



LIGITEK ELECTRONICS CO.,LTD.
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RGB Power Light LED

LGXRGB-501E-SI

DATA SHEET

DOC. NO : QW0905-LGXRGB-501E-SI

REV : B

DATE : 26 - Sep. - 2012



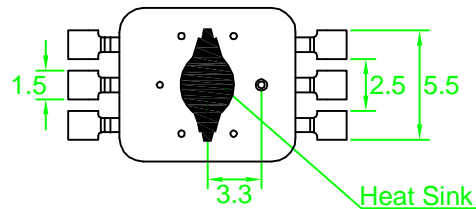
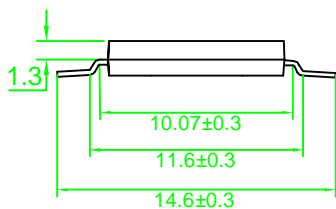
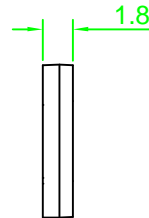
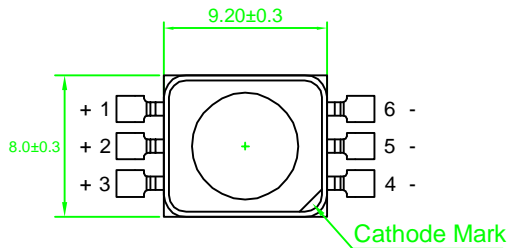
Features

- *. Three chip(color) in one package for High Flux LED.
- *. Various colors for choice.
- *. More Energy Efficient than Incandescent and most Halogen lamps.
- *. Low voltage DC operated..
- *. Instant light(less than 100 ns).
- *. Independent control of each color.
- *. No UV.
- *. IR reflow process compatible.

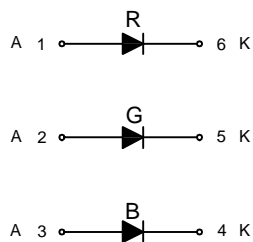
Typical Applications

- *. LCD Backlights / Light Guides.
- *. Commercial and Residential Architectural lighting.
- *. Mini-accent / Uplighters / Downlighters / Orientation lighting
- *. Fiber Optic Alternative / Decorative / Entertainment lighting.
- *. Security / Garden lighting.
- *. Sign and channel Letter.

Dimension



(Bottom)



1. Anode Red
2. Anode Green
3. Anode Blue
4. Cathode Blue
5. Cathode Green
6. Cathode Red

Note:1.All dimension are in millimeter tolerance is $\pm 0.25\text{mm}$ unless otherwise noted
2.Specifications are subject to change without notice

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Ratings	UNIT
		White	
DC Forward Current for each color	IF	350	mA
Total Power Dissipation	PD	3.92	W
Peak pulse current Duty 1/10@10KHz	IFP	500	mA
LED junction Temperature	Tj	125	°C
Reverse Current(VR=5V)	Ir	100	μA
Storage Temperature	Tstg	-40 ~ +120	°C
Operating Temperature	Topr	-40 ~ +100	°C
Manual Soldering Time at 260°C(Max)	Tsol	5	seconds

Luminous Flux Characteristics at 350mA (Ratings At 25°C Ambient)

PART NO	Emission Color	Luminous Flux @350mA(lm)			Units
		Min.	Typ.	Max.	
LGXRGB-501E/SI	Red	18.1	22.3	39.8	lm
	Green	30.6	44.1	67.2	
	Blue	18.1	22.3	39.8	

. Forward Voltage Characteristics at 350mA

(Ratings At 25°C Ambient)

PART NO	Emission Color	Vf			Units
		Min.	Typ.	Max.	
LGXRGB-501E-SI	Red	2.0	2.5	3.2	V
	Green	3.0	3.6	4.0	
	Blue	3.0	3.6	4.0	

Note : Forward Voltage is measured with an accuracy of $\pm 0.1V$

. Dominant Wavelength Characteristics at 350mA

(Ratings At 25°C Ambient)

