

EL Multi Color CH2525-RGBY0201H-AM

Preliminary



Features

- Package: Red, Green, Blue and Yellow color LEDs on Ceramic Package
- Emitted Color: Red 623nm ; Green 527nm ; Blue 460nm ; Yellow 590nm
- Typ Luminous Intensity: Red 627 mcd; Green 1462 mcd; Blue 178 mcd; Yellow 731 mcd @ 20mA
- Typ Luminous Flux: Red 1600 mlm; Green 2550 mlm; Blue 400 mlm; Yellow 2150 mlm @ 20mA
- Viewing angle: Green and Blue 150°; Red and Yellow 140°
- ESD: up to 8KV
- Qualifications: According to AEC-Q101
- Compliance with RoHS and REACH

Applications

- Automotive Interior Lighting , Dashboard, Reading lamp, Audio and Car Infotainment....etc
- Color change Application for Automotive Ambient Lighting.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Optical indicator.
- Signage.
- General applications.

Contents

1. Characteristics	3
2. Absolute Maximum Ratings	4
3. Characteristics Graph	5
4. Binning Information	11
5. Part Number	14
6. Ordering Information	15
7. Mechanical Dimension	16
8. Recommended Soldering Pad	17
9. Reflow Soldering Profile	17
10. Packaging Information	18
11. Handling of Silicon Resin for LEDs	20
12. Precaution for Use	21

1. Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity [1][3]	Red	Φ_v	460	627	780	mcd	$I_F=20mA$
	Green		1200	1462	1600		
	Blue		150	178	350		
	Yellow		450	731	900		
Luminous Flux[2][3]	Red	Φ_v	---	1660	---	mlm	$I_F=20mA$
	Green		---	2550	---		
	Blue		---	400	---		
	Yellow		---	2150	---		
Forward Voltage[4][6]	Red	V_F	1.80	1.90	2.50	V	$I_F=20mA$
	Green		2.70	2.55	3.50		
	Blue		2.70	2.95	3.50		
	Yellow		1.80	2.30	2.50		
Viewing Angle	Red	ϕ	---	140	---	deg	$I_F=20mA$
	Green		---	150	---		
	Blue		---	150	---		
	Yellow		---	140	---		
Peak Wavelength	Red	λ_p	---	621	---	nm	$I_F=20mA$
	Green		---	527	---		
	Blue		---	456	---		
	Yellow		---	588	---		
Dominant Wavelength	Red	λ_d	621	623	627	nm	$I_F=20mA$
	Green		520	527	535		
	Blue		455	460	467		
	Yellow		585	590	597		
Thermal Resistance (Junction to Solder)	Real	$R_{th JS real}$	---	TBD	---	K/W	$I_F=20mA$
	Electrical	$R_{th JS el}$	---	TBD	---		

Notes:

1. Luminous intensity measurement tolerance: $\pm 8\%$.
2. Luminous flux measurement tolerance: $\pm 8\%$.
3. The data of luminous intensity and luminous flux measured at thermal pad=25°C.
4. Forward voltage measurement tolerance: $\pm 0.05V$.
5. Typical luminous flux or light output performance is operated within the condition guided by this datasheet.
6. The V_F range shown in the table above indicates 99% output.

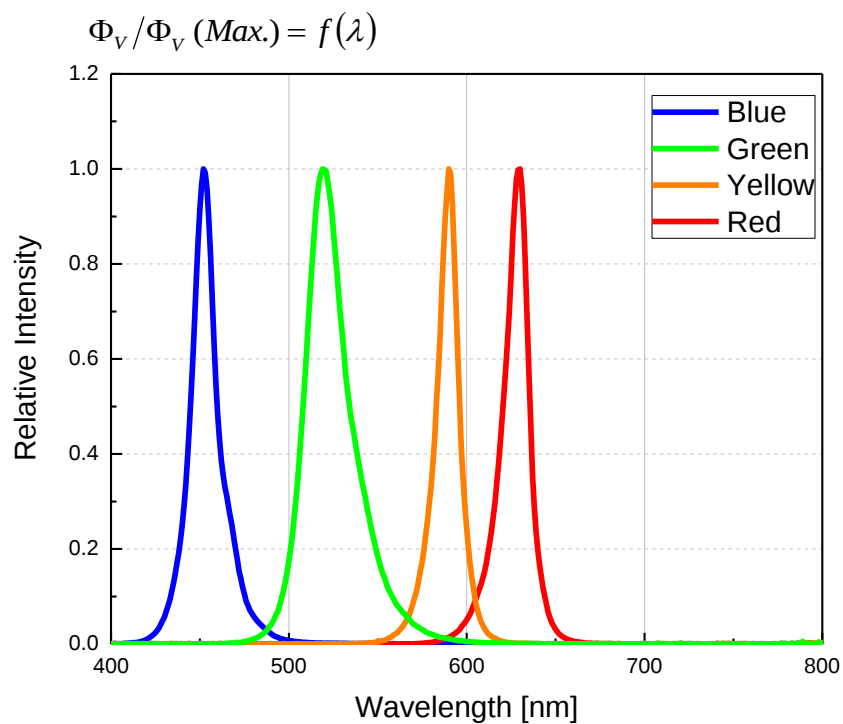
2. Absolute Maximum Ratings

Parameter	Symbol	Ratings				Unit
		Red	Green	Blue	Yellow	
Reverse Voltage	V_R	Not designed for reverse operation				V
Power Dissipation	P_d	275	350	375	300	mW
Max. DC Forward Current	I_F	10 ~ 100				mA
Junction Temperature	T_J	125				°C
Operating Temperature	T_{opr}	-40 ~ +110				°C
Storage Temperature	T_{stg}	-40 ~ +110				°C
ESD Sensitivity	ESD_{HBM}	8000				V
Max. Soldering Temperature	T_{Sol}	260°C for 30 sec				°C

