

●Features

- Reflector type (3.0×2.0mm, t=1.3mm)
- Reflector improved the concentration of viewing angle and luminous intensity to the front direction

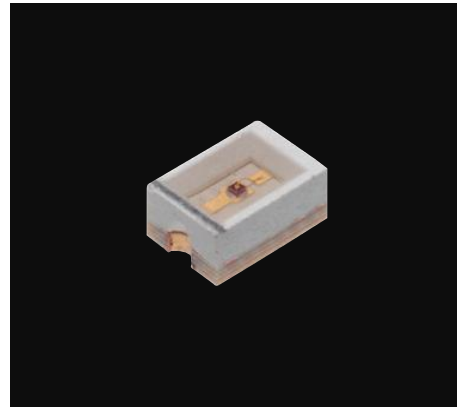
●Size

3020 (1208)
3.0 × 2.0mm (t=1.3mm)

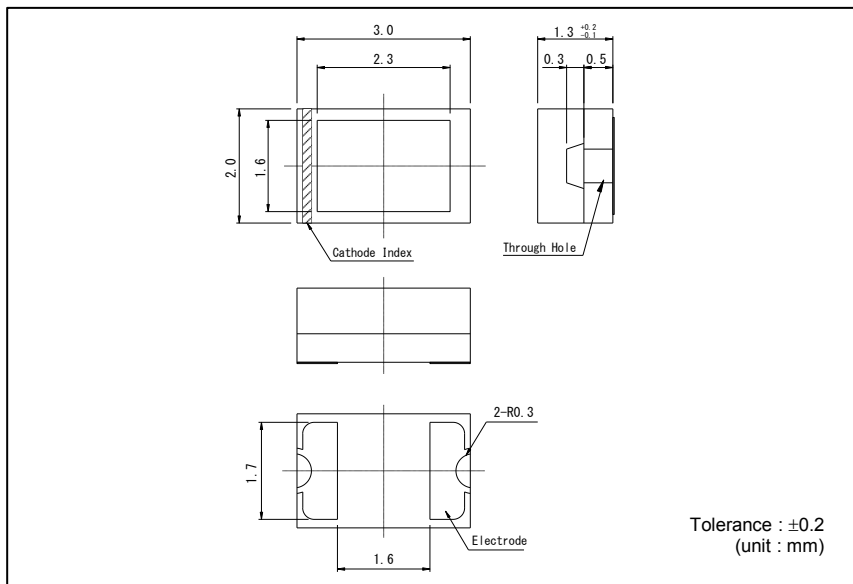
Color
Type



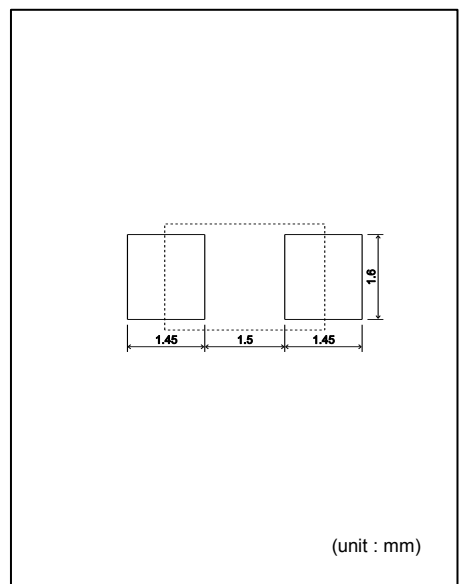
●Outline



●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		Reverse Current I _R		Dominant Wavelength λ _D			Luminous Intensity I _V			
									Typ. (V)	I _F (mA)	Max. (μA)	V _R (V)	Min. ⁺² (nm)	Typ. (nm)	Max. ⁺² (nm)	I _F (mA)	Min. (mcd)	Typ. (mcd)	I _F (mA)
SML-012VT(A)	AlGaInP on GaAs	Red	75	30	100 ^{*1}	5	-40 to +100	-40 to +100	2.0	20	10	5	626	630	636	20	35.5	71	20
SML-012V8T			54	20			-40 to +85		2.2				625	635	25		63		
SML-013UT			75	30			-30 to +85		2.0				619	624	629		90	220	
SML-012U8T			54	20			-40 to +85		2.2						40		100		
SML-012UT			75	30			-40 to +100		2.0				615	620	625		36	100	
SML-011UT															22		63		
SML-012D8T		Orange	54	20			-40 to +85		2.2								63	160	
SML-012DT			75	30			-40 to +100		2.0				602	605	608		36	100	
SML-011DT		Yellow															22	63	
SML-012Y8T			54	20			-40 to +85		2.2								40	100	
SML-013YT									2.1				587	590	593		100	250	
SML-012YT			75	30			-40 to +100		2.0								36	100	
SML-011YT																	22	63	
SML-012M8T		Yellowish Green																	
SML-012P8T		Green	54	20			-40 to +85		2.2				569	572	575		16	40	
SML-012PT(A)			62	25			60 ^{*1}		-40 to +100				2.1	558	560		564	9	

