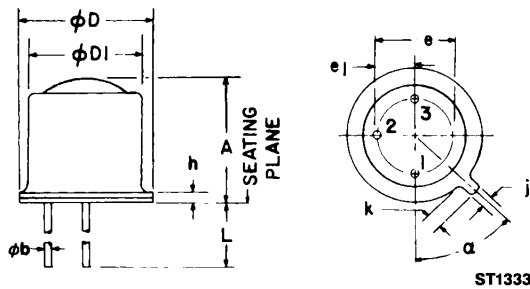




## HERMETIC SILICON PHOTOTRANSISTOR

**L14G1/2/3**

### PACKAGE DIMENSIONS



ST1333

| SYMBOL          | INCHES   |      | MILLIMETERS |      | NOTES |
|-----------------|----------|------|-------------|------|-------|
|                 | MIN.     | MAX. | MIN.        | MAX. |       |
| A               | .225     | .255 | 5.71        | 6.47 |       |
| @b              | .016     | .021 | .407        | .533 |       |
| @D              | .209     | .230 | 5.31        | 5.84 |       |
| @D <sub>1</sub> | .178     | .195 | 4.52        | 4.96 |       |
| e               | .100 NOM |      | 2.54 NOM    |      | 2     |
| e <sub>1</sub>  | .050 NOM |      | 1.27 NOM    |      | 2     |
| h               | —        | .030 | —           | .76  |       |
| j               | .036     | .046 | .92         | 1.16 |       |
| k               | .028     | .048 | .71         | 1.22 | 1     |
| L               | .500     | —    | 12.7        | —    |       |
| $\alpha$        | 45°      | 45°  | 45°         | 45°  | 3     |

### DESCRIPTION

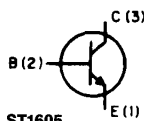
The L14G series is a silicon phototransistor mounted in a narrow angle, TO-18 package.

### FEATURES

- Hermetically sealed package
- Narrow reception angle

### PACKAGE OUTLINE

(COLLECTOR  
CONNECTED  
TO CASE)



ST1605

#### NOTES:

1. MEASURED FROM MAXIMUM DIAMETER OF DEVICE.
2. LEADS HAVING MAXIMUM DIAMETER .021" (.533mm) MEASURED IN GAUGING PLANE .054" + .001" - .000 (1.37 + .025 - .000mm) BELOW THE REFERENCE PLANE OF THE DEVICE SHALL BE WITHIN .007" (.778mm) THEIR TRUE POSITION RELATIVE TO MAXIMUM WIDTH TAB.
3. FROM CENTERLINE TAB.



## HERMETIC SILICON PHOTOTRANSISTOR

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C Unless Otherwise Specified)

|   |                                       |
|---|---------------------------------------|
| Storage Temperature .....                       | -65°C to +150°C                       |
| Operating Temperature .....                     | -65°C to +125°C                       |
| Soldering:                                      |                                       |
| Lead Temperature (Iron) .....                   | 240°C for 5 sec. <sup>(3,4,5,6)</sup> |
| Lead Temperature (Flow) .....                   | 260°C for 10 sec. <sup>(3,4,6)</sup>  |
| Collector-Emitter Breakdown Voltage .....       | 45 Volts                              |
| Collector-Base Breakdown Voltage .....          | 45 Volts                              |
| Emitter-Base Breakdown Voltage .....            | 5 Volts                               |
| Power Dissipation (T <sub>A</sub> = 25°C) ..... | 300 mW <sup>(1)</sup>                 |
| Power Dissipation (T <sub>C</sub> = 25°C) ..... | 600 mW <sup>(2)</sup>                 |

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless Otherwise Specified)

(All measurements made under pulse conditions.)

| PARAMETER                        | SYMBOL               | MIN. | TYP. | MAX. | UNITS   | TEST CONDITIONS  |
|----------------------------------|----------------------|------|------|------|---------|--|
| Collector-Emitter Breakdown      | BV <sub>CEO</sub>    | 45   | —    | —    | V       | I <sub>C</sub> = 10 mA, E <sub>e</sub> = 0                                       |
| Emitter-Base Breakdown           | BV <sub>EBO</sub>    | 5.0  | —    | —    | V       | I <sub>E</sub> = 100 μA, E <sub>e</sub> = 0                                      |
| Collector-Base Breakdown         | BV <sub>CBO</sub>    | 45   | —    | —    | V       | I <sub>C</sub> = 100 μA, E <sub>e</sub> = 0                                      |
| Collector-Emitter Leakage        | I <sub>CEO</sub>     | —    | —    | 100  | nA      | V <sub>CE</sub> = 10 V, E <sub>e</sub> = 0                                       |
| Reception Angle at ½ Sensitivity | θ                    | —    | ±10  | —    | Degrees |  |
| On-State Collector Current L14G1 | I <sub>C(ON)</sub>   | 6.0  | —    | —    | mA      | E <sub>e</sub> = 3.0 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup> |
| On-State Collector Current L14G2 | I <sub>C(ON)</sub>   | 3.0  | —    | —    | mA      | E <sub>e</sub> = 3.0 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup> |
| On-State Collector Current L14G3 | I <sub>C(ON)</sub>   | 12.0 | —    | —    | mA      | E <sub>e</sub> = 3.0 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup> |
| Turn-On Time                     | t <sub>on</sub>      | —    | 8    | —    | μS      | I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 10 V, R <sub>L</sub> = 100Ω             |
| Turn-Off Time                    | t <sub>off</sub>     | —    | 7    | —    | μS      | I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 10 V, R <sub>L</sub> = 100Ω             |
| Saturation Voltage               | V <sub>CE(SAT)</sub> | —    | —    | 0.40 | V       | I <sub>C</sub> = 1.0 mA, E <sub>e</sub> = 3.0 mW/cm <sup>2(7,8)</sup>            |

