

MCL0603FRD1GR1T DATASHEET

Multi Color LED, 0603, Flat Lens, Red, Green

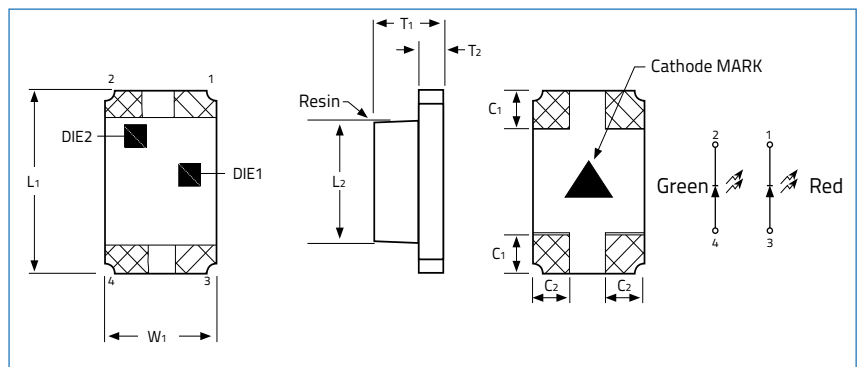


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Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity mcd	Wavelength nm λ_P	Viewing Angle (2θ 1/2)
MCL0603FRD1GR1T	0603	Red, Green	AlGaInP, AlGaInP	Clear	Red: 32mcd Min 200mcd Max Green: 20mcd Min 125mcd Max	Red: 642nm typ Green: 575nm typ	130°

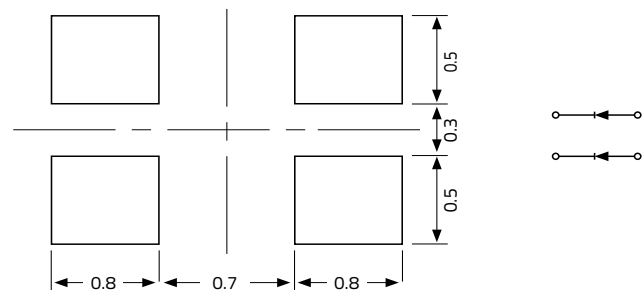
Electrical & Optical Specifactions ($T_A=25^\circ\text{C}$)		Red @20mA	Green @20mA	Unit
Forward Voltage Min.	V_F	1.5	1.7	V
Forward Voltage Max.	V_F	2.4	2.6	V
Reverse Current (Max) ($V_R=5V$)	I_R	10	10	μA
Peak Wavelength Typ.	λ_P	642	575	nm
Dominant Wavelength Min.	λ_D	630	574	nm
Spectral Line Half Width 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	25	25	mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	I_{FP}	90	60	mA
Power Dissipation	P_D	60	65	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_1	C_1	C_2	
0.063±0.004 (1.6±0.1)	0.043±0.004 (1.0±0.1)	0.0216±0.004 (0.40±0.1)	0.0071±0.004 (0.20±0.1)				
				0.059±0.004 (0.80±0.1)	0.059±0.004 (0.45±0.1)	0.059±0.004 (0.25±0.1)	

Soldering Pad Layout



Tolerances are all ±0.1mm

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Graphs for Red (AlGaInP)

