

# SML-01 Series

3020 (1208)  
3.0 × 2.0mm (t=1.3mm)

### Features

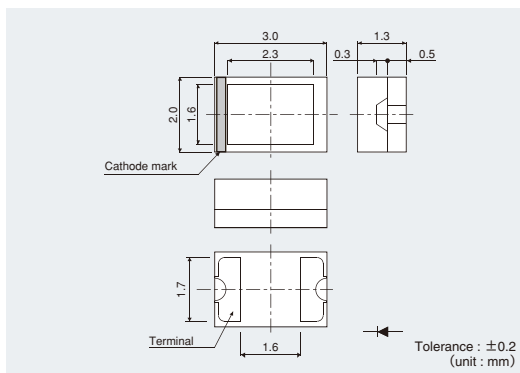
- Reflector type (3.0 × 2.0mm, t=1.3mm)
- Reflector improved the concentration of viewing angle and luminous intensity to the front direction



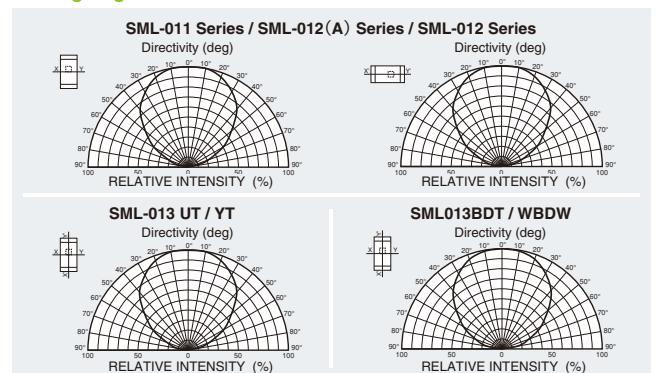
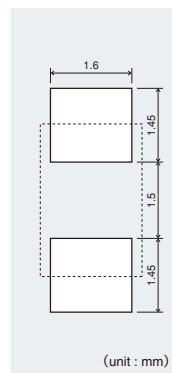
### Specifications

| 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) |      |     |     |    |
| ■ SML-012VT(A) | AlGaInP on GaAs | Red             | 75                                 | 30                      |                               |                        | -40 to +100                     |  |                                    |                                     |   | 626                 | 630 | 636                                     | 35.5 | 71  |     |    |
| ■ 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    |                 |                 |                                    |                         |                               |                        | -40 to +100                     |  |                                    |                                     |   |                     |     |   | 22   | 63  |     |    |
| ■ SML-012D8T   |                 |                 |                                    |                         | 54                            | 20                     |                                 | -40 to +85                                       | 2.2                                |                                     |   |                     |     |   | 63   | 160 |     |    |
| ■ SML-012DT    |                 |                 |                                    | Orange                  |                               |                        | 100*1                           |  |                                    |                                     |   |                     | 602 | 605                                     | 608  | 36  | 100 |    |
| ■ SML-011DT    |                 |                 | 75                                 | 30                      |                               | -40 to +100            | 2.0                             | 10   |                                    |                                     |   |                     | 22  | 63                                      |      |     |     |    |
| ■ SML-012WT(A) |                 |                 |                                    |                         |                               |                        |                                 |  |                                    |                                     |   |                     | 140 | 280                                     |      |     |     |    |
| ■ SML-012Y8T   |                 |                 | 54                                 | 20                      |                               | -40 to +85             | 2.2                             |  |                                    |                                     |   |                     | 40  | 100                                     |      |     |     |    |
| ■ SML-013YT    |                 | Yellow          |                                    |                         |                               | 5                      | -40 to +85                      | -40 to +100                                      | 2.1                                | 20                                  | 5                                       | 587                 | 590 | 593                                     | 20   | 100 | 250 | 20 |
| ■ SML-012YT    |                 |                 | 75                                 | 30                      |                               |                        | -40 to +100                     | 2.0  |                                    |                                     |   |                     |     | 36                                      | 100  |     |     |    |
| ■ SML-011YT    |                 |                 |                                    |                         |                               |                        | -40 to +100                     |  |                                    |                                     |   |                     |     | 22                                      | 63   |     |     |    |
| ■ SML-012M8T   |                 | Yellowish Green | 54                                 | 20                      |                               |                        | -40 to +85                      | 2.2  |                                    |                                     |   | 569                 | 572 | 575                                     | 16   | 40  |     |    |
| ■ SML-012P8T   |                 | Green           |                                    |                         |                               |                        | -40 to +85                      |  |                                    |                                     |   | 557                 | 560 | 563                                     | 2.5  | 6.3 |     |    |
| ■ SML-012PT(A) |                 |                 | 62                                 | 25                      | 60*1                          |                        | -40 to +100                     | 2.1  |                                    |                                     |   | 558                 | 564 | 9                                       | 18   |     |     |    |
| ■ SML012ECT    |                 | Bluish Green    | 84                                 |                         |                               |                        |                                 | 3.3  |                                    |                                     |   | 520                 | 525 | 535                                     | 140  | 360 |     |    |
| ■ SML012EC4T   |                 |                 |                                    |                         |                               |                        |                                 | 3.2  |                                    |                                     |   |                     |     | 56                                      | 140  |     |     |    |
| ■ SML013BDT    | InGaN           | Blue            | 78                                 | 20                      | 100*1                         |                        | -30 to +85                      |  |                                    | 100                                 |   |                     |     | 90                                      | 250  |     |     |    |
| ■ SML012BCT    |                 |                 |                                    |                         |                               |                        |                                 | 3.3  |                                    |                                     |   | 465                 | 470 | 475                                     | 36   | 100 |     |    |
| ■ SML012BC4T   |                 |                 | 84                                 |                         |                               |                        |                                 |  | 3.2                                |                                     |   |                     |     |   | 22   | 36  |     |    |
| □ SML013WBDW   |                 | White           |                                    |                         |                               |                        |                                 |  |                                    |                                     |   | (x, y) (0.30, 0.30) |     | 360                                     | 900  |     |     |    |

