NEC
ELECTRON DEVICE

PHOTO INTERRUPTERS
PS4001,PS4003,PS4005,PS4007,PS4009

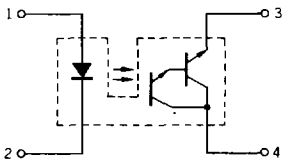
PHOTO INTERRUPTER

NEPOC SERIES

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)

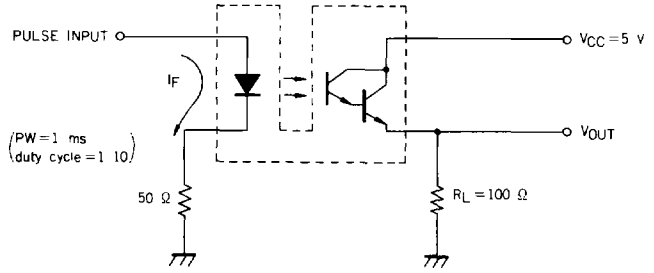
Diode			
Reverse Voltage	V_R	5.0	V
Forward Current	I_F	50	mA
Power Dissipation	P_D	100	mW
Transistor			
Collector to Emitter Voltage	V_{CEO}	30	V
Collector Current	I_C	50	mA
Power Dissipation	P_C	100	mW
Storage Temperature	T_{stg}	−40 to +100	°C
Operating Temperature	T_{opt}	−20 to +80	°C

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 mA
	Reverse Current	I_R			20	μA	V_R = 4.0 V
	Junction Capacitance	C		100		pF	V = 0, f = 1.0 MHz
Transistor	Collector to Emitter Dark Current	I_{CEO}			400	nA	V_{CE} = 10 V, I_F = 0
Coupled	Current Transfer Ratio	CTR(I_C/I_F)	20※			%	I_F = 10 mA, V_{CE} = 2.0 V
	Collector Saturation Voltage	$V_{CE(sat)}$			1.2	V	I_F = 10 mA, I_C = 0.5 mA
	Rise Time	t_r		200		μs	V_{CC} = 5.0 V, I_C = 2.0 mA, R_L = 100 Ω *
	Fall Time	t_f		200		μs	V_{CC} = 5.0 V, I_C = 2.0 mA, R_L = 100 Ω *

※ PS4003 : 15 % MIN., Others : 20 % MIN.

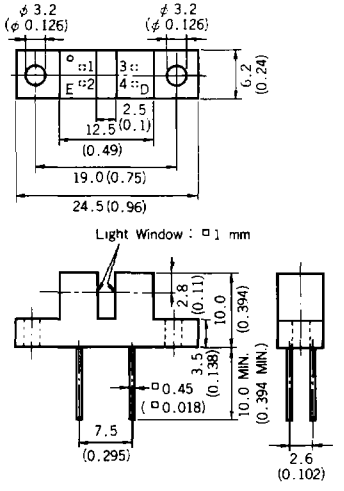
* Test Circuit for Switching Time



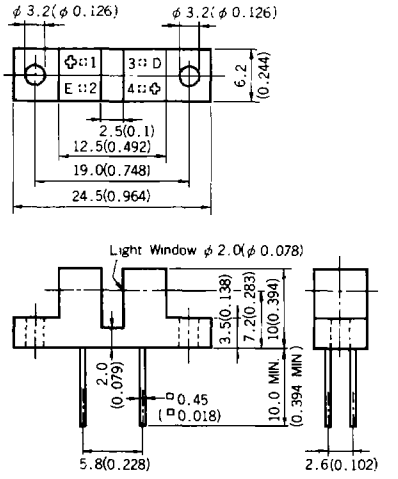
PACKAGE DIMENSIONS

in millimeters (inches)

