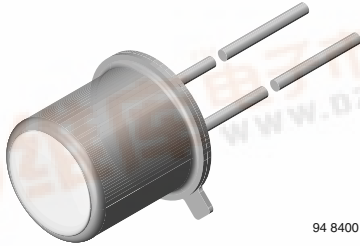


TSTS7500

Vishay Semiconductors

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

94 8400

FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): $\varnothing 4.7$
- Peak wavelength: $\lambda_p = 950 \text{ nm}$
- 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**DESCRIPTION**

TSTS7500 is an infrared, 950 nm emitting diode in GaAs technology in a hermetically sealed TO-18 package with flat glass window.

APPLICATIONS

- Radiation source in near infrared range

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ (deg)	λ_p (nm)	t_r (ns)
TSTS7500	1.6	± 30	950	800

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSTS7500	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





TSTS7500

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

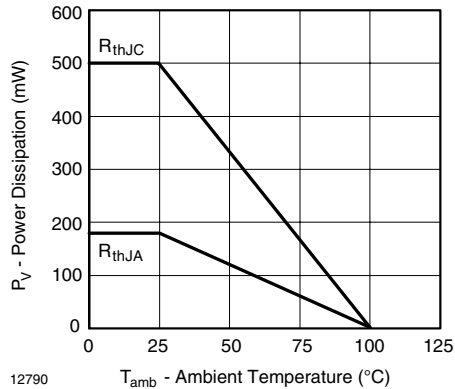


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

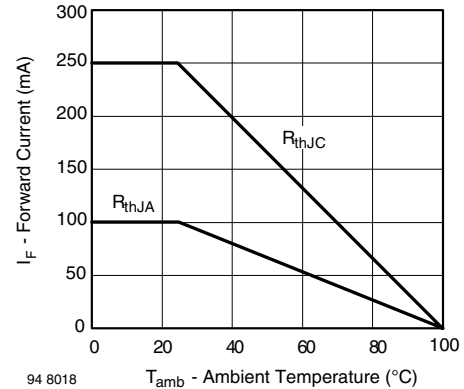


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	1.25	1.6	8	mW/sr
Radiant power	$I_F = 100 \text{ mA}$, $t_p \leq 20 \text{ ms}$	ϕ_e		7		mW
Temperature coefficient of ϕ_e	$I_F = 100 \text{ mA}$	$TK\phi_e$		- 0.8		%/K
Angle of half intensity		φ		± 30		deg
Peak wavelength	$I_F = 100 \text{ mA}$	λ_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		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

