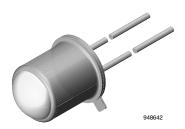
### Vishay Semiconductors



## Infrared Emitting Diode, RoHS Compliant, 950 nm, GaAs



## DESCRIPTION

TSTS7300 is an infrared, 950 nm emitting diode in GaAs technology in a hermetically sealed TO-18 package with lens.

#### **FEATURES**

Package type: leaded
Package form: TO-18
Dimensions (in mm): Ø 4.7

• Peak wavelength:  $\lambda_p = 950 \text{ nm}$ 

High reliability

· High radiant power

· High radiant intensity

• Angle of half intensity:  $\phi = \pm 12^{\circ}$ 

· 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 in near infrared range

PRODUCT SUMMARY					
COMPONENT	I <sub>e</sub> (mW/sr)	φ (deg)	λ <sub>P</sub> (nm)	t <sub>r</sub> (ns)	
TSTS7300	6.3	± 12	950	800	

#### Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION						
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM			
TSTS7300	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	T <sub>case</sub> ≤ 25 °C	I <sub>F</sub>	250	mA	
Peak forward current	$t_p/T = 0.5, t_p \le 100 \ \mu s, T_{case} \le 25 \ ^{\circ}C$	I <sub>FM</sub>	500	mA	
Surge forward current	t <sub>p</sub> ≤ 100 μs	I <sub>FSM</sub>	2.5	Α	
Power dissipation		P <sub>V</sub>	170	mW	
	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	$R_{thJC}$	150	K/W	

#### Note

T<sub>amb</sub> = 25 °C, unless otherwise specified

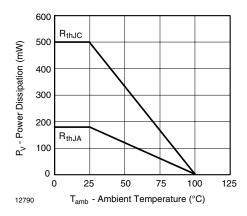




RoHS



## Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors 950 nm, GaAs



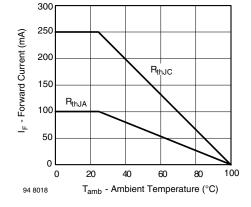


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$	$V_{F}$		1.3	1.7	V
Temperature coefficient of V <sub>F</sub>	I <sub>F</sub> = 100 mA	TK <sub>VF</sub>		- 1.3		mV/K
Breakdown voltage	I <sub>R</sub> = 100 μA	V <sub>(BR)</sub>	5			V
Junction capacitance	$V_R = 0 V, f = 1 MHz, E = 0$	C <sub>j</sub>		30		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I <sub>e</sub>	4	6.3	32	mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$	фe		7		mW
Temperature coefficient of $\phi_{\text{e}}$	I <sub>F</sub> = 100 mA	TKφ <sub>e</sub>		- 0.8		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I <sub>F</sub> = 100 mA	$\lambda_{p}$		950		nm
Spectral bandwidth	I <sub>F</sub> = 100 mA	Δλ		50		nm
Rise time	I <sub>F</sub> = 100 mA	t <sub>r</sub>		800		ns
	$I_F = 1.5 \text{ A}, t_p/T = 0.01, t_p \le 10 \mu\text{s}$	t <sub>r</sub>		400		ns
Virtual source diameter		d		1		mm

#### Note

T<sub>amb</sub> = 25 °C, unless otherwise specified

#### **BASIC CHARACTERISTICS**

T<sub>amb</sub> = 25 °C, unless otherwise specified

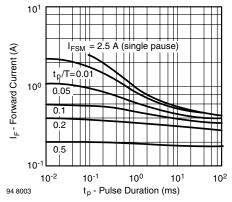


Fig. 3 - Pulse Forward Current vs. Pulse Duration

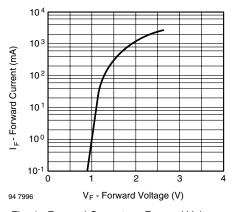


Fig. 4 - Forward Current vs. Forward Voltage

## Vishay Semiconductors Infrared Emitting Diode, RoHS Compliant, 950 nm, GaAs



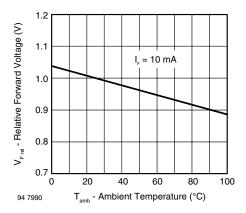


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

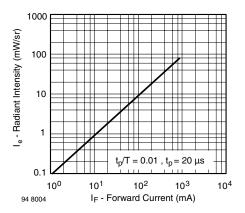


Fig. 6 - Radiant Intensity vs. Forward Current

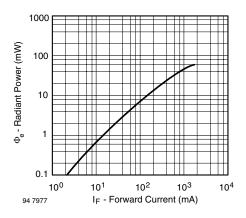


Fig. 7 - Radiant Power vs. Forward Current

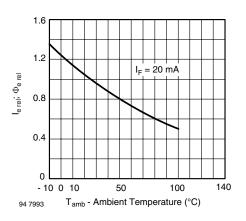


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

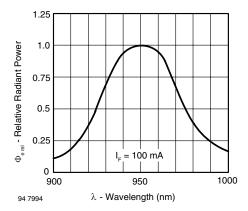


Fig. 9 - Relative Radiant Power vs. Wavelength

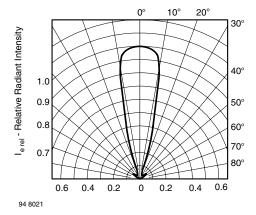
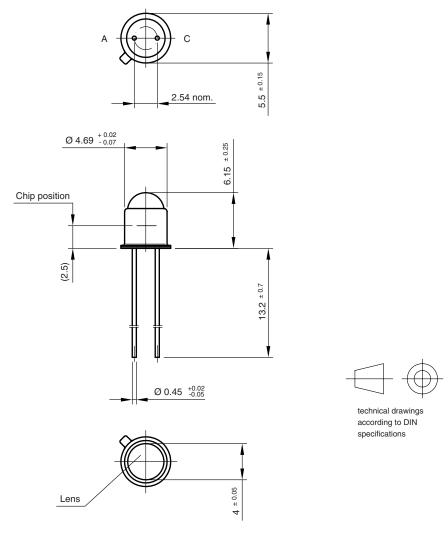


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



# Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors 950 nm, GaAs

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



Drawing-No.: 6.503-5022.02-4

Issue: 1; 24.08.98

14487



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