

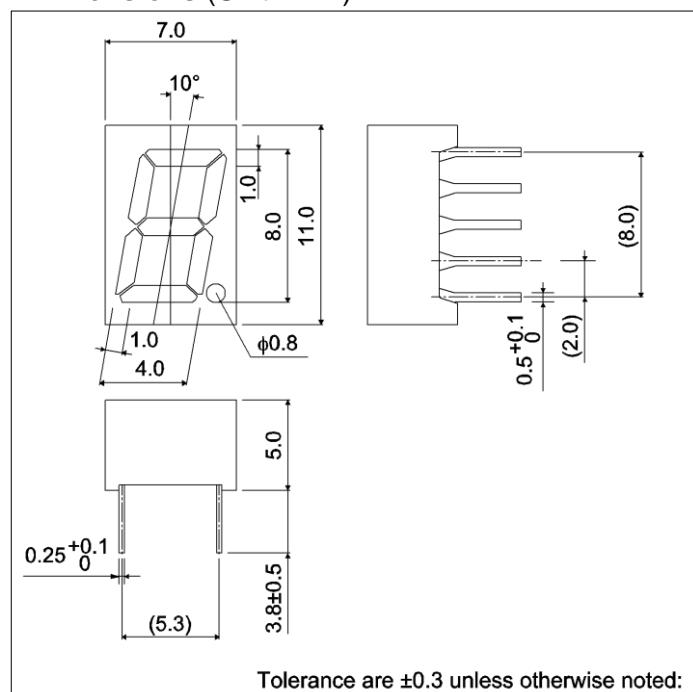
LA-301 B / L series is developed because of the demand for small single digit LED Numeric Display.

Materials of emission are GaAsP on GaP, AlGaNp and GaP. This is the height of a letter 8mm, single digit LED Numeric Display that is packed by epoxy resin.

### ●Features

- 1) The height of a letter is 8mm.
- 2) The light don't leak from the segment in spite of the small package.
- 3) The package of surface color is black. Color of segment is colored in emitting color.
- 4) Each color has anode common and cathode common respectively.

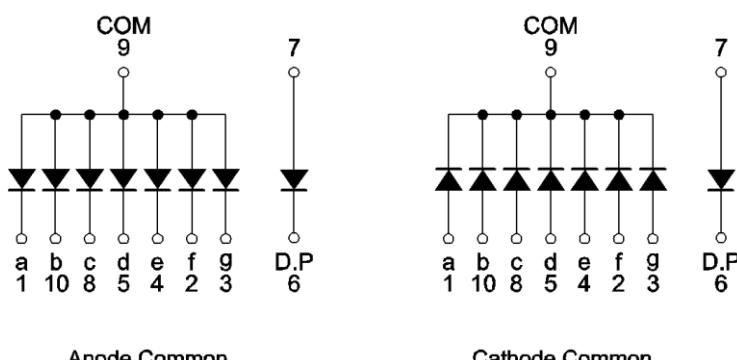
### ●Dimensions (Unit : mm)



### ●Pin assignments

| Pin No. | Function    |
|---------|-------------|
| 1       | Segment "a" |
| 2       | Segment "f" |
| 3       | Segment "g" |
| 4       | Segment "e" |
| 5       | Segment "d" |
| 6       | D.P Cathode |
| 7       | D.P Anode   |
| 8       | Segment "c" |
| 9       | Common      |
| 10      | Segment "b" |

### ●Internal circuit schematic



### ●Selection guide

| Emitting color<br>Common | Red      | Red<br>(High brightness) | Orange<br>(High brightness) | Yellow<br>(High brightness) | Green    |
|--------------------------|----------|--------------------------|-----------------------------|-----------------------------|----------|
| Anode                    | LA-301VB | LA-301AB                 | LA-301EB                    | LA-301XB                    | LA-301MB |
| Cathode                  | LA-301VL | LA-301AL                 | LA-301EL                    | LA-301XL                    | LA-301ML |

● Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter             | Symbol      | Red               | Red<br>(High brightness) | Orange<br>(High brightness) | Yellow<br>(High brightness) | Green             | Unit |
|-----------------------|-------------|-------------------|--------------------------|-----------------------------|-----------------------------|-------------------|------|
|                       |             | LA-301VB / VL     | LA-301AB / AL            | LA-301EB / EL               | LA-301XB / XL               | LA-301MB / ML     |      |
| Power dissipation     | $P_D$       | 320               | 520                      | 520                         | 520                         | 480               | mW   |
| Power dissipation     | $P_D$ / seg | 40                | 65                       | 65                          | 65                          | 60                | mW   |
| Forward current       | $I_F$       | 15                | 25                       | 25                          | 25                          | 20                | mA   |
| Peak forward current  | $I_{FP}$    | 60 * <sup>1</sup> | 50 * <sup>2</sup>        | 50 * <sup>2</sup>           | 50 * <sup>2</sup>           | 60 * <sup>1</sup> | mA   |
| Reverse voltage       | $V_R$       | 5                 | 5                        | 5                           | 5                           | 5                 | V    |
| Operating temperature | $T_{opr}$   | -25 to +75        |                          |                             |                             |                   | °C   |
| Storage temperature   | $T_{stg}$   | -30 to +85        |                          |                             |                             |                   | °C   |

\*<sup>1</sup> Pulse width 1ms, duty 1 / 5\*<sup>2</sup> Pulse width 0.1ms, duty 1 / 10● Electrical and optical characteristics ( $T_a = 25^\circ\text{C}$ )

| Parameter               | Symbol          | Conditions        | Red  |      | Red<br>(High brightness) |      | Orange |      | Yellow<br>(High brightness) |      | Green |      | Unit |
|-------------------------|-----------------|-------------------|------|------|--------------------------|------|--------|------|-----------------------------|------|-------|------|------|
|                         |                 |                   | Typ. | Max. | Typ.                     | Max. | Typ.   | Max. | Typ.                        | Max. | Typ.  | Max. |      |
| Forward voltage         | $V_F$           | $I_F=10\text{mA}$ | 2.0  | 2.8  | 2.05*                    | 2.6* | 2.05*  | 2.6* | 2.05*                       | 2.6* | 2.1   | 2.8  | V    |
| Reverse current         | $I_R$           | $V_R=3\text{V}$   | -    | 100  | -                        | 100  | -      | 100  | -                           | 100  | -     | 100  | μA   |
| Peak wavelength         | $\lambda_p$     | $I_F=10\text{mA}$ | 650  | -    | 626*                     | -    | 610*   | -    | 589*                        | -    | 563   | -    | nm   |
| Spectral line halfwidth | $\Delta\lambda$ | $I_F=10\text{mA}$ | 40   | -    | 18*                      | -    | 17*    | -    | 15*                         | -    | 40    | -    | nm   |

◎ Not designed for radiation resistance.

\* Shows the number on the condition of  $I_F=20\text{mA}$ .

## ● Luminous intensity

| Parameter                   | $\lambda_p$ | Type     | Min. | Typ. | Max. | Unit |
|-----------------------------|-------------|----------|------|------|------|------|
| Red                         | 650         | LA-301VB | 3.6  | 10   | -    | mcd  |
|                             |             | LA-301VL |      |      |      |      |
| Red<br>(High brightness)    | 626         | LA-301AB | 36   | 90   | -    | mcd  |
|                             |             | LA-301AL |      |      |      |      |
| Orange<br>(High brightness) | 610         | LA-301EB | 36   | 90   | -    | mcd  |
|                             |             | LA-301EL |      |      |      |      |
| Yellow<br>(High brightness) | 589         | LA-301XB | 36   | 90   | -    | mcd  |
|                             |             | LA-301XL |      |      |      |      |
| Green                       | 563         | LA-301MB | 3.6  | 10   | -    | mcd  |
|                             |             | LA-301ML |      |      |      |      |