*1:Duty 1/10, 1kHz *2:Reference

●Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

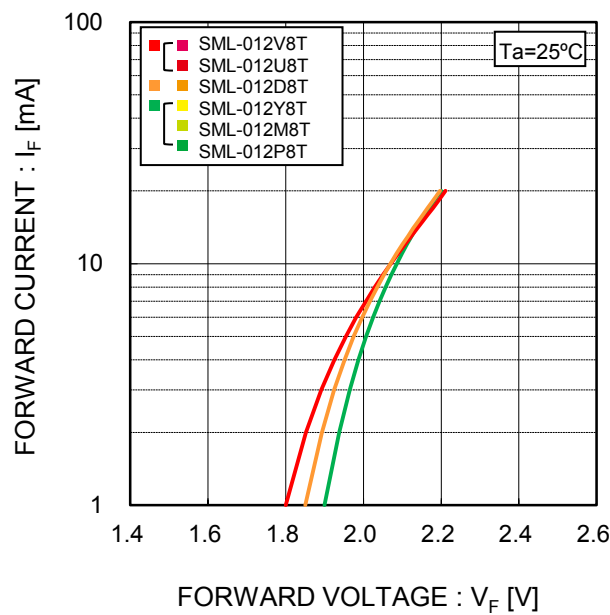


Fig.2 Luminous Intensity - Atmosphere Temperature

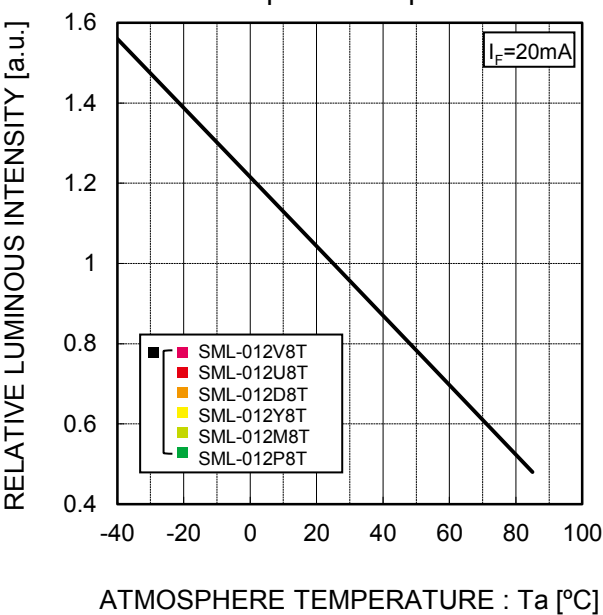


Fig.3 Luminous Intensity - Forward Current

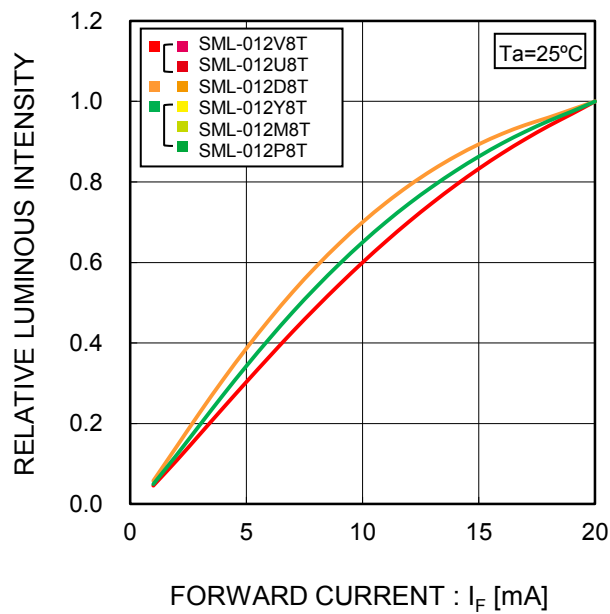
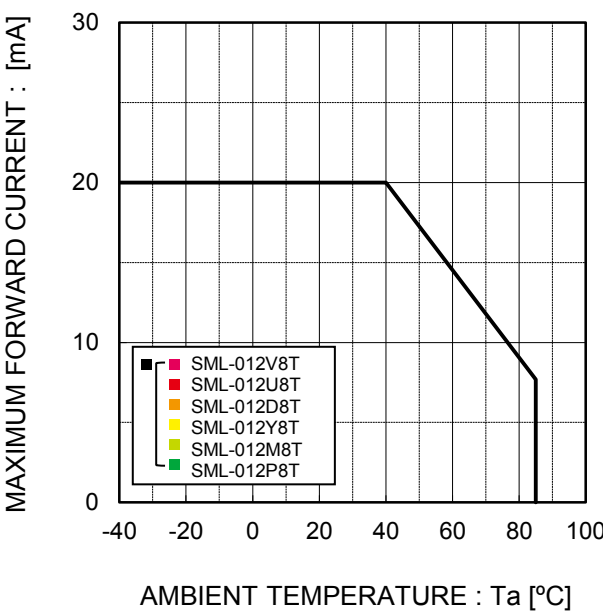


