

# CTL1206FGR2T DATASHEET

Chip Type LED, 1206, Flat Lens, Green

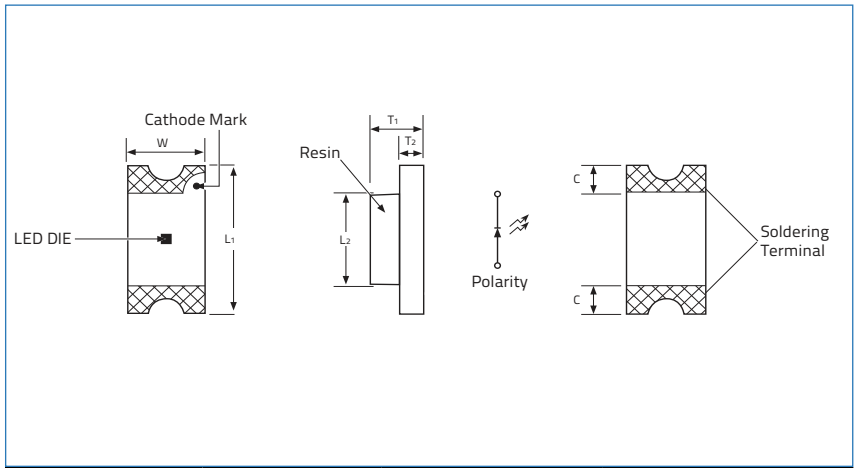


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| Part Number  | Size | Emitting Color | Emitting Material | Lens-Color  | Luminous Intensity<br>( $I_F=20\text{mA}$ ) mcd | Wavelength nm $\lambda_P$ | Viewing Angle<br>( $2\theta$ 1/2) |
|--------------|------|----------------|-------------------|-------------|-------------------------------------------------|---------------------------|-----------------------------------|
| CTL1206FGR2T | 1206 | Green          | InGaN             | Water Clear | 200 min 500 typ                                 | 518                       | 140°                              |

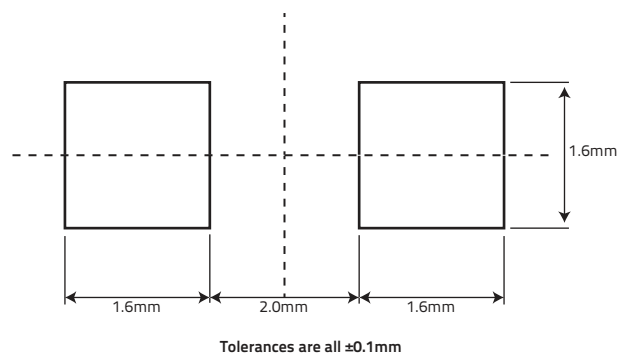
| Electrical & Optical Specifications ( $T_A=25^\circ\text{C}$ ) |                 | GR2 (InGaN) | Unit          |
|----------------------------------------------------------------|-----------------|-------------|---------------|
| Forward Voltage (Min.)<br>( $I_F=20\text{mA}$ )                | $V_F$           | 2.8         | V             |
| Forward Voltage (Max.)<br>( $I_F=20\text{mA}$ )                | $V_F$           | 3.6         | V             |
| Reverse Current (Max)<br>( $V_R=5\text{V}$ )                   | $I_R$           | 50          | $\mu\text{A}$ |
| Peak Wavelength (Typ.)<br>( $I_F=20\text{mA}$ )                | $\lambda_P$     | 518         | nm            |
| Dominant Wavelength<br>(Typ.) ( $I_F=20\text{mA}$ )            | $\lambda_D$     | 525         | nm            |
| Spectral Line Half Width (Typ.) ( $I_F=20\text{mA}$ )          | $\Delta\lambda$ | 36          | nm            |

| Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ ) |           | GR2 (InGaN) | Unit |
|-----------------------------------------------------|-----------|-------------|------|
| Reverse Voltage                                     | $V_R$     | 5           | V    |
| DC Forward Current                                  | $I_F$     | 20          | mA   |
| Peak Forward Current<br>1/10 Duty Cycle @<br>10KHz  | $I_{FP}$  | 100         | mA   |
| Power Dissipation                                   | $P_D$     | 72          | mW   |
| Operating Temperature                               | $T_A$     | -40 ~ +85   | °C   |
| Storage Temperature                                 | $T_{stg}$ | -40 ~ +100  |      |



| Dimensions               |                          |                           |                           | Units: Inches (mm)       |                           |  |  |
|--------------------------|--------------------------|---------------------------|---------------------------|--------------------------|---------------------------|--|--|
| $L_1$                    | $L_2$                    | $T_1$                     | $T_2$                     | $W$                      | $C$                       |  |  |
| 0.126±0.004<br>(3.2±0.1) | 0.079±0.004<br>(2.0±0.1) | 0.0433±0.004<br>(1.1±0.1) | 0.0197±0.004<br>(0.5±0.1) | 0.063±0.004<br>(1.6±0.1) | 0.0236±0.004<br>(0.6±0.1) |  |  |

