CLE135, CLE130E, CLE130W
940nm High Efficiency GaAs/AlGaAs IREDs

UPGRADED SERIES

July, 2005

CLE135

CLE130E

CLE130W

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)

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CLE135, CLE130E, CLE130W
940nm High Efficiency GaAs/AlGaAs IREDs

**features**
- higher power output
- cathode connected to case
- TO-46 header with three lens options
- different package styles provide flexible design options

**description**
The original Clairex CLE130 series has been upgraded. The new series features current state of the art GaAs/AlGaAs technology for increased quantum efficiency. The chip substrate is N type material resulting in the case being common to the cathode. The original configuration can still be supplied as a special order. Three different lens options are offered. Contact Clairex for other electrical and package options.

**absolute maximum ratings** (T_A = 25°C unless otherwise stated)

- **storage temperature**
  - CLE135 and CLE130W: -65°C to +150°C
  - CLE130E: -40°C to +150°C

- **operating temperature**
  - CLE135 and CLE130W: -65°C to +125°C
  - CLE130E: -40°C to +100°C

- **lead soldering temperature** (1)
  - 260°C

- **continuous forward current** (2)
  - 100mA

- **peak forward current** (1.0ms pulse width, 10% duty cycle)
  - 1A

- **reverse voltage**
  - 5V

- **continuous power dissipation** (3)
  - 200mW

**notes:**
1. 0.06" (1.5mm) from the header for 5 seconds maximum.
2. Derate linearly 0.80mA/°C from 25°C free air temperature to T_A = +125°C.
3. Derate linearly 1.60mW/°C from 25°C free air temperature to T_A = +125°C.

**electrical characteristics** (T_A = 25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>symbol</th>
<th>parameter</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
<th>test conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_F</td>
<td>Forward voltage</td>
<td>-</td>
<td>1.5</td>
<td>1.8</td>
<td>V</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>I_R</td>
<td>Reverse current</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>µA</td>
<td>V_R = 3V</td>
</tr>
<tr>
<td>λ_p</td>
<td>Peak wavelength</td>
<td>-</td>
<td>940</td>
<td>-</td>
<td>nm</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>BW</td>
<td>Spectral bandwidth</td>
<td>-</td>
<td>50</td>
<td>-</td>
<td>nm</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>t_r, t_f</td>
<td>Output rise and fall time</td>
<td>-</td>
<td>700</td>
<td>-</td>
<td>ns</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>P_o</td>
<td>Total output power</td>
<td>-</td>
<td>12.5</td>
<td>-</td>
<td>mW</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>P_o</td>
<td>Total output power</td>
<td>2.0</td>
<td>2.5</td>
<td>-</td>
<td>mW</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>θ HP</td>
<td>Emission angle at half power points</td>
<td>-</td>
<td>80</td>
<td>-</td>
<td>deg.</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>P_o</td>
<td>Total output power</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>mW</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>P_o</td>
<td>Total output power</td>
<td>1.5</td>
<td>2.0</td>
<td>-</td>
<td>mW</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>θ HP</td>
<td>Emission angle at half power points</td>
<td>-</td>
<td>70</td>
<td>-</td>
<td>deg.</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>P_o</td>
<td>Total output power</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>mW</td>
<td>I_F = 100mA</td>
</tr>
<tr>
<td>E_o</td>
<td>Irradiance (4)</td>
<td>-</td>
<td>2.0</td>
<td>-</td>
<td>mW/cm²</td>
<td>I_F = 100mA</td>
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<tr>
<td>E_o</td>
<td>Irradiance (4)</td>
<td>0.4</td>
<td>0.5</td>
<td>-</td>
<td>mW/cm²</td>
<td>I_F = 20mA</td>
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<tr>
<td>θ HP</td>
<td>Emission angle at half power points</td>
<td>-</td>
<td>22</td>
<td>-</td>
<td>deg.</td>
<td>I_F = 20mA</td>
</tr>
</tbody>
</table>

**note:**
4. E_o is a measure of irradiance (power/unit area) within a 0.444" (1.128cm) diameter area, centered on the mechanical axis of the device and spaced 2.54" (6.45cm) from the lens side of the tab. This is geometrically equivalent to a 10° cone.

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