

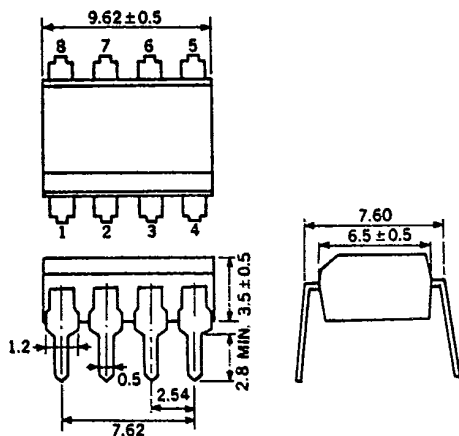
## . PHOTO COUPLER

## PS2043

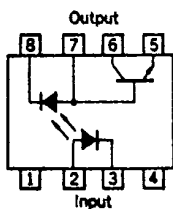
## HIGH SPEED 8PIN PHOTO COUPLER

## PACKAGE DIMENSIONS

(Unit: mm)



## PIN CONNECTION



| PIN | Function        |
|-----|-----------------|
| 1.  | NC              |
| 2.  | Anode           |
| 3.  | Cathode         |
| 4.  | NC              |
| 5.  | Emitter         |
| 6.  | V <sub>O</sub>  |
| 7.  | Base            |
| 8.  | V <sub>CC</sub> |

## FEATURES

- High Speed Response 0.3  $\mu$ s TYP.
- High Isolation Voltage 2500 V<sub>r.m.s.</sub>
- Compact, Dual In-Line Package

## APPLICATIONS

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

ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25 °C)

## Diode

|                   |                |    |    |
|-------------------|----------------|----|----|
| Forward Current   | I <sub>F</sub> | 25 | mA |
| Reverse Voltage   | V <sub>R</sub> | 5  | V  |
| Power Dissipation | P <sub>D</sub> | 45 | mW |

## Detector

|                         |                  |             |                     |
|-------------------------|------------------|-------------|---------------------|
| Supply Voltage          | V <sub>CC</sub>  | -0.5 to 15  | V                   |
| Output Voltage          | V <sub>O</sub>   | -0.5 to 15  | V                   |
| Output Current          | I <sub>O</sub>   | 8           | mA                  |
| Power Dissipation       | P <sub>C</sub>   | 100         | mW                  |
| Isolation Voltage*      | BV               | 2500        | V <sub>r.m.s.</sub> |
| Storage Temperature     | T <sub>stg</sub> | -55 to +125 | °C                  |
| Operating Temperature   | T <sub>opt</sub> | -55 to +100 | °C                  |
| Lead Temperature (10 s) |                  | 260         | °C                  |

\* Condition

AC Voltage for 1 minute at T<sub>a</sub> = 25 °C, RH = 60 %

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

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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 | $t_{PLH}^{**}$                |           |                        |                         | $\mu\text{s}$ | $I_F = 16\text{ mA}, V_{CC} = 5\text{ V}, R_L = 1.9\text{ k}\Omega$ |
|                |                                             |                               |           | (K/L/R)<br>0.3/1.0/0.8 | (K/L/R)<br>0.8/1.5/1.25 |               |                                                                     |

## \* CTR rank

K: 15 % ~

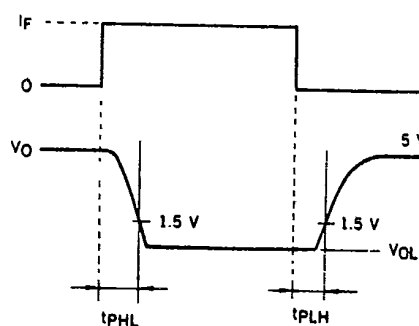
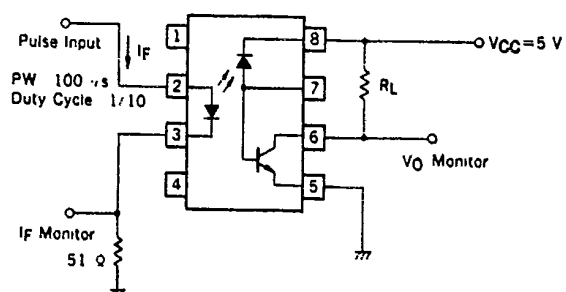
L: 25 % ~

