

**Pb-free  
HEAT**



# MU08 Series

Single Color / Light Bar Module

## Features

|                                     |   |
|-------------------------------------|---|
| Light emitting surface (Outer size) | 14 x 16 mm (15 x 17 mm) (L x W)   |
| Product features                    | <ul style="list-style-type: none"> <li>• Single Color (Green, Yellow Green, Orange or Red)</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul> |
| Peak wavelength                     | Green : 555 nm<br>Yellow Green : 570 nm<br>Orange : 605 nm<br>Red : 660 nm  |
| Die materials                       | Green, Yellow Green : GaP<br>Orange : GaAsP<br>Red : GaAlAs   |
| Soldering methods                   | TTW (Through The Wave) soldering and manual soldering   |
| Soldering methods                   | More than 2kV(HBM)  |
| Packing                             | Tray  |

## Recommended Applications

Electric Household Appliances, OA/FA, Other General Applications

## Color and Luminous Intensity

| Part No.  | Material | Emitted Color | Resin Color | Intensity <sup>※1</sup><br>I <sub>v</sub> (mcd) |      |                | Number of Chips |
|-----------|----------|---------------|-------------|---|------|----------------|-----------------|
|           |          |               |             | MIN.  | TYP. | I <sub>F</sub> |                 |
| MU08-5201 | GaP      | Green         | Green       | 10  | 20   | 20             | 4               |
| MU08-4201 | GaP      | Yellow Green  | Yellow      | 20  | 42   | 20             | 4               |
| MU08-3201 | GaAsP    | Orange        | Orange      | 10  | 20   | 20             | 4               |
| MU08-2201 | GaAlAs   | Red           | Red         | 20  | 42   | 20             | 4               |

※1 Luminous Intensity : 4 chips

## Absolute Maximum Ratings

(Ta=25°C)

| Item                                | Symbol            | Absolute Maximum Ratings |      |      |      | Unit  |
|-------------------------------------|-------------------|--------------------------|------|------|------|-------|
|                                     |                   | 5201                     | 4201 | 3201 | 2201 |       |
| Power Dissipation <sup>※2</sup>     | P <sub>d</sub>    | 250                      | 300  | 250  | 240  | mW    |
| Forward Current                     | I <sub>F</sub>    | 25                       | 30   | 25   | 30   | mA    |
| Pulse Forward Current <sup>※3</sup> | I <sub>FRM</sub>  | 60                       | 60   | 60   | 60   | mA    |
| Derating<br>(Ta=25°C or higher)     | ΔI <sub>F</sub>   | 0.33                     | 0.40 | 0.33 | 0.40 | mA/°C |
|                                     | ΔI <sub>FRM</sub> | 0.80                     | 0.80 | 0.80 | 0.80 | mA/°C |
| Reverse Voltage                     | V <sub>R</sub>    | 4                        | 4    | 4    | 4    | V     |
| Operating Temperature               | T <sub>opr</sub>  | -40~+85                  |      |      |      | °C    |
| Storage Temperature                 | T <sub>stg</sub>  | -40~+85                  |      |      |      | °C    |

※2 Power Dissipation : 4 chips, The other Items : 1 chip

※3 I<sub>FRM</sub> Measurement condition : Pulse Width ≤ 2ms, Duty ≤ 1/5

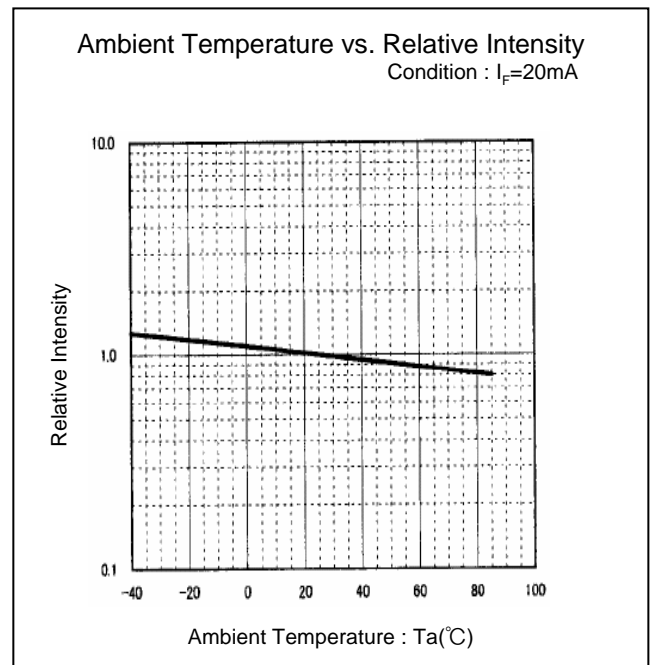
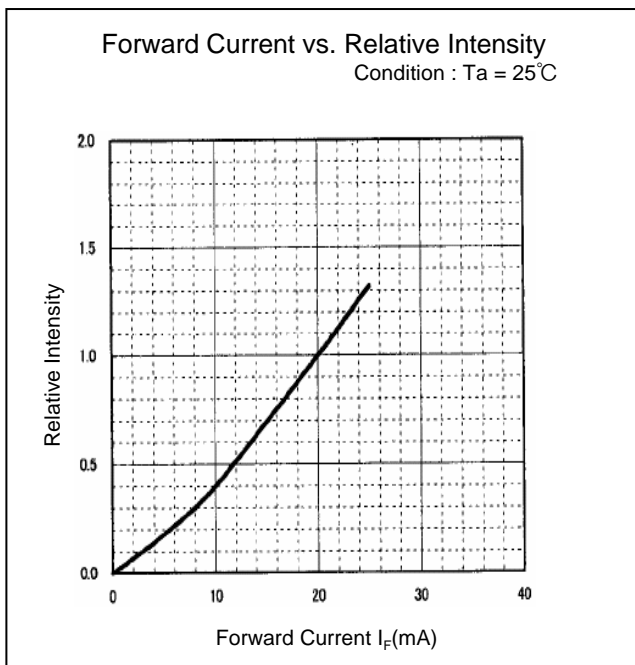
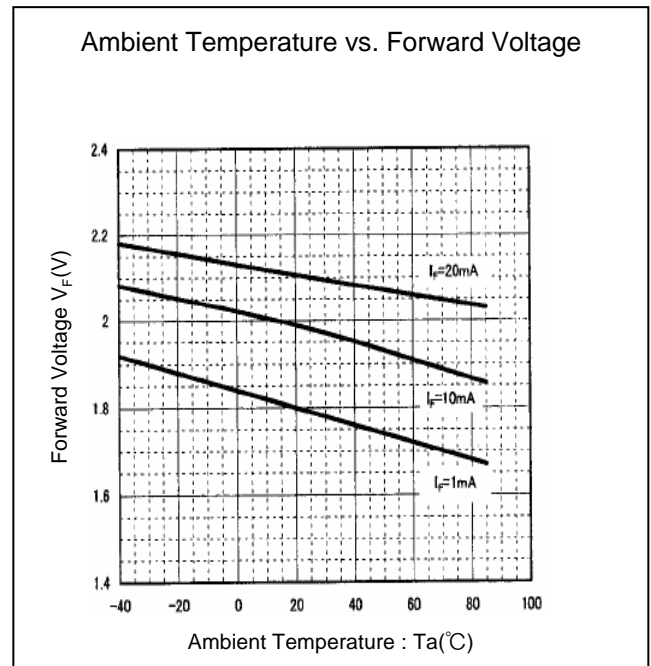
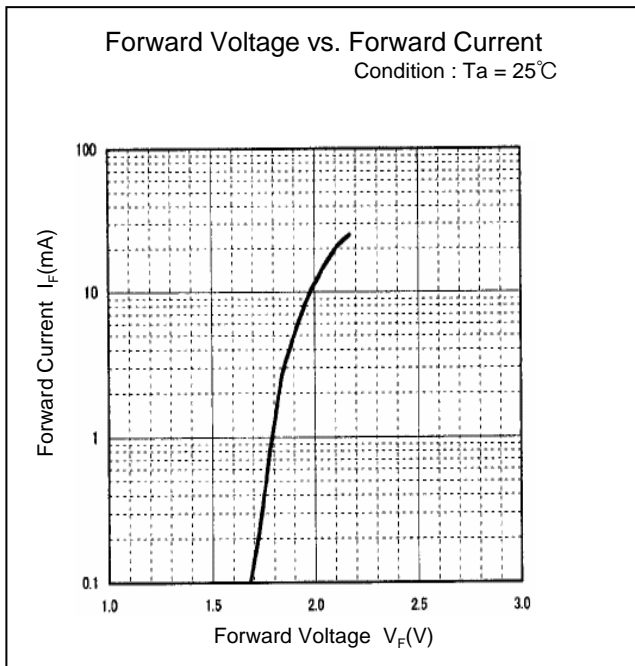
## Electro-Optical Characteristics

