

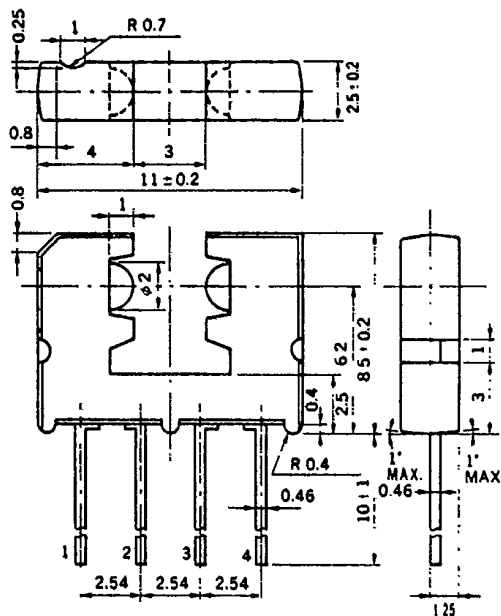
# PHOTO INTERRUPTER

## PS4601

### ONE PIECE PHOTO INTERRUPTER

#### PACKAGE DIMENSIONS

in millimeters



#### DESCRIPTION

The PS4601 contains a GaAs LED and NPN photo transistor in one molded package.

#### FEATURES

- Ultra small and thin package (Width = 2.5 mm TYP.)
- High speed response ( $t = 9 \mu s$  TYP.)
- Single in-line package (4 PIN)

#### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

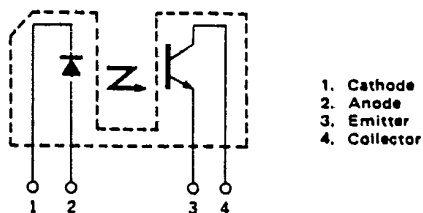
##### Diode

|                   |       |     |    |
|-------------------|-------|-----|----|
| Reverse Voltage   | $V_R$ | 5.0 | V  |
| Forward Current   | $I_F$ | 50  | mA |
| Power Dissipation | $P_D$ | 100 | mW |

##### Transistor

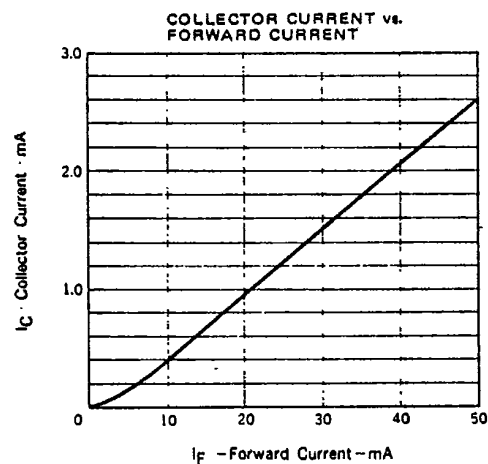
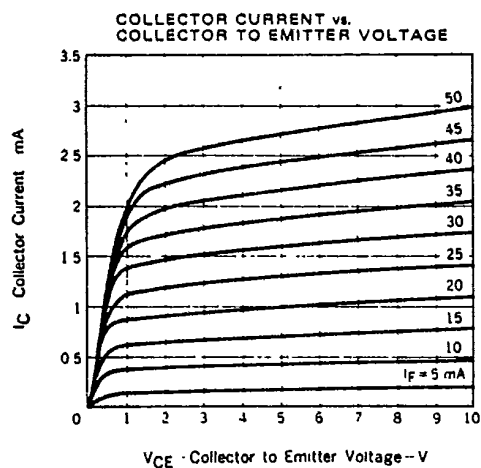
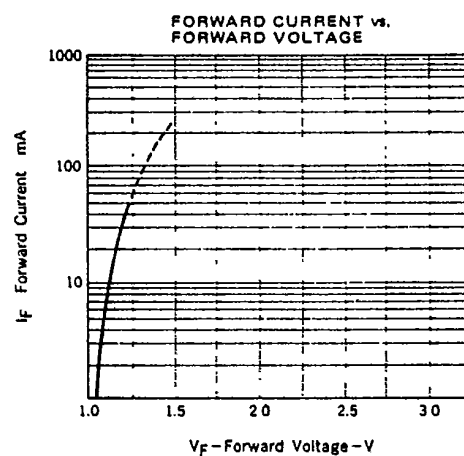
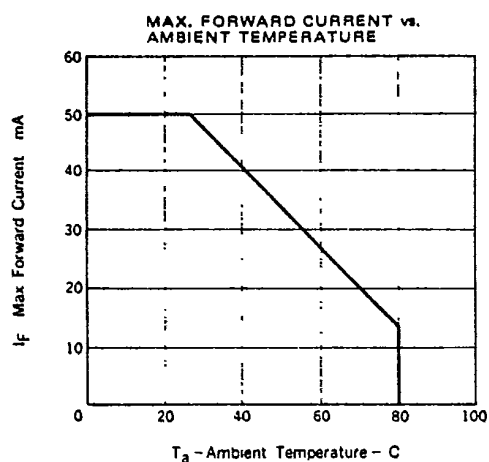
|                              |           |             |            |
|------------------------------|-----------|-------------|------------|
| Collector to Emitter Voltage | $V_{CEO}$ | 30          | V          |
| Collector Current            | $I_C$     | 40          | mA         |
| Power Dissipation            | $P_C$     | 100         | mW         |
| Storage Temperature          | $T_{stg}$ | -40 to +100 | $^\circ C$ |
| Operating Temperature        | $T_{opt}$ | -20 to +80  | $^\circ C$ |

