

# PHOTO INTERRUPTERS

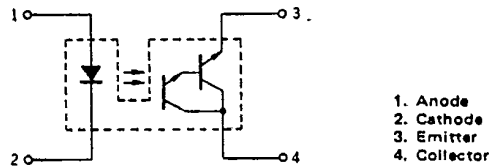
PS4001, PS4003, PS4005, PS4007, PS4009, PS4010, PS4011

## PHOTO INTERRUPTER

### DESCRIPTION

The PS4001, PS4003, PS4005, PS4007, PS4009 are photo coupled interrupter modules containing a GaAs light emitting diode and an NPN silicon darlington connected photo-transistor.

### CONNECTION DIAGRAM (Top View)



- 1. Anode
- 2. Cathode
- 3. Emitter
- 4. Collector

### ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

#### Diode

Reverse Voltage	$V_R$	5.0	V
Forward Current	$I_F$	50	mA
Power Dissipation	$P_D$	100	mW

#### Transistor

Collector to Emitter Voltage	$V_{CEO}$	30	V
Collector Current	$I_C$	50	mA
Power Dissipation	$P_C$	100	mW
Storage Temperature	$T_{stg}$	-40 to +100	°C
Operating Temperature	$T_{opt}$	-20 to +80	°C

### ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

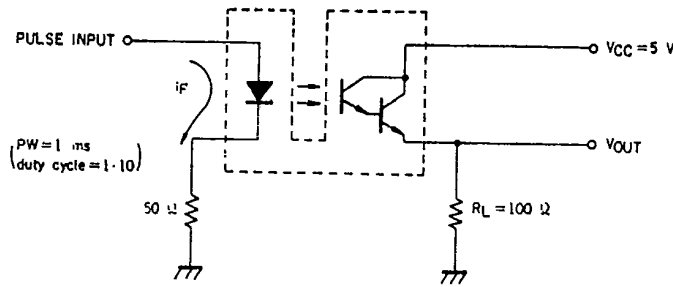
CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	$V_F$		1.1	1.4	V	$I_F = 20 \text{ mA}$
	Reverse Current	$I_R$		~	20	$\mu\text{A}$	$V_R = 4.0 \text{ V}$
	Junction Capacitance	C		100		pF	$V = 0, f = 1.0 \text{ MHz}$
Transistor	Collector to Emitter Dark Current	$I_{CEO}$			400	nA	$V_{CE} = 10 \text{ V}, I_F = 0$
Coupled	Current Transfer Ratio	CTR ( $I_C/I_F$ )	20*			%	$I_F = 10 \text{ mA}, V_{CE} = 2.0 \text{ V}$
	Collector Saturation Voltage	$V_{CE(sat)}$			1.2	V	$I_F = 10 \text{ mA}, I_C = 0.5 \text{ mA}$
	Rise Time	$t_r$		200		$\mu\text{s}$	$V_{CC} = 5.0 \text{ V}, I_C = 2.0 \text{ mA}, R_L = 100 \Omega$
	Fall Time	$t_f$		200		$\mu\text{s}$	$V_{CC} = 5.0 \text{ V}, I_C = 2.0 \text{ mA}, R_L = 100 \Omega$

\* PS4003 : 15 % MIN., Others : 20 % MIN.

