



H2A1-H1020



IR High Power single chip LED

H2A1-H1020 is a GaAlAs based, high power 1020 nm single chip LED in standard hexagonal Aluminum package for general application. Slots in the Aluminum-core PCB allow for easy mounting of standard collimating optics and are also suitable for M3 or M4 mounting screws. Large electrical interconnection pads on the PCB allow for convenient installation.

Specifications

- Structure: GaAlAs
- Peak Wavelength: 1020 nm
- Optical Output Power: typ. 40 mW
- Life Time: > 10.000 hours
- Housing: standard emitter package



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 | $^\circ\text{C}$ |

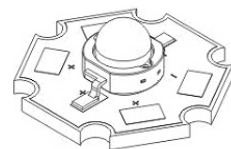
Electro-Optical Characteristics ($T_a=25^\circ\text{C}$)

| 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 | $I_F = 350 \text{ mA}$ | | 40 | | mW |
| Peak Wavelength | λ_p | $I_F = 350 \text{ mA}$ | | 1020 | | nm |
| Forward Voltage | U_F | $I_F = 350 \text{ mA}$ | - | 1.3 | - | V |
| Half Width (FWHM) | $\Delta\lambda$ | $I_F = 350 \text{ mA}$ | - | 35 | | nm |

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

Device Materials

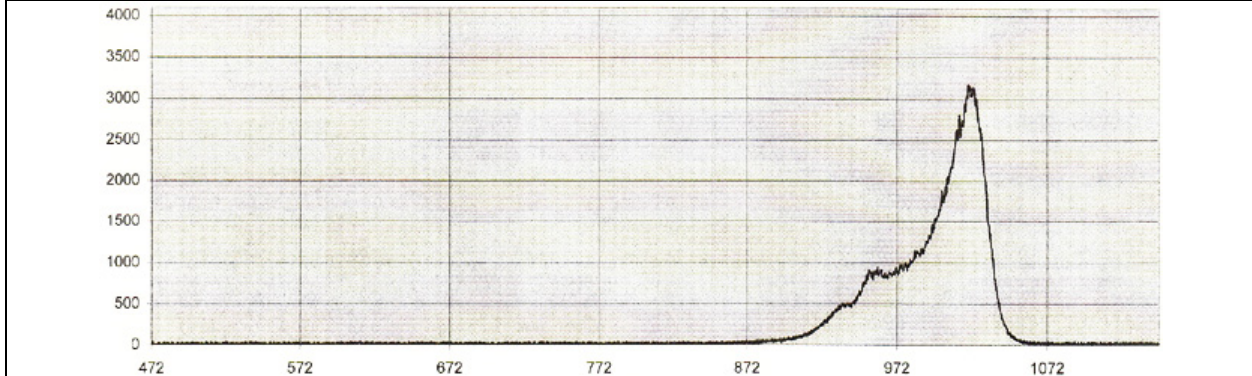
| Item | Material |
|------------|----------|
| foundation | Plastic |
| Lens | Acryl |
| Electrodes | AgCu |
| PCB | Al |