(Ta=25°C)

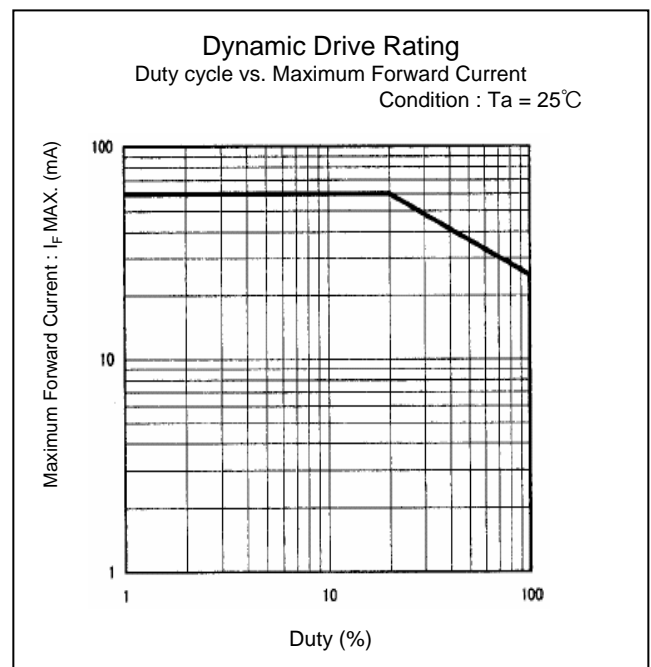
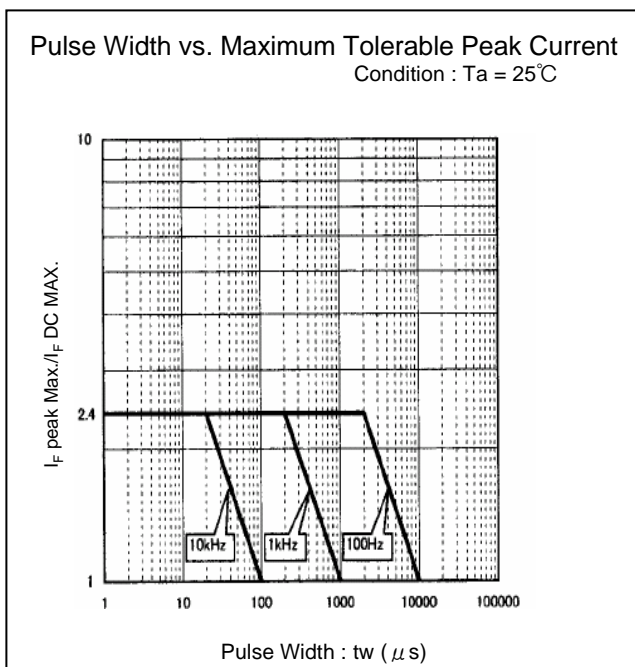
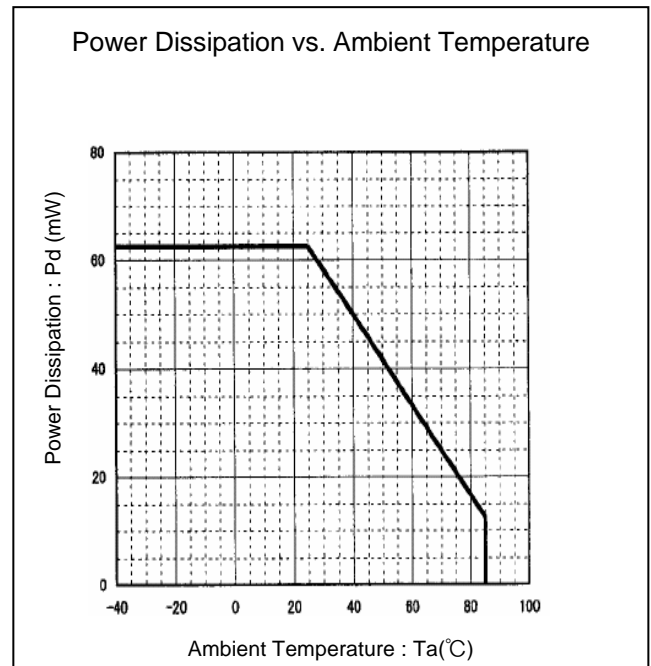
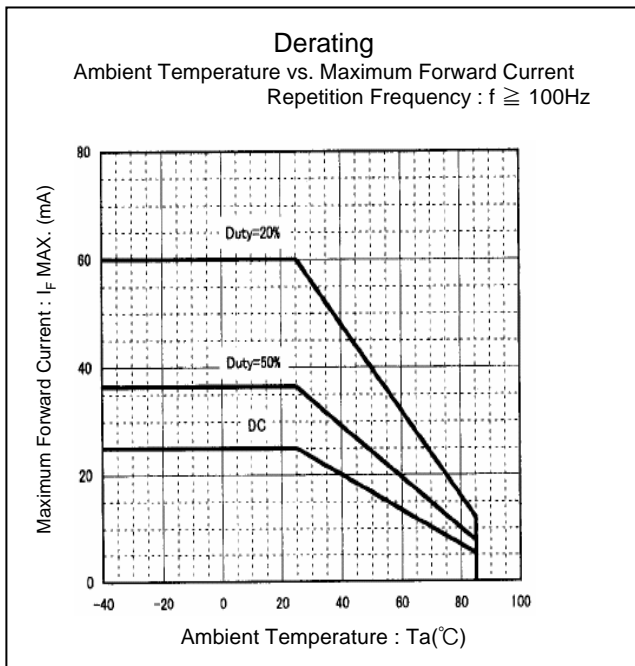
| Item                     | Conditions           | Symbol         | Characteristics |      |      |      | Unit |    |
|--------------------------|----------------------|----------------|-----------------|------|------|------|------|----|
|                          |                      |                | 5201            | 4201 | 3201 | 2201 |      |    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub> | TYP.            | 2.2  | 2.1  | 2.2  | 1.7  | V  |
|                          |                      |                | MAX.            | 2.5  | 2.5  | 2.5  | 2.0  |    |
| Reverse Current          | V <sub>R</sub> =4V   | I <sub>R</sub> | MAX.            | 100  | 100  | 100  | 100  | μA |
| Peak Wavelength          | I <sub>F</sub> =20mA | λ <sub>p</sub> | TYP.            | 555  | 570  | 605  | 660  | nm |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ             | TYP.            | 30   | 30   | 30   | 30   | nm |