### Soldering Pad Layout



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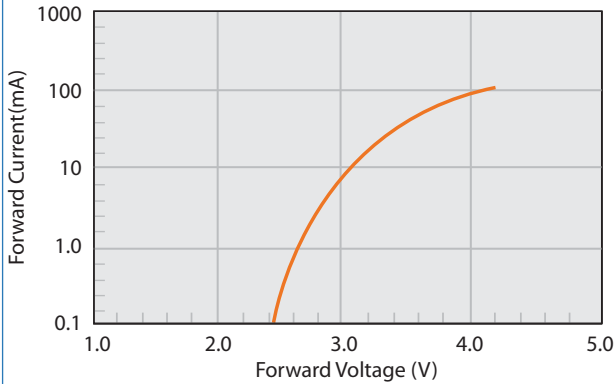
Chip Type LED, 0805, Flat Lens, Green



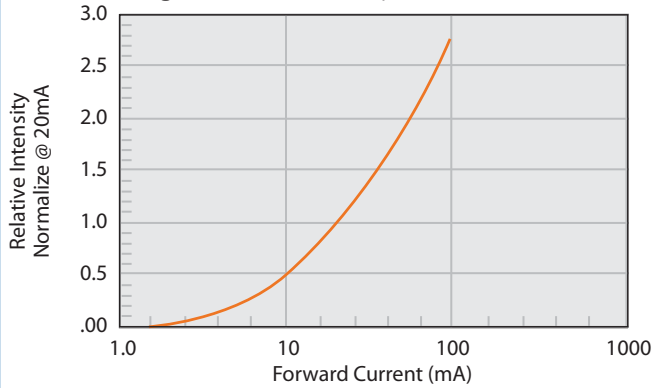
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## Graphs

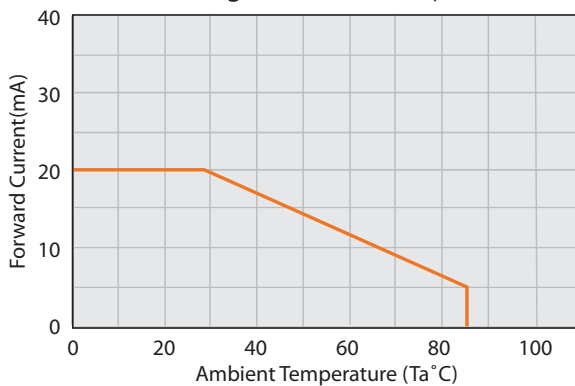
**Fig.1** Forward Current vs Forward Voltage



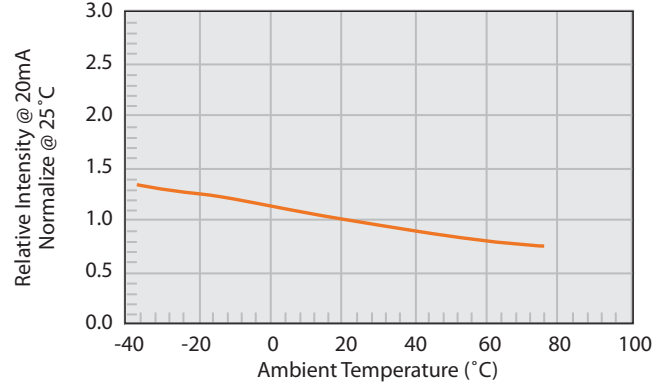
**Fig.2** Relative Intensity vs Forward Current



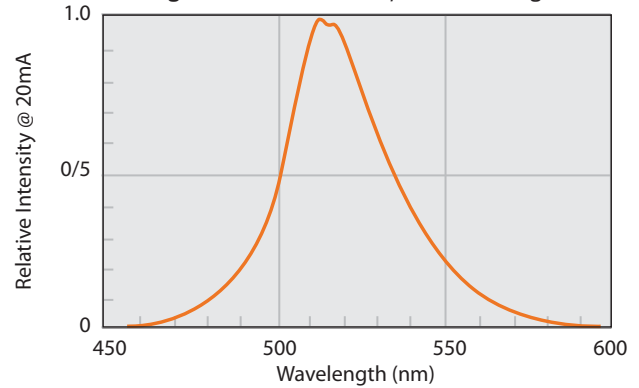
**Fig.3** Current vs Temp



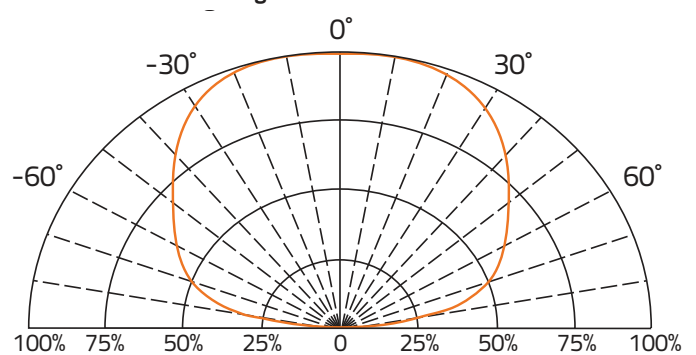
**Fig.4** Relative Intensity vs Temperature