Fig.4 Derating



●Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

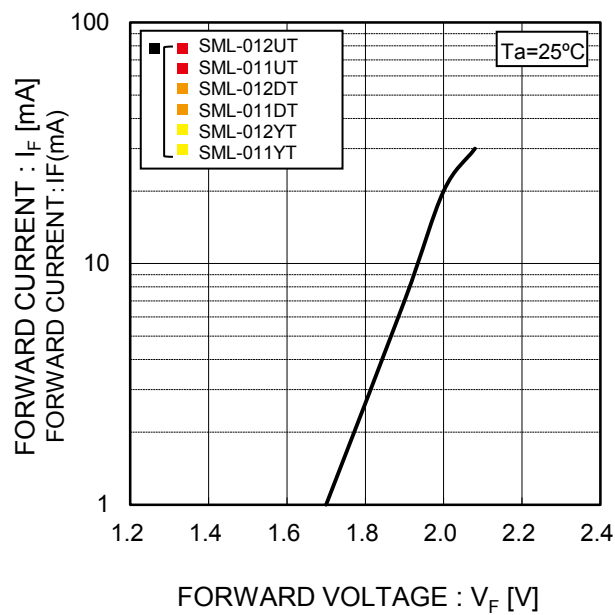


Fig.2 Luminous Intensity - Atmosphere Temperature

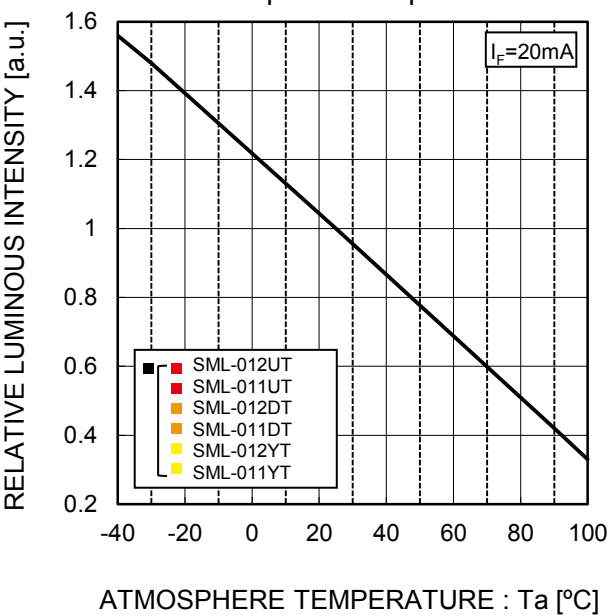


Fig.3 Luminous Intensity - Forward Current

