

# MCL1206FRGB1T DATASHEET

Multi Color LED, 1206, Flat Lens, RGB

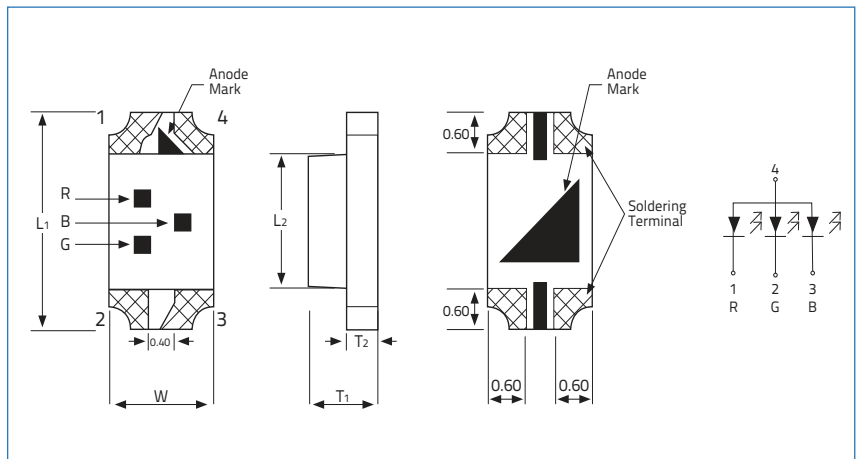


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Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity mcd	Wavelength nm $\lambda_P$	Viewing Angle ( $2\theta$ 1/2)
MCL1206FRGB1T	1206	Red, Green, Blue (RGB)	AlGaInP, InGaN	Clear	Red: 300 mcd typ Green: 700 mcd typ Blue: 140 mcd typ	Red: 632 nm typ Green: 520 nm typ Blue: 468 nm typ	120°

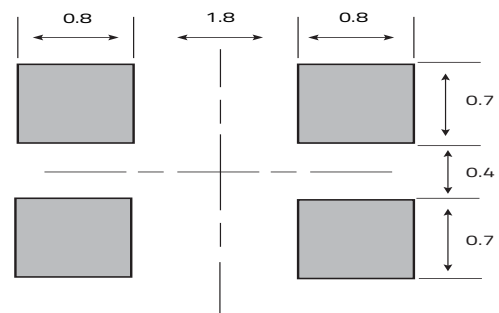
Electrical & Optical Specifications ( $T_A=25^\circ\text{C}$ )		Red @20mA	Green @20mA	Blue @20mA	Unit
Forward Voltage Typ.	$V_F$	1.8	2.8	2.8	V
Forward Voltage Max.	$V_F$	2.4	3.5	3.5	V
Reverse Current (Max) ( $V_R=5V$ )	$I_R$	10	50	50	$\mu\text{A}$
Peak Wavelength Typ.	$\lambda_P$	632	520	468	nm
Dominant Wavelength Typ.	$\lambda_D$	623	525	470	nm
Spectral Line Half Width Typ.	$\Delta\lambda$	20	36	30	nm

Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ )		Red	Green/Blue	Unit
Reverse Voltage	$V_R$	5	5	V
DC Forward Current	$I_F$	30	30	mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	$I_{FP}$	60	100	mA
Power Dissipation	$P_D$	78	108	mW
Operating Temperature	$T_A$	-40 ~ +85		°C
Storage Temperature	$T_{stg}$	-40 ~ +100		



Dimensions				Units: Inches (mm)			
$L_1$	$L_2$	$T_1$	$T_2$	$L_1$	$L_2$	$T_1$	$T_2$
0.126±0.004 (3.2±0.1)	0.0787±0.004 (2.0±0.1)	0.0433±0.004 (1.1±0.1)	0.0196±0.004 (0.50±0.1)				
<b>W</b>				0.063±0.004 (1.6±0.1)			