**Fig.5** Relative Intensity vs Wavelength



**Fig. 6** Direct Radiation



### Environmental information

|                                  |                       |
|----------------------------------|-----------------------|
| RoHS Status                      | 6 of 6 Compliant      |
| REACH Status                     | Compliant             |
| Halogen Status                   | Halogen Free          |
| Conflict Mineral Status          | Conflict Mineral Free |
| Moisture Sensitivity Level (MSL) | 3                     |

### Reflow profile

|                         |       |
|-------------------------|-------|
| Max Reflow Temperature  | 260°C |
| Number of Reflow Cycles | 2     |

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## Label Example

Item: CTL1206FGR2T

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Qty: 3000

D/C: 1616

Lot: 20160502001

BIN/HUE: T/1Q

VF: 3.0-3.2

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## Codes:

VF: Forward Voltage | BIN: Luminous Intensity | HUE: Dominant Wavelength

## Luminous Intensity Classification (BIN Code)

| BIN Code | Iv(mcd) at 20mA |      |
|----------|-----------------|------|
|          | Min.            | Max. |
| S        | 200             | 300  |
| T        | 320             | 500  |
| U        | 500             | 800  |
| V        | 800             | 1250 |

## Dominant Wavelength Classification (HUE Code)

| HUE Code | $\lambda_D$ (nm) at 20mA |      |
|----------|--------------------------|------|
|          | Min.                     | Max. |
| 1O       | 519                      | 522  |
| 1P       | 522                      | 525  |
| 1Q       | 525                      | 528  |
| 1R       | 528                      | 531  |

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| Reel Specifications |          | Units: mm |          |          |
|---------------------|----------|-----------|----------|----------|
|                     |          |           |          |          |
| <b>M</b>            | <b>C</b> | <b>F</b>  | <b>E</b> | <b>G</b> |
| 178±1.50            | 56.0±1.0 | 12.0±1.0  | 60.0±1.0 | 9.0±1.0  |

| Packaging Specifications |       |
|--------------------------|-------|
| Reel Size:               | 7"    |
| Quantity per Reel :      | 3,000 |

| Storage Specifications                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Storage temperature and RH: 5°C~35°C, RH60%                                                                                                                                                                    |
| 2. Once the package is opened, the LEDs should be used within a week. Otherwise, they should be kept in a moisture proof bag with desiccant. We suggest that you use this product within one year from date code. |
| 3. If opened for more than one week in an atmosphere of 5°C~35°C, RH60%. The parts should be heat treated at 60°C±5°C for 15 hours.                                                                               |

| Tape Specifications |          | Units: mm |          |          |
|---------------------|----------|-----------|----------|----------|
|                     |          |           |          |          |
| <b>T</b>            | <b>W</b> | <b>A</b>  | <b>B</b> | <b>F</b> |
| 1.36±0.5            | 8.0±0.3  | 3.38±0.5  | 1.76±0.1 | 3.5±0.2  |
| <b>E</b>            | <b>H</b> | <b>J</b>  | <b>D</b> | <b>G</b> |
| 1.75±0.1            | 4.0±0.2  | 2.0±0.1   | 1.5±0.1  | 4.0±0.2  |

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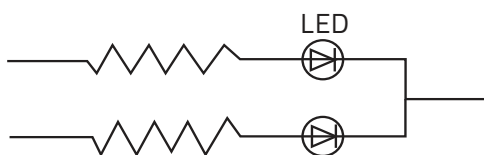
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| Environmental Test Criteria |                                         |                                                                                    |             |
|-----------------------------|-----------------------------------------|------------------------------------------------------------------------------------|-------------|
| Classification              | Test Item                               | Test Condition                                                                     | Sample Size |
| Endurance Test              | Operating Life                          | 1. Ta=25°C<br>2. If=20mA<br>3. t=1000hrs (-24hrs, +72hrs)                          | 22          |
|                             | High Temperature Storage                | 1. Ta=105°C±5°C<br>2. t=1000hrs (-24hrs, +72hrs)                                   | 22          |
|                             | Low Temperature Storage                 | 1. Ta=-40°C±5°C<br>2. t=1000hrs (-24hrs, +72hrs)                                   | 22          |
|                             | High Temperature, High Humidity Storage | 1. Ta=85°C<br>2. RH=85%<br>3. t=1000hrs(-24hrs, +72hrs)                            | 22          |
| Environmental Test          | Thermal Shock                           | 1. Ta=100°C±5°C & -40°C±5°C<br>20min / 10sec / 20min<br>3. Total: 100 cycles total | 22          |
|                             | Temperature Cycling                     | 1. 100°C±5°C & -40°C±5°C<br>30mins / 5mins / 30mins<br>2. 100 Cycles               | 22          |
|                             | IR Reflow                               | 1. T=260°C Max. 10 seconds Max<br>2. 6 Min                                         | 22          |

## Drive Method

LED is a current operated drive, and therefore it requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED. Consider worst case voltage variations that can occur across the current limiting resistor placed in series with the LED. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B