PART NO	Emission Color	λD			Units
		Min.	Typ.	Max.	
LGXRGB-501E-SI	Red	619	----	629	nm
	Green	522	----	531	
	Blue	450	----	465	

. Temperature Coefficient Of Forward Voltage&Thermal Resistance Junction To Board Characteristics at 350mA

(Ratings At 25°C Ambient)

PART NO	Emission Color	VF/ΔT		Rth,j-B	
		Typ.	Units	Typ.	Units
LGXRGB-501E-SI	Red	-2	mV/°C	18	°C/W
	Green				
	Blue				

. View Angle Characteristics at 350mA

(Ratings At 25°C Ambient)

PART NO	Emission Color	Lambertian	Units
LGXRGB-501E-SI	Red	120	Degrees
	Green		
	Blue		

Brightness Code For High Power LED

Group		Luminous flux(lm)	
		Min	Max
R	F19	18.1	23.5
	F20	23.5	30.6
	F21	30.6	39.8
G	F21	30.6	39.8
	F22	39.8	51.2
	F23	51.2	67.2
B	F19	18.1	23.5
	F20	23.5	30.6
	F21	30.6	39.8

Note : Flux is measured with an accuracy of $\pm 10\%$

Dominant Wavelength For High Power LED

Group		λ_D (nm)	
		Min	Max
R	All	619	629
G	C	522	525
	D	525	528
	E	528	531
B	A	450	455
	B	455	460
	C	460	465

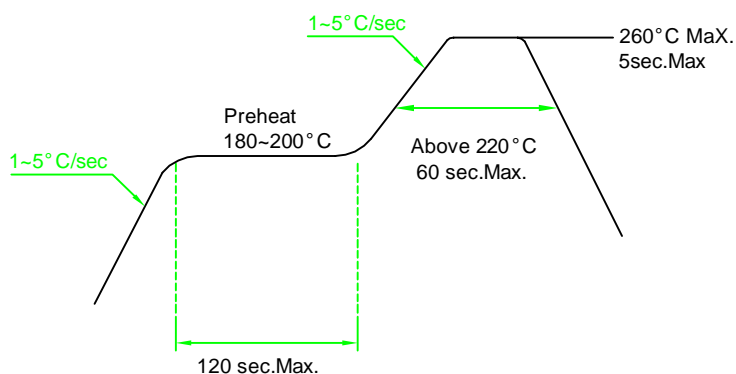
Recommended Soldering Conditions

Soldering Conditions:

The LEDs can soldered in place using the reflow soldering method.

	Reflow Soldering (Lead-free Soder)	Hand Soldering
Pre-heat Pre-heat time Peak temperature Soldering time Condition	180 ~ 200 °C 120sec. Max. 260° C Max. 10 sec. Max. refer to Temperature - profile	Temperature Soldering Time \leq 260°C 5 sec Max one time only.

PB-Free Reflow Solder



Reflow Soldering should not be done more than two times.

