

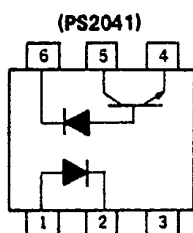
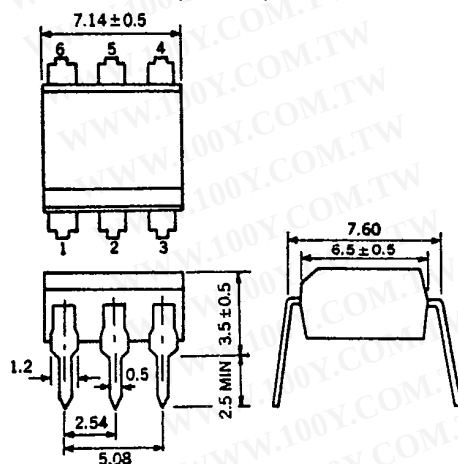
# PHOTO COUPLER

## PS2041

### HIGH SPEED 6PIN PHOTO COUPLER

#### PACKAGE DIMENSIONS

(Unit: mm)



1. Anode
2. Cathode
3. NC
4. Emitter
5.  $V_O$
6.  $V_{CC}$

#### FEATURES

- High Speed Response 0.3  $\mu$ s TYP.
- High Isolation Voltage 2500  $V_{r.m.s.}$
- Compact, Dual In-Line Package

#### APPLICATIONS

1. Interface circuit for various instrumentations, control equipments.
2. Computer and peripheral manufactures.
3. TV sets.

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#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

##### Diode

|                   |       |    |    |
|-------------------|-------|----|----|
| Forward Current   | $I_F$ | 25 | mA |
| Reverse Voltage   | $V_R$ | 5  | V  |
| Power Dissipation | $P_D$ | 45 | mW |

##### Detector

|                         |           |             |                  |
|-------------------------|-----------|-------------|------------------|
| Supply Voltage          | $V_{CC}$  | -0.5 to 15  | V                |
| Output Voltage          | $V_O$     | -0.5 to 15  | V                |
| Output Current          | $I_O$     | 8           | mA               |
| Power Dissipation       | $P_C$     | 100         | mW               |
| Isolation Voltage*      | BV        | 2500        | $V_{r.m.s.}$     |
| Storage Temperature     | $T_{stg}$ | -55 to +125 | $^\circ\text{C}$ |
| Operating Temperature   | $T_{opt}$ | -55 to +100 | $^\circ\text{C}$ |
| Lead Temperature (10 s) |           | 260         | $^\circ\text{C}$ |

\* Condition

AC Voltage for 1 minute at  $T_A = 25^\circ\text{C}$ , RH = 60 %  
 between input (pin No. 1, 2, 3, Common) and output (pin No. 4, 5, 6)

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

| CHARACTERISTIC |                                             | SYMBOL                        | MIN.      | TYP.                   | MAX.                    | UNIT          | TEST CONDITIONS                                                     |
|----------------|---------------------------------------------|-------------------------------|-----------|------------------------|-------------------------|---------------|---------------------------------------------------------------------|
| Diode          | Forward Voltage                             | $V_F$                         |           | 1.7                    | 2.2                     | V             | $I_F = 16\text{ mA}$                                                |
|                | Reverse Current                             | $I_R$                         |           | 0.01                   | 10                      | $\mu\text{A}$ | $V_R = 5\text{ V}$                                                  |
|                | Forward Voltage Temperature Coefficient     | $\frac{\Delta V_F}{\Delta T}$ |           | -1.6                   |                         | mV/°C         | $I_F = 16\text{ mA}$                                                |
|                | Capacitance                                 | $C_t$                         |           | 60                     |                         | pF            | $V = 0, f = 1\text{ MHz}$                                           |
| Detector       | High Level Output Current                   | $I_{OH}(1)$                   |           | 3                      | 500                     | nA            | $I_F = 0\text{ mA}, V_{CC} = V_O = 5.5\text{ V}$                    |
|                | High Level Output Current                   | $I_{OH}(2)$                   |           |                        | 100                     | $\mu\text{A}$ | $I_F = 0\text{ mA}, V_{CC} = V_O = 15\text{ V}$                     |
| Coupled        | Current Transfer Ratio                      | CTR *                         | 15        | 22                     |                         | %             | $I_F = 16\text{ mA}, V_{CC} = 4.5\text{ V}, V_O = 0.4\text{ V}$     |
|                | Low Level Output Voltage                    | $V_{OL}$                      |           | 0.1                    | 0.4                     | V             | $I_F = 16\text{ mA}, V_{CC} = 4.5\text{ V}, I_O = 2.4\text{ mA}$    |
|                | Low Level Supply Current                    | $I_{CCL}$                     |           | 50                     |                         | $\mu\text{A}$ | $I_F = 16\text{ mA}, V_O = \text{Open}, V_{CC} = 15\text{ V}$       |
|                | High Level Supply Current                   | $I_{CCH}$                     |           | 0.01                   | 1                       | $\mu\text{A}$ | $I_F = 0\text{ mA}, V_O = \text{Open}, V_{CC} = 15\text{ V}$        |
|                | Isolation Resistance                        | $R_{1-2}$                     | $10^{11}$ |                        |                         | $\Omega$      | $V_{in-out} = 1\text{ kVDC}$                                        |
|                | Isolation Capacitance                       | $C_{1-2}$                     |           | 0.7                    |                         | pF            | $V = 0, f = 1\text{ MHz}$                                           |
|                | Propagation Delay Time to Low Output Level  | $t_{PHL}^{**}$                |           | 0.3                    | 0.8                     | $\mu\text{s}$ | $I_F = 16\text{ mA}, V_{CC} = 5\text{ V}, R_L = 1.9\text{ k}\Omega$ |
|                | Propagation Delay Time to High Output Level | $t_{PLH}^{**}$                |           | (K/L/R)<br>0.3/1.0/0.9 | (K/L/R)<br>0.8/1.5/1.25 | $\mu\text{s}$ | $I_F = 16\text{ mA}, V_{CC} = 5\text{ V}, R_L = 1.9\text{ k}\Omega$ |

