

TOSHIBA LED DISPLAY

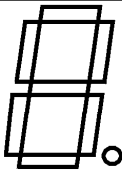
**TLG358, TLG359, TLS358  
TLS359, TLR358, TLR359**

- 13.46mm (0.53") Character Height Numerical Display.
- Application : Numerical Readout for Instrument and Consumer Product.
- Luminous Intensity Ranking Performed Uniform Display.
- Available Both Types of Package Colors.  
TL□xxx : Gray Color Coated Only on Surface.  
TL□xxxT : Black Color Coated Only on Surface.

PRODUCT LINE UP

|                 |           |
|-----------------|-----------|
| TLG358 / TLG359 | GaP GREEN |
| TLS358 / TLS359 | GaAsP RED |
| TLR358 / TLR359 | GaP RED   |

TYPE No. vs FULLY DISPLAY FONT

| COMMON CATHODE             | COMMON ANODE               | FULLY DISPLAY FONT                                                                  |
|----------------------------|----------------------------|-------------------------------------------------------------------------------------|
| TLG358<br>TLS358<br>TLR358 | TLG359<br>TLS359<br>TLR359 |  |

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC                      | SYMBOL                    | RATING | UNIT |
|-------------------------------------|---------------------------|--------|------|
| DC Forward Current / seg.           | I <sub>F</sub> (DC) / seg | 20     | mA   |
| Pulse Forward Current / seg. (Note) | I <sub>FP</sub> / seg     | 110    | mA   |
| Reverse Voltage / seg.              | V <sub>R</sub>            | 6      | V    |
| Operating Temperature Range         | T <sub>opr</sub>          | -35~85 | °C   |
| Storage Temperature Range           | T <sub>stg</sub>          | -40~85 | °C   |

