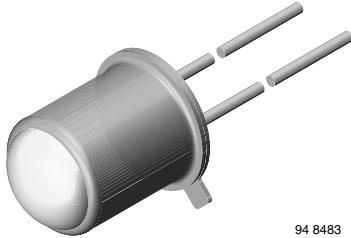


## Infrared Emitting Diode, RoHS Compliant, 950 nm, GaAs



94 8483

### FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm):  $\varnothing$  4.7
- Peak wavelength:  $\lambda_p = 950$  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

### DESCRIPTION

TSTS7100 is an infrared, 950 nm emitting diode in GaAs technology in a hermetically sealed TO-18 package with lens.

### APPLICATIONS

- Radiation source in near infrared range

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\varphi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
TSTS7100	> 10	$\pm 5$	950	800

#### Note

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSTS7100	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	$T_{case} \leq 25^\circ\text{C}$	$I_F$	250	mA
Peak forward current	$t_p/T = 0.5$ , $t_p \leq 100 \mu\text{s}$ , $T_{case} \leq 25^\circ\text{C}$	$I_{FM}$	500	mA
Surge forward current	$t_p \leq 100 \mu\text{s}$	$I_{FSM}$	2.5	A
Power dissipation		$P_V$	170	mW
	$T_{case} \leq 25^\circ\text{C}$	$P_V$	500	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	- 55 to + 100	$^\circ\text{C}$
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

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



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

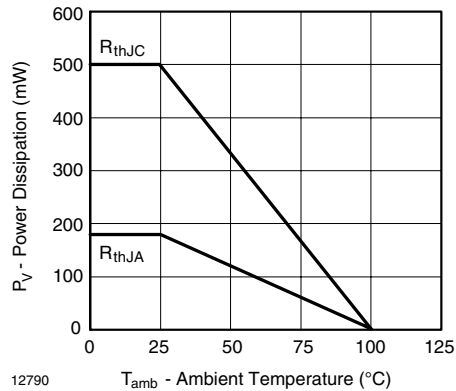


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

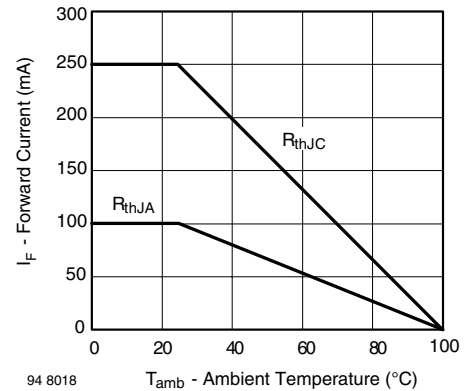


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$	$V_F$		1.3	1.7	V
Temperature coefficient of $V_F$	$I_F = 100 \text{ mA}$	$TK_{V_F}$		- 1.3		mV/K
Breakdown voltage	$I_R = 100 \text{ }\mu\text{A}$	$V_{(BR)}$	5			V
Junction capacitance	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ , $E = 0$	$C_j$		30		pF
Radiant intensity	$I_F = 100 \text{ mA}$ , $t_p = 20 \text{ ms}$	$I_e$	10		50	mW/sr
Radiant power	$I_F = 100 \text{ mA}$ , $t_p \leq 20 \text{ ms}$	$\phi_e$		7		mW
Temperature coefficient of $\phi_e$	$I_F = 100 \text{ mA}$	$TK_{\phi_e}$		- 0.8		%/K
Angle of half intensity		$\varphi$		$\pm 5$		deg
Peak wavelength	$I_F = 100 \text{ mA}$	$\lambda_p$		950		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\Delta\lambda$		50		nm
Rise time	$I_F = 100 \text{ mA}$	$t_r$		800		ns
	$I_F = 1.5 \text{ A}$ , $t_p/T = 0.01$ , $t_p \leq 10 \text{ }\mu\text{s}$	$t_r$		400		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

