PHOTO COUPLER
PS2007B

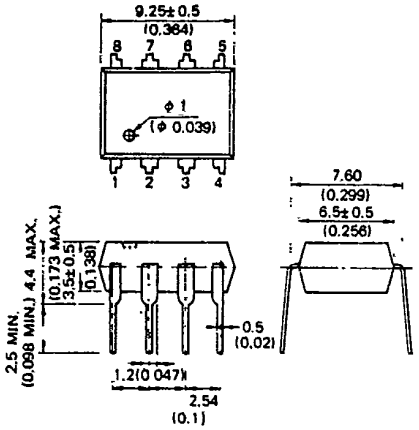
HIGH SPEED PHOTO COUPLER

DESCRIPTION

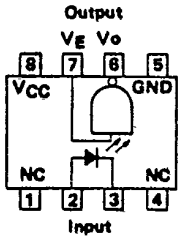
The PS2007B is a high speed photo coupler containing a GaAsP light emitting diode and an integrated detector consisting of a photodiode and a high gain linear amplifier that drives a schottky clamped open collector output transistor in a plastic DIP (Dual In-Line Package).

PACKAGE DIMENSIONS

in millimeters (inches)



PIN CONNECTION



PIN		Function
Input	1.	NC
	2.	Anode
	3.	Cathode
	4.	NC
Output	5.	GND
	6.	Vo
	7.	V_E
	8.	V_{CC}

FEATURES

- Ultra high speed — 50 ns TYP.
- High isolation voltage — 3 000 V_{DC} 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_R	5	V
Forward Current	I_F	10	mA
Detector			
Supply Voltage	Vcc	7	V
Output Voltage	Vo	7	V
Output Current	Io	50	mA
Enable Voltage	V_E	5.5	V
Power Dissipation	Pc	85	mW
Isolation Voltage	BV^{*1}	3000	V_{DC}
Storage Temperature	Tstg	−55 to +125	°C
Operating Temperature	Topt	0 to +70	°C

ELECTRICAL CHARACTERISTICS (Ta = 0 to 70 °C)

	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.42	1.7	V	I_F=10 mA, Ta=25 °C
Diode	Reverse Current	I_R		0.01	10	μA	V_R=5 V, Ta=25 °C
Diode	Capacitance	C_t		60		pF	V=0, f=1.0 MHz
Detector	High Level Enable Current	I_{EH}		−0.8		mA	Vcc=5.5 V, V_{EH}=2.0 V
Detector	Low Level Enable Current	I_{EL}		−1.2	−2.0	mA	Vcc=5.5 V, V_{EL}=0.5 V
Coupled	High Level Output Current	I_{OH}		30	250	μA	Vcc=Vo=5.5 V, I_F=250 μA, V_E=2.0 V
Coupled	Low Level Output Voltage	V_{OL}		0.4	0.6	V	Vcc=5.5 V, V_E=2.0 V, I_F=5 mA, Io=13 mA
Coupled	Low Level Supply Current	I_{CCL}		10	18	mA	Vcc=5.5 V, V_E=2 V, I_F=10 mA
Coupled	High Level Supply Current	I_{CCH}		7	15	mA	Vcc=5.5 V, V_E=0.5 V, I_F=0 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

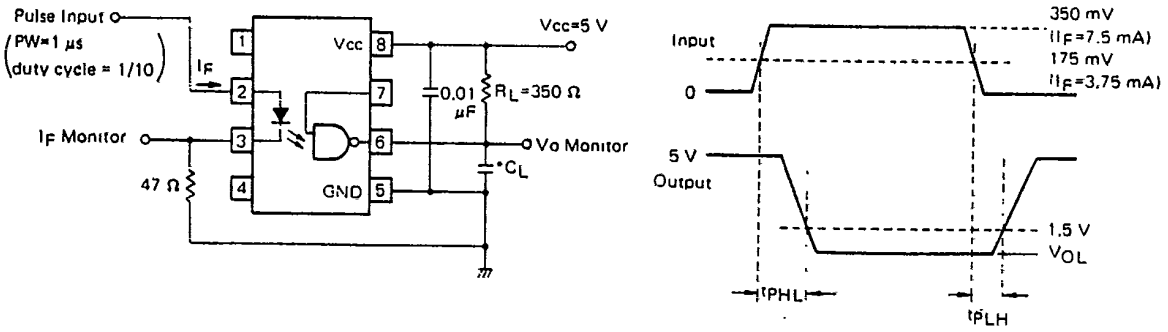
	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Coupled	Current Transfer Ratio	CTR		600		%	I_F=5 mA, Vcc=5 V, R_L=100 Ω
Coupled	Isolation Resistance	R_{I-2}		10^{12}		Ω	V_{in-out}=1 kV
Coupled	Isolation Capacitance	C_{I-2}		0.7		pF	V=0, f=1 MHz
Coupled	Propagation Delay Time to Low Output Level	t_{PHL} *2		50	75	ns	I_F=7.5 mA, Vcc=5 V, R_L=350 Ω, C_L=15 pF
Coupled	Propagation Delay Time to High Output Level	t_{PLH} *2		50	75	ns	
Coupled	Propagation Delay Time of Enable to Low Output Level	t_{EHL}		15		ns	I_F=7.5 mA, Vcc=5 V, R_L=350 Ω, V_{EH}=3 V, C_L=15 pF
Coupled	Propagation Delay Time of Enable to High Output Level	t_{ELH}		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_L is approximately 15 pF, which includes probe and stray wiring capacitance.

PS2007B

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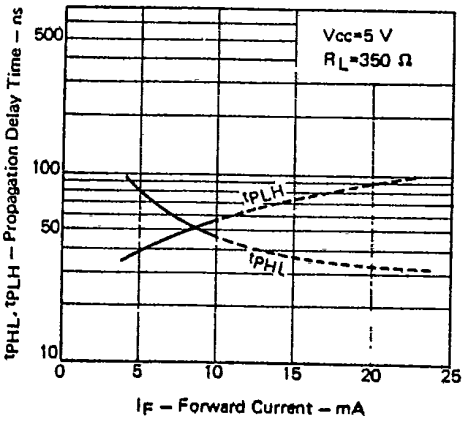
PROPAGATION DELAY TIME vs. FORWARD CURRENT



PROPAGATION DELAY TIME vs. AMBIENT TEMPERATURE