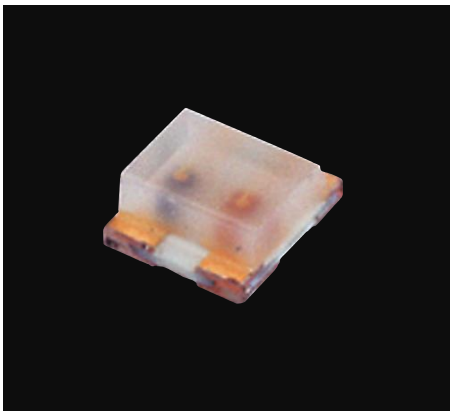
SML-52 series

Datasheet

●Features

- 2-color type LED
- Abundant 2 color variations

●Outline

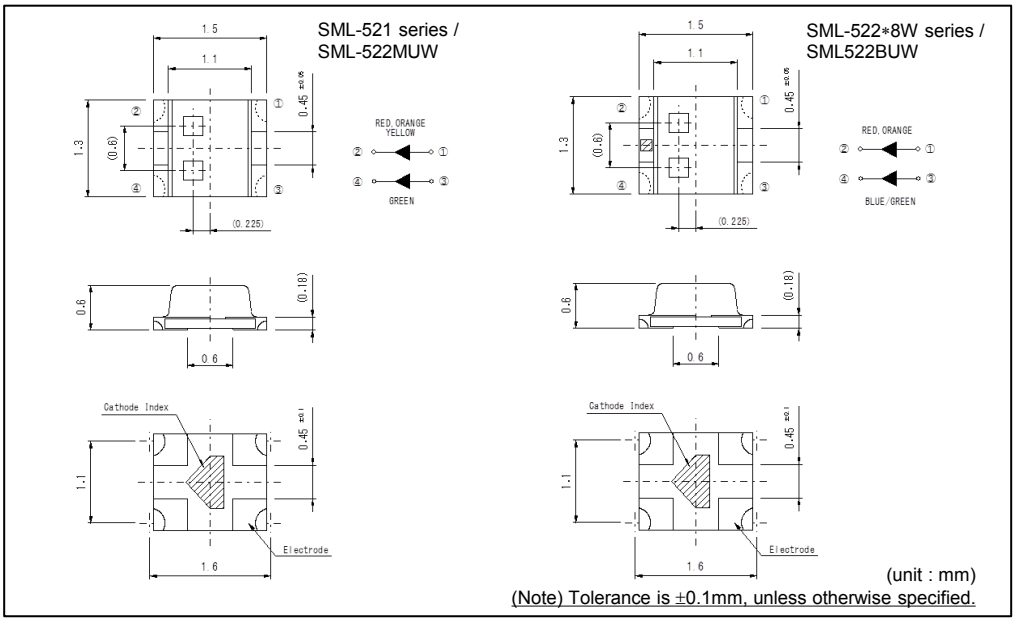


●Size

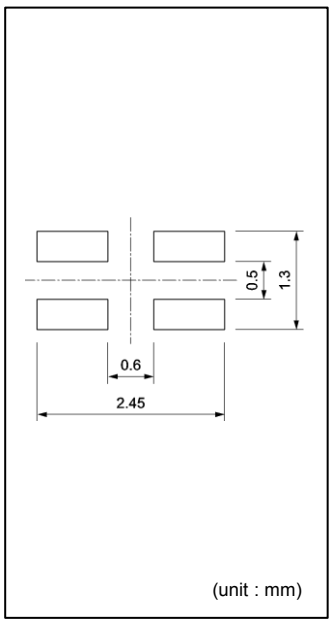
1315 (0605)
1.3 × 1.5mm (t=0.6mm)

