PS2002B
PHOTO COUPLER
DARLINGTON TRANSISTOR

NEPOC SERIES

Description

The PS2002B is an optically coupled isolator containing a GaAsP light emitting diode and an NPN silicon Darlington-connected photo transistor.

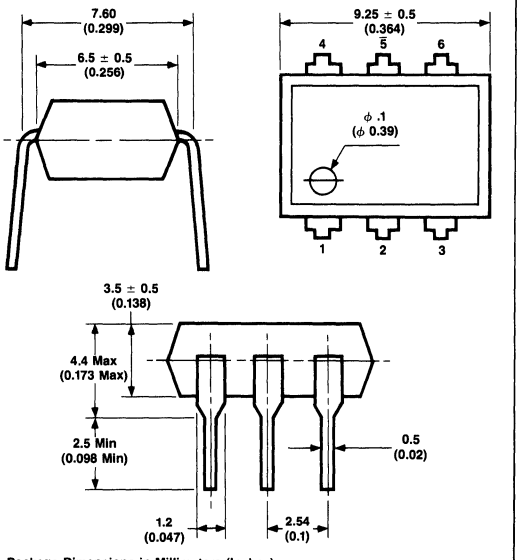
Features

- ☐ High-voltage isolation: 2500V_{DC} min
- ☐ High transfer ratio: 100% min
- ☐ Economical, compact, plastic dual in-line package

Applications

- ☐ ECR
- ☐ Automat
- ☐ Replacement of pulse transformers
- ☐ Replacement of mechanical and reed relays

Package Dimensions



Package Dimensions in Millimeters (Inches)

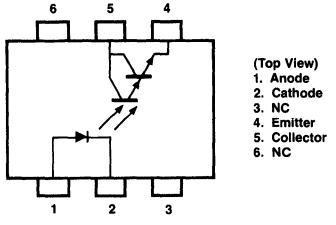
83-000421A

Absolute Maximum Ratings

T_A = +25°C

Diode	
Reverse Voltage, V_R	7.0V
Forward Current, I_F	50mA
Power Dissipation, P_D	100mW
Transistor	
Collector to Emitter Voltage, V_{CEO}	40V
Collector Current, I_C	50mA
Power Dissipation, P_D	100mW
Isolation Voltage[1], BV	2500V_{DC}
Storage Temperature, T_{STG}	−55°C to +125°C
Operating Temperature, T_{OPT}	−55°C to +100°C

Pin Connection



(Top View)
1. Anode
2. Cathode
3. NC
4. Emitter
5. Collector
6. NC

83-000385A

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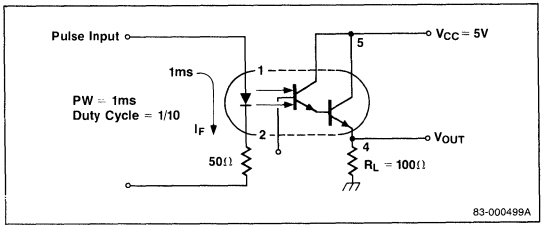
Electrical Characteristics
T_A = +25°C

Parameter	Symbol	Limits Min	Typ	Max	Unit	Test Conditions
Diode						
Forward Voltage	V_F			1.9	V	I_F = 5.0mA
Reverse Current	I_R			2.0	μA	V_R = 4.0V
Junction Capacitance	C		100		pF	V = 0, f = 1.0MHz
Transistor						
Collector to Emitter Dark Current	I_{CEO}			400	nA	V_{CE} = 10V, I_F = 0
DC Current Gain	h_{FE}		5000			I_C = 4.0mA, V_{CE} = 2.0V
Coupled						
Current Transfer Ratio	CTR (I_C/I_F)	100			%	I_F = 5.0mA, V_{CE} = 2.0V
Collector Saturation Voltage	$V_{CE(sat)}$			1.2	V	I_F = 5.0mA, I_C =2.0mA
Isolation Resistance	R_{1-2}	10^{11}			Ω	V_{IN-OUT} = 1.0kV
Isolation Capacitance	C_{1-2}		0.8		pF	V = 0, f = 1.0MHz
Rise Time[2]	t_r		100		μs	V_{CC} = 5.0V, I_F = 10mA, R_L = 100Ω
Fall Time[2]	t_f		120		μs	V_{CC} = 5.0V, I_F = 10mA, R_L = 100Ω

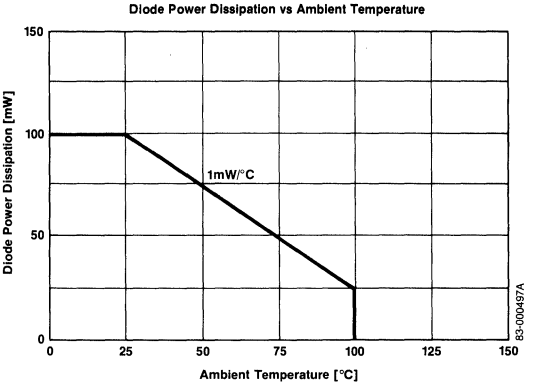
Notes: 1. Measuring Conditions: DC or AC voltage for 1 min at T_A = +25°C, RH = 60% between input (pins 1, 2, and 3 common) and output (pins 4, 5, and 6 common).

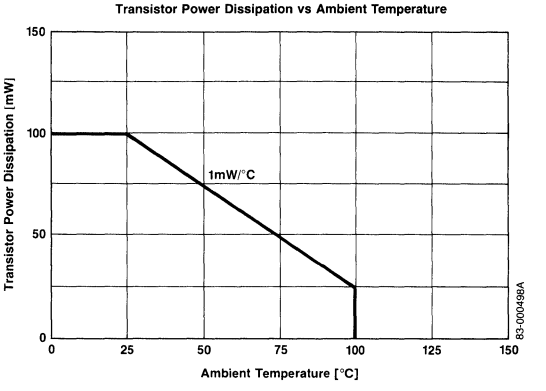
2. Test circuit for switching time.