※ The above Items : 1 chip

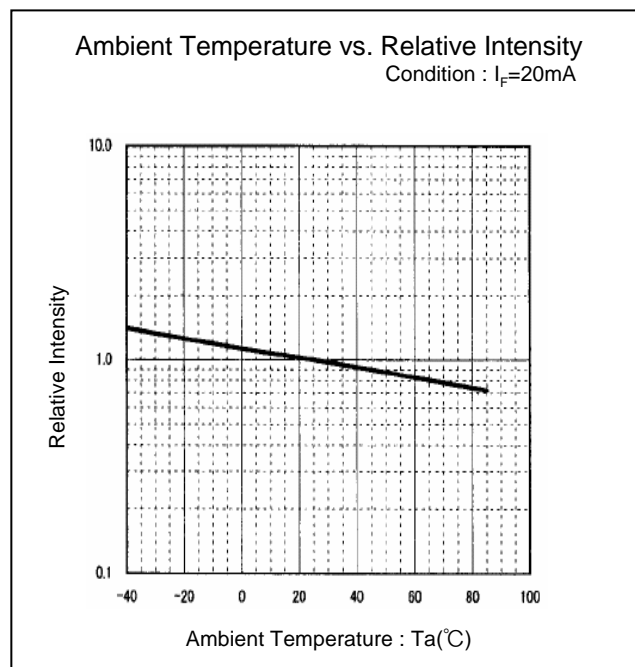
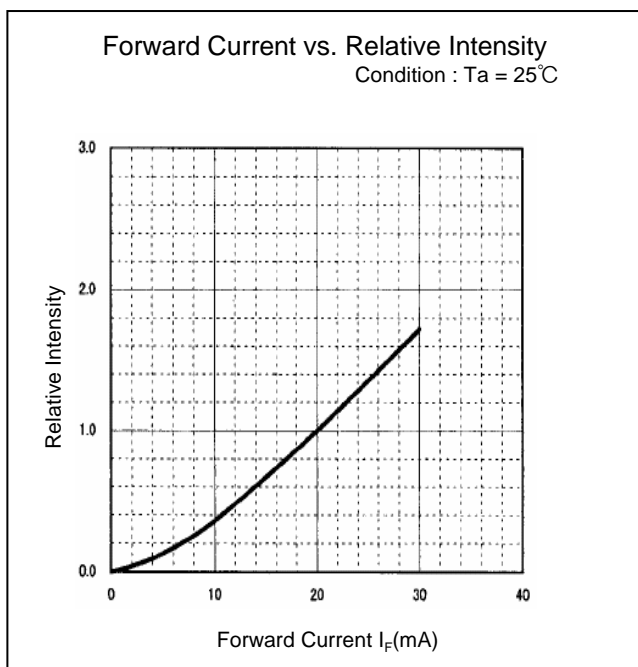
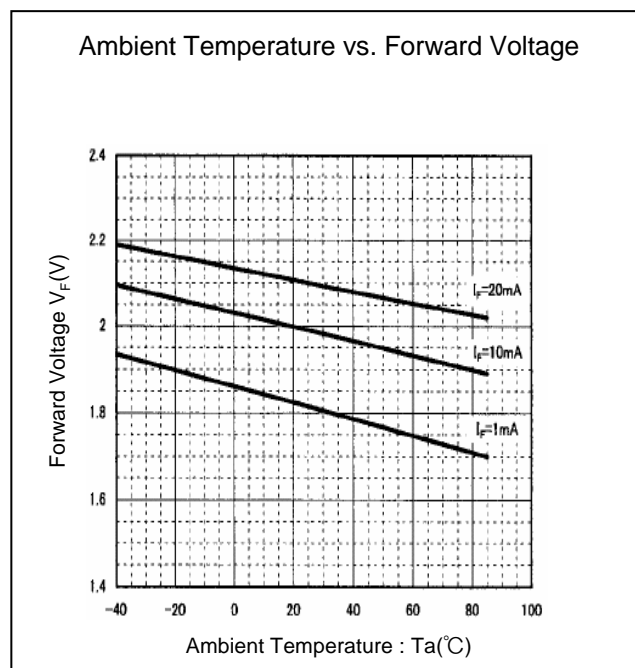
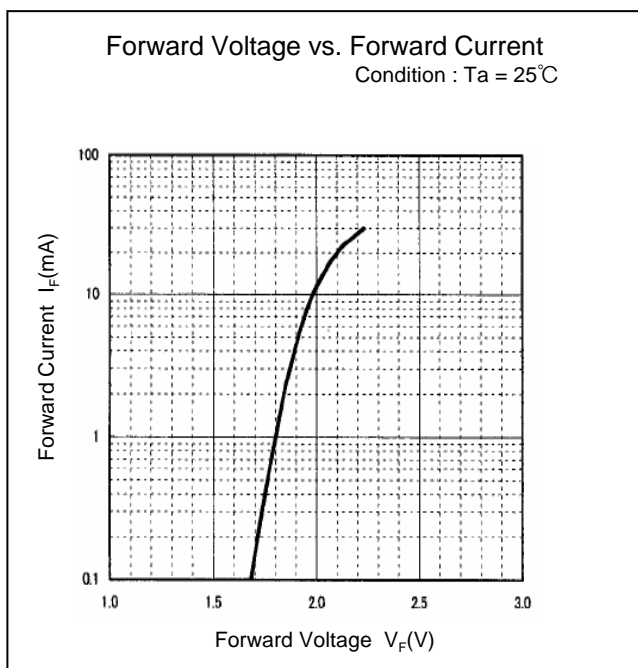
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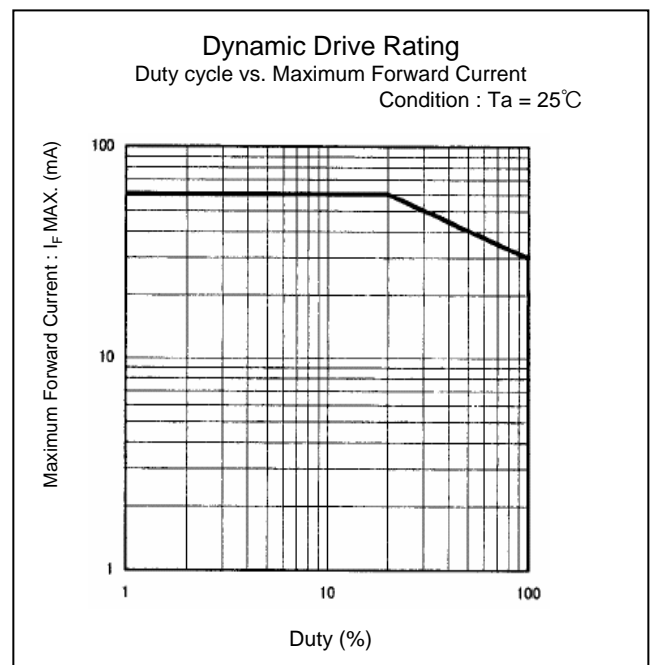
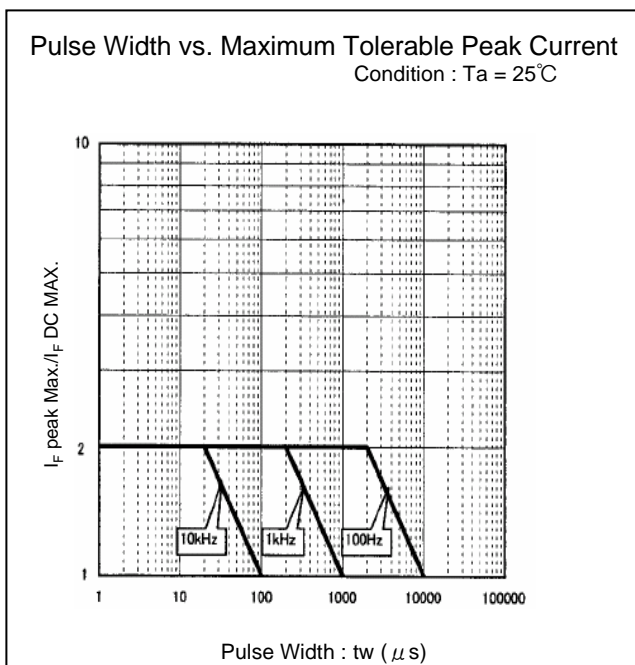
