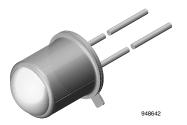
# **Vishay Semiconductors**



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



## 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

### **APPLICATIONS**

• Radiation source in near infrared range

### DESCRIPTION

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

# PRODUCT SUMMARY

PRODUCT SUMMART				
COMPONENT	l <sub>e</sub> (mW/sr)	φ <b>(deg)</b>	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	$T_{case} \le 25 \ ^{\circ}C$	١ <sub>F</sub>	250	mA
Peak forward current	$t_p/T$ = 0.5, $t_p \leq 100~\mu s,~T_{case} \leq 25~^\circ C$	I <sub>FM</sub>	500	mA
Surge forward current	$t_p \le 100 \ \mu s$	I <sub>FSM</sub>	2.5	А
		Pv	170	mW
Power dissipation	$T_{case} \le 25 \ ^{\circ}C$	Pv	500	mW
Junction temperature		Тj	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



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

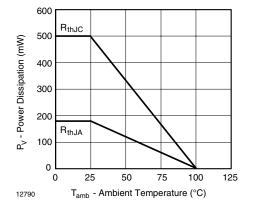


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

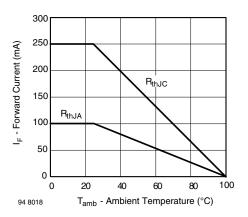


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_{F} = 100 \text{ mA}, t_{p} \le 20 \text{ ms}$	V <sub>F</sub>		1.3	1.7	V
Temperature coefficient of $V_F$	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 <sub>R</sub> = 0 V, f = 1 MHz, E = 0	Cj		30		pF
Radiant intensity	I <sub>F</sub> = 100 mA, t <sub>p</sub> = 20 ms	l <sub>e</sub>	4	6.3	32	mW/sr
Radiant power	$I_F$ = 100 mA, $t_p \le$ 20 ms	фе		7		mW
Temperature coefficient of $\phi_{e}$	I <sub>F</sub> = 100 mA	ΤKφ <sub>e</sub>		- 0.8		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I <sub>F</sub> = 100 mA	λρ		950		nm
Spectral bandwidth	I <sub>F</sub> = 100 mA	Δλ		50		nm
	I <sub>F</sub> = 100 mA	t <sub>r</sub>		800		ns
Rise time	$I_F = 1.5 \; A, \; t_p / T = 0.01, \; t_p \leq 10 \; \mu s$	tr		400	r	ns
Virtual source diameter		d		1		mm

#### Note

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

#### **BASIC CHARACTERISTICS**

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

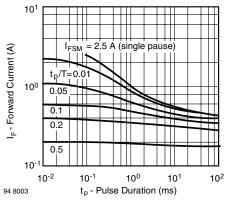
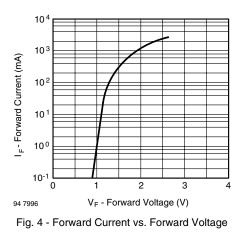


Fig. 3 - Pulse Forward Current vs. Pulse Duration



# **TSTS7300**

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

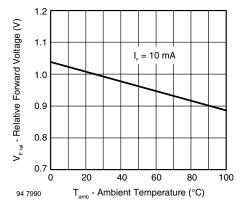


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

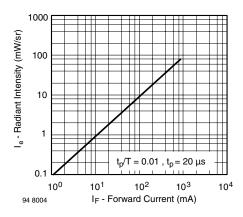


Fig. 6 - Radiant Intensity vs. Forward Current

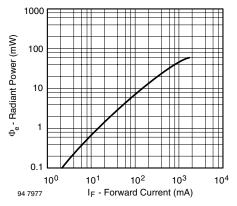


Fig. 7 - Radiant Power vs. Forward Current

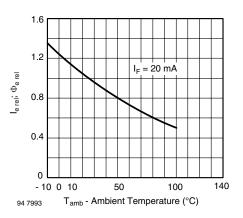


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

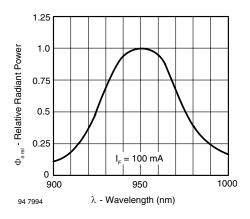


Fig. 9 - Relative Radiant Power vs. Wavelength

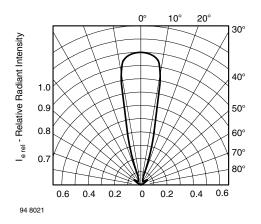


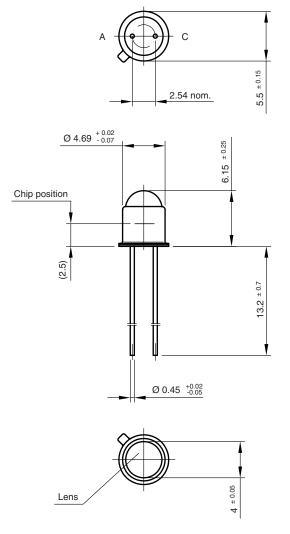
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement





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

### **PACKAGE DIMENSIONS** in millimeters





technical drawings according to DIN specifications

Drawing-No.: 6.503-5022.02-4 Issue: 1; 24.08.98 14487



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