

MCL1204RRGB1T DATASHEET

Multi Color LED, 1204, Right Angle Lens, RGB



VENKEL LTD.

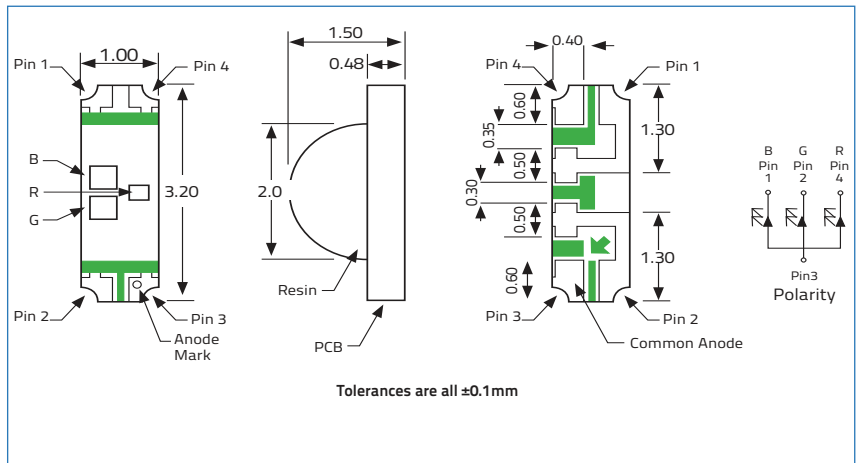
Part Number	Size	Emitting Color	Emitting Material	Lens-Color	Luminous Intensity mcd	Wavelength nm λ_P	Viewing Angle (2θ 1/2)
MCL1204RRGB1T	1204	Red, Green, Blue (RGB)	AlGaInP, InGaN	Diffused	Red: 112.50 mcd typ Green: 285 mcd typ Blue: 45 mcd typ	Red: 632 nm typ Green: 520 nm typ Blue: 468 nm typ	120°

Electrical & Optical Specifications ($T_A=25^\circ\text{C}$)		Red @20mA	Green @20mA	Blue @20mA	Unit
Forward Voltage Typ.	V_F	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	μA
Peak Wavelength Typ.	λ_P	632	520	468	nm
Dominant Wavelength Typ.	λ_D	624	525	470	nm
Spectral Line Half Width Typ.	$\Delta\lambda$	20	30	40	nm

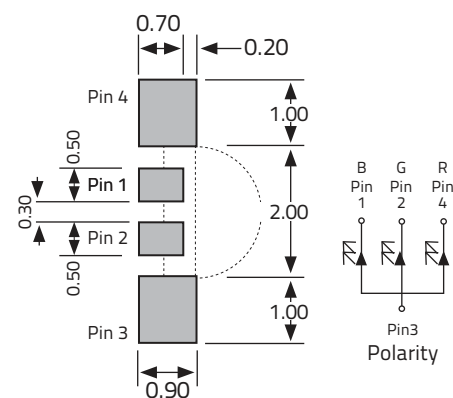
Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)		Red	Green	Blue	Unit
Reverse Voltage	V_R	5	5	50	V
DC Forward Current	I_F	20	20	20	mA
Peak Forward Current 1/10 Duty Cycle @ 10KHz	1_{FP}	40	40	60	mA
Power Dissipation	P_D	48	78	78	mW
Operating Temperature	T_A	-40 ~ +85			°C
Storage Temperature	T_{stg}	-40 ~ +100			