3.Characteristics Graph

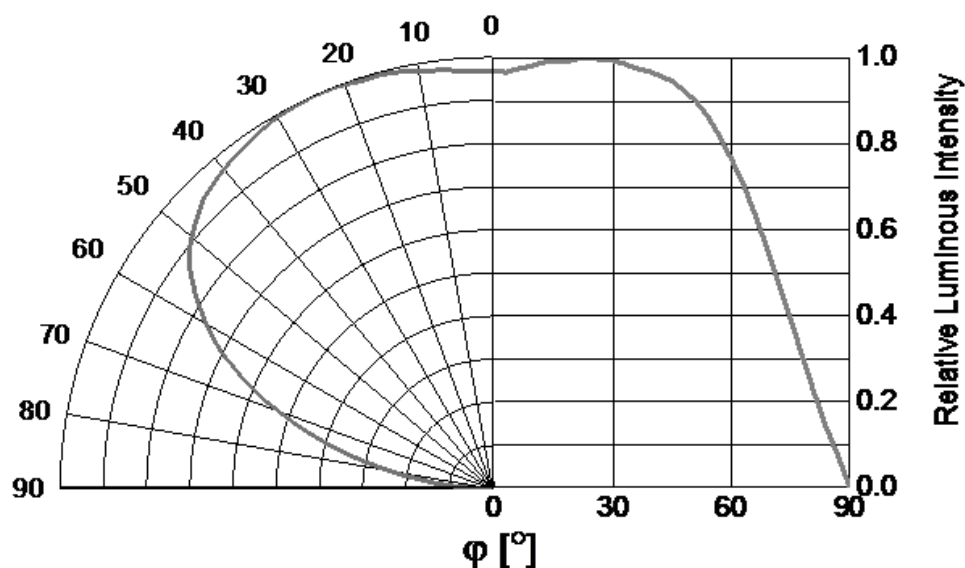
Wavelength Characteristics Relative Spectral Distribution

@ Ts = 25°C , I_F=20mA



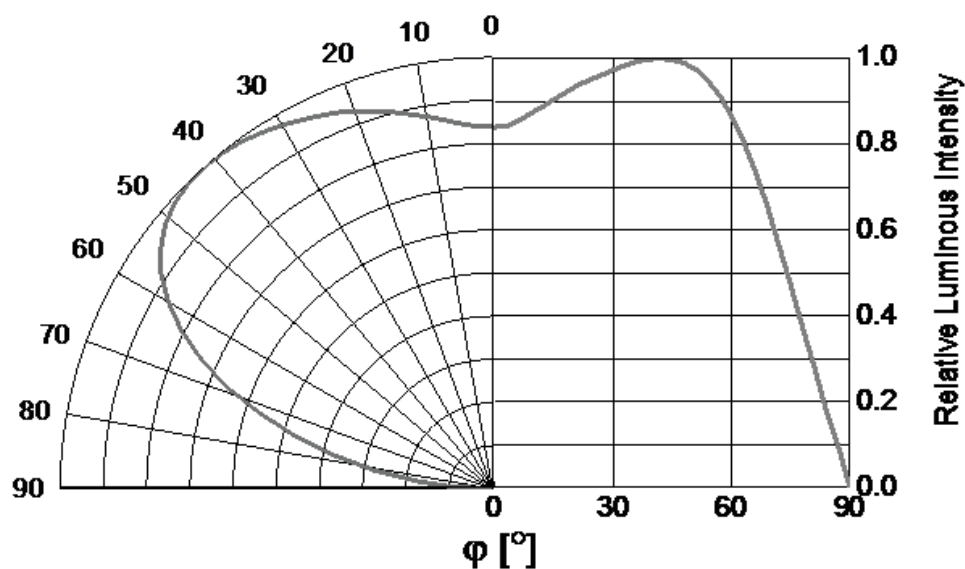
Typical Diagram Characteristics of Radiation (Red)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$



Typical Diagram Characteristics of Radiation (Green)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$

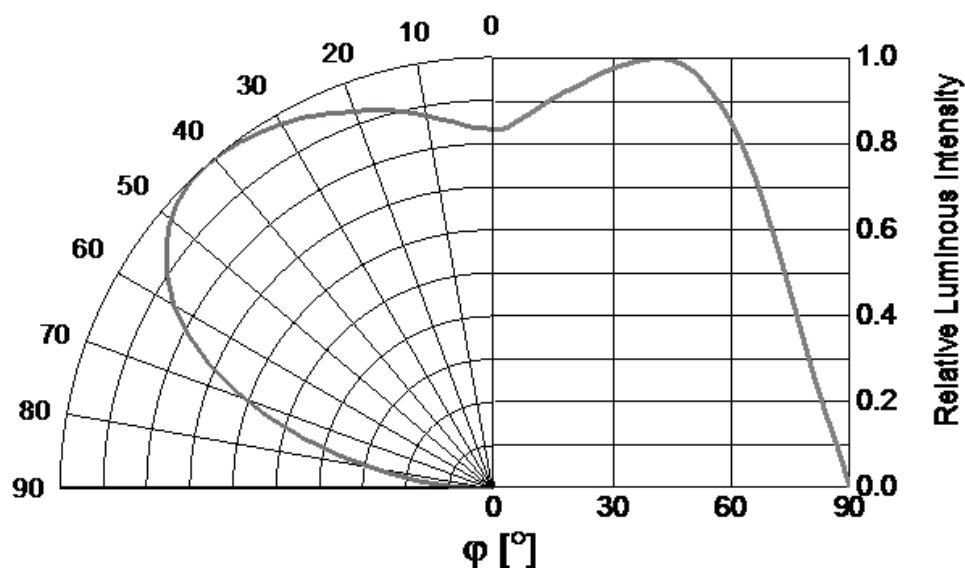


Notes:

1. φ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is $\pm 5^\circ$.

