

●Features

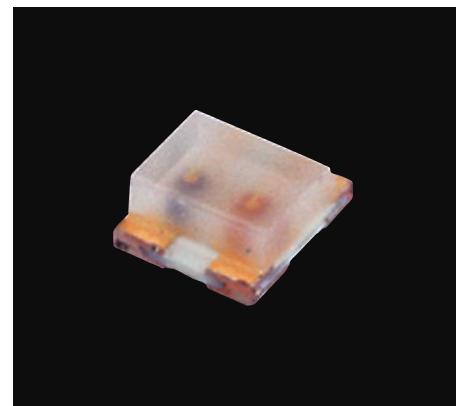
- 2-color type LED
- Abundant 2 color variations

●Size

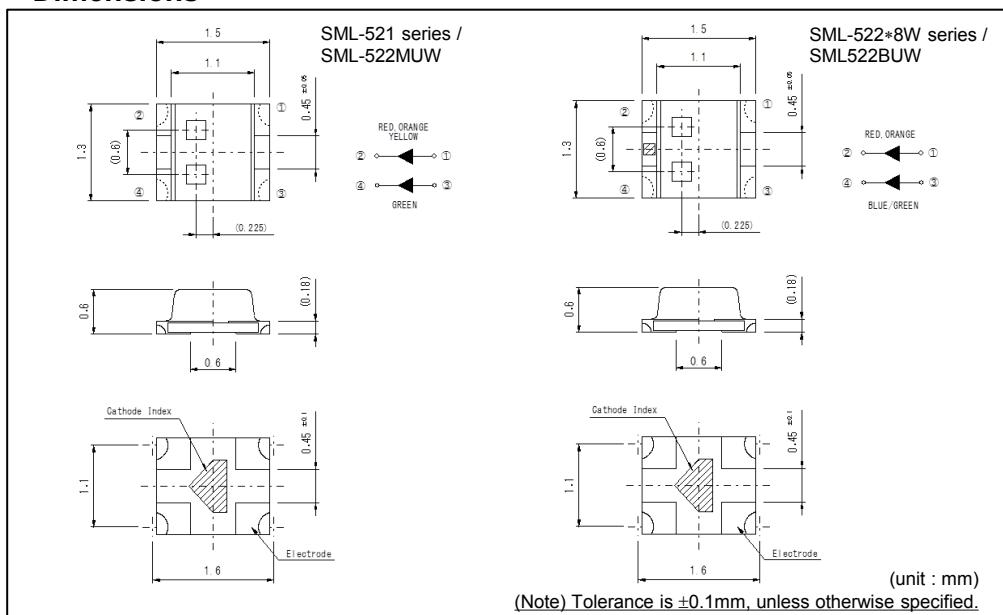
1315 (0605)
1.3 × 1.5mm (t=0.6mm)



