

PHOTO COUPLER PS1001

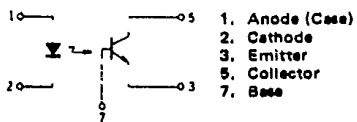
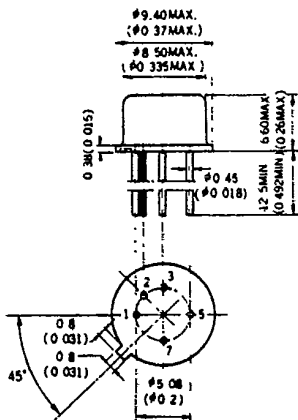
PHOTO COUPLER INDUSTRIAL USE

DESCRIPTION

The PS1001 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon photo transistor.

PACKAGE DIMENSIONS

in millimeters (inches)



1. Anode (Case)
2. Cathode
3. Emitter
5. Collector
7. Base

FEATURES

- High isolation voltage 1000V Rating
- High transfer ratio 20% MIN.
- High speed switching $t_r, t_f = 5.0 \mu s$ TYP.
- Economical, compact, TO-5 hermetic package.

APPLICATIONS

- Interface circuit for various instrumentations, control equipments.
- Chopper circuits.
- Computer and peripheral manufactures.
- Pulse transformer.
- Data communication equipment.
- Traffic signal

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

Diode			
Reverse Voltage	V_R	5.0	V
Forward Current	I_F	60	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	150	mW
Isolation Voltage *1	BV	1000	V _{DC}
Storage Temperature	T_{stg}	-65 to +150	°C
Operating Temperature	T_{opt}	-20 to +100	°C

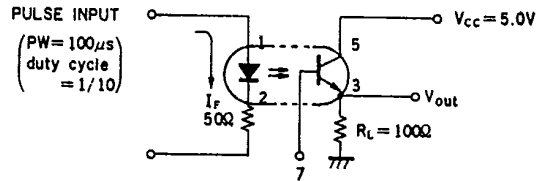
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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	μA	$V_R = 4.0\text{ V}$
	Junction Capacitance	C_t		100		pF	$V = 0, f = 1.0\text{ MHz}$
Transistor	Collector to Emitter Dark Current	I_{CEO}			200	nA	$V_{CE} = 10\text{ V}, I_F = 0$
	DC Current Gain	h_{FE}		400			$I_C = 4.0\text{ mA}, V_{CE} = 5.0\text{ V}$
Coupled	Current Transfer Ratio	$CTR(I_C/I_F)$	20	30		%	$I_F = 20\text{ mA}, V_{CE} = 5.0\text{ V}$
	Collector Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_F = 20\text{ mA}, I_C = 2.0\text{ mA}$
	Isolation Resistance	R_{1-2}	10^{11}			Ω	$V_{in-out} = 1.0\text{ kV}$
	Isolation Capacitance	C_{1-2}		2		pF	$V = 0, f = 1.0\text{ MHz}$
	Rise Time	t_r		5.0		μs	$V_{CC} = 5.0\text{ V}, I_F = 20\text{ mA}, R_L = 100\Omega * 2$
	Fall Time	t_f		5.0		μs	$V_{CC} = 5.0\text{ V}, I_F = 20\text{ mA}, R_L = 100\Omega * 2$

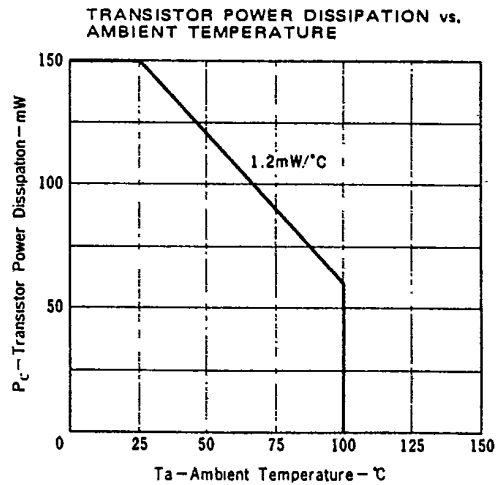
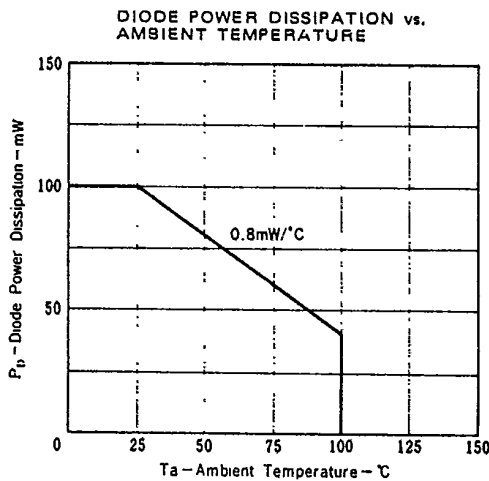
*** 1. Measuring Condition**

DC voltage for 1 minute at $T_a = 25^\circ\text{C}$,
 RH = 60%
 Between input (pin No. 1 and No. 2 Common)
 and output (pin No. 3, 5 and No. 7 Common)