### Dimensions



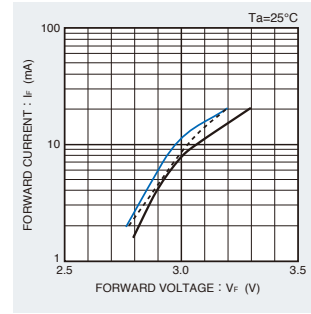
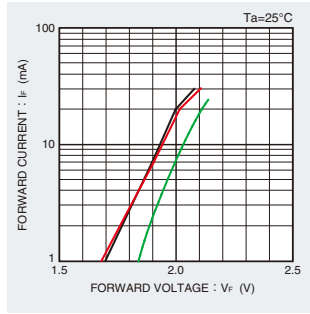
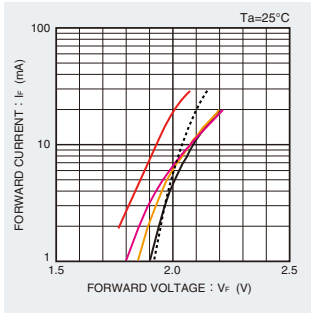
### Recommended Solder Pattern Viewing Angle



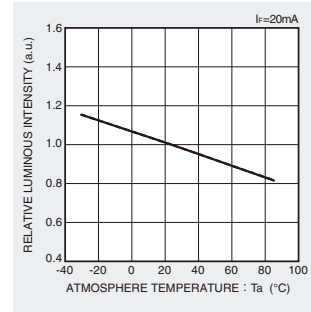
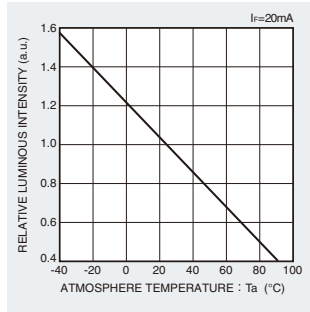
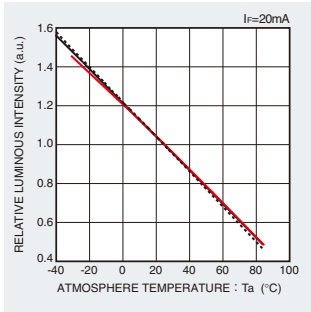
\* 1:Duty1/10, 1kHz / \* 2:Reference

Electrical Characteristics Curves

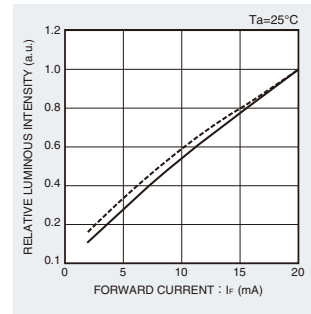
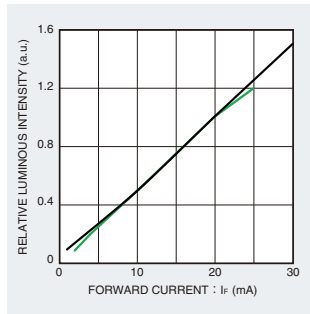
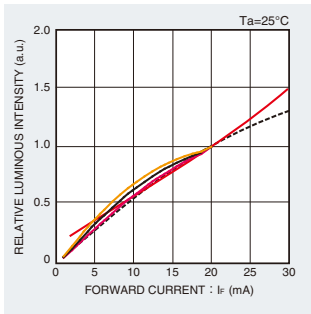
Forward Current-Forward Voltage



