MCL1210FRGB1T DATASHEET

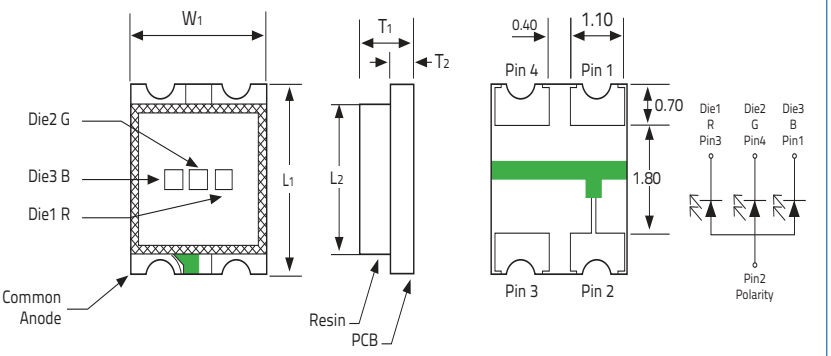
Multi Color LED, 1210, Flat Lens, RGB

VENKEL LTD.

Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity mcd	Wavelength nm λP	Vewing Angle (2θ 1/2)
MCL1210FRGB1T	1210	Red, Green, Blue (RGB)	AlInGaP, InGaN	Diffused	Red: 112.50 mcd typ Green: 285 mcd typ Blue: 112.50 mcd typ	Red: 632 nm typ Green: 520 nm typ Blue: 468 nm typ	120°

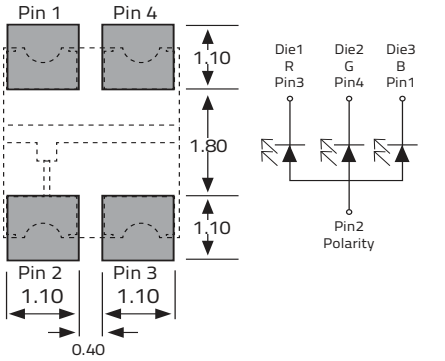
Electrical & Optical Specifactions (T_A=25°C)		Red @20mA	Green @20mA	Blue @20mA	Unit
Forward Voltage Typ.	V_F	2.0	3.3	3.3	V
Forward Voltage Max.	V_F	2.4	3.9	3.9	V
Reverse Current (Max) (V_R=5V)	I_R	<100	<100	<100	uA
Peak Wavelength Typ.	λP	632	520	468	nm
Dominant Wave-length Typ.	λD	624	525	470	nm
Spectral Line Half Width Typ.	Δλ	20	30	40	nm

Absolute Maximum Ratings (T_A=25°C)		Red	Green/ Blue	Unit
Reverse Voltage	V_R	5	5	V
DC Forward Current	I_F	20	20	mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	1_{Fp}	40	60	mA
Power Dissipation	P_D	48	78	mW
Operating Temperature	T_A	-40 ~ +85		°C
Storage Temperature	Tstg	-40 ~ +100		



Dimensions			Units: Inches (mm)
L_1	L_2	T_1	T_2
0.126±0.004 (3.2±0.1)	0.10±0.004 (2.55±0.1)	0.0433±0.004 (1.1±0.1)	0.0188±0.004 (0.48±0.1)
W			
0.106±0.004 (2.7±0.1)			