Fig.1 Forward current vs. Forward Voltage

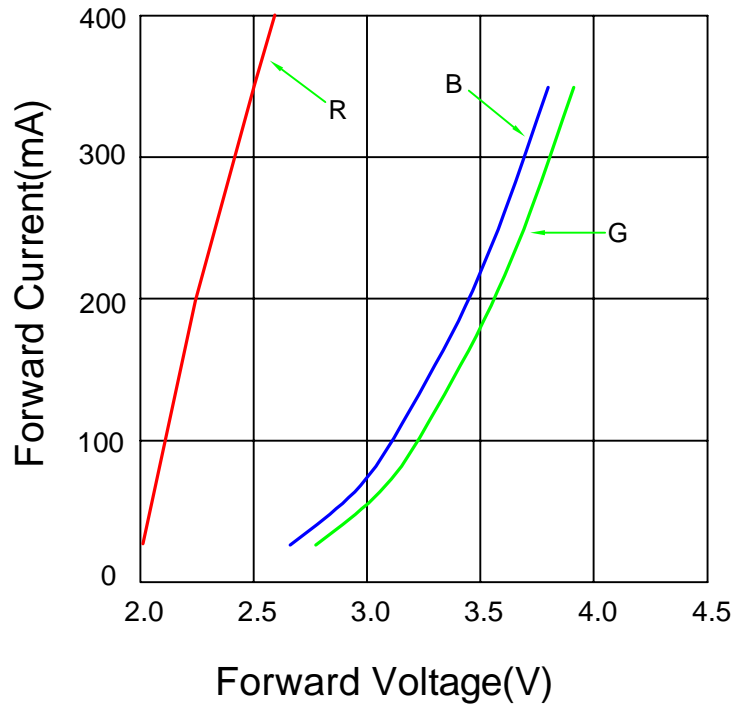


Fig.2 Operating current vs. Ambient Temperature

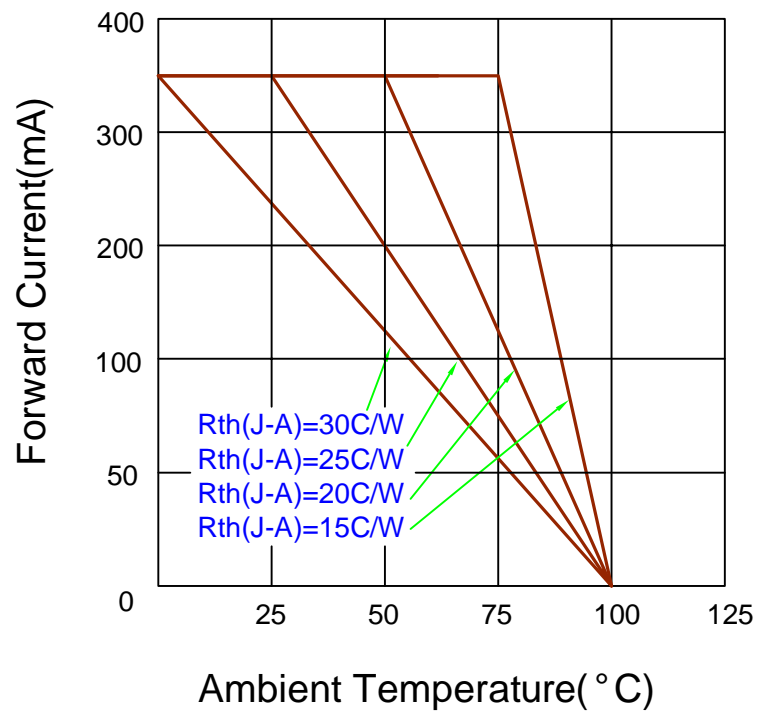


