

# MCL1210FRD1GR1T DATASHEET

Multi Color LED, 1210, Flat Lens, Red, Green

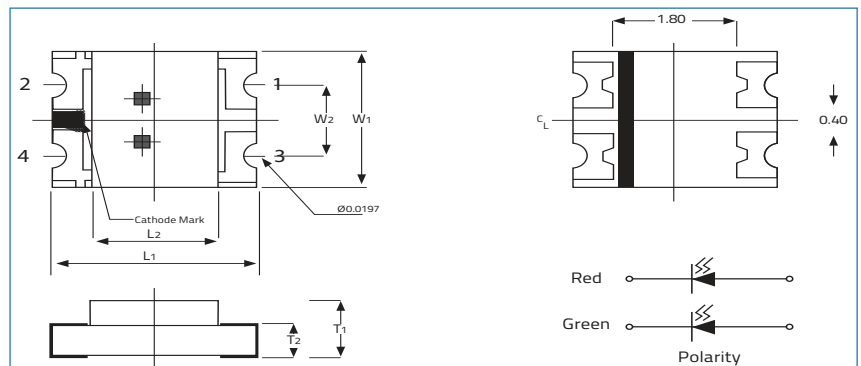


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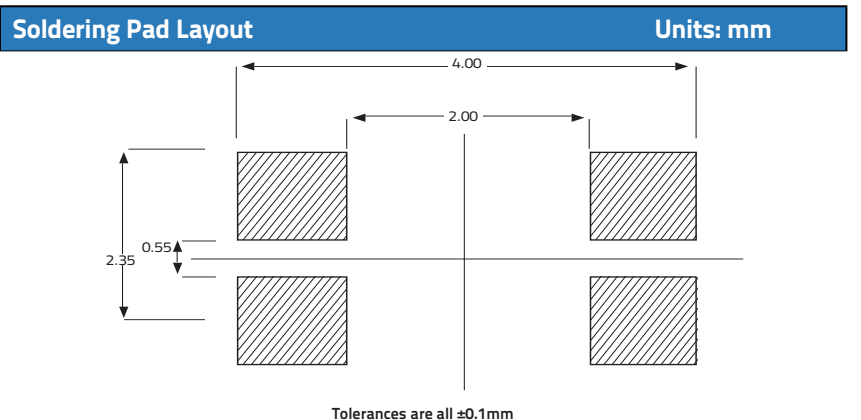
| Part Number     | Size | Emitting Color | Emitting Material | Lens-Color | Luminous Intensity mcd             | Wavelength nm $\lambda_P$          | Viewing Angle ( $2\theta$ 1/2) |
|-----------------|------|----------------|-------------------|------------|------------------------------------|------------------------------------|--------------------------------|
| MCL1210FRD1GR1T | 1210 | Red, Green     | AlGaInP, AlGaInP  | Clear      | Red: 50mcd Min<br>Green: 25mcd Min | Red: 625nm typ<br>Green: 573nm typ | 120°                           |

| Electrical & Optical Specifications ( $T_A=25^\circ\text{C}$ ) |                 | Red @20mA | Green @20mA | Unit          |
|--|-----------------|-----------|-------------|---------------|
| Forward Voltage Min.   | $V_F$           | 1.8       | 1.8         | V             |
| Forward Voltage Max.   | $V_F$           | 2.4       | 2.4         | V             |
| Reverse Current (Max) ( $V_R=5V$ )                             | $I_R$           | 10        | 10          | $\mu\text{A}$ |
| Peak Wavelength Typ.   | $\lambda_P$     | 635       | 573         | nm            |
| Dominant Wavelength Min.                                       | $\lambda_D$     | 625       | 570         | nm            |
| Spectral Line Half Width Typ.                                  | $\Delta\lambda$ | 20        | 20          | nm            |

| Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ ) |           | Red       | Green | Unit |
|---|-----------|-----------|-------|------|
| Reverse Voltage                                     | $V_R$     | 5         | 5     | V    |
| DC Forward Current                                  | $I_F$     | 30        | 30    | mA   |
| Peak Forward Current 1/10 Duty Cycle @ 10KHz        | $I_{FP}$  | 125       |       | mA   |
| Power Dissipation                                   | $P_D$     | 72        | 72    | mW   |
| Operating Temperature                               | $T_A$     | -40 ~ +85 |       | °C   |
| Storage Temperature                                 | $T_{stg}$ | -40 ~ +85 |       |      |



| Dimensions                 |                           |                            |                            | Units: Inches (mm)        |                            |  |  |
|----------------------------|---------------------------|----------------------------|----------------------------|---------------------------|----------------------------|--|--|
| $L_1$                      | $L_2$                     | $T_1$                      | $T_2$                      | $W_1$                     | $W_1$                      |  |  |
| 0.1259±0.004<br>(3.20±0.1) | 0.0788±0.004<br>(2.0±0.1) | 0.0433±0.004<br>(1.10±0.1) | 0.0197±0.004<br>(0.50±0.1) | 0.106±0.004<br>(2.70±0.1) | 0.0551±0.004<br>(1.40±0.1) |  |  |



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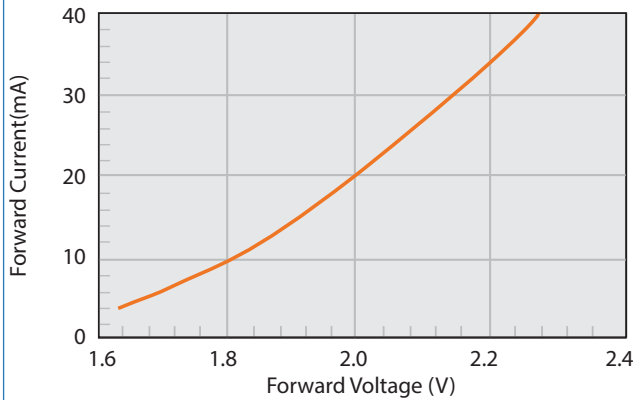
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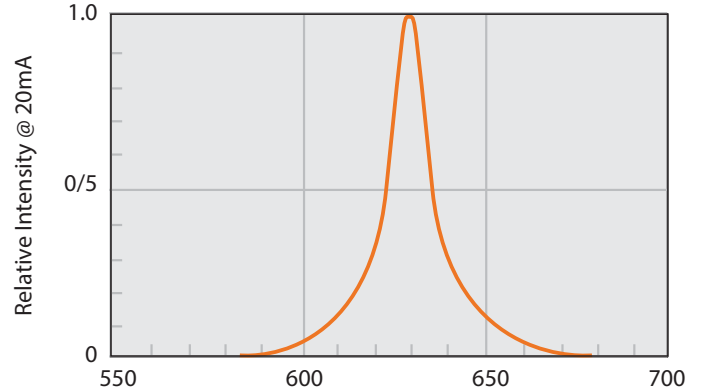
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## Graphs for Red (AlGaInP)

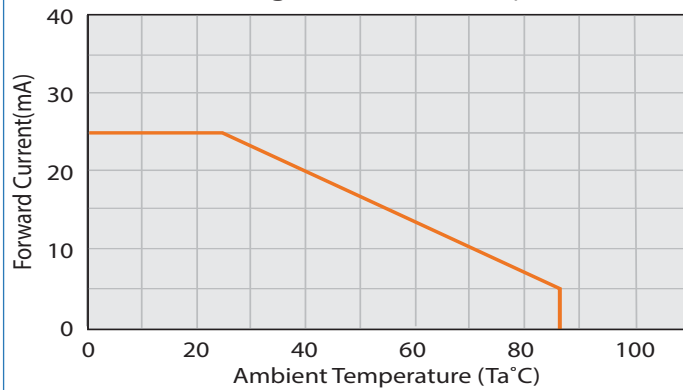
**Fig.1** Forward Current vs Forward Voltage



