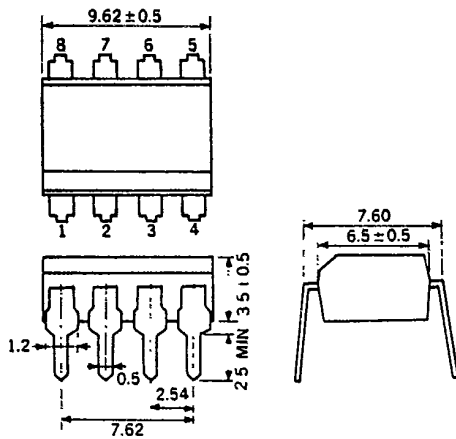


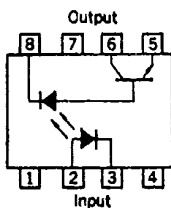
# PHOTO COUPLER PS2044

## 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.  | NC              |
| 8.  | V <sub>CC</sub> |

### FEATURES

- High Speed Response 0.3 μs 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)

PS2044

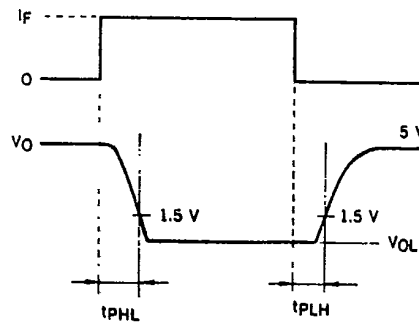
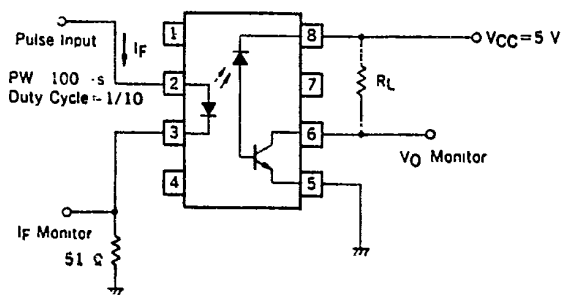
T-41-83

ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)

