

**SPECIFICATION FOR OPTOGAN InGaN CHIP**

**MODEL: f-Power II Blue**

## Product Description

OptoGaN f-Power® II is a blue-color InGaN LED chip grown by MOCVD on sapphire substrate. Its structure enables enhanced quantum efficiency and therefore a greater light intensity at high current density operation. These LED chips can be used in a broad range of applications indoor and outdoor lighting, automotive, white LED lamps. Power consumption of the chip is 0.1W.

### Absolute Maximum Ratings (Ta=25° C)

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current (DC)	I <sub>F</sub>	60	mA
Peak Forward Current*	I <sub>FP</sub>	100	mA
Reverse Voltage	V <sub>rev</sub>	5	V
Operation Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C

\*frequency =1kHz, duty = 1/10

### Notes:

Maximum ratings are package dependent. The above ratings were determined on bare chips mounted on Au plated TO-56 header without an encapsulant by using calibrated integrating sphere. The junction temperature should be characterized in a specific package to determine limitations;

All chips conform to listed specification when operated at 30 mA. Efficiency decreases at higher currents. The values given are provided for information only.

### Typical Electrical & Optical Characteristics (Ta=25° C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =30 mA	3.1	3.2	3.3	V
Dominant Wavelength	λ <sub>dom</sub>		445	---	455	nm

Electrostatic Discharge Classification – class 2

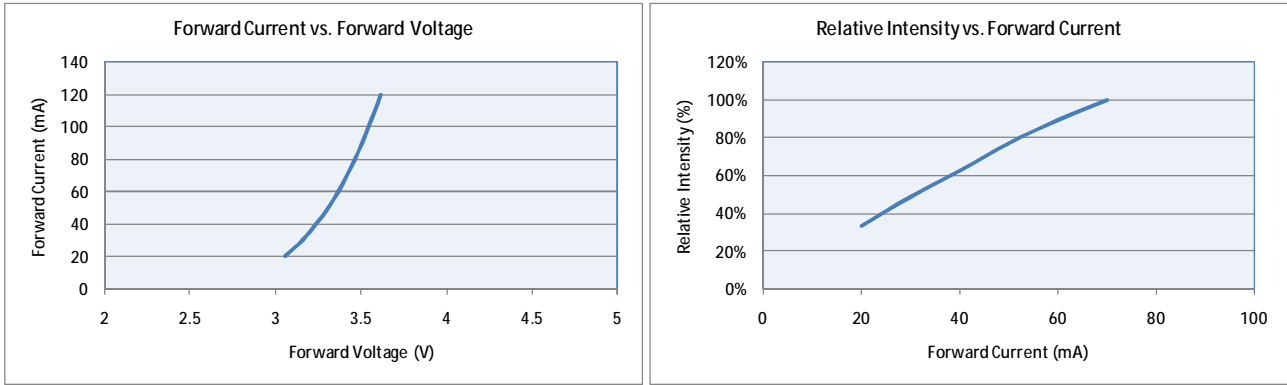
### Intensity Ranks (I<sub>F</sub>=30 mA, Ta=25° C)

Rank	A	B	C	D
Intensity (mW)	>12mW	>15mW	>18mW	>21mW

### Notes:

LED chips are sorted to the radiant flux and dominant wavelength. Values are measured on bare chips mounted on Au plated TO-56 header without an encapsulant by using calibrated integrating sphere.

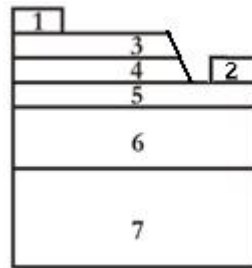
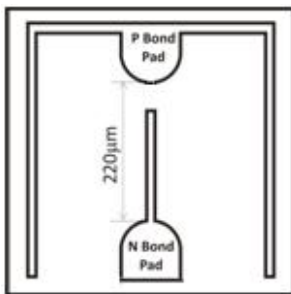
## Typical Optical / Electrical Characteristic Curves (Ta=25<sup>0</sup> C)



### Notes:

Test measurements were performed on bare chips mounted on Au plated TO-56 header without an encapsulant by using calibrated integrating sphere. The junction temperature should be characterized in a specific package to determine limitations.

### Chip Dimensions



**Chip size: 430X430 µm**  
**Effective chip size: 390X390 µm**  
**Light emitting area: 0.1 mm<sup>2</sup>**  
**Bonding pad linear size: 70 µm**  
**Chip thickness: 90 µm**  
**Tolerance: ± 10 µm**

1. Anode (Au on top)
2. Cathode (Au on top)
3. P-GaN cladding/contact layers
4. InGaN EPAC active region
5. N-GaN cladding/contact layers
6. ULD GaN buffer layers
7. Sapphire substrate

### Wire Bond

Wire bond pads for both connections to the device are 70 µm in size. The bond pads consist of a metal structure with the final layer being a layer of evaporated gold. Gold ultrasonic ball bonding has been used to attach wire to these devices and is generally tolerant of variation in the process set up. A background temperature of 130°C has been used, force and power settings are machine dependant parameters.