# SILICON PHOTOTRANSISTOR
# 61048 (TYPE GS 4123)

OPTOELECTRONIC PRODUCTS DIVISION

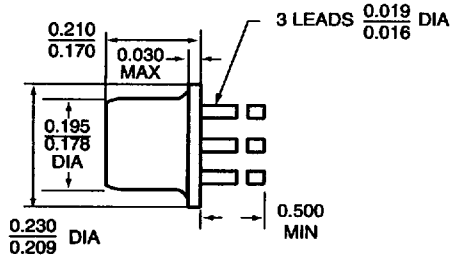
## GENERAL DESCRIPTION

LARGE SENSITIVE AREA

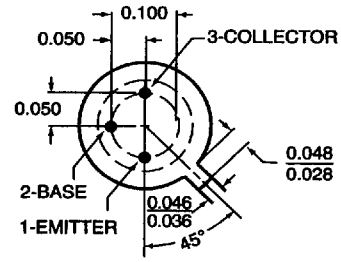
TO-46 HERMETIC PACKAGE

Mii 61048 is an N-P-N silicon Phototransistor featuring a large (.060 by .060) sensitive area, mounted in a flat window TO-46 package.
This device is ideal for use wherever system considerations dictate the use of external optics to focus radiation on the sensor. Available screened to MIL-S-19500.

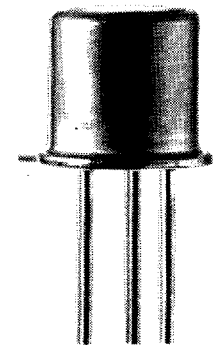
## PHYSICAL DESCRIPTION




ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED




THE COLLECTOR IS IN ELECTRICAL
CONTACT WITH THE CASE



## OPTICAL/ELECTRICAL CHARACTERISTICS AT 25°C

| PARAMETER | LIGHT CURRENT | | DARK CURRENT | COLLECTOR BREAKDOWN | EMITTER BREAKDOWN | LIGHT CURRENT RISE TIME | SATURATION VOLTAGE | ANGULAR RESPONSE |
|---|---|---|---|---|---|---|---|---|
| TEST CONDITION | $V_{CE}$ = 5.0V<br>* H = 20 mW/cm² | | $V_{CE}$ = 5V<br>H = 0 | $I_C$ = 100 µA | $I_F$ = 100µA | $I_L$ = 1mA $R_L$ = 100Ω<br>Vcc = 5V | $I_C$ = 0.4 ma<br>H as shown | Note 1 |
| SYMBOL | $I_L$ | | $I_D$ | $BV_{CEO}$ | $BV_{ECO}$ | tr | $V_{CE}$ (sat) | θ |
| UNIT | mA | | nA | VOLTS | VOLTS | µ sec | VOLTS | degrees |
| | MIN | MAX | MAX | MIN | MIN | TYP | TYP | TYP |
| GS 4123-1 | 5.0 | 20.0 | 50 | 30 | 7 | 8.0 | 0.2 | 45 |
| GS 4123-2 | 20.0 | 30.0 | 50 | 30 | 7 | 10.0 | 0.2 | 45 |
| GS 4123-3 | 30.0 | 50.0 | 50 | 30 | 7 | 15.0 | 0.2 | 45 |
| GS 4123-4 | 50.0 | – | 50 | 30 | 7 | 20.0 | 0.2 | 45 |

* Irradiance in mW/cm² from a tungsten source at a color temperature of 2870K
1 The angle between incidence for peak response and incidence for 50% of peak response

## 61048 SILICON PHOTOTRANSISTOR

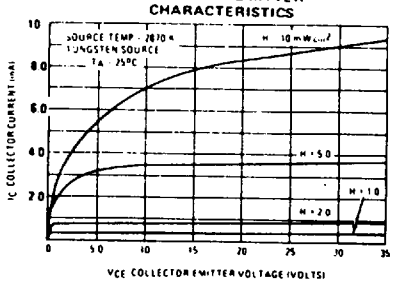
### ABSOLUTE MAXIMUM RATINGS 25°C FREE AIR TEMPERATURE UNLESS NOTED

| | |
|---|---|
| Collector-Emitter Voltage | 50 V |
| Emitter-Collector Voltage | 7 V |
| Continuous Collector Current | 50 mA |
| Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note) | 250 mW |
| Operating Free-Air Temperature Range | -65°C to 125° C |
| Storage Temperature Range | -65°C to 150° C |
| Lead Temperature 1/16 inch from Case for 10 Seconds | 240° C |

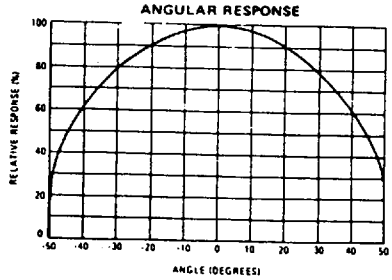
NOTE: Derate linearly to 125°C free-air temperature at the rate of 2.5 mW/°C.

### TYPICAL CHARACTERISTICS

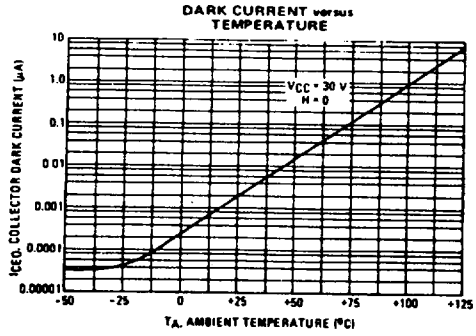
COLLECTOR EMITTER CHARACTERISTICS



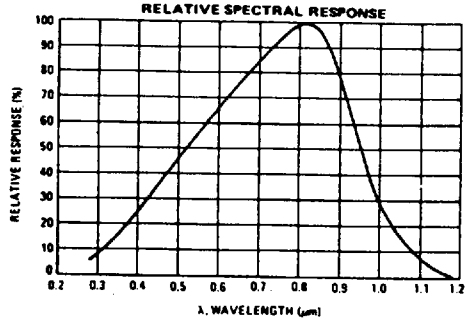

ANGULAR RESPONSE



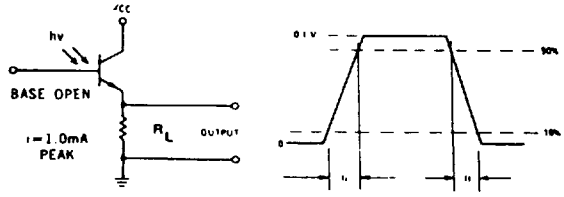

DARK CURRENT versus TEMPERATURE




RELATIVE SPECTRAL RESPONSE




PULSE RESPONSE TEST CIRCUIT AND WAVEFORM




For unsaturated rise time measurements, radiation is provided by a pulsed GaAs (gallium-arsenide) LED ($\lambda$=0.9 μm) with a pulse width equal to or greater than 200 microseconds.