

**61055****SILICON PHOTOTRANSISTOR "PILL PACK"**
**OPTOELECTRONIC PRODUCTS  
DIVISION**

08/12/2009

**Features:**

- Hermetically sealed
- High sensitivity
- Small package
- Suitable for high-density PC Board mounting

**Applications:**

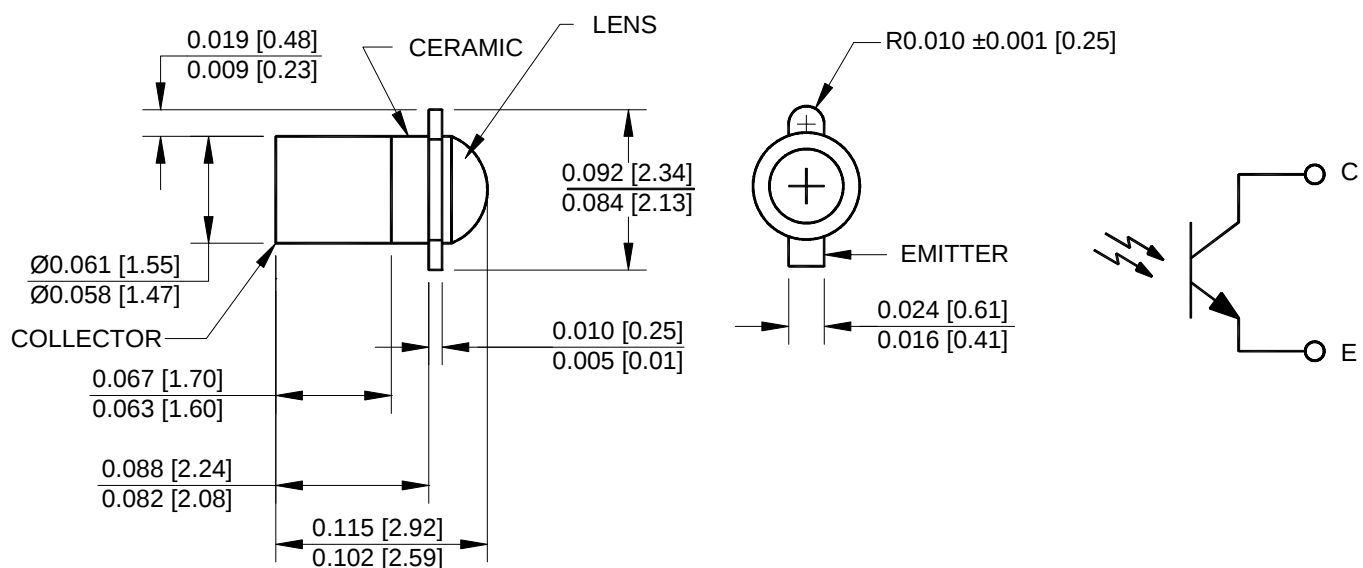
- Incremental Encoding
- Reflective Sensors
- Position Sensors
- Level Sensors

**DESCRIPTION**

The **61055** is an N-P-N Planar Silicon Transistor in a package designed to be mounted in a double-clad printed circuit board. 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. Available custom binned to customer specifications or screened to MIL-PRF-19500.

