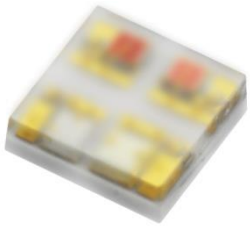
DATASHEET

EL Multi Color
CH2525-RGBY0401H-AM

Preliminary



Features

- Package: SMD ceramic package
- Emitted Color: Red 623nm ; Green 527nm ; Blue 460nm ; Yellow 590nm
- Typical luminous Intensity: Red 1200 mcd; Green 2300 mcd; Blue 360mcd; Yellow 1300mcd @ 40mA
- Viewing angle : Green and Blue 150º; Red and Yellow 140º
- ESD : up to 8KV
- MSL : 2
- Qualifications : According to AEC-Q101
- Compliance with RoHS & REACH
- Compliance Halogen Free. (Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)
- Sulfur robustness

Applications

- Automotive interior lighting
- Ambient light

Contents

1. Characteristics 3
2. Absolute Maximum Ratings 4
3. Characteristics Graph 5
4. Binning Information 12
5. Part Number 15
6. Ordering Information 16
7. Mechanical Dimension 17
8. Recommend Soldering Pad 18
9. Reflow Soldering Profile 18
10. Packaging Information 19
11. Precaution for Use 21

1. Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Current	R,G,B,Y	I_F	10	40	80	mA	---
Luminous Intensity[1][3]	Red	Φ_v	900	1200	1400	mcd	I_F=40mA
	Green		2240	2300	3550		
	Blue		355	360	560		
	Yellow		900	1300	1400		
Forward Voltage[4][5]	Red	V_F	1.75	2.00	2.50	V	I_F=40mA
	Green		2.75	2.80	3.50		
	Blue		2.75	3.00	3.50		
	Yellow		1.75	2.40	2.50		
Viewing Angle	Red	φ	---	140	---	deg	I_F=40mA
	Green		---	150	---		
	Blue		---	150	---		
	Yellow		---	140	---		
Peak Wavelength	Red	λp	---	630	---	nm	I_F=40mA
	Green		---	520	---		
	Blue		---	450	---		
	Yellow		---	595	---		
Dominant Wavelength[6]	Red	λd	621	623	627	nm	I_F=40mA
	Green		520	527	535		
	Blue		455	460	467		
	Yellow		585	590	597		
Thermal Resistance (Junction to Solder)	Red	$R_{th\ JS\ real}$	---	33	---	K/W	I_F=40mA
		$R_{th\ JS\ el}$	---	25	---		
	Green	$R_{th\ JS\ real}$	---	46	---		
		$R_{th\ JS\ el}$	---	35	---		
	Blue	$R_{th\ JS\ real}$	---	25	---		
		$R_{th\ JS\ el}$	---	20	---		
	Yellow	$R_{th\ JS\ real}$	---	33	---		
		$R_{th\ JS\ el}$	---	25	---		

Notes:

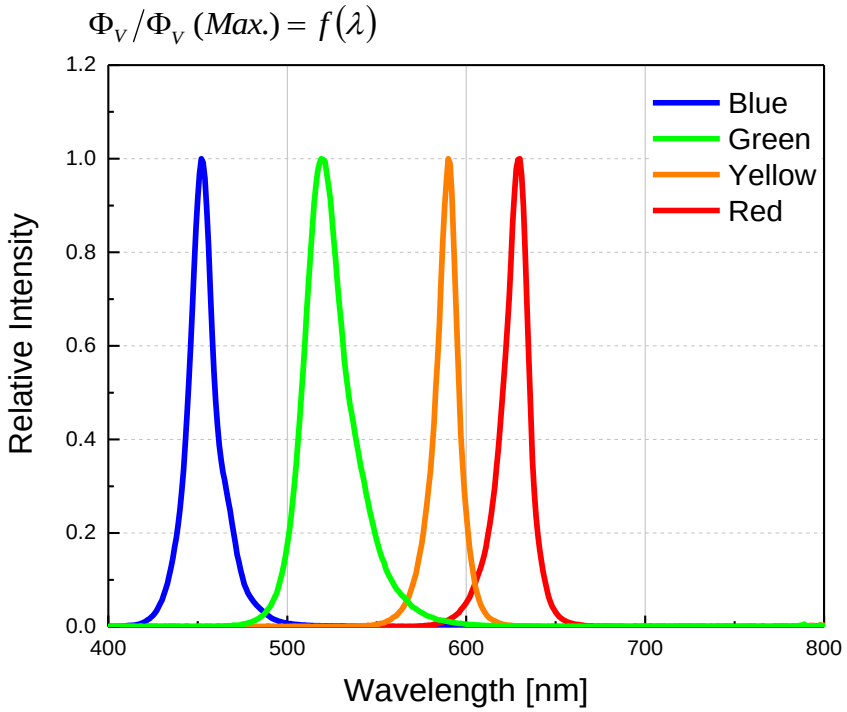
1. Luminous intensity measurement tolerance: ±8%.
2. Luminous flux measurement tolerance: ±8%.
3. The data of luminous intensity and luminous flux measured at thermal pad=25°C.
4. Forward voltage measurement tolerance: ±0.05V.
5. The V_F range shown in the table above indicates 99% output.
6. Tolerance of Dominant Wavelength：±1nm.