Note : Pulse Width=1ms, Duty Ratio=1 / 10

961001EAC2

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

## ELECTRICAL-OPTICAL CHARACTERISTICS (Ta = 25°C)

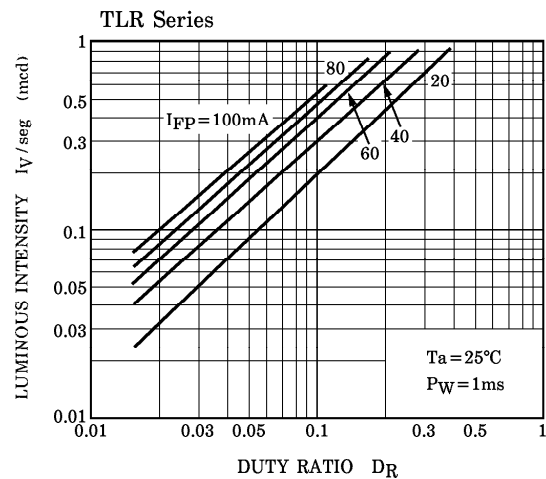
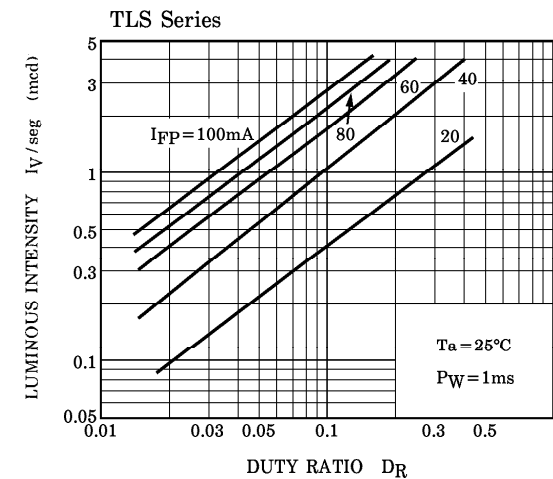
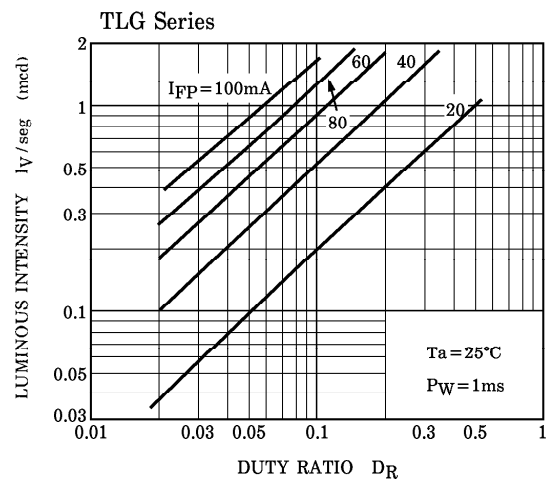
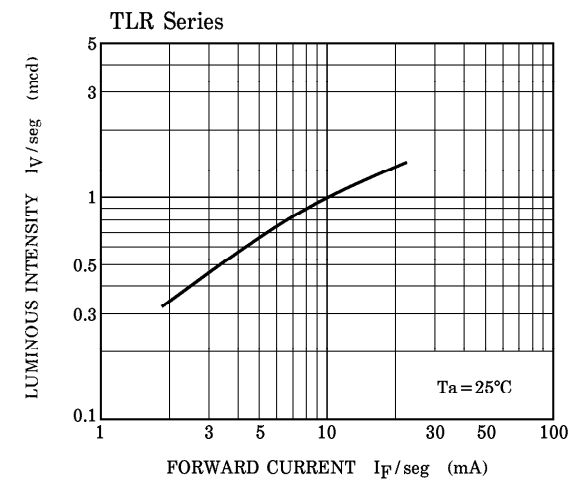
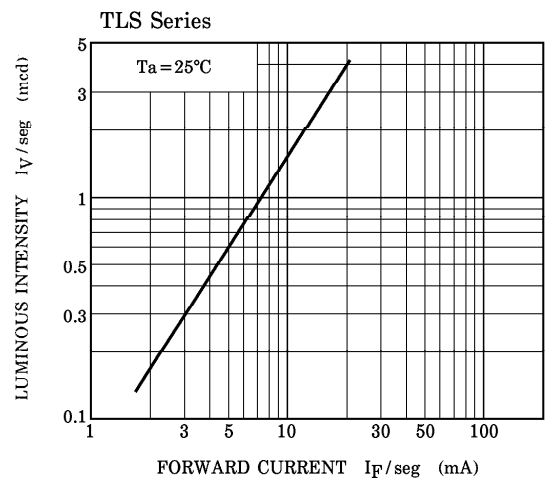
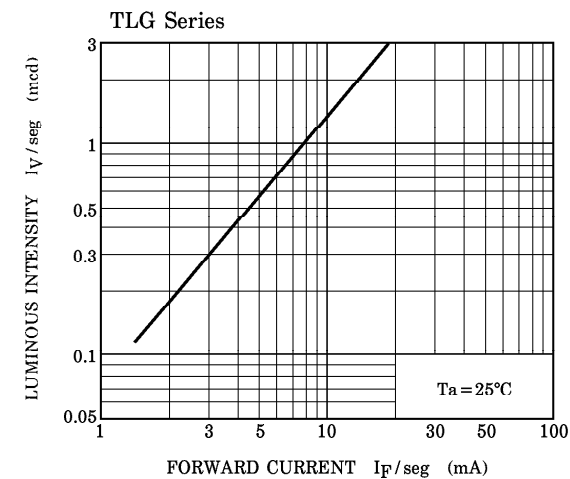
| TYPE No.   | EMITTING<br>WAVE LENGTH |                 |                     | LUMINOUS<br>INTENSITY<br>I <sub>V</sub> / seg |      |                     | FORWARD<br>VOLTAGE V <sub>F</sub> / seg |      |      |                     | REVERSE<br>CURRENT<br>I <sub>R</sub> / seg |                     | LUMINOUS<br>INTENSITY<br>MATCHING<br>RATIO I <sub>V-M</sub> |                     |
|------------|-------------------------|-----------------|---------------------|-----------------------------------------------|------|---------------------|-----------------------------------------|------|------|---------------------|--------------------------------------------|---------------------|-------------------------------------------------------------|---------------------|
|            | $\lambda_p$             | $\Delta\lambda$ | I <sub>F</sub> /seg | Min.                                          | Typ. | I <sub>F</sub> /seg | Min.                                    | Typ. | Max. | I <sub>F</sub> /seg | Max.                                       | V <sub>R</sub> /seg | Max.                                                        | I <sub>F</sub> /seg |
| TLG Series | 565                     | 30              | 10                  | 0.56                                          | 1.42 | 10                  | 1.7                                     | 2.0  | 2.5  | 10                  | 5                                          | 6                   | 2.3                                                         | 10                  |
| TL3 Series | 635                     | 40              |                     | 0.73                                          | 1.56 |                     | 1.7                                     | 1.9  | 2.5  |                     |                                            |                     |                                                             |                     |
| TLR Series | 700                     | 100             |                     | 0.26                                          | 0.70 | 5                   | 1.4                                     | 2.0  | 2.5  |                     |                                            |                     |                                                             | 5                   |
| UNIT       | nm                      |                 | mA                  | mcd                                           |      | mA                  | V                                       |      |      | mA                  | $\mu$ A                                    | V                   | —                                                           | mA                  |