Fig.1 Forward Current vs Forward Voltage

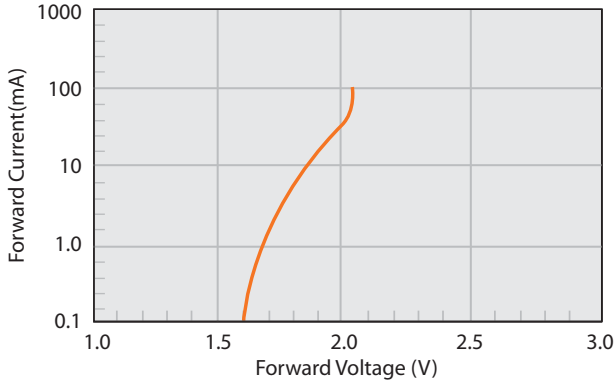


Fig.4 Relative Intensity vs Temperature

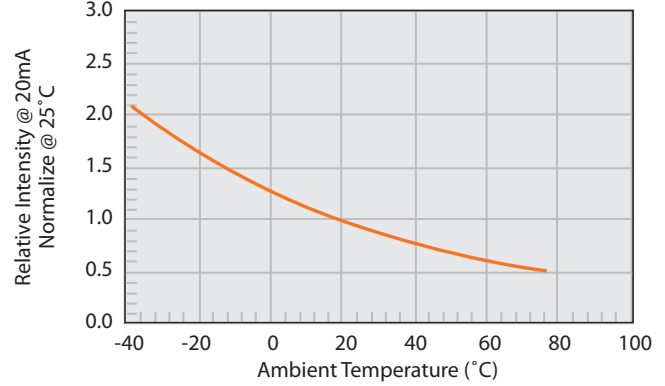


Fig.2 Relative Intensity vs Forward Current

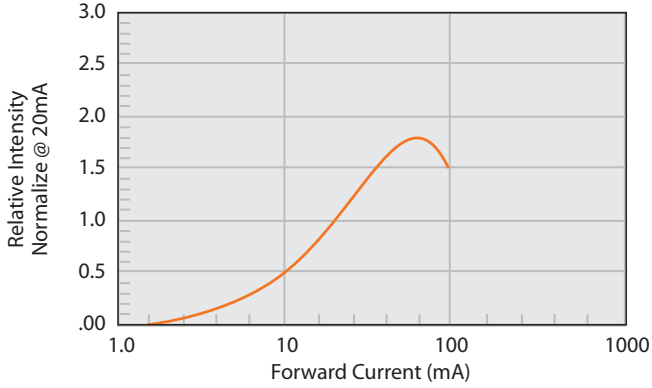


Fig.5 Relative Intensity vs Wavelength

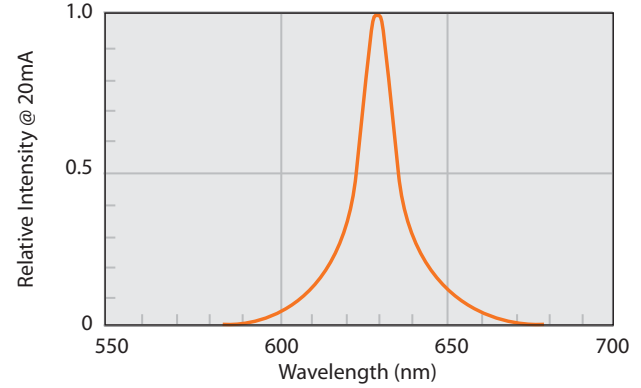


Fig.3 Current vs Temp

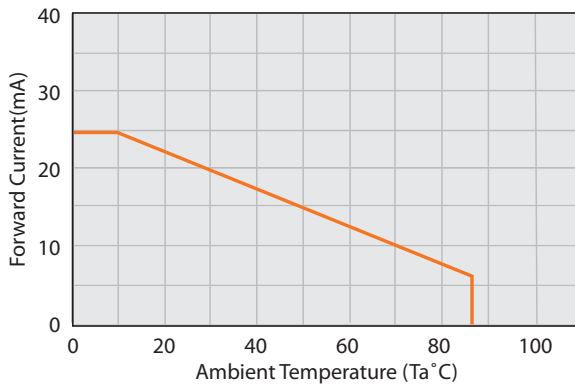
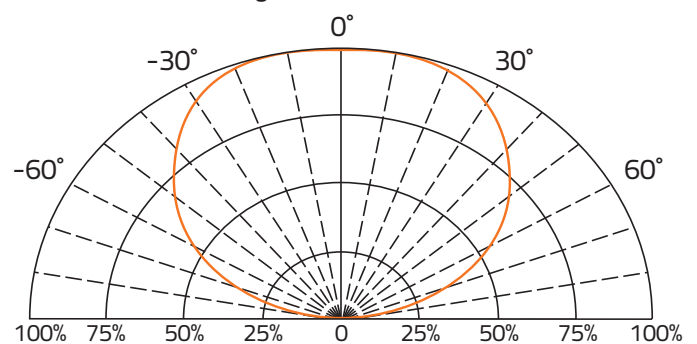


Fig. 6 Direct Radiation



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
Time at Max Reflow Temperature	10 seconds

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Graphs for Green (AlGaInP)