Color Type

●Dimensions



●Recommended Solder Pattern



●Specifications

Part No.	Chip Structure	Emitting Color	Absolute Maximum Ratings (Ta=25°C)						Electrical and Optical Characteristics (Ta=25°C)										
			Power Dissipation P_D(mW)	Forward Current I_F(mA)	Peak Forward Current I_{FP}(mA)	Reverse Voltage V_R(V)	Operating Temp. Topr(°C)	Storage Temp. Tstg(°C)	Forward Voltag V_F Typ. (V)	I_F (mA)	Reverse Current I_R Max. (μA)	V_R (V)	Dominant Wavelength λD Min.∗3 (nm)	Typ. (nm)	Max.∗3 (nm)	I_F (mA)	Luminous Intensity I_V Min. (mcd)	Typ. (mcd)	I_F (mA)
SML522BU1W	InGaN	Blue	66	20	60∗2	5	−40 to +85	−40 to +100	2.9	5	10	5	465	470	475	5	9	22	5
	AlGaInP	Red	50						1.9				619	624	629		10	21	
SML-522MUW	AlGaInP	Yellowish Green	52	20	60∗1	4	−30 to +85	−40 to +85	2.1	20	100	4	569	572	575	20	14	40	20
		Red	50						1.9				615	620	625		22	63	
SML-522MU8W		Green	54		100∗2		−40 to +85	−40 to +100	2.2				569	572	575		16	40	
		Red											615	620	625		25	63	
SML-521MUW	GaP	Yellowish Green	70	25	60∗1		−30 to +85	−40 to +85	2.2				569	572	575		5.6	16	
	AlGaInP	Red	50	20					1.9				615	620	625		22	63	
SML-522MD8W	AlGaInP	Green	54	20	100∗2	5	−40 to +85	−40 to +100	2.2				569	572	575		10	25	
		Orange											602	605	608		40	100	
SML-521MDW	GaP	Yellowish Green	70	25	60∗1	4	−30 to +85	−40 to +85	2.2				569	572	575		5.6	16	
	AlGaInP	Orange	50	20					1.9				602	605	608		22	63	
SML-521MYW	GaP	Yellowish Green	70	25					2.2				569	572	575		5.6	16	
	AlGaInP	Yellow	50	20					1.9				584	587	590		22	63	

