

PHOTO COUPLER PS2007B

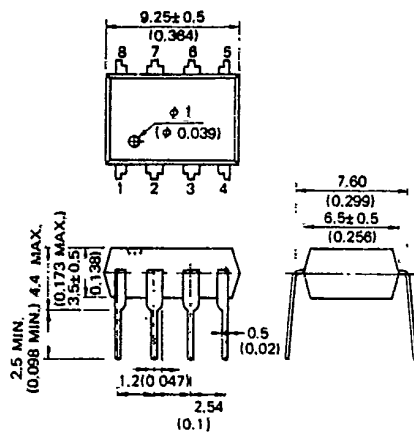
HIGH SPEED PHOTO COUPLER

DESCRIPTION

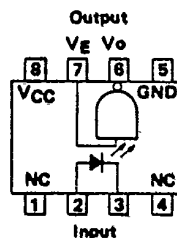
The PS2007B is a high speed photo coupler containing a GaAsP light emitting diode and an integrated detector consisting of a photodiode and a high gain linear amplifier that drives a schottky clamped open collector output transistor in a plastic DIP (Dual In-Line Package).

PACKAGE DIMENSIONS

in millimeters (inches)



PIN CONNECTION



PIN	Function
1.	NC
2.	Anode
3.	Cathode
4.	NC
5.	GND
6.	Vo
7.	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	V _{CC}	7	V
Output Voltage	V _O	7	V
Output Current	I _O	50	mA
Enable Voltage	V _E	5.5	V
Power Dissipation	P _c	85	mW
Isolation Voltage	BV ^{*1}	3000	V _{DC}
Storage Temperature	T _{stg}	-55 to +125	°C
Operating Temperature	T _{opt}	0 to +70	°C

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ELECTRICAL CHARACTERISTICS ($T_a = 0$ to 70°C)

	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Diode	Forward Voltage	V_F		1.42	1.7	V	$I_F = 10\text{ mA}$, $T_a = 25^\circ\text{C}$
	Reverse Current	I_R		0.01	10	μA	$V_R = 5\text{ V}$, $T_a = 25^\circ\text{C}$
	Capacitance	C_t		60		pF	$V = 0$, $f = 1.0\text{ MHz}$
Detector	High Level Enable Current	I_{EH}		-0.8		mA	$V_{CC} = 5.5\text{ V}$, $V_{EH} = 2.0\text{ V}$
	Low Level Enable Current	I_{EL}		-1.2	-2.0	mA	$V_{CC} = 5.5\text{ V}$, $V_{EL} = 0.5\text{ V}$
Coupled	High Level Output Current	I_{OH}		30	250	μA	$V_{CC} = V_o = 5.5\text{ V}$, $I_F = 250\text{ }\mu\text{A}$, $V_E = 2.0\text{ V}$
	Low Level Output Voltage	V_{OL}		0.4	0.6	V	$V_{CC} = 5.5\text{ V}$, $V_E = 2.0\text{ V}$, $I_F = 5\text{ mA}$, $I_o = 13\text{ mA}$
	Low Level Supply Current	I_{CCL}		10	18	mA	$V_{CC} = 5.5\text{ V}$, $V_E = 2\text{ V}$, $I_F = 10\text{ mA}$
	High Level Supply Current	I_{CCH}		7	15	mA	$V_{CC} = 5.5\text{ V}$, $V_E = 0.5\text{ V}$, $I_F = 0\text{ mA}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

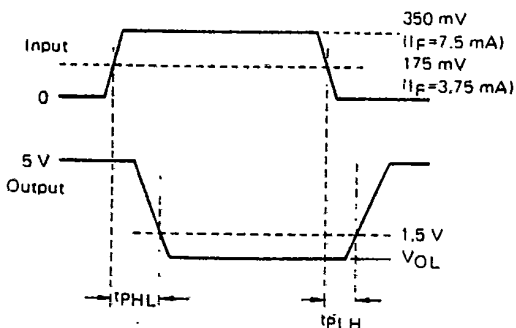
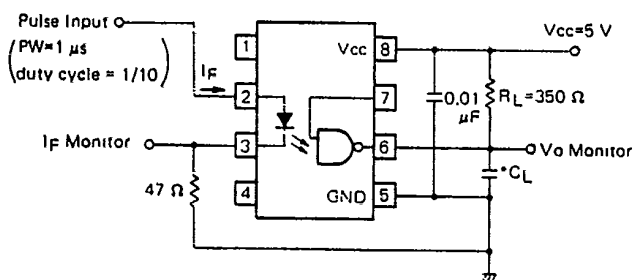
	CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Coupled	Current Transfer Ratio	CTR		600		%	$I_F = 5\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 100\text{ }\Omega$
	Isolation Resistance	R_{1-2}		10^{12}		Ω	$V_{in-out} = 1\text{ kV}$
	Isolation Capacitance	C_{1-2}		0.7		pF	$V = 0$, $f = 1\text{ MHz}$
	Propagation Delay Time to Low Output Level	t_{PHL}^{*2}		50	75	ns	$I_F = 7.5\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 350\text{ }\Omega$, $C_L = 15\text{ pF}$
	Propagation Delay Time to High Output Level	t_{PLH}^{*2}		50	75	ns	
	Propagation Delay Time of Enable to Low Output Level	t_{EHL}		15		ns	$I_F = 7.5\text{ mA}$, $V_{CC} = 5\text{ V}$, $R_L = 350\text{ }\Omega$, $V_{EH} = 3\text{ V}$, $C_L = 15\text{ pF}$
	Propagation Delay Time of Enable to High Output Level	t_{ELH}		30		ns	

*1 Measuring Condition

DC voltage for 1 minute at $T_a = 25^\circ\text{C}$, $RH = 60\%$

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

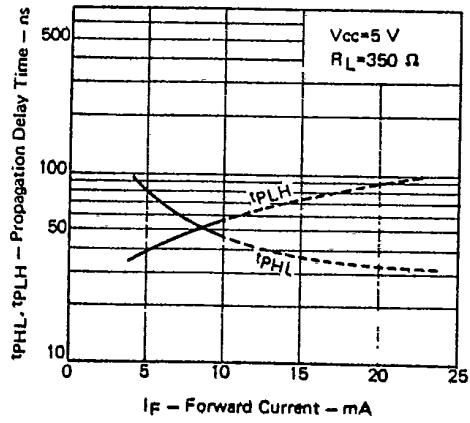
*2 Measuring Circuit

* C_L is approximately 15 pF, which includes probe and stray wiring capacitance.

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PROPAGATION DELAY TIME vs. FORWARD CURRENT



PROPAGATION DELAY TIME vs. AMBIENT TEMPERATURE