\* CTR rank

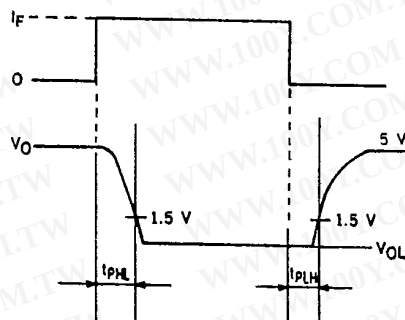
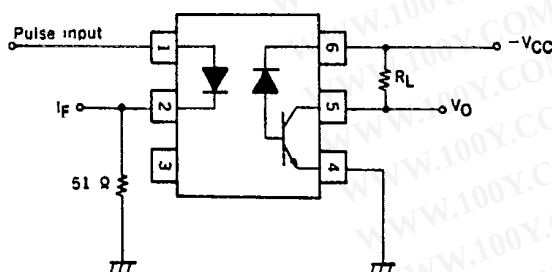
K: 15 % ~

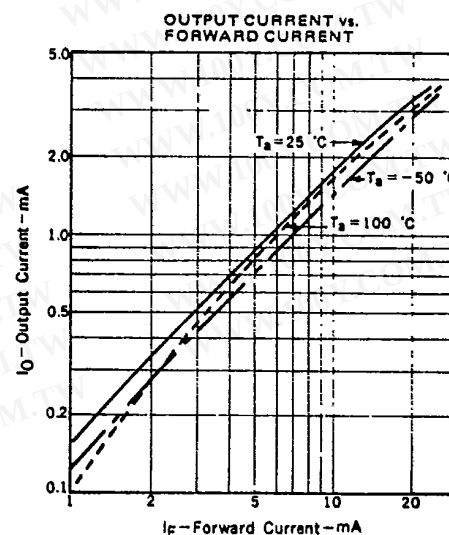
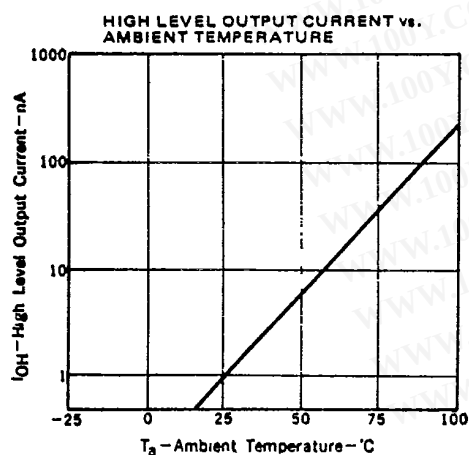
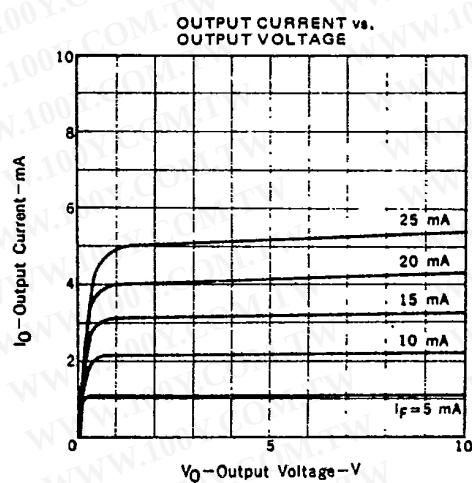
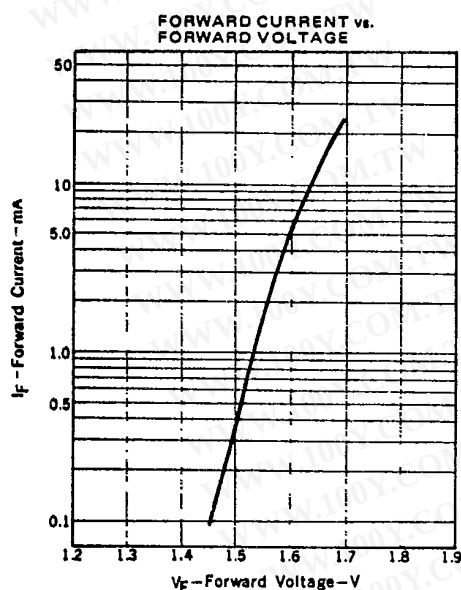
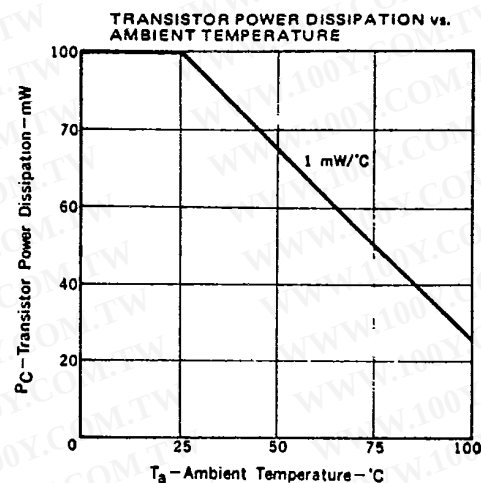
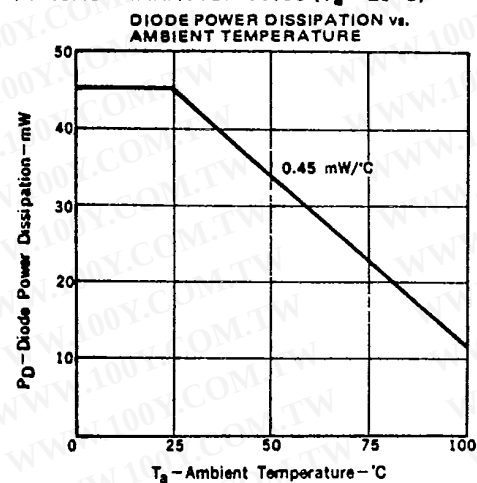
L: 25 % ~