Fig.3 Forward current vs. Luminous Flux

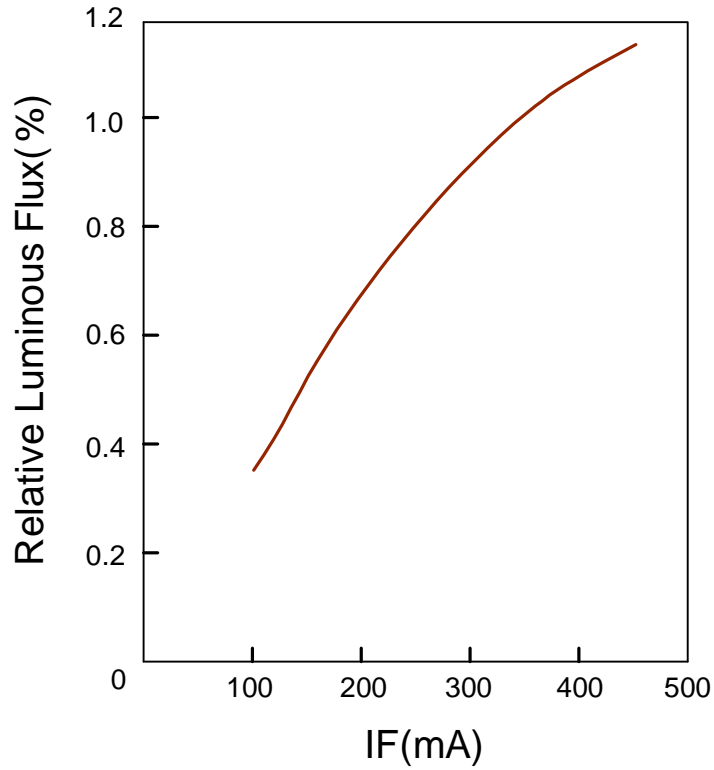


Fig.4 Junction Temperature vs. Forward Voltage

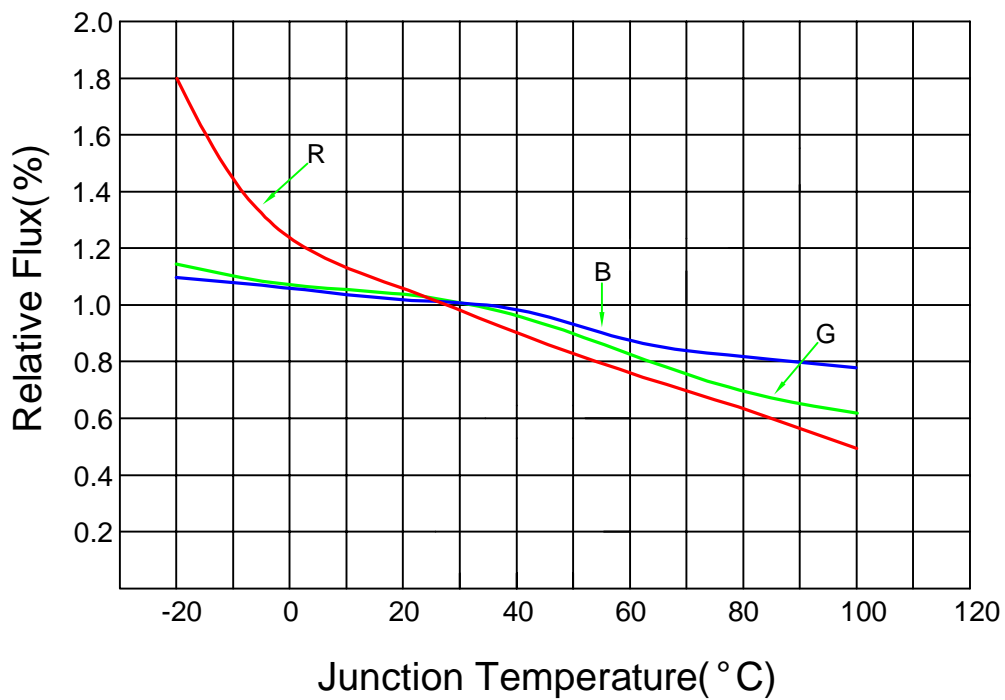


Fig.5 Luminous Spectrum(Ta=25 °C)