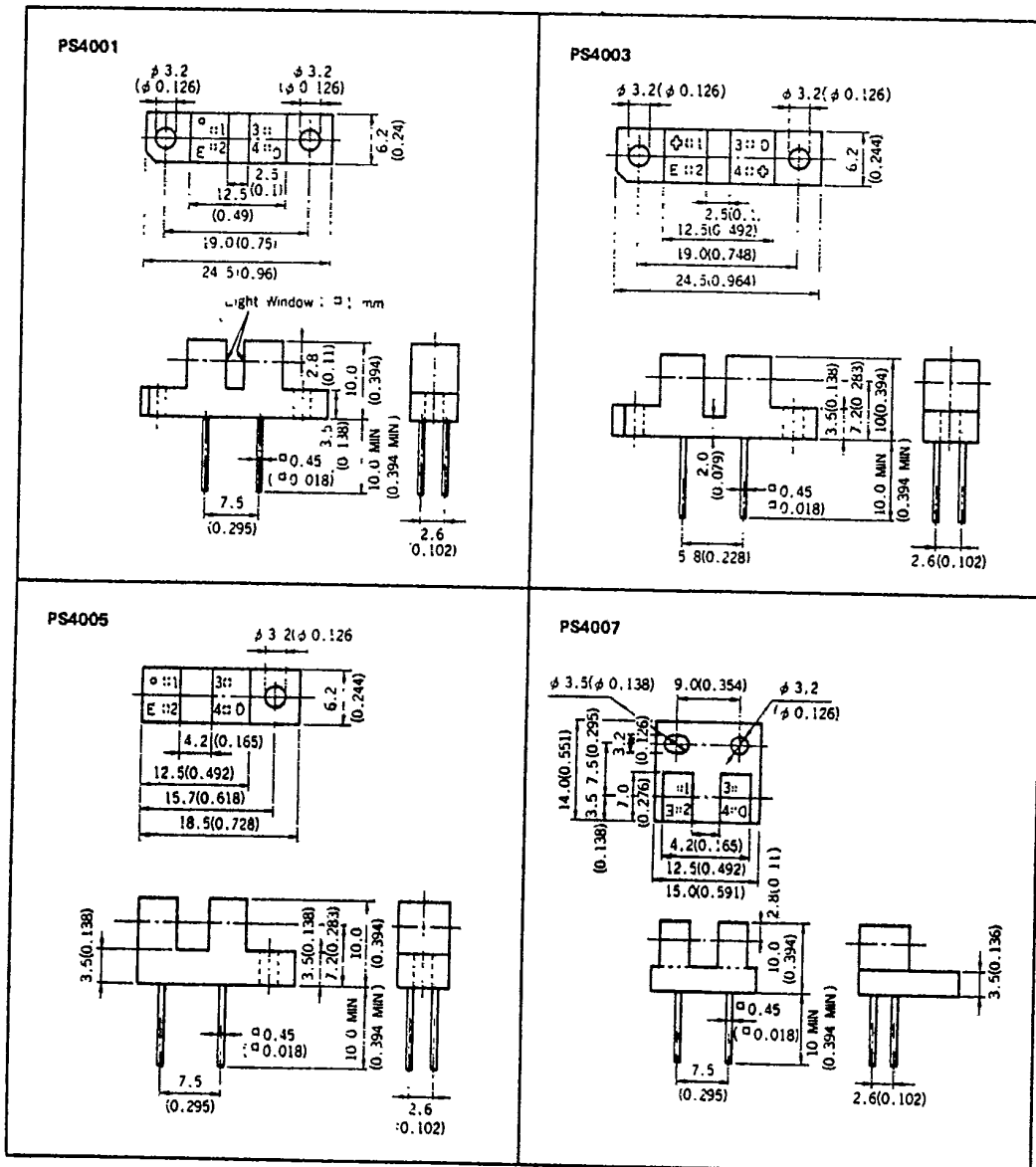
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