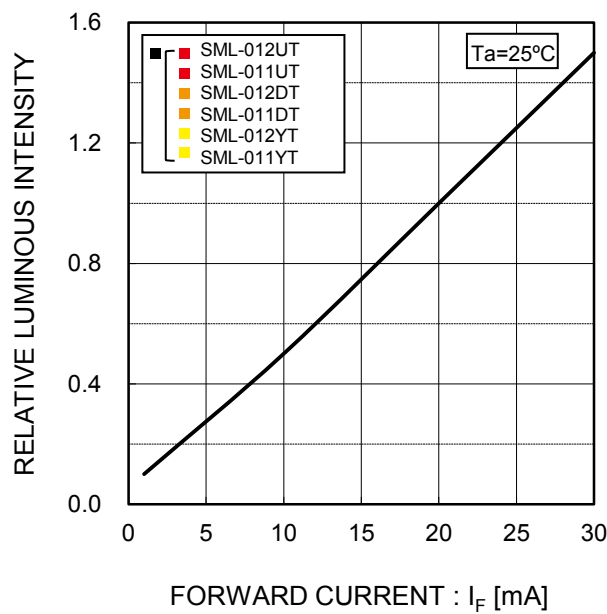
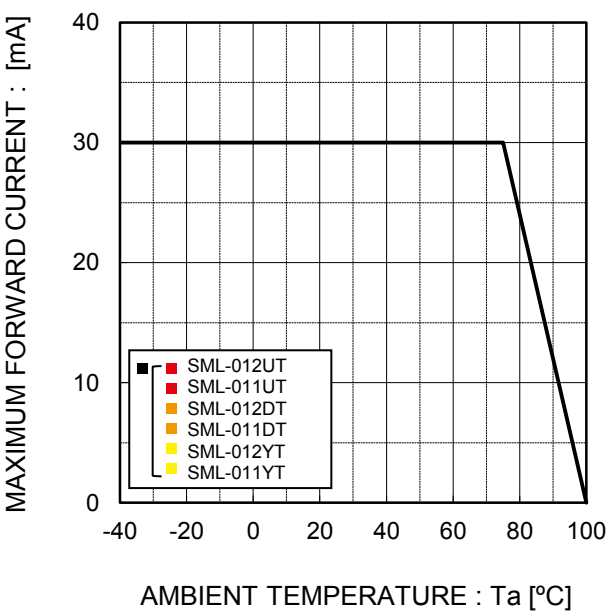


Fig.4 Derating



●Electrical Characteristics Curves

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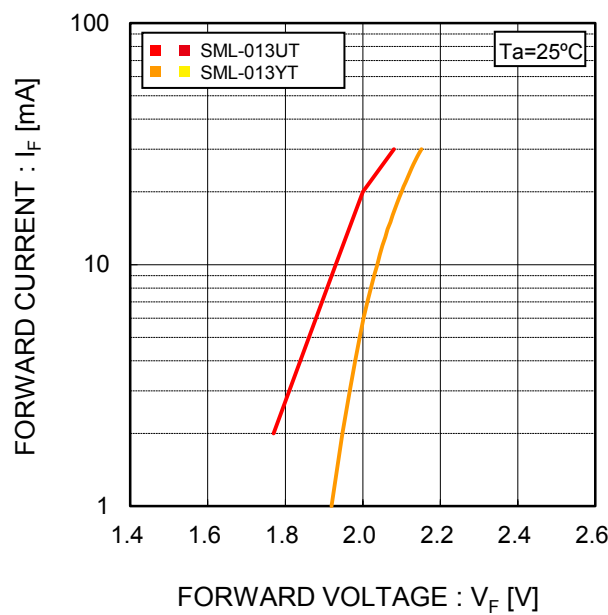