∗1:Duty1/5, 1ms ∗2:Duty1/10, 1kHz ∗3:Reference

●Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

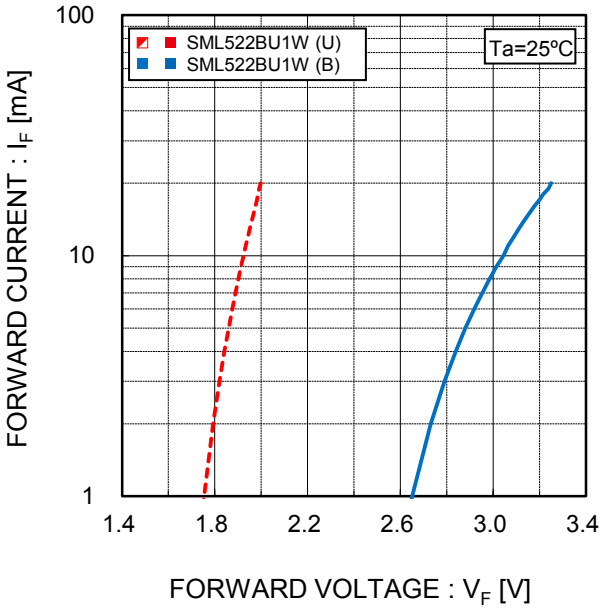


Fig.2 Luminous Intensity - Atmosphere Temperature

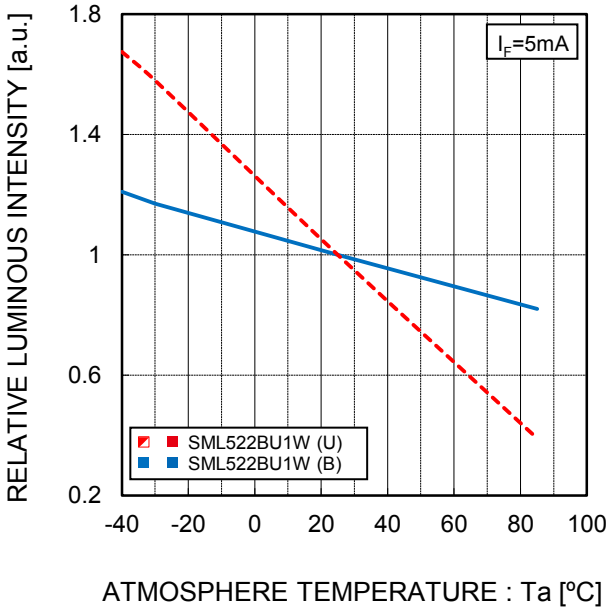


Fig.3 Luminous Intensity - Forward Current

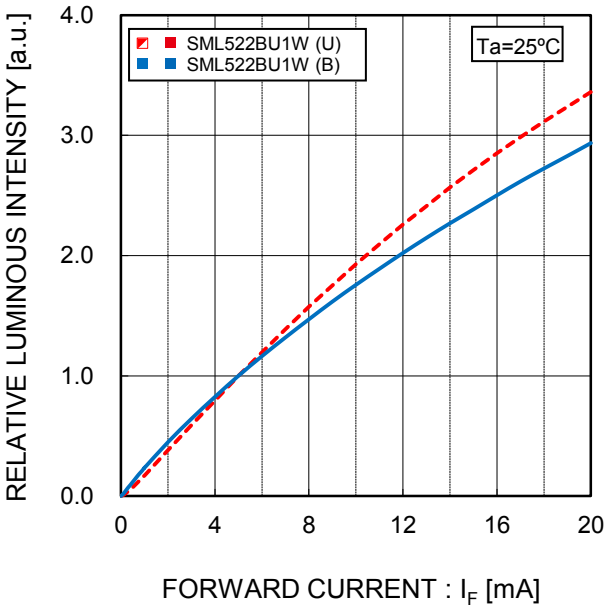
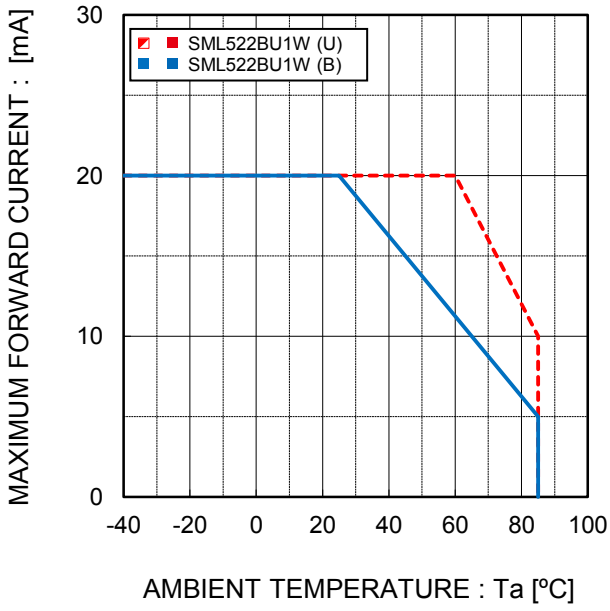


Fig.4 Derating



(Note) In case of lighting a single color.
∗The value is based on the die destruction endurance; optical characteristics are NOT considered..

●Electrical Characteristics Curves

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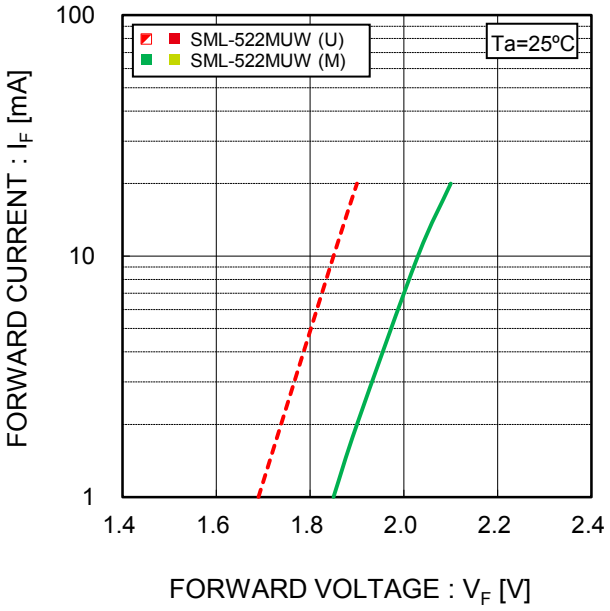

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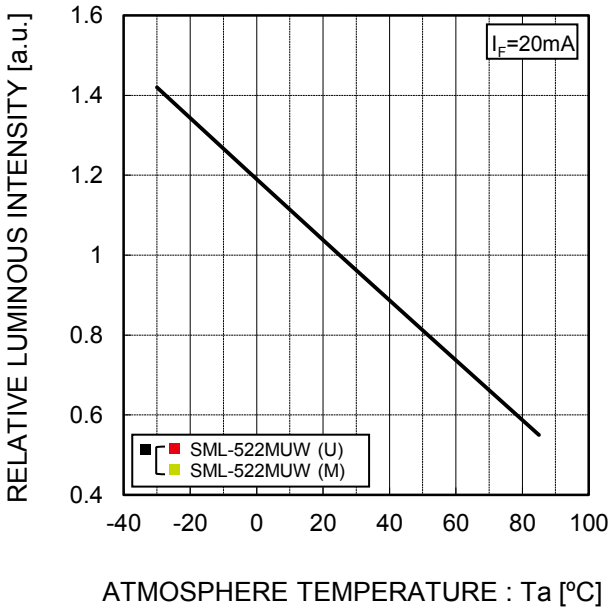


