

# SML-E1 Series

1608(0603)  
1.6×0.8mm(t=0.36mm)

### Features

- EXCELED™ series
- Compact, Thin size (1.6×0.8mm, t=0.36mm)
- LED die consists of 4 elements
- Original device technology enables high brightness and high reliability

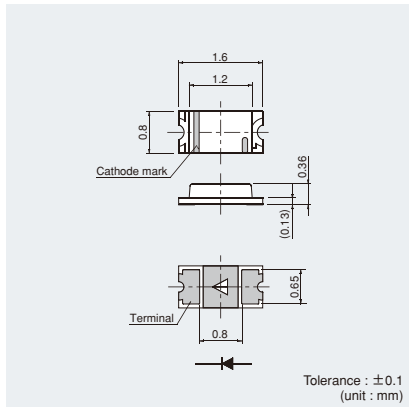


### Specifications

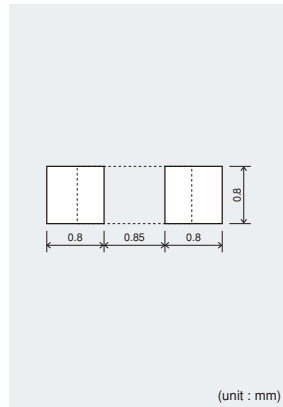
Part No.	Chip Structure	Emitting Color	Absolute Maximum Ratings (Ta=25°C)						Electrical and Optical Characteristics (Ta=25°C)									
			Power Dissipation Pd (mW)	Forward Current If (mA)	Peak Forward Current Ifp (mA)	Reverse Voltage Vr (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	Forward Voltage V <sub>F</sub> (V)	Reverse Current I <sub>R</sub> (μA)	Dominant Wavelength λ <sub>D</sub> (nm)			Luminous Intensity I <sub>v</sub> (mcd)				
<b>SML-E12V8W</b>	AlGaInP on GaAs	Red	54	20	100* <sup>2</sup>	5	-40 to +85	-40 to +100	2.2	20	4	625	630	635	20	16	40	
<b>SML-E12UW</b>			62	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	2.1			619	624	629		36	100	
<b>SML-E12U8W</b>			54	20	100* <sup>2</sup>	5	-40 to +85	-40 to +100	2.2			615	620	625		25	63	
<b>SML-E12DW</b>	AlGaInP on GaAs	Orange	62	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	1.9	20	4	603.5	606.5	609.5	20	56	200	
<b>SML-E12D8W</b>			62	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	1.9			602	605	608		40	100	
<b>SML-E12Y8W</b>			54	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	2.2			587	590	593		25	63	
<b>SML-E12M8W</b>	AlGaInP on GaAs	Yellowish Green	54	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	2.2	20	4	569	572	575	20	10	25	
<b>SML-E12P8W</b>			54	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	2.2			557	560	563		2.5	6.3	
<b>SML-E12B8W</b>			54	25	60* <sup>1</sup>	4	-30 to +85	-40 to +85	2.2			465	470	475		14	40	
<b>SMLE13EC8T</b>	InGaN	Bluish Green	68	20	100* <sup>2</sup>	5	-40 to +85	-40 to +100	3.0	5	5	520	527	535	5	56	120	
<b>SMLE12EC6T</b>							-30 to +85	-40 to +100	3.0			465	470	475		36	85	
<b>SMLE13BC8T</b>							-40 to +85	-40 to +100	2.9			465	470	475		14	40	
<b>SMLE12BC7T</b>	InGaN	Blue	66	20	100* <sup>2</sup>	5	-30 to +85	-40 to +100	2.9	5	5	464	476	5	9	22		
							-30 to +85	-40 to +100	2.9			464	476		9	22		