Fig.2 Luminous Intensity - Atmosphere Temperature

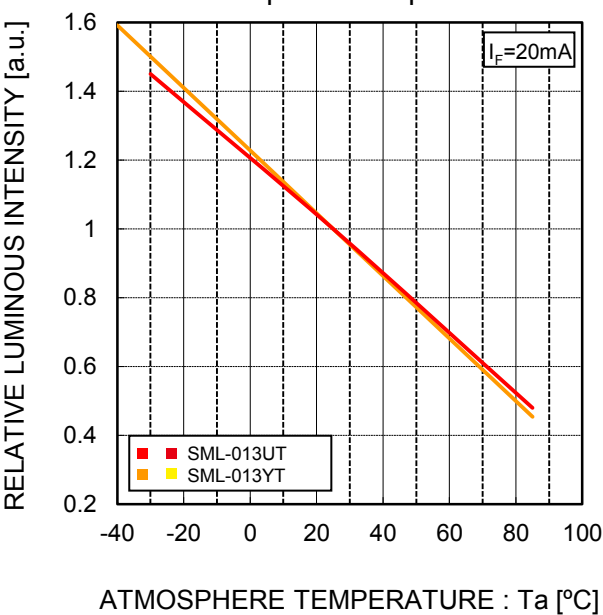


Fig.3 Luminous Intensity - Forward Current

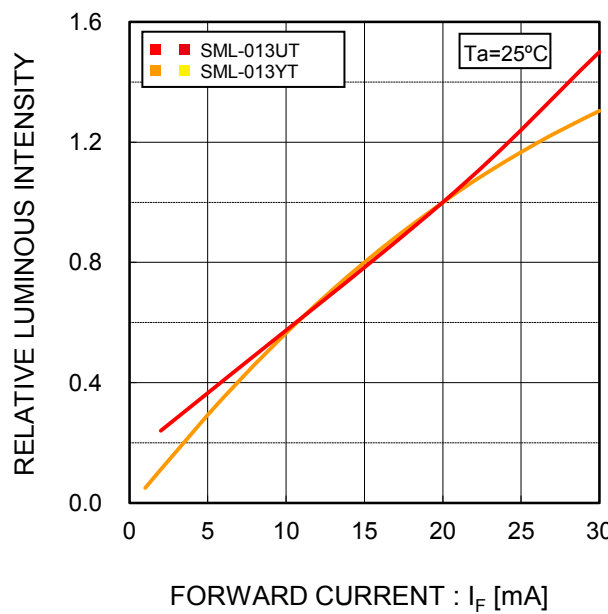
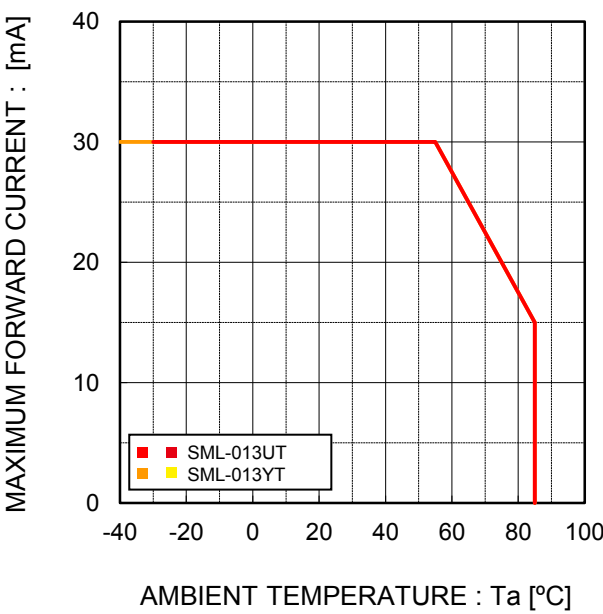


