

# Small, chip LEDs

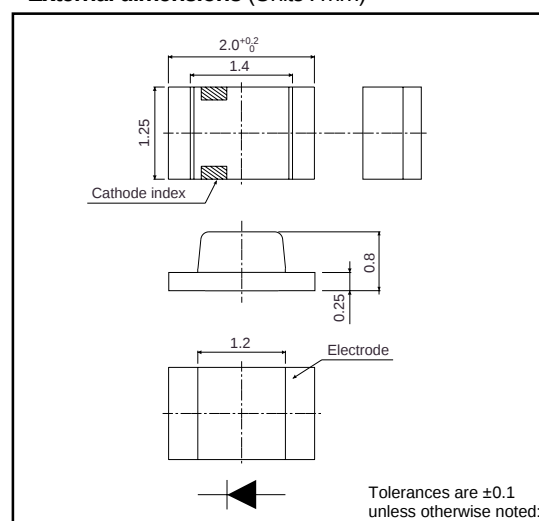
## SML-210 Series

The SLM-210 series are small, chip LEDs. The compact and leadless design of these LEDs allows for high mounting density.

### ●Features

- 1) Four colors: red, orange, yellow and green.
- 2) Rectangular and leadless (2 x 2.5 mm, 0.8 mm thick)
- 3) Can be mounted by automatic mounting.

### ●External dimensions (Units : mm)



### ●Selection guide

| Emitting color    | Red       | Orange    | Yellow    | Green     |
|-------------------|-----------|-----------|-----------|-----------|
| Lens              |           |           |           |           |
| Transparent clear | SML-210JT | SML-210DT | SML-210YT | SML-210MT |
|                   | SML-210LT | -         | -         | SML-210FT |
|                   | SML-210VT | -         | -         | SML-210PT |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter             | Symbol           | Limits            |              | Unit |
|-----------------------|------------------|-------------------|--------------|------|
|                       |                  | Bright red (L, J) | Other colors |      |
| Power dissipation     | P <sub>D</sub>   | 75                | 70           | mW   |
| Forward current       | I <sub>F</sub>   | 30                | 25           | mA   |
| Peak forward current  | I <sub>FP</sub>  | 75                | 60           | mA*  |
| Reverse voltage       | V <sub>R</sub>   | 4                 |              | V    |
| Operating temperature | T <sub>opr</sub> | -30~+85           |              | °C   |
| Storage temperature   | T <sub>stg</sub> | -40~+85           |              | °C   |

\* Pulse width 1ms Duty 1 / 5

## LED lamps

### ●Electrical and optical characteristics (Ta=25°C)

| Type    | Parameter | Color  | Forward voltage    |      |                     | Reverse current     |                    | Luminous intensity   |      |                     | Peak wavelength     |                     | Spectral line half width |                     |
|---------|-----------|--------|--------------------|------|---------------------|---------------------|--------------------|----------------------|------|---------------------|---------------------|---------------------|--------------------------|---------------------|
|         |           |        | V <sub>F</sub> (V) |      | Cond.               | I <sub>R</sub> (μA) | Cond.              | I <sub>V</sub> (mcd) |      | Cond.               | λ <sub>P</sub> (nm) | Cond.               | Δλ(nm)                   | Cond.               |
|         |           |        | Typ.               | Max. | I <sub>F</sub> (mA) | Max.                | V <sub>R</sub> (V) | Min.                 | Typ. | I <sub>F</sub> (mA) | Typ.                | I <sub>F</sub> (mA) | Typ.                     | I <sub>F</sub> (mA) |
| SML-210 | JT        | Red    | 1.9                | 2.5  | 20                  | 100                 | 4                  | 14.0                 | 40.0 | 20                  | 660                 | 20                  | 25                       | 20                  |
|         | LT        | Red    | 1.75               | 2.5  | 20                  | 100                 | 4                  | 3.6                  | 10.0 | 20                  | 660                 | 20                  | 25                       | 20                  |
|         | VT        | Red    | 2.0                | 2.8  | 20                  | 100                 | 4                  | 1.4                  | 4.0  | 20                  | 650                 | 20                  | 40                       | 20                  |
|         | DT        | Orange | 2.0                | 2.8  | 20                  | 100                 | 4                  | 2.2                  | 6.3  | 20                  | 610                 | 20                  | 40                       | 20                  |
|         | YT        | Yellow | 2.1                | 2.8  | 20                  | 100                 | 4                  | 2.2                  | 6.3  | 20                  | 585                 | 20                  | 40                       | 20                  |
|         | MT        | Green  | 2.2                | 2.8  | 20                  | 100                 | 4                  | 3.6                  | 16.0 | 20                  | 570                 | 20                  | 40                       | 20                  |
|         | FT        | Green  | 2.2                | 2.8  | 20                  | 100                 | 4                  | 1.4                  | 6.3  | 20                  | 560                 | 20                  | 40                       | 20                  |
|         | PT        | Green  | 2.2                | 2.8  | 20                  | 100                 | 4                  | 1.4                  | 4.0  | 20                  | 555                 | 20                  | 40                       | 20                  |

