



# TLR312, TLR313, TLR314, TLR315

## RED COLOR 1 DIGIT LED DISPLAY

- 8.3mm Character Height Red Color Numerical and with Polarity Display.
- High Efficiency Electro Luminescence from GaP Diodes, Which Emit Red Light in All Directions Provides High Luminance and Low Power Requirements.
- Luminous Intensity Ranking Performed Uniform Display at the Multi-Digit Drive.
- Operates with Standard TTL, DTL-IC by Same Power Supply.
- Fast Response-Suitable for Time-Shared Operation.

## TYPE NO. vs FULLY DISPLAYED FONT

| COMMON CATHODE | COMMON ANODE | FULLY DISPLAY FONT  |
|----------------|--------------|---|
| TLR312         | TLR313       |  |
| TLR315         | TLR314       |  |

Refer to page 208 for the figure.

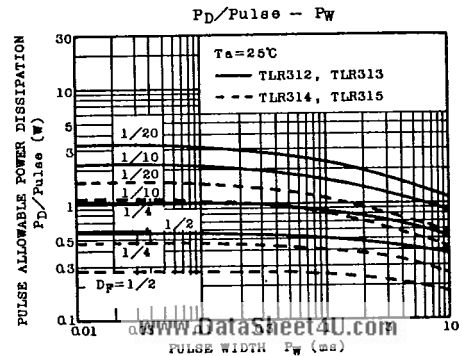
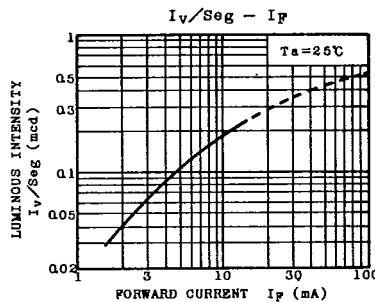
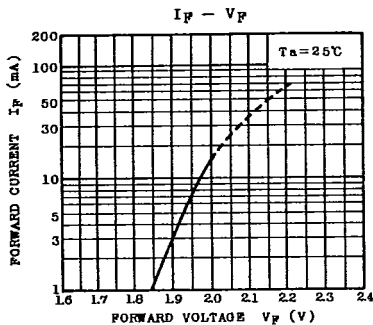
## MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

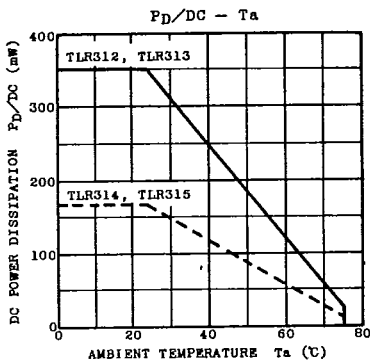
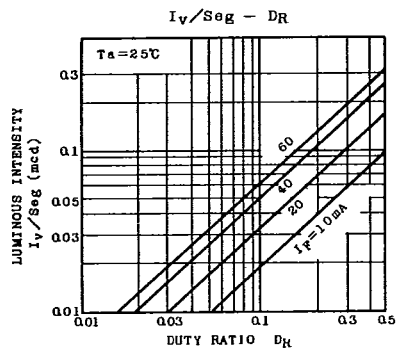
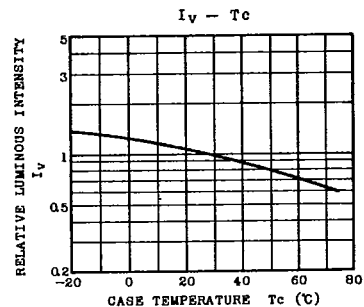
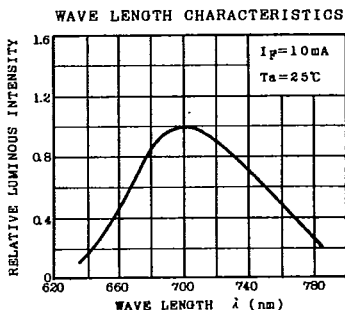
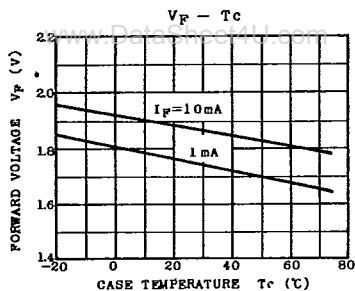
| CHARACTERISTIC                    | SYMBOL                           | RATING   | UNIT             |
|-----------------------------------|----------------------------------|----------|------------------|
| DC Forward Current/Segment        | $I_F(\text{DC})/\text{Seg}$      | 15       | mA               |
| Pulse Forward Current/Seg. (Note) | $I_F(\text{Pulse})/\text{Seg}$   | 80       | mA               |
| Reverse Voltage                   | $V_R$                            | 3        | V                |
| Power Dissipation                 | TLR312, TLR313<br>TLR314, TLR315 | $P_D$    | 350              |
|                                   |                                  |          | 170              |
| Operating Temperature Range       | $T_{opr}$                        | -20 ~ 75 | $^\circ\text{C}$ |
| Storage Temperature Range         | $T_{stg}$                        | -30 ~ 80 | $^\circ\text{C}$ |

