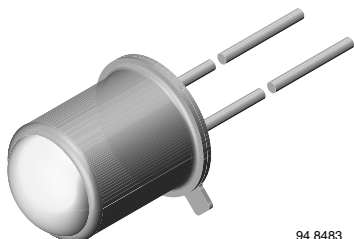


## Infrared Emitting Diode, RoHS Compliant, 875 nm, GaAlAs



94 8483

### DESCRIPTION

TSTA7100 is an infrared, 875 nm emitting diode in GaAlAs technology in a hermetically sealed TO-18 package with lens.

### FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm):  $\varnothing$  4.7
- Peak wavelength:  $\lambda_p = 875$  nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity:  $\varphi = \pm 5^\circ$
- 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



**RoHS**  
COMPLIANT

### APPLICATIONS

- Radiation source near infrared range

### PRODUCT SUMMARY

| COMPONENT | $I_e$ (mW/sr) | $\varphi$ (deg) | $\lambda_p$ (nm) | $t_r$ (ns) |
|-----------|---------------|-----------------|------------------|------------|
| TSTA7100  | 50            | $\pm 5$         | 875              | 600        |

#### Note

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS                      | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| TSTA7100      | 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                | $t_p/T = 0.5, t_p \leq 100 \mu s$ | $I_{FM}$   | 200           | mA         |
| Surge forward current               | $t_p \leq 100 \mu s$              | $I_{FSM}$  | 2.5           | A          |
| Power dissipation                   |                                   | $P_V$      | 180           | mW         |
|                                     | $T_{case} \leq 25^\circ C$        | $P_V$      | 500           | mW         |
| Junction temperature                |                                   | $T_j$      | 100           | $^\circ C$ |
| Storage temperature range           |                                   | $T_{stg}$  | - 55 to + 100 | $^\circ C$ |
| 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

$T_{amb} = 25^\circ C$ , unless otherwise specified



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

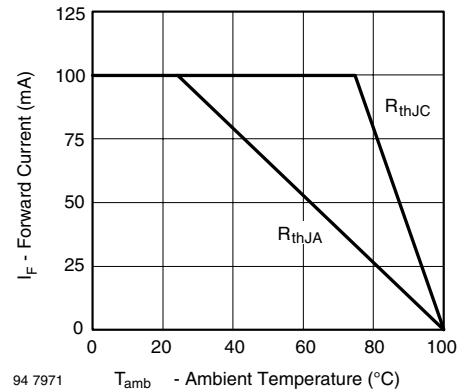


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS               |                                                                            |                 |      |         |      |       |
|-------------------------------------|----------------------------------------------------------------------------|-----------------|------|---------|------|-------|
| PARAMETER                           | TEST CONDITION                                                             | SYMBOL          | MIN. | TYP.    | MAX. | UNIT  |
| Forward voltage                     | $I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$                          | $V_F$           |      | 1.4     | 1.8  | V     |
| Breakdown voltage                   | $I_R = 100 \text{ }\mu\text{A}$                                            | $V_{(BR)}$      | 5    |         |      | V     |
| Junction capacitance                | $V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ , $E = 0$                        | $C_j$           |      | 20      |      | pF    |
| Radiant intensity                   | $I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$                          | $I_e$           | 20   | 50      | 100  | mW/sr |
| Radiant power                       | $I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$                          | $\phi_e$        |      | 10      |      | mW    |
| Temperature coefficient of $\phi_e$ | $I_F = 100 \text{ mA}$                                                     | $TK\phi_e$      |      | - 0.7   |      | %/K   |
| Angle of half intensity             |                                                                            | $\varphi$       |      | $\pm 5$ |      | deg   |
| Peak wavelength                     | $I_F = 100 \text{ mA}$                                                     | $\lambda_p$     |      | 875     |      | nm    |
| Spectral bandwidth                  | $I_F = 100 \text{ mA}$                                                     | $\Delta\lambda$ |      | 80      |      | nm    |
| Rise time                           | $I_F = 100 \text{ mA}$                                                     | $t_r$           |      | 600     |      | ns    |
|                                     | $I_F = 1.5 \text{ A}$ , $t_p/T = 0.01$ , $t_p \leq 10 \text{ }\mu\text{s}$ | $t_r$           |      | 300     |      | ns    |
| Virtual source diameter             |                                                                            | $d$             |      | 1.5     |      | mm    |

