUTPUT PATTERN



PS5001LC

ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25 °C)

Diode				
Reverse Voltage	V <sub>R</sub>	6	V	
Forward Current	I <sub>F</sub>	50	mA	
Power Dissipation	P <sub>D</sub>	75	mW	
Detector				
Supply Voltage	V <sub>CC</sub>	17	V	
Output Voltage	V <sub>O</sub>	28	V	
Low Level Output Current	I <sub>OL</sub>	50	mA	
Power Dissipation	P <sub>C</sub>	250	mW	
Storage Temperature	T <sub>stg</sub>	-40 to +100	°C	
Operating Temperature	T <sub>opt</sub>	-30 to +85	°C	

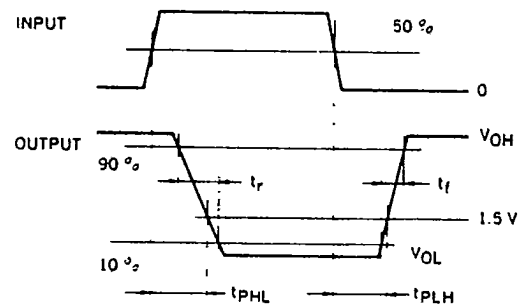
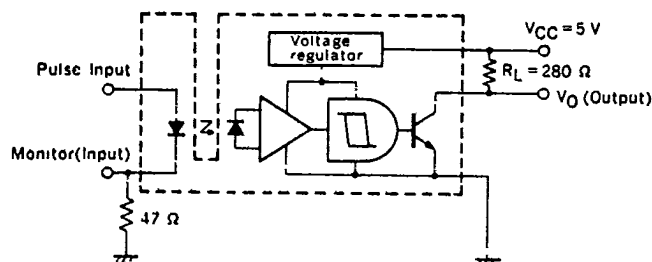
RECOMMENDED OPERATING CONDITIONS (T<sub>a</sub> = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Temperature	T <sub>opt</sub>	-10		+60	°C
Supply Voltage	V <sub>CC</sub>	4.5	5	12	V
Forward Current	I <sub>F</sub>	5		20	mA

ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)

	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V <sub>F</sub>		1.1	1.4	V	I <sub>F</sub> = 5 mA
	Reverse Current	I <sub>R</sub>			10	μA	V <sub>R</sub> = 5 V
	Junction Capacitance	C <sub>t</sub>		20		pF	V = 0, f = 1 MHz
Detector	Operating Supply Voltage	V <sub>CC</sub>	4.5		17	V	
	Low Level Output Voltage	V <sub>OL</sub>		0.15	0.4	V	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 5 mA
	High Level Output Voltage	V <sub>OH</sub>	4.9			V	I <sub>OL</sub> = 16 mA, V <sub>CC</sub> = 5 V
	Low Level Supply Current	I <sub>CC(L)</sub>		2.5	5	mA	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 5 mA
	High Level Supply Current	I <sub>CC(H)</sub>		1	3	mA	V <sub>CC</sub> = 5 V, I <sub>F</sub> = 0
Coupled	Threshold Input Current	I <sub>FHL</sub>			5	mA	V <sub>CC</sub> = 5 V, R <sub>L</sub> = 280 Ω
	Hysteresis Ratio	I <sub>FLH</sub> /I <sub>FHL</sub>		0.7			V <sub>CC</sub> = 5 V, R <sub>L</sub> = 280 Ω
	Propagation Delay Time	t <sub>PLH</sub>		3	9	μs	V <sub>CC</sub> = 5 V I <sub>F</sub> = 5 mA R <sub>L</sub> = 280 Ω
		t <sub>PHL</sub>		3	9	μs	
	Rise Time	t <sub>r</sub>		100	300	ns	
Fall Time	t <sub>f</sub>		50	150	ns		

Test Circuit for Switching Time



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