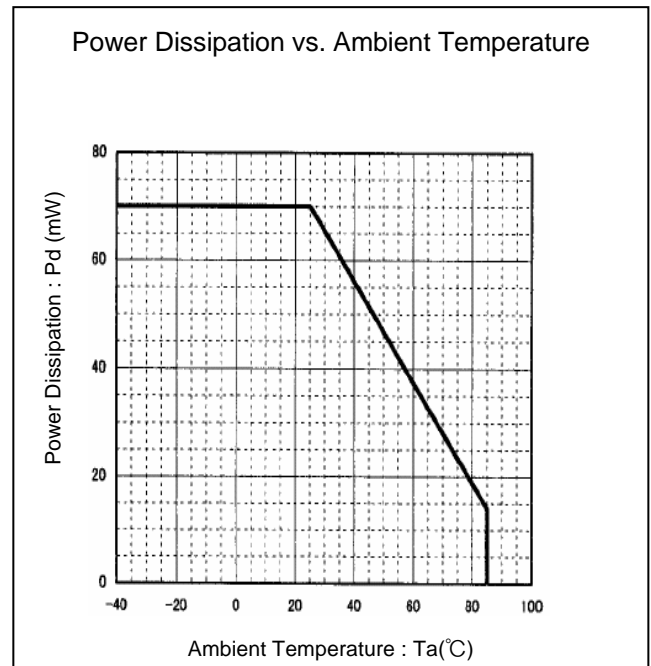
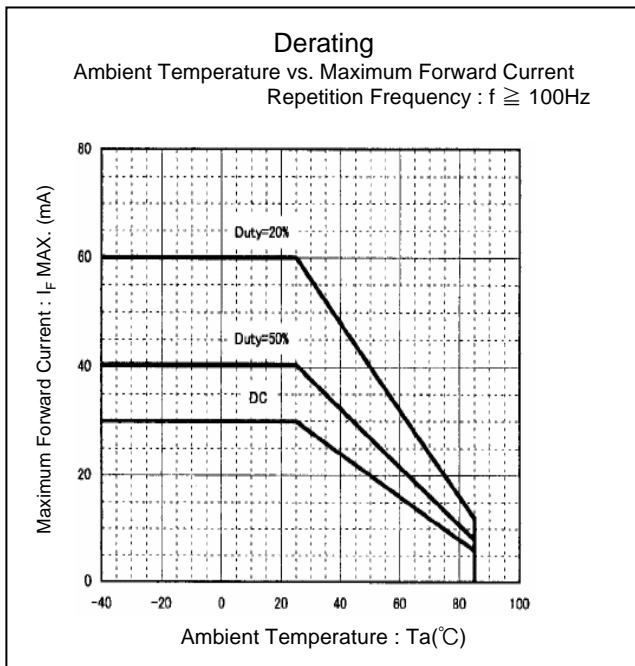
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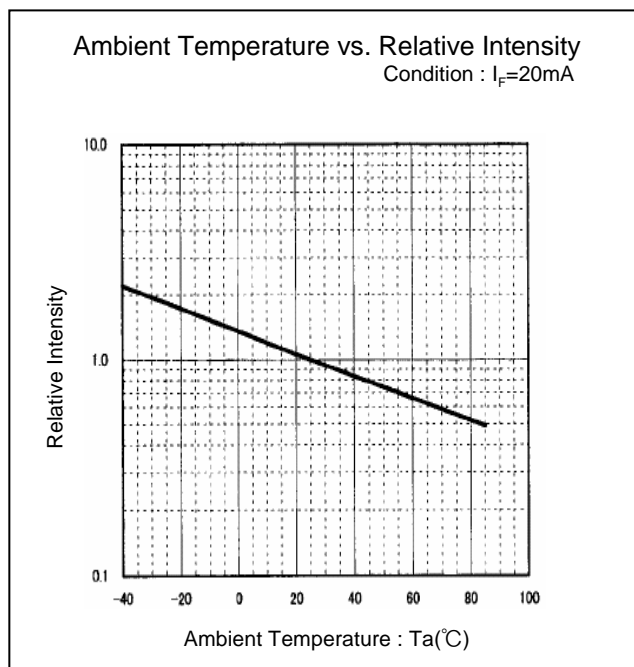
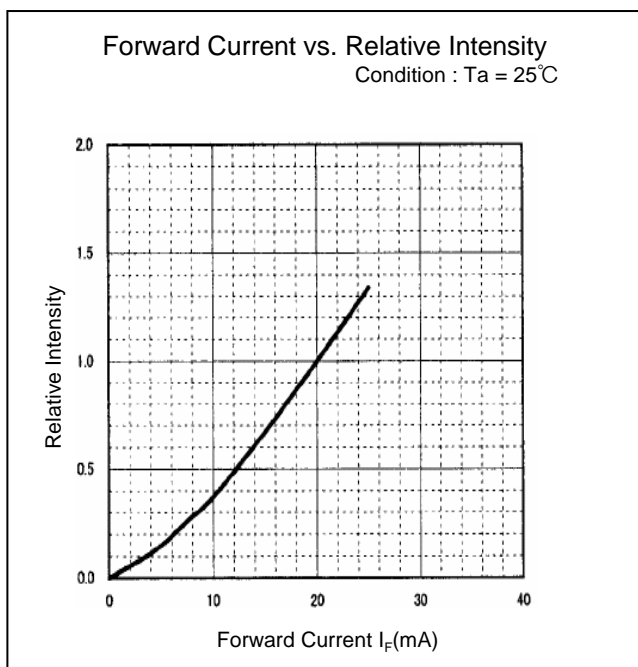
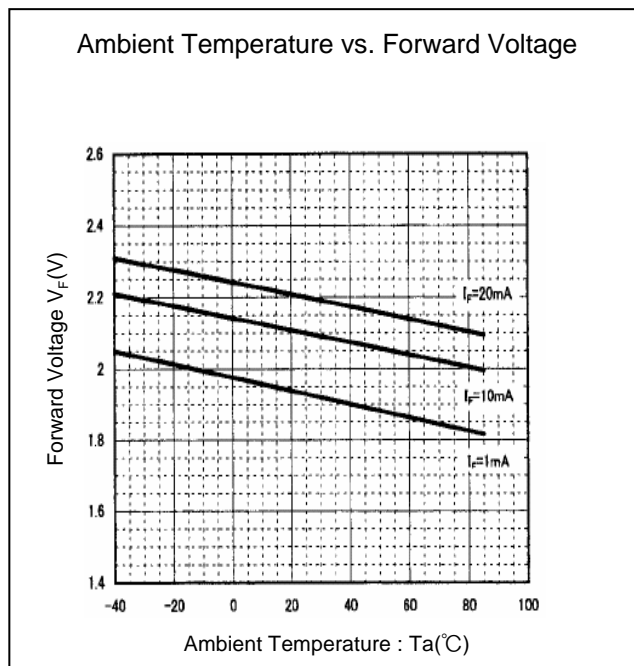
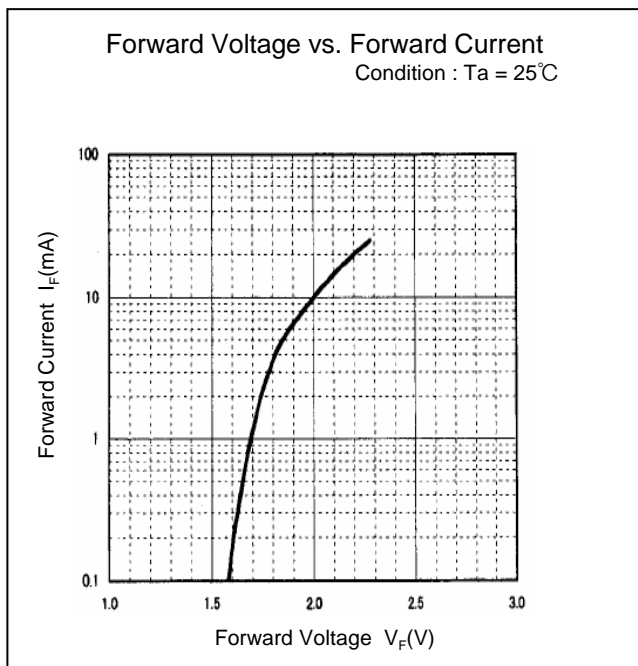


