

# SILICON PHOTOTRANSISTOR 61058 (TYPE GS 4021)



## GENERAL DESCRIPTION (REPLACES TIL 81)

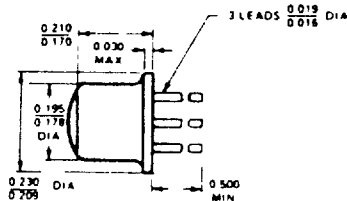
T-41-61

HIGH SENSITIVITY  
TO-46 HERMETIC PACKAGE

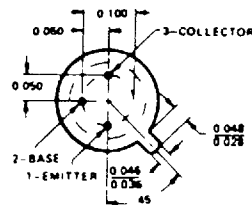
Mii 61058 is an N-P-N Silicon Phototransistor in a lensed TO-46 three-lead package. It is available in a range of sensitivities and is ideal for use wherever high response, low dark leakage, and low saturation characteristics are required.

The base lead of this device is available if needed in order to provide additional control. 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>$H = 5 \text{ mW/cm}^2$ |      | $V_{CE} = 10V$<br>$H = 0$ | $I_C = 100 \mu A$   | $I_E = 100 \mu A$ | $I_L = 1 \text{ mA}$ $R_L = 100 \Omega$<br>$V_{CC} = 5V$ | $I_C = 0.4 \text{ ma}$<br>$H$ as shown | Note 1           |
| SYMBOL         | $I_L$                                      |      | $I_D$                     | $BV_{CEO}$          | $BV_{ECO}$        | $t_r$                                                    | $V_{CE(sat)}$                          | $\theta$         |
| UNIT           | mA                                         |      | nA                        | VOLTS               | VOLTS             | $\mu \text{ sec}$                                        | VOLTS                                  | degrees          |
|                | MIN                                        | MAX  | MAX                       | MIN                 | MIN               | TYP                                                      | TYP                                    | TYP              |
| GS 4021-1      | 1.0                                        | 5.0  | 100                       | 30                  | 7                 | 3.0                                                      | 0.2                                    | 10               |
| GS 4021-2      | 4.0                                        | 9.0  | 100                       | 30                  | 7                 | 4.0                                                      | 0.2                                    | 10               |
| GS 4021-3      | 8.0                                        | 16.0 | 100                       | 30                  | 7                 | 5.0                                                      | 0.2                                    | 10               |
| GS 4021-4      | 15.0                                       | -    | 100                       | 30                  | 7                 | 7.0                                                      | 0.2                                    | 10               |

- Irradiance in  $\text{mW/cm}^2$  from a tungsten source at a color temperature of 2870°K  
1. The angle between incidence for peak response and incidence for 50% of peak response

SILICON PHOTOTRANSISTOR, TYPE GS 4021, *Continued*

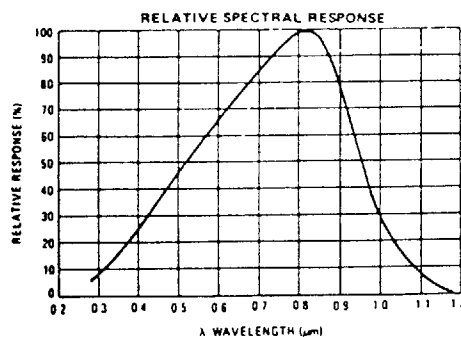
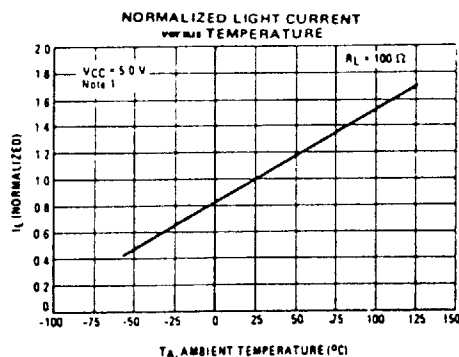
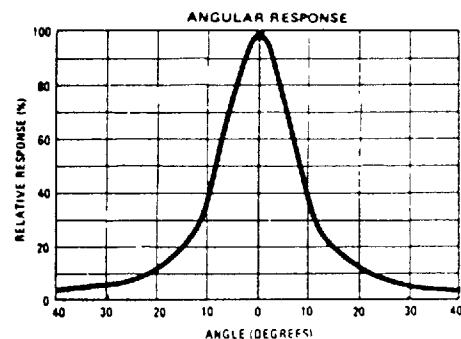
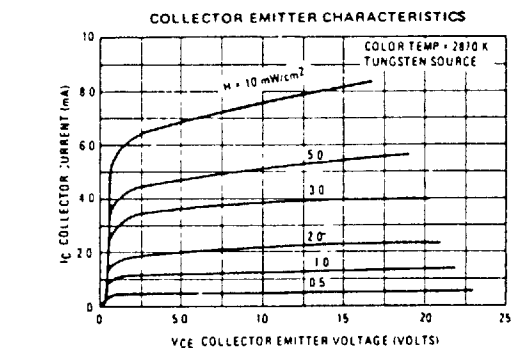
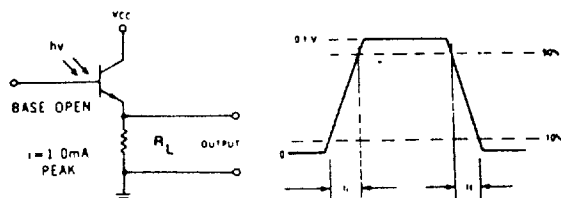
## 61058 SILICON PHOTOTRANSISTOR

## 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)<br>25°C Free-Air Temperature (See Note) | 250 mW         |
| Operating Free-Air Temperature Range                                                | -55°C to 125°C |
| Storage Temperature Range                                                           | -55°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

PULSE RESPONSE TEST  
CIRCUIT AND WAVEFORM

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