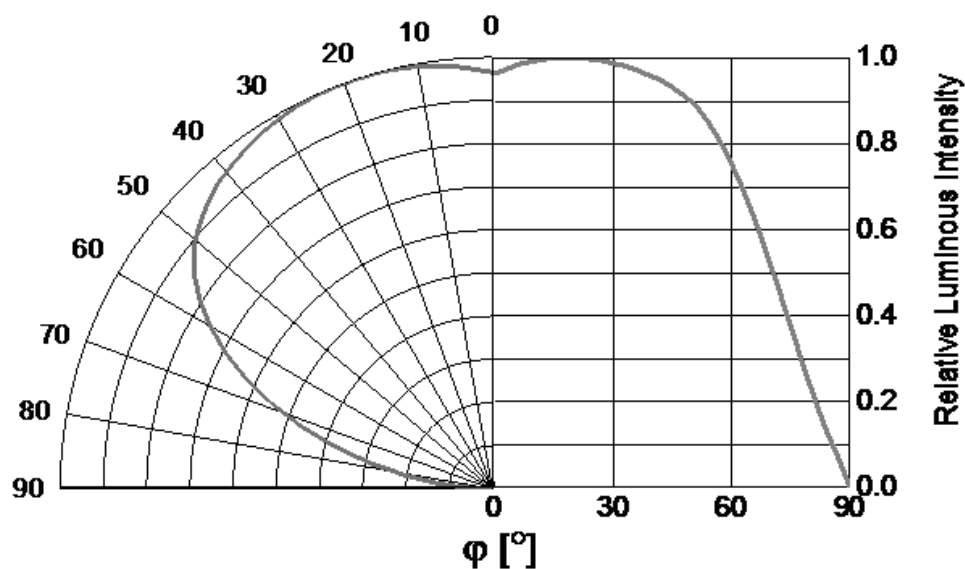
Typical Diagram Characteristics of Radiation (Blue)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$



Typical Diagram Characteristics of Radiation (Yellow)

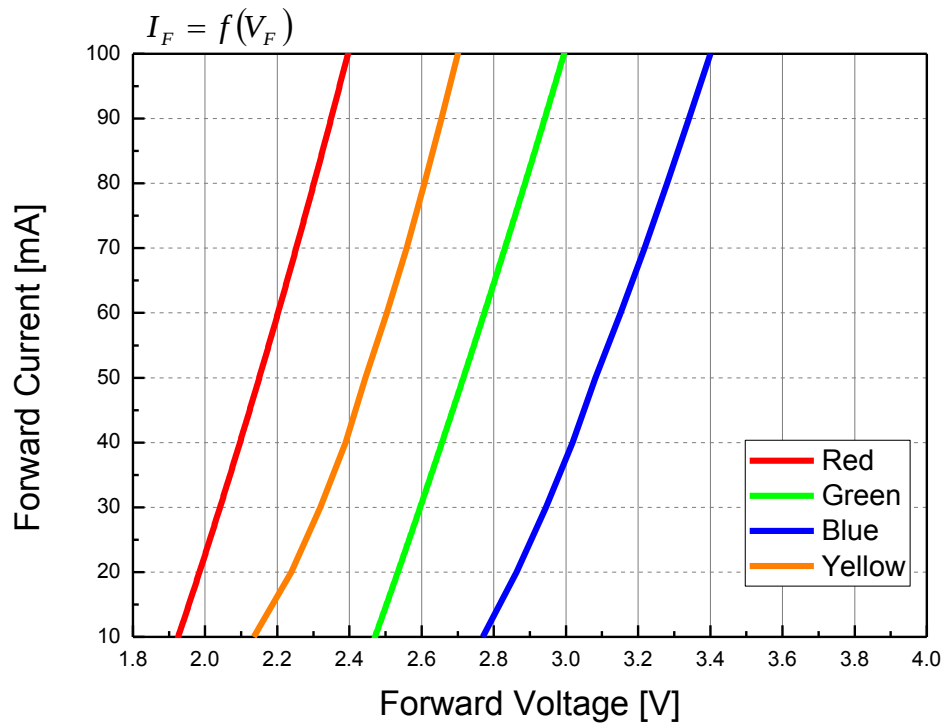
$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$



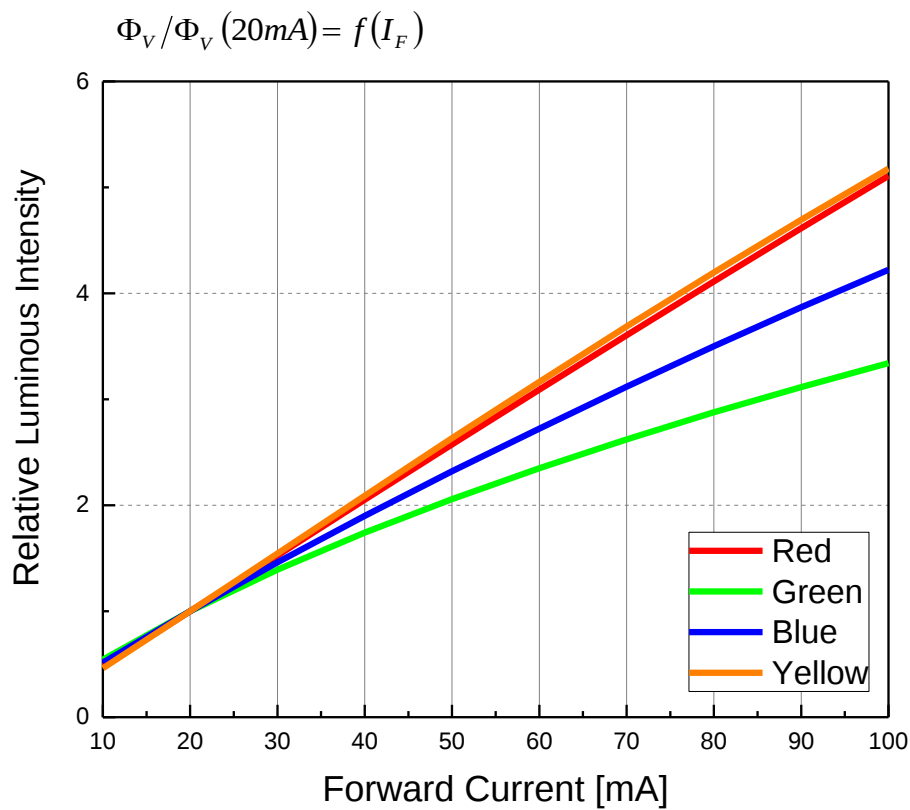
Notes:

1. φ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is $\pm 5^\circ$.

