

SURFACE MOUNT LED TAPE AND REEL



Lead-Free Parts

LRGB9553-5/T5/TR1-A01

DATA SHEET

DOC. NO : QW0905-LRGB9553-5/T5/TR1-A01

REV. : A

DATE : 12 - Dec. - 2011



Features:

1. Top view white LED.
2. white SMT package.
3. Leadframe package with individual 4 pin.
4. Wide viewing angle.
5. Soldering methods: IR reflow soldering.
6. Feature of the device: more light due to higher optical efficiency; extremely wide viewing angle; ideal for backlighting and coupling in light guide.

Descriptions:

The LRGB9553 SMD has wide viewing angle and optimized light coupling by inter reflector, The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

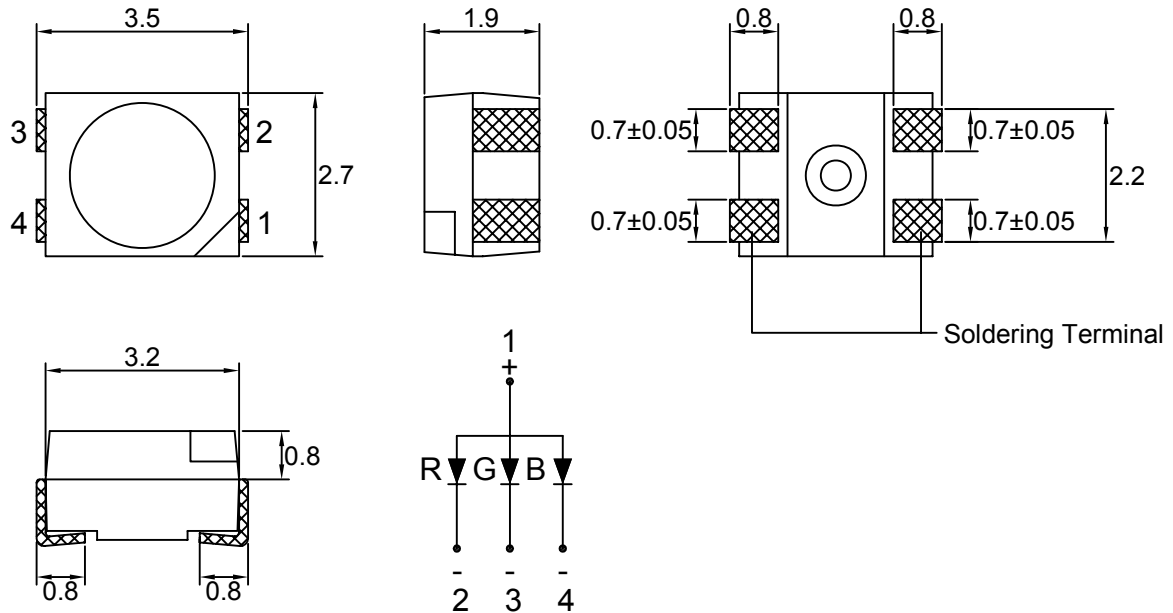
Applications:

1. LCD back light.
2. Mobile phones.
3. Indicators.
4. Switch lights.
5. Lighting.

Device Selection Guide:

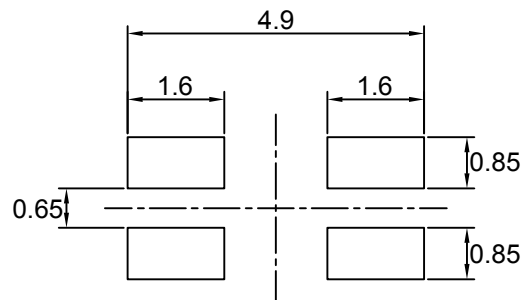
PART NO	MATERIAL	COLOR	
		Emitted	Lens
LRGB9553-5/T5/TR1-A01	AlGaInP	Red	Water Clear
	InGaIn/GaN	Green	
	InGaIn/GaN	Blue	

Package Dimensions



Note : 1.All dimension are in millimeter tolerance is $\pm 0.2\text{mm}$ unless otherwise noted.
2.Specifications are subject to change without notice.

Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit=mm.

Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings			UNIT
		URF	DGM	DBK	
Forward Current	IF	50	30	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	130	100	100	mA
Power Dissipation	PD	120	120	120	mW
Reverse Current @5V	Ir	10	50	50	μA
Electrostatic Discharge	ESD	2000	500	500	V
Operating Temperature	Topr	- 20 ~ + 80			°C
Storage Temperature	Tstg	- 30 ~ + 100			°C

Typical Electrical & Optical Characteristics (Ta=25 °C)

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION	
Luminous Intensity	Iv	URF	20	32	----	mcd	IF=5mA
		DGM	125	200	----		
		DBK	50	80	----		
Dominant Wavelength	λD	URF	624	----	636	nm	IF=5mA
		DGM	519	----	531		
		DBK	468	----	474		
Spectral Line Half-Width	Δλ	URF	----	17	----	nm	IF=5mA
		DGM	----	36	----		
		DBK	----	30	----		
Forward Voltage	VF	URF	1.5	----	2.4	V	IF=5mA
		DGM	2.8	----	4.0		
		DBK	2.8	----	3.6		
Viewing Angle	2θ 1/2	URF	----	120	----	deg	IF=5mA
		DGM	----	120	----		
		DBK	----	120	----		

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.
 2.The luminous intensity data did not including ±15% testing tolerance.
 3.The color coordinates measurement allowance is ±0.01 testing tolerance.

Luminous Intensity Classification

BIN CODE		Iv(mcd) at 5mA	
		Min.	Max.
URF	M	20	32
	N	32	50
	P	50	80

BIN CODE		Iv(mcd) at 5mA	
		Min.	Max.
DBK	R	125	200
	S	200	320
	T	320	500

BIN CODE		Iv(mcd) at 5mA	
		Min.	Max.
DGM	P	50	80
	Q	80	125
	R	125	200

Dominant Wavelength Classification

BIN CODE		λ_D (nm) at 5mA	
		Min.	Max.
URF	29	624	627
	30	627	630
	31	630	633
	32	633	636

BIN CODE		λ_D (nm) at 5mA	
		Min.	Max.
DGM	1O	519	522
	1P	522	525
	1Q	525	528
	1R	528	531