**ABSOLUTE MAXIMUM RATINGS**

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

**Package Dimensions****Schematic Diagram**

ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

**ELECTRICAL CHARACTERISTICS**  $T_A = 25^\circ\text{C}$  unless otherwise specified.

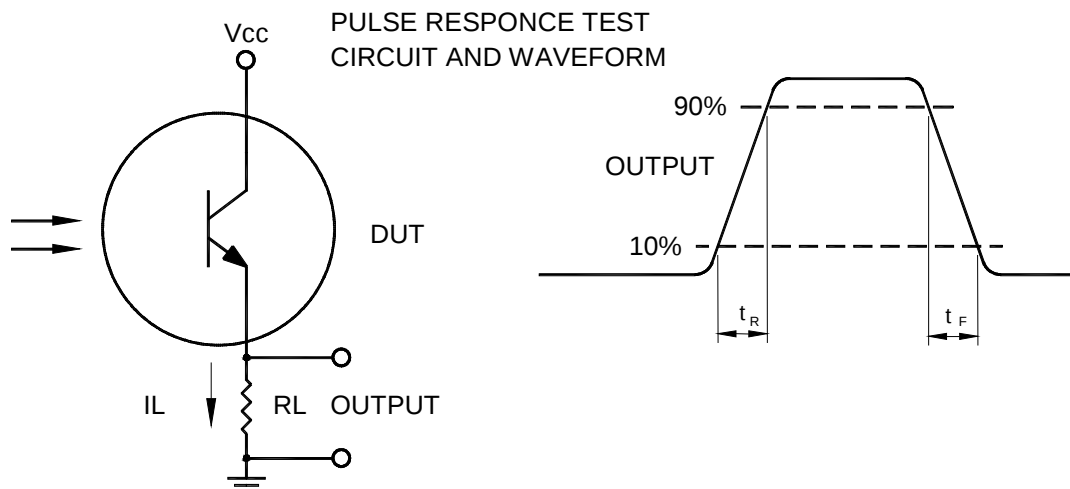
| PARAMETER                           | SYMBOL    | MIN           | TYP | MAX  | UNITS           | TEST CONDITIONS                                                              | NOTE |
|-------------------------------------|-----------|---------------|-----|------|-----------------|------------------------------------------------------------------------------|------|
| Light Current                       | 61055-X01 | 0.5           |     | 3.0  |                 | $V_{CE} = 5.0\text{ V}$ , $H = 20\text{ mW/cm}^2$                            | 1    |
|                                     | 61055-X02 | 2.0           |     | 5.0  |                 |                                                                              |      |
|                                     | 61055-X03 | 4.0           |     | 8.0  |                 |                                                                              |      |
|                                     | 61055-X04 | 7.0           |     | 12.0 | mA              |                                                                              |      |
|                                     | 61055-X05 | 12.0          |     | 20.0 |                 |                                                                              |      |
|                                     | 61055-X06 | 20.0          |     | —    |                 |                                                                              |      |
|                                     | 61055-305 | 4.0           |     | —    |                 |                                                                              |      |
| Dark Current                        | 61055-X0X | $I_D$         |     | 25   | nA              | $V_{CE} = 30\text{ V}$ , $H = 0$                                             | 1    |
| Collector-Emitter Breakdown Voltage | 61055-X0X | $BV_{CEO}$    | 50  |      | V               | $I_C = 100\text{ }\mu\text{A}$                                               |      |
| Emitter-Collector Breakdown Voltage | 61055-X0X | $BV_{ECO}$    | 7   |      | V               | $I_E = 100\text{ }\mu\text{A}$                                               |      |
| Light Current Rise Time, Fall Time  | 61055-X0X | $t_r$ , $t_f$ |     | 20.0 | $\mu\text{sec}$ | $R_L = 1\text{ K}\Omega$ , $V_{CC} = 30\text{ V}$ ,<br>$I_L = 1.0\text{ mA}$ |      |
| Saturation Voltage                  | 61055-X0X | $V_{CE(sat)}$ |     | 0.3  | V               | $I_C = 0.4\text{ mA}$ , $H = 20\text{ mW/cm}^2$                              |      |
| Angular Response                    | 61055-X0X | $\theta$      | 24  |      | degrees         | $R_L = 1\text{ K}\Omega$ , $V_{CC} = 5\text{ V}$ ,<br>$I_L = 1.0\text{ mA}$  | 2    |

**NOTES:**

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

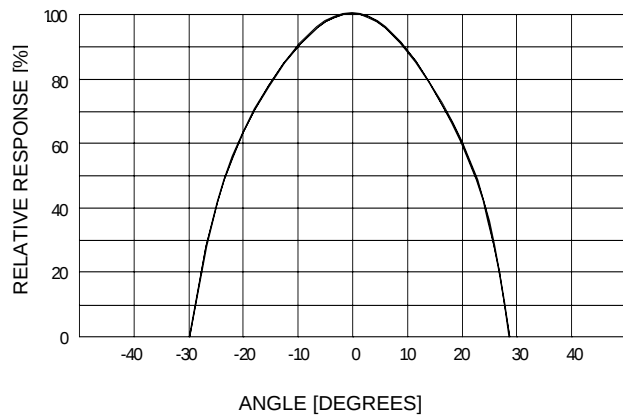
**SELECTION GUIDE**

| PART NUMBER | PART DESCRIPTION        | $I_L$ Range |
|-------------|-------------------------|-------------|
| 61055-001   | Commercial              | 0.5 to 3 mA |
| 66155-101   | Screened to JANTX level | 0.5 to 3 mA |
| 61055-002   | Commercial              | 2 to 5 mA   |
| 61055-102   | Screened to JANTX level | 2 to 5 mA   |
| 61055-003   | Commercial              | 4 to 8 mA   |
| 61055-103   | Screened to JANTX level | 4 to 8 mA   |
| 61055-004   | Commercial              | 7 to 12 mA  |
| 61055-104   | Screened to JANTX level | 7 to 12 mA  |
| 61055-005   | Commercial              | 12 to 20 mA |
| 61055-105   | Screened to JANTX level | 12 to 20 mA |
| 61055-006   | Commercial              | 20 mA min   |
| 61055-106   | Screened to JANTX level | 20 mA min   |
| 61055-305   | Screened to JANS level  | 4 mA min    |

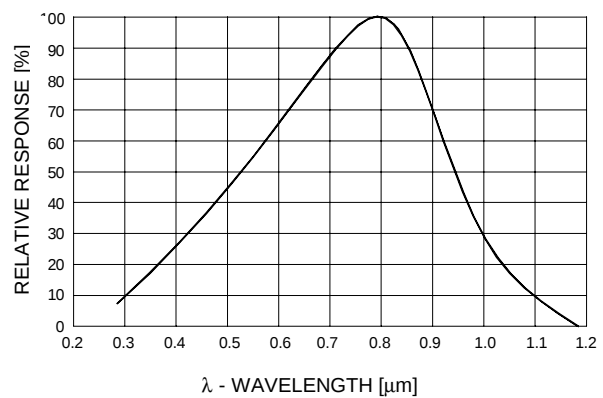


## TYPICAL CHARACTERISTICS

ANGULAR RESPONSE



RELATIVE SPECTRAL RESPONSE

NORMALIZED LIGHT CURRENT  
versus TEMPERATURE