



APG2C1-830



High Power Single Chip LED

APG2C1-830 is a GaAlAs based, high power 830 nm single chip LED in standard emitter package for general application.

Specifications

- Structure: GaAlAs
- Peak Wavelength: 830 nm
- Optical Output Power: typ. 70 mW
- Life Time: > 10.000 hours
- **Lead free product - RoHS compliant**



Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Value | Unit |
|--------------------------------------|-----------|-------------|------------------|
| Power Dissipation, DC | P_D | 1000 | mW |
| Forward Current, DC | I_F | 500 | mA |
| Pulsed Current (1% duty cycle, 1kHz) | I_{FP} | 1000 | mA |
| Reverse Voltage | U_R | -5 | V |
| Operating Temperature | T_{opr} | -30 ... +70 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -30 ... +85 | $^\circ\text{C}$ |
| Soldering Temperature (max. 1,5 s) | T_{sol} | 330 | $^\circ\text{C}$ |

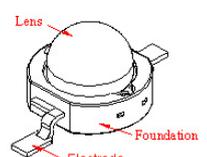
Electro-Optical Characteristics ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------|-----------------|------------------------|------|----------|------|------|
| Forward Current | I_F | | - | 350 | - | mA |
| Viewing Angle | φ | $I_F = 350 \text{ mA}$ | - | ± 75 | - | deg. |
| CW Output Power | P_O | $I_F = 350 \text{ mA}$ | - | 70 | - | mW |
| Peak Wavelength | λ_P | $I_F = 350 \text{ mA}$ | - | 830 | - | nm |
| Forward Voltage | U_F | $I_F = 350 \text{ mA}$ | - | 1.5 | - | V |
| Half Width (FWHM) | $\Delta\lambda$ | $I_F = 350 \text{ mA}$ | - | 35 | - | nm |
| Rise Time | t_r | $I_F = 350 \text{ mA}$ | | 40 | | ns |
| Fall Time | t_f | $I_F = 350 \text{ mA}$ | | 40 | | ns |

Wavelength measurements tolerance is +/- 2%
Output power measurement tolerance is +/- 10%
Voltage measurement tolerance is +/- 2%

Device Materials

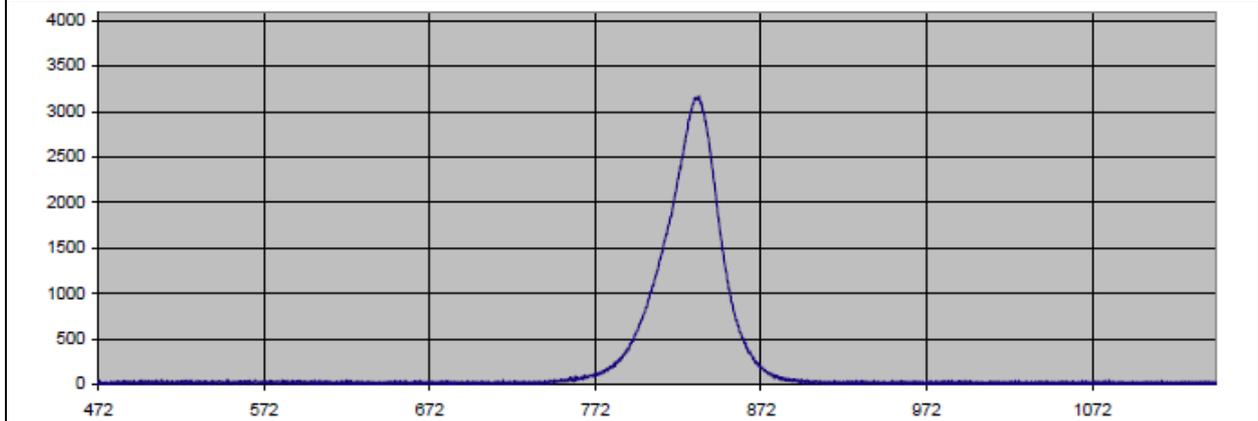
| Item | Material |
|------------|----------|
| Foundation | Plastic |
| Lens | Acryl |
| Electrodes | AgCu |
| Heat Sink | AgCu |