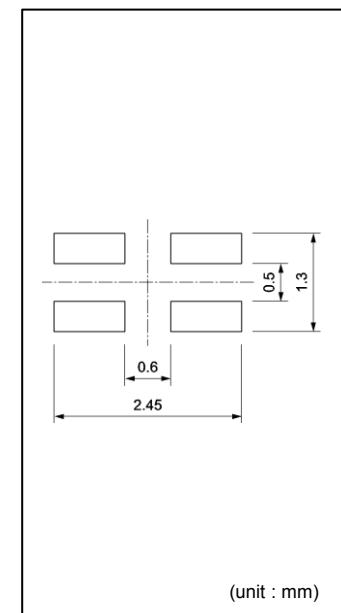
●Outline



●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. T _{OPR} (°C)	Storage Temp. T _{STG} (°C)	Forward Voltage V _F (V)	Reverse Current I _R (μA)	Dominant Wavelength λ _D (nm)	Luminous Intensity I _V (mcd)	Min. ³	Typ. ³	Max. ³	I _F (mA)	Min. ³	Typ. ³	I _F (mA)
SML522BU1W	InGaN AlGaNp	Blue Red	66 50	20	60* ² 60* ¹	5 20	-40 to +85 -30 to +85 -40 to +85 -30 to +85 -40 to +85 -30 to +85	-40 to +100 -40 to +85 -40 to +100 -40 to +85 -40 to +100 -40 to +85	2.9 1.9 2.1 1.9 2.2 2.2 1.9 2.2 1.9 2.2 1.9 2.2 1.9 2.2 1.9	5 10 5 5 4 100 4	465 619 569 615 569 569 615 569 602 569 569 602 569 584	470 624 572 620 572 572 620 572 605 572 572 605 572 590	5 5 20 20	9 10 14 22 16 25 5.6 22 10 40 22 10 5.6 22 5.6 22	22 21 40 63 40 63 16 63 25 100 63 25 100 63 63	5 5 20 20			
SML-522MUW	AlGaNp	Yellowish Green Red	52 50	20	60* ¹ 100* ²	4	-30 to +85 -40 to +85 -30 to +85 -40 to +85	-40 to +85 -40 to +100 -40 to +85 -40 to +85	2.1 1.9 2.2 2.2 1.9 2.2 1.9 2.2 1.9 2.2 1.9 2.2 1.9 2.2 1.9	20 100 4	569 615 569 569 615 569 615 569 602 569 569 602 569 584	572 620 572 572 620 572 620 572 605 572 572 605 572 590	575 625 575 575 625 575 625 575 608 575 575 608 575 590	14 22 16 25 5.6 22 22 10 40 22 10 5.6 22 22	40 63 40 63 63 63 63 63 100 63 63 100 63 63	14 22 16 25 5.6 22 22 10 40 22 10 5.6 22 22	40 63 40 63 63 63 63 63 100 63 63 100 63 63		
SML-522MU8W		Green Red	54																
SML-521MUW		Yellowish Green Red	70 50	25 20															
SML-522MD8W	AlGaNp	Green Orange	54	20	100* ²	5	-40 to +85	-40 to +100	2.2	20	100	4	569 569 602 569 569 602 569 569	572 572 605 572 572 605 572 572	575 575 608 575 575 608 575 575	20	5.6 22 10 40 22 10 5.6 22	16 63 25 100 63 25 16 63	20
SML-521MDW	AlGaNp	Yellowish Green Orange	70 50	25 20	60* ¹	4	-30 to +85	-40 to +85	2.2 1.9 2.2 1.9 2.2 1.9	20 100 4	569 569 602 569 569 602 569 569	572 572 605 572 572 605 572 572	575 575 608 575 575 608 575 575	22 22 22 22 22 22 22 22	63 63 63 63 63 63 63 63	20			
SML-521MYW	AlGaNp	Yellowish Green Yellow	70 50	25 20															