BIN CODE		λ_D (nm) at 5mA	
		Min.	Max.
DBK	0C	468	471
	0B	471	474

Typical Electro-Optical Characteristics Curve

URF CHIP

Fig.1 Forward current vs. Forward Voltage

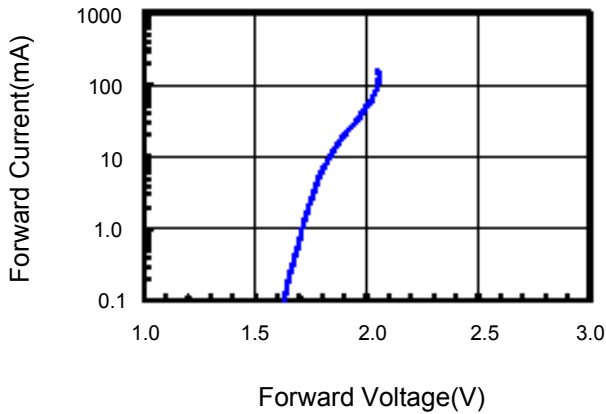


Fig.2 Relative Intensity vs. Forward Current

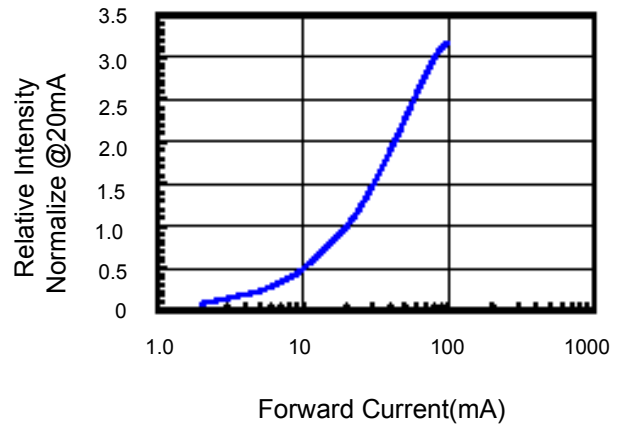


Fig.3 Forward Voltage vs. Temperature

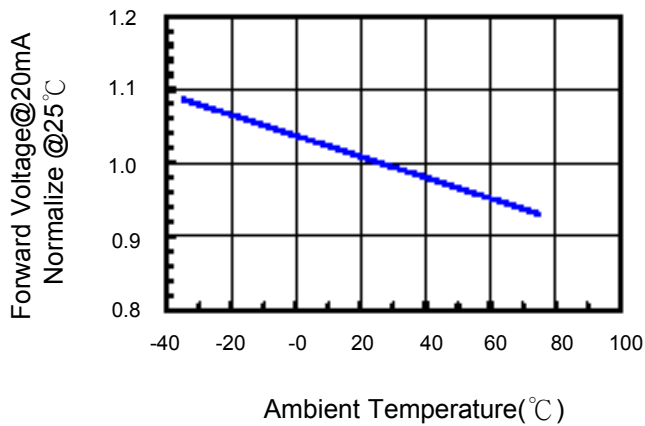


Fig.4 Relative Intensity vs. Temperature

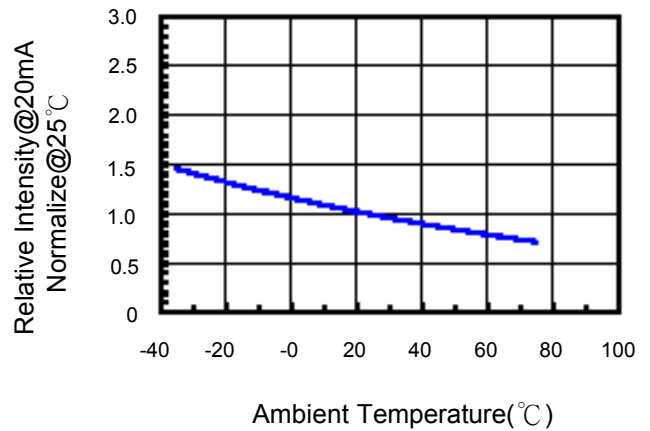


Fig.5 Relative Intensity vs. Wavelength

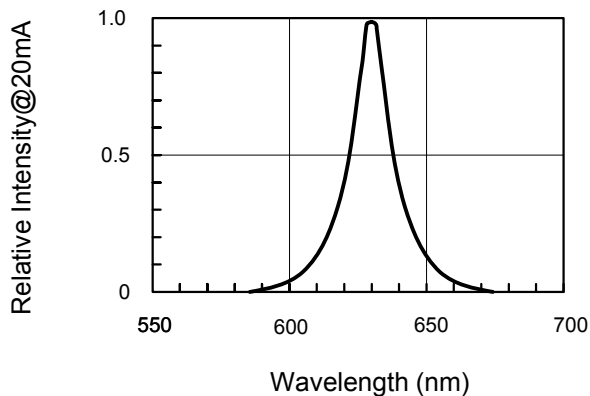
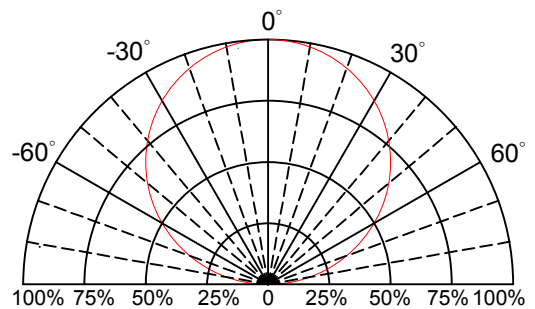