Fig.3 Luminous Intensity - Forward Current

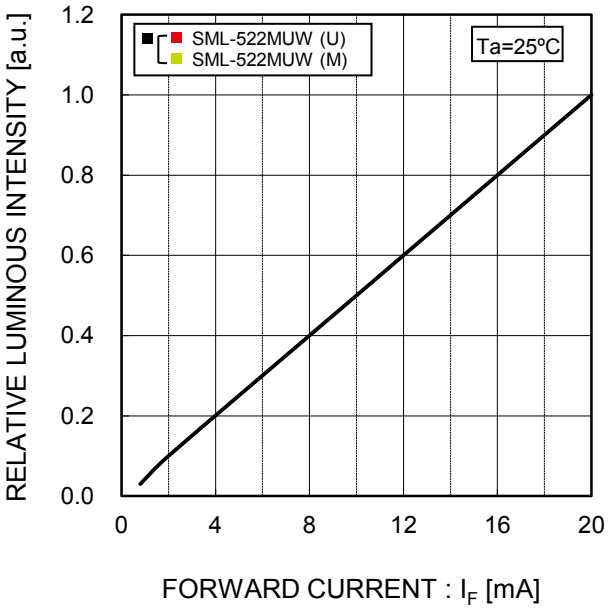
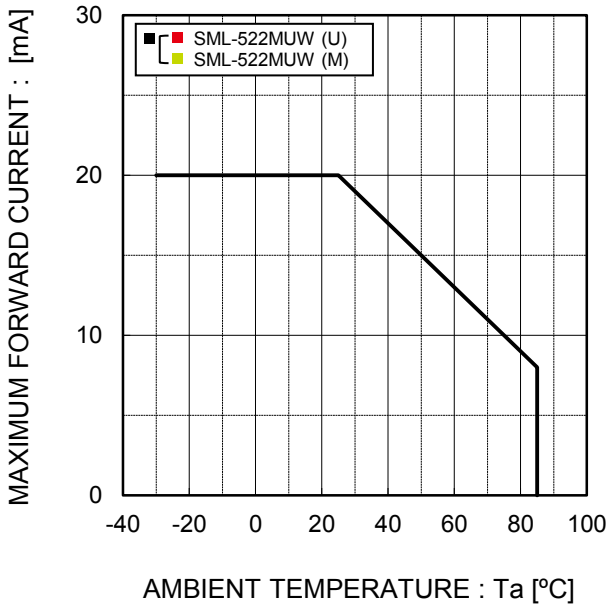


Fig.4 Derating



●Electrical Characteristics Curves

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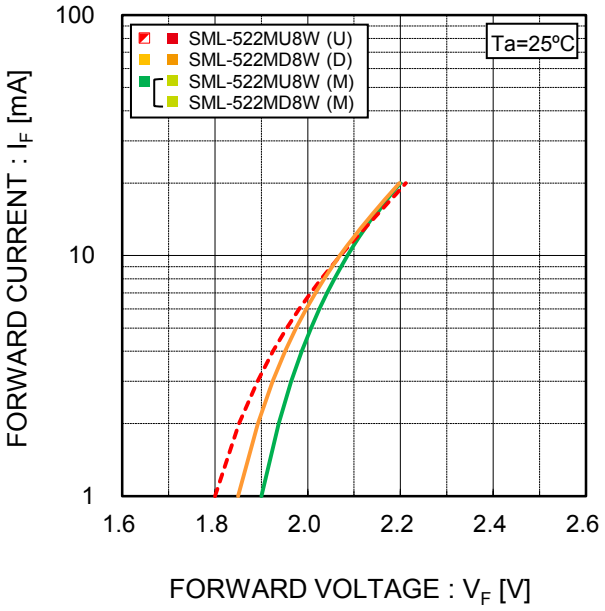