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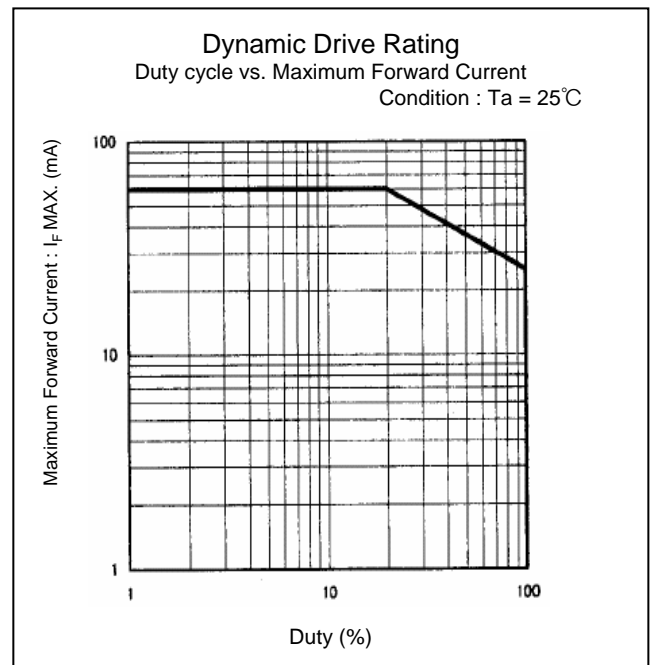
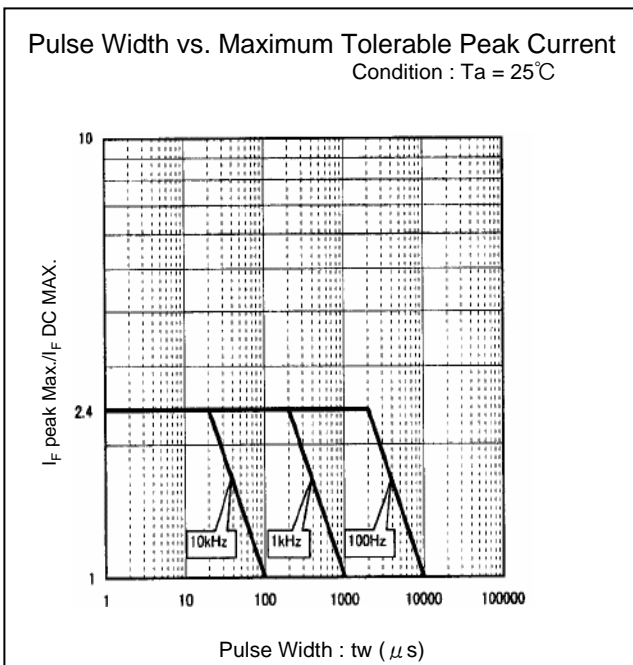
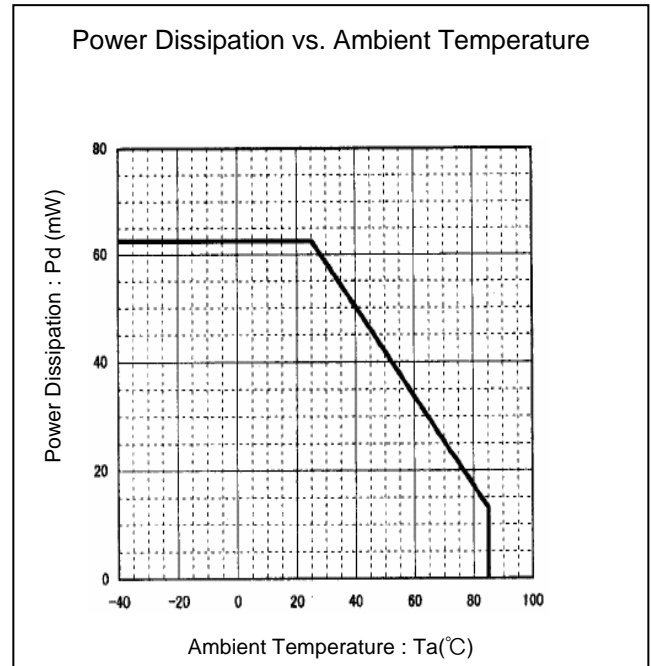
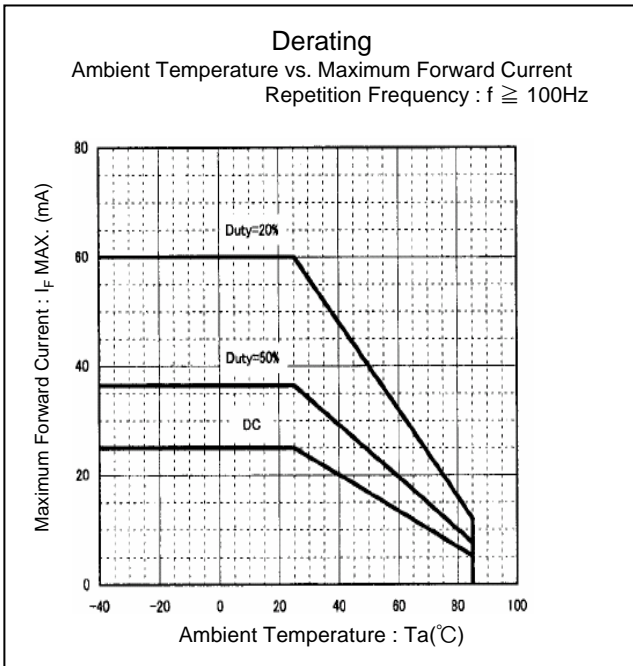