Fig.6 Directive Radiation



Typical Electro-Optical Characteristics Curve DGM CHIP

Fig.1 Forward current vs. Forward Voltage

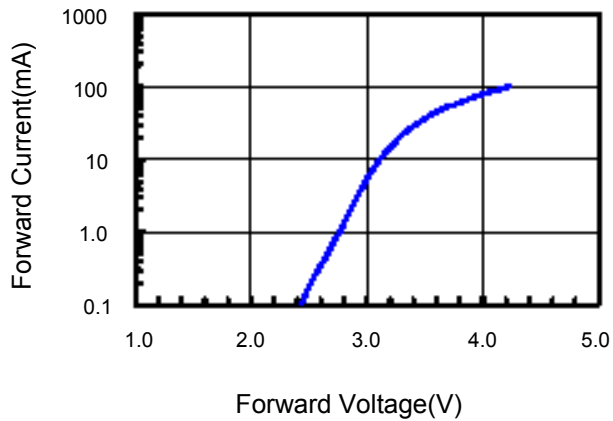


Fig.2 Relative Intensity vs. Forward Current

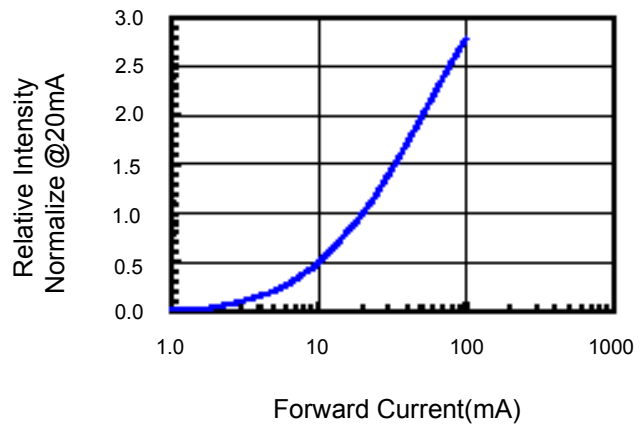


Fig.3 Forward Voltage vs. Temperature

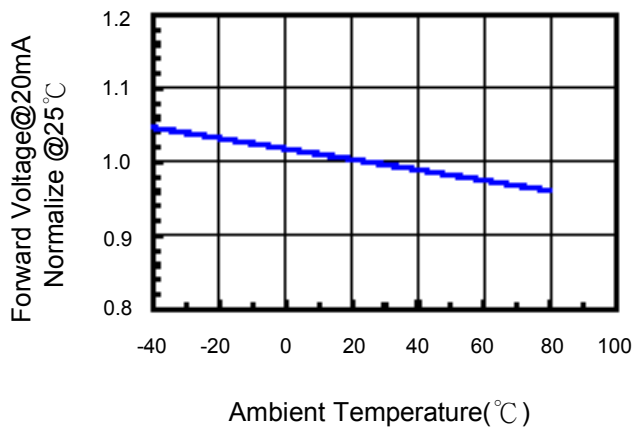


Fig.4 Relative Intensity vs. Temperature

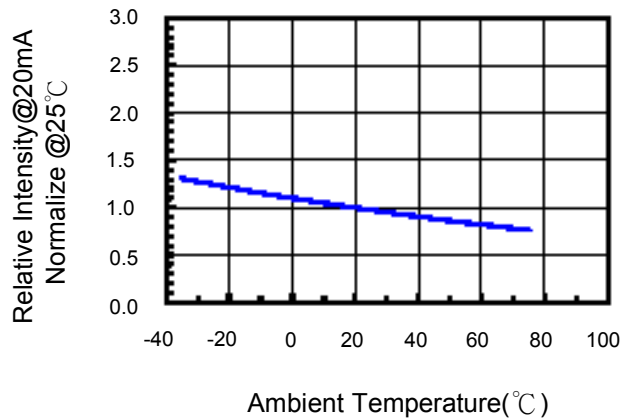


Fig.5 Relative Intensity vs. Wavelength

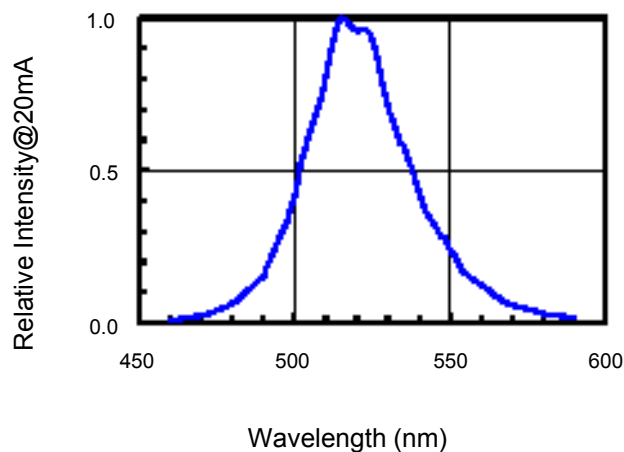
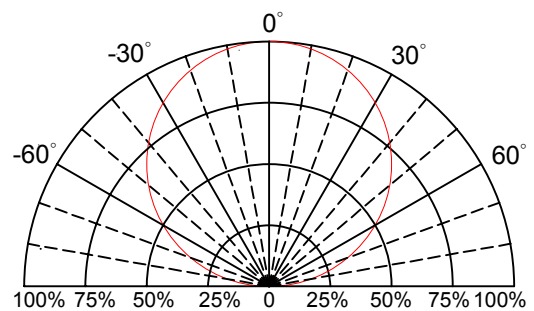