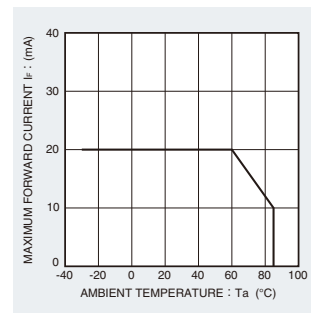
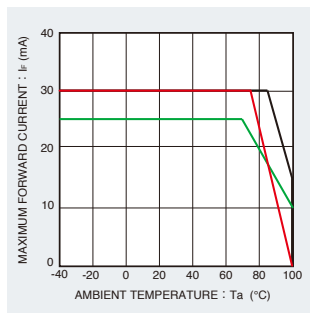
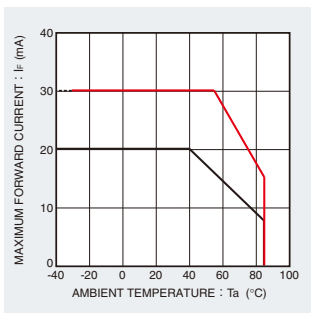
Luminous Intensity-Atmosphere Temperature



Luminous Intensity-Forward Current



Derating



# SML-01 series

## Rank Reference of Brightness

### Red (V, U)

(Ta=25°C, If=20mA)

| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | J          | K          | L         | M        | N        | P        | Q        | R         | S          | T          | U          | V          | W           | X            |  |
|--------------------------|------------|--------------------------|------------|------------|-----------|----------|----------|----------|----------|-----------|------------|------------|------------|------------|-------------|--------------|--|
|                          |            |                          | 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 |  |
| Chip LEDs with reflector | 3020       | 1.3                      | SML-012V8T |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-013UT  |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012U8T |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012UT* |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
| SML-011UT*               |            |                          |            |            |           |          |          |          |          |           |            |            |            |            |             |              |  |

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

### Orange (D)

(Ta=25°C, If=20mA)

| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | J          | K          | L         | M        | N        | P        | Q        | R         | S          | T          | U          | V          | W           | X            |  |
|--------------------------|------------|--------------------------|------------|------------|-----------|----------|----------|----------|----------|-----------|------------|------------|------------|------------|-------------|--------------|--|
|                          |            |                          | 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 |  |
| Chip LEDs with reflector | 3020       | 1.3                      | SML-011DT* |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012D8T |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012DT* |            |           |          |          |          |          |           |            |            |            |            |             |              |  |

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

### Yellow (Y)

(Ta=25°C, If=20mA)

| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | J          | K          | L         | M        | N        | P        | Q        | R         | S          | T          | U          | V          | W           | X            |  |
|--------------------------|------------|--------------------------|------------|------------|-----------|----------|----------|----------|----------|-----------|------------|------------|------------|------------|-------------|--------------|--|
|                          |            |                          | 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 |  |
| Chip LEDs with reflector | 3020       | 1.3                      | SML-011YT* |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012Y8T |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012YT* |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-013YT  |            |           |          |          |          |          |           |            |            |            |            |             |              |  |

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

### Green (M, P, E)

(Ta=25°C, If=20mA)

| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | J           | K          | L         | M        | N        | P        | Q        | R         | S          | T          | U          | V          | W           | X            |  |
|--------------------------|------------|--------------------------|-------------|------------|-----------|----------|----------|----------|----------|-----------|------------|------------|------------|------------|-------------|--------------|--|
|                          |            |                          | 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 |  |
| Chip LEDs with reflector | 3020       | 1.3                      | SML-012P8T  |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML-012M8T  |            |           |          |          |          |          |           |            |            |            |            |             |              |  |
|                          |            |                          | SML012EC4T* |            |           |          |          |          |          |           |            |            | SML012ECT* |            |             |              |  |

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

### Blue (B)

(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          |
|--------------------------|------------|--------------------------|------------|------------|------------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|------------|------------|
|                          |            |                          | 0.9 to 1.4 | 1.4 to 2.2 | 2.2 to 3.6 | 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 |
| Chip LEDs with Reflector | 3020       | 1.3                      | SML012BC4T |            |            |            |            |         |          |          |          |          |           |            |            |            |            |
|                          |            |                          | SML012BCT  |            |            |            |            |         |          |          |          |          |           |            |            |            |            |
|                          |            |                          | SML013BDT  |            |            |            |            |         |          |          |          |          |           |            |            |            |            |