#### CONNECTION DIAGRAM



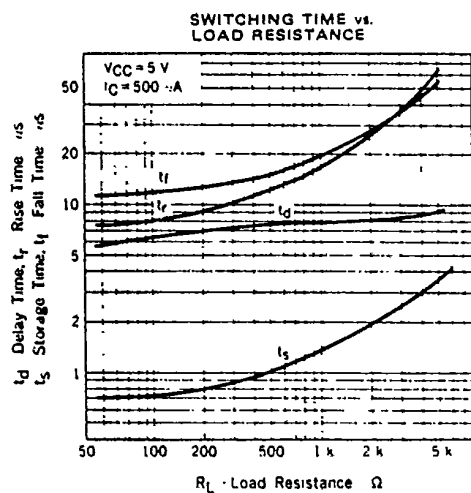
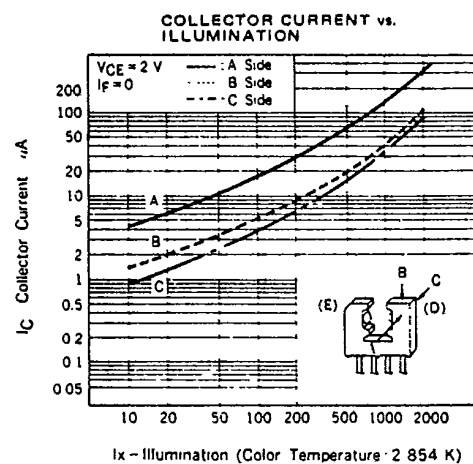
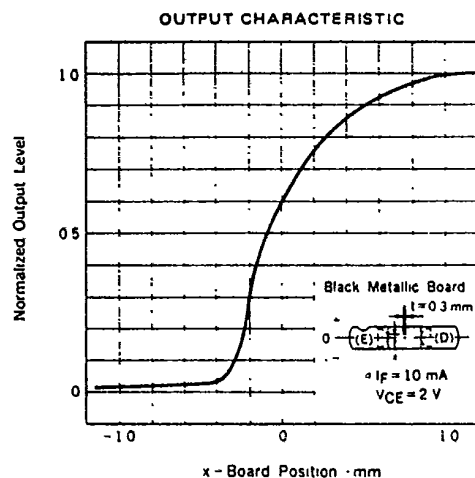
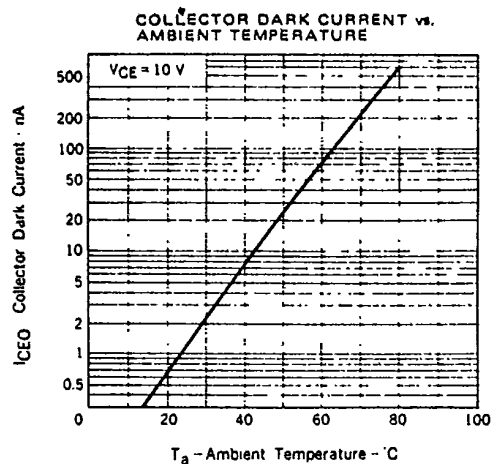
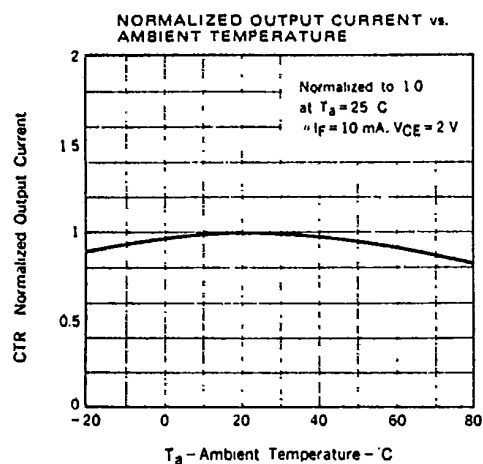
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