Fig.6 Directive Radiation



Typical Electro-Optical Characteristics Curve

DBK CHIP

Fig.1 Forward current vs. Forward Voltage

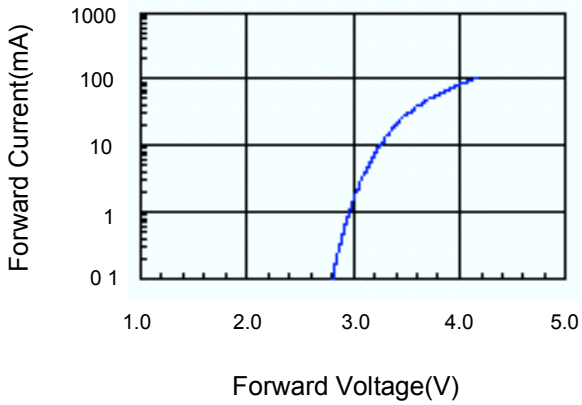


Fig.2 Relative Intensity vs. Forward Current

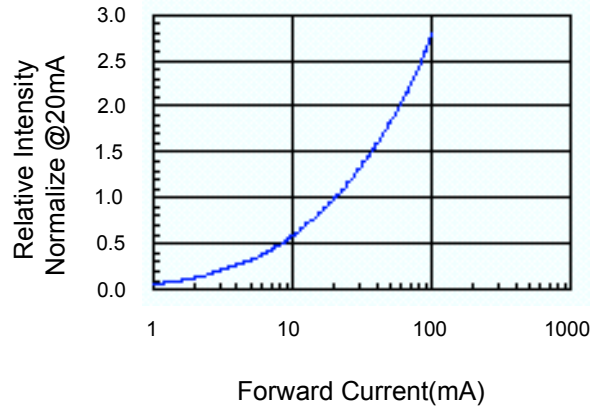


Fig.3 Forward Voltage vs. Temperature

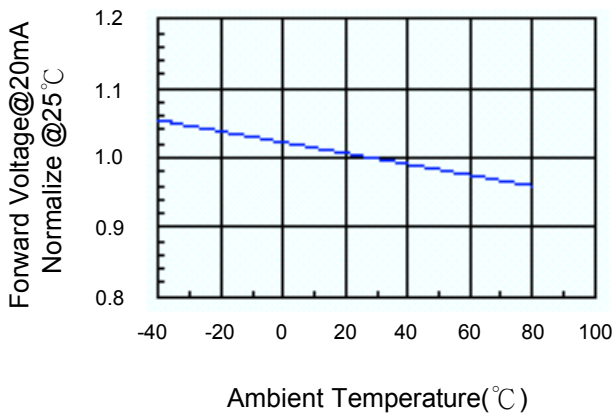


Fig.4 Relative Intensity vs. Temperature