2. Absolute Maximum Ratings

Parameter	Symbol	Ratings				Ratings
		Red	Green	Blue	Yellow	
Power Dissipation	P_d	220	280	280	220	mW
Forward Current	I_F	10-80				
Reverse Voltage	V_R	Not designed for reverse operation				V
Junction Temperature	T_J	125				°C
Operating Temperature	T_{opr}	-40 ~ +110				°C
Storage Temperature	T_{stg}	-40 ~ +110				°C
ESD Sensitivity (R=1.5kΩ, C= 100pF)	ESD_{HBM}	8				kV
Soldering Temperature	Reflow	260°C for 30sec				°C

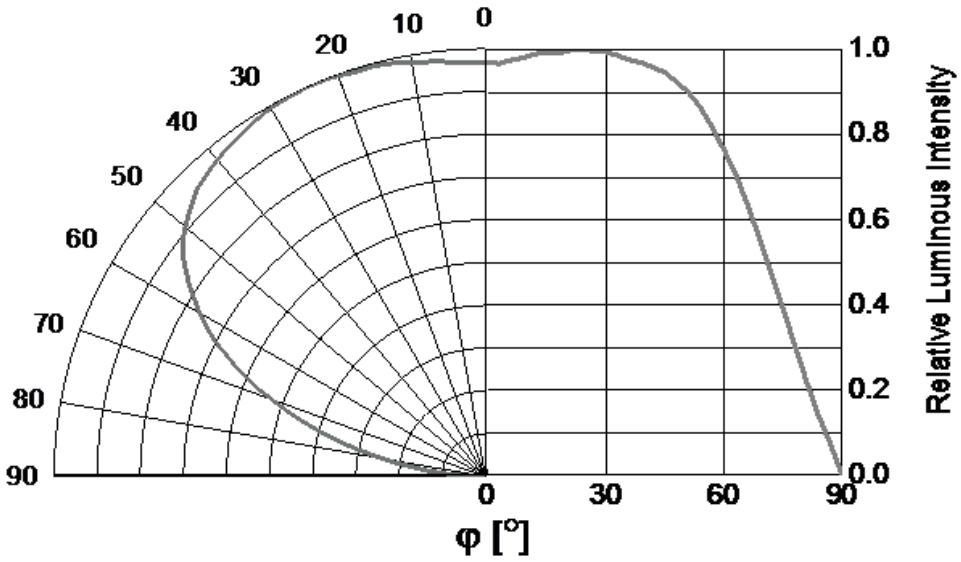
3. Characteristics Graph

Wavelength Characteristics Relative Spectral Distribution
@ Ts = 25°C , I_F=40mA



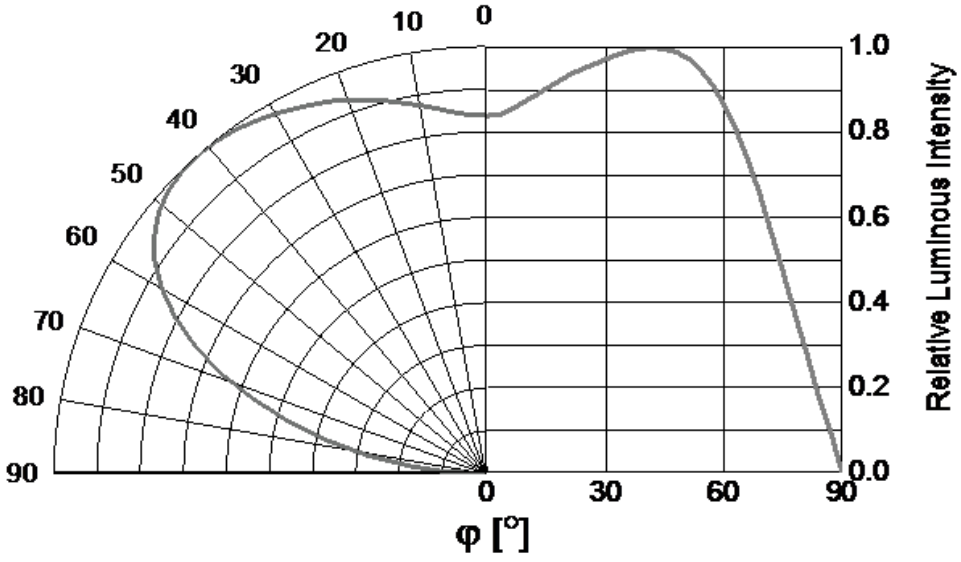
Typical Diagram Characteristics of Radiation (Red)

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



Typical Diagram Characteristics of Radiation (Green)

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

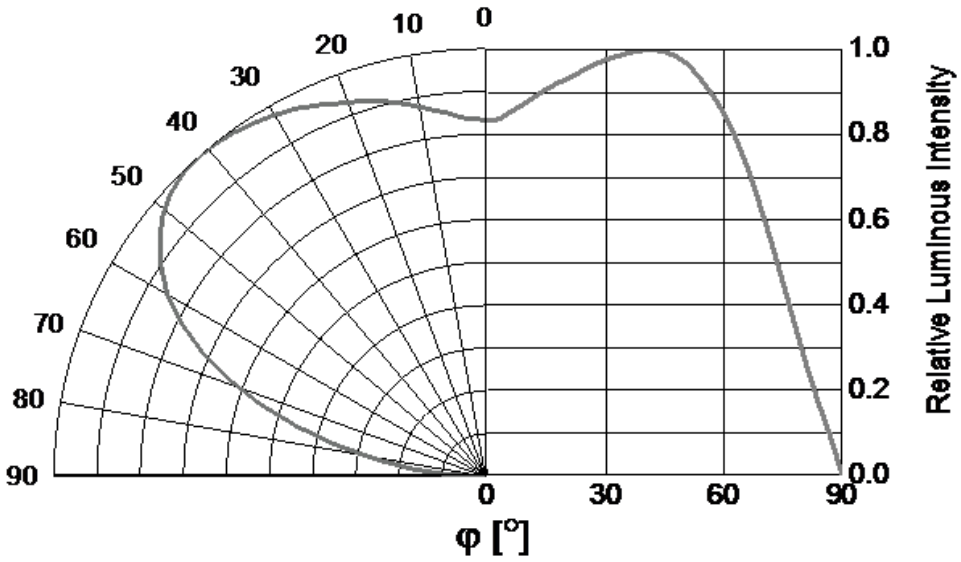


Notes:

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 ± 5°.