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

● Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

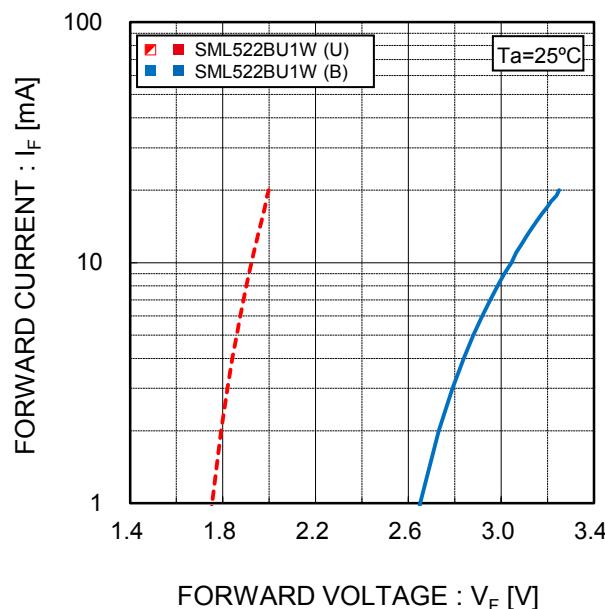


Fig.2 Luminous Intensity - Atmosphere Temperature

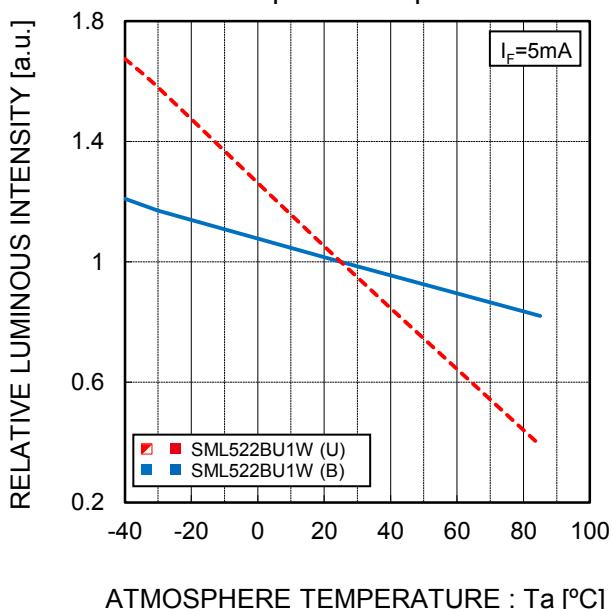


Fig.3 Luminous Intensity - Forward Current

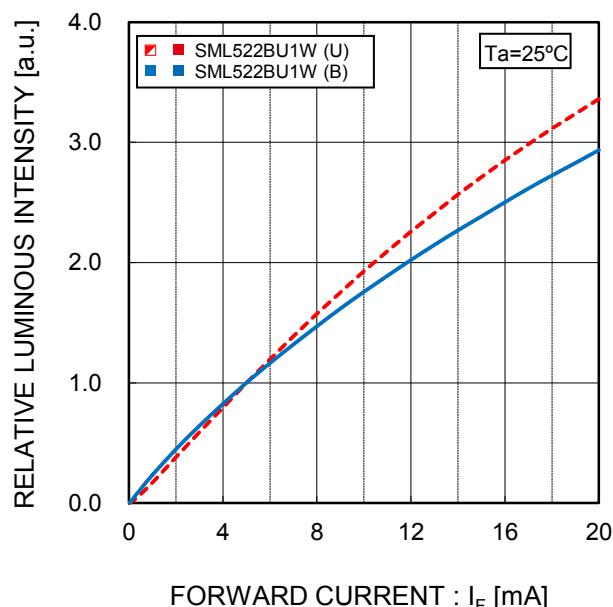
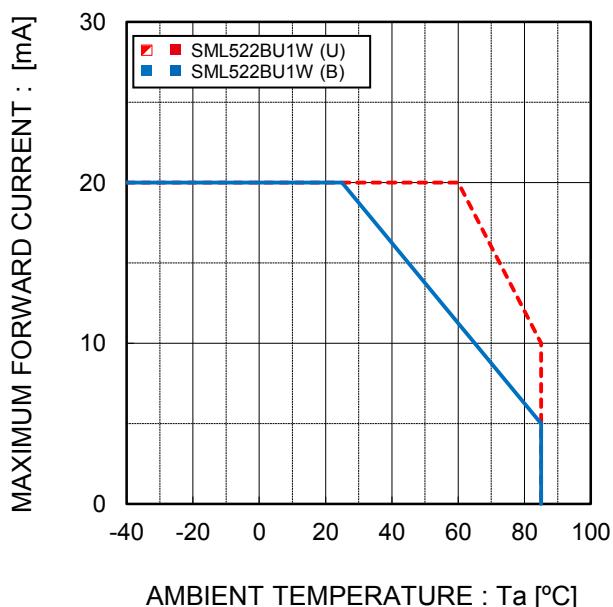