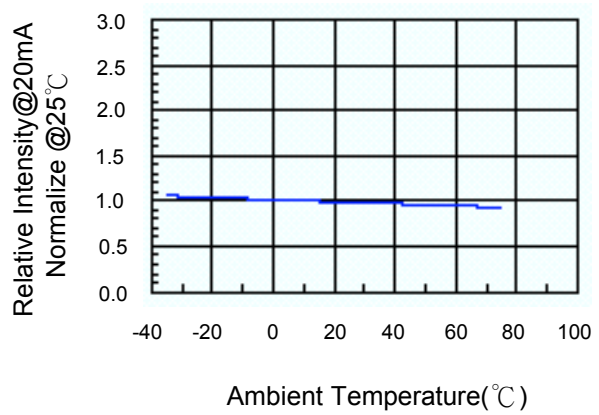


Fig.5 Relative Intensity vs. Wavelength

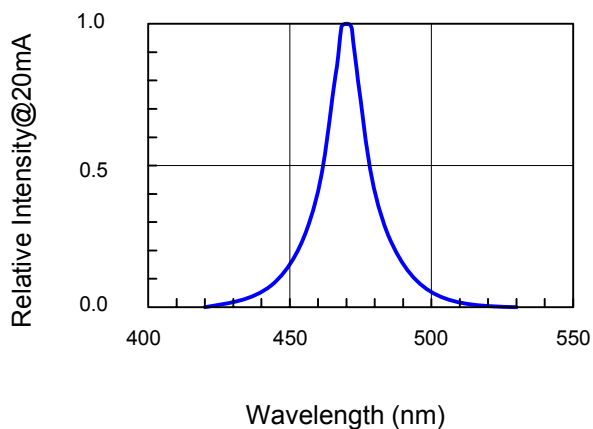
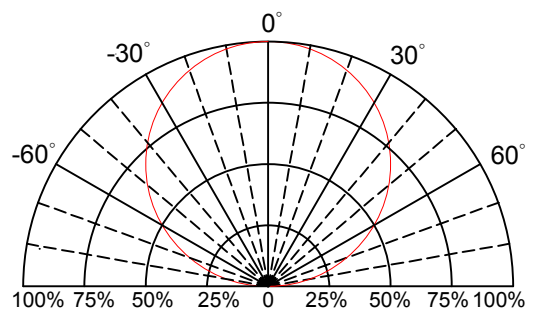
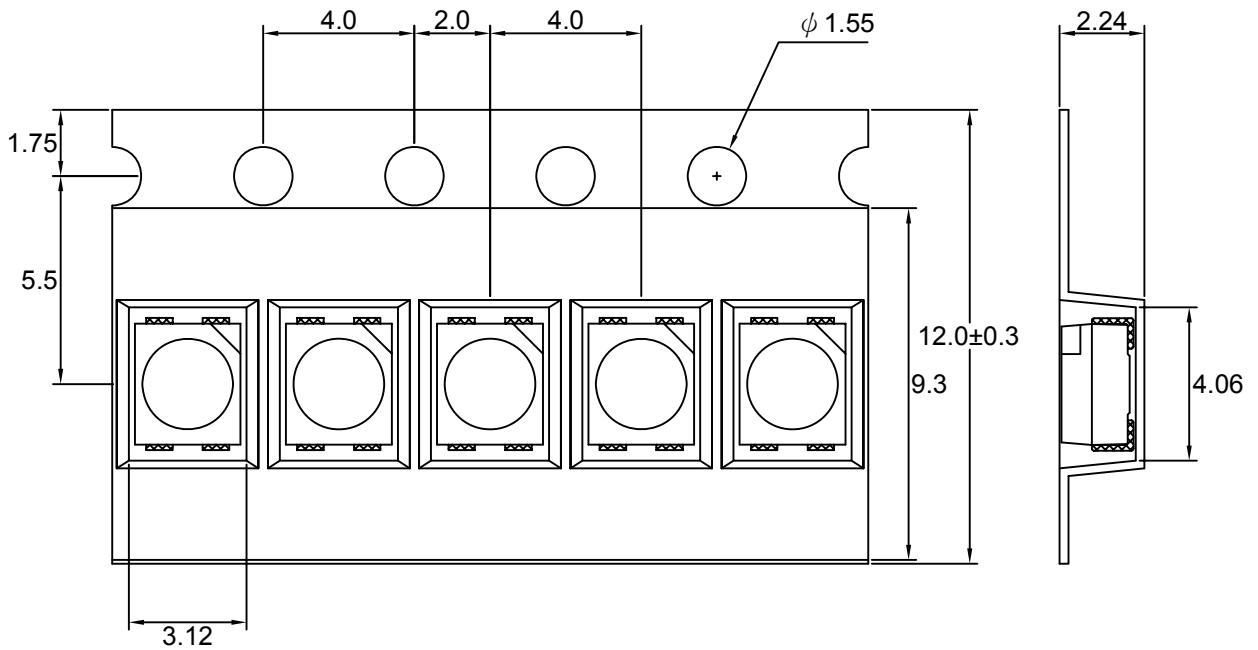


Fig.6 Directive Radiation

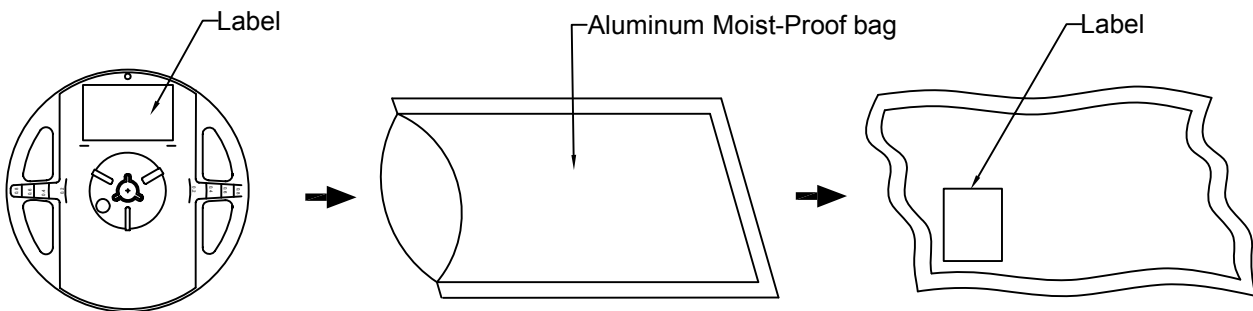


Carrier Type Dimensions











Note : The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle ± 0.5 . Unit=mm.

