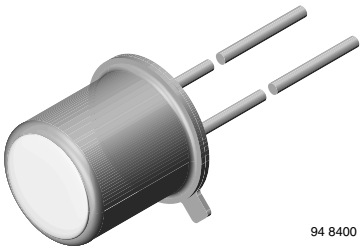
# Infrared Emitting Diode, RoHS Compliant, 875 nm, GaAlAs




## FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): ∅ 4.7
- Peak wavelength: $\lambda_p$ = 875 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi$ = ± 30°
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free

e4

RoHS COMPLIANT

## DESCRIPTION

TSTA7500 is an infrared, 875 nm emitting diode in GaAlAs technology in a hermetically sealed TO-18 package with flat glass window.

## APPLICATIONS

- Radiation source near infrared range

| PRODUCT SUMMARY | | | | |
|---|---|---|---|---|
| COMPONENT | $I_e$ (mW/sr) | $\varphi$ (deg) | $\lambda_P$ (nm) | $t_r$ (ns) |
| TSTA7500 | 6 | ± 30 | 875 | 600 |

**Note**

Test conditions see table “Basic Characteristics”

| ORDERING INFORMATION | | | |
|---|---|---|---|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
| TSTA7500 | Bulk | MOQ: 1000 pcs, 1000 pcs/bulk | TO-18 |

**Note**

MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS | | | | |
|---|---|---|---|---|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage | | $V_R$ | 5 | V |
| Forward current | | $I_F$ | 100 | mA |
| Peak forward current | $t_p/T$ = 0.5, $t_p \leq$ 100 µs | $I_{FM}$ | 200 | mA |
| Surge forward current | $t_p \leq$ 100 µs | $I_{FSM}$ | 2.5 | A |
| Power dissipation | | $P_V$ | 180 | mW |
| | $T_{case} \leq$ 25 °C | $P_V$ | 500 | mW |
| Junction temperature | | $T_j$ | 100 | °C |
| Storage temperature range | | $T_{stg}$ | - 55 to + 100 | °C |
| Thermal resistance junction/ambient | leads not soldered | $R_{thJA}$ | 450 | K/W |
| Thermal resistance junction/case | leads not soldered | $R_{thJC}$ | 150 | K/W |

**Note**

$T_{amb}$ = 25 °C, unless otherwise specified

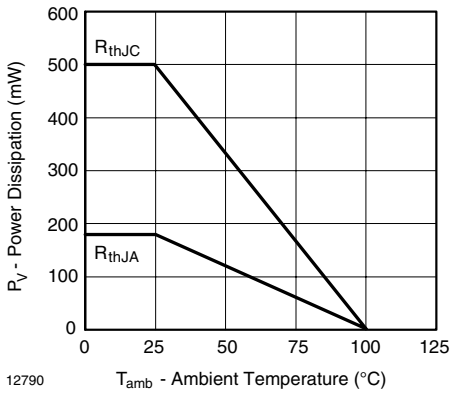



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

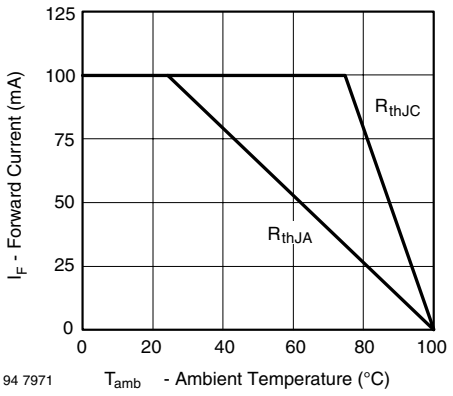



Fig. 2 - Forward Current Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Forward voltage | $I_F$ = 100 mA, $t_p \leq 20$ ms | $V_F$ | | 1.4 | 1.8 | V |
| Breakdown voltage | $I_R$ = 100 µA | $V_{(BR)}$ | 5 | | | V |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz, E = 0 | $C_j$ | | 20 | | pF |
| Radiant intensity | $I_F$ = 100 mA, $t_p \leq 20$ ms | $I_e$ | 3.5 | 6 | 16 | mW/sr |
| Radiant power | $I_F$ = 100 mA, $t_p \leq 20$ ms | $\phi_e$ | | 10 | | mW |
| Temperature coefficient of $\phi_e$ | $I_F$ = 100 mA | $TK\phi_e$ | | - 0.7 | | %/K |
| Angle of half intensity | | $\varphi$ | | ± 30 | | deg |
| Peak wavelength | $I_F$ = 100 mA | $\lambda_p$ | | 875 | | nm |
| Spectral bandwidth | $I_F$ = 100 mA | $\Delta\lambda$ | | 80 | | nm |
| Rise time | $I_F$ = 100 mA | $t_r$ | | 600 | | ns |
| | $I_F$ = 1.5 A, $t_p/T$ = 0.01, $t_p \leq 10$ µs | $t_r$ | | 300 | | ns |
| Virtual source diameter | | d | | 0.5 | | mm |

