

# SEP8505

## GaAs Infrared Emitting Diode

### FEATURES

- T-1 package
- 15° (nominal) beam angle
- 935 nm wavelength
- Consistent on-axis optical properties
- Mechanically and spectrally matched to SDP8405 phototransistor and SDP8105 photodarlington



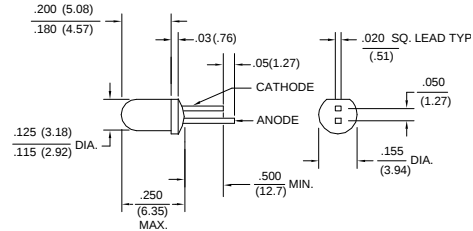
INFRA-55.TIF

### DESCRIPTION

The SEP8505 is a gallium arsenide infrared emitting diode transfer molded in a T-1 red plastic package. Transfer molding of this device assures superior optical centerline performance compared to other molding processes. Lead lengths are staggered to provide a simple method of polarity identification.

### OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals  $\pm 0.005(0.12)$   
2 plc decimals  $\pm 0.020(0.51)$



DIM\_101.ds4

# SEP8505

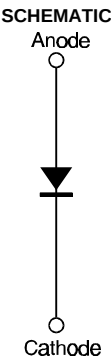
## GaAs Infrared Emitting Diode

| ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted) |                                 |     |     |     |        |                          |
|----------------------------------------------------------|---------------------------------|-----|-----|-----|--------|--------------------------|
| PARAMETER                                                | SYMBOL                          | MIN | TYP | MAX | UNITS  | TEST CONDITIONS          |
| Irradiance <sup>(1)</sup>                                | H                               |     |     |     | mW/cm² | I <sub>F</sub> =20 mA    |
| SEP8505-001                                              |                                 | 0.5 |     |     |        |                          |
| SEP8505-002                                              |                                 | 1.0 | 4.0 |     |        |                          |
| SEP8505-003                                              |                                 | 2.0 | 4.0 |     |        |                          |
| Forward Voltage                                          | V <sub>F</sub>                  |     |     | 1.5 | V      | I <sub>F</sub> =20 mA    |
| Reverse Breakdown Voltage                                | V <sub>BR</sub>                 | 3.0 |     |     | V      | I <sub>R</sub> =10 µA    |
| Peak Output Wavelength                                   | λ <sub>p</sub>                  |     | 935 |     | nm     |                          |
| Spectral Bandwidth                                       | Δλ                              |     | 50  |     | nm     |                          |
| Spectral Shift With Temperature                          | Δλ <sub>p</sub> /ΔT             |     | 0.3 |     | nm/°C  |                          |
| Beam Angle <sup>(2)</sup>                                | Ø                               |     | 15  |     | degr.  | I <sub>F</sub> =Constant |
| Radiation Rise And Fall Time                             | t <sub>r</sub> , t <sub>f</sub> |     | 0.7 |     | µs     |                          |

- Notes
- Measured in mW/cm² into a 0.081(2.05) diameter aperture placed 0.40(10.16) from the lens tip.
  - Beam angle is defined as the total included angle between the half intensity points.

| ABSOLUTE MAXIMUM RATINGS                           |                      |
|----------------------------------------------------|----------------------|
| (25°C Free-Air Temperature unless otherwise noted) |                      |
| Continuous Forward Current                         | 50 mA                |
| Power Dissipation                                  | 70 mW <sup>(1)</sup> |
| Operating Temperature Range                        | -40°C to 85°C        |
| Storage Temperature Range                          | -40°C to 85°C        |
| Soldering Temperature (5 sec)                      | 240°C                |

- Notes
- Derate linearly from 25°C free-air temperature at the rate of 0.18 mW/°C.



Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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## GaAs Infrared Emitting Diode

Fig. 1 Radiant Intensity vs Angular Displacement

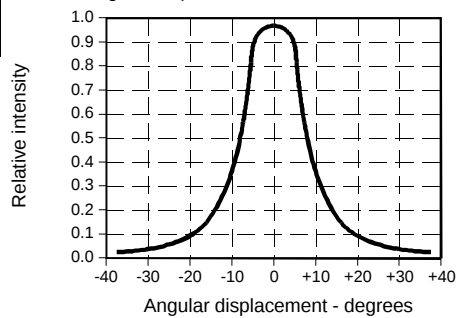


Fig. 2 Radiant Intensity vs Forward Current

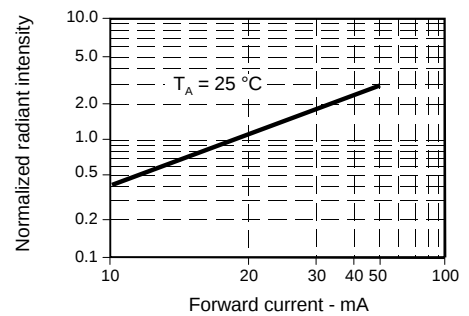


Fig. 3 Forward Voltage vs Forward Current

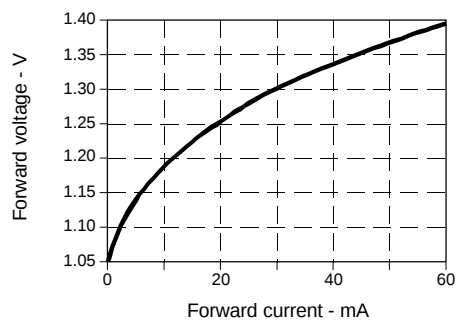


Fig. 4 Forward Voltage vs Temperature

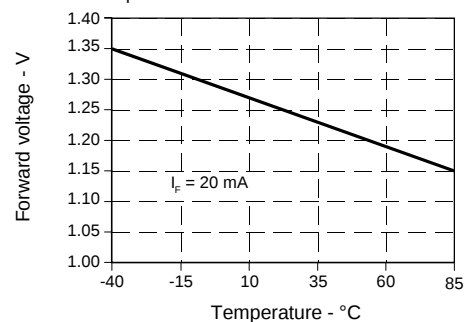


Fig. 5 Spectral Bandwidth

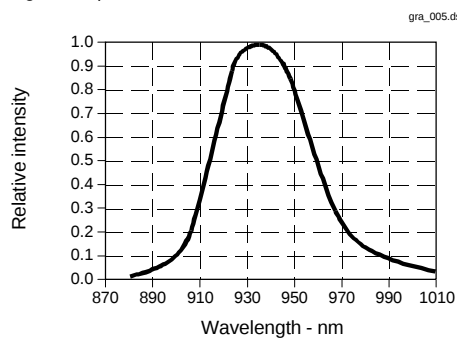
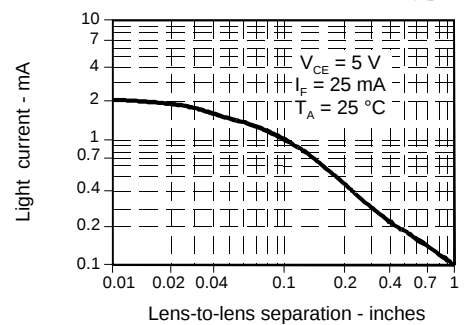


Fig. 6 Coupling Characteristics with SDP8405

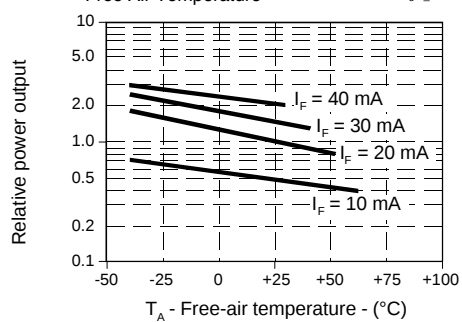


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## GaAs Infrared Emitting Diode

Fig. 7 Relative Power Output vs  
Free Air Temperature

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All Performance Curves Show Typical Values