

# PHOTO COUPLER PS2007B

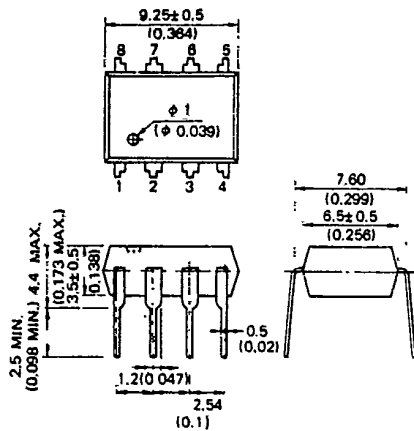
## HIGH SPEED PHOTO COUPLER

### DESCRIPTION

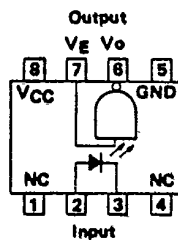
The PS2007B is a high speed photo coupler containing a GaAsP light emitting diode and an integrated detector consisting of a photodiode and a high gain linear amplifier that drives a schottky clamped open collector output transistor in a plastic DIP (Dual In-Line Package).

### PACKAGE DIMENSIONS

in millimeters (inches)



### PIN CONNECTION



PIN	Function
1.	NC
2.	Anode
3.	Cathode
4.	NC
5.	GND
6.	Vo
7.	VE
8.	VCC

### FEATURES

- Ultra high speed 50 ns TYP.
- High isolation voltage 3 000 VDC MIN.
- Low input current req. 5 mA
- Economical, compact, plastic dual in-line package
- TTL compatible 5 V Supply
- Equivalent to HP's 5082-4360, 6N137

### APPLICATIONS

- Line receiver
- Floating power supply
- Computer and peripheral memory
- Replaceable from mechanical relays and reed relays
- Replaceable from pulse transformer

### ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

#### Diode

Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	10	mA

#### Detector

Supply Voltage	V <sub>CC</sub>	7	V
Output Voltage	V <sub>O</sub>	7	V
Output Current	I <sub>O</sub>	50	mA
Enable Voltage	V <sub>E</sub>	5.5	V
Power Dissipation	P <sub>c</sub>	85	mW
Isolation Voltage	BV <sup>*1</sup>	3000	V <sub>DC</sub>
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C
Operating Temperature	T <sub>opt</sub>	0 to +70	°C

ELECTRICAL CHARACTERISTICS (Ta = 0 to 70 °C)

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V <sub>F</sub>		1.42	1.7	V	I <sub>F</sub> =10 mA, Ta=25 °C
	Reverse Current	I <sub>R</sub>		0.01	10	μA	V <sub>R</sub> =5 V, Ta=25 °C
	Capacitance	C <sub>t</sub>		60		pF	V=0, f=1.0 MHz
Detector	High Level Enable Current	I <sub>EH</sub>		-0.8		mA	V <sub>CC</sub> =5.5 V, V <sub>EH</sub> =2.0 V
	Low Level Enable Current	I <sub>EL</sub>		-1.2	-2.0	mA	V <sub>CC</sub> =5.5 V, V <sub>EL</sub> =0.5 V
Coupled	High Level Output Current	I <sub>OH</sub>		30	250	μA	V <sub>CC</sub> =V <sub>O</sub> =5.5 V, I <sub>F</sub> =250 μA, V <sub>E</sub> =2.0 V
	Low Level Output Voltage	V <sub>OL</sub>		0.4	0.6	V	V <sub>CC</sub> =5.5 V, V <sub>E</sub> =2.0 V, I <sub>F</sub> =5 mA, I <sub>O</sub> =13 mA
	Low Level Supply Current	I <sub>CCL</sub>		10	18	mA	V <sub>CC</sub> =5.5 V, V <sub>E</sub> =2 V, I <sub>F</sub> =10 mA
	High Level Supply Current	I <sub>CCH</sub>		7	15	mA	V <sub>CC</sub> =5.5 V, V <sub>E</sub> =0.5 V, I <sub>F</sub> =0 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

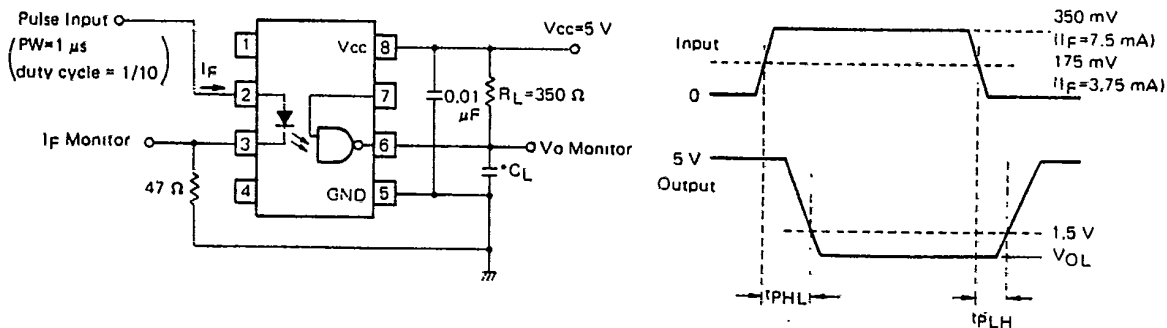
CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Coupled	Current Transfer Ratio	CTR		600		%	I <sub>F</sub> =5 mA, V <sub>CC</sub> =5 V, R <sub>L</sub> =100 Ω
	Isolation Resistance	R <sub>1-2</sub>		10 <sup>12</sup>		Ω	V <sub>in-out</sub> =1 kV
	Isolation Capacitance	C <sub>1-2</sub>		0.7		pF	V=0, f=1 MHz
	Propagation Delay Time to Low Output Level	t <sub>PHL</sub> *2		50	75	ns	I <sub>F</sub> =7.5 mA, V <sub>CC</sub> =5 V, R <sub>L</sub> =350 Ω, C <sub>L</sub> =15 pF
	Propagation Delay Time to High Output Level	t <sub>PLH</sub> *2		50	75	ns	
	Propagation Delay Time of Enable to Low Output Level	t <sub>EHL</sub>		15		ns	I <sub>F</sub> =7.5 mA, V <sub>CC</sub> =5 V, R <sub>L</sub> =350 Ω, V <sub>EH</sub> =3 V, C <sub>L</sub> =15 pF
	Propagation Delay Time of Enable to High Output Level	t <sub>ELH</sub>		30		ns	

\*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

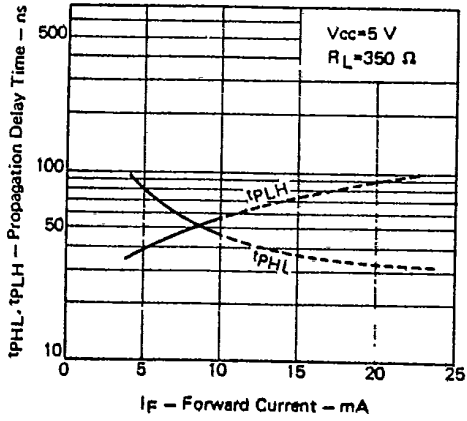


\*C<sub>L</sub> is approximately 15 pF, which includes probe and stray wiring capacitance.

PS2007B

T-41-89

PROPAGATION DELAY TIME vs. FORWARD CURRENT



PROPAGATION DELAY TIME vs. AMBIENT TEMPERATURE