\* 1:Duty1/5, 200Hz / \* 2:Duty1/10, 1kHz \* 3:Reference

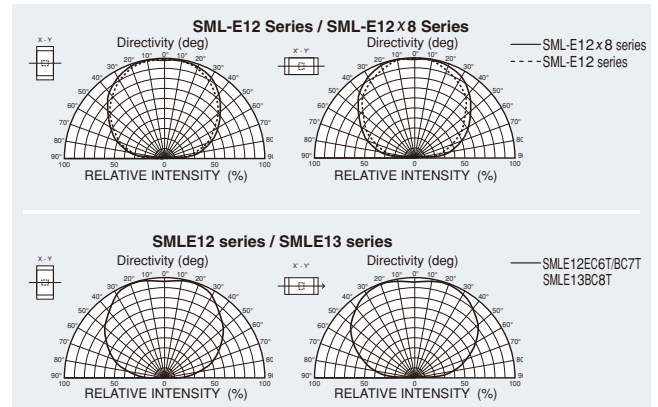
### Dimensions



### Recommended Solder Pattern



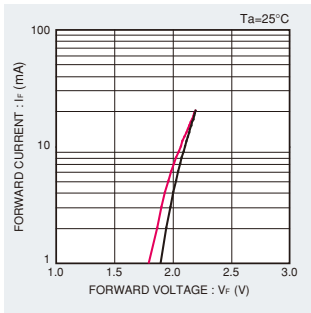
### Viewing Angle



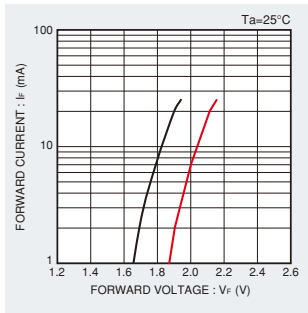
\* EXCELED™ is ROHM's pending trademark.

## Electrical Characteristics Curves

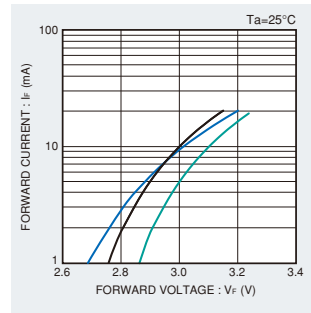
### Forward Current-Forward Voltage



- SML-E12V8W
- SML-E12U8W
- SML-E12D8W
- SML-E12Y8W
- SML-E12M8W
- SML-E12P8W

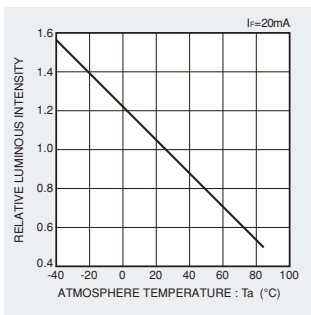


- SML-E12UW
- SML-E12DW

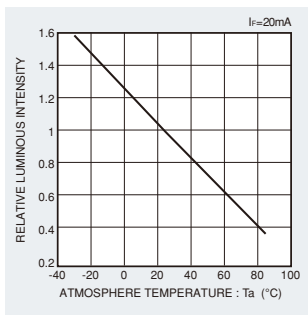


- SMLE12EC6T
- SMLE12BC8T
- SMLE12BC7T
- SMLE13BC8T

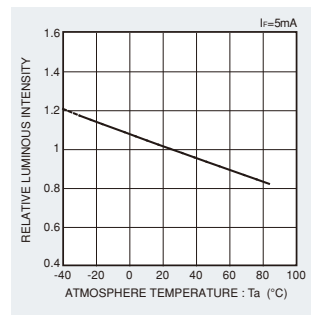
### Luminous Intensity-Atmosphere Temperature