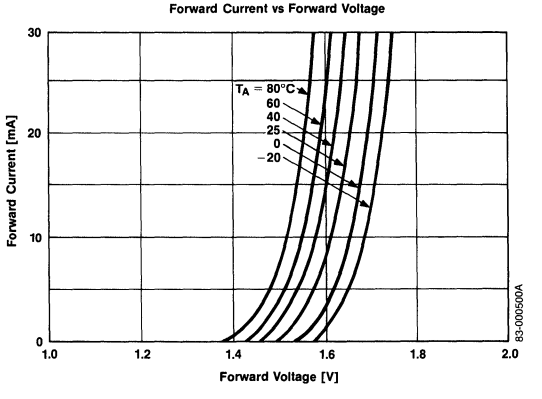
Test circuit for switching time



Typical Characteristics
T_A = +25°C



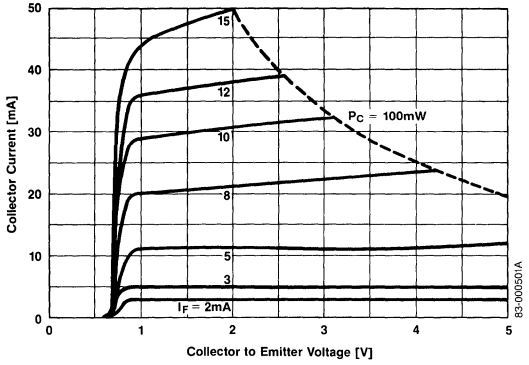




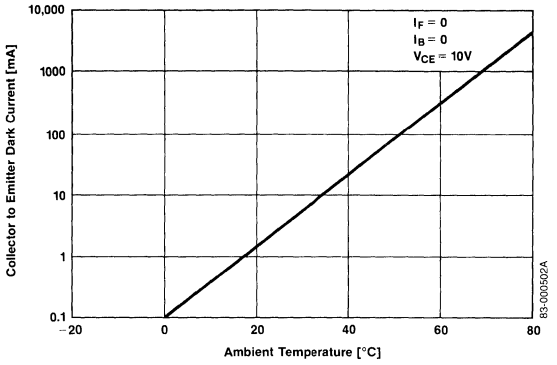
Typical Characteristics (cont)

T_A = +25°C

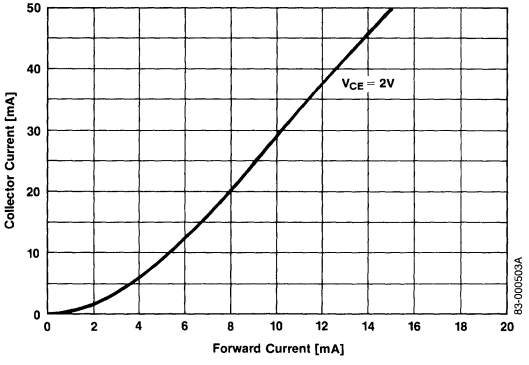
Collector Current vs Collector to Emitter Voltage



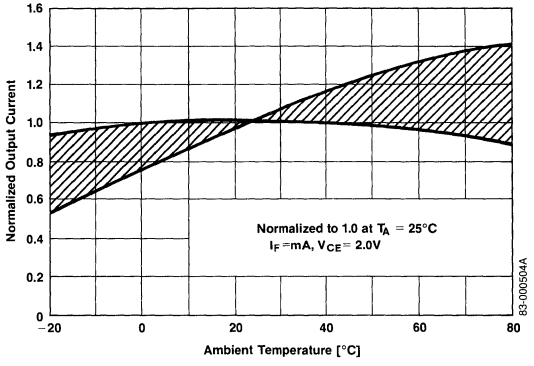
Collector to Emitter Dark Current vs Ambient Temperature



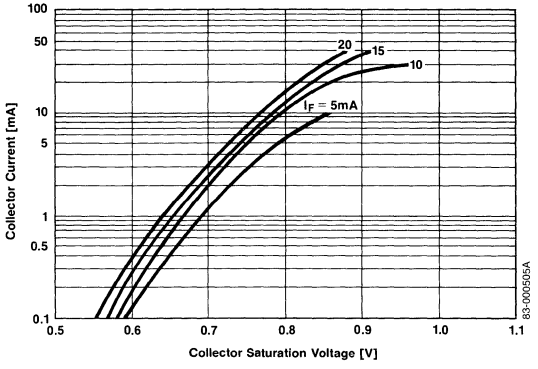
Collector Current vs Forward Current



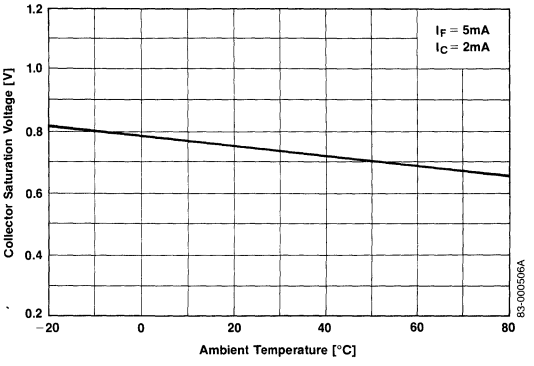
Normalized Output Current vs Ambient Temperature



Collector Current vs Collector Saturation Voltage



Collector Saturation Voltage vs Ambient Temperature



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