Fig.2 Luminous Intensity - Atmosphere Temperature

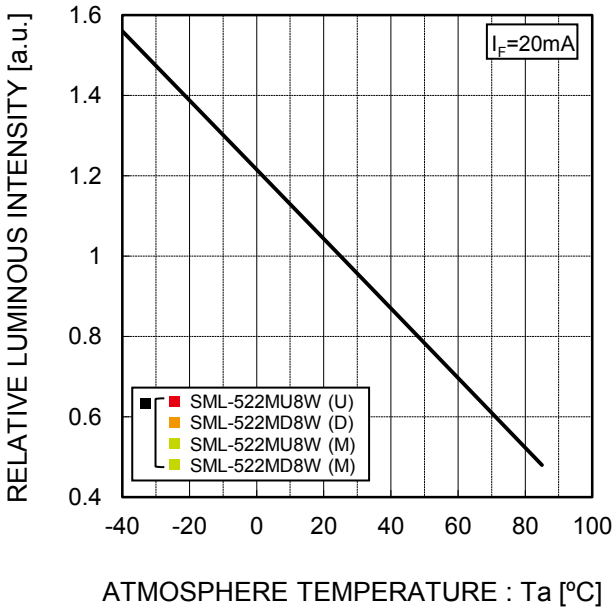


Fig.3 Luminous Intensity - Forward Current

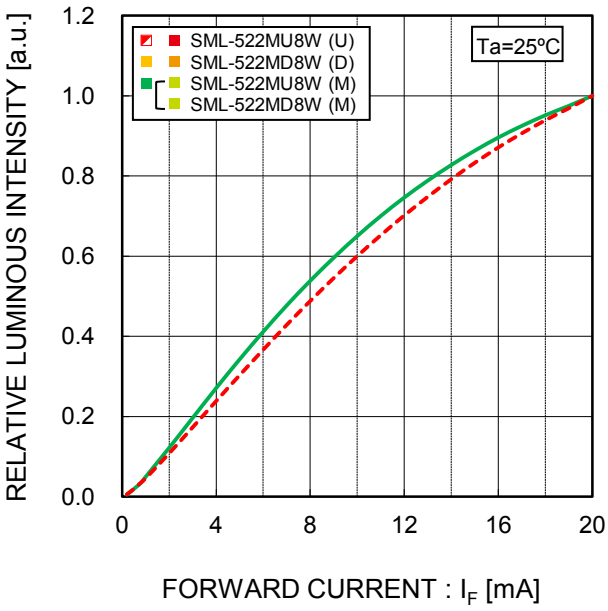
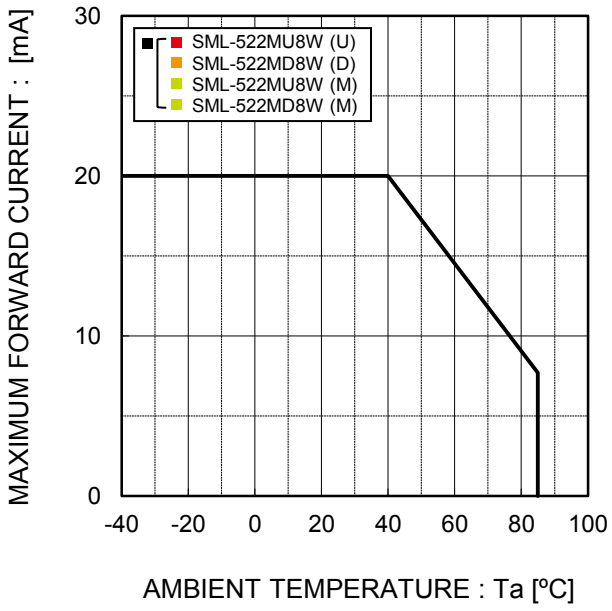


Fig.4 Derating



●Electrical Characteristics Curves

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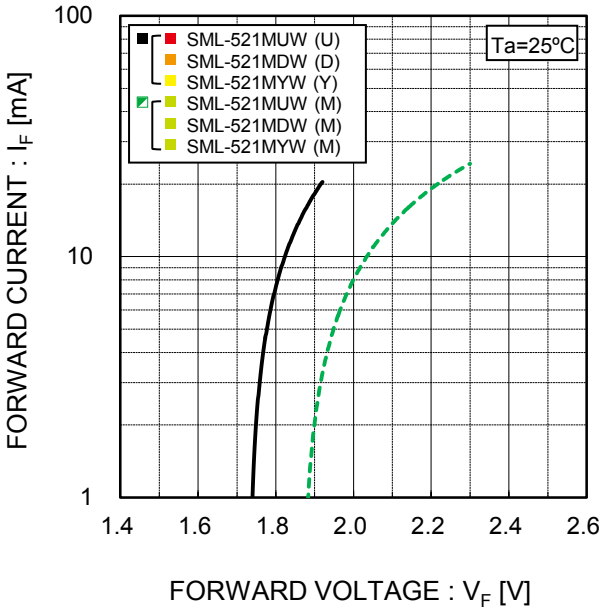

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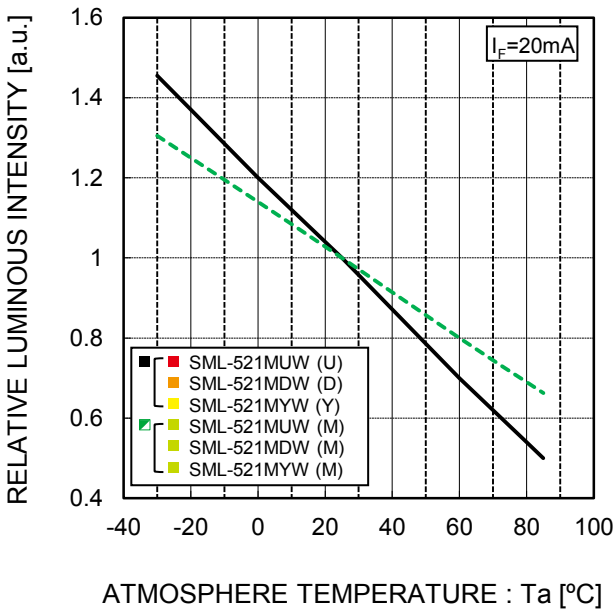