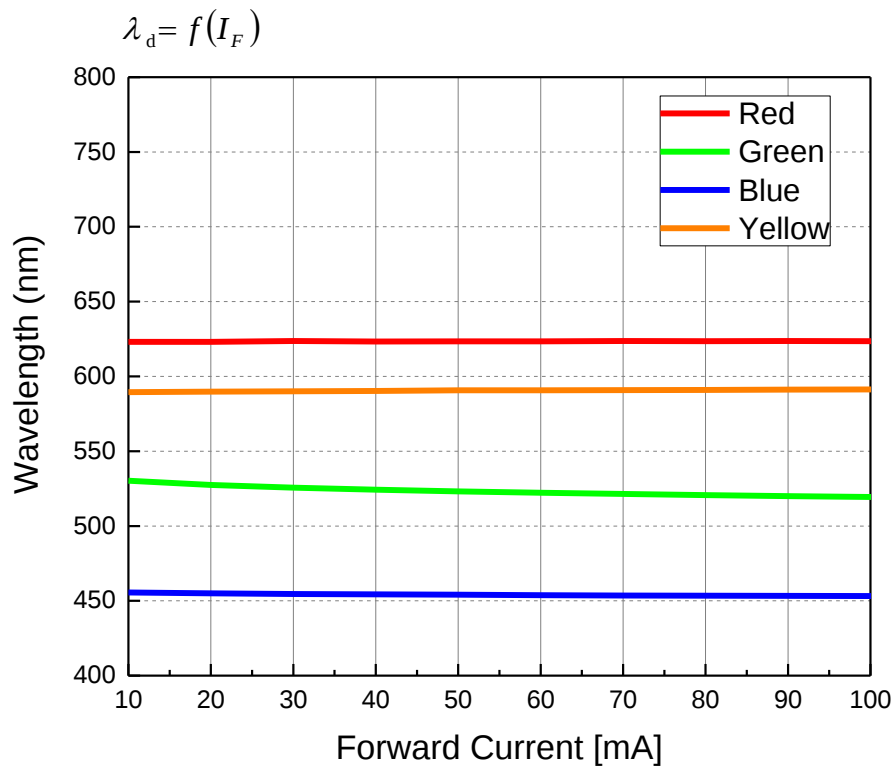
Forward Current vs. Forward Voltage @ Ts = 25°C



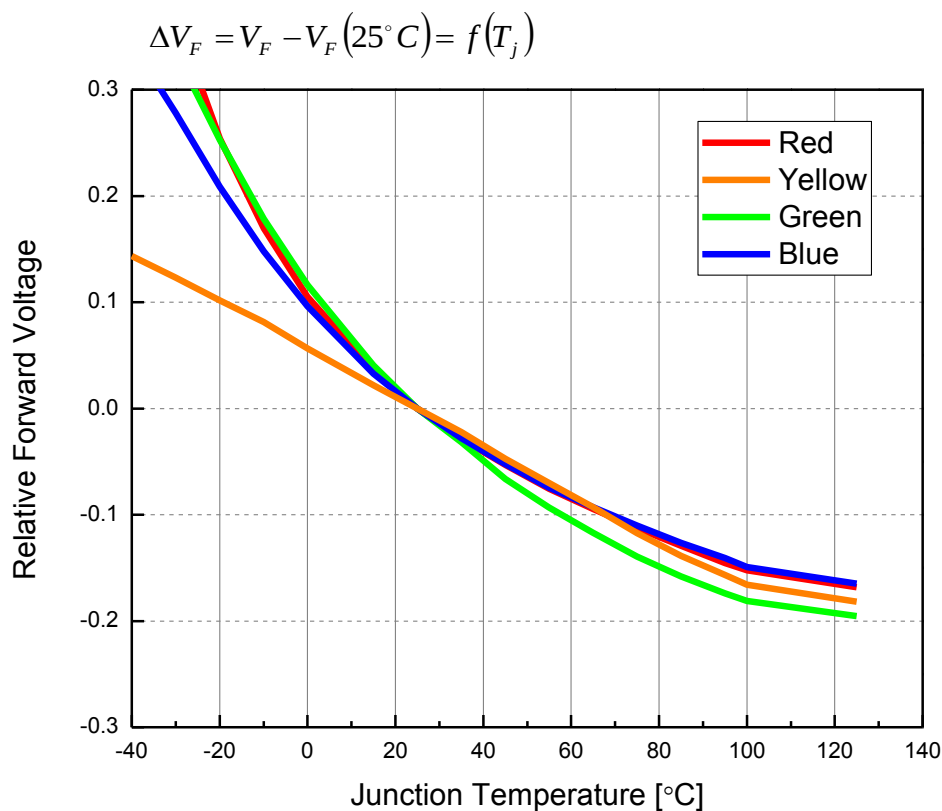
Relative Luminous Intensity vs. Forward Current @ Ts = 25°C