|            | CHARACTERISTIC                    | SYMBOL         | MIN. | TYP. | MAX. | UNIT          | TEST CONDITIONS                                                              |
|------------|-----------------------------------|----------------|------|------|------|---------------|------------------------------------------------------------------------------|
| Diode      | Forward Voltage                   | $V_F$          |      | 1.1  | 1.4  | V             | $I_F = 10\text{ mA}$                                                         |
|            | Reverse Current                   | $I_R$          |      |      | 10   | $\mu\text{A}$ | $V_R = 5.0\text{ V}$                                                         |
|            | Junction Capacitance              | C              |      | 30   |      | pF            | $V = 0, f = 1.0\text{ MHz}$                                                  |
| Transistor | Collector to Emitter Dark Current | $I_{CEO}$      |      |      | 100  | nA            | $V_{CE} = 10\text{ V}, I_F = 0$                                              |
| Coupled    | Output Current                    | $I_C$          | 150  | 400  |      | $\mu\text{A}$ | $I_F = 10\text{ mA}, V_{CE} = 2.0\text{ V}$                                  |
|            | Collector Saturation Voltage      | $V_{CE(sat)}$  |      |      | 0.3  | V             | $I_F = 10\text{ mA}, I_C = 100\text{ }\mu\text{A}$                           |
|            | Collector Leak Current Ratio      | $I_{leak}/I_C$ |      | 0.5  |      | %             | $I_F = 10\text{ mA}, V_{CE} = 2.0\text{ V (shielded)}$                       |
|            | Rise Time                         | $t_r$          |      | 9    |      | $\mu\text{s}$ | $V_{CC} = 5\text{ V}, I_C = 500\text{ }\mu\text{A}, R_L = 100\text{ }\Omega$ |
|            | Fall Time                         | $t_f$          |      | 12   |      | $\mu\text{s}$ | $V_{CC} = 5\text{ V}, I_C = 500\text{ }\mu\text{A}, R_L = 100\text{ }\Omega$ |

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

## PS4601

T-41-73



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PS4601

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## • Test Circuit for Switching Time

