

**PHOTO COUPLER
INDUSTRIAL USE**

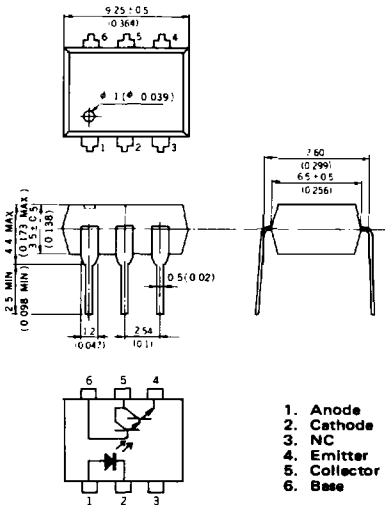
— NEPOC SERIES —

DESCRIPTION

The PS2004B is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon darlington phototransistor in a plastic DIP (Dual In-Line Package)

PACKAGE DIMENSIONS

in millimeters (inches)



FEATURES

- High voltage isolation 2 500 V MIN.
- Ultra high transfer ratio 1 300 % MIN.
- Economical, compact, plastic dual in-line package
- Large output current 200 mA MAX.

APPLICATIONS

- Copy machine.
- Replaceable from mechanical relays and reed relays.
- Replaceable from pulse transformer.

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	200	mA
Power Dissipation	P _C	200	mW
Total Power Dissipation	P _{total}	250	mW
Isolation Voltage*1	BV	2 500	V _{DC}
Isolation Voltage*1	BV	2 000	V _{AC} (r.m.s.)
Storage Temperature	T _{stg}	-55 to +125	°C
Operating Temperature	T _{opt}	-55 to +100	°C

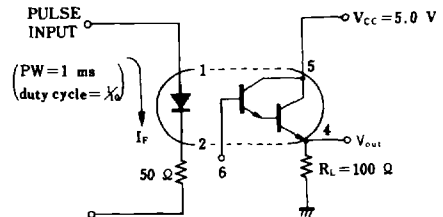
ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F			1.4	V	$I_F = 20 \text{ mA}$
	Reverse Current	I_R			5.0	μA	$V_R = 4.0 \text{ V}$
	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	$CTR(I_C/I_F)$	1300			%	$I_F = 5.0 \text{ mA}, V_{CE} = 2.0 \text{ V}$
	Collector Saturation Voltage	$V_{CE(sat)}$			1.2	V	$I_F = 5.0 \text{ mA}, I_C = 2.0 \text{ mA}$
	Isolation Resistance	R_{1-2}	10^{11}			Ω	$V_{in-out} = 1.0 \text{ kV}$
	Isolation Capacitance	C_{1-2}		0.8		pF	$V = 0, f = 1.0 \text{ MHz}$
	Rise Time	t_r		100		μs	$V_{CC} = 5.0 \text{ V}, I_F = 5.0 \text{ mA}, R_L = 100 \Omega \times 2$
	Fall Time	t_f		250		μs	$V_{CC} = 5.0 \text{ V}, I_F = 5.0 \text{ mA}, R_L = 100 \Omega \times 2$

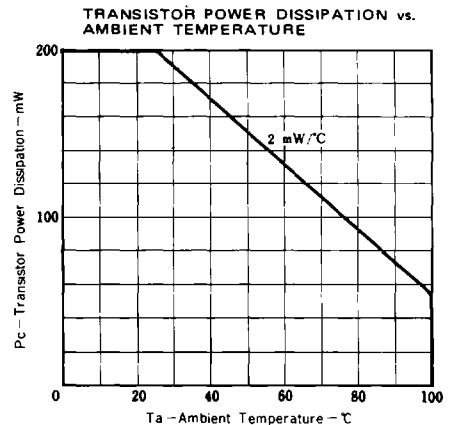
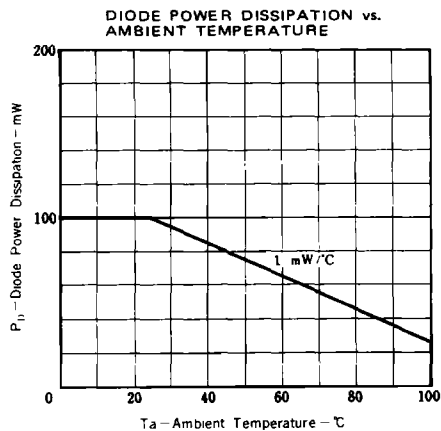
* 1. Measuring Condition