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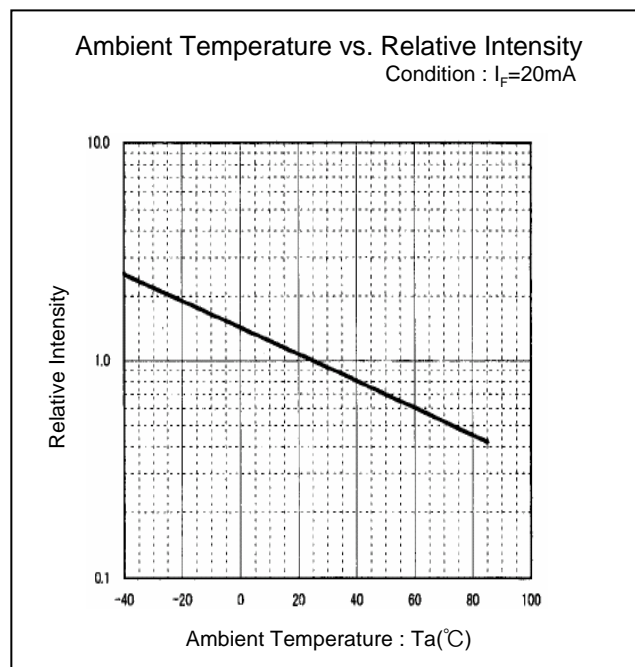
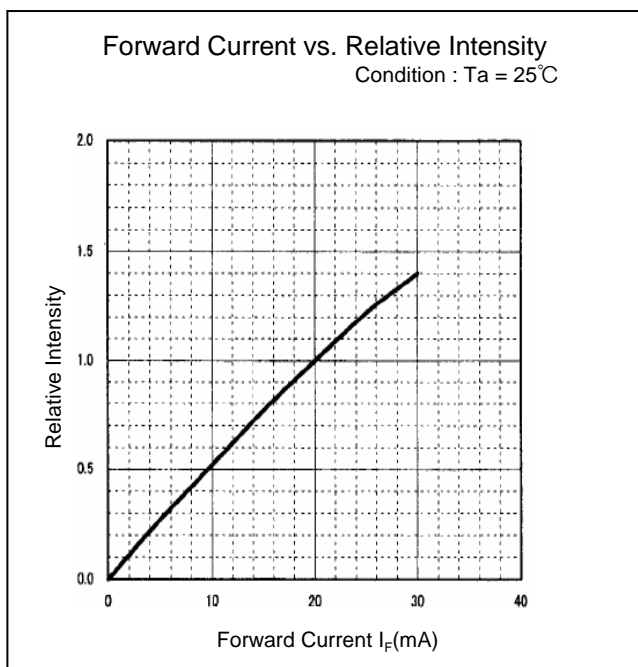
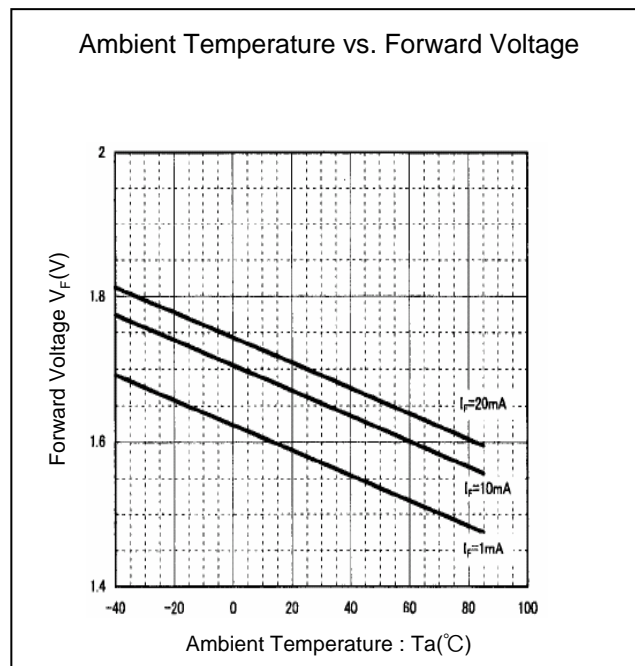
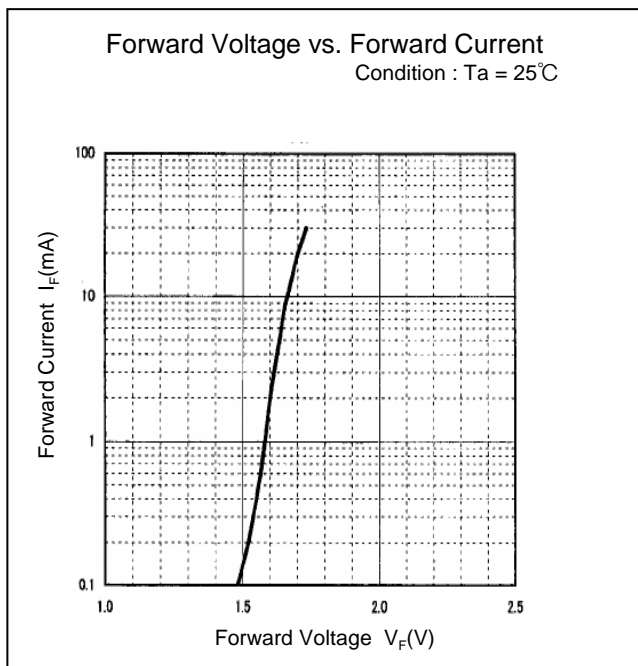