Fig.4 Derating



(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

Fig.1 Forward Current - Forward Voltages

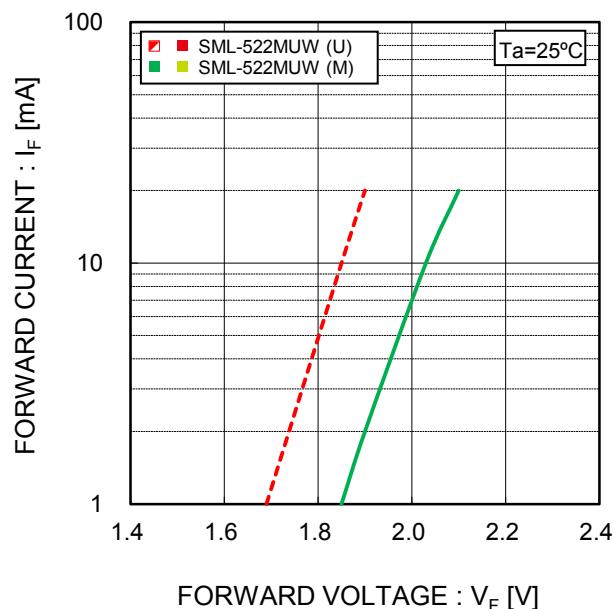


Fig.2 Luminous Intensity - Atmosphere Temperature

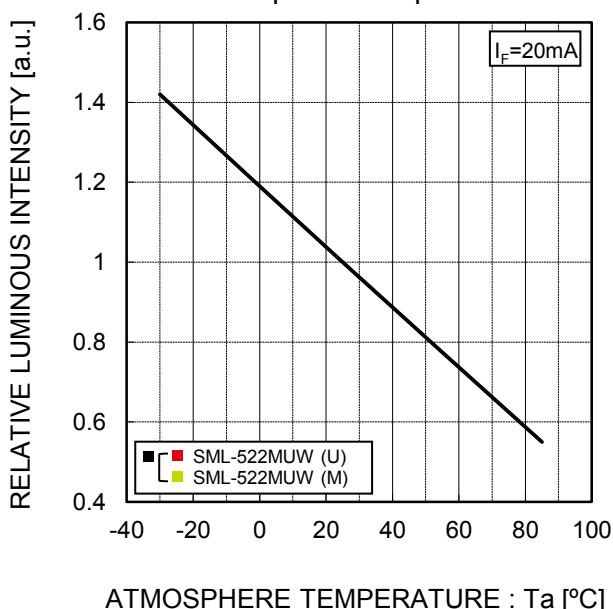


Fig.3 Luminous Intensity - Forward Current

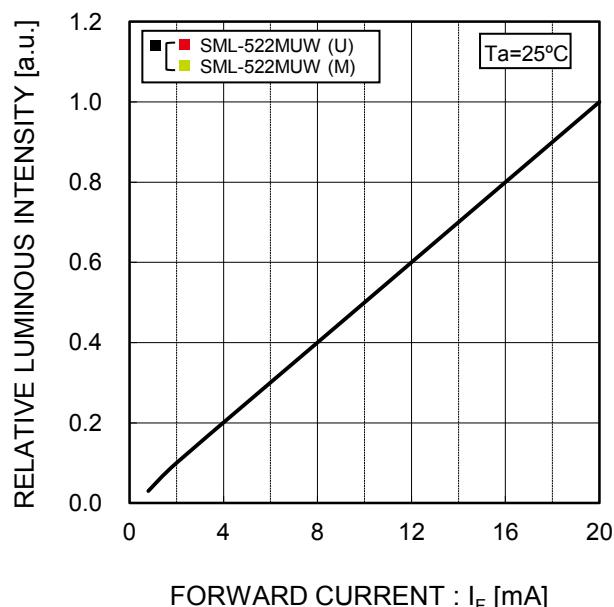
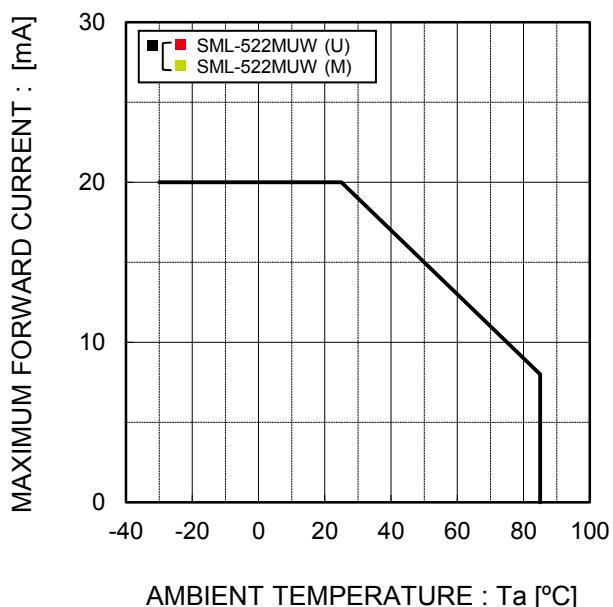