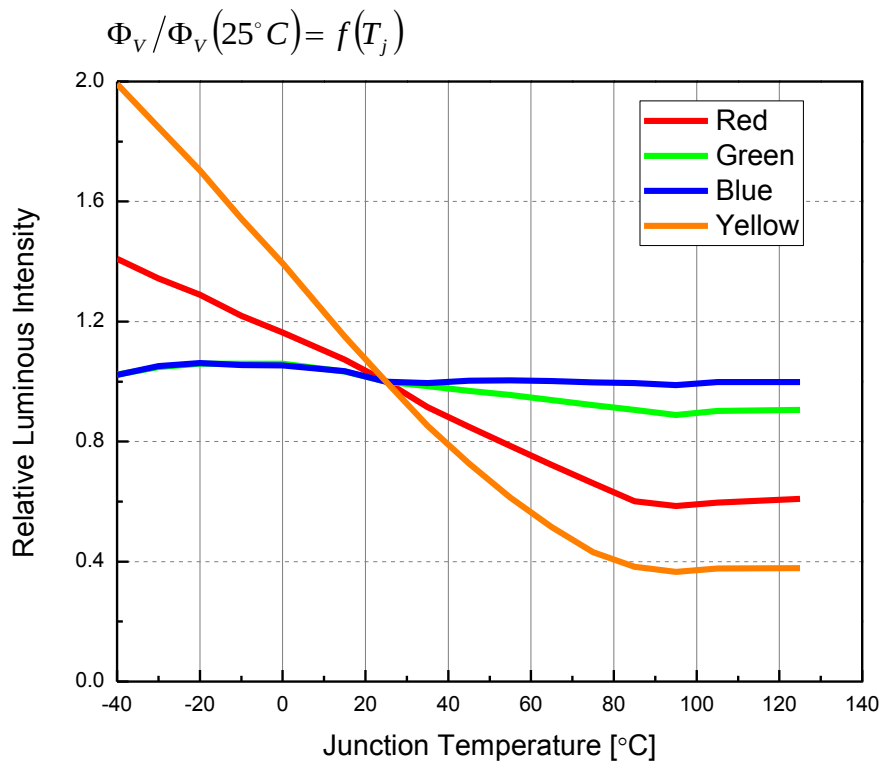
Wavelength Characteristics vs. Forward Current @ $T_s = 25^\circ\text{C}$



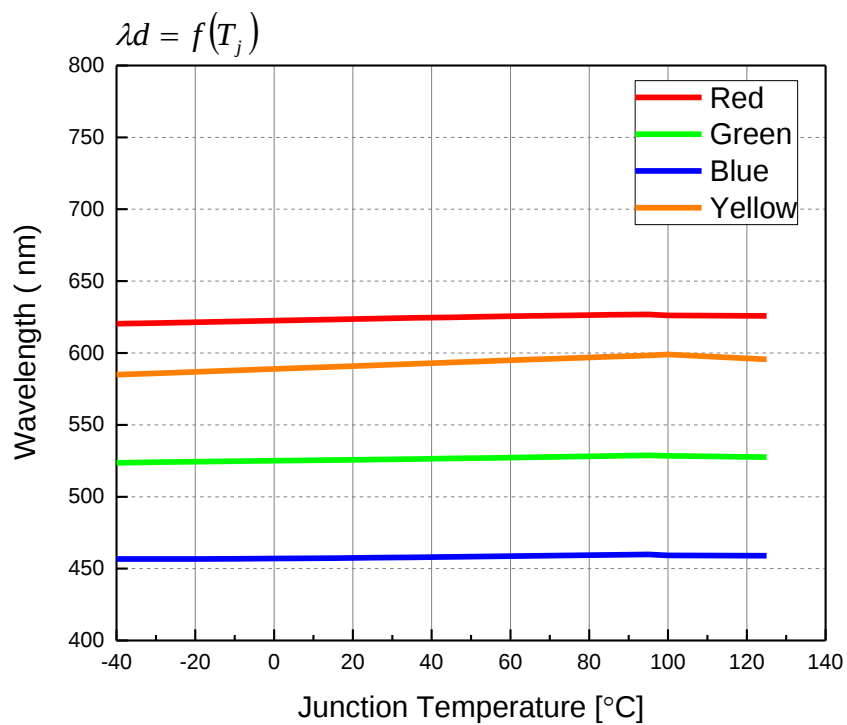
Relative Forward Voltage vs. Junction Temperature @ $I_F = 20\text{mA}$



Relative Luminous Flux vs. Junction Temperature @ $I_F=20\text{mA}$



Wavelength Characteristics vs. Junction Temperature @ $I_F=20\text{mA}$



4. Binning Information

Luminous Intensity Bins

Group Bin		Minimum Luminous Intensity [mcd]	Maximum Luminous Intensity [mcd]
Red	U1	460	780
Green	BA	1200	1600
Blue	R2	150	350
Yellow	NY	450	900

Notes:

1. Luminous intensity measurement tolerance: 8%.

Wavelength Bin Structure

Color Bin Structure Bin	Minimum Dominant Wavelength [nm]	Maximum Dominant Wavelength [nm]
5155	451	455
5559	455	459
5963	459	463
6367	463	467
6771	467	471
7175	471	475
1015	510	515
1520	515	520
2025	520	525
2530	525	530
3035	530	535
5861	558	561
6164	561	564
6467	564	567
6770	567	570
7073	570	573
7376	573	576
7679	576	579
7982	579	582
8285	582	585
8588	585	588
8891	588	591
9194	591	594
9497	594	597
9700	597	600
0003	600	603
0306	603	606
0609	606	609
0912	609	612
1215	612	615
1518	615	618
1821	618	621
2124	621	624
2427	624	627
2730	627	630
3033	630	633
3336	633	636
3639	636	639

Notes:

1. Dominant wavelength measurement tolerance: $\pm 1\text{nm}$.
2. Highlighted Black Box is available bins.
 - Red: 2124 ~ 2427
 - Green: 2025 ~ 3035
 - Blue: 5559 ~ 6367
 - Yellow: 8588 ~ 9497

Forward Voltage Bins

Group Bin		Minimum Forward Voltage [V]	Maximum Forward Voltage [V]
Red , Yellow	FA	1.8	2.5
Green , Blue	FB	2.7	3.5

Notes:

1. Bin code defines either Minimum or Maximum Value of the Bin.
2. Forward voltage measurement tolerance: $\pm 0.05V$.
3. Forward voltage bins are defined at $I_F = 20mA$ operation.