### ●Directional pattern

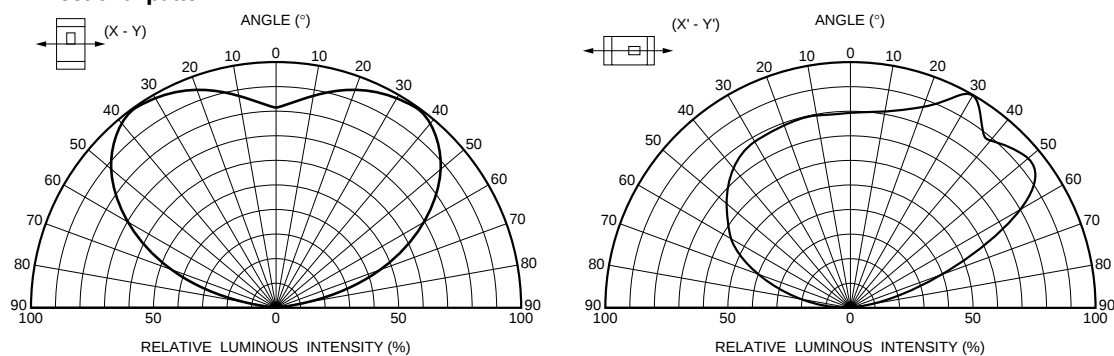


Fig.1 Directional pattern

### ●Electrical characteristics curves 1 (SML-210LT, SML-210JT) (Bright red)

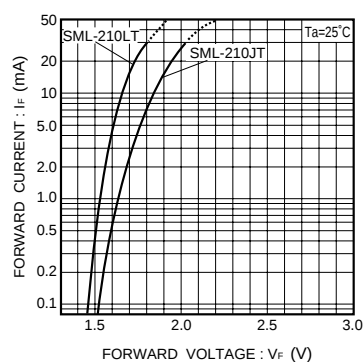


Fig. 2 Forward current vs. forward voltage

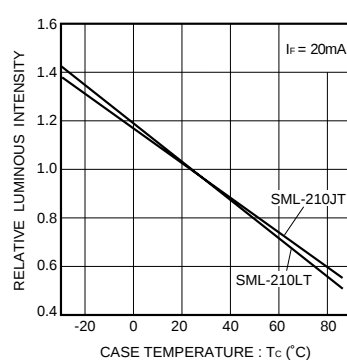


Fig. 3 Luminous intensity vs. case temperature

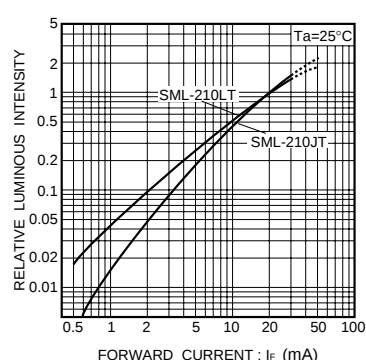


Fig. 4 Luminous intensity vs. forward current

## LED lamps

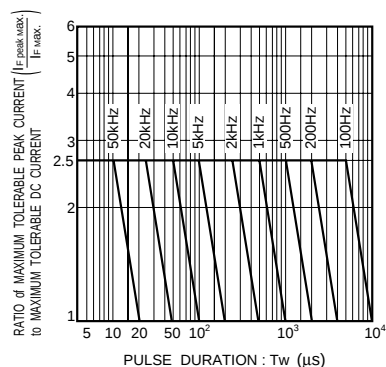


Fig. 5 Maximum tolerable peak current vs. pulse duration

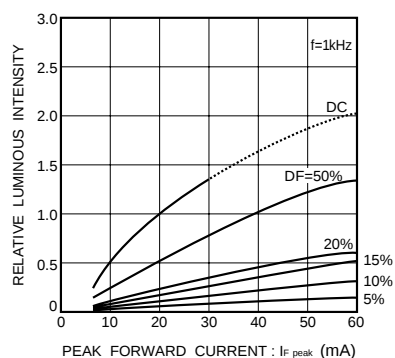


Fig. 6 Luminous intensity vs. peak forward current

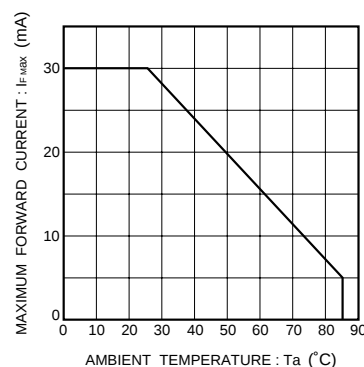


Fig. 7 Maximum forward current vs. ambient temperature

## ●Electrical characteristics curves 2 (SML-210VT) (red)

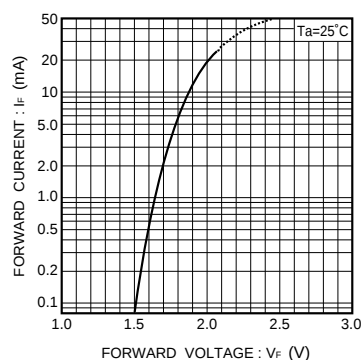


