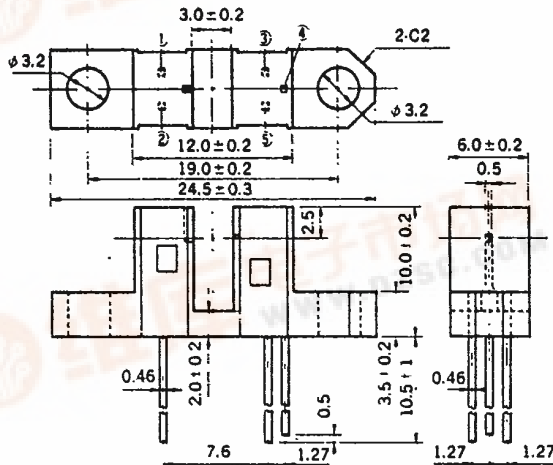


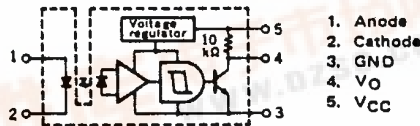
# PHOTO INTERRUPTER PS5001LR

## PHOTO IC INTERRUPTER

PACKAGE DIMENSIONS (Unit : mm)



CONNECTION DIAGRAM



**APPLICATIONS**

- PPC
- FACSIMILE
- PRINTER
- FDD

**DESCRIPTION**

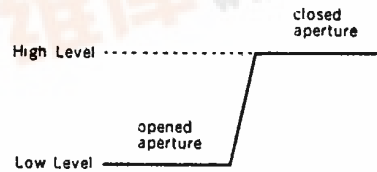
The PS5001LR photo interrupter module is a GaAs Light Emitting Diode coupled to a Si monolithic integrated circuit including a Photo Diode in a plastic housing.

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 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"
- Built-in pull up resistor

**OUTPUT PATTERN**



PS5001LR

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Diode			
Reverse Voltage	$V_R$	6	V
Forward Current	$I_F$	50	mA
Power Dissipation	$P_D$	75	mW
Detector			
Supply Voltage	$V_{CC}$	17	V
Low Level Output Current	$I_{OL}$	50	mA
Power Dissipation	$P_C$	250	mW
Storage Temperature	$T_{stg}$	-40 to +100	$^\circ\text{C}$
Operating Temperature	$T_{opt}$	-30 to +85	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITIONS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Temperature	$T_{opt}$	-10		+60	$^\circ\text{C}$
Supply Voltage	$V_{CC}$	4.5	5	12	V
Forward Current	$I_F$	5		20	mA

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	$V_F$		1.1	1.4	V	$I_F = 5\text{ mA}$
	Reverse Current	$I_R$			10	$\mu\text{A}$	$V_R = 5\text{ V}$
	Junction Capacitance	$C_t$		20		pF	$V = 0, f = 1\text{ MHz}$
Detector	Operating Supply Voltage	$V_{CC}$	4.5		17	V	
	Low Level Output Voltage	$V_{OL}$		0.15	0.4	V	$V_{CC} = 5\text{ V}, I_F = 5\text{ mA}$
	High Level Output Voltage	$V_{OH}$	4.9			V	$I_{OL} = 16\text{ mA}, V_{CC} = 5\text{ V}$
	Low Level Supply Current	$I_{CCL}$		2.5	5	mA	$V_{CC} = 5\text{ V}, I_F = 5\text{ mA}$
	High Level Supply Current	$I_{CCH}$		1	3	mA	$V_{CC} = 5\text{ V}, I_F = 0$
Coupled	Threshold Input Current	$I_{FHL}$			5	mA	$V_{CC} = 5\text{ V}$
	Hysteresis Ratio	$I_{FLH}/I_{FHL}$		0.7			$V_{CC} = 5\text{ V}$
	Propagation Delay Time	$t_{PLH}$		3	9	$\mu\text{s}$	$V_{CC} = 5\text{ V}$ $I_F = 5\text{ mA}$ $R_L = 280\ \Omega$
		$t_{PHL}$		3	9	$\mu\text{s}$	
	Rise Time	$t_r$		100	300	ns	
Fall Time	$t_f$		50	150	ns		

Test Circuit for Switching Time