5. Part Number

CH2525-RGBY0201H-AM

Part number is designated with below details.

CH2525 = Product family name.

RGBY = Color ^[1]

020 = Test current [mA]

1 = Lead Frame Type (0=Ag ; 1=Au)

H = Brightness Level (H=High ; L=Low)

AM = Automotive Application

Note

^[1] Color:

Symbol	Description
C	Cool White
N	Neutral White
W	Warm White
PA	Phosphor Converted Amber
PR	Phosphor Converted Red
UB	Blue
IB	Ice Blue
SB	Sky Blue
UG	Green
UY	Yellow
UA	Amber
UR	Red
SR	Super Red
RGB	RGB-Color
RGBY	RGBY – Color

6. Ordering Information

CH2525-RGBY0201H-**ABC-DE**-AM

Part Number of the EL Multi Color	Order Code
CH2525-RGBY0201H-AM	CH2525-RGBY0201H-VCC-1T-AM

Order code contains information with below details:

ABC = product emits 2 or more colors

D = Standard packing quantity

E = Packing method (T for tape & reel)

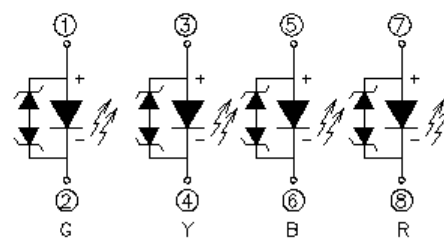
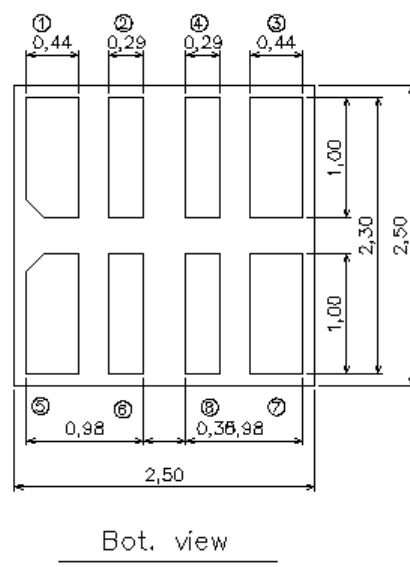
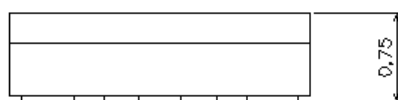
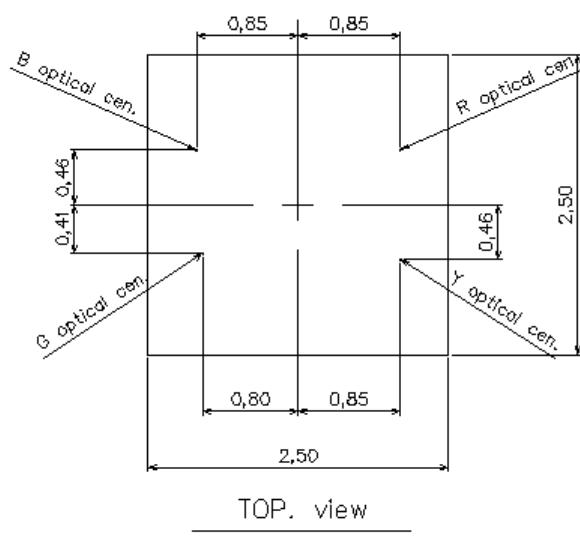
AM = Automotive Application Note

Note

^[1] Group Bin chart

Group Bin	Dominant Wavelength (nm)		Φ_v	V_F
VCC	Red	621 ~ 627	U1	FA
	Green	520 ~ 535	BA	FB
	Blue	455 ~ 467	R2	FB
	Yellow	586 ~ 597	NY	FA

7. Mechanical Dimension

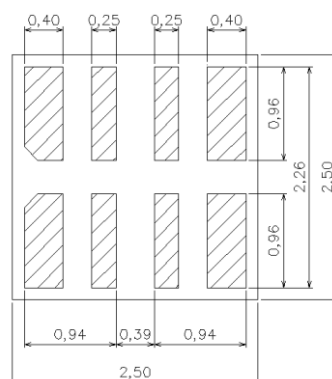


Polarity

Notes:

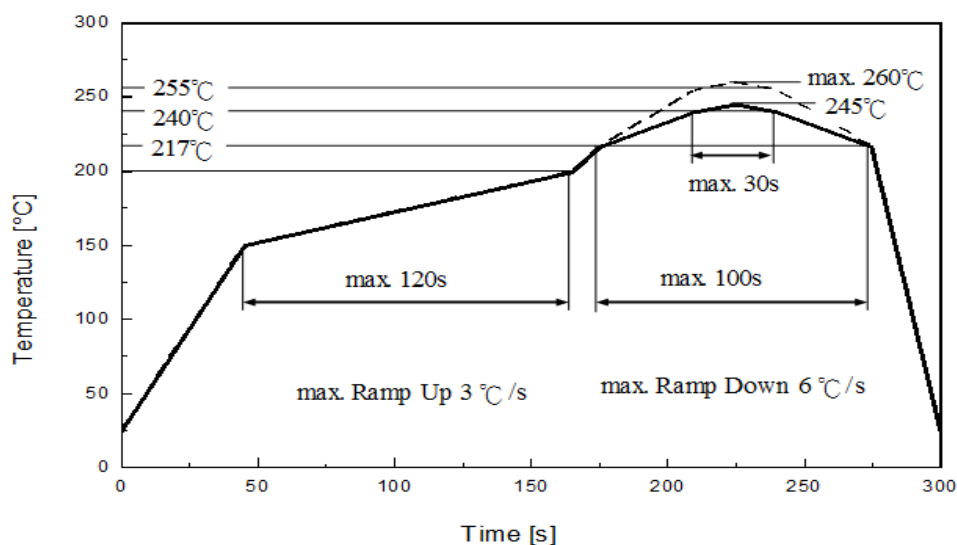
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are $\pm 0.1\text{mm}$.