### NOTES

1. Derate power dissipation linearly 3.00mW/°C above 25°C ambient.
2. Derate power dissipation linearly 6.00mW/°C above 25°C case.
3. RMA flux is recommended.
4. Methanol or Isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip 1/16" (1.6 mm) minimum from housing.
6. As long as leads are not under any stress or spring tension.
7. Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.
8. Figure 1 and figure 2 use light source of tungsten lamp at 2870°K color temperature. A GaAs source of 3.0 mW/cm<sup>2</sup> is approximately equivalent to a tungsten source, at 2870°K of 10 mW/cm<sup>2</sup>.

**TYPICAL CHARACTERISTICS**

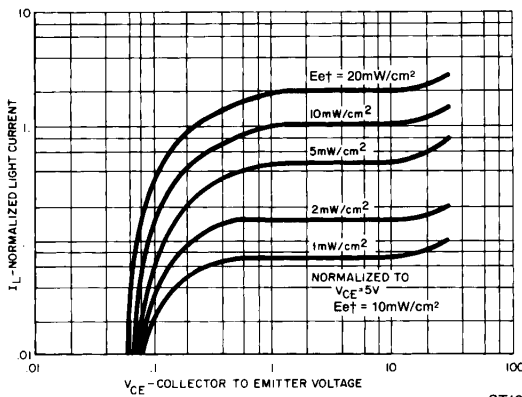


Fig. 1. Light Current vs. Collector to Emitter Voltage ST1082

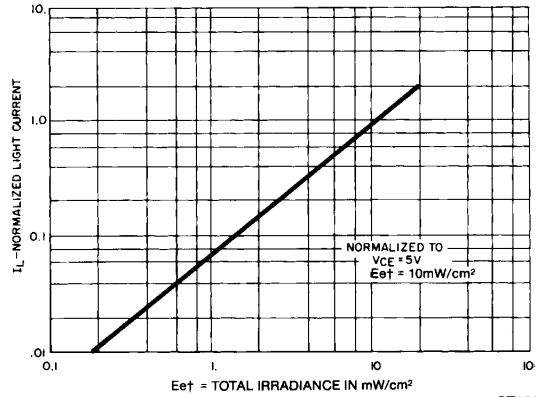


Fig. 2. Normalized Light Current vs. Radiation ST1087

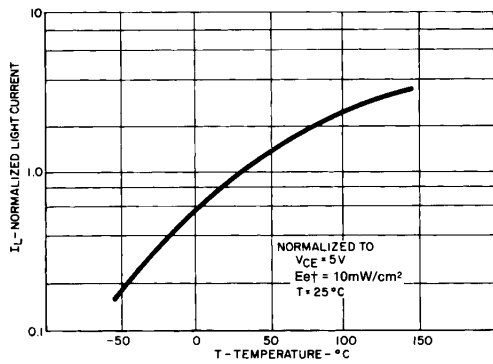


Fig. 3. Normalized Light Current vs. Temperature ST1083

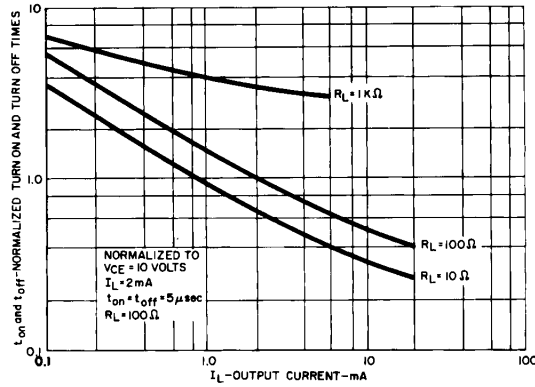


Fig. 4. Switching Times vs. Output Current ST1086

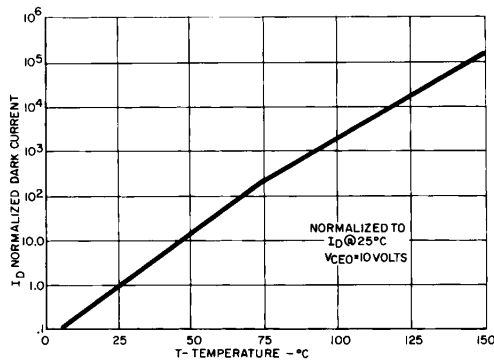


Fig. 5. Dark Current vs. Temperature ST1084

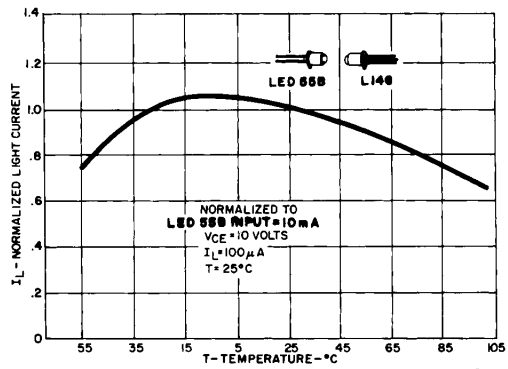


Fig. 6. Normalized Light Current vs. Temperature Both Emitter (LED55B) and Detector (L14G) at Same Temperature ST1085