**Note**

$T_{amb}$ = 25 °C, unless otherwise specified

## BASIC CHARACTERISTICS

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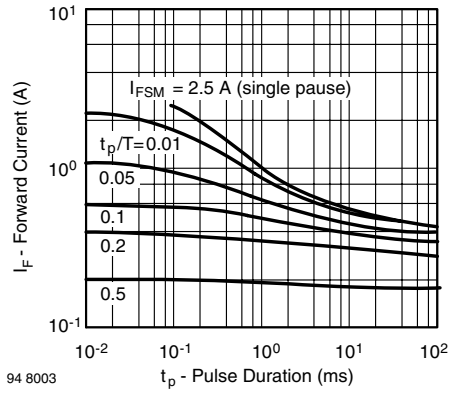



Fig. 3 - Pulse Forward Current vs. Pulse Duration

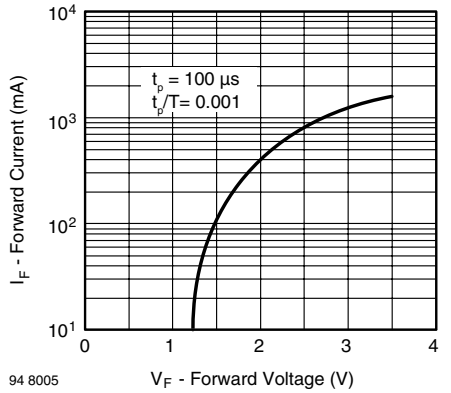



Fig. 4 - Forward Current vs. Forward Voltage

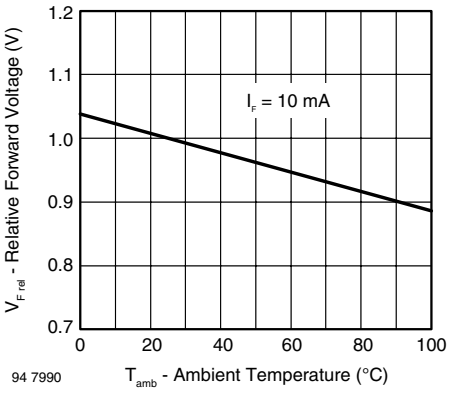



Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

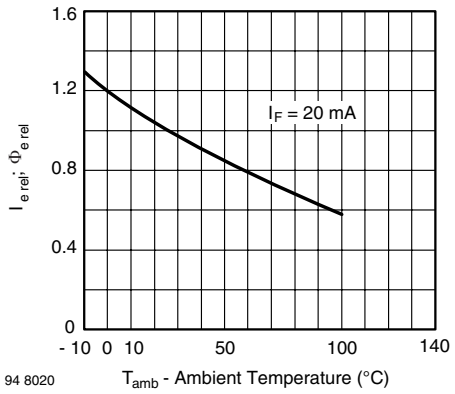



Fig. 8 - Rel. Radiant Intensity/Power vs. Ambient Temperature

