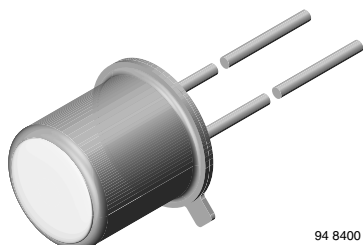


## Infrared Emitting Diode, RoHS Compliant, 875 nm, GaAlAs



94 8400

### DESCRIPTION

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

### 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:  $\varphi = \pm 30^\circ$
- 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)
TSTA7500	6	$\pm 30$	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	$t_p/T = 0.5, t_p \leq 100 \mu s$	$I_{FM}$	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



Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors  
875 nm, GaAlAs

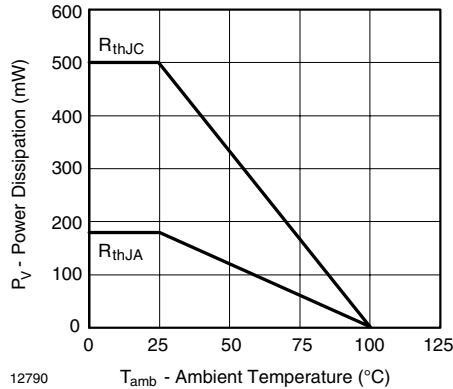


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

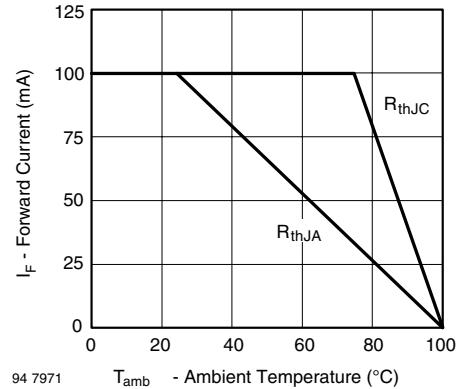


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	$I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$	$I_e$	3.5	6	16	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		$\varphi$		$\pm 30$		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		$d$		0.5		mm