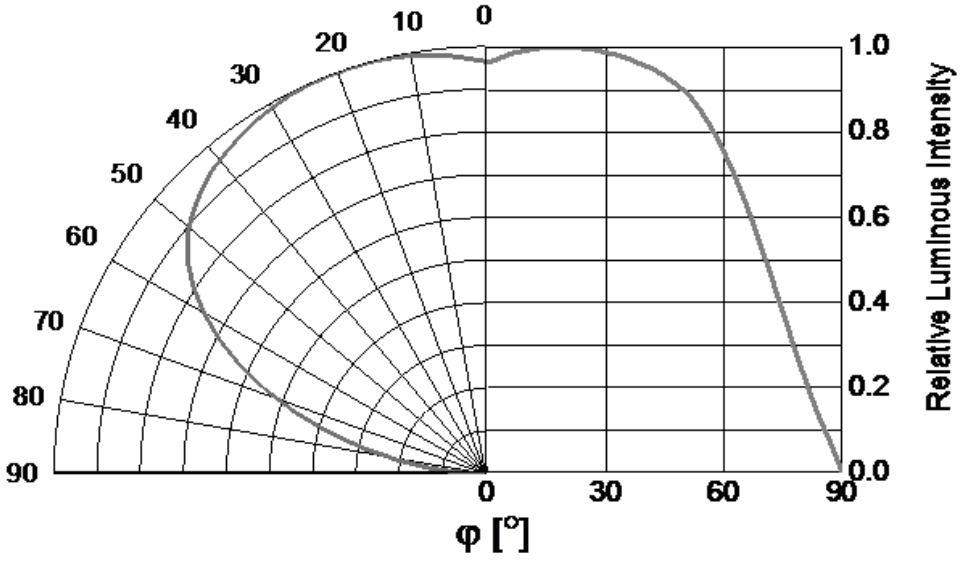
Typical Diagram Characteristics of Radiation (Blue)

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



Typical Diagram Characteristics of Radiation (Yellow)

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

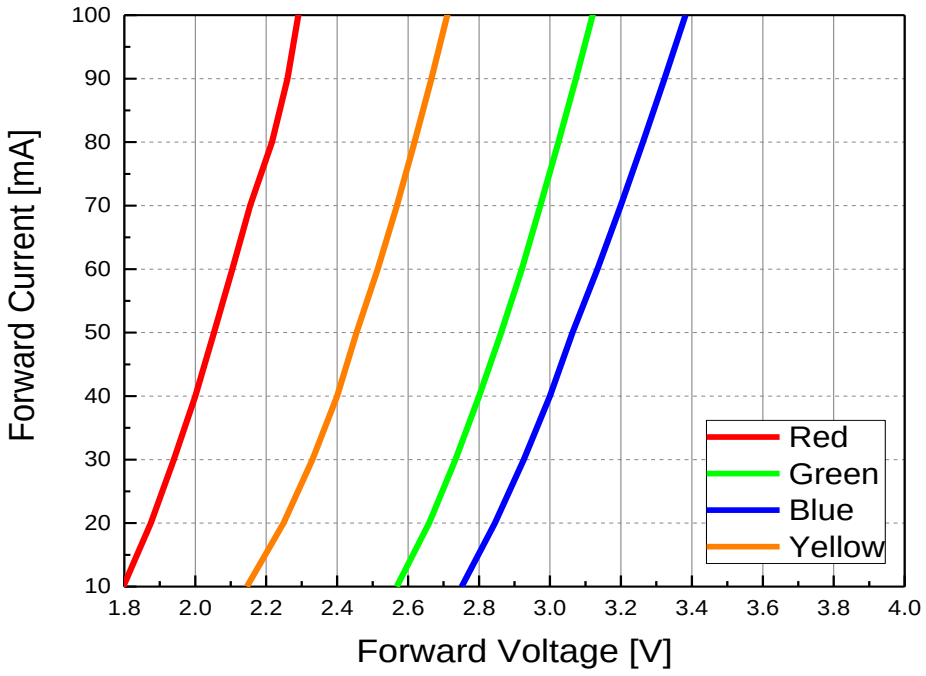


Notes:

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 ± 5°.