Fig. 8 Forward current vs. forward voltage

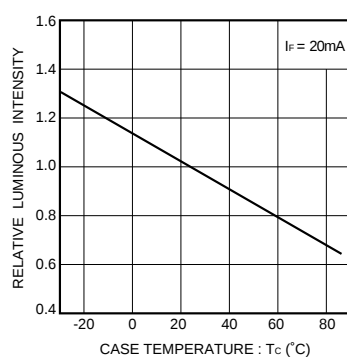


Fig. 9 Luminous intensity vs. case temperature

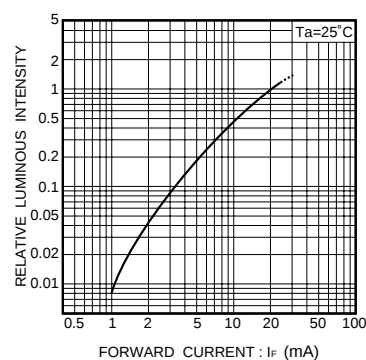


Fig. 10 Luminous intensity vs. forward current

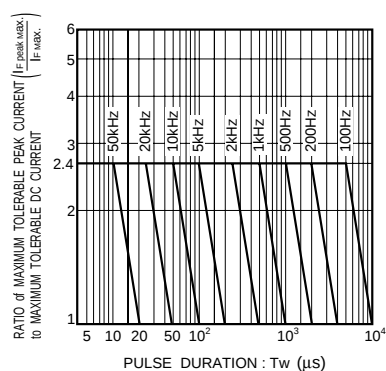


Fig. 11 Maximum tolerable peak current vs. pulse duration

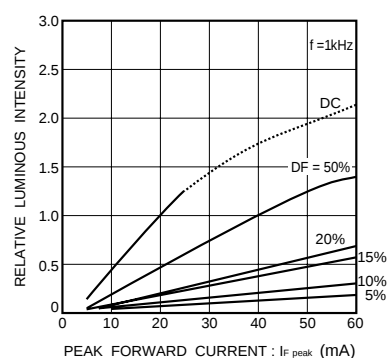


Fig. 12 Luminous intensity vs. peak forward current

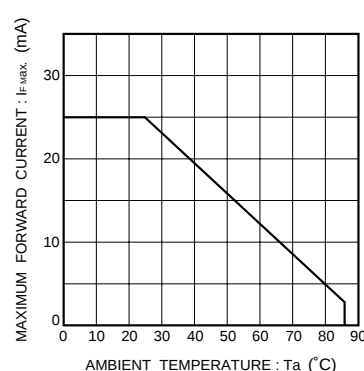


Fig. 13 Maximum forward current vs. ambient temperature

## LED lamps

## ●Electrical characteristics curves 3 (SML-210DT) (orange)

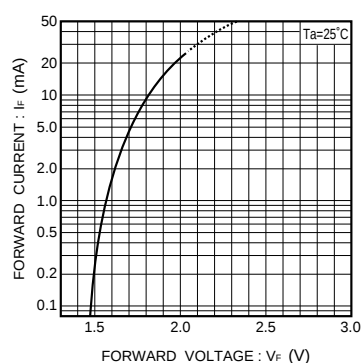


Fig. 14 Forward current vs. forward voltage

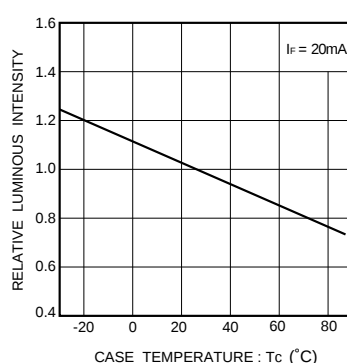


Fig. 15 Luminous intensity vs. case temperature