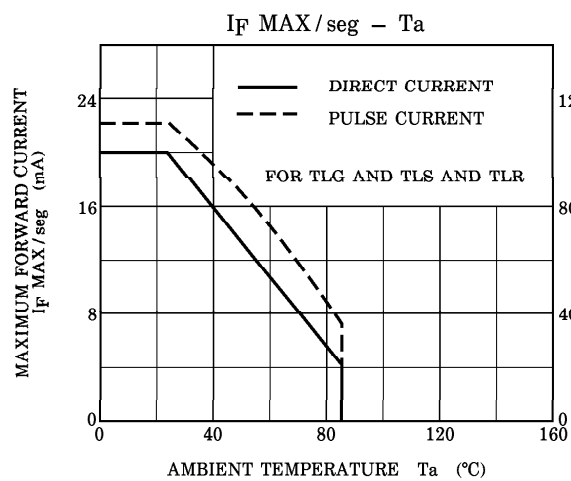
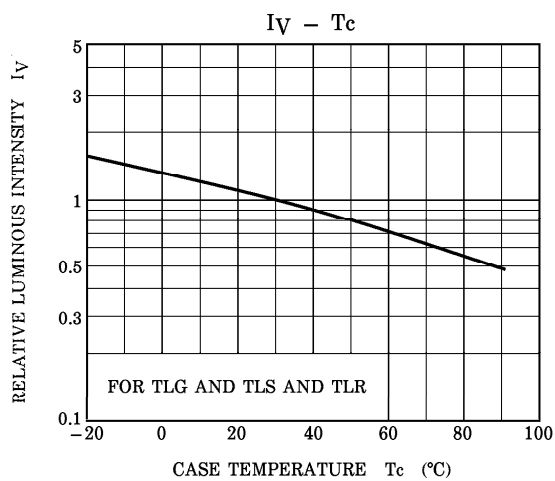
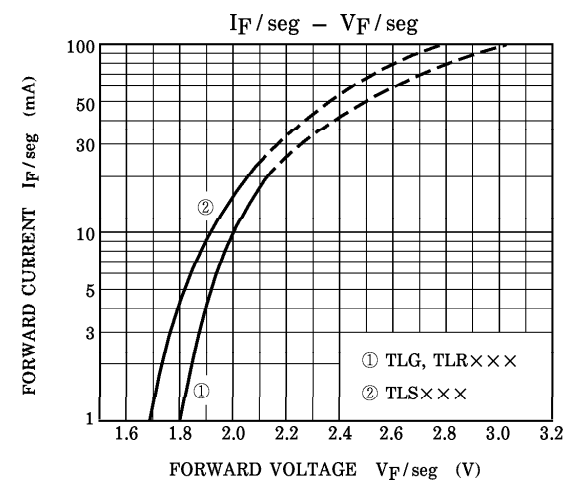
## PRECAUTION

Please be careful of the following.

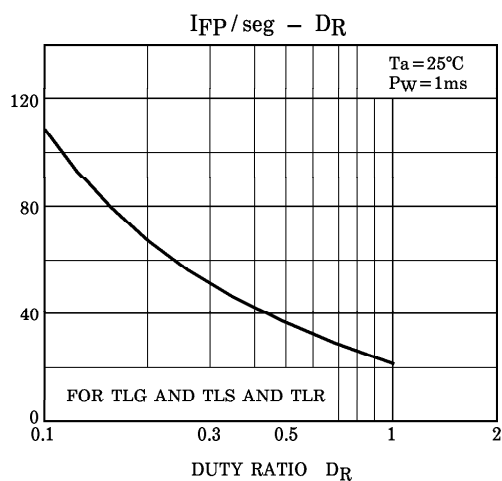
- Soldering temperature should be less than 260°C for 3 seconds at 2.0mm from the seating plane.