8. Recommend Soldering Pad



9. Reflow Soldering Profile

Soldering Condition (Reference: IPC/JEDEC J-STD-020D)



Profile Feature	Pb-Free Assembly	Unit Einheit
	Recommendation	
Ramp-up rate to preheat 25 °C to 150 °C	3	°C /sec
Time of soaking zone 150 °C to 200 °C	120	sec
Ramp-up rate to peak	3	°C /sec
Liquidus temperature	217	°C
Time above liquidus temperature	100	sec
Peak temperature (max.)	260	°C
Time within 5°C of the specified peak temperature	30	sec
Ramp-down Rate (max.)	6	°C /sec

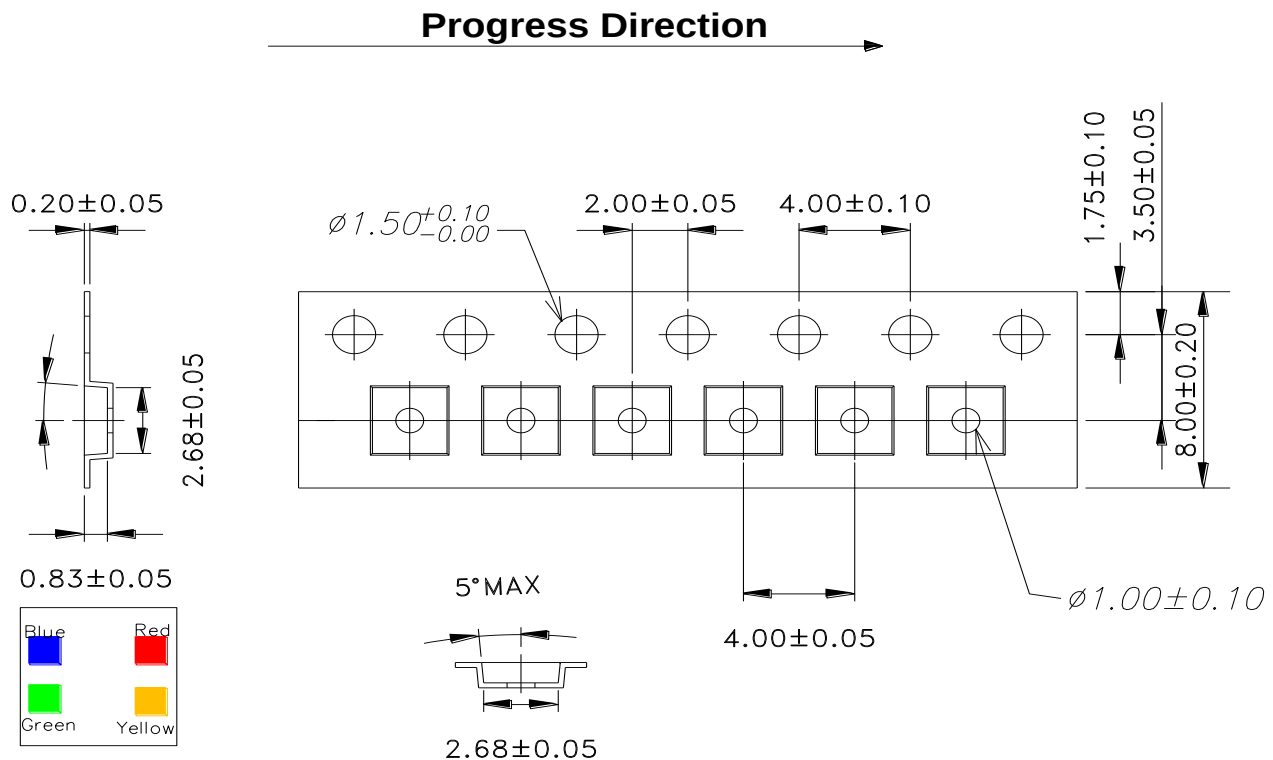
10. Packaging Information

• Product Labeling



- CPN : Customer's Product Number
- P/N : Everlight Part Number
- QTY : Packing Quantity
- CAT : Luminous Flux (Brightness) Bin
- HUE : Color Bin
- REF : Forward Voltage Bin
- LOT No : Lot Number

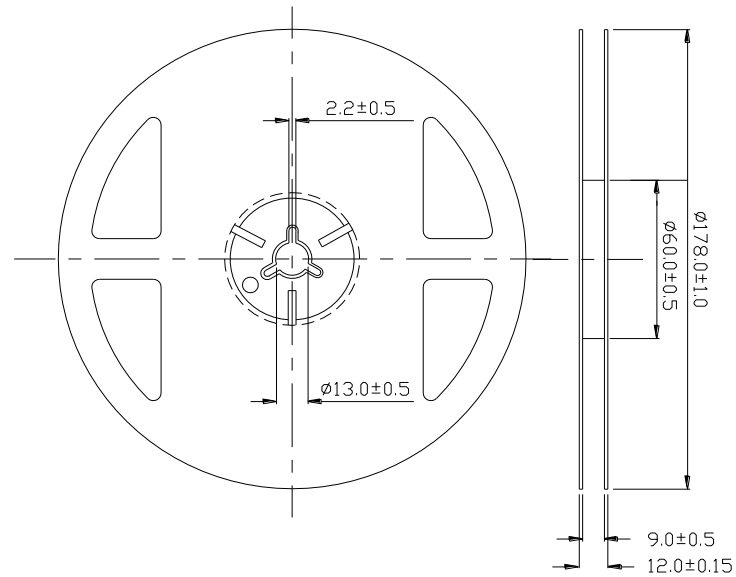
• Packing: Loaded Quantity 800 pcs Per Reel



Notes:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.2mm.