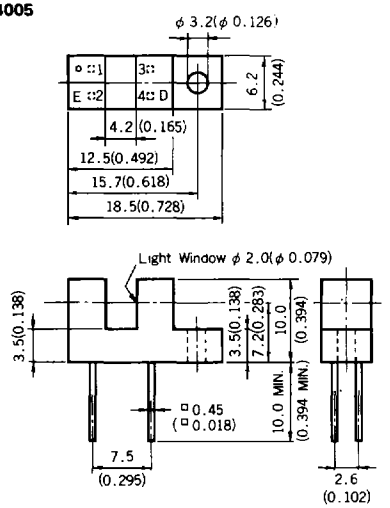
PS4001



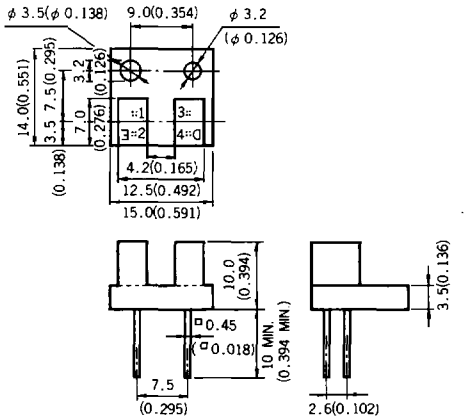
PS4003



PS4005



PS4007



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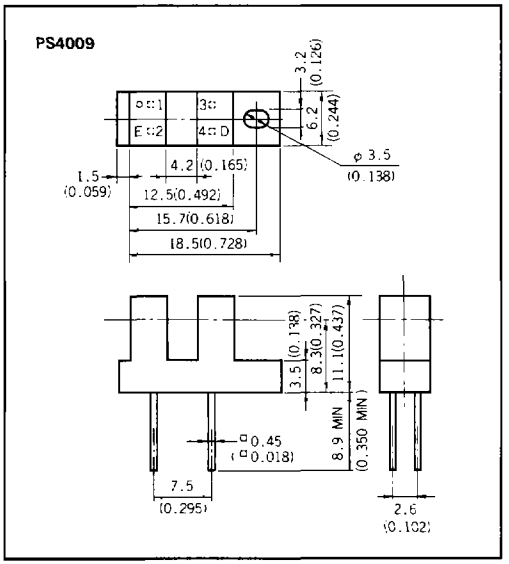
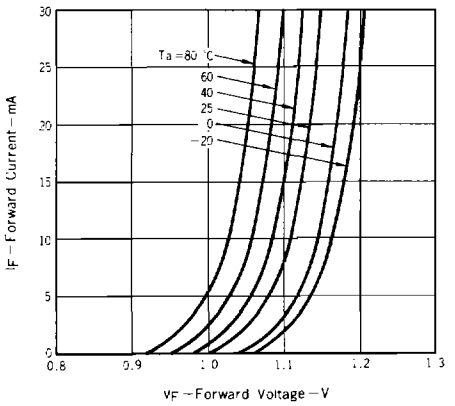
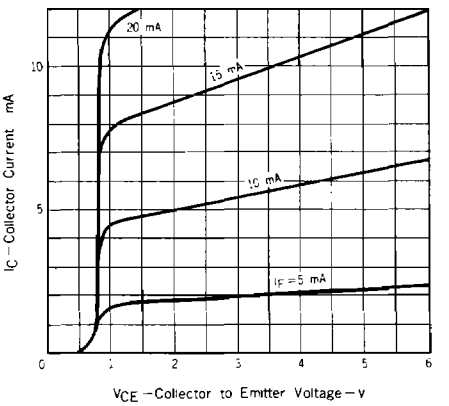


TYPICAL CHARACTERISTICS (Ta = 25 °C)

