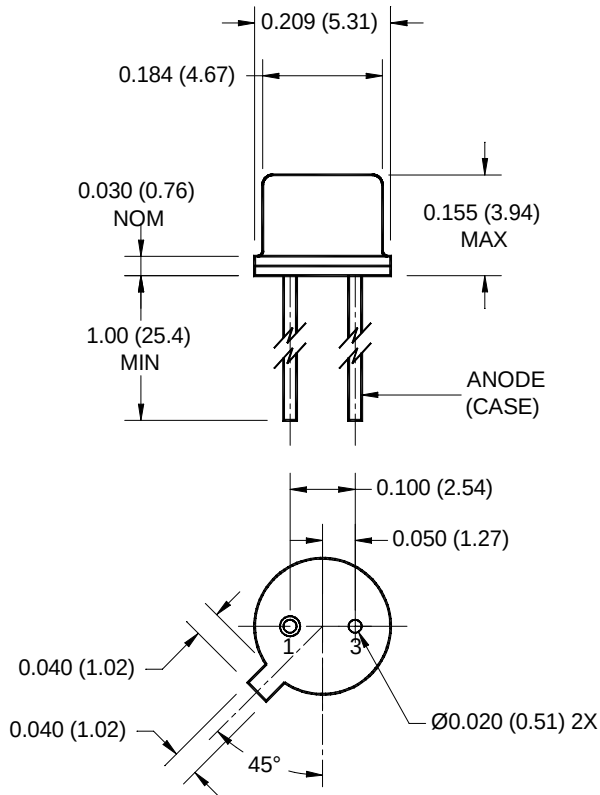


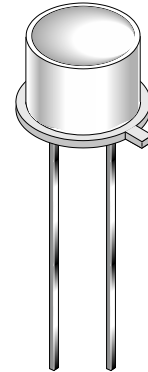
**LED55BF LED55CF LED56F**

**PACKAGE DIMENSIONS**

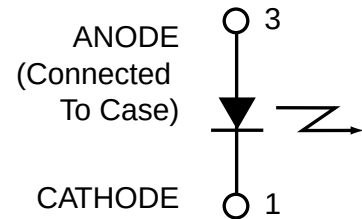


**NOTES:**

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.



**SCHEMATIC**



**DESCRIPTION**

The LED55BF/LED55CF/LED56F series are 940nm LEDs in a wide angle, TO-46 package.

**FEATURES**

- Good optical to mechanical alignment
- Mechanically and wavelength matched to the TO-18 series phototransistor
- Hermetically sealed package
- High irradiance level

## LED55BF LED55CF LED56F

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                                                     | Symbol      | Rating         | Unit             |
|---------------------------------------------------------------|-------------|----------------|------------------|
| Operating Temperature                                         | $T_{OPR}$   | -65 to +125    | $^\circ\text{C}$ |
| Storage Temperature                                           | $T_{STG}$   | -65 to +150    | $^\circ\text{C}$ |
| Soldering Temperature (Iron) <sup>(3,4,5 and 6)</sup>         | $T_{SOL-I}$ | 240 for 5 sec  | $^\circ\text{C}$ |
| Soldering Temperature (Flow) <sup>(3,4 and 6)</sup>           | $T_{SOL-F}$ | 260 for 10 sec | $^\circ\text{C}$ |
| Continuous Forward Current                                    | $I_F$       | 100            | mA               |
| Forward Current (pw, 1 $\mu\text{s}$ ; 200Hz)                 | $I_F$       | 10             | A                |
| Reverse Voltage                                               | $V_R$       | 3              | V                |
| Power Dissipation ( $T_A = 25^\circ\text{C}$ ) <sup>(1)</sup> | $P_D$       | 170            | mW               |
| Power Dissipation ( $T_C = 25^\circ\text{C}$ ) <sup>(2)</sup> | $P_D$       | 1.3            | W                |

#### NOTE:

- Derate power dissipation linearly 1.70 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$  ambient.
- Derate power dissipation linearly 13.0 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$  case.
- RMA flux is recommended.
- Methanol or isopropyl alcohols are recommended as cleaning agents.
- Soldering iron tip 1/16" (1.6mm) minimum from housing.
- As long as leads are not under any stress or spring tension
- Total power output,  $P_O$ , is the total power radiated by the device into a solid angle of  $2\pi$  steradians.

### ELECTRICAL / OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ ) (All measurements made under pulse conditions)

| PARAMETER                          | TEST CONDITIONS       | SYMBOL         | MIN | TYP      | MAX | UNITS         |
|------------------------------------|-----------------------|----------------|-----|----------|-----|---------------|
| Peak Emission Wavelength           | $I_F = 100\text{ mA}$ | $\lambda_{PE}$ | —   | 940      | —   | nm            |
| Emission Angle at 1/2 Power        |                       | $\theta$       | —   | $\pm 40$ | —   | Deg.          |
| Forward Voltage                    | $I_F = 100\text{ mA}$ | $V_F$          | —   | —        | 1.7 | V             |
| Reverse Leakage Current            | $V_R = 3\text{ V}$    | $I_R$          | —   | —        | 10  | $\mu\text{A}$ |
| Total Power LED55BF <sup>(7)</sup> | $I_F = 100\text{ mA}$ | $P_O$          | 3.5 | —        | —   | mW            |
| Total Power LED55CF <sup>(7)</sup> | $I_F = 100\text{ mA}$ | $P_O$          | 5.4 | —        | —   | mW            |
| Total Power LED56F <sup>(7)</sup>  | $I_F = 100\text{ mA}$ | $P_O$          | 1.5 | —        | —   | mW            |
| Rise Time 0-90% of output          |                       | $t_r$          | —   | 1.0      | —   | $\mu\text{s}$ |
| Fall Time 100-10% of output        |                       | $t_f$          | —   | 1.0      | —   | $\mu\text{s}$ |