Fig.4 Derating



●Electrical Characteristics Curves

Fig.1 Forward Current - Forward Voltages

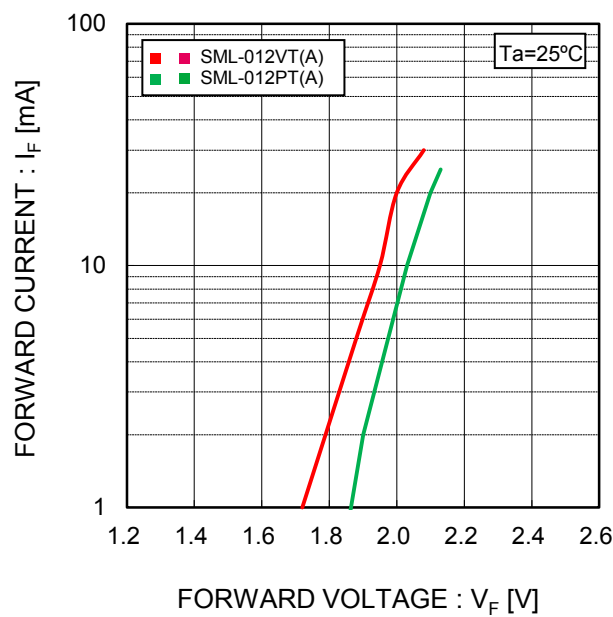


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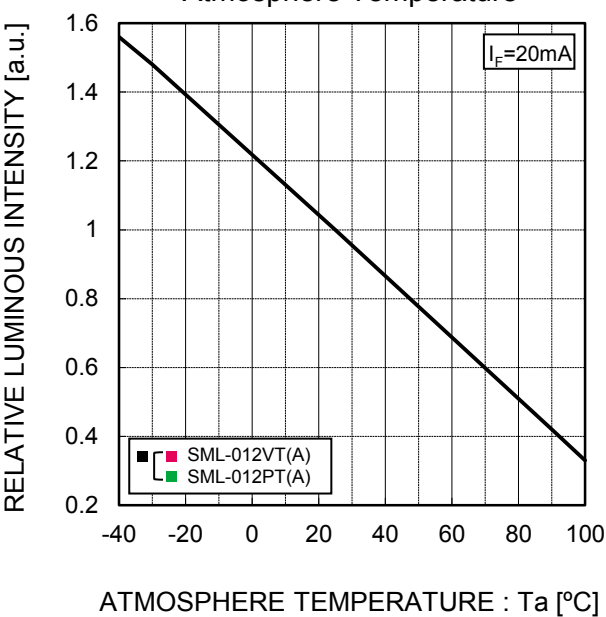


Fig.3 Luminous Intensity - Forward Current

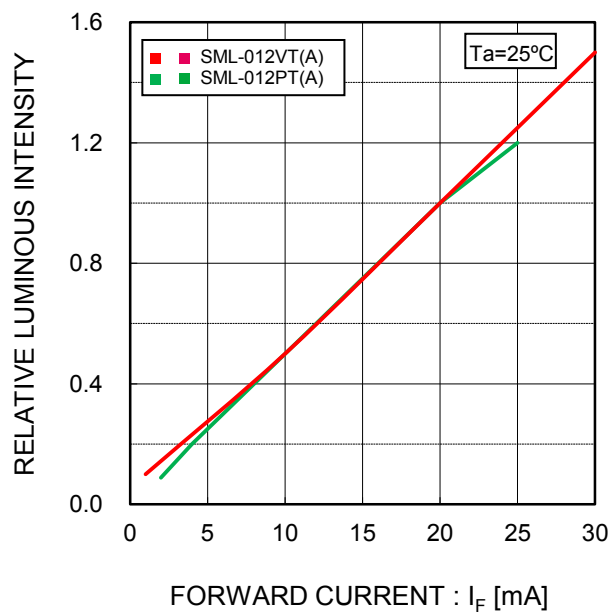
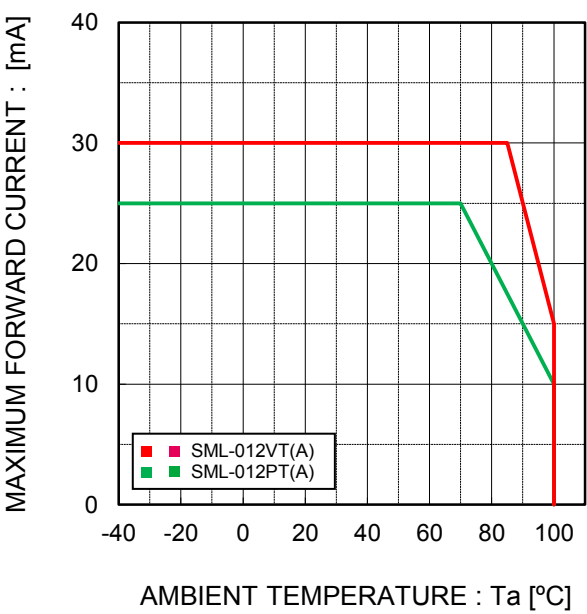
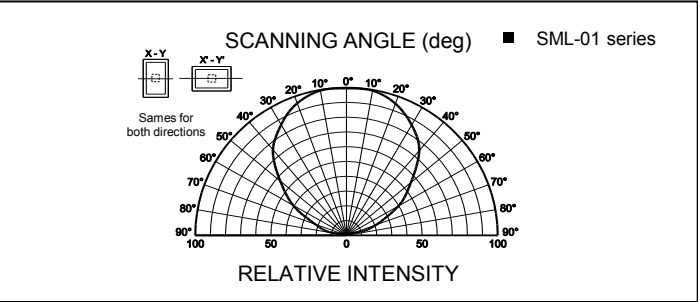