**Note**
 $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified

**BASIC CHARACTERISTICS**
 $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified


Fig. 3 - Pulse Forward Current vs. Pulse Duration

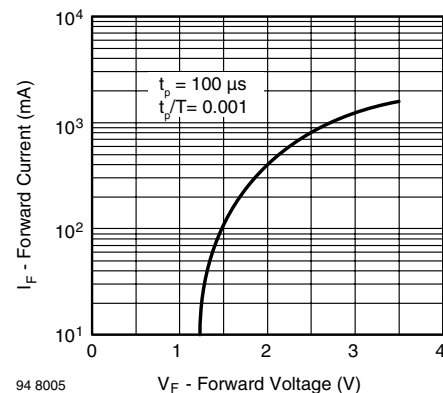


Fig. 4 - Forward Current vs. Forward Voltage



Fig. 5 - Relative Forward Voltage vs. Ambient Temperature



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

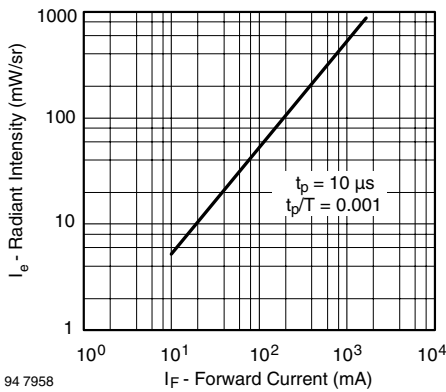


Fig. 6 - Radiant Intensity vs. Forward Current

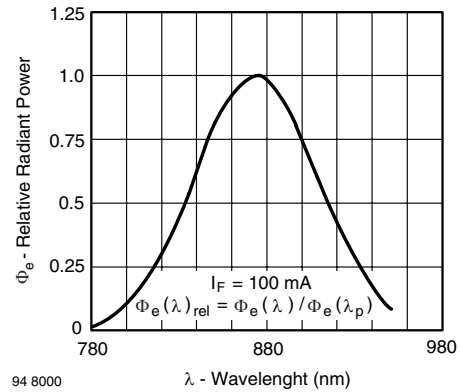


Fig. 9 - Relative Radiant Power vs. Wavelength

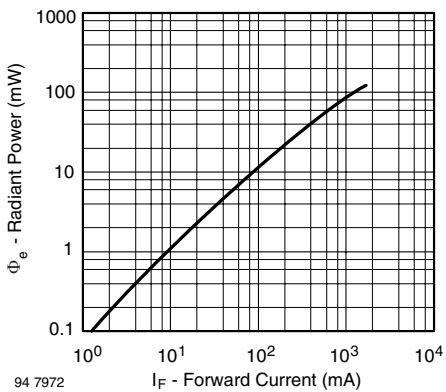


Fig. 7 - Radiant Power vs. Forward Current

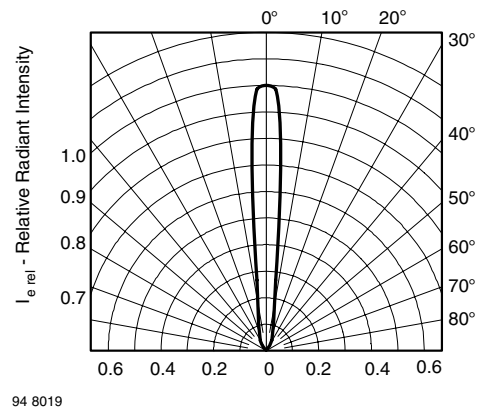
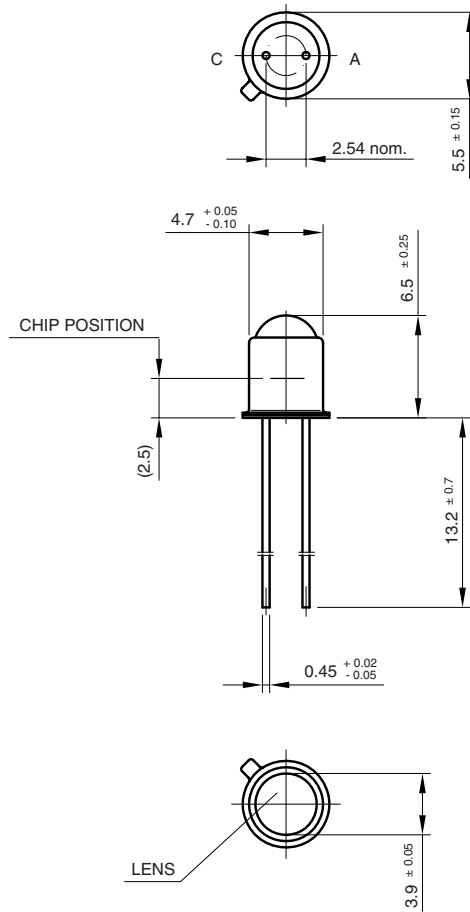


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

Drawing-No.: 6.503-5002.01-4  
Issue: 2; 24.08.98  
96 12174



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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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