*** 2. Test Circuit for Switching Time**



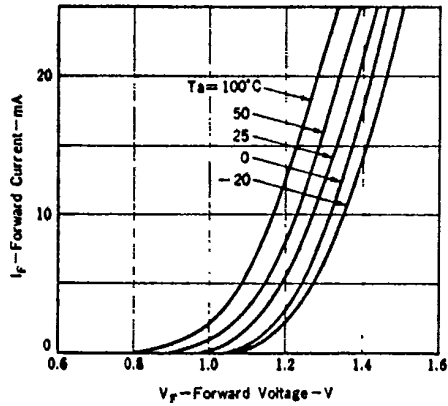
TYPICAL CHARACTERISTICS (Ta = 25°C)



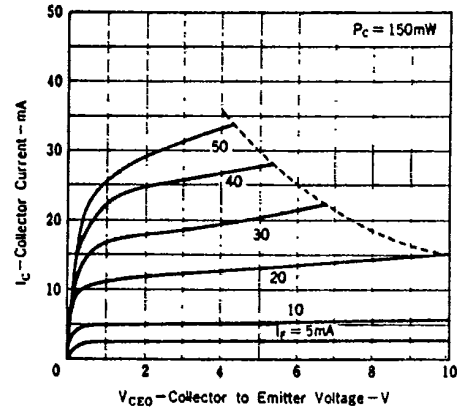
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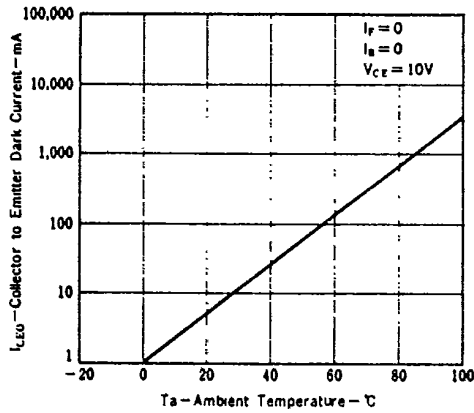
FORWARD CURRENT vs. FORWARD VOLTAGE



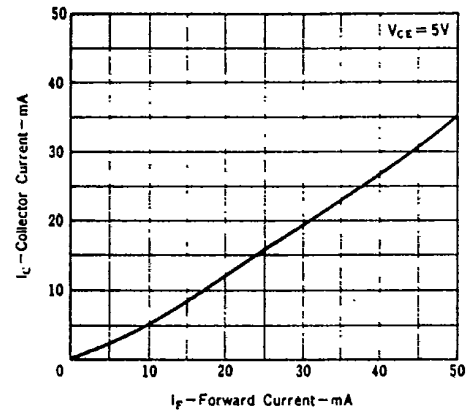
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



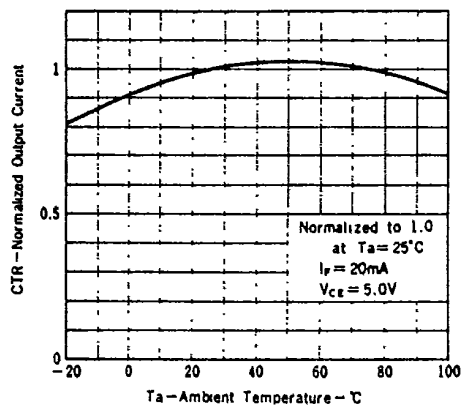
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



COLLECTOR CURRENT vs. FORWARD CURRENT



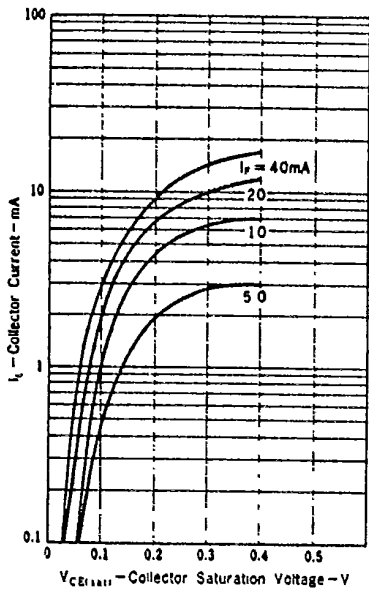
NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



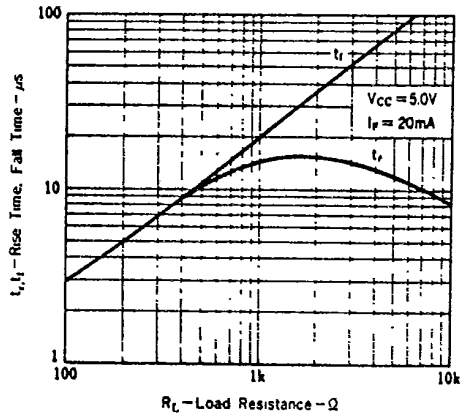
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COLLECTOR CURRENT vs. COLLECTOR SATURATION VOLTAGE



SWITCHING TIME vs. LOAD RESISTANCE



FREQUENCY RESPONSE