Fig.4 Derating



●Viewing Angle



●Rank Reference of Brightness

Red(V,U)

(Ta=25°C, If=20mA)

Rank	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
Iv (mcd)	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600
SML-012V8T														
SML-013UT														
SML-012U8T														
SML-012UT														
SML-011UT														

*Brightness on specification sheet include tolerance of within ±10%.

(Ta=25°C, If=20mA)

Rank	AG	AH	AJ	AK	AL	AM	AN	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
Iv (mcd)	9.0 to 11.2	11.2 to 14	14 to 18	18 to 22.4	22.4 to 28	28 to 35.5	35.5 to 45	45 to 56	56 to 71	71 to 90	90 to 112	112 to 140	140 to 180	180 to 224	224 to 280	280 to 355	355 to 450	450 to 560
SML-012VT(A)																		

*Please note that the brightness of some products may fall between ranks (half rank)

Orange(D)

(Ta=25°C, If=20mA)

Rank	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
Iv (mcd)	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600
SML-011DT														
SML-012D8T														
SML-012DT														

*Brightness on specification sheet include tolerance of within ±10%.

Yellow(Y)

(Ta=25°C, If=20mA)

Rank	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
Iv (mcd)	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600
SML-011YT														
SML-012Y8T														
SML-012YT														
SML-013YT														

*Brightness on specification sheet include tolerance of within ±10%.

Green(M,P)

(Ta=25°C, If=20mA)

Rank	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
Iv (mcd)	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600
SML-012M8T														
SML-012P8T														

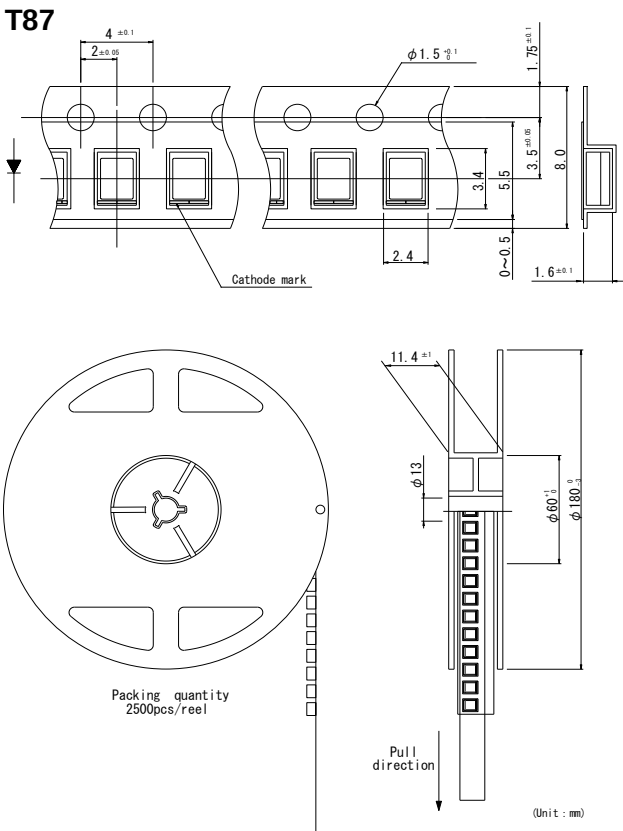
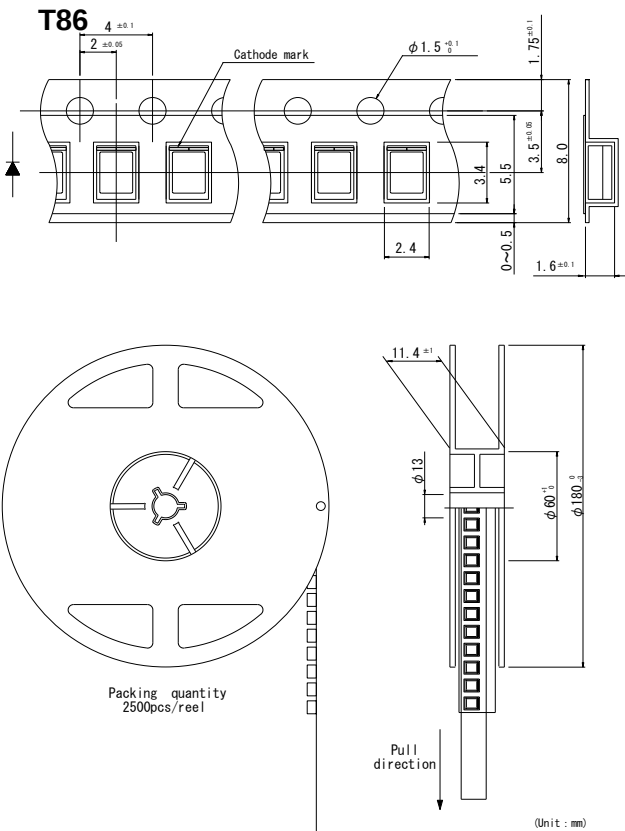
*Brightness on specification sheet include tolerance of within ±10%.