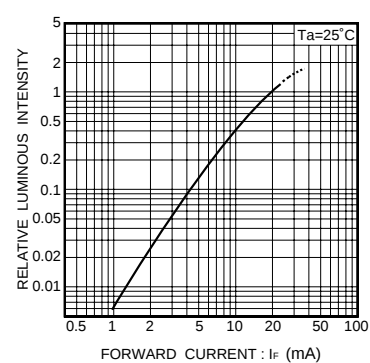


Fig. 16 Luminous intensity vs. forward current

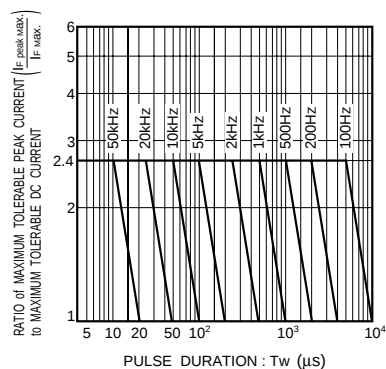


Fig. 17 Maximum tolerable peak current vs. pulse duration

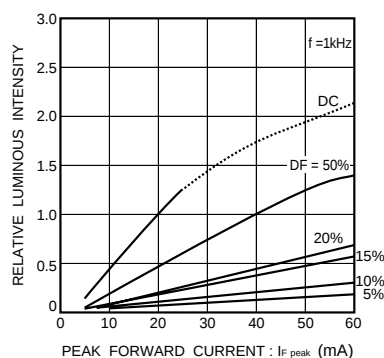


Fig. 18 Luminous intensity vs. peak forward current

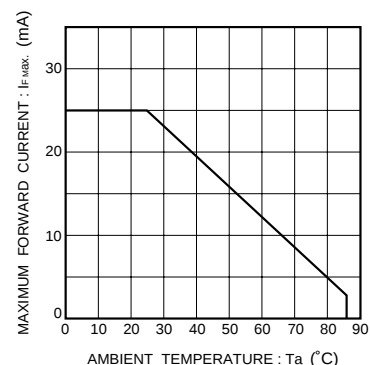


Fig. 19 Maximum forward current vs. ambient temperature

## ●Electrical characteristics curves 4 (SML-210YT) (yellow)

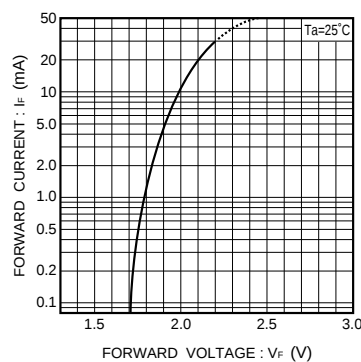


Fig. 20 Forward current vs. forward voltage

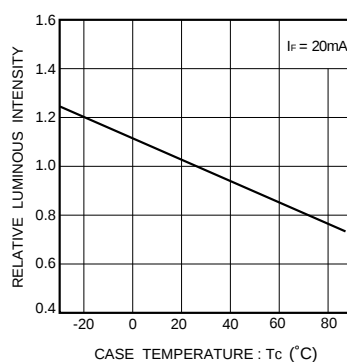


Fig. 21 Luminous intensity vs. case temperature

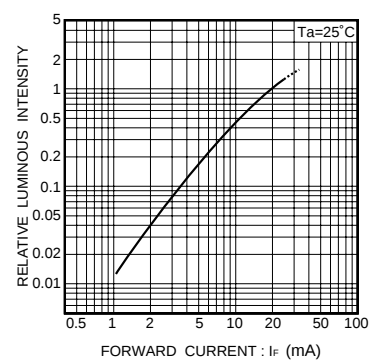


Fig. 22 Luminous intensity vs. forward current

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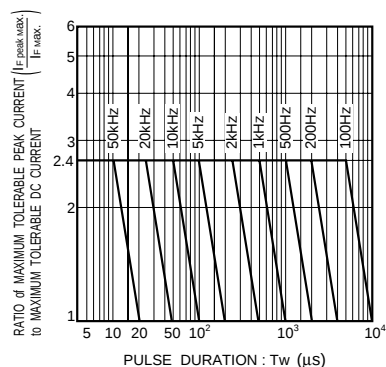