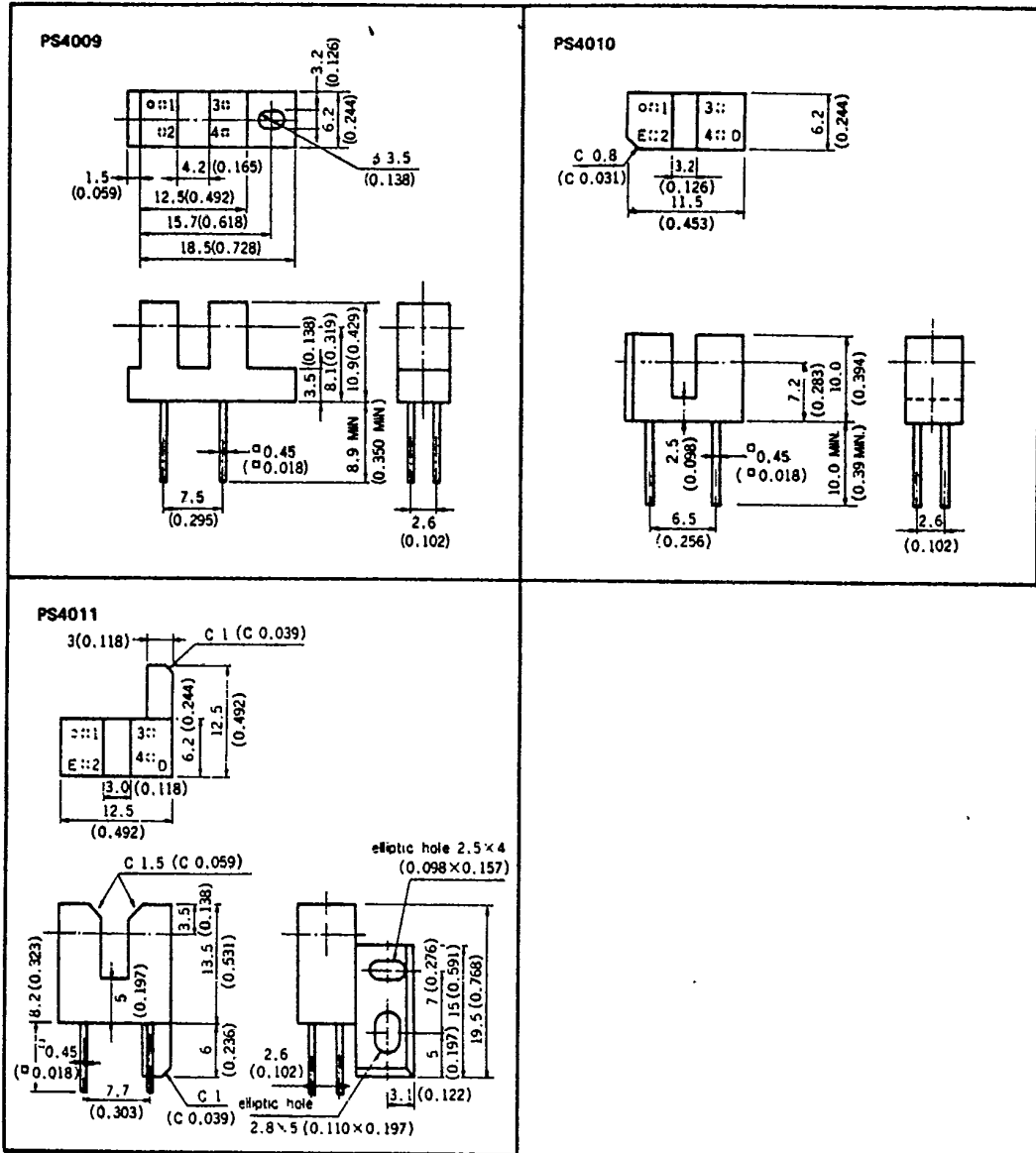
\* Test Circuit for Switching Time



