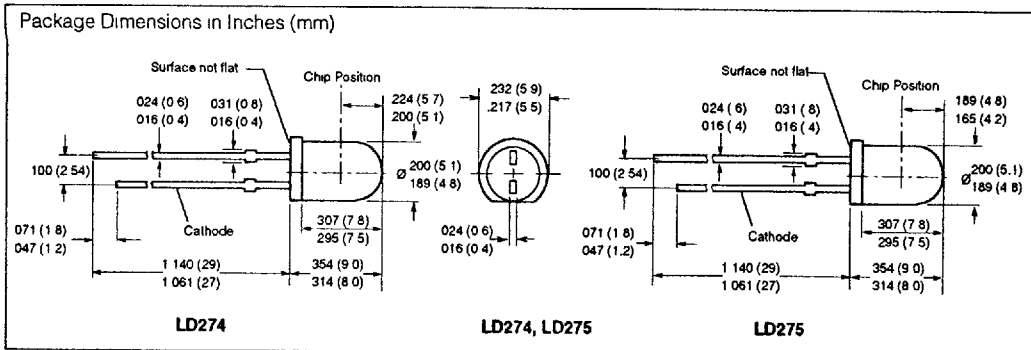




### FEATURES

- GaAs Infrared Emitting Diode, Fabricated in a Liquid Phase Epitaxy Process
- Emits Radiation in Near Infrared Range
- High Efficiency
- High Reliability
- Long Lifetime
- LD274: Very High Radiant Intensity
- LD275: High Radiant Intensity
- High Pulse Power
- Radiant Intensity Selections
- LD274: Same Package as SFH484
- LD275: Same Package as BP103B, SFH415, SFH485, SFH2030
- DIN Humidity Category per DIN 40040 GQG
- Package
  - T<sup>1</sup>/<sub>4</sub> (5 mm) LED Package
  - Gray Epoxy Resin Lens
  - Lead Spacing 0.100" (2.54 mm)
- Cathode Marking: Shorter Solder Tab, Flat

### DESCRIPTION

The LD274 and LD275 are GaAs IR emitters with an emitted wavelength of 950 nm. The LD274 has a narrow beam and the LD275, a wide beam. These high power devices are suitable for remote control applications

### Maximum Ratings

Operating/Storage Temperature Range (T<sub>OP</sub>, T<sub>STG</sub>) ..... -55° to +100°C  
 Junction Temperature (T<sub>J</sub>) ..... 100°C  
 Reverse Voltage (V<sub>R</sub>) ..... 5 V  
 Forward Current (I<sub>F</sub>) ..... 100 mA  
 Surge Current (I<sub>FSM</sub>) t=10 μs, D=0 ..... 3 A  
 Power Dissipation (P<sub>TOT</sub>) ..... 165 mW  
 Thermal Resistance (R<sub>thJA</sub>) ..... 450 K/W

### Characteristics (T<sub>A</sub>=25°C)

| Parameter                                                                                                      | Symbol                          | Value       | Unit            |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|-----------------|
| Peak Wavelength<br>(I <sub>F</sub> =100 mA, t <sub>p</sub> =20 ms)                                             | λ <sub>PEAK</sub>               | 950±20      | nm              |
| Spectral Bandwidth, 50% I <sub>MAX</sub><br>(I <sub>F</sub> =100 mA, t <sub>p</sub> =20 ms)                    | Δλ                              | 55          | nm              |
| Half Angle<br>LD274                                                                                            | φ                               | ±10         | Deg             |
| LD275                                                                                                          | φ                               | ±18         | Deg             |
| Active Chip Area                                                                                               | A                               | 0.09        | mm <sup>2</sup> |
| Active Chip Area Dimensions                                                                                    | L x W                           | 0.3 x 0.3   | mm              |
| Distance, Chip Surface to Case Surface<br>LD274                                                                | H                               | 4.9 to 5.5  | mm              |
| LD275                                                                                                          | H                               | 4.2 to 4.8  | mm              |
| Switching Times, I <sub>E</sub><br>10% to 90% and 90% to 10%<br>(I <sub>F</sub> =100 mA, R <sub>L</sub> =50 Ω) | t <sub>R</sub> , t <sub>F</sub> | 1           | μs              |
| Capacitance (V <sub>R</sub> =0 V, f=1 mHz)                                                                     | C <sub>0</sub>                  | 25          | pF              |
| Forward Voltage<br>(I <sub>F</sub> =100 mA, t <sub>p</sub> =20 μs)                                             | V <sub>F</sub>                  | 1.30 (≤1.5) | V               |
| (I <sub>F</sub> =1 A, t <sub>p</sub> =100 μs)                                                                  | V <sub>F</sub>                  | 1.90 (≤2.5) | V               |
| Reverse Current (V <sub>R</sub> =5 V)                                                                          | I <sub>R</sub>                  | 0.01 (≤1)   | μA              |
| Radiant Flux, Total (I <sub>F</sub> =100 mA, t <sub>p</sub> =20 ms)                                            | Φ <sub>E</sub>                  | 15          | mW              |
| Temperature Coefficient, I <sub>E</sub> or Φ <sub>E</sub> (I <sub>F</sub> =100 mA)                             | TC <sub>I</sub>                 | -0.55       | %/K             |
| Temperature Coefficient, V <sub>F</sub> (I <sub>F</sub> =100 mA)                                               | TC <sub>V</sub>                 | -1.5        | mV/K            |
| Temperature Coefficient, λ (I <sub>F</sub> =100 mA)                                                            | TC <sub>λ</sub>                 | 0.3         | nm/K            |