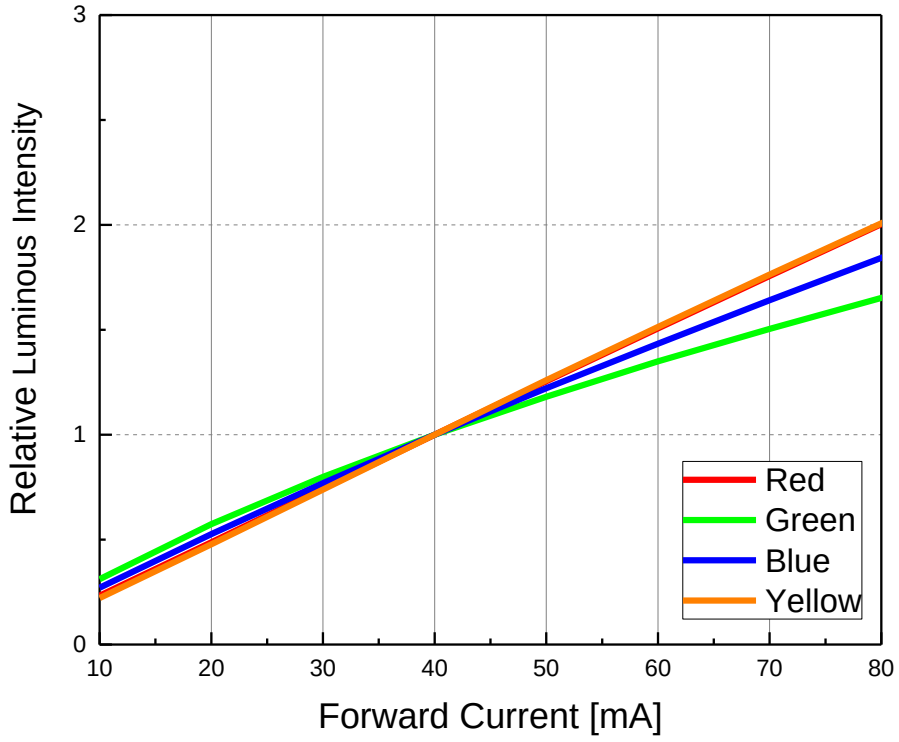
Forward Current vs. Forward Voltage @ Ts = 25°C

$$I_F = f(V_F)$$



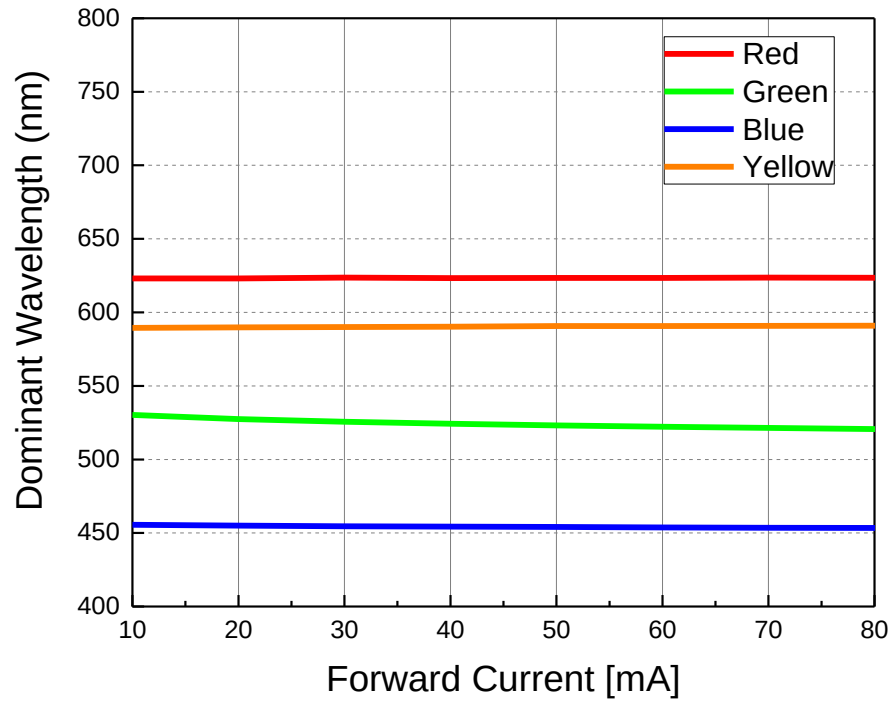
Relative Luminous Intensity vs. Forward Current @ Ts = 25°C

$$\Phi_V / \Phi_V(40mA) = f(I_F)$$



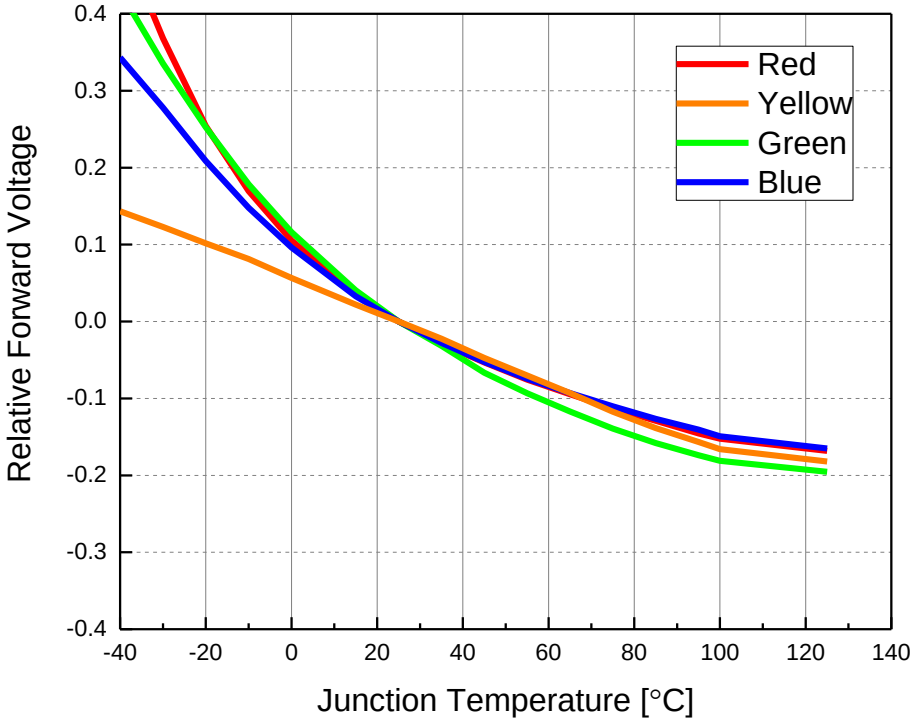
Dominant Wavelength vs. Forward Current @ Ts = 25°C