**Fig.2** Relative Intensity vs Wavelength



**Fig.3** Current vs Temp



### 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          |
| Time at Max Reflow Temperature | 10 seconds |

# MCL1210FRD1GR1T DATASHEET

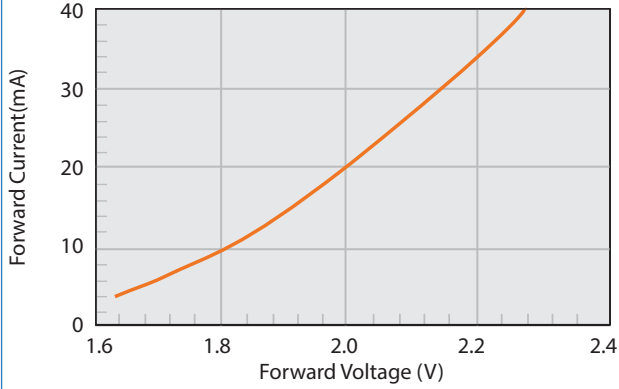
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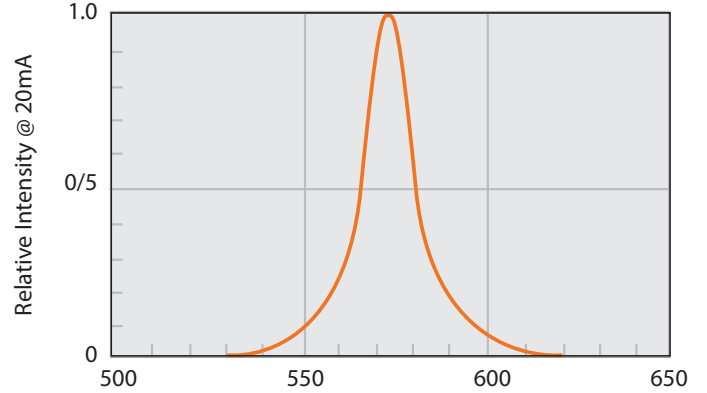
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## Graphs for Green (AlGaInP)

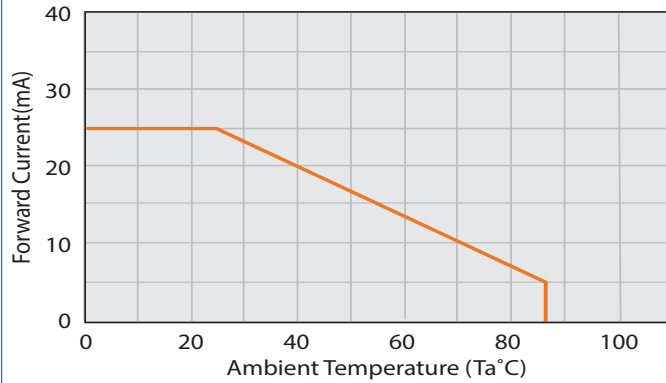
**Fig.1 Forward Current vs Forward Voltage**



**Fig.2 Relative Intensity vs Wavelength**



**Fig.3 Current vs Temp**



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## Label Example

Item: MCL1210FRD1GR1T

Chip Type LED,1210,Flat Lens,Red,Green

Qty: 3000

D/C: 1619

Lot: GS115A0168

VF: 1.8-2.4

BIN/HUE: I/t-E/i

VF: 1.8-2.4

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## Codes:

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

## Luminous Intensity Classification (BIN Code)

| RED BIN Code | Iv(mcd) at 20mA |      |
|--------------|-----------------|------|
|              | Min.            | Max. |
| G            | 50              | 63   |
| H            | 63              | 80   |
| I            | 80              | 100  |
| J            | 100             | 125  |
| K            | 125             | 160  |

| Green BIN Code | Iv(mcd) at 20mA |      |
|----------------|-----------------|------|
|                | Min.            | Max. |
| D              | 25              | 32   |
| E              | 32              | 40   |
| F              | 40              | 50   |
| G              | 50              | 63   |