R: 20 % ~

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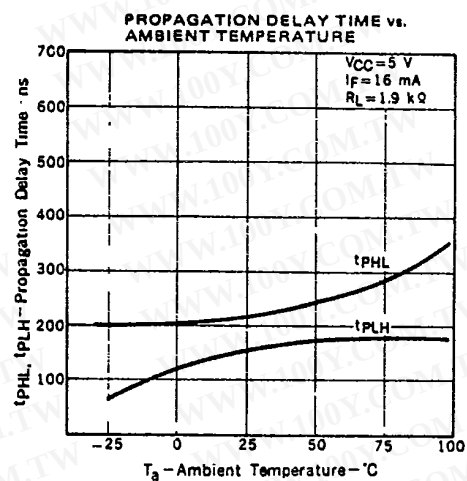
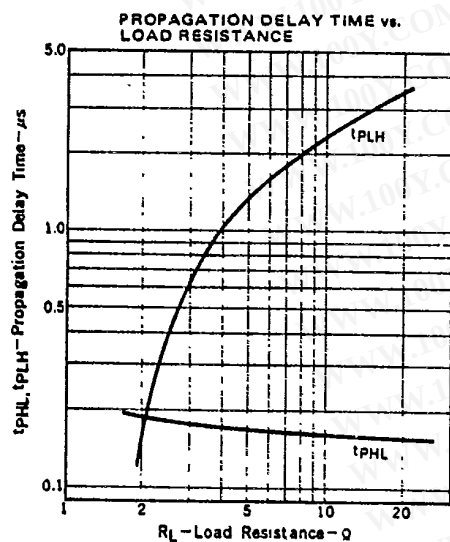
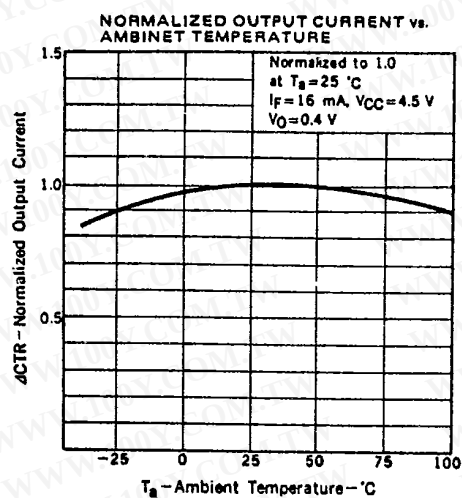
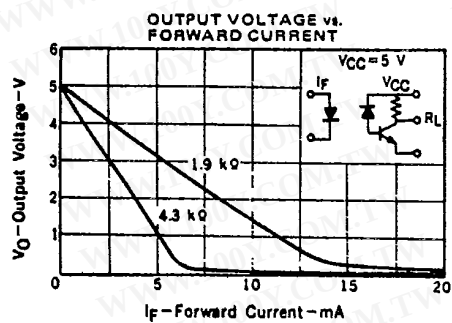
\*\* Measuring circuit



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

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