### Radiant Intensity Selections

I<sub>E</sub> in axial direction at solid angle of Ω=0.001 sr (LD274) or Ω=0.01 sr (LD275)

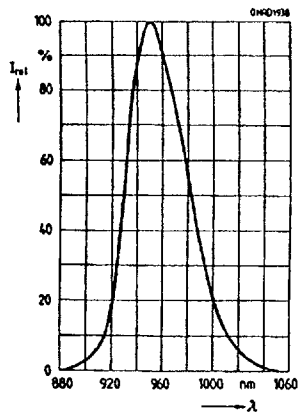
|                                                                 | LD    | LD    | LD     | LD    | LD    | LD     |
|-----------------------------------------------------------------|-------|-------|--------|-------|-------|--------|
| Symbol                                                          | 274-1 | 274-2 | 274-3* | 275-1 | 275-2 | 275-3* |
| I <sub>F</sub> =100 mA, t <sub>p</sub> =20 ms I <sub>Emin</sub> | 30    | 50    | 80     | 10    | 16    | 25     |
| I <sub>F</sub> =100 mA, t <sub>p</sub> =20 ms I <sub>Emax</sub> | 60    | 100   | -      | 20    | 32    | -      |
| I <sub>F</sub> =1 A, t <sub>p</sub> =100 ms I <sub>Etyp</sub>   | 350   | 600   | 800    | 120   | 190   | 250    |
|                                                                 |       |       |        |       |       |        |

\* Availability subject to yield.



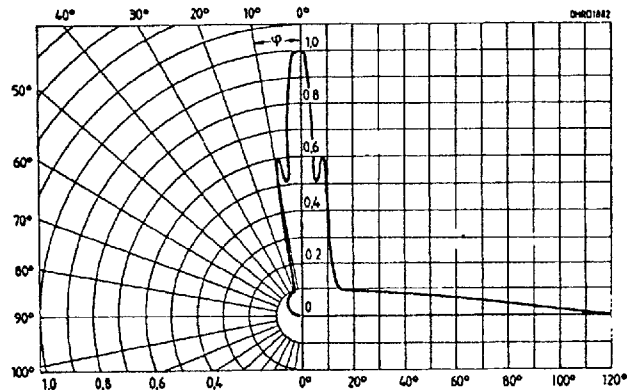
Relative spectral emission

$$I_{REL}=f(\lambda)$$

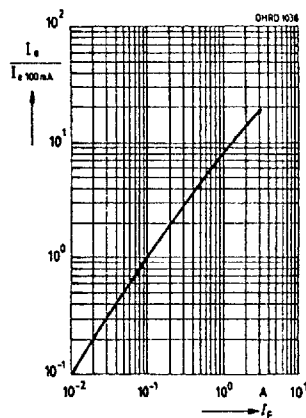


Radiation characteristic-LD274

$$I_{REL}=f(\varphi)$$

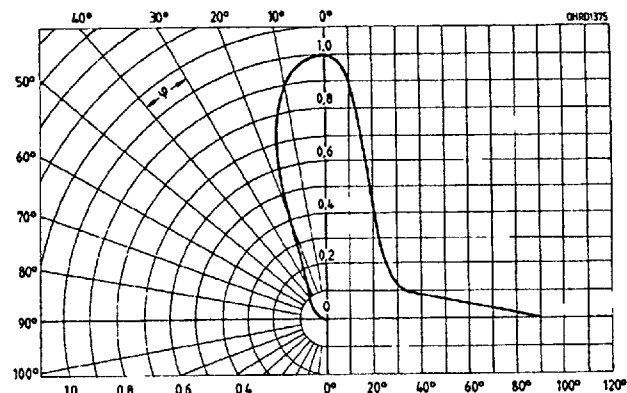


Radiant Intensity  $I_E/I_{E50mA}=f(I_F)$   
Single pulse,  $\tau=20 \mu s$

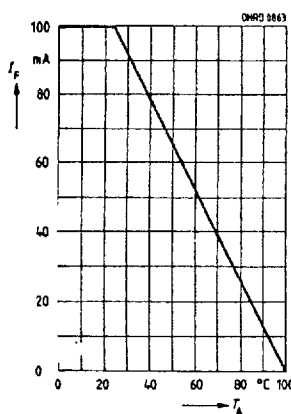


Radiation characteristic-LD275

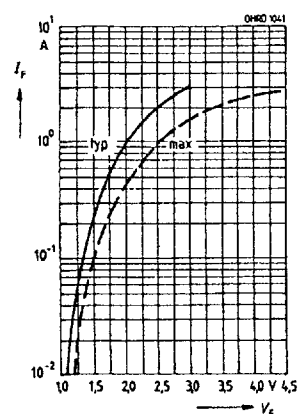
$$I_{REL}=f(\varphi)$$



Maximum permissible forward current  $I_F=f(T_A)$



Forward current  $I_F=f(V_F)$   
Single pulse,  $\tau=20 \mu s$



Permissible pulse handling capability  $I_F=f(\tau)$ ,  $T_A \leq 25^\circ C$   
duty cycle  $D=$ Parameter