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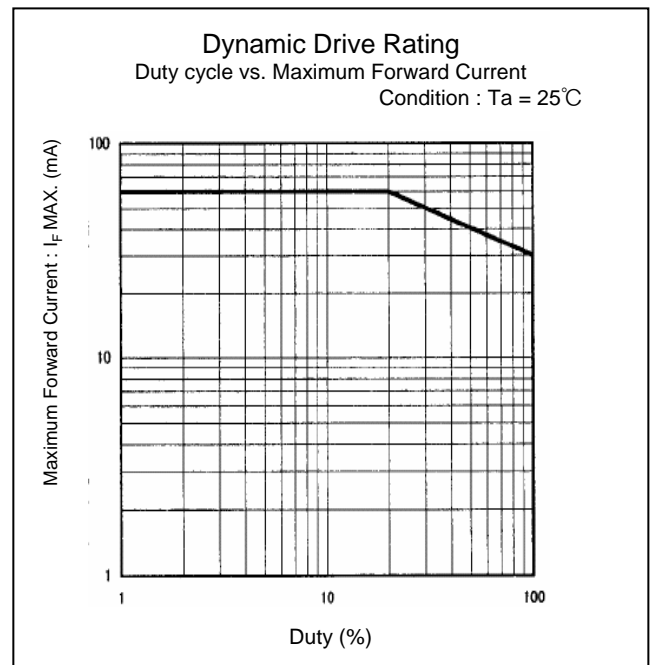
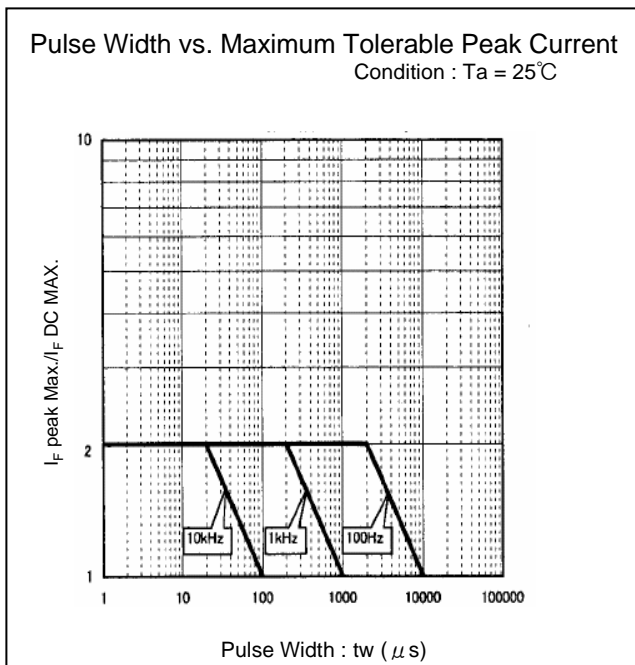
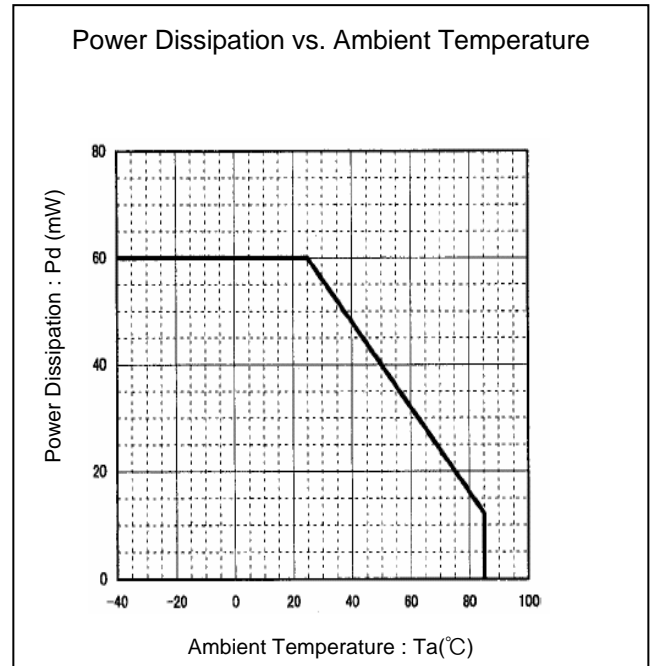
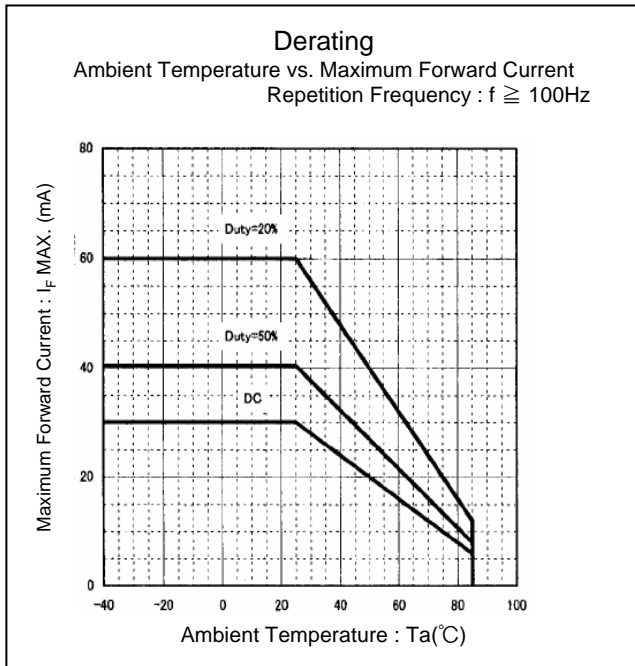