DC or AC voltage for 1 minute at $T_a = 25 \text{ }^\circ\text{C}$,
 RH = 60 %
 Between input (pin No. 1, 2 and No. 3 Common)
 and output (pin No. 4, 5 and No. 6 Common)

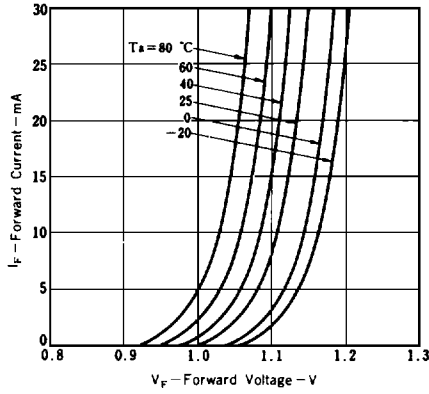
* 2. Test Circuit for Switching Time



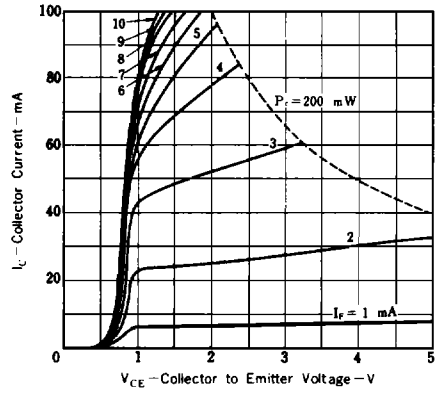
TYPICAL CHARACTERISTICS (Ta = 25 °C)



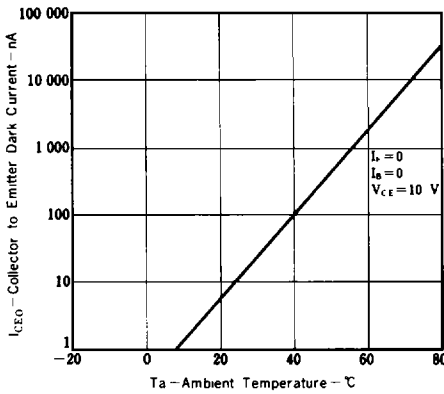
FORWARD CURRENT vs. FORWARD VOLTAGE



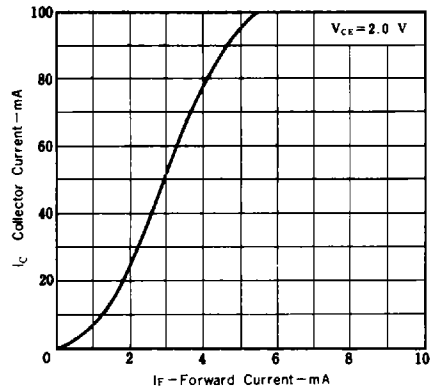
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



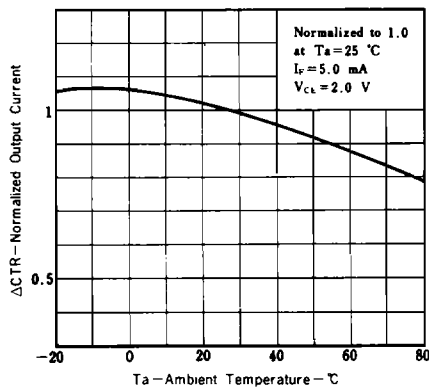
COLLECTOR TO EMITTER DARK CURRENT vs. AMBIENT TEMPERATURE



COLLECTOR CURRENT vs. FORWARD CURRENT



NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



NORMALIZED OUTPUT CURRENT vs. BASE RESISTANCE