• Packing Specifications



Part No.	Description	Quantity/Reel
LRGB9553-5/T5/TR1-A01	12.0mm tape,7"reel	1500 PCS

Label Explanation

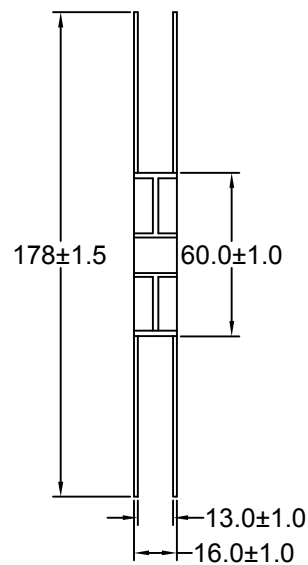
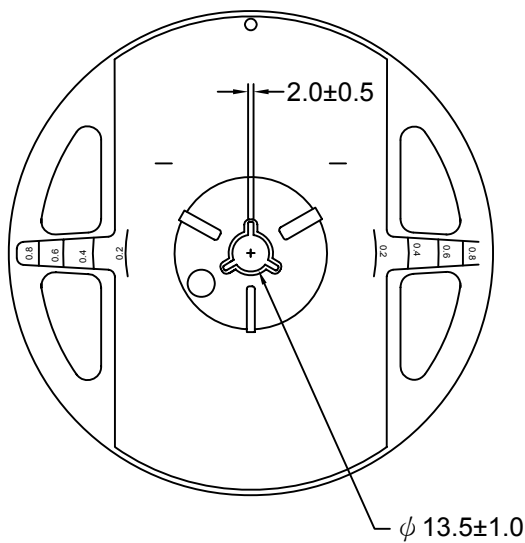
	LIGITEK ELECTRONICS CO., LTD.	
		