$$\lambda_d = f(I_F)$$

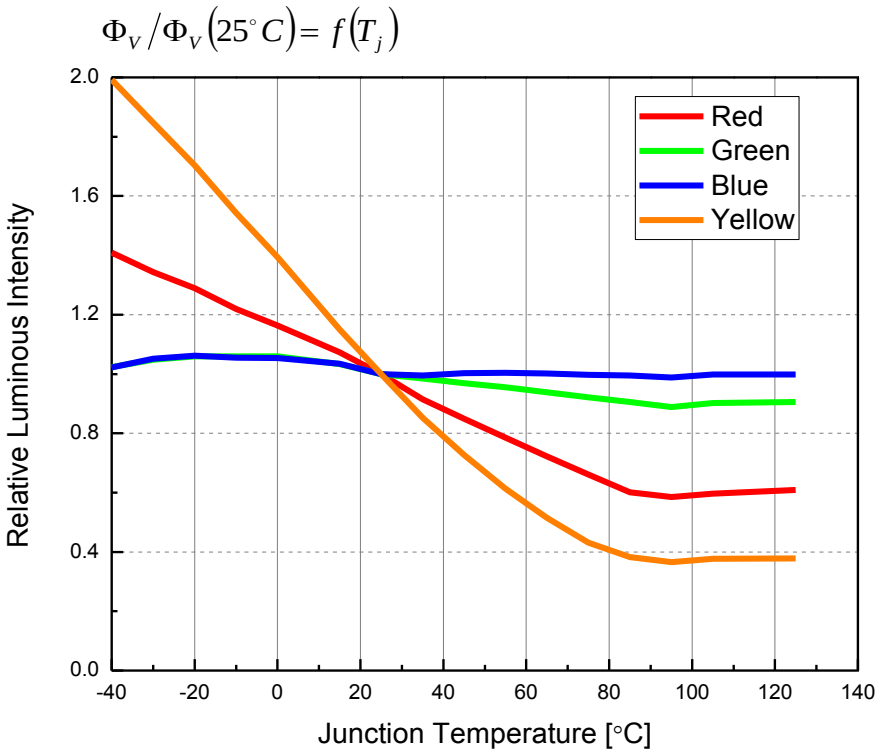


Relative Forward Voltage vs. Junction Temperature @ I_F=40mA

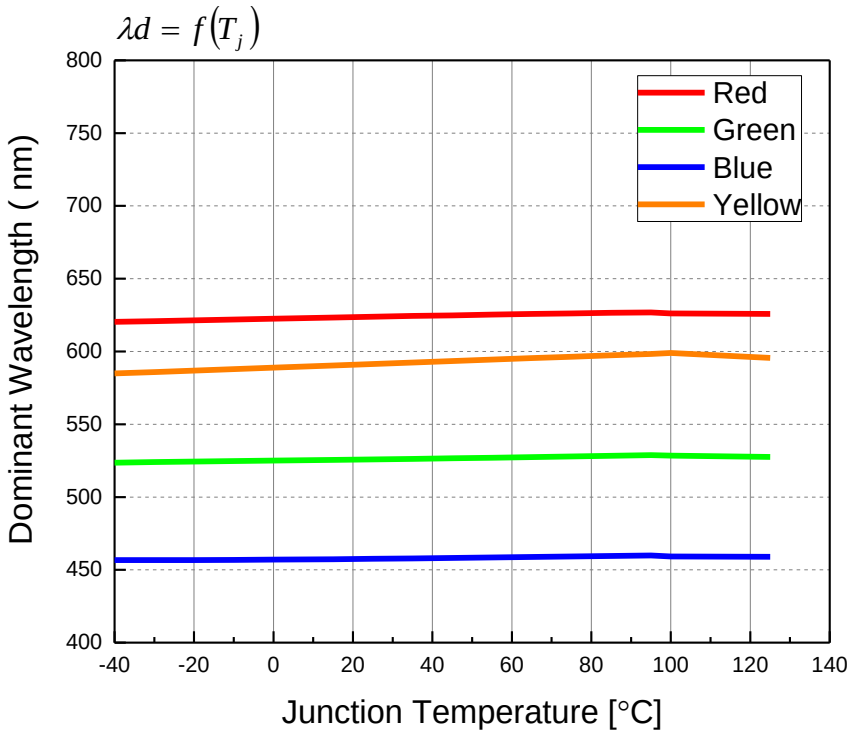
$$\Delta V_F = V_F - V_F(25^\circ C) = f(T_j)$$