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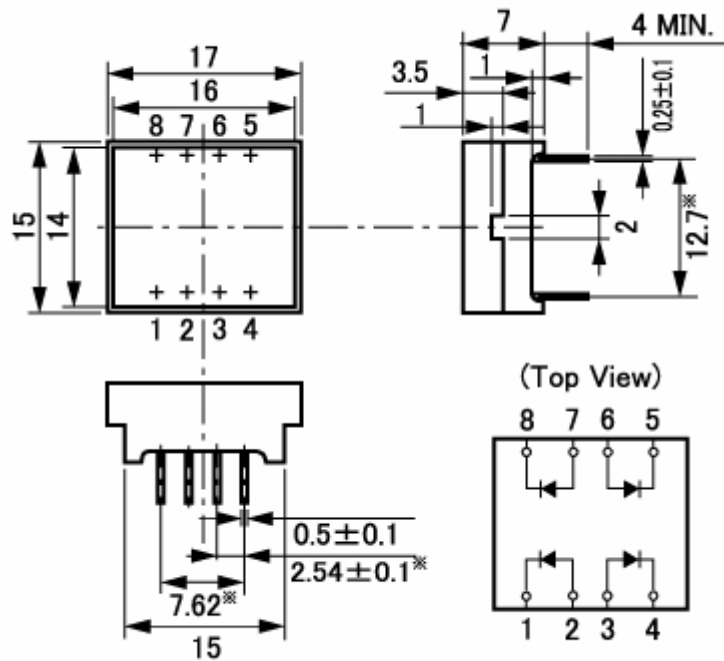
## Technical Data(2201)



## Package Dimensions

(Unit: mm)

(Tolerance :  $\pm 0.25$  mm)



● ※ mark : The measure of lead root

## TTW (Through The Wave) soldering Conditions

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|                   |  |  |
|-------------------|--|--|
| Pre-heating       | 100 °C<br>60 s                             | (MAX.) Resin surface temperature<br>(MAX.) |
| Solder Bath Temp. | 265 °C                                     | (MAX.)                                     |
| Dipping Time      | 5 s  | (MAX.)                                     |
| Position          | At least 2.0 mm away from the root of lead |  |

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.

## Manual Soldering Conditions

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|                              |  |                    |
|------------------------------|--|--------------------|
| Iron tip temp.               | 400 °C                                     | (MAX.) (30 W Max.) |
| Soldering time and frequency | 3 s<br>2 times                             | (MAX.)<br>(MAX.)   |
| Position                     | At least 2.0 mm away from the root of lead |                    |

## Reliability Testing Result

| Reliability Testing Result    | Applicable Standard | Testing Conditions  | Duration | Failure |
|-------------------------------|---------------------|---|----------|---------|
| Room Temp. Operating Life     | EAJED-4701/100(101) | Ta = 25°C, If = Maximum Rated Current   | 1,000 h  | 0/10    |
| Resistance to Soldering Heat  | EAJED-4701/300(302) | 260±5°C, 3mm from package base  | 10s      | 0/10    |
| Temperature Cycling           | EAJED-4701/100(105) | Minimum Rated Storage Temperature(30min)<br>~Normal Temperature(15min)<br>~Maximum Rated Storage Temperature(30min)<br>~Normal Temperature(15min) | 5 cycles | 0/10    |
| Wet High Temp. Storage Life   | EAJED-4701/100(103) | Ta = 60±2°C, RH = 90±5%   | 1,000 h  | 0/10    |
| High Temp. Storage Life       | EAJED-4701/200(201) | Ta = Maximum Rated Storage Temperature  | 1,000 h  | 0/10    |
| Low Temp. Storage Life        | EAJED-4701/200(202) | Ta = Minimum Rated Storage Temperature  | 1,000 h  | 0/10    |
| Lead Tension                  | EAJED-4701/400(401) | 5N, 1time   | 10s      | 0/10    |
| Vibration, Variable Frequency | EAJED-4701/400(403) | 98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction   | 2 h      | 0/10    |
| Lead Bend                     | EAJED-4701/400(401) | 2.5N, 0°←→ 90°  | Twice    | 0/10    |
| Shock                         | JSC 7201 A-8        | It falls on wood engraving from height of 75cm.   | 3 times  | 0/10    |

## Failure Criteria

| Items               | Symbols        | Conditions         | Failure criteria   |
|---------------------|----------------|--------------------|--|
| Luminous Intensity  | Iv             | If=20mA            | Testing Min. Value < Spec. Min. Value x 0.5                  |
| Forward Voltage     | V <sub>F</sub> | If=20mA            | Testing Max. Value ≥ Spec. Max. Value x 1.2                  |
| Reverse Current     | I <sub>R</sub> | V <sub>R</sub> =4V | Testing Max. Value ≥ Spec. Max. Value x 2.5                  |
| Cosmetic Appearance | -              | -                  | Occurrence of notable decoloration, deformation and cracking |

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