Fig.3 Luminous Intensity - Forward Current

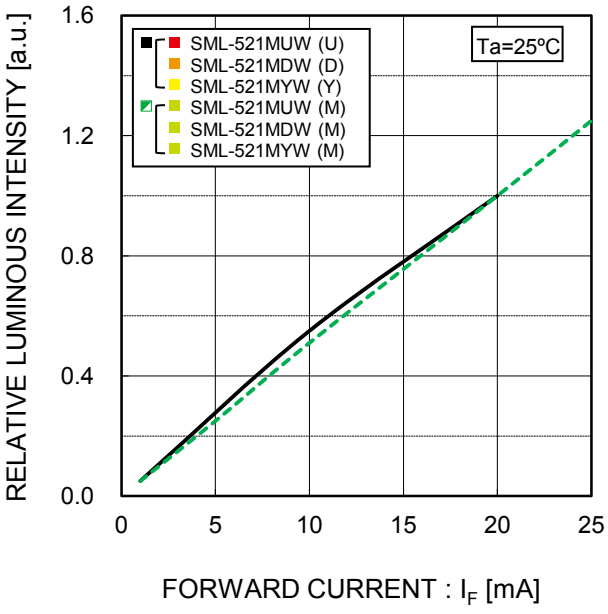
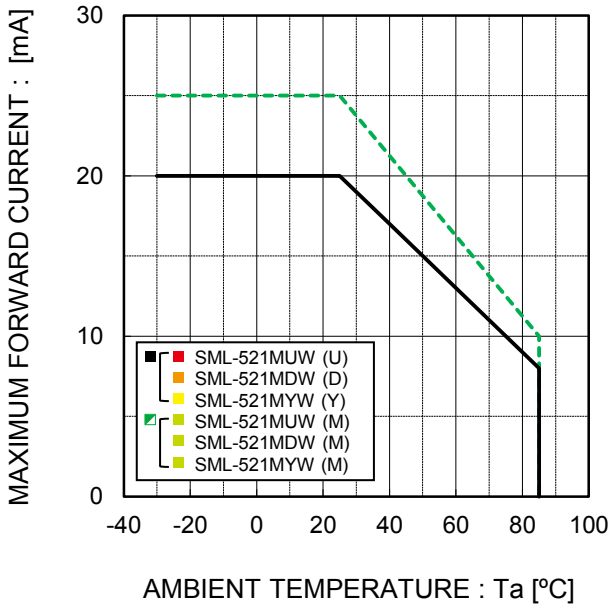
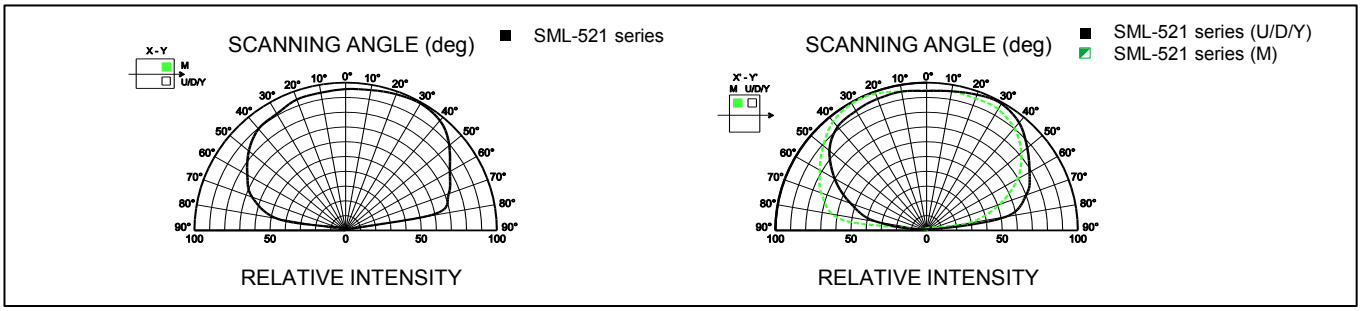
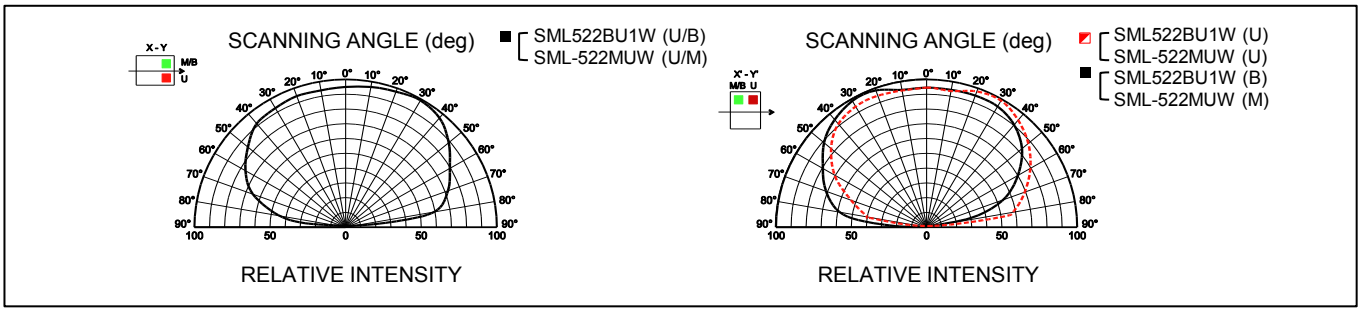