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

## ELECTRICAL-OPTICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

| CHARACTERISTIC               | SYMBOL           | TEST CONDITION         | MIN. | TYP. | MAX. | UNIT          |
|------------------------------|------------------|------------------------|------|------|------|---------------|
| Forward Voltage              | $V_F$            | $I_F=15\text{mA}$      | 1.8  | 2.0  | 2.4  | V             |
| Reverse Current              | $I_R$            | $V_R=3\text{V}$        | -    | -    | 5.0  | $\mu\text{A}$ |
| Luminous Intensity/Segment   | $I_v/\text{Seg}$ | $I_F=5\text{mA}$       | 0.04 | 0.11 | -    | mcd           |
| Peak Emission Wave Length    | $\lambda_p$      | $I_F=10\text{mA}$      | -    | 700  | -    | nm            |
| Spectral Half Line Width     | $\Delta\lambda$  | $I_F=10\text{mA}$      | -    | 100  | -    | nm            |
| Terminal Between Capacitance | $C_T$            | $V_R=0, f=1\text{MHz}$ | -    | 100  | -    | pF            |

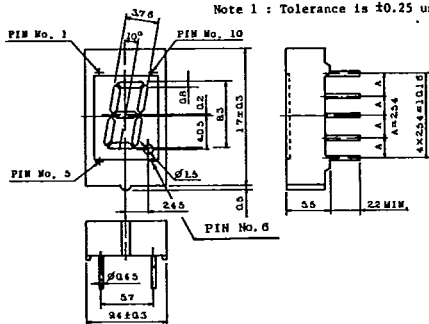




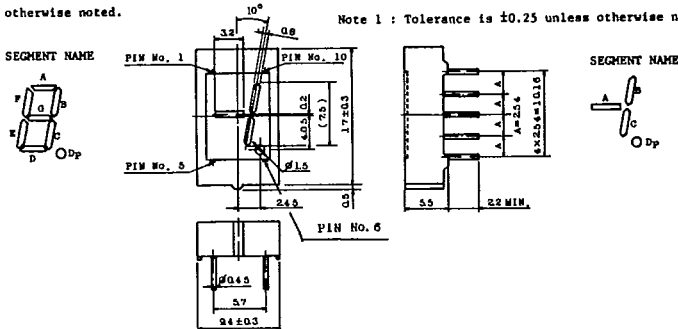
**OUTLINE DIMENSIONS**

Unit in mm

Note 1 : Tolerance is  $\pm 0.25$  unless otherwise noted.

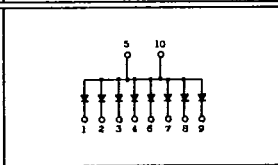
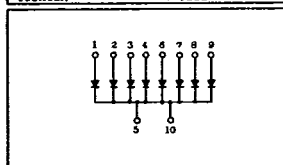


Note 1 : Tolerance is  $\pm 0.25$  unless otherwise noted.



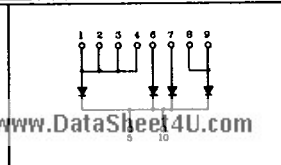
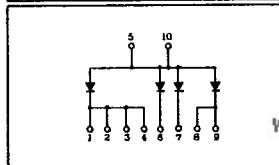
**PIN CONNECTION**

| TLR 312                 |        | TLR 313                   |        |
|-------------------------|--------|---------------------------|--------|
| PIN No.                 |        | PIN No.                   |        |
| 1. ANODE A              |        | 1. CATHODE A              |        |
| 2. ANODE F              |        | 2. CATHODE F              |        |
| 3. ANODE E              |        | 3. CATHODE E              |        |
| 4. ANODE D              |        | 4. CATHODE D              |        |
| 5. COMMON CATHODE       |        | 5. COMMON ANODE           |        |
| 6. ANODE C              |        | 6. CATHODE C              |        |
| 7. ANODE D <sub>p</sub> |        | 7. CATHODE D <sub>p</sub> |        |
| 8. ANODE G              |        | 8. CATHODE G              |        |
| 9. ANODE B              |        | 9. CATHODE B              |        |
| 10. COMMON CATHODE      |        | 10. COMMON ANODE          |        |
| EIAJ                    | -      | EIAJ                      | -      |
| TOSHIBA                 | 4-981B | TOSHIBA                   | 4-981A |



**PIN CONNECTION**

| TLR 314                   |        | TLR 315                 |        |
|---------------------------|--------|-------------------------|--------|
| PIN No.                   |        | PIN No.                 |        |
| 1. CATHODE A              |        | 1. ANODE A              |        |
| 2. CATHODE A              |        | 2. ANODE A              |        |
| 3. CATHODE A              |        | 3. ANODE A              |        |
| 4. CATHODE A              |        | 4. ANODE A              |        |
| 5. COMMON ANODE           |        | 5. COMMON CATHODE       |        |
| 6. CATHODE D <sub>p</sub> |        | 6. ANODE D <sub>p</sub> |        |
| 7. CATHODE C              |        | 7. ANODE C              |        |
| 8. CATHODE B              |        | 8. ANODE B              |        |
| 9. CATHODE B              |        | 9. ANODE B              |        |
| 10. COMMON ANODE          |        | 10. COMMON CATHODE      |        |
| EIAJ                      | -      | EIAJ                    | -      |
| TOSHIBA                   | 4-981C | TOSHIBA                 | 4-981D |



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