Fig.4 Derating



● Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

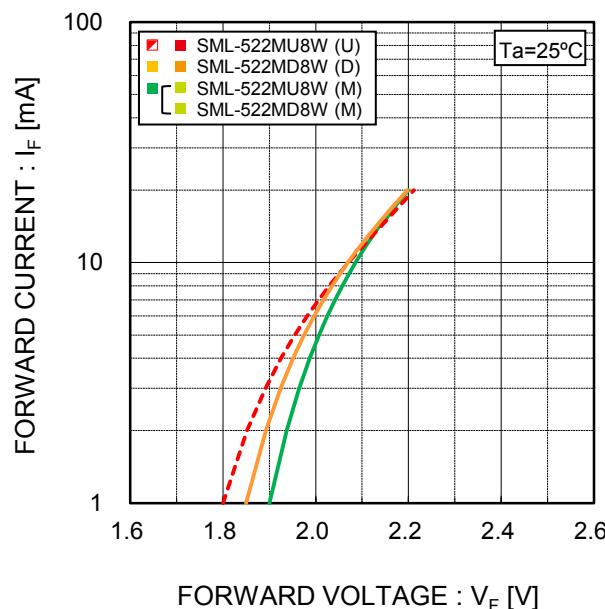


Fig.2 Luminous Intensity - Atmosphere Temperature

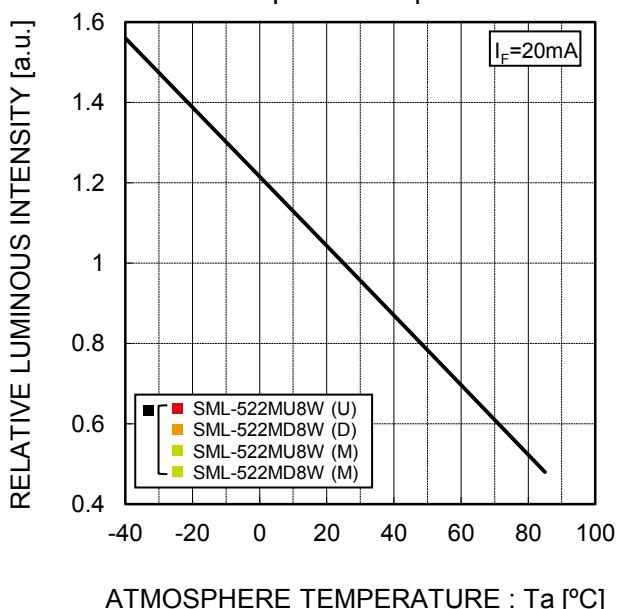


Fig.3 Luminous Intensity - Forward Current

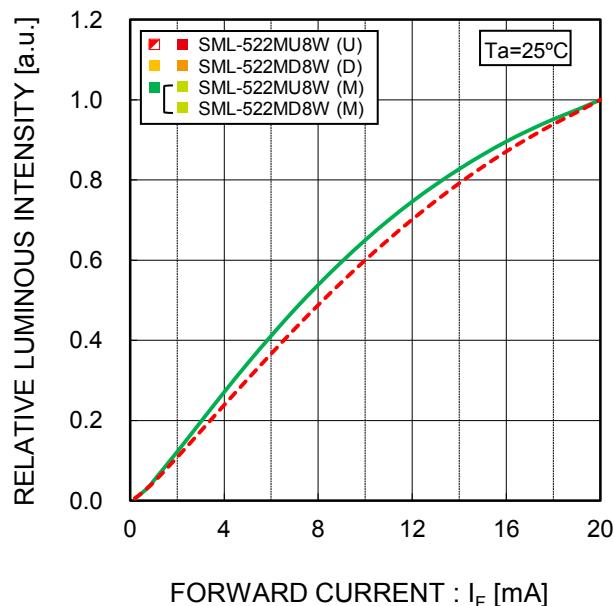
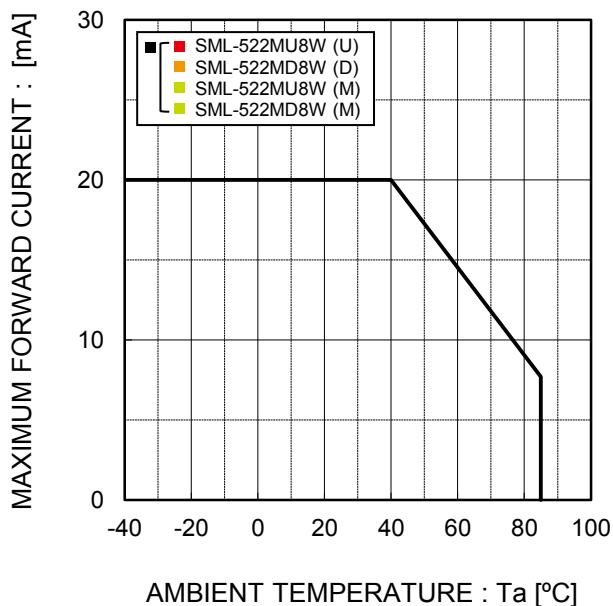