	PART :	LRGB9553-5/T5/TR1/A-A01
		
	LOT :	GSI-080168
		
QTY(PCS):	1500	VF:1.5-2.4
		
BIN/HUE :	N/29-S/1R-Q/0B	VF:2.8-4.0
		
		VF:2.8-3.6

BIN : Luminous Intensity

HUE : Dominant Wavelength

VF : Forward Voltage

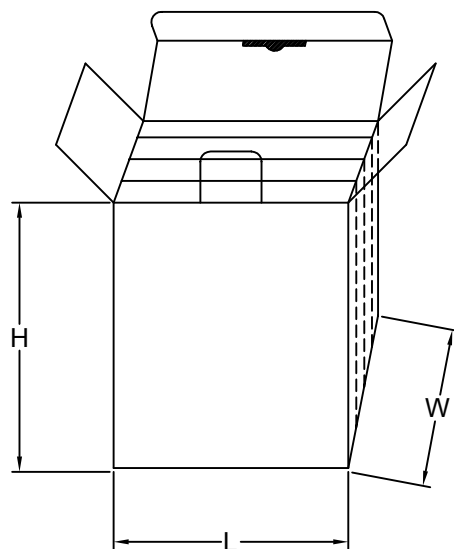
Reel Dimensions



Box Explanation

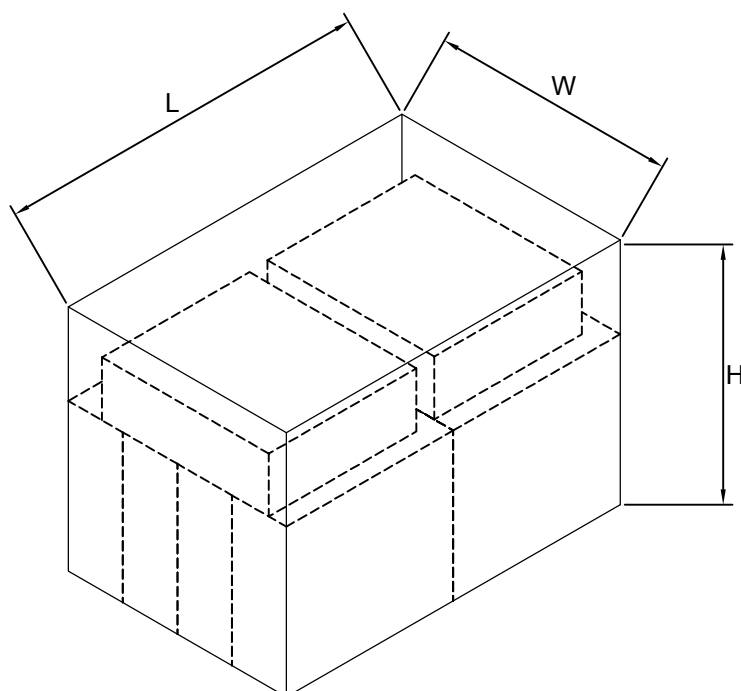
1. 4 BAG / INNER BOX

2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



3. 10 INNER BOXES / CARTON

4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm

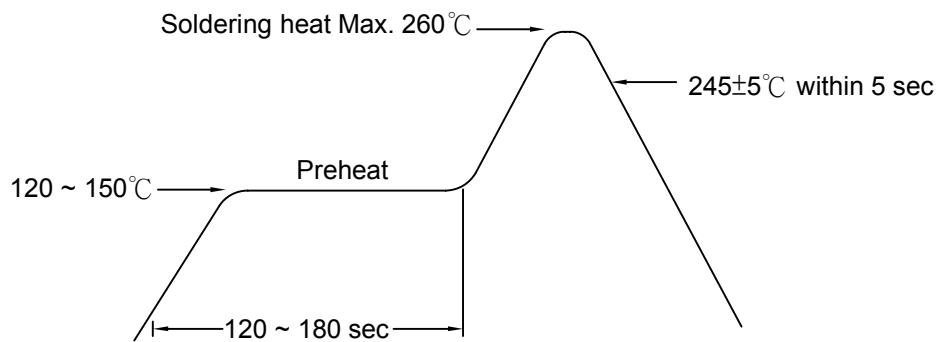


Recommended Soldering Conditions

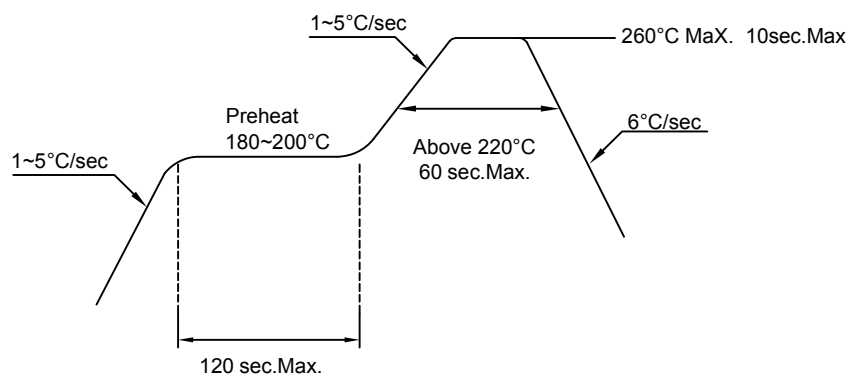
1. Hand Solder

Basic spec is $\leq 320^{\circ}\text{C}$ 3 sec one time only.

2. Wave Solder



3. PB-Free Reflow Solder



Note:

- 1.Reflow soldering should not be done more than two times.
- 2.When soldering,do not put stress on the LEDs during heating.
- 3.After soldering,do not warp the circuit board.

Precautions For Use:**Storage time:**

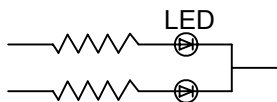
- 1.The operation of Temperatures and RH are : $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$,RH60%.
- 2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with desiccating agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$,RH60%, they should be treated at $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 15hrs.

Drive Method:

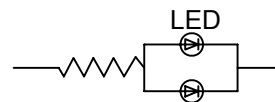
LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations that could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

(1) Test items and results

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=5mA 3.t=1000 hrs	22
	High Temperature Storage Test	1.Ta=105°C±5°C 2.t=500 hrs	22
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs	22
	High Temperature High Humidity Storage Test	1.IR-Reflow In-Board, 2 Times 2.Ta=85°C±5°C 3.RH=90%~95% 4.t=500hrs±2hrs	22
Environmental Test	Thermal Shock Test	1.IR-Reflow In-Board,2 times 2.Ta=105°C ±5°C & -40°C ±5°C (30min) (30min) 3.total 100 cycles	22
	Reflow Soldering Test	1.T.Sol=260°C ±5°C 2.Dwell Time= 10Max.	22
	Temperature Cycling	1.105°C ~ 25°C ~ -40°C 30mins 15mins 30mins 2.100 Cyeles	22

(2) Criteria for judging the damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	Vf	If=5mA	-	U.S.L x1.2
Reverse Current	Ir	Vr=5V	-	U.S.L x2.0
Luminous Intensity	Iv	If=5mA	L.S.L x 0.5	-

Note:

1.U.S.L.:Upper Standard Level.

2.L.S.L.:Lower Standard Level.