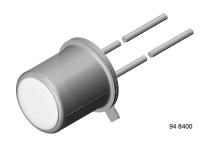
### Vishay Semiconductors



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



#### **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): Ø 4.7
Peak wavelength: λ<sub>p</sub> = 875 nm

High reliability

· High radiant power

· High radiant intensity

• Angle of half intensity:  $\phi = \pm 30^{\circ}$ 

• 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



· Radiation source near infrared range

PRODUCT SUMMARY					
COMPONENT	I <sub>e</sub> (mW/sr)	φ (deg)	λ <sub>P</sub> (nm)	t <sub>r</sub> (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 <sub>R</sub>	5	V	
Forward current		I <sub>F</sub>	100	mA	
Peak forward current	$t_p/T = 0.5, t_p \le 100 \ \mu s$	I <sub>FM</sub>	200	mA	
Surge forward current	t <sub>p</sub> ≤ 100 μs	I <sub>FSM</sub>	2.5	Α	
Dower discination		P <sub>V</sub>	180	mW	
Power dissipation —	T <sub>case</sub> ≤ 25 °C	P <sub>V</sub>	500	mW	
Junction temperature		Tj	100	°C	
Storage temperature range		T <sub>stg</sub>	- 55 to + 100	°C	
Thermal resistance junction/ambient	leads not soldered	R <sub>thJA</sub>	450	K/W	
Thermal resistance junction/case	leads not soldered	R <sub>thJC</sub>	150	K/W	

#### Note

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





ROHS



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

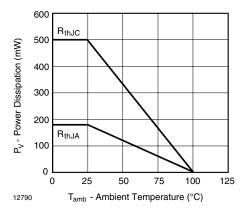


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

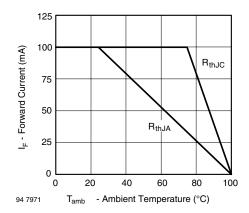


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$	$V_{F}$		1.4	1.8	V
Breakdown voltage	I <sub>R</sub> = 100 μA	$V_{(BR)}$	5			V
Junction capacitance	$V_R = 0 \text{ V, f} = 1 \text{ MHz, E} = 0$	C <sub>j</sub>		20		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$	I <sub>e</sub>	3.5	6	16	mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$	фе		10		mW
Temperature coefficient of $\phi_e$	I <sub>F</sub> = 100 mA	TKφ <sub>e</sub>		- 0.7		%/K
Angle of half intensity		φ		± 30		deg
Peak wavelength	I <sub>F</sub> = 100 mA	$\lambda_{p}$		875		nm
Spectral bandwidth	I <sub>F</sub> = 100 mA	Δλ		80		nm
Disching	I <sub>F</sub> = 100 mA	t <sub>r</sub>		600		ns
Rise time	$I_F = 1.5 \text{ A}, t_p/T = 0.01, t_p \le 10 \mu\text{s}$	t <sub>r</sub>		300		ns
Virtual source diameter		d		0.5		mm

#### Note

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

#### **BASIC CHARACTERISTICS**

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

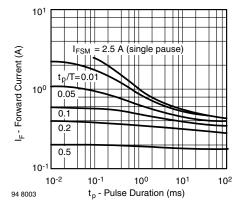


Fig. 3 - Pulse Forward Current vs. Pulse Duration

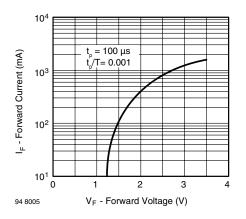


Fig. 4 - Forward Current vs. Forward Voltage

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



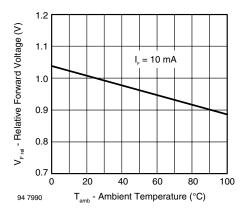


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

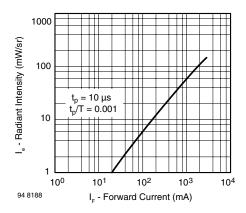


Fig. 6 - Radiant Intensity vs. Forward Current

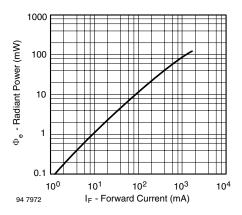


Fig. 7 - Radiant Power vs. Forward Current

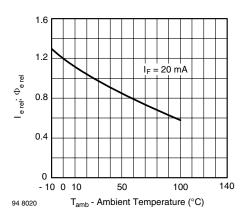


Fig. 8 - Rel. Radiant Intensity/Power vs. Ambient Temperature

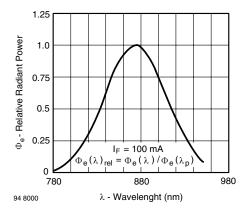


Fig. 9 - Relative Radiant Power vs. Wavelength

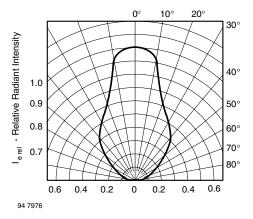
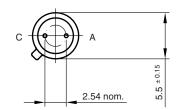


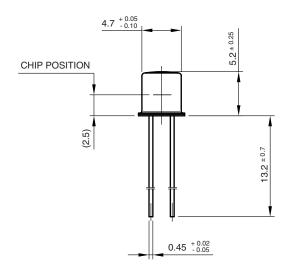
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

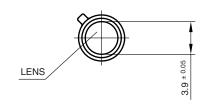


# Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors 875 nm, GaAlAs

#### **PACKAGE DIMENSIONS** in millimeters









technical drawings according to DIN specifications

Drawing-No.: 6.503-5001.01-4

Issue: 2; 24.08.98

96 12173



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Vishay

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