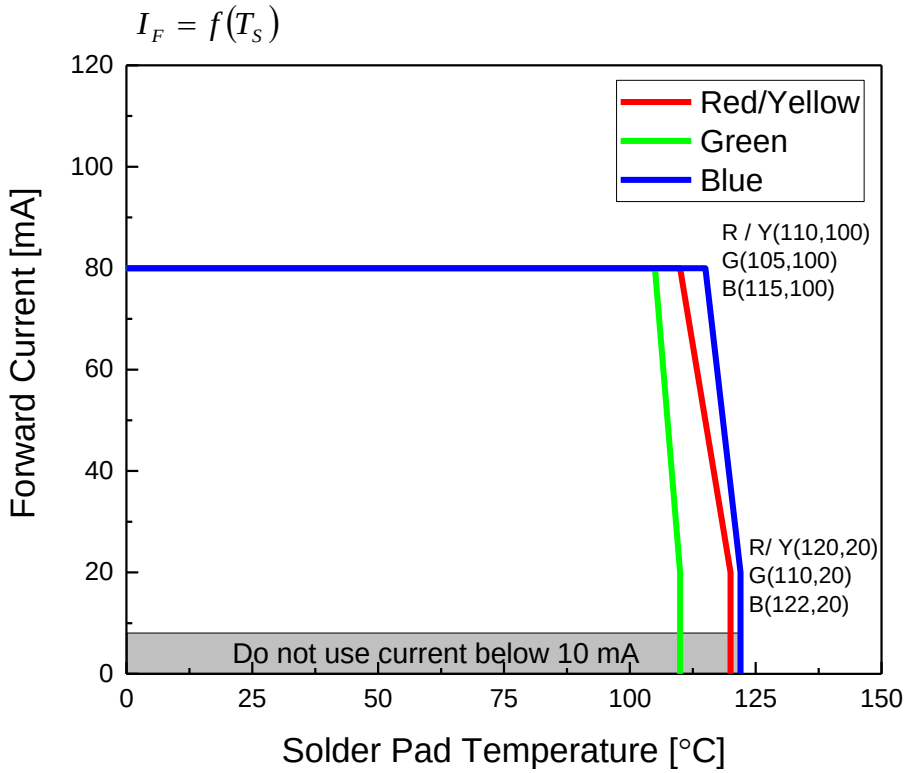
Relative Luminous Intensity vs. Junction Temperature @ I_F=40mA



Dominant Wavelength vs. Junction Temperature @ I_F=40mA



Forward Current Derating Curve



4. Binning Information

Luminous Intensity Bins

Group Bin	Minimum Luminous Intensity [mcd]	Maximum Luminous Intensity [mcd]
L1	11.2	14
L2	14	18
M1	18	22.4
M2	22.4	28
N1	28	35.5
N2	35.5	45
P1	45	56
P2	56	71
Q1	71	90
Q2	90	112
R1	112	140
R2	140	180
S1	180	224
S2	224	280
T1	280	355
T2	355	450
U1	450	560
U2	560	710
V1	710	900
V2	900	1120
AA	1120	1400
AB	1400	1800
BA	1800	2240
BB	2240	2800
CA	2800	3550
CB	3550	4500
DA	4500	5600
DB	5600	7100
EA	7100	9000
EB	9000	11200
FA	11200	14000
FB	14000	18000
GA	18000	22400

Notes:

1. Luminous intensity measurement tolerance: 8%.

Dominant Wavelength Bins

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: ±1nm.

Forward Voltage Bins

Bin	Minimum Forward Voltage [V]	Maximum Forward Voltage [V]
1012	1.00	1.25
1215	1.25	1.75
1517	1.50	1.75
1720	1.75	2.00
2022	2.00	2.25
2225	2.25	2.50
2527	2.50	2.75
2730	2.75	3.00
3032	3.00	3.25
3235	3.25	3.50
3537	3.50	3.75
3740	3.75	4.00
4042	4.00	4.25
4245	4.25	4.50
4547	4.50	4.75
4750	4.75	5.00
5052	5.00	5.25
5255	5.25	5.50
5557	5.50	5.75
5760	5.75	6.00
6062	6.00	6.25
6265	6.25	6.50
6567	6.50	6.75
6770	6.75	7.00

Notes:

1. Forward voltage measurement tolerance: ±0.05V.
2. Forward voltage bins are defined at IF = 40mA operation.

5. Part Number

CH2525-RGBY0401H-AM

Part number is designated with below details.

CH2525 = Product family name.

RGBY = Color [1]

040 = Test current [mA]

1 = Metallic Plating Type (0=Ag ; 1=Au : 2=MLP)

H = Brightness Level (H=High ; M=Medium ; 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
UP	Purple
UG	Green
UY	Yellow
UA	Amber
UR	Red
SR	Super Red
RGB	RGB – Color
RGBY	RGBY – Color

6. Ordering Information

CH2525-RGBY0401H-ABC-DE-AM

Part Number of the EL Multi Color	Order Code
CH2525-RGBY0401H-AM	CH2525-RGBY0401H-ELM-DE-AM

Order code contains information with below details:

ABC = Please refer to the chart to the right [1]

D = Standard packing quantity

E = Packing method (T for tape & reel)

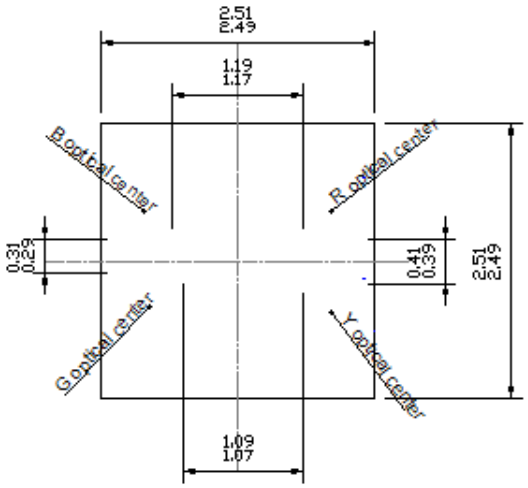
AM = Automotive Application Note

Note

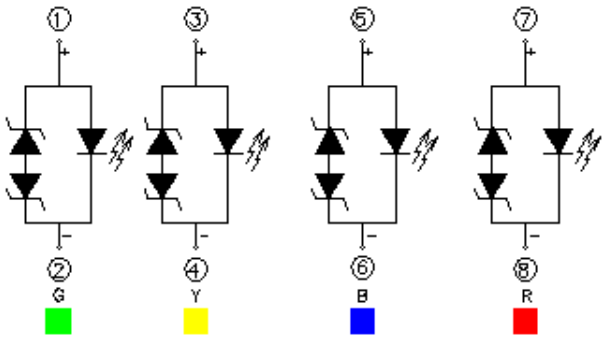
[1] Group Bin chart

Group Bin	Dominant Wavelength (nm)		Φ_v	V_F
ELM	Red	621 ~ 627	V2AA	1725
	Green	520 ~ 535	BBCA	2735
	Blue	455 ~ 467	T2U1	2735
	Yellow	585 ~ 597	V2AA	1725

