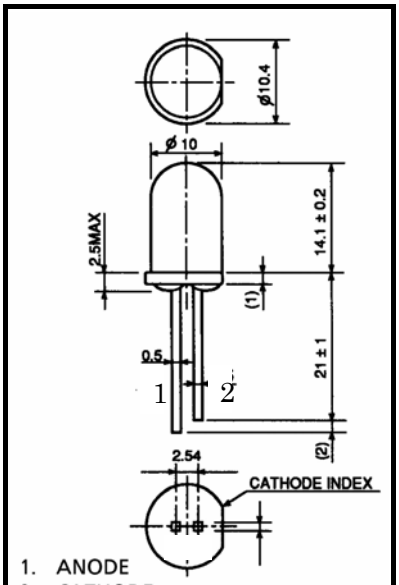
TOSHIBA LED Lamp InGaAℓP Red Light Emission

# TLRH190P(F)

## Panel Circuit Indicator

Unit in mm

- Lead(Pb)-free products (lead: Sn-Ag-Cu)
- 10 mm package
- InGaAℓP technology
- All plastic mold type.
- Colorless clear lens
- Low drive current, high intensity red light emission
  Recommended forward current: $I_F$ = 1~20mA (DC)
- All plastic molded lens, provides an excellent on−off contrast ratio.
- Fast response time, capable of pulse operation.
- High power luminous intensity
- Without stand−offs
- Applications: Suitable for outdoor message signboard, safety equipment.




| | |
|---|---|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 4-10F2 |

Weight: 1.0 g

## Maximum Ratings (Ta = 25°C)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Forward current (DC) | $I_F$ | 50 | mA |
| Reverse voltage | $V_R$ | 4 | V |
| Power dissipation | $P_D$ | 125 | mW |
| Operating temperature range | $T_{opr}$ | −30~85 | °C |
| Storage temperature range | $T_{stg}$ | −40~120 | °C |

## Electrical And Optical Characteristics (Ta = 25°C)

| Characteristic | | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Forward voltage | | $V_F$ | $I_F$ = 20 mA | — | 1.9 | 2.5 | V |
| Reverse current | | $I_R$ | $V_R$ = 4 V | — | — | 50 | μA |
| Luminous intensity | TLRH190P(F) | $I_V$ | $I_F$ = 20 mA (Note) | 4760 | 19000 | — | mcd |
| | TLRH190P (WX,F) | | | 8500 | — | 41400 | |
| Peak emission wavelength | | $\lambda_P$ | $I_F$ = 20 mA | — | (644) | — | nm |
| Spectral line half width | | $\Delta\lambda$ | $I_F$ = 20 mA | — | 18 | — | nm |
| Dominant wavelength | | $\lambda_d$ | $I_F$ = 20mA | — | 630 | — | nm |

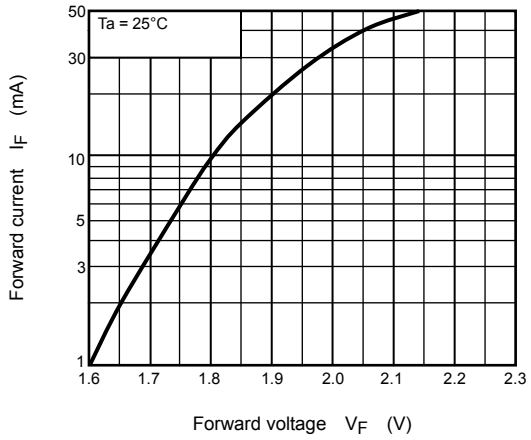
(Note):Lamps are classified into the following ranks according to their luminous intensity, and packed in boxes by each rank.
V: 4760−12900mcd, W: 8500−23000mcd, X: 15300mcd−