**Note**

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

**BASIC CHARACTERISTICS**

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

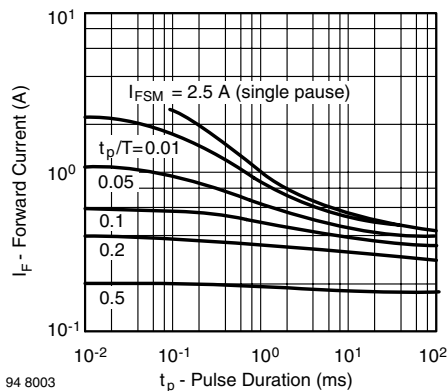


Fig. 3 - Pulse Forward Current vs. Pulse Duration

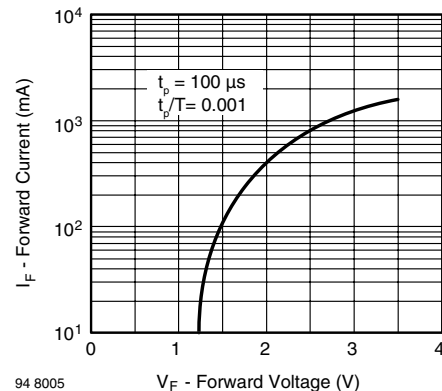


Fig. 4 - Forward Current vs. Forward Voltage



Fig. 5 - Relative Forward Voltage vs. Ambient Temperature



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

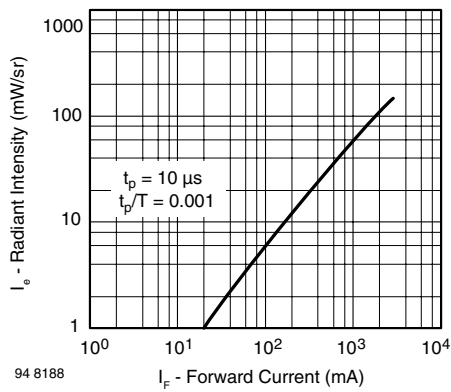


Fig. 6 - Radiant Intensity vs. Forward Current

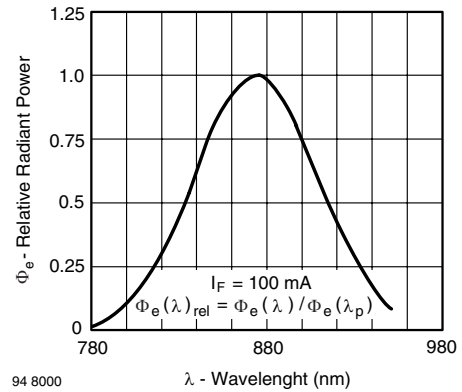


Fig. 9 - Relative Radiant Power vs. Wavelength

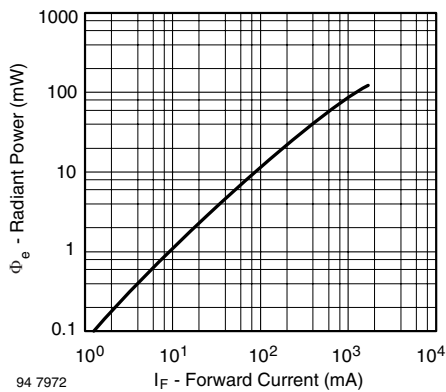


Fig. 7 - Radiant Power vs. Forward Current

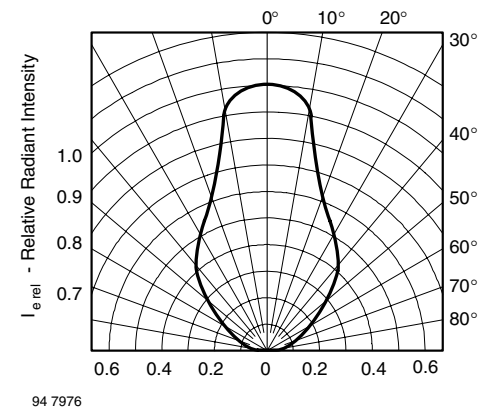
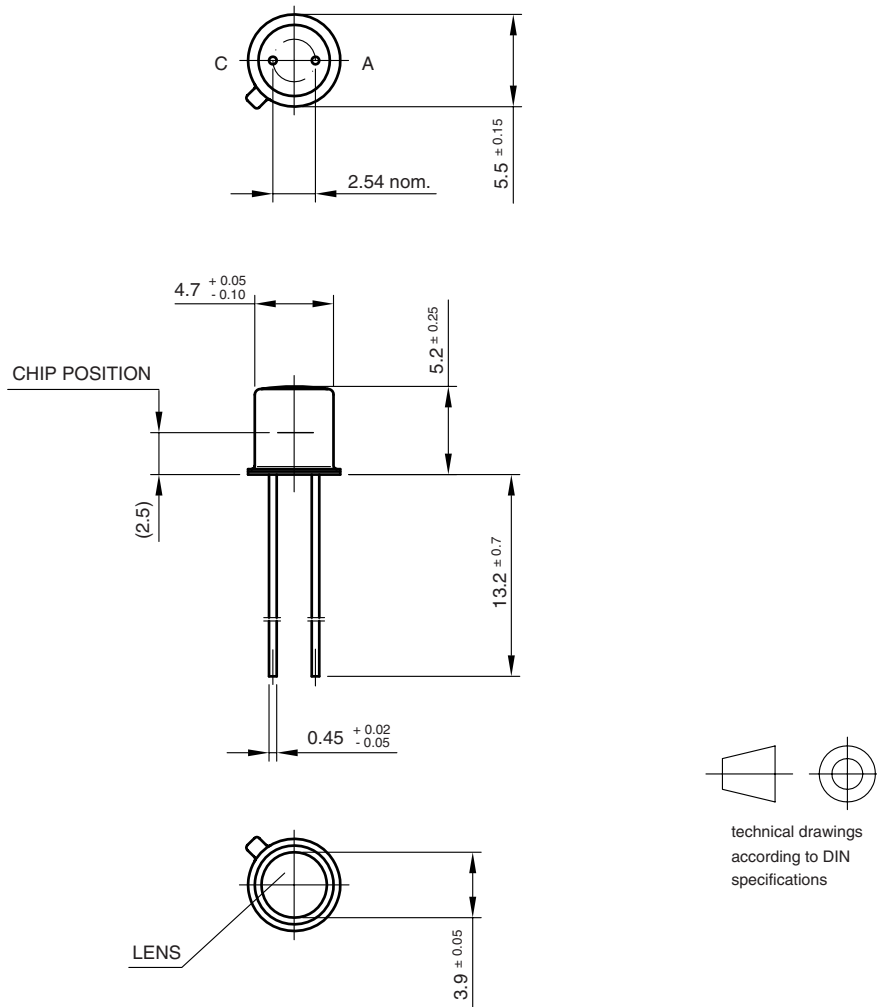


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.503-5001.01-4  
Issue: 2; 24.08.98  
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