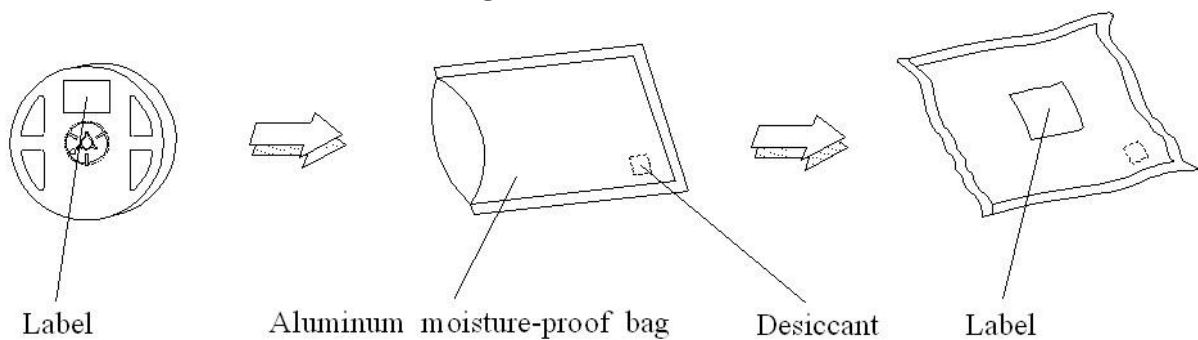
● Reel Dimensions



Notes:

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are $\pm 0.2\text{mm}$.

● Moisture Resistant Packing Process

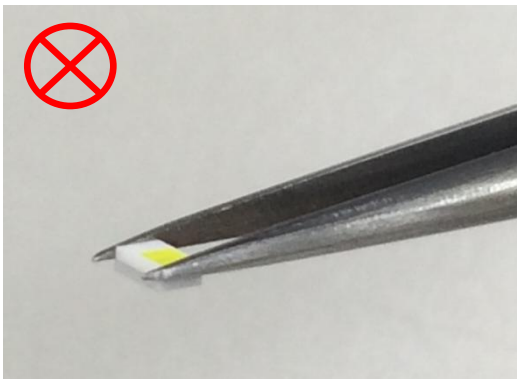
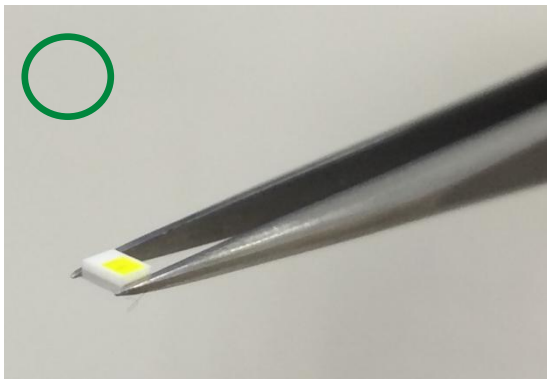
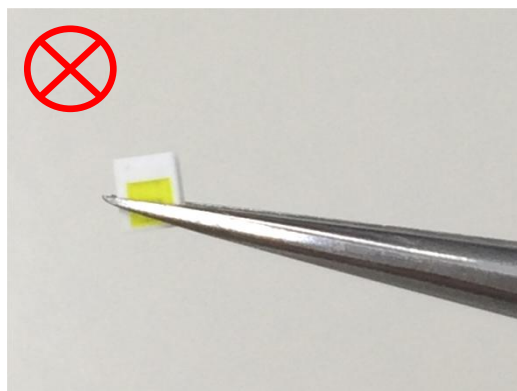
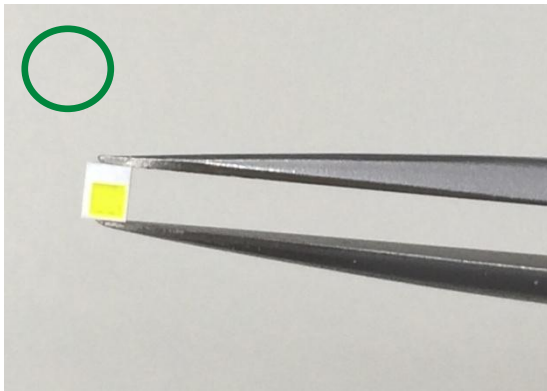


Notes:

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are $\pm 0.2\text{mm}$.

11. Handling of Silicon Resin for LEDs

- Do not put mechanical stress on the LED.
- When handling the product, do not apply direct pressure on the optical surface. The LED surface could be damaged, which could affect the optical performance of the LED.
- In low-humidity work environment, please keep handling the LEDs with appropriate ESD grounding.
- It is recommended to handle the LED with powder-less latex gloves.
- Do not touch the resin with tweezers to avoid scratching or other damage.



12. Precaution for Use

- Before the package is opened, the LEDs should be stored at 30°C or less and 90%RH or less after being shipped from Everlight and the storage life limits are 18 months. The LEDs can be stored up to 3 years in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- After opening the package, all unused LEDs are recommended to be stored in moisture proof packages.
- If the moisture absorbent material (silica gel) has exceeded effectiveness or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

Revision History

Current version: Dec.22.2016

Issue No: Preliminary

Version: 0.8

Created by: Christi Shen

Rev.	Subjects (major change in previous version)	Modified date
0.8	Preliminary	2016/12/22