NEC
ELECTRON DEVICE

PHOTO COUPLER
PS2006, PS2006(1)

HIGH SPEED PHOTO COUPLER

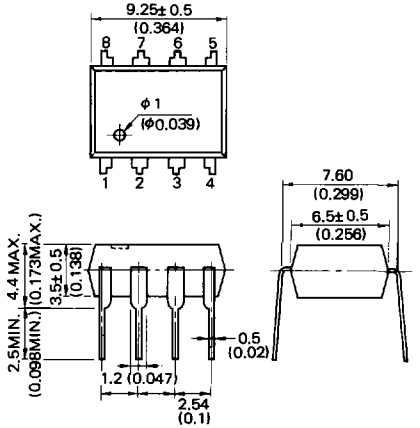
—NEPOC SERIES—

DESCRIPTION

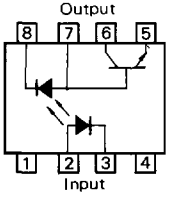
The PS2006, PS2006(1) are high speed photo couplers containing a GaAsP light emitting diode and a p-n photodiode connected to a high speed transistor.

The CTR are 15% MIN. for PS2006 and 7% MIN. for PS2006(1).

PACKAGE DIMENSIONS
in millimeters (inches)



PIN CONNECTION



PIN		Function
Input	1.	NC
	2.	Anode
	3.	Cathode
	4.	NC
Output	5.	Emitter
	6.	Vo
	7.	Base
	8.	Vcc

FEATURES

- High isolation voltage — 3000 V_{DC} MIN.
- High speed response — t_{PHL},t_{PLH}=300ns TYP.
- Compact, dual in-line plastic package
- Equivalent to HP's 5082-4350 Series

APPLICATIONS

- Interface circuit for various instrumentations, control equipments.
- Floating power supply feedback networks.
- Computer and peripheral manufactures.
- Pulse transformer.
- High speed digital and analog line receivers.

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Diode			
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Power Dissipation	P_D	45	mW
Detector			
Supply Voltage	Vcc	−0.5 to +15	V
Output Voltage	Vo	−0.5 to +15	V
Output Current	Io	8	mA
Emitter to Base Voltage	V_{EBO}	5	V
Power Dissipation	Pc	100	mW
Isolation Voltage *1	BV	3000	V_{DC}
Storage Temperature	Tstg	−55 to +125	°C
Operating Temperature	Topt	−55 to +100	°C

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ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.43	1.7	V	I_F=16mA
	Reverse Current	I_R		0.01	10	μA	V_R=5V
	Forward Voltage Temperature Coefficient	$\frac{\Delta V_F}{\Delta T}$		−1.51		mV/°C	I_F=16mA
	Capacitance	C_t		60		pF	V=0,f=1MHz
Detector	High Level Output Current	$I_{OH(1)}$		3	500	nA	I_F=0mA,Vcc=Vo=5.5V
	High Level Output Current	$I_{OH(2)}$			100	μA	I_F=0mA,Vcc=Vo=15V
	DC Current Gain	h_{FE}		120			Vo=5V,Io=3mA
Coupled	Current Transfer Ratio	CTR	15/7	22		%	I_F=16mA,Vcc=4.5V Vo=0.4V
	Low Level Output Voltage	V_{OL}		0.1	0.4	V	I_F=16mA,Vcc=4.5V Io=2.4mA/1.1mA
	Low Level Supply Current	I_{CCL}		50		μA	I_F=16mA,Vo=Open, Vcc=15V
	High Level Supply Current	I_{CCH}		0.01	1	μA	I_F=0mA,Vo=Open, Vcc=15V
	Isolation Resistance	R_{1-2}		10^{12}		Ω	Vin-out=1kV
	Isolation Capacitance	C_{1-2}		0.7		pF	V=0,f=1MHz
	Propagation Delay Time to Low Output Level	*2 t_{PHL}		0.3/0.5	0.8/1.5	μs	I_F=16mA,Vcc=5V R_L=1.9kΩ/4.1kΩ
	Propagation Delay Time to High Output Level	*2 t_{PLH}		0.3/0.8	0.8/1.5	μs	I_F=16mA,Vcc=5V R_L=1.9kΩ/4.1kΩ

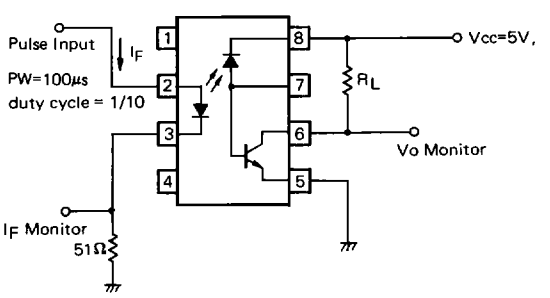
In Characteristics " / " indicates PS2006/PS2006(1).