### White (WB)

(Ta=25°C, If=5mA)

| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | P          | Q        | R        | S         | T          | U          | V          | W          | X1          | X2           | Y1           | Y2           | Z1           |
|--------------------------|------------|--------------------------|------------|----------|----------|-----------|------------|------------|------------|------------|-------------|--------------|--------------|--------------|--------------|
|                          |            |                          | 25 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 1100 | 1100 to 1400 | 1400 to 1800 | 1800 to 2200 | 2200 to 2800 |
| Chip LEDs with reflector | 3020       | 1.3                      | SML013WBDW |          |          |           |            |            |            |            |             |              |              |              |              |

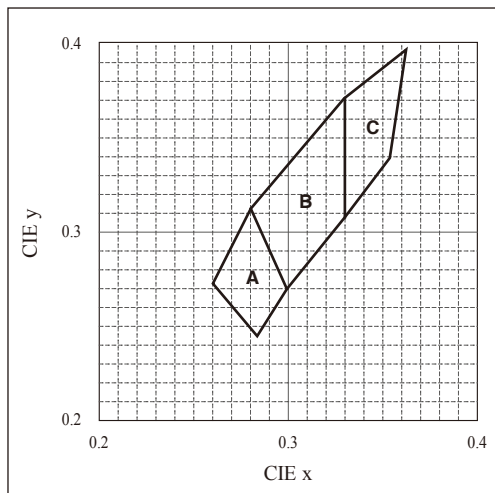
### SML-012(A)

(Ta=25°C, If=20mA)

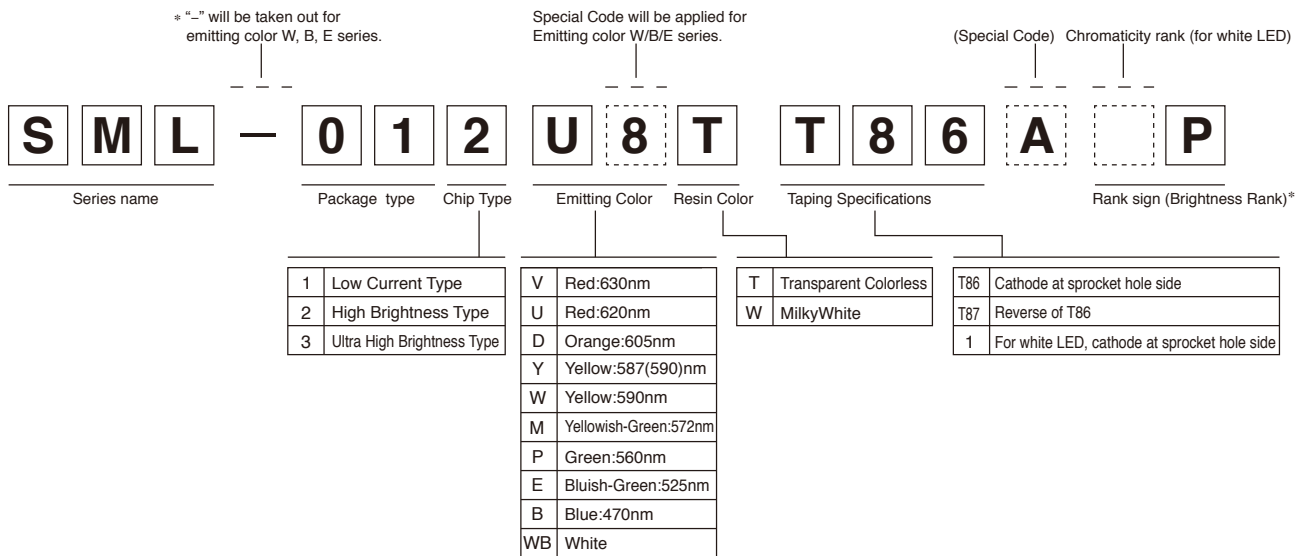
| Package size(mm)         | Height(mm) | Luminous Intensity (mcd) | AG            | AH         | AJ       | AK         | AL         | AM         | AN         | AP       | AQ       | AR       | AS            | AT         | AU         | AV         | AW         | AX         | AY         | AZ         |
|--------------------------|------------|--------------------------|---------------|------------|----------|------------|------------|------------|------------|----------|----------|----------|---------------|------------|------------|------------|------------|------------|------------|------------|
|                          |            |                          | 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 |
| Chip LEDs with Reflector | 3020       | 1.3                      | SML-012PT(A)* |            |          |            |            |            |            |          |          |          |               |            |            |            |            |            |            |            |
|                          |            |                          | SML-012VT(A)  |            |          |            |            |            |            |          |          |          | SML-012WT(A)* |            |            |            |            |            |            |            |

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

## Chromaticity Diagram (White)



## Part No. Construction



- \* 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.

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