◎ Condition  $I_F=10\text{mA}$

● Electrical and optical characteristics curves

Fig.1 Forward Current vs. Forward Voltage

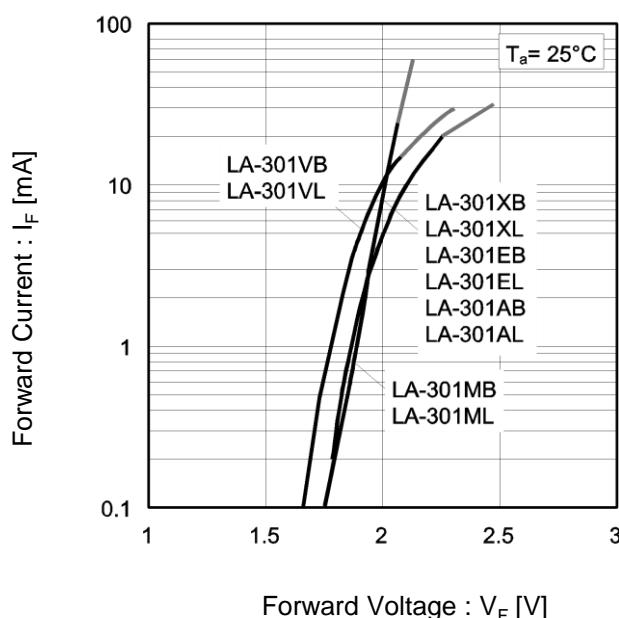


Fig.2 Relative Luminous Intensity vs. Forward Current

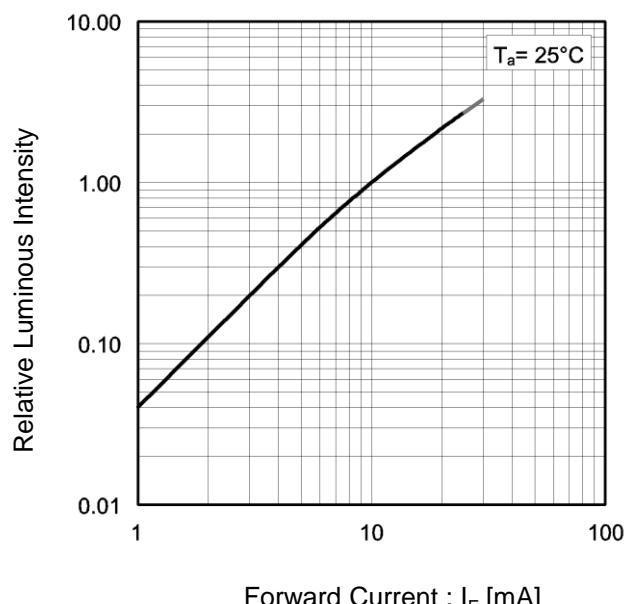


Fig.3 Relative Luminous Intensity vs. Case Temperature

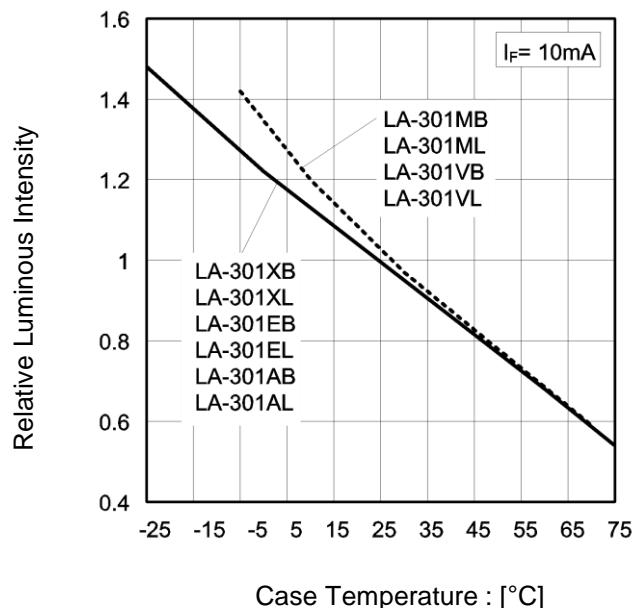
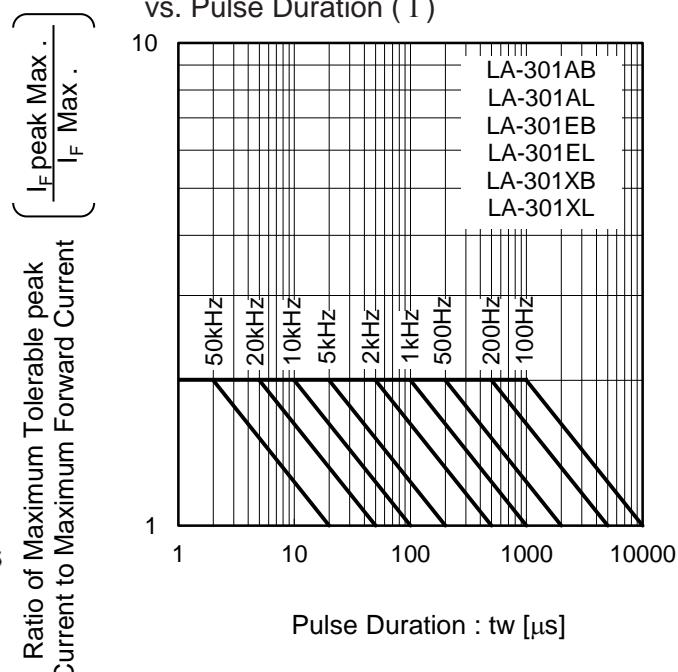