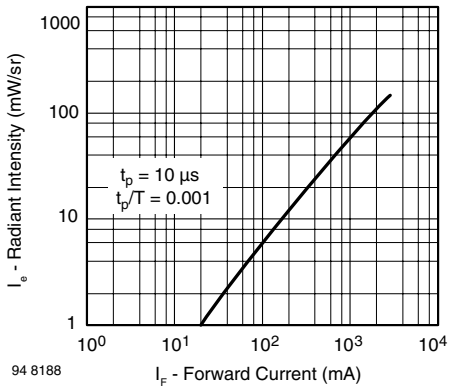



Fig. 6 - Radiant Intensity vs. Forward Current

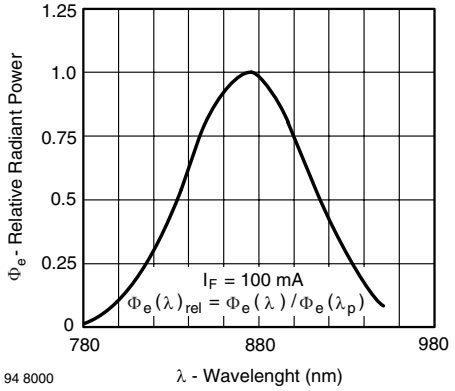



Fig. 9 - Relative Radiant Power vs. Wavelength

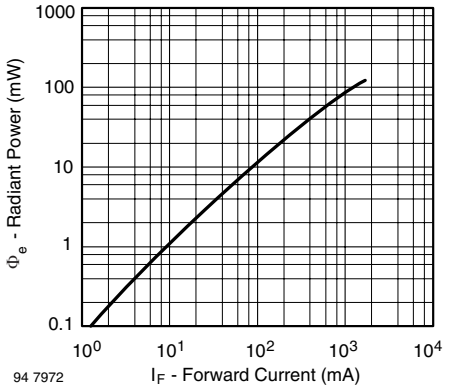



Fig. 7 - Radiant Power vs. Forward Current

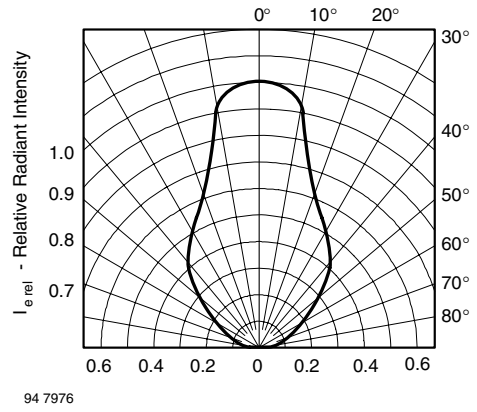
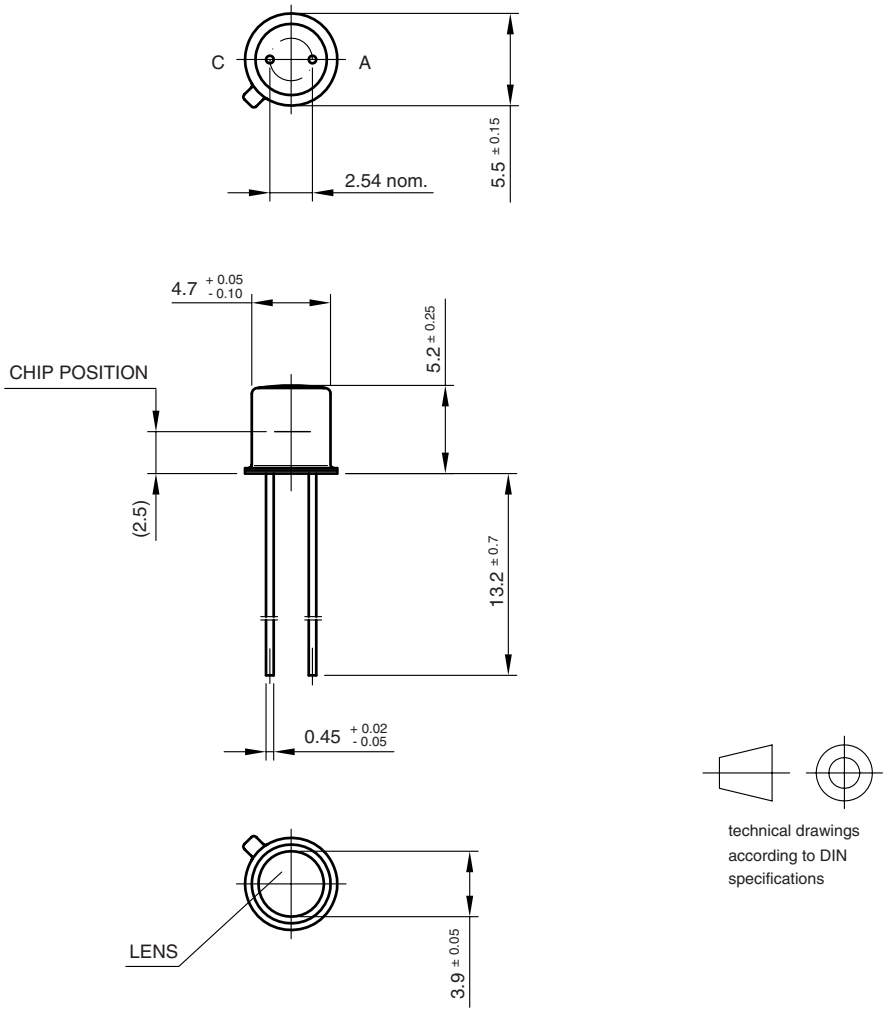



Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters

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