

**61053**

**SILICON PHOTOTRANSISTOR, "PIGTAIL PACKAGE"**



06/23/03

**Features:**

- Hermetically sealed
- Narrow receiving angle
- Suitable for high-density mounting
- Welded loop lead available

**Applications:**

- Incremental encoding
- Reflective sensors
- Position sensors
- Level sensors

**DESCRIPTION**

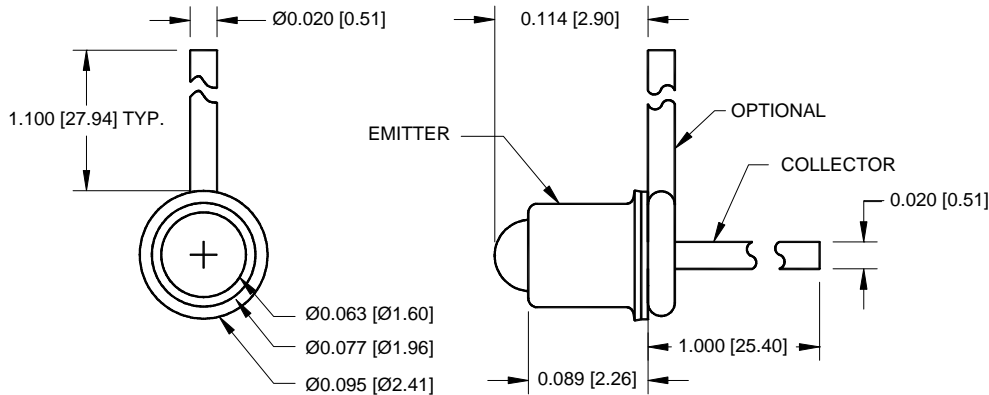
The **61053** is an N-P-N Planar Silicon phototransistor in a small outline package designed to be housing mounted. It is available in a range of sensitivities and is lensed for minimum response to stray light. High sensitivity, low dark current leakage, and low saturation voltage make this device ideal for interfacing with TTL circuits. This sensor is also available with a lead attached to the case so that it may be connected without the use of printed circuit boards. Available custom binned to customer specifications or screened to MIL-PRF-19500.

**ABSOLUTE MAXIMUM RATINGS**

|  |                 |
|--|-----------------|
| Collector-Emitter Voltage.....                                       | 50V             |
| Emitter-Collector Voltage.....                                       | 7V              |
| Operating Temperature .....  | -55°C to +125°C |
| Storage Temperature.....   | -65°C to +150°C |
| Power Dissipation (Derate at the rate of 0.5 mW/°C above 25°C) ..... | 50mW            |
| Lead Soldering Temperature (10 second, 1/16" from case) .....        | 240°C           |

**Package Dimensions**

**Schematic Diagram**



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

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## SILICON PHOTOTRANSISTOR, "PIGTAIL PACKAGE"

### ELECTRICAL CHARACTERISTICS

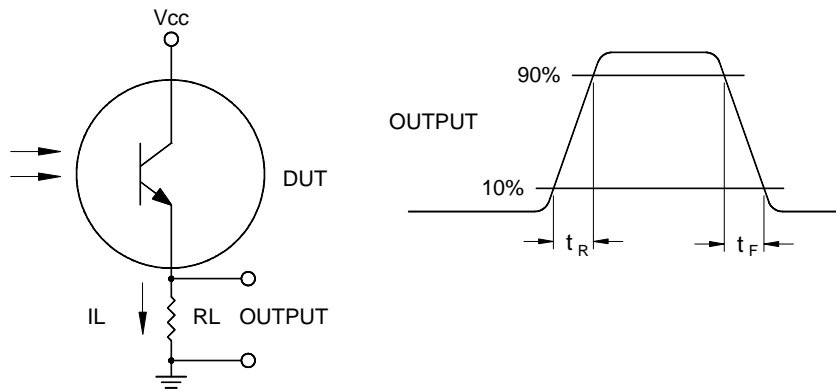
T<sub>A</sub> = 25°C unless otherwise specified.

| PARAMETER                           | SYMBOL   | MIN                      | TYP | MAX                     | UNITS   | TEST CONDITIONS   | NOTE |
|-------------------------------------|--|--------------------------|-----|-------------------------|---------|---|------|
| Light Current                       | 61053-X01<br>61053-X02<br>61053-X03<br>61053-X04 | 0.7<br>1.5<br>3.0<br>6.0 |     | 2.0<br>4.0<br>7.0<br>-- | mA      | V <sub>CE</sub> = 5.0V, H = 5 mW/cm <sup>2</sup>                      | 1    |
| Dark Current                        | 61053-X0X  |                          |     | 25                      | nA      | V <sub>CE</sub> = 30V, H = 0  |      |
| Collector-Emitter Breakdown Voltage | 61053-X0X  | BV <sub>CEO</sub>        | 50  |                         | V       | I <sub>C</sub> = 100μA  |      |
| Emitter-Collector Breakdown Voltage | 61053-X0X  | BV <sub>ECO</sub>        | 7   |                         | V       | I <sub>E</sub> = 100μA  |      |
| Light Current Rise Time             | 61053-X0X  | t <sub>r</sub>           |     | 20                      | μs      | R <sub>L</sub> = 1KΩ, V <sub>CC</sub> = 5V,<br>I <sub>L</sub> = 1.0mA |      |
| Saturation Voltage                  | 61053-X01  | V <sub>CE (sat)</sub>    |     | 0.3                     | V       | I <sub>C</sub> = 0.4mA, H = 5 mW/cm <sup>2</sup>                      |      |
| Angular Response                    | 61053-X01  | θ                        | 12  |                         | degrees |   | 2    |