(Ta=25°C, If=20mA)

Rank	AG	AH	AJ	AK	AL	AM	AN	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
Iv (mcd)	9.0 to 11.2	11.2 to 14	14 to 18	18 to 22.4	22.4 to 28	28 to 35.5	35.5 to 45	45 to 56	56 to 71	71 to 90	90 to 112	112 to 140	140 to 180	180 to 224	224 to 280	280 to 355	355 to 450	450 to 560
SML-012PT(A)																		

*Please note that the brightness of some products may fall between ranks (half rank)

●Taping



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

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unless otherwise specified

●Part No. Construction

Special Code will be applied for Emitting color W/B/E series.

(Special Code)

S M L — **0 1 2** **U** **8** **T** **T** **8** **6** **A** **P**

Series name Package type Chip Type Emitting Color Resin Color Taping Specifications Rank sign (Brightness Rank)*

1	Low Current Type	V	Red:630nm	T	Transparent Colorless	T86	Cathode at sprocket hole side
2	High Brightness Type	U	Red:620nm	W	MilkyWhite	T87	Reverse of T86
3	Ultra High Brightness Type	D	Orange:605nm			1	For white LED, cathode at sprocket hole side
		Y	Yellow:587(590)nm				
		M	Yellowish-Green:572nm				
		P	Green:560nm				

* 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

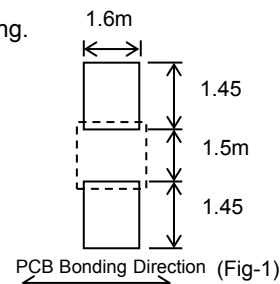
This product was developed as a surface mount LED especially suitable for reflow soldering.
Please take care of following points when using this device.

1.DESIGNING OF PCB

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

The size and direction of the pad pattern depends 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.MOUNTING

This LED was designed to fit various mounting machines.

A round type nozzle is recommended for a hollow lens surface.

3.SOLDERING

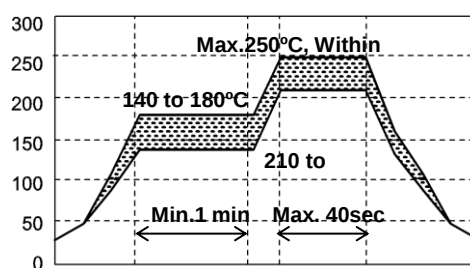
LED products do not contain reinforcement materials such as glass fillers.

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)

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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