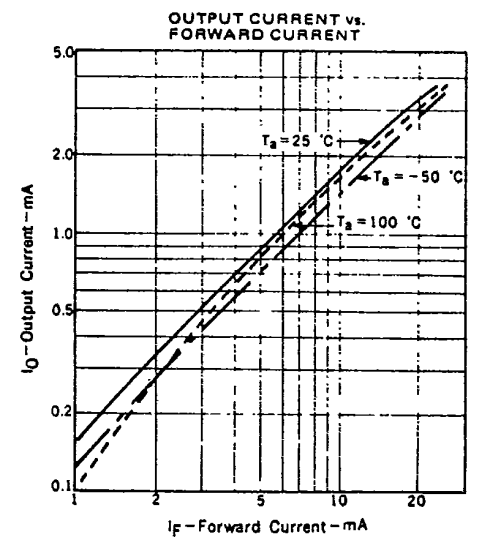
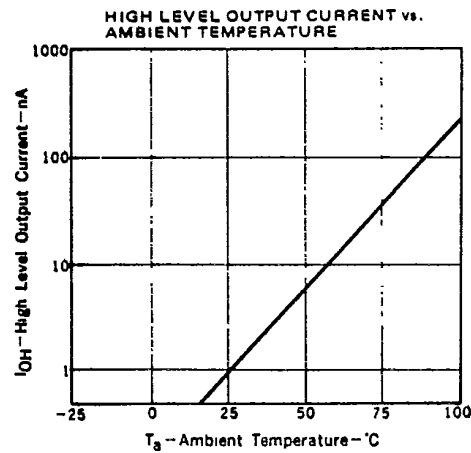
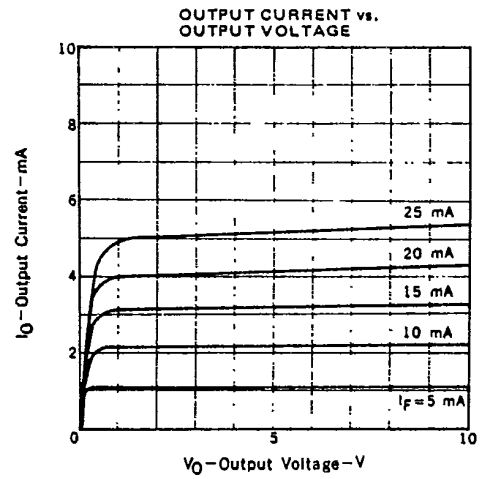
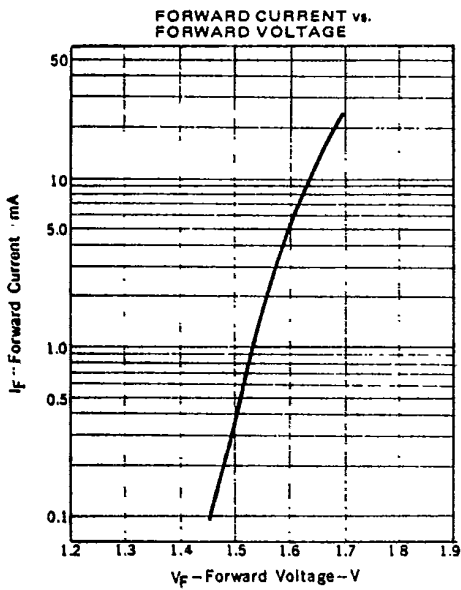
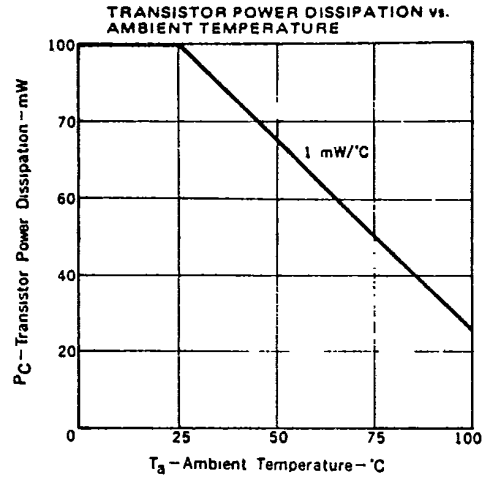
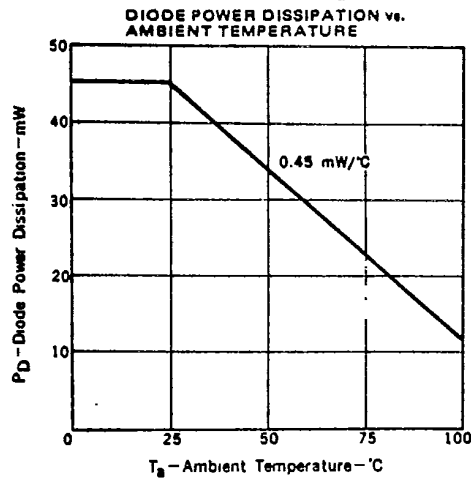
| CHARACTERISTIC |   | SYMBOL                        | MIN.             | TYP.                | MAX.                 | UNIT  | TEST CONDITIONS  |
|----------------|---|-------------------------------|------------------|---------------------|----------------------|-------|--|
| Diode          | Forward Voltage                             | V <sub>F</sub>                |                  | 1.7                 | 2.2                  | V     | I <sub>F</sub> = 16 mA   |
|                | Reverse Current                             | I <sub>R</sub>                |                  | 0.01                | 10                   | μA    | V <sub>R</sub> = 5 V   |
|                | Forward Voltage Temperature Coefficient     | $\frac{\Delta V_F}{\Delta T}$ |                  | -1.6                |                      | mV/°C | I <sub>F</sub> = 16 mA   |
|                | Capacitance                                 | C <sub>t</sub>                |                  | 60                  |                      | pF    | V = 0, f = 1 MHz   |
| Detector       | High Level Output Current                   | I <sub>OH</sub> (1)           |                  | 3                   | 500                  | nA    | I <sub>F</sub> = 0 mA, V <sub>CC</sub> = V <sub>O</sub> = 5.5 V          |
|                | High Level Output Current                   | I <sub>OH</sub> (2)           |                  |                     | 100                  | μA    | I <sub>F</sub> = 0 mA, V <sub>CC</sub> = V <sub>O</sub> = 15 V           |
| Coupled        | Current Transfer Ratio                      | CTR *                         | 15               | 22                  |                      | %     | I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 4.5 V, V <sub>O</sub> = 0.4 V  |
|                | Low Level Output Voltage                    | V <sub>OL</sub>               |                  | 0.1                 | 0.4                  | V     | I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 4.5 V, I <sub>O</sub> = 2.4 mA |
|                | Low Level Supply Current                    | I <sub>CC</sub> L             |                  | 50                  |                      | μA    | I <sub>F</sub> = 16 mA, V <sub>O</sub> = Open, V <sub>CC</sub> = 15 V    |
|                | High Level Supply Current                   | I <sub>CC</sub> H             |                  | 0.01                | 1                    | μA    | I <sub>F</sub> = 0 mA, V <sub>O</sub> = Open, V <sub>CC</sub> = 15 V     |
|                | Isolation Resistance                        | R <sub>1-2</sub>              | 10 <sup>11</sup> |                     |                      | Ω     | V <sub>in-out</sub> = 1 kVDC   |
|                | 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> **           |                  | 0.3                 | 0.8                  | μs    | I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1.9 kΩ   |
|                | Propagation Delay Time to High Output Level | t <sub>PLH</sub> **           |                  | (K/L/R) 0.3/1.0/0.8 | (K/L/R) 0.8/1.5/1.25 | μs    | I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1.9 kΩ   |

- CTR rank  
 K: 15% ~  
 L: 25% ~  
 R: 20% ~

\*\* Measuring circuit



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



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