Dimensions

Units: mm



Soldering Pad Layout



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Graphs

Fig. 1 Forward Voltage vs Forward Current

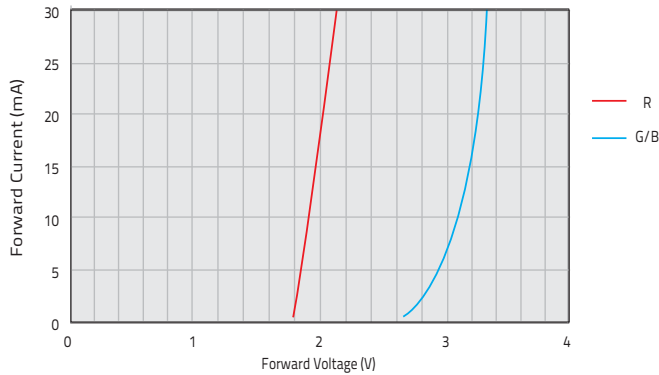


Fig.4 Relative Intensity vs Wavelength

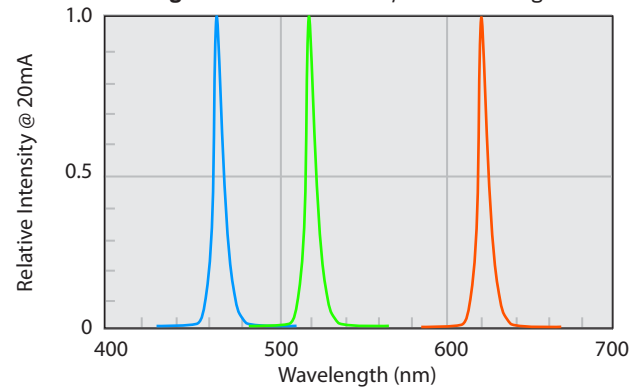


Fig. 2 Relative Intensity vs Forward Current

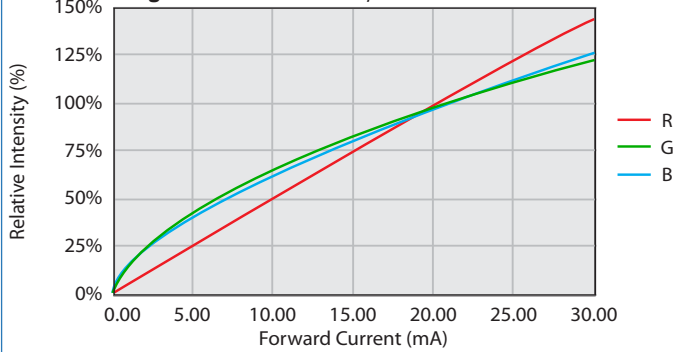


Fig.5 Radiation Diagram

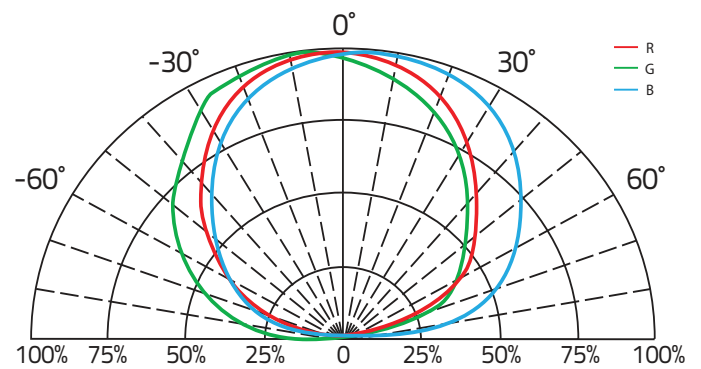
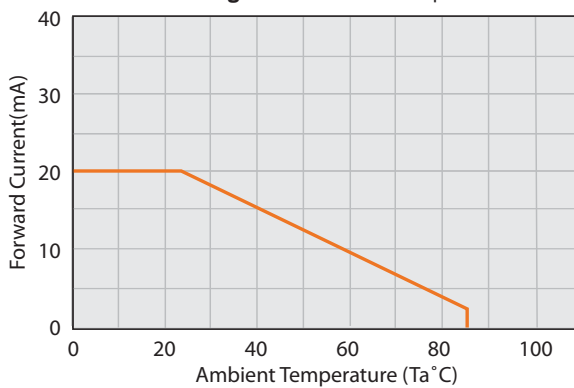


Fig.3 Current vs Temp



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: MCL1204RRGB1T

Chip Type LED,1204,Right Angle Lens,RGB

Qty: 1000

D/C: 1616

Lot: GS11470168

VF: 1.6-2.4

VF: 2.9-3.1

BIN/HUE: AC/B/AB

VF: 2.9-3.1

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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.
Q	71.50	112.5
R	112.5	180
S	180	285

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

Blue BIN Code	Iv(mcd) at 20mA	
	Min.	Max.
N	28.50	45
P	45	71.50
Q	71.5	112.5

Dominant Wavelength Classification (HUE Code)

Red HUE Code	λD (nm) at 20mA	
	Min.	Max.
AC	615	630

Green HUE Code	λD (nm) at 20mA	
	Min.	Max.
A	515	520
B	520	525
C	525	530
D	530	535

Blue HUE Code	λD (nm) at 20mA	
	Min.	Max.
AA	460	465
AB	465	470
AC	470	475
AD	475	480

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Reel Specifications		Units: mm		
M	C	F	E	G
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 :	1,000

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
1.20±0.10	8.0±0.30	3.40±0.10	1.70±0.10	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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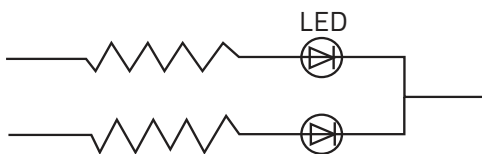
Environmental Test Criteria

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