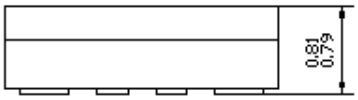
7. Mechanical Dimension



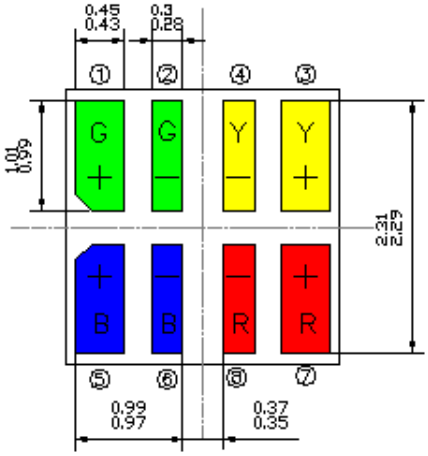
TOP View



Polarity



Side view

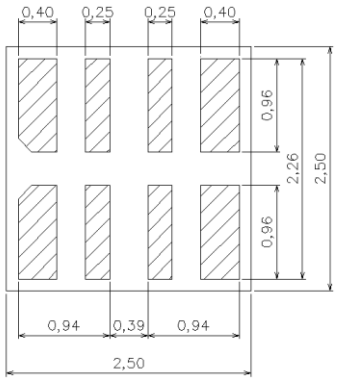


BOT. view

Notes:

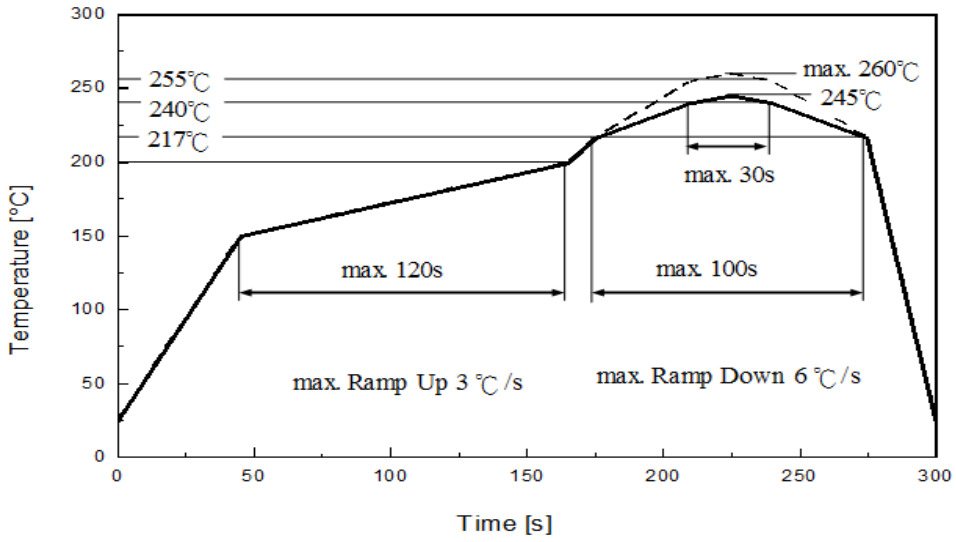
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.1mm.

8. Recommend Soldering Pad



9. Reflow Soldering Profile

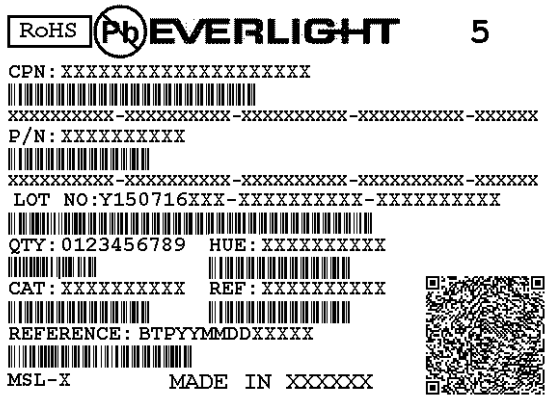
Soldering Condition (Reference: IPC/JEDEC J-STD-020D)



Profile Feature	Pb-Free Assembly Recommendation	Unit Einheit
Ramp-up rate to preheat 25 °C to 150 °C	3	°C /sec
Time of soaking zone150 °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