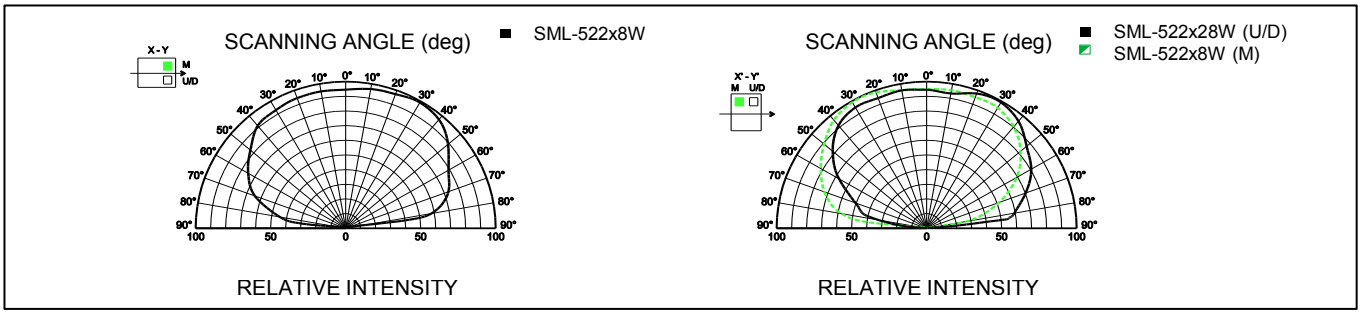
Fig.4 Derating



●Viewing Angle







●Rank Reference of Brightness

(Ta=25ºC, I_F=20mA)

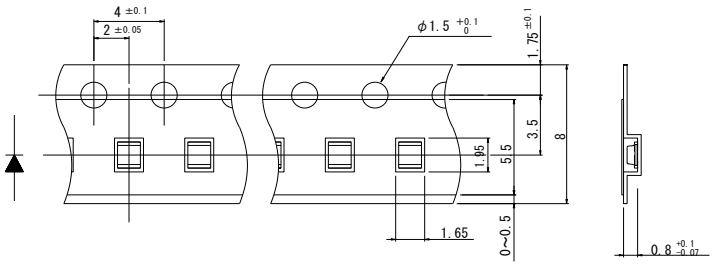
Part No.	Rank	K	L	M	N	P	Q	R	S	T	U
	Iv (mcd)	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	90 to 140	140 to 220	220 to 360
SML-522MUW*	Red					U					
	Yellowish Green				M						
SML-522MU8W*	Red					U					
	Green				M						
SML-521MUW*	Red					U					
	Yellowish Green		M								
SML-522MD8W	Orange					D					
	Green		M								
SML-521MDW*	Orange						D				
	Yellowish Green			M							
SML-521MYW*	Yellow					Y					
	Yellowish Green		M								

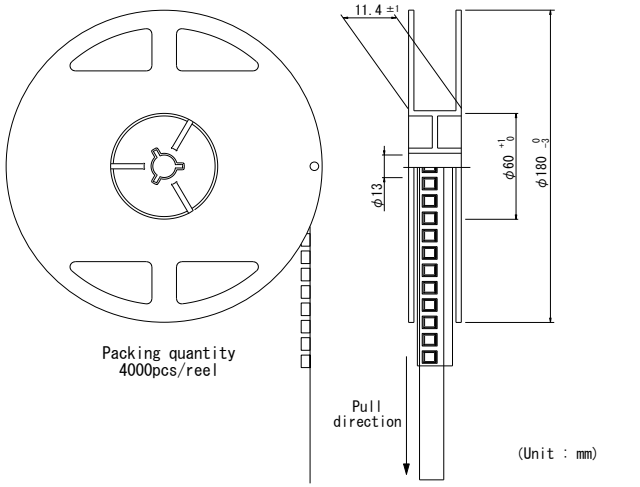
(Ta=25ºC, I_F=5mA)

Part No.	Rank	K	L	M	N	P	Q	R	S	T	U
	Iv (mcd)	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	90 to 140	140 to 220	220 to 360
SML522BU1W	Red			U							
	Blue			B							

* Measurement tolerance ±10%

●Taping [T86]





(note) Tolerance is within ±0.2mm
unless otherwise specified

●Part No. Construction

＊"–" will be taken out for emitting color B series.

Chip Special Code

S	M	L	–	5	2	2	M	U	8	W	T	8	6	Q	R
Series name				Package type		Chip Type	Emitting Color			Resin Color	Taping Specifications			Rank sign (Brightness Rank)＊	

1	Standard Type
2	High Brightness Type

U	Red:620nm
D	Orange:605nm
Y	Yellow:587nm
M	Yellowish-Green:572nm
B	Blue:470nm

W	Milky White

T86	Cathode at sprocket hole side
T87	Reverse of T86

＊Concerning the Brightness rank
- Please refer to the rank chart above for luminous intensity classification.
- Part name is individual for each rank.
- When shipped as sample, the part name will be a representative part name.
  General products are free of ranks. Please contact sales if rank appointment is needed.