## Dominant Wavelength Classification (HUE Code)

| $\lambda_D$ (nm) at 20mA |      |      |          |      |      |
|--------------------------|------|------|----------|------|------|
| Red                      |      |      | Green    |      |      |
| Hue Code                 | Min. | Max. | Hue Code | Min. | Max. |
| t                        | 620  | 625  | h        | 565  | 568  |
| u                        | 625  | 630  | i        | 568  | 572  |
|                          |      |      | j        | 572  | 576  |

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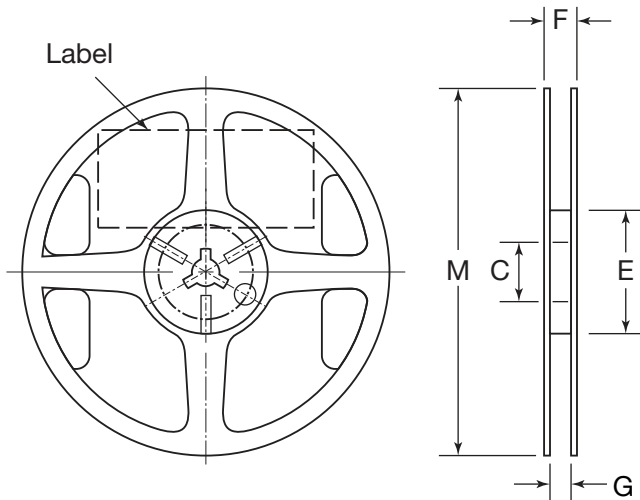
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## Reel Specifications

Units: mm



| M        | C        | F         | E        | G       |
|----------|----------|-----------|----------|---------|
| 178±1.50 | 13.0±2.0 | 11.40±1.0 | 60.0±1.0 | 9.0±1.0 |

## Packaging Specifications

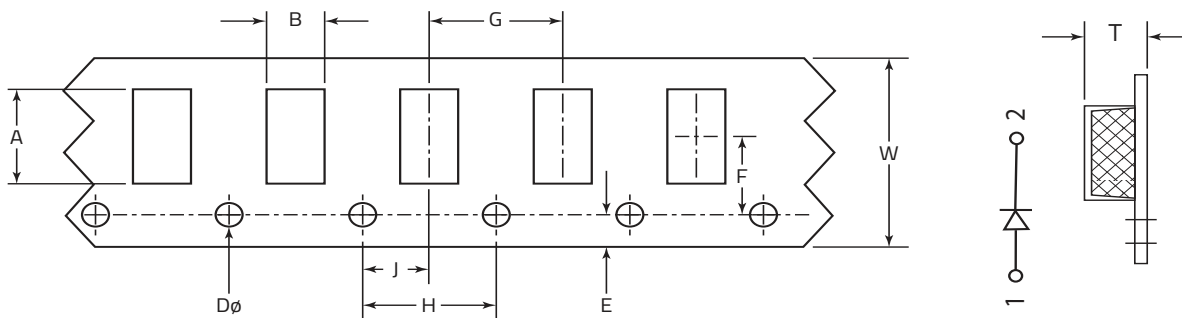
|                     |       |
|---------------------|-------|
| Reel Size:          | 7"    |
| Quantity per Reel : | 3,000 |

## 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> |
| 1.55±0.5 | 8.0±0.3  | 3.20±0.5 | 3.50±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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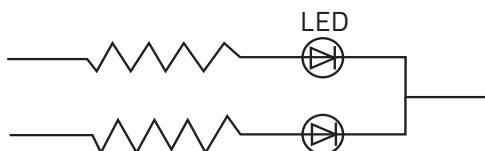
## Environmental Test Criteria

| 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