Fig. 23 Maximum tolerable peak current vs. pulse duration

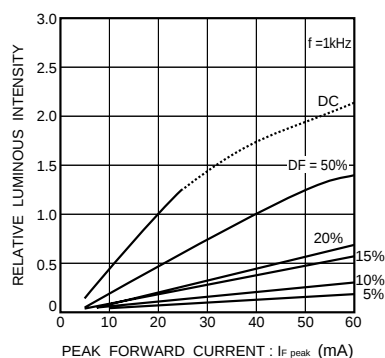


Fig. 24 Luminous intensity vs. peak forward current

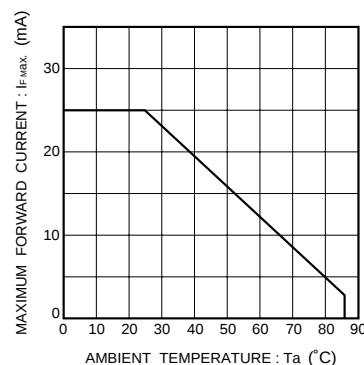


Fig. 25 Maximum forward current vs. ambient temperature

## ●Electrical characteristics curves 5 (SML-210MT, SML-210FT, SML-210PT) (green)

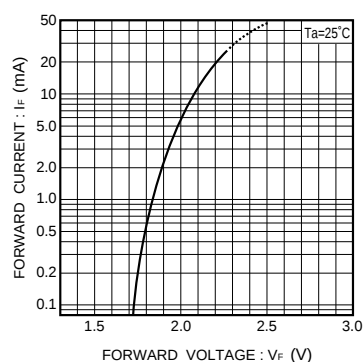


Fig. 26 Forward current vs. forward voltage

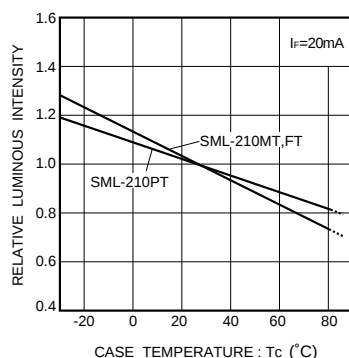


Fig. 27 Luminous intensity vs. case temperature

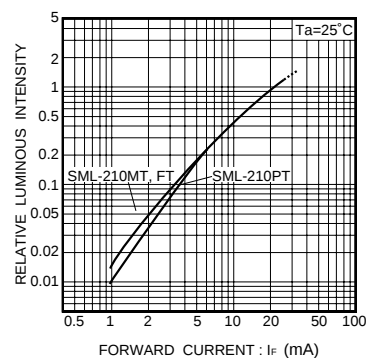


Fig. 28 Luminous intensity vs. forward current

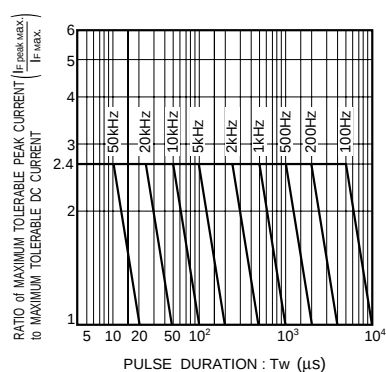


Fig. 29 Maximum tolerable peak current vs. pulse duration

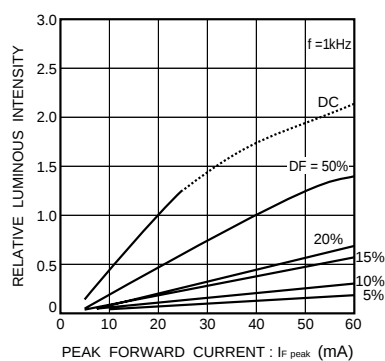


Fig. 30 Luminous intensity vs. peak forward current

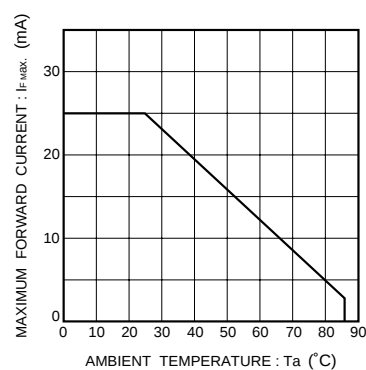


Fig. 31 Maximum forward current vs. ambient temperature