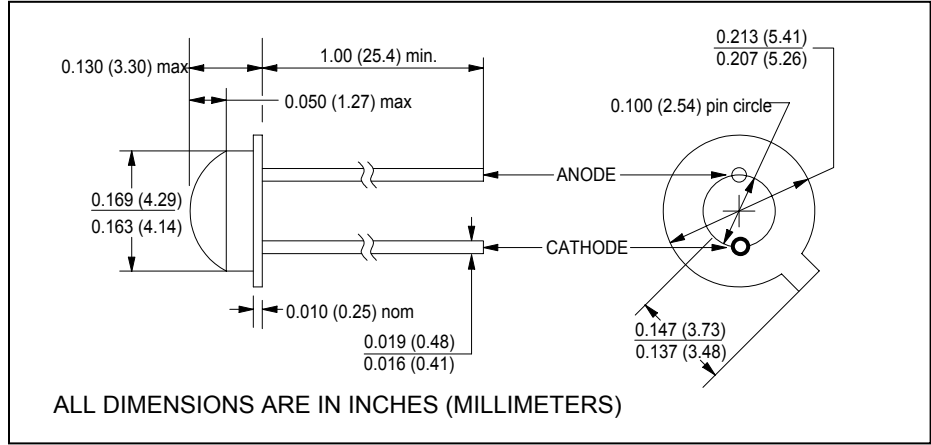


CLE331E

Super-efficient Aluminum Gallium Arsenide IRED Point source Die



December, 1998



features

- high power output
- 850nm wavelength
- > 10MHz operation
- TO-46 epoxy-dome lens
- wide beam angle
- uniform output radiation pattern
- 0.002" dia. point source junction

absolute maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise stated)

| | |
|---|-----------------|
| storage temperature | -65°C to +100°C |
| operating temperature | -65°C to +100°C |
| junction temperature ⁽¹⁾ | +125°C |
| lead soldering temperature ⁽²⁾ | 240°C |
| continuous forward current ⁽³⁾ | 100mA |
| peak forward current ⁽⁴⁾ | 3A |
| reverse voltage | 5V |
| power dissipation ⁽⁵⁾ | 200mW |

description

The CLE331E is an advanced, high efficiency, high speed, point source, AlGaAs infrared-emitting diode intended for applications requiring a uniform output radiation pattern. The point source die junction is typically 0.002" dia. and provides a uniform radiation pattern without the usual bond wire shadow effect. The TO-46 header provides the thermal environment for reliable operation over a wide temperature range.

notes:

1. Maximum operating temperature of the metallurgical junction.
2. 0.06" (1.5mm) from the header for 5 seconds maximum. Maximum temperature can be 260°C if wave soldering.
3. Derate linearly 1.07mA/°C from 25°C free air temperature to $T_A = +100^\circ\text{C}$.
4. Pulsed condition only. Maximum pulse width is 2.0µs at 2% duty cycle. Use good judgement when operating this device under these conditions. Thermal transients exceeding these restrictions can cause irreversible damage.
5. Derate linearly 2.13mW/°C from 25°C free air temperature to $T_A = +100^\circ\text{C}$.

| electrical characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|--------------------------------|-----|-----|-------|---------------------|
| symbol | parameter | min | max | units | test conditions |
| P_O | Power output ^(6, 7) | 250 | - | µW | $I_F = 20\text{mA}$ |
| V_F | Forward voltage | - | 1.6 | V | $I_F = 20\text{mA}$ |
| I_R | Reverse current | - | 10 | µA | $V_R = 3\text{V}$ |

- notes: 6. Power output is the measure of all the power radiated within a hemisphere centered on the header and encompassing the epoxy dome lens.
7. Other ranges of power output and test conditions can be specified. Call Clairex for applications assistance.

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| typical characteristics at $T_A = 25^\circ\text{C}$ (not guaranteed by test) | | | | |
|--|---|-------|-------|---|
| symbol | parameter | value | units | conditions |
| P_O | Total power output ⁽⁸⁾ | 2.0 | mW | $I_F = 100\text{mA}$ |
| λ_P | Peak emission wavelength | 850 | nm | $I_F = 100\text{mA}$ |
| BW | Spectral bandwidth at half power points | 60 | nm | $I_F = 100\text{mA}$ |
| Θ_{HP} | Emission angle at half power points | 80 | deg. | $I_F = 100\text{mA}$ |
| V_F | Forward voltage | 1.9 | V | $I_F = 100\text{mA}$ |
| t_r, t_f | Radiation rise and fall time | 8 | ns | $I_{F(PK)} = 100\text{mA}, f = 1\text{kHz}, \text{D.C.} = 50\%$ |

note: 8. Power output is the measure of all the power radiated within a hemisphere centered on the header and encompassing the epoxy dome lens.

Clairex reserves the right to make changes at any time to improve design and to provide the best possible product.

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