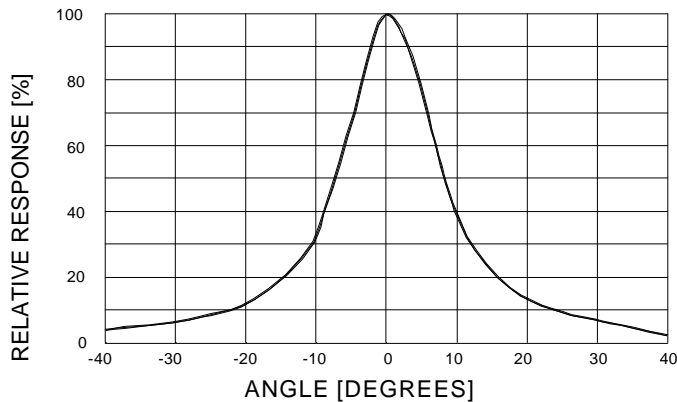
#### NOTES:

- Irradiance (H) in mW/cm<sup>2</sup> from a tungsten source at a color temperature of 2870K..
- The angle between incidence for peak response and incidence for 50% of peak response.

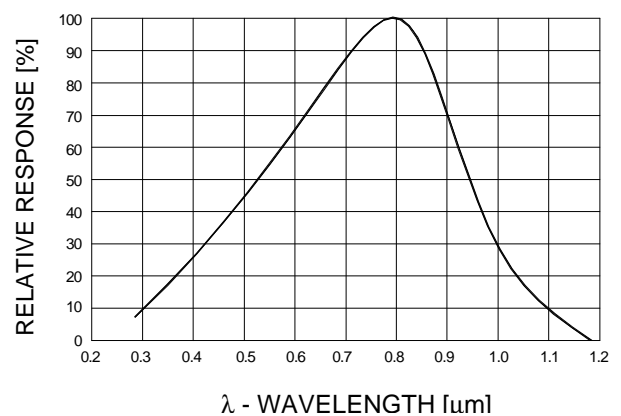
#### PULSE RESPONSE TEST CIRCUIT AND WAVEFORM



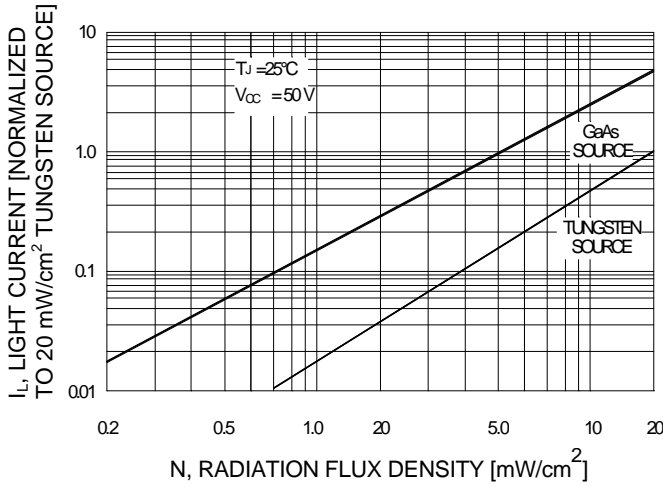
#### ANGULAR RESPONSE



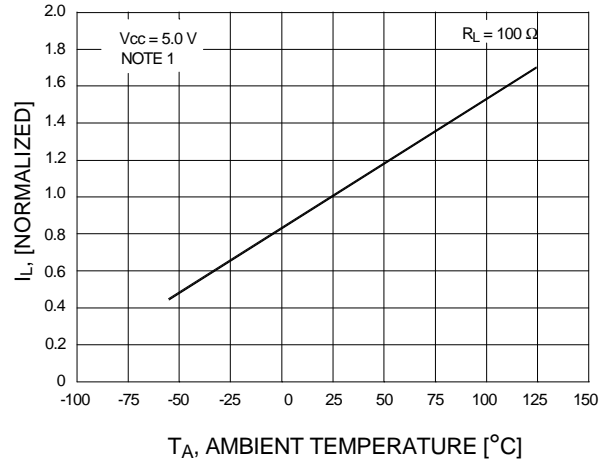
#### RELATIVE SPECTRAL RESPONSE



**NORMALIZED LIGHT CURRENT  
versus RADIATION FLUX DENSITY**



**NORMALIZED LIGHT CURRENT  
versus TEMPERATURE**



**SELECTION GUIDE**

| PART NUMBER | PART DESCRIPTION | $I_L$ Range |
|-------------|------------------|-------------|
| 61053-001   | Commercial       | 0.7 to 2mA  |
| 66153-101   | Screened         | 0.7 to 2mA  |
| 61053-002   | Commercial       | 1.5 to 4mA  |
| 61053-102   | Screened         | 1.5 to 4mA  |
| 61053-003   | Commercial       | 3 to 7mA    |
| 61053-103   | Screened         | 3 to 7mA    |
| 61053-004   | Commercial       | 6 mA (min)  |
| 61053-104   | Screened         | 6 mA (min)  |

**NOTE:** Add L following dash number ( e.g. -004L ) to indicate loop lead.