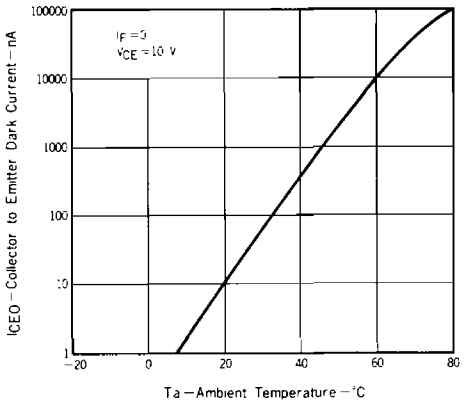
FORWARD CURRENT vs. FORWARD VOLTAGE



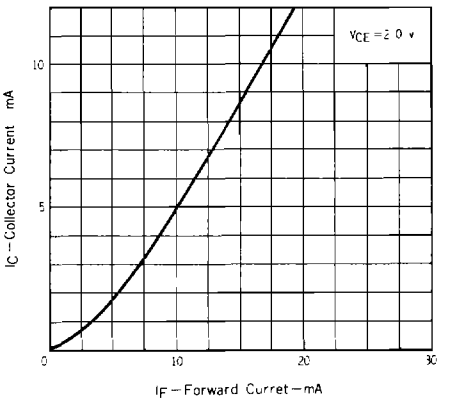
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



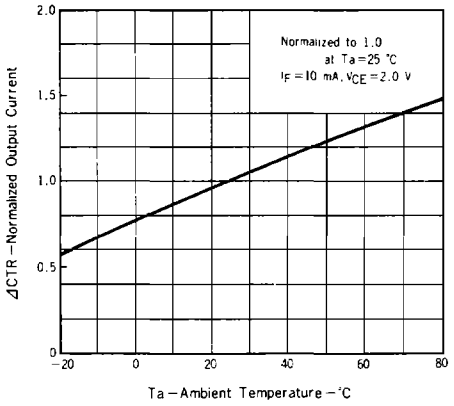
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



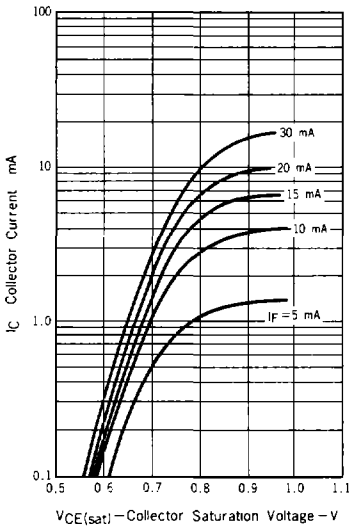
COLLECTOR CURRENT vs. FORWARD CURRENT



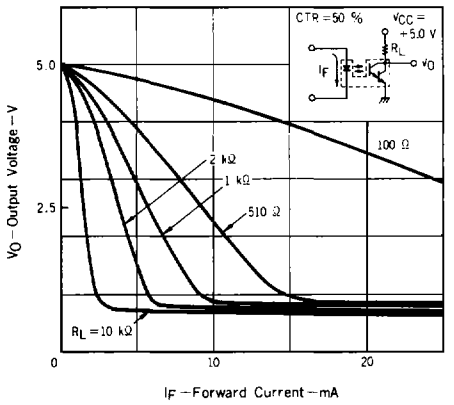
NORMALIZED OUTPUT CURRENT vs.
AMBIENT TEMPERATURE



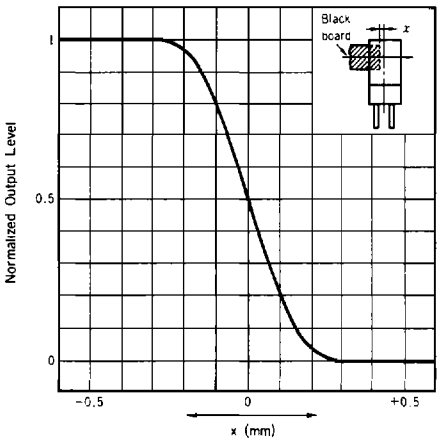
COLLECTOR CURRENT vs.
COLLECTOR SATURATION VOLTAGE



OUTPUT VOLTAGE vs.
FORWARD CURRENT



OUTPUT CHARACTERISTIC



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TYPICAL APPLICATION