●Packing Specification

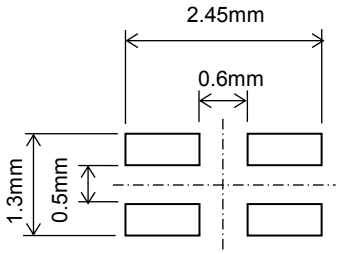
ROHM LED products are being shipped with desiccant (silica gel) concluded in moisture-proof bags.

Pasting the moisture sensitive label on the outer surface of the moisture-proof bags or enclosing the humidity indication card inside the bag is available upon request.

Please contact the nearest sales office or distributer if necessary.

●Attention Points In Handling

This product was developed as a surface mount LED especially suitable for soldering.
Please take care of following points when using this device.



(Fig-1)

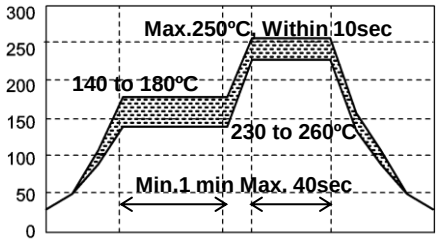
1.DESIGNING OF PCB

As for a recommendable solder pattern, Please refer to Fig-1.
The size and direction of the pad pattern depend on the condition of the PCB.
Thorough design review is recommended before the final designing

(This product of structured with rear/bottom electrode to be soldered.
The formation of solder fillet is not guaranteed due to its electrode shape.)

2.SOLDERING (Sn-Cu, Sn-Ag-Cu, Sn-Ag-Bi-Cu)

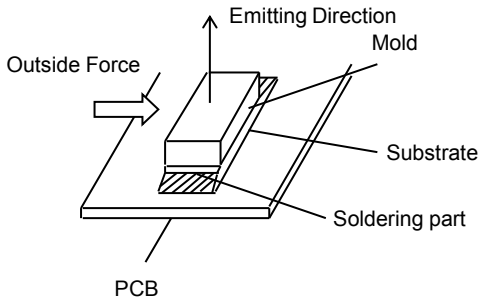
LED products do not contain reinforcement materials such as glass fillers.
Therefore, thermal stress by soldering greatly influence its reliability.
The temperature conditions for reflow soldering should therefore be set up according to the characteristic of this product. (See Fig-2)
Number of reflow process shall be max 2 times and these processes shall be performed in a row.
Cooling process to normal temperature shall be required between first and second soldering process.



(Fig-2)

3.HANDLING AFTER MOUNTING

As shown right drawing, in case outside force of around 1kg is given to the device, stress is concentrated to the jointed part between mold resin and substrate.
Therefore there is a possibility to breat the device or PCB.
Careful handing is needed as ROHM cannot guarantee the falling of the device by outside force after mounting.



4.WASHING

Please note the following points when washing is required after soldering.

4-1) WASHING SOLVENT
Isopropyl alcohol or other alcohol solvent is recommendable.

4-2) TEMPERATURE
Below 30ºC, immersion time ; within 3 minutes.

4-3) ULTRA SONIC WASHING
Below 15/1 litter of solvent tub.

4-4) COOLING
Below 100ºC within 3 minutes.

5.EROSION GAS

Utilization in erosion gas atmosphere may degenerate the plating surface which might cause deterioration of solder strength, optical characteristics, or functions.
Please take precautions against occurrence of gas from the surrounding parts on the occasion of custody, and also after mounted on circuit board.

6.STORAGE

At reflow soldering, the reliability of this product is often influenced by moisturet
absorption so we apply the packaging with moisture proof for better condition is use, please also note that

6-1) Not to be opened before using.

6-2) To be kept in our moisture proof packaging with some desiccant (SILICA GEL) after opening it.
To be baked in case the SILICA GEL indicator changed its color from either blue to clear or green to pink.

6-3) Please use within 168 hours after the package was opened. (Condition at 30°C, max.70%Rh.)
In case it is not used within 168 hours, please put it back into our packaging.

6-4) BAKING
Please bake under reel condition at 60°C, 12～24 hours (max.20%Rh) after un-sealing.
While baking is done, the reel and emboss tape may be easily deformed.
Please be careful not to give any stress.

7.LIFE TIME

This product will cause reduction of luminous intensity depending on the using conditions and environmental.
Please inquire our sales contact if long life time is required on your application.

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.

7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

11) ROHM has used reasonable care to ensur the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.

12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.

13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.

14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.

ROHM SEMICONDUCTOR

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