Soldering Pad Layout



Tolerances are all ±0.1mm

(800) 950–8365
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Graphs

Fig. 1 Forward Voltage vs Forward Current

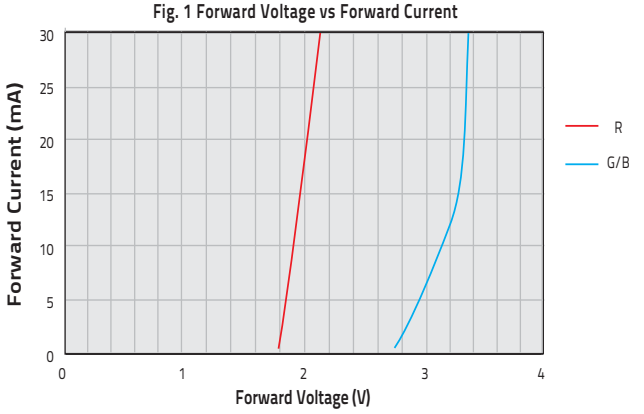


Fig.4 Relative Intensity vs Wavelength

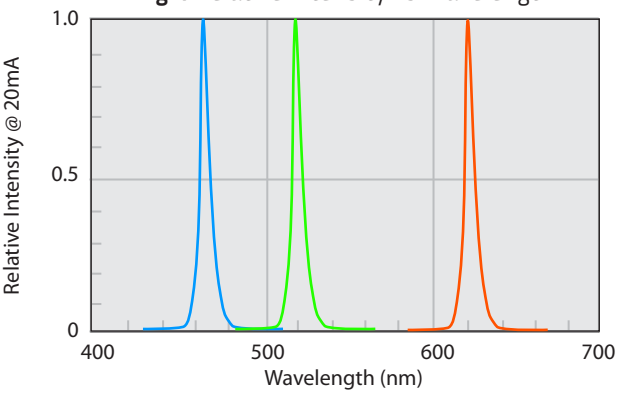


Fig. 2 Relative Intensity vs Forward Current

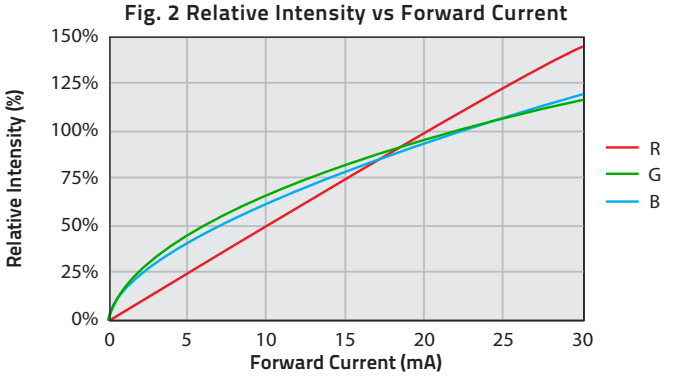


Fig. 6 Directive Radiation

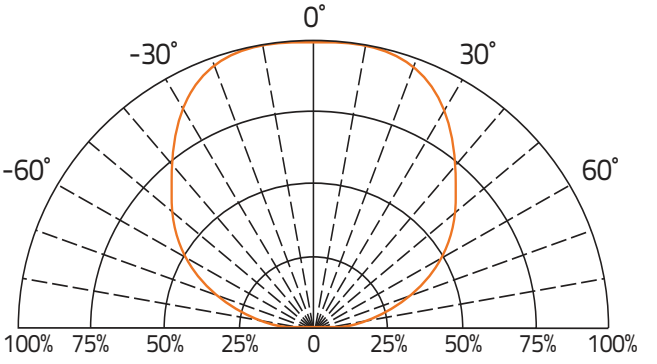
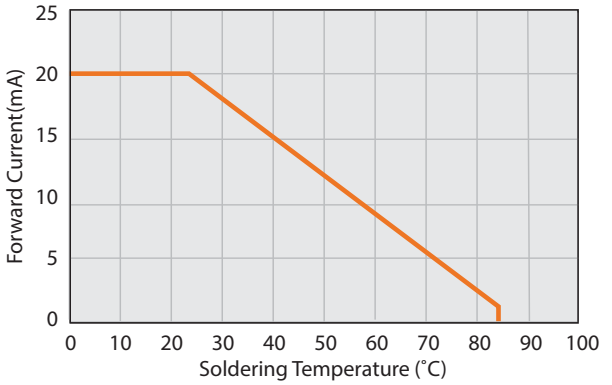


Fig.3 Current vs Temp



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: MCL1210FRGB1T
Chip Type LED,1210,Flat Lens,RGB
Qty: 500 D/C: 1616

Lot: GS11470168 VF: 1.6-2.4
VF: 2.7-3.9
BIN/HUE: Q/AC-S/A-Q/AB VF: 2.7-3.9

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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.
P	45	71.5
Q	71.5	112.5
R	112.5	180
S	180	285