Fig.4 Derating



● Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

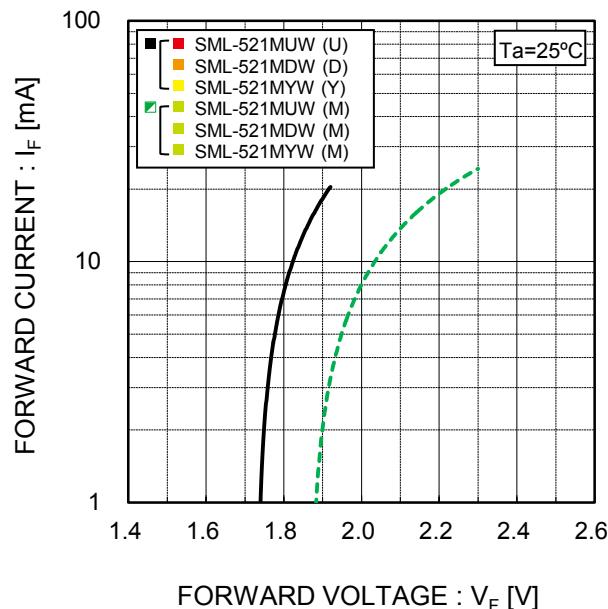


Fig.2 Luminous Intensity - Atmosphere Temperature

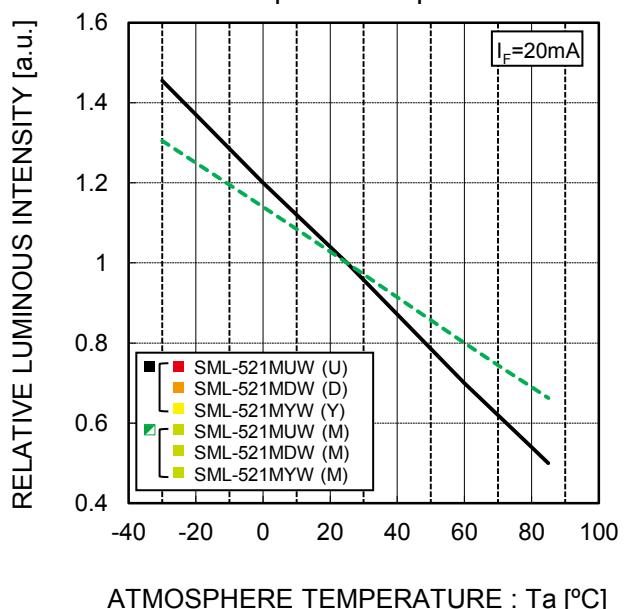