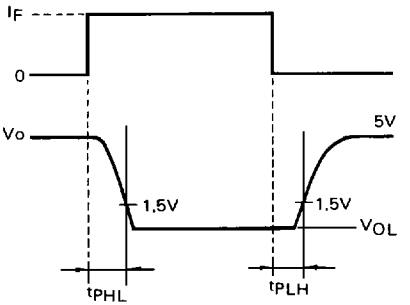
*1 Measuring Condition

DC voltage for 1 minute at Ta=25 °C, RH=60%

Between input (pin No. 1, 2, 3, 4 Common) and output (pin No. 5, 6, 7, 8 Common)

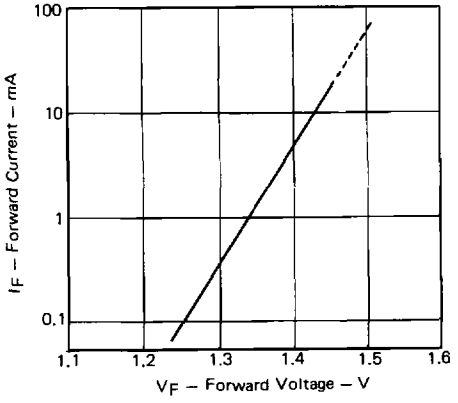
*2 Measuring Circuit



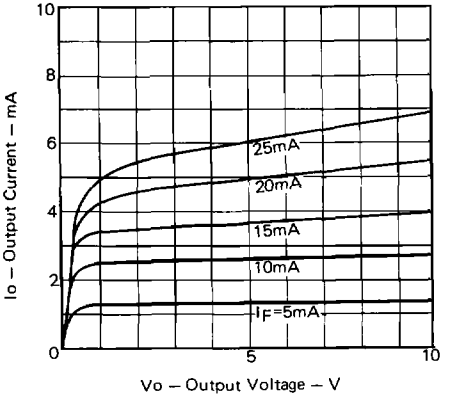


TYPICAL CHARACTERISTICS (Ta = 25°C)

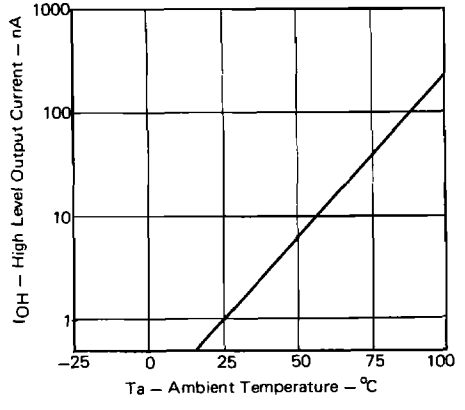
FORWARD CURRENT vs. FORWARD VOLTAGE



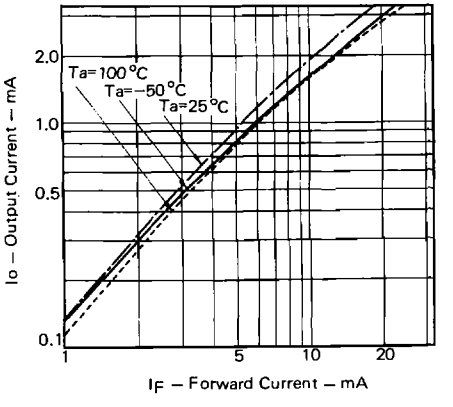
OUTPUT CURRENT vs. OUTPUT VOLTAGE



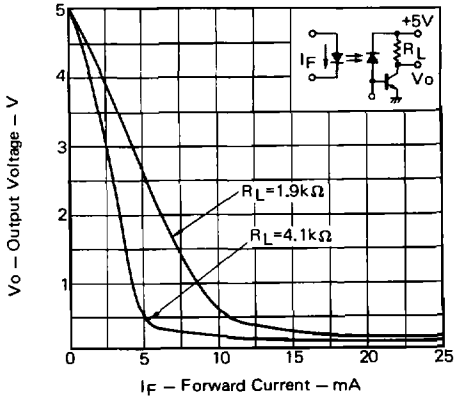
HIGH LEVEL OUTPUT CURRENT vs. AMBIENT TEMPERATURE



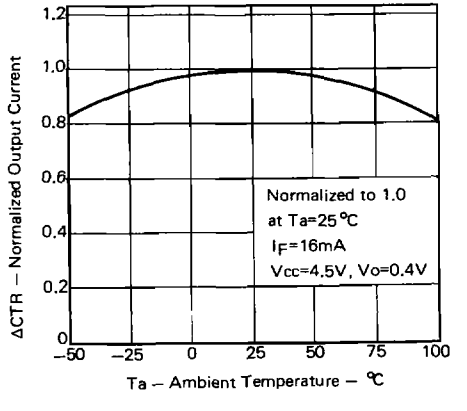
OUTPUT CURRENT vs. FORWARD CURRENT



OUTPUT VOLTAGE vs. FORWARD CURRENT



NORMALIZED OUTPUT CURRENT vs. AMBIENT TEMPERATURE



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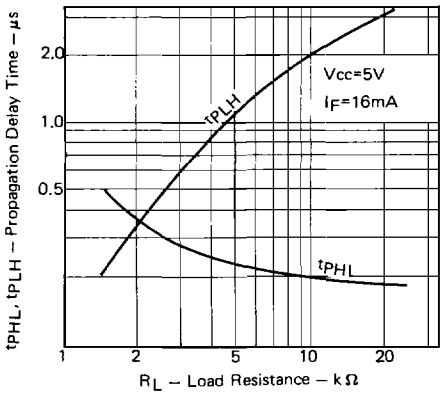
PROPAGATION DELAY TIME vs. LOAD RESISTANCE



PROPAGATION DELAY TIME vs. AMBIENT TEMPERATURE