**LED55BF LED55CF LED56F**

**TYPICAL PERFORMANCE CURVES**

Figure 1. Power Output vs. Input Current

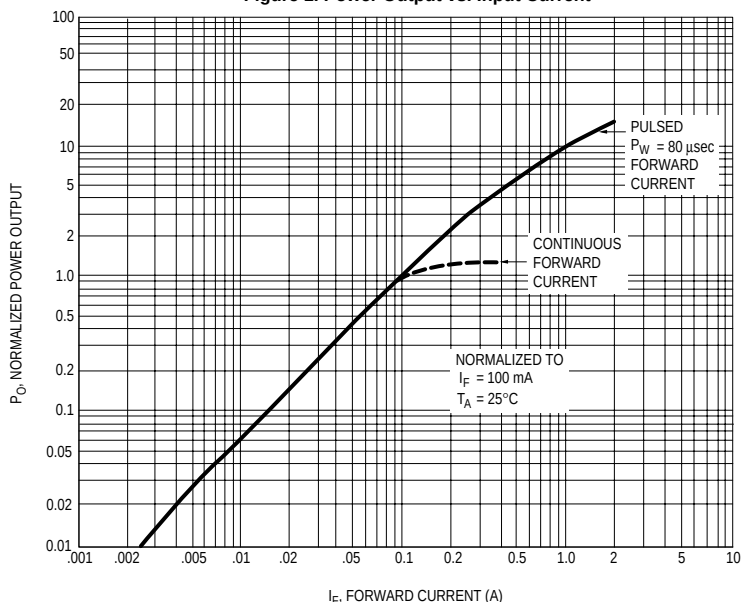


Figure 2. Power Output vs. Temperature

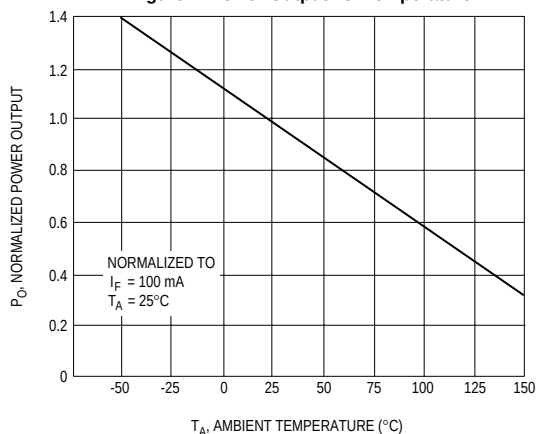


Figure 3. Forward Voltage vs. Forward Current

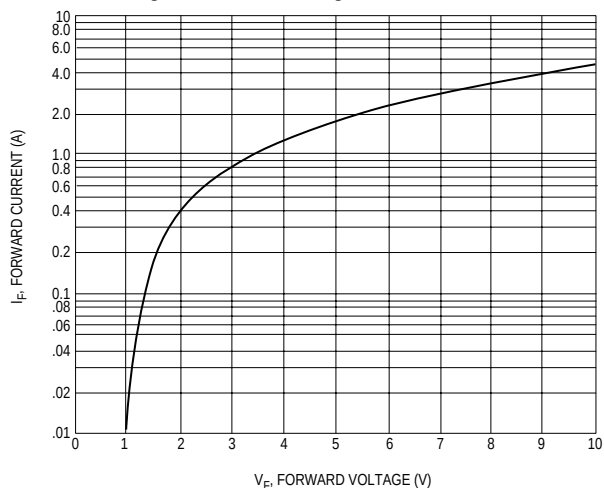


Figure 4. Forward Voltage vs. Forward Current

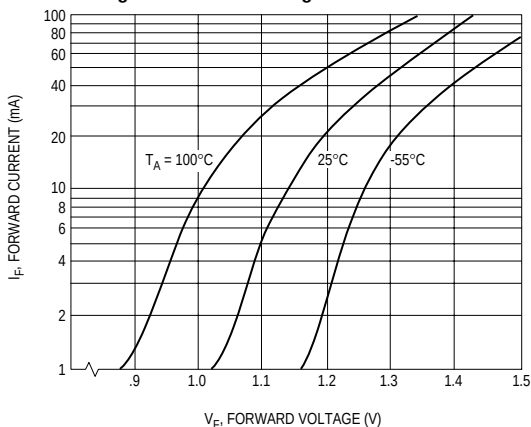
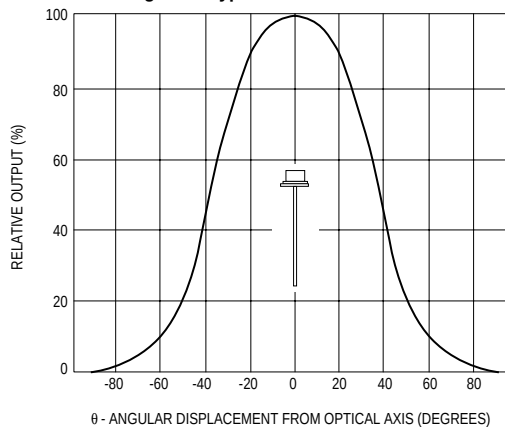


Figure 5. Typical Radiation Pattern



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## LED55BF LED55CF LED56F

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.