### Soldering Pad Layout



Tolerances are all ±0.1mm

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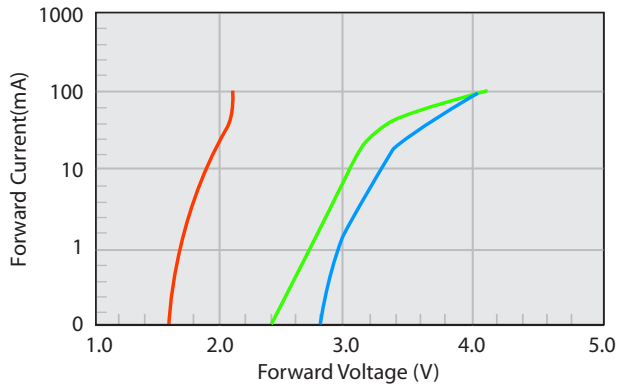
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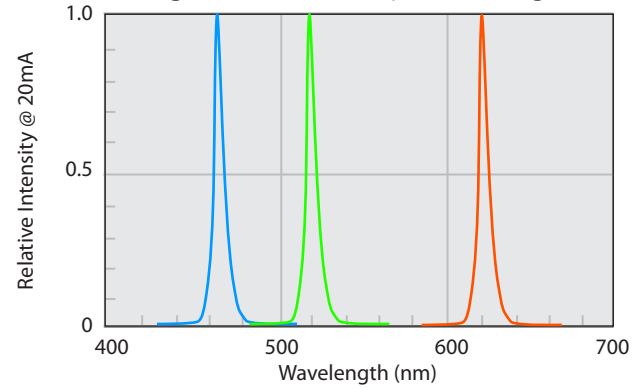
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## Graphs

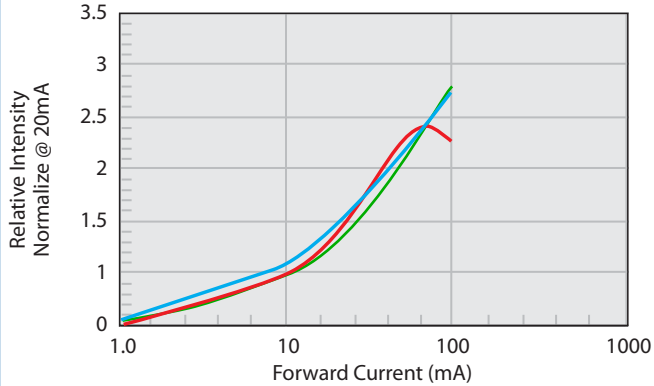
**Fig.1 Forward Current vs Forward Voltage**



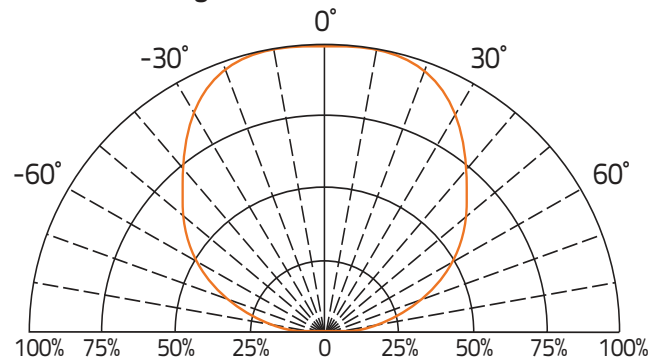
**Fig.4 Relative Intensity vs Wavelength**



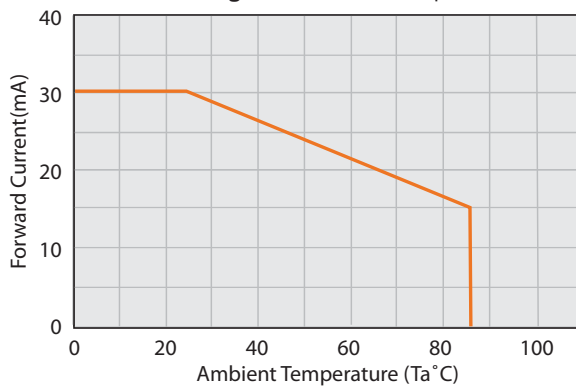
**Fig.2 Relative Intensity vs Forward Current**



**Fig. 6 Directive Radiation**



**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

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## Label Example

Item: MCL0805FRGB1T

Chip Type LED,0805,Flat Lens,RGB

Qty: 3000

D/C: 1616

Lot: GS11470168

VF: 1.8-2.4

VF: 2.8-3.5

BIN/HUE: C1

VF: 2.8-3.5

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## Codes:

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

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Reel Specifications		Units: mm		
<b>M</b>	<b>C</b>	<b>F</b>	<b>E</b>	<b>G</b>
178±1.5	56.0±1.0	12.0±0.1	60.0±1.0	9.0±0.1

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±0.05	8.0±0.30	3.38±0.05	1.76±0.05	3.5±0.05
<b>E</b>	<b>H</b>	<b>J</b>	<b>D</b>	<b>G</b>
1.75±0.10	4.0±0.10	2.0±0.05	1.5±0.1	4.0±0.2

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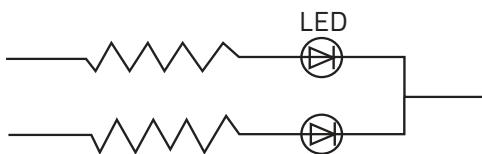
## Environmental Test Criteria

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

