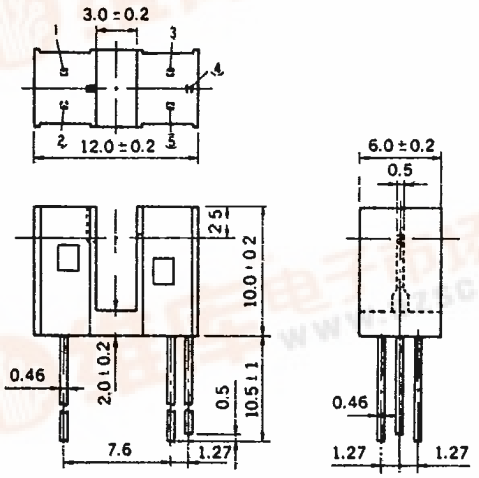
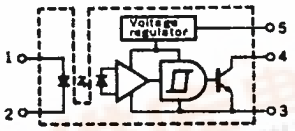
PHOTO INTERRUPTER
PS5003HC

PHOTO IC INTERRUPTER

PACKAGE DIMENSIONS (Unit : mm)



CONNECTION DIAGRAM



1. Anode
2. Cathode
3. GND
4. V_O
5. V_{CC}

DESCRIPTION

The PS5003HC 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.

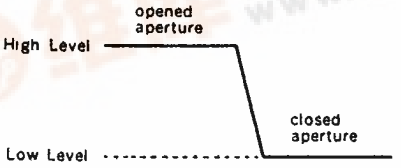
FEATURES

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

APPLICATIONS

- PPC
- FACSIMILE
- PRINTER
- FDD

OUTPUT PATTERN



PS5003HC

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °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
Output Voltage	V_O	28	V
Low Level Output Current	I_{OL}	50	mA
Power Dissipation	P_C	250	mW
Storage Temperature	T_{stg}	−40 to +100	°C
Operating Temperature	T_{opt}	−30 to +85	°C

RECOMMENDED OPERATING CONDITIONS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Temperature	T_{opt}	−10		+60	°C
Supply Voltage	V_{CC}	4.5	5	12	V
Forward Current	I_F	5		20	mA

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

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

Test Circuit for Switching Time