Green BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
R	112.5	180
S	180	285
T	285	360
U	360	450

Blue BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
P	45	71.5
Q	71.5	112.5
R	112.5	180
S	180	285

Dominant Wavelength Classification (HUE Code)

λD (nm)								
Red			Green			Blue		
Hue Code	Min.	Max.	Hue Code	Min.	Max.	Hue Code	Min.	Max.
AC	615	630	A	515	520	AA	460	465
			B	520	525	AB	465	470
			C	525	530	AC	470	475
			D	530	535	AD	475	480

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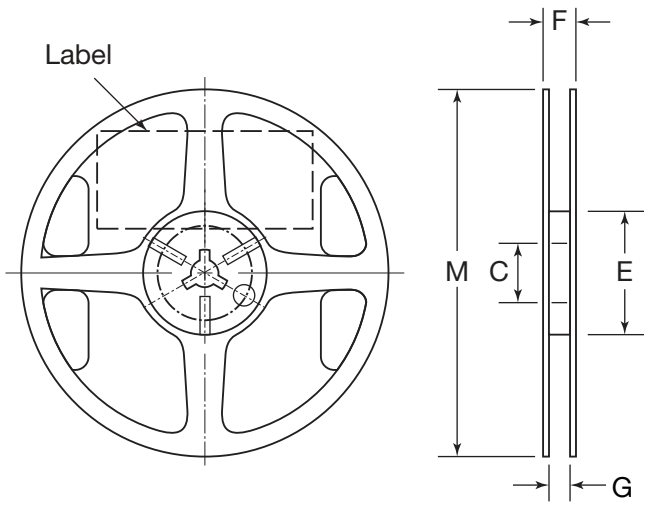
Reel Specifications

Units: mm



M	C	F	E	G
178±1.5	13.0±0.2	12.0±0.1	60.0±1.0	9.0±0.5

Packaging Specifications

Reel Size:	7″
Quantity per Reel :	500

Storage Specifications

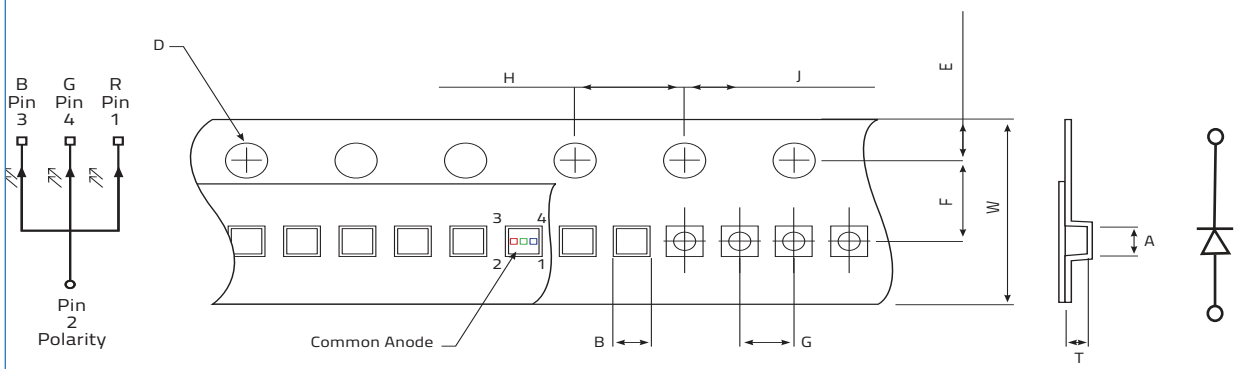
1. Storage temperature and RH: 5°C~35°C, RH60%

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
1.4±0.10	8.0±0.30	3.02±0.10	3.52±0.05	3.5±0.05
E	**H**	**J**	**D**	**G**
1.75±0.10	4.0±0.10	2.0±0.05	1.5±0.1	4.0±0.2

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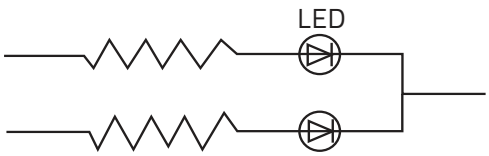
Environmental Test Criteria

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