Fig.4 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration (t<sub>w</sub>)



●Electrical and optical characteristics curves

Fig.5 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration ( II )

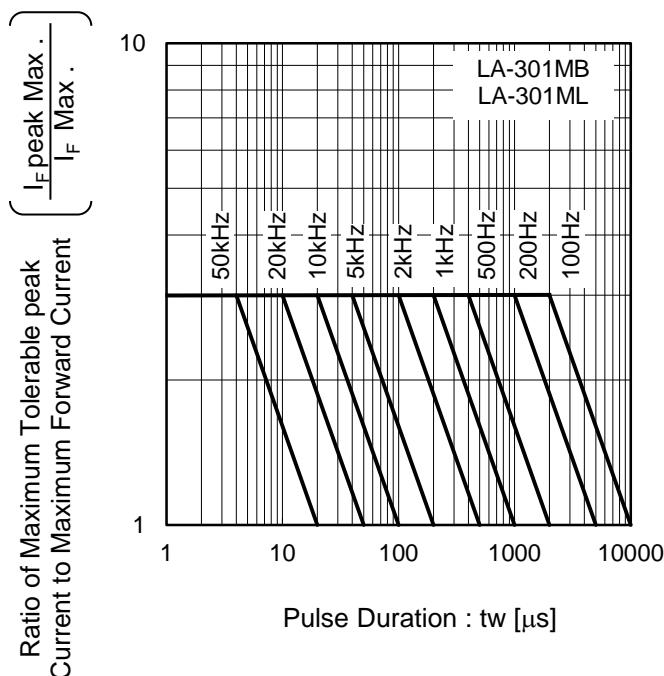


Fig.6 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration ( III )

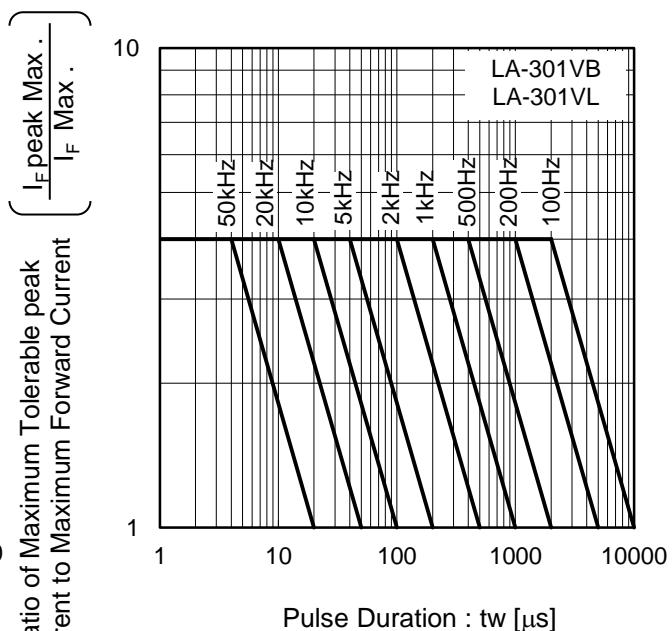
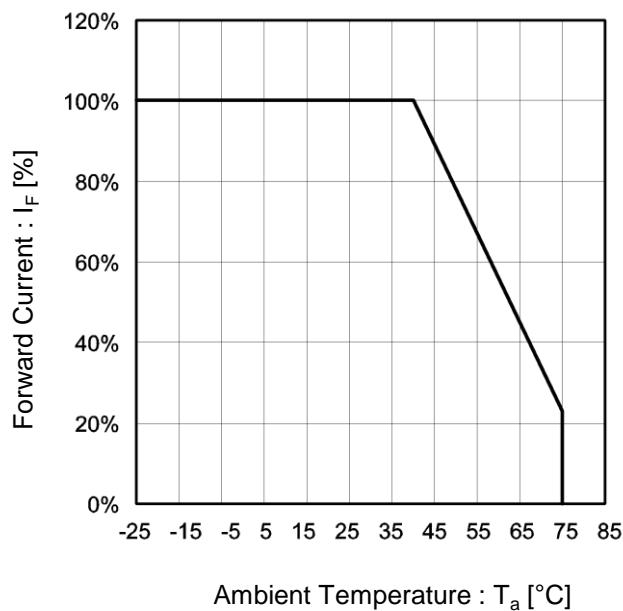


Fig.7 Derating



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