Fig.3 Luminous Intensity - Forward Current

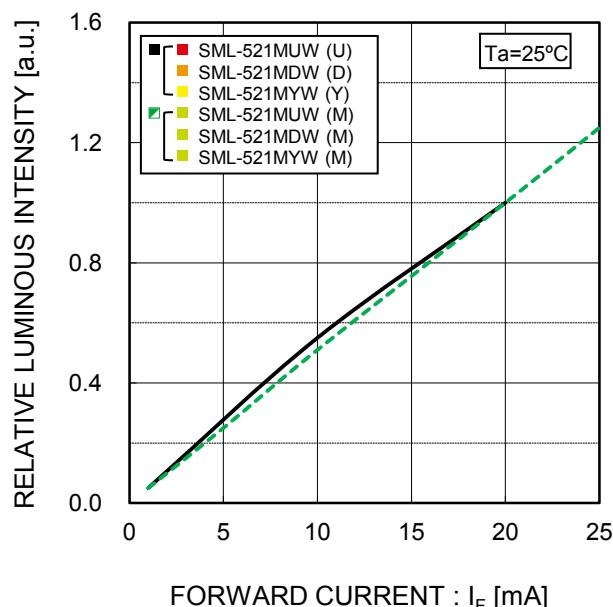
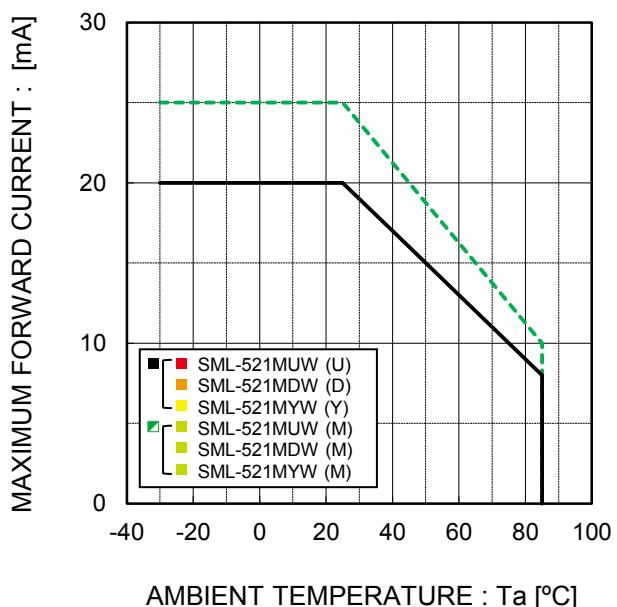
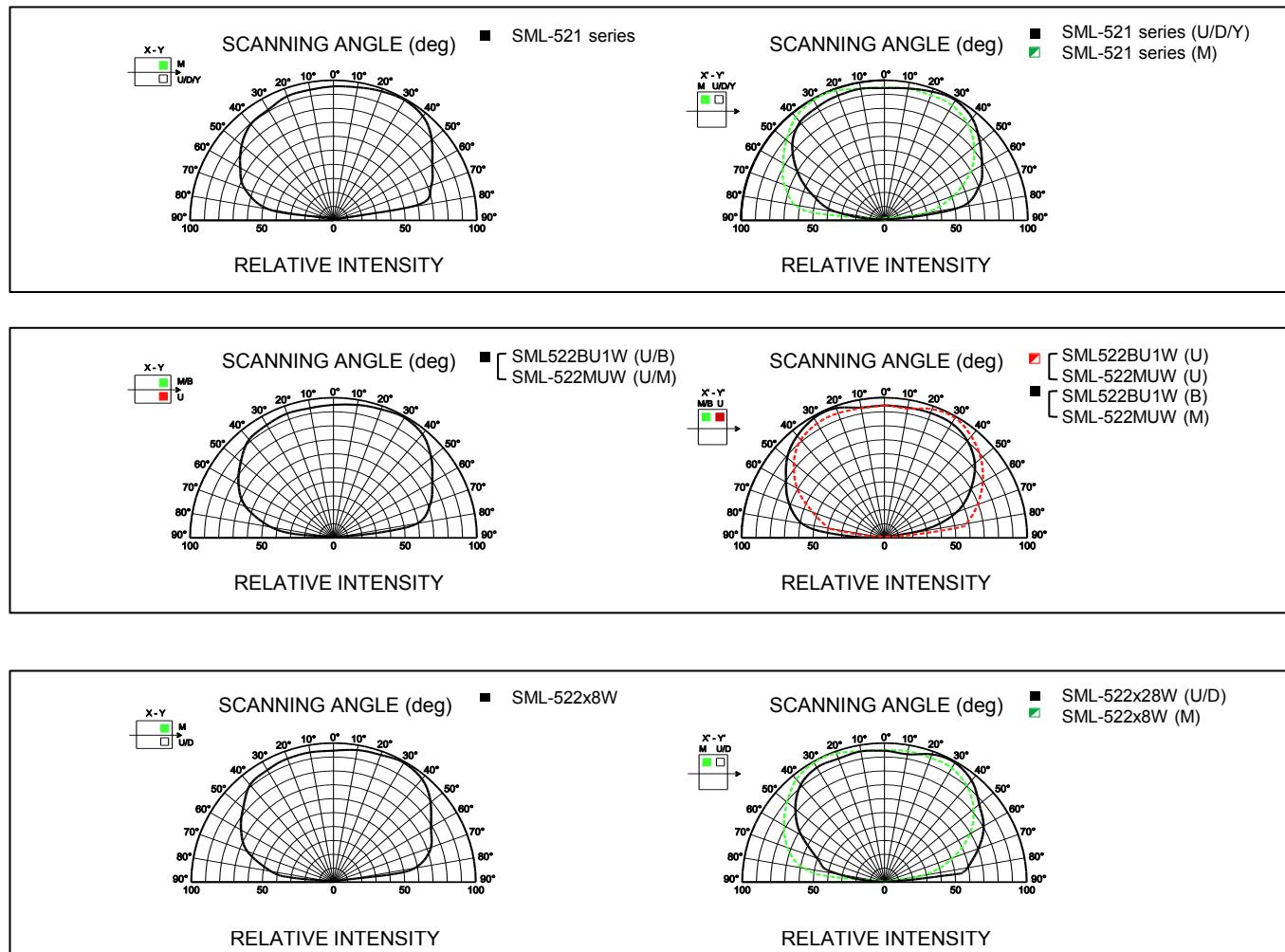