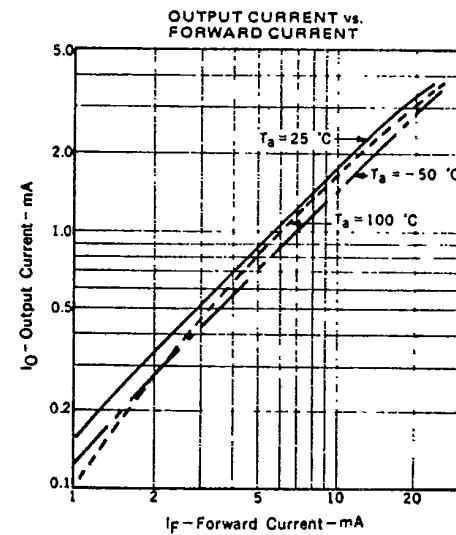
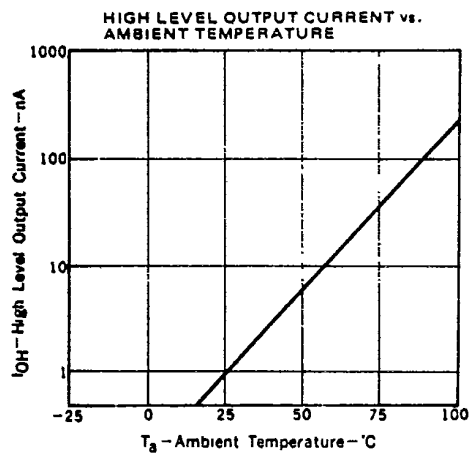
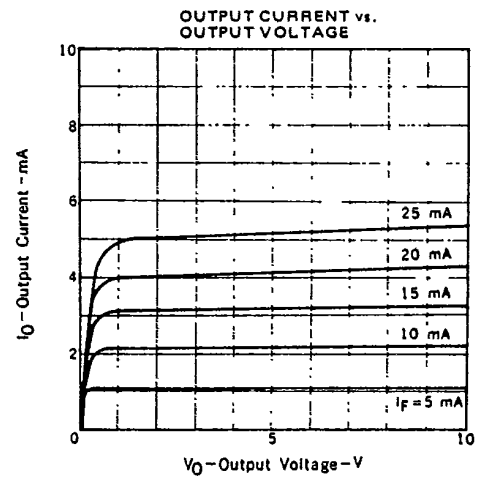
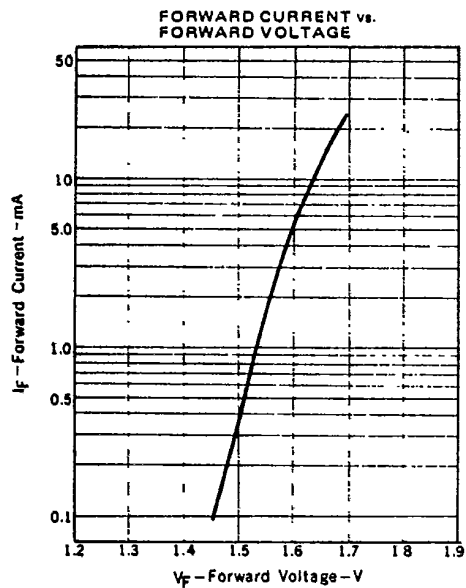
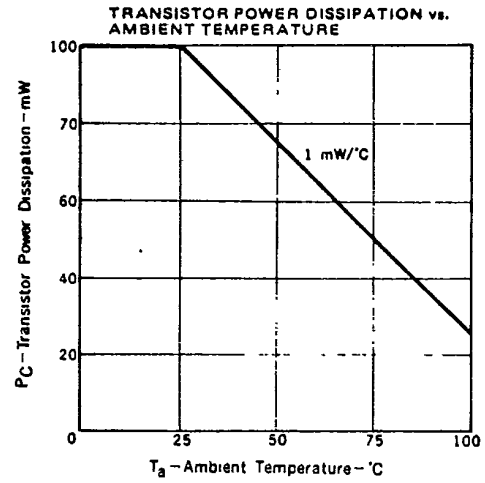
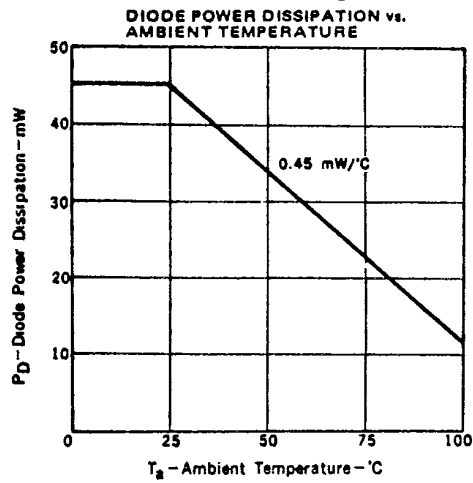
R: 20 % ~

## \*\* Measuring circuit

input PW = 100  $\mu\text{s}$ 

Duty = 10 %



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

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