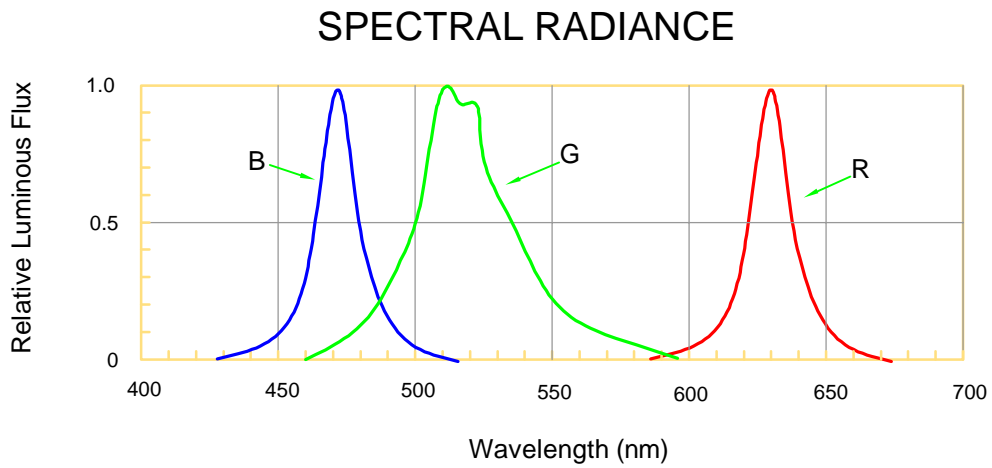
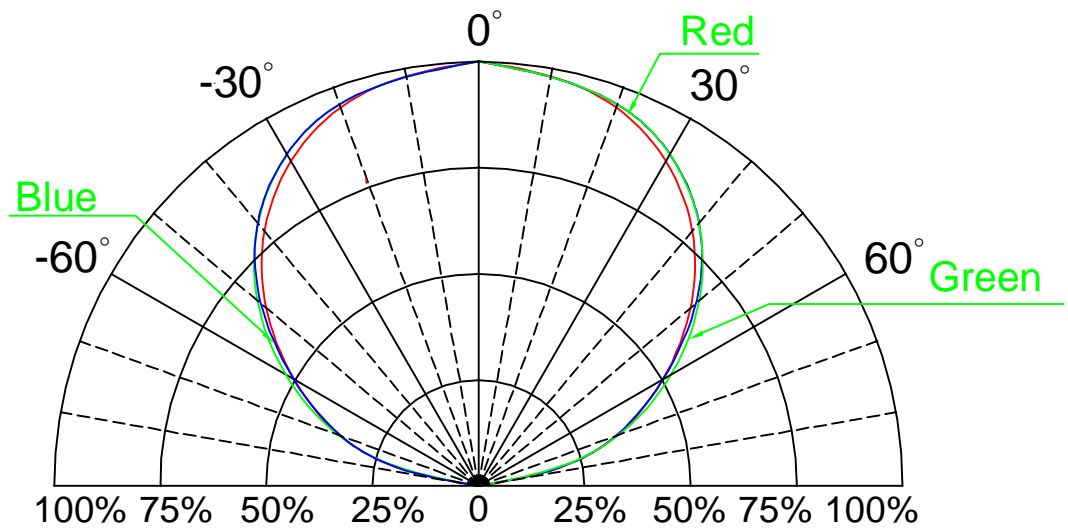


Fig.6 Directivity Radiation



Reliability Test

Item	Description	Stress Condition	Test Duration
RTOL	Room Temperature Operation Life	25° C, Max. IF	1000 hours
WHT	Wet High Temperature	85° C/85%RH	1000 hours
TC	Temperature Cycling	-40/+110° C, 30min dwell,<5min trans.	200 cycles
TS	Thermal Shock	-40/+110° C, 20min dwell,<20min trans.	200 cycles
HTSL	High Temperature Storage Life	120° C	1000 hours
LTSL	Low Temperature Storage Life	-40° C	1000 hours
SHR	Solder Heat Resistance	260±5° C, 5secs	
MS	Mechanical Shock	1500G,0.5msec pulse, 5 shocks each 6 axis	
ND	Natural Drop	On concrete from 1.2m, 3times	
RV	Random Vibration	6G RMS from 10 to 2KHz, 10mins/axis	
VVF	Variable Vibration Frequency	10-2000-10Hz, 20G 1 min, 1.5mm, 3times/axis	

Note :

Failure criteria:

Electrical failures

V_F shife $\geq 10\%$

$I_R < 50\mu A @ V_r = 5v$

Ligitek output Degradation

$\%I_v$ shift $\geq 30\% @ 1000hrs$ or 200cycle

Visual failures

Broken or damaged pockage or lead

Dimension out of tolerance