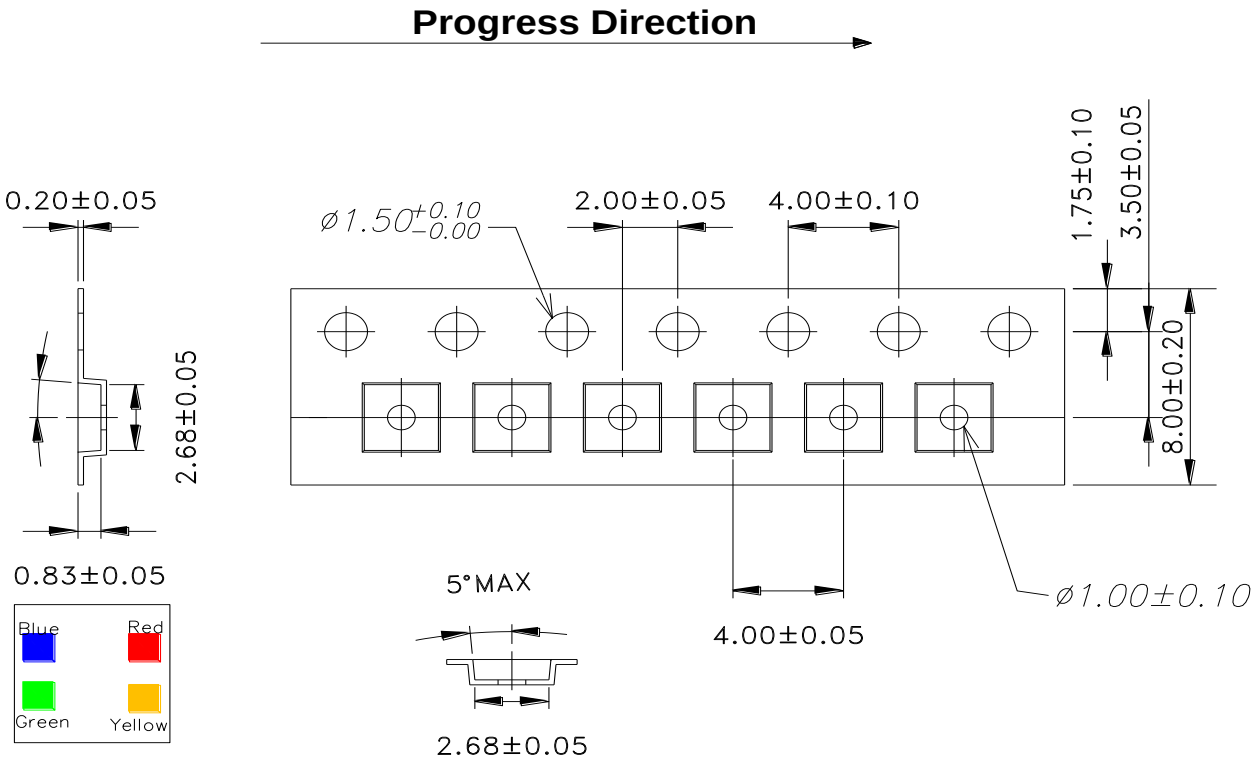
10. Packaging Information

• 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

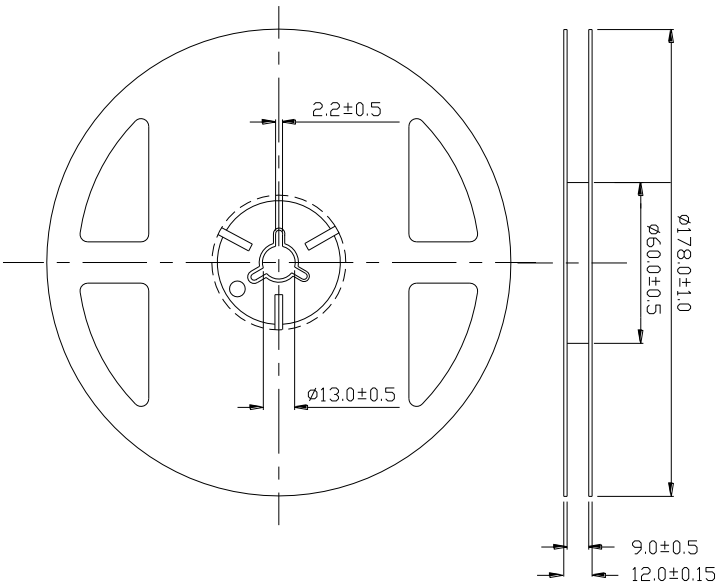
• Packing: Loaded Quantity 500 pcs Per Reel



Notes:

1. Dimensions are in millimeters.

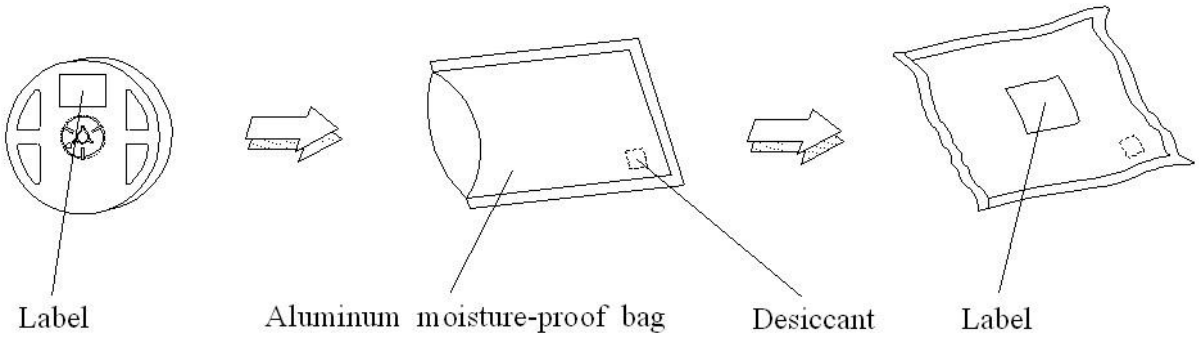
• Reel Dimensions



Notes:

1. Dimensions are in millimeters.

• Moisture Resistant Packing Process



11. Precaution for Use

1. Over-current-proof
   Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (burn out will happen).

2. Assemblies
   Do not stack assemblies containing LEDs to prevent damage to the optical surface of LEDs. Forces applied to the optical surface may result in the surface being damaged.

3. Soldering Condition
   3.1 When soldering, do not put stress on the LEDs during heating.
   3.2 After soldering, do not warp the circuit board.

4. Soldering Iron
   Each terminal is to go to the tip of soldering iron temperature less than 350℃ for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing
   Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