PACKAGE DIMENSIONS  
in millimeters (inches)



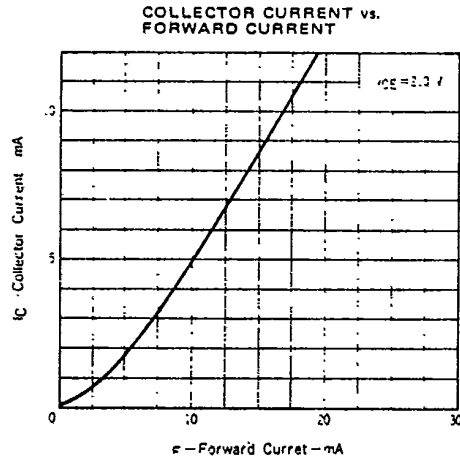
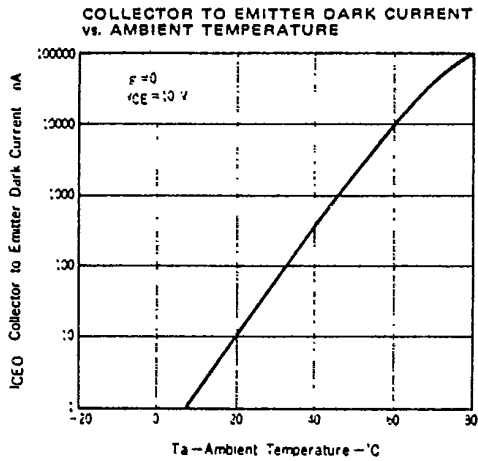
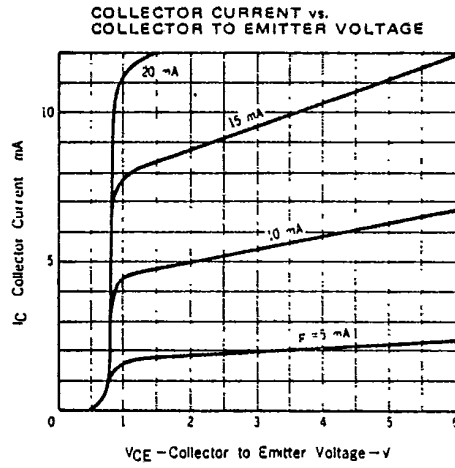
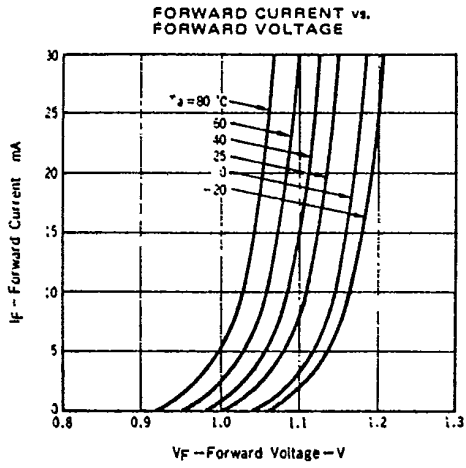
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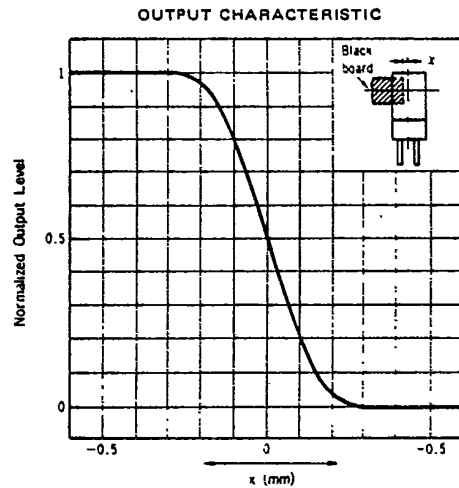
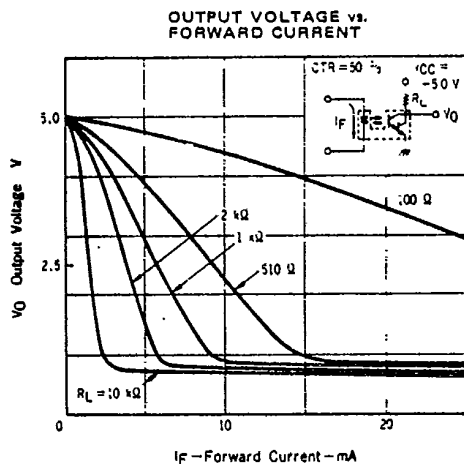
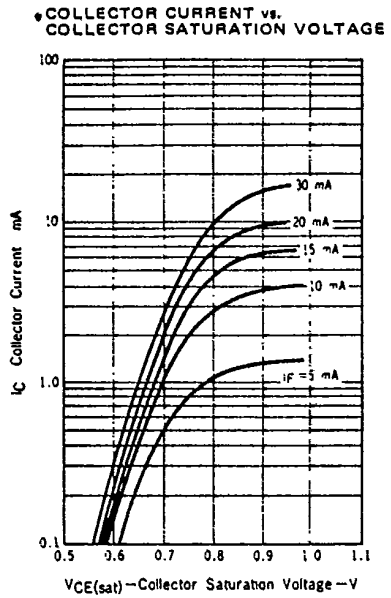
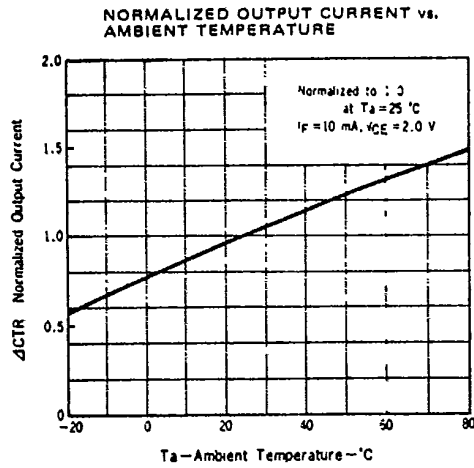
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TYPICAL CHARACTERISTICS (Ta = 25 °C)



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TYPICAL APPLICATION