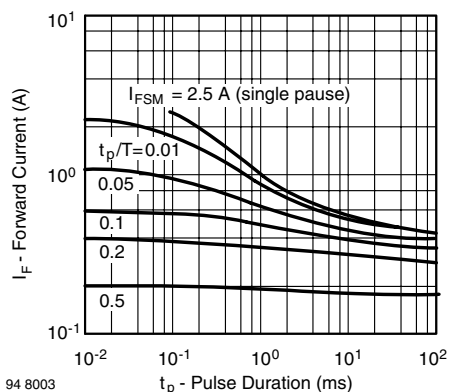


Fig. 3 - Pulse Forward Current vs. Pulse Duration

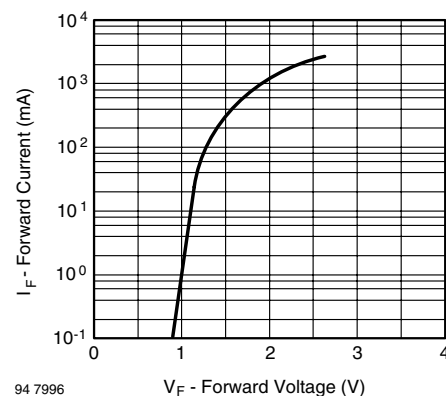


Fig. 4 - Forward Current vs. Forward Voltage

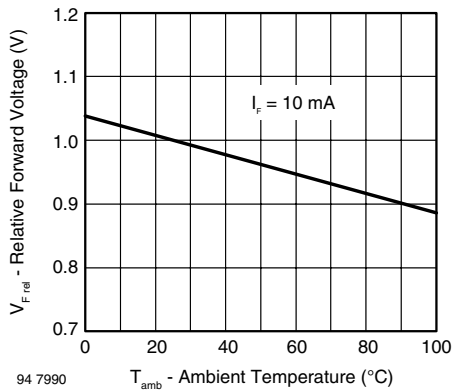


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

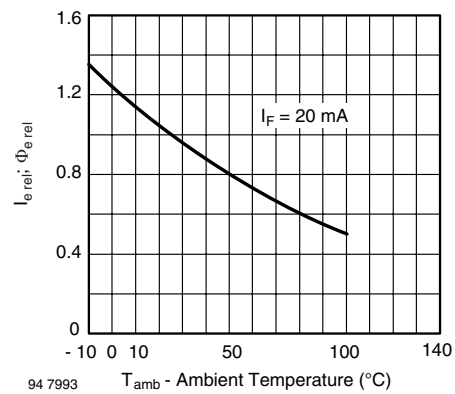


Fig. 8 - Rel. Radiant Intensity/Power vs. Ambient Temperature

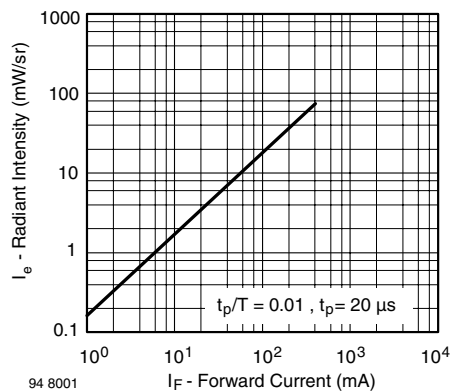


Fig. 6 - Radiant Intensity vs. Forward Current

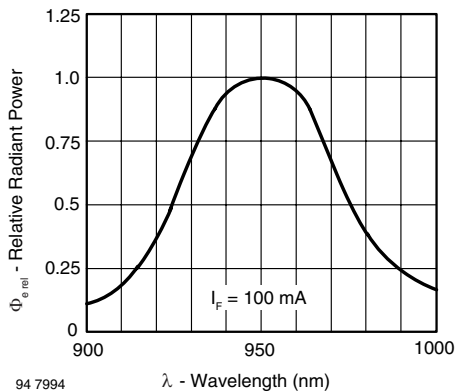


Fig. 9 - Relative Radiant Power vs. Wavelength

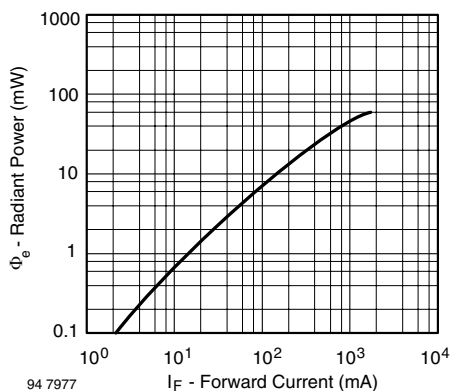


Fig. 7 - Radiant Power vs. Forward Current

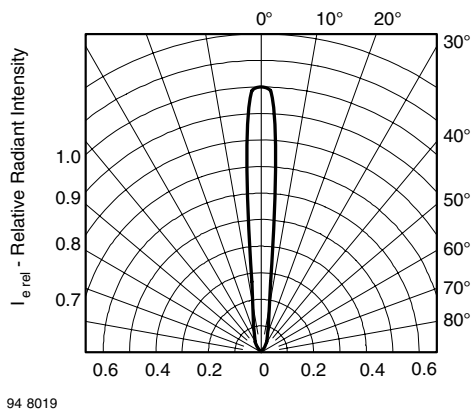
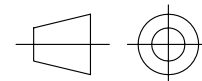
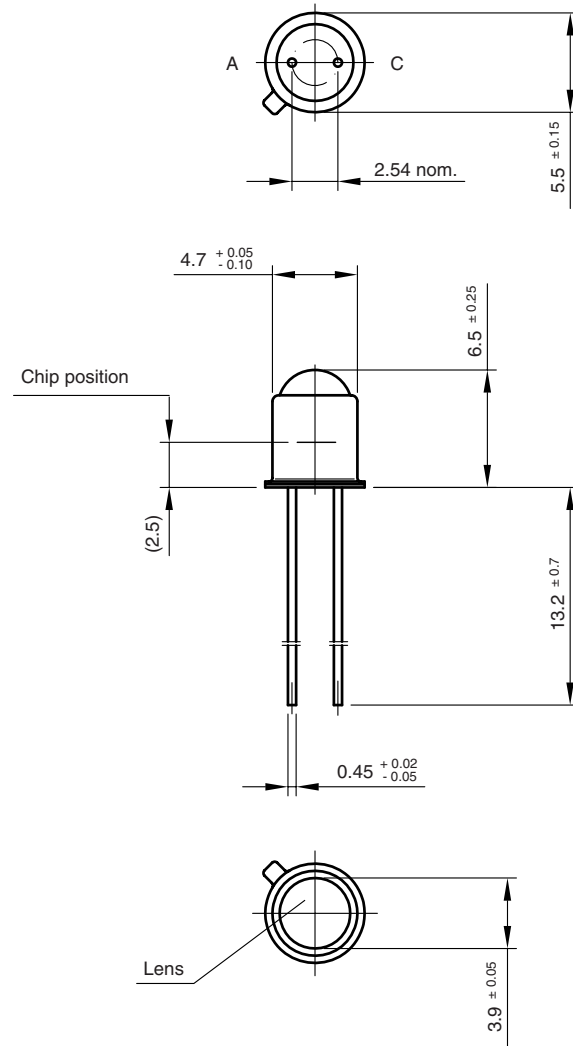


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters

technical drawings  
according to DIN  
specifications

Drawing-No.: 6.503-5002.02-4

Issue: 1; 24.08.98

14486



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