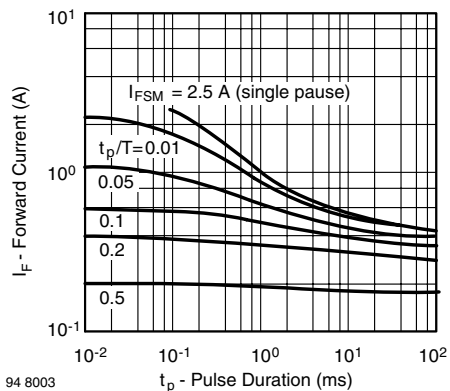


Fig. 3 - Pulse Forward Current vs. Pulse Duration

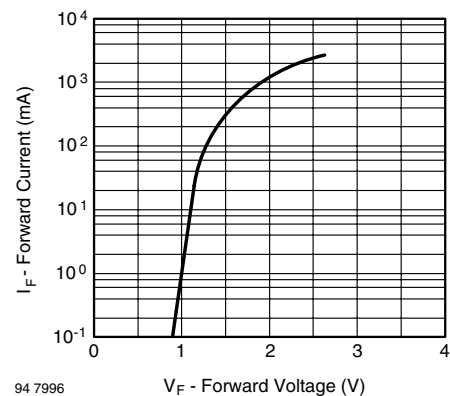


Fig. 4 - Forward Current vs. Forward Voltage

TSTS7500

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

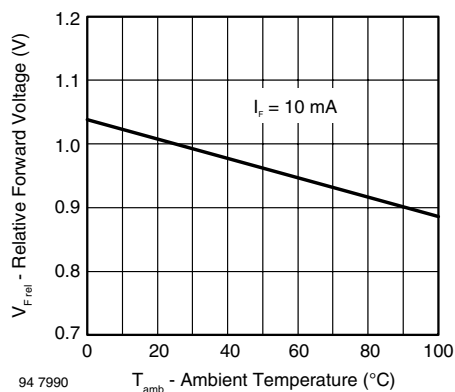


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

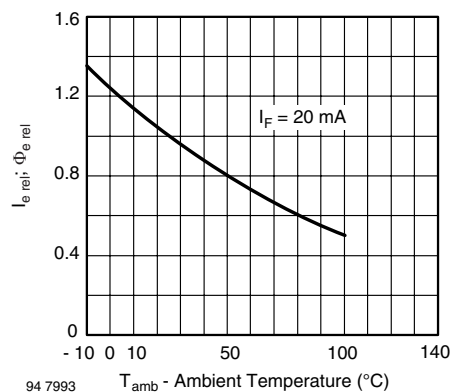


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

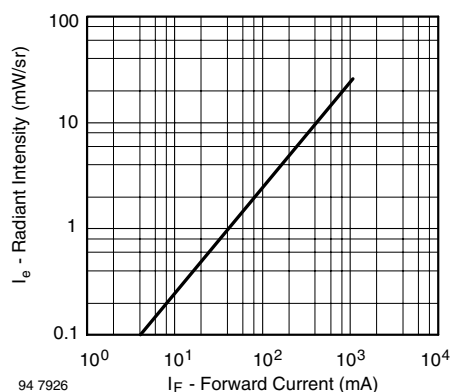


Fig. 6 - Radiant Intensity vs. Forward Current

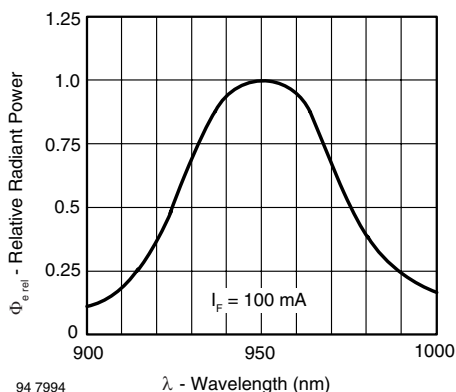


Fig. 9 - Relative Radiant Power vs. Wavelength

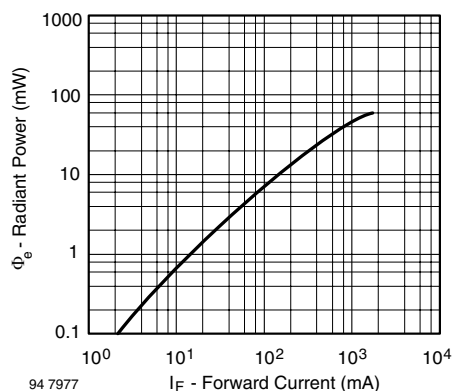


Fig. 7 - Radiant Power vs. Forward Current

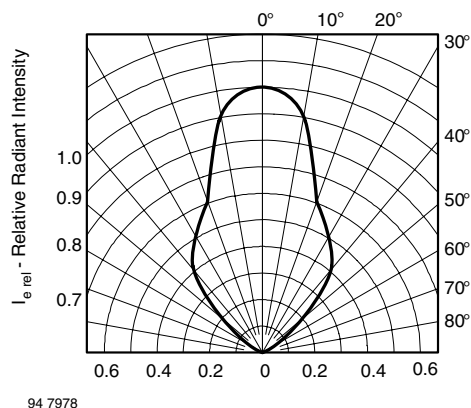


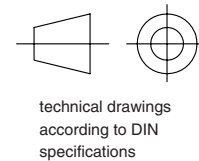
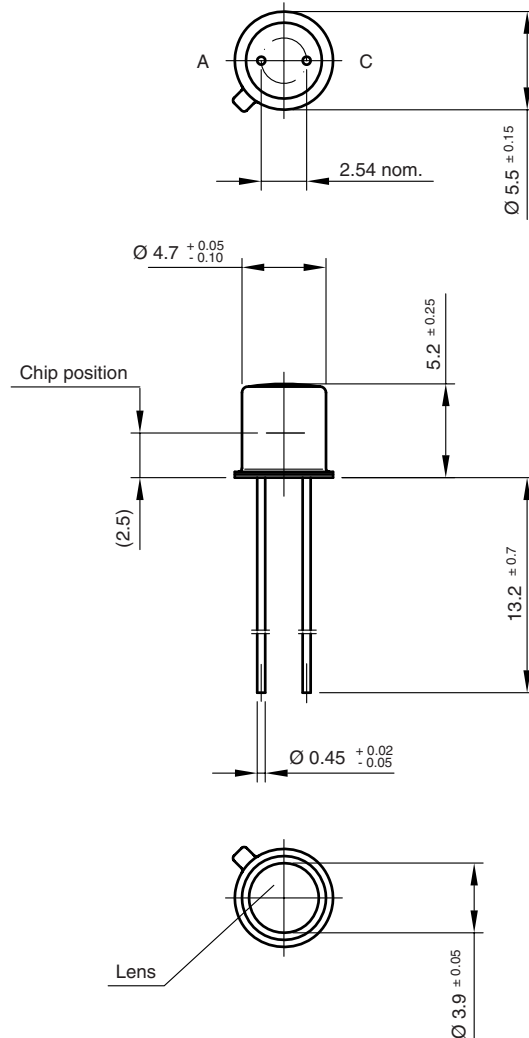
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



TSTS7500

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

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.503-5001.02-4

Issue: 1; 24.08.98

14485



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