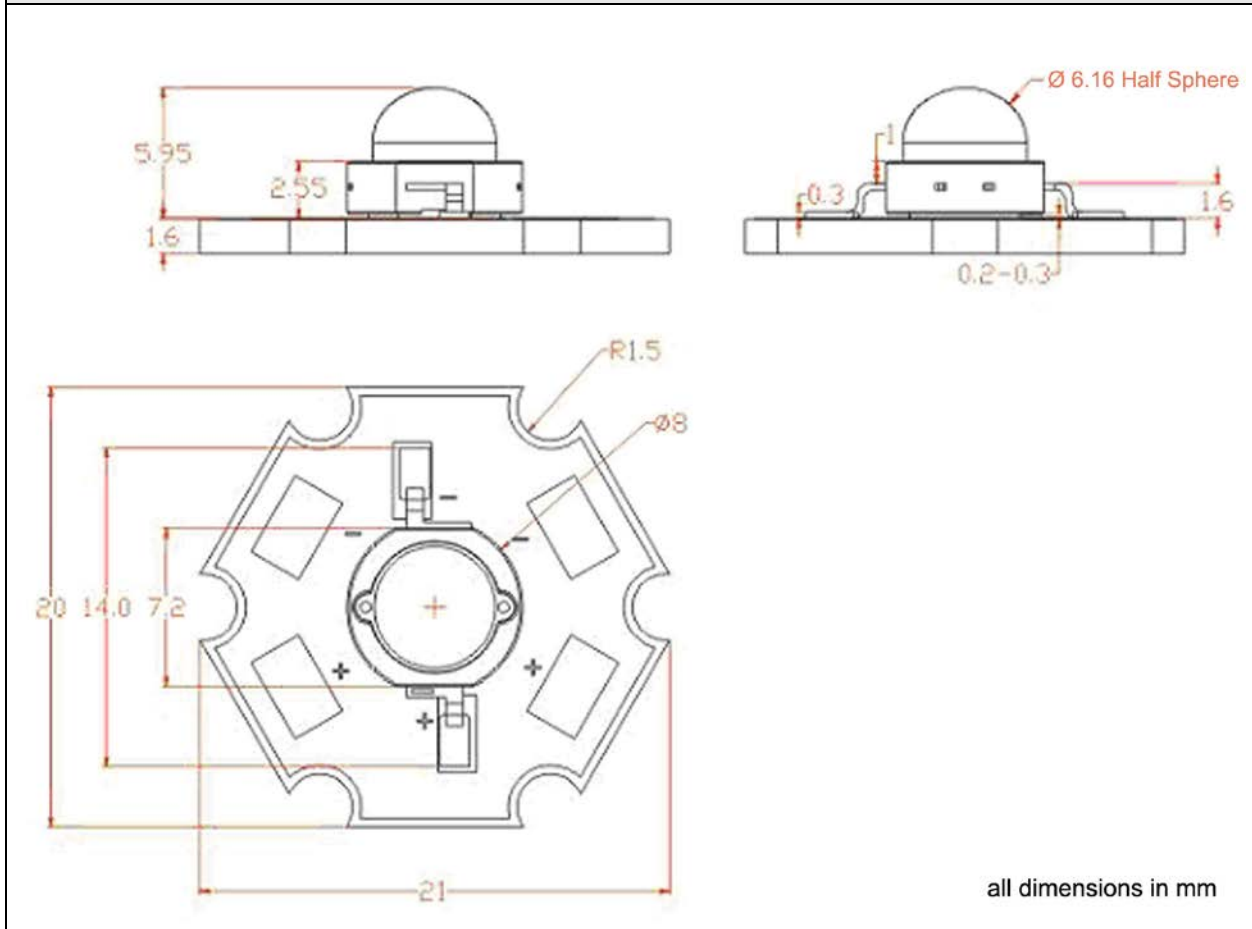
Typical Performance Characteristics

Normalized Output Power vs. Wavelength:



Outline Dimensions

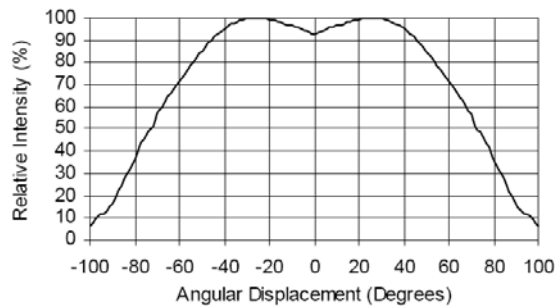
Emitter:





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





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

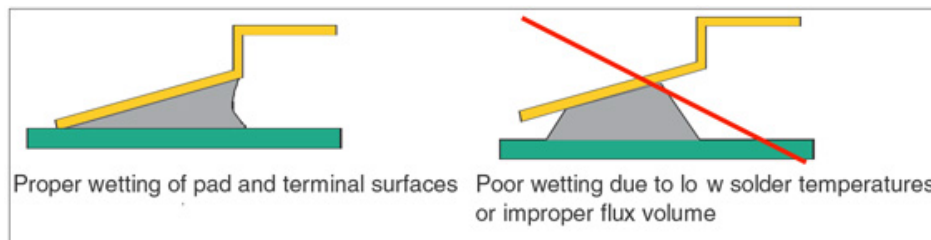
It is recommended to use a copper nickel-plated hot bar mounted to standard temperature controlled soldering equipment.

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