Fig.1 Forward Current vs Forward Voltage

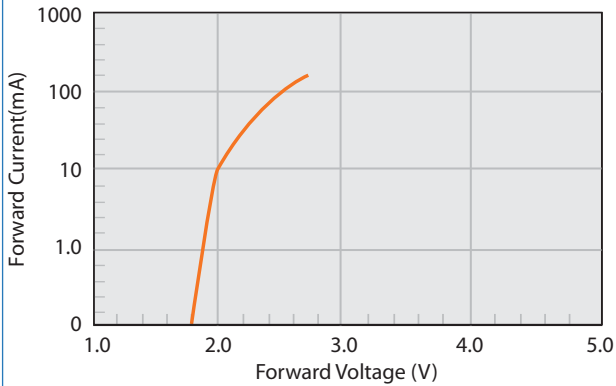


Fig.4 Relative Intensity vs Temperature

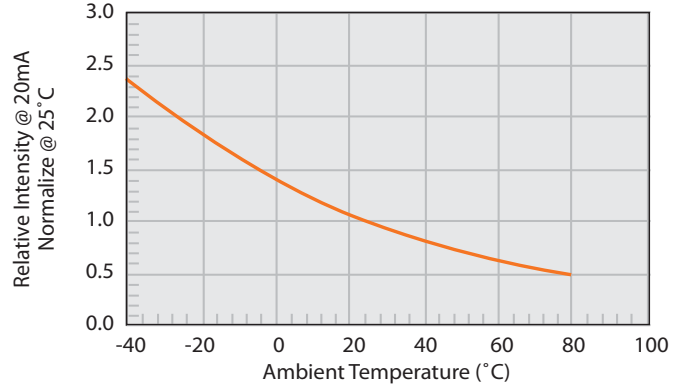


Fig.2 Relative Intensity vs Forward Current

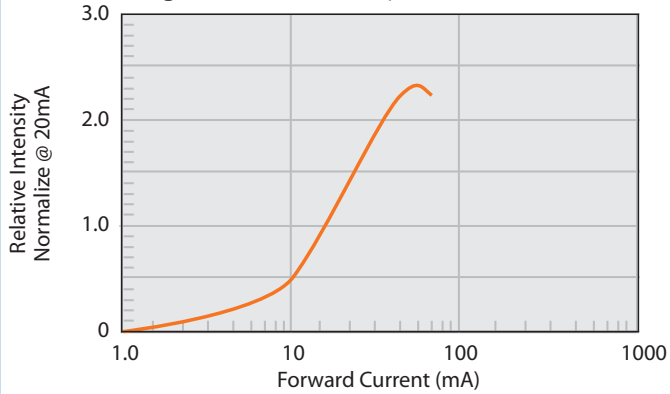


Fig.5 Relative Intensity vs Wavelength

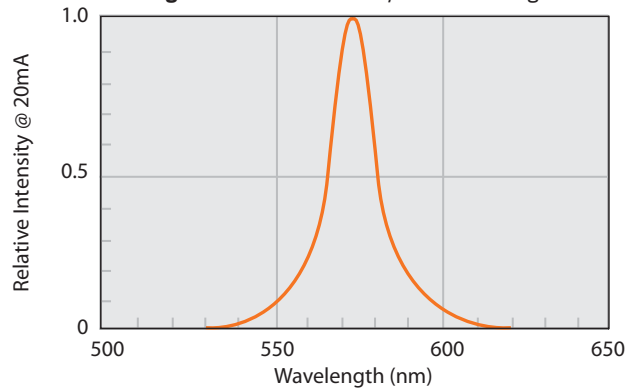


Fig.3 Current vs Temp

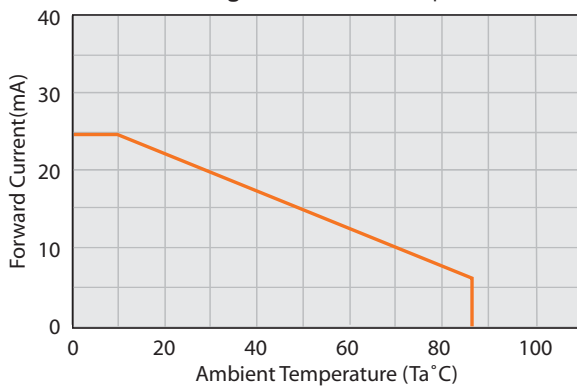
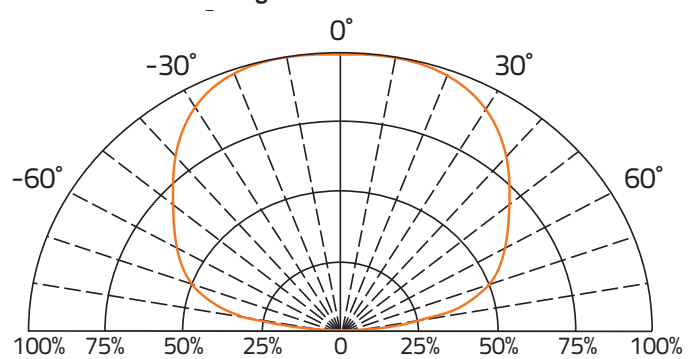


Fig. 6 Direct Radiation



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Label Example

Item: MCL0603FRD1GR1T

Chip Type LED,0606,Flat Lens,Red,Green

Qty: 4000 D/C: 1616

Lot: GS115A0168

VF: 1.5-2.4

BIN/HUE: P/30-M/8 VF: 1.7-2.6

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YOUR SINGLE SOURCE FOR SURFACE MOUNT PASSIVES

Codes:

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

Luminous Intensity Classification (BIN Code)

RED BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
N	32	50
P	50	80
Q	80	125
R	125	200

Green BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
M	20	32
N	32	50
P	50	80
Q	80	125

Dominant Wavelength Classification (HUE Code)

λ_D (nm) at 20mA					
Red			Green		
Hue Code	Min.	Max.	Hue Code	Min.	Max.
29	624	627	7	568	570
30	627	630	8	570	572
31	630	633	9	572	574
32	633	636			

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Reel Specifications		Units: mm		
M	C	F	E	G
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 :	4,000

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		
T	W	A	B	F
0.60±0.5	8.0±0.3	1.75±0.5	0.90±0.1	3.5±0.2
E	H	J	D	G
1.75±0.1	4.0±0.2	2.0±0.1	1.5±0.1	4.0±0.2

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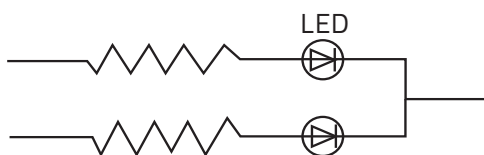
Environmental Test Criteria

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life	1. Ta=25°C 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