$I_V/\text{seg} - I_F/\text{seg}$

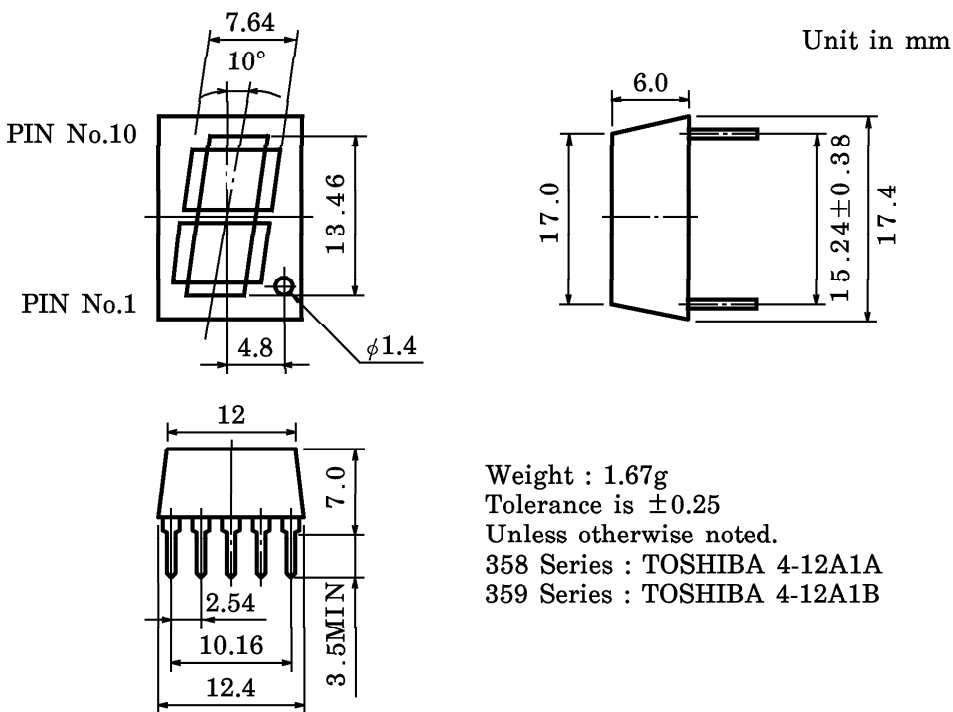




MAXIMUM PULSE FORWARD CURRENT  
 $I_{FP} / \text{seg}$  (mA)  
(DUTY RATIO = 1/10, PULSE WIDTH = 1ms)



OUTLINE DIMENSIONS



PIN CONNECTION

| 358 Series |                |  |  |  |  | 359 Series |              |  |  |  |  |
|------------|----------------|--|--|--|--|------------|--------------|--|--|--|--|
|            |                |  |  |  |  |            |              |  |  |  |  |
| PIN No.    | CONNECTION     |  |  |  |  | PIN No.    | CONNECTION   |  |  |  |  |
| 1          | Anode e        |  |  |  |  | 1          | Cathode e    |  |  |  |  |
| 2          | Anode d        |  |  |  |  | 2          | Cathode d    |  |  |  |  |
| 3          | Anode c        |  |  |  |  | 3          | Cathode c    |  |  |  |  |
| 4          | Anode Dp       |  |  |  |  | 4          | Cathode Dp   |  |  |  |  |
| 5          | Common Cathode |  |  |  |  | 5          | Common Anode |  |  |  |  |
| 6          | Common Cathode |  |  |  |  | 6          | Common Anode |  |  |  |  |
| 7          | Anode b        |  |  |  |  | 7          | Cathode b    |  |  |  |  |
| 8          | Anode a        |  |  |  |  | 8          | Cathode a    |  |  |  |  |
| 9          | Anode g        |  |  |  |  | 9          | Cathode g    |  |  |  |  |
| 10         | Anode f        |  |  |  |  | 10         | Cathode f    |  |  |  |  |