- SML-E12V8W
- SML-E12U8W
- SML-E12D8W
- SML-E12Y8W
- SML-E12M8W
- SML-E12P8W

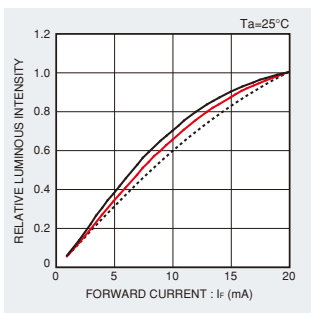


- SML-E12UW
- SML-E12DW

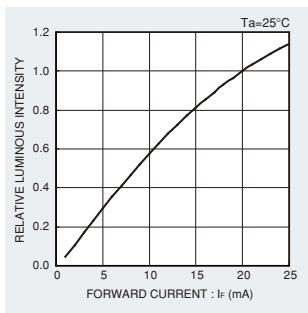


- SMLE12EC6T
- SMLE12BC7T
- SMLE12BC8T
- SMLE13BC8T

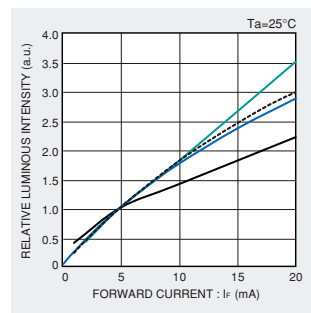
### Luminous Intensity-Forward Current



- SML-E12V8W
- SML-E12U8W
- SML-E12D8W
- SML-E12P8W
- SML-E12Y8W
- SML-E12M8W

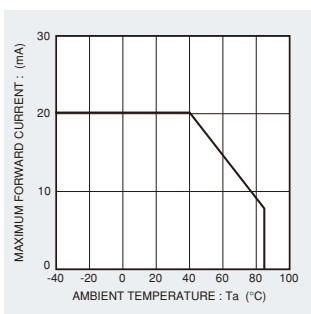


- SML-E12UW
- SML-E12DW

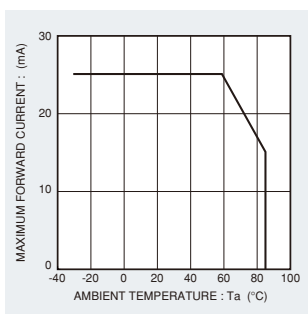


- SMLE12EC6T
- SMLE12BC8T
- SMLE12BC7T
- SMLE13BC8T

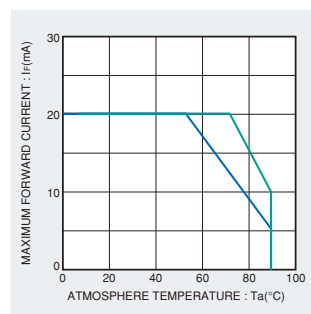
### Derating



- SML-E12V8W
- SML-E12U8W
- SML-E12D8W
- SML-E12Y8W
- SML-E12M8W
- SML-E12P8W



- SML-E12UW
- SML-E12DW



- SMLE12EC6T
- SMLE12BC7T
- SMLE12BC8T
- SMLE13BC8T

# SML-E1 Series

## Rank Reference of Brightness

### Red (V, U)

(Ta=25°C, If=20mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	
			1.0 to 1.6	1.6 to 2.5	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	
Mini-mold Chip LEDs	1608	0.36	SML-E12V8W																
			SML-E12U8W																
			SML-E12UW*																

### Orange (D)

(Ta=25°C, If=20mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	
			1.0 to 1.6	1.6 to 2.5	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	
Mini-mold Chip LEDs	1608	0.36	SML-E12DW*																
			SML-E12D8W																

### Yellow (Y)

(Ta=25°C, If=20mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	
			1.0 to 1.6	1.6 to 2.5	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	
Mini-mold Chip LEDs	1608	0.36	SML-E12Y8W																

### Green (M, P)

(Ta=25°C, If=20mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
			0.63 to 1.0	1.0 to 1.6	1.6 to 2.5	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 1800
Mini-mold Chip LEDs	1608	0.36	SML-E12P8W																
			SML-E12M8W																

### Bluish-Green (E)

(Ta=25°C, If=5mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
			3.6 to 5.6	5.6 to 9.0	9.0 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 2200	2200 to 3600
Mini-mold Chip LEDs	1608	0.36	SMLE12EC6T														
			SMLE13EC8T														

### Blue (B)

(Ta=25°C, If=5mA)

Package size(mm)	Height(mm)	Luminous Intensity (mcd)	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
			3.6 to 5.6	5.6 to 9.0	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 2200	2200 to 3600
Mini-mold Chip LEDs	1608	0.36	SMLE12BC7T														
			SMLE13BC8T														

※Measurement tolerance ± 10%.

## Part No. Explanation

\* "-" will be taken out for emitting color B/E series.

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



2	High Brightness Type	V	Red:630nm	T	Type Transparent Colorless	T86	Cathode at sprocket hole side
3		U	Red:620nm	W	MilkyWhite	T87	Reverse of T86
		D	Orange:605nm				
		Y	Yellow:587(590)nm				
		M	Yellowish-Green:572nm				
		P	Green:560nm				
		E	Bluish-Green:527nm				
		B	Blue:470nm				

- \* 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.

## 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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