Fig.4 Derating



● Viewing Angle



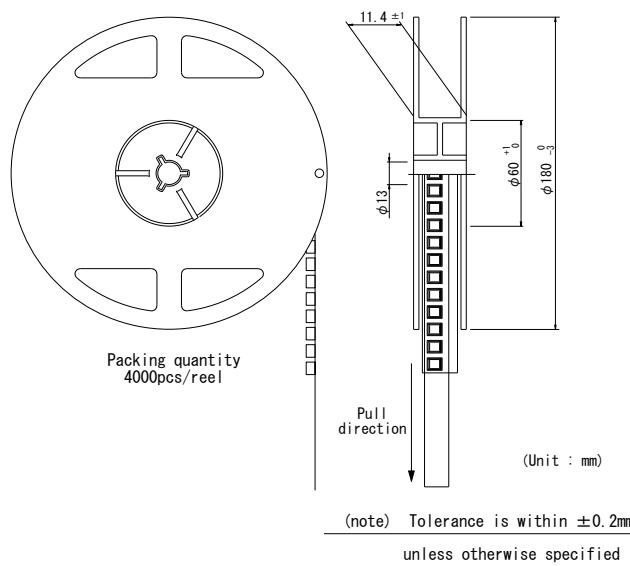
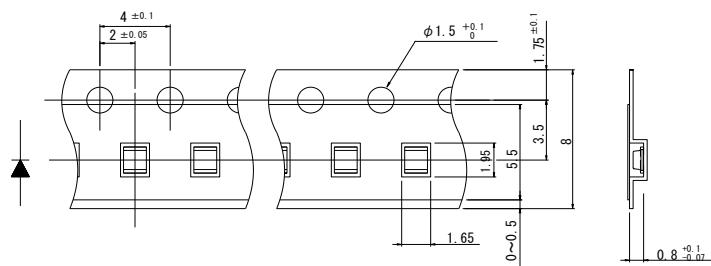
● Rank Reference of Brightness

Part No.	Rank	K	L	M	N	P	Q	R	S	T	U
	lv (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-522MUW8*	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								

Part No.	Rank	K	L	M	N	P	Q	R	S	T	U
	lv (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 $\pm 10\%$

●Taping [T86]



●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
Series name	Package type	Chip Type					Emitting Color		Resin Color		Taping Specifications
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 distributor 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.

1.DESIGNING OF PCB

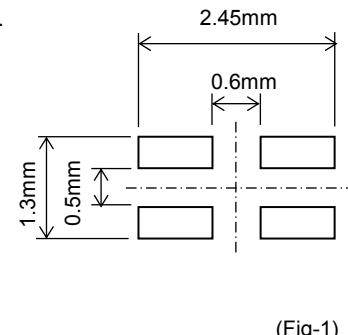
As for a recommendable solder pattern, Please refer to Fig-1.

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 is structured with rear/bottom electrode to be soldered.

The formation of solder fillet is not guaranteed due to its electrode shape.



(Fig-1)

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

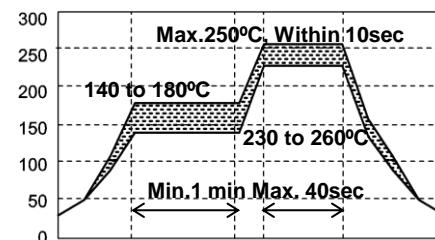
LED products do not contain reinforcement materials such as glass fillers.

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.



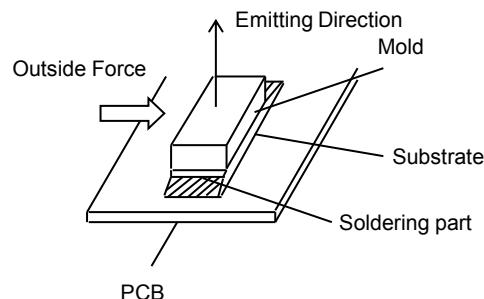
(Fig-2)

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 break 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 30°C, immersion time ; within 3 minutes.

4-3) ULTRA SONIC WASHING

Below 15/1 litter of solvent tub.

4-4) COOLING

Below 100°C 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 moisture 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 Products 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.
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