## Precaution

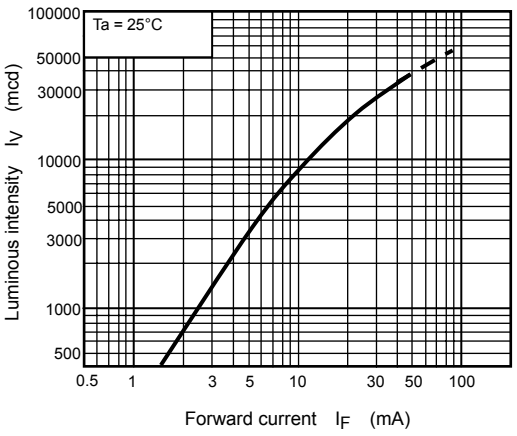
Please be careful of the followings

- Soldering temperature: 260°C max Soldering time: 3 s max
  (Soldering portion of lead: up to 1.6 mm from the body of the device)
- If the lead is formed, the lead should be formed up to 1.6 mm from the body of the device without forming stress to the resin. Soldering should be performed after lead forming.
- This visible LED lamp also emits some IR light. If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

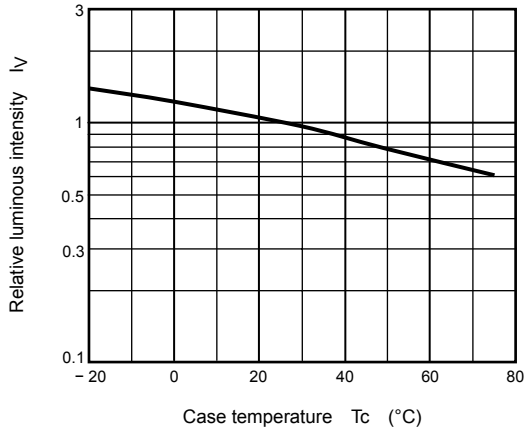
$I_F - V_F$



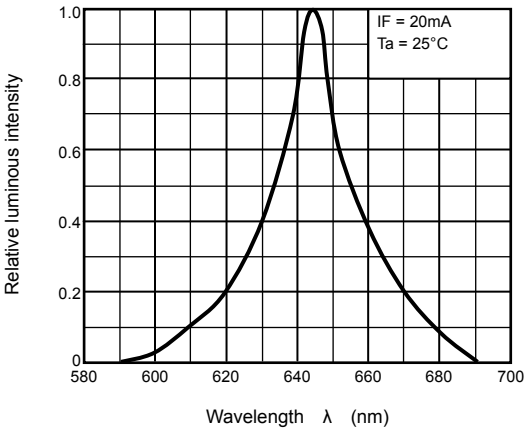

$I_V - I_F$



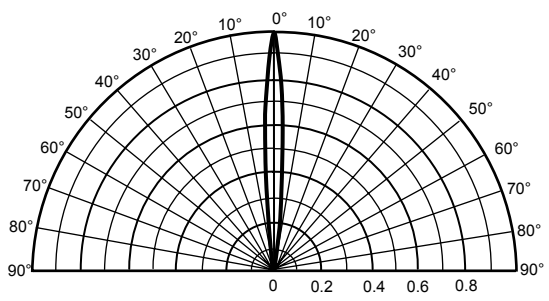

$I_V - Tc$



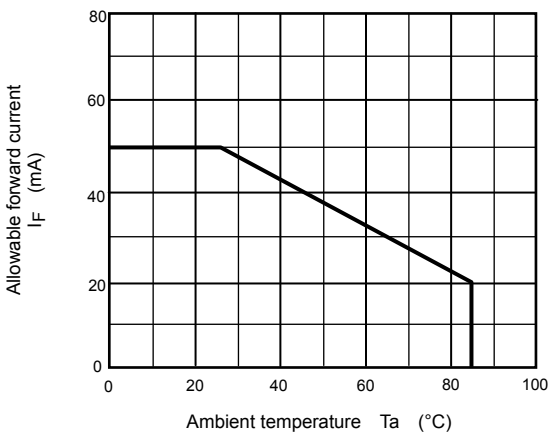

Relative Luminous Intensity _ Wavelength




Radiation Pattern Ta = 25 °C




$I_F - Ta$



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