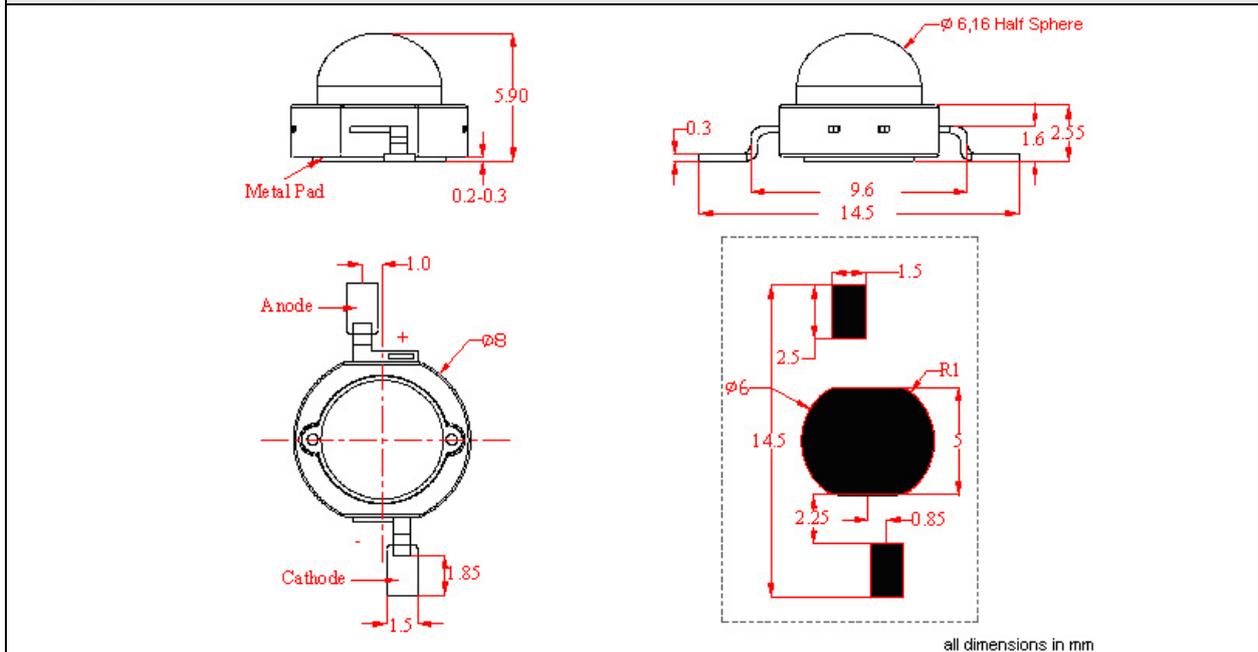
Typical Performance Characteristics

Normalized Output Power vs. Wavelength:



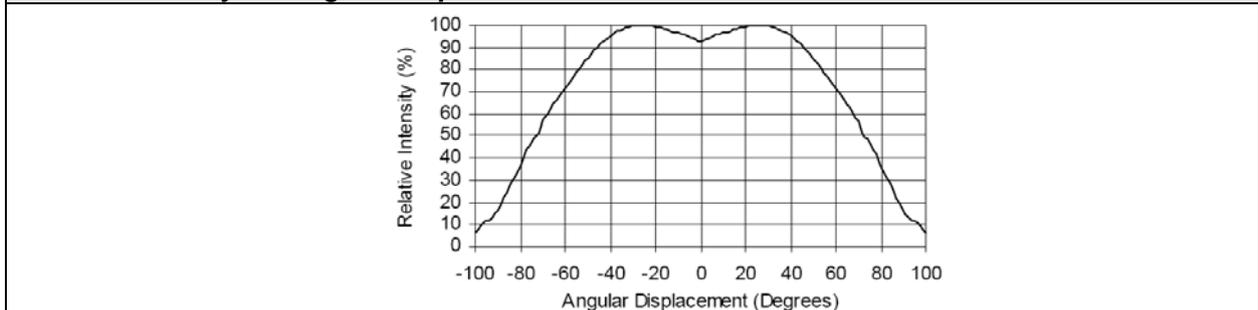
Outline Dimensions

Emitter:



Radiation Pattern (Lambertian lens without optics)

Relative Intensity vs. Angular Displacement





Accessories

Collimating optics, holders, reflectors

10158 + 10146, 2° half angle spot optic + optic holder
10048 + 10076, 4° half angle spot optic + optic holder
10003 + 10043, 6° half angle spot optic + optic holder
10003/15 + 10043, 15° half angle spot optic + optic holder
10003/25 + 10043, 25° half angle spot optic + optic holder
CLP17CR, 6° metalized polycarbonate reflector
CLP23CR, 20° metalized polycarbonate reflector



Static Electricity

LEDs are very sensitive to static Electricity and surge voltage. It is recommended to wear a wristband or an anti-electrostatic glove whenever handling the LEDs

All devices, equipment, and machinery that is used when handling the LEDs must be grounded properly.



Heat Generation

It is advised to operate these LEDs at a reasonable low temperature for long lifetime and stability. High operating temperature will result in premature degradation and shortened lifetime.





Soldering Conditions

Reflow Soldering:

APG2C1 LEDs have a maximum storage temperature of 85°. Therefore it is not possible to use a reflow soldering process for array assembly!

Hot Bar Soldering:

A Hot Bar Soldering process is recommended when soldering APG2C1 emitters. This process will only transfer heat to the leads and avoids overheating the emitter which will damage the device. In order to transfer sufficient heat from the hot bar to the device, following parameters must be carefully considered:

- Amount of flux
- Pressing force of solder tip
- Hot bar temperature

For the standard assembly process, following parameters should be maintained:

- Hot Bar temperature: 330 °C
- Force of Hot Bar: 40 N
- Soldering time: 1.5 s

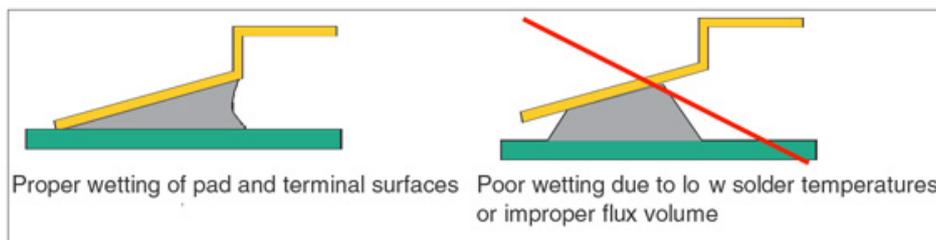
It is recommended to use a copper nickel-plated hot bar mounted to standard temperature controlled soldering equipment.

Manual Hand Soldering:

For prototype build or small series production runs, it is possible to place and solder the emitters by hand. It is therefore recommended to maintain the following parameters:

- Solder Tip Temperature 330 °C
- Soldering time: < 1.5 s
- Junction temperature must be kept below 70 °C

A visual inspection may be used to check the quality of the solder joint



General Soldering Precautions:

- Mechanical stress, shock and vibration must be avoided during soldering
- Only use non corrosive flux.
- Do not apply current to the device until it has cooled down to room temperature after soldering.



NOTE
HIGH POWER LED
MUST BE COOLED