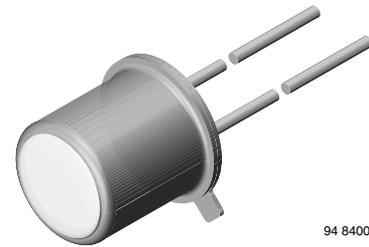


Infrared Emitting Diode, 870 nm, GaAlAs

Description

TSTA7500 is a high efficiency infrared emitting diode in GaAlAs on GaAlAs technology in a hermetically sealed TO-18 package. Its flat glass window makes it ideal for use with external optics.



Features

- High radiant power
- Suitable for pulse operation
- Wide angle of half intensity $\varphi = \pm 30^\circ$
- Peak wavelength $\lambda_p = 875 \text{ nm}$
- High reliability
- Good spectral matching to Si photodetectors
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



Applications

- Radiation source in near infrared range

Absolute Maximum Ratings

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

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		V_R	5	V
Forward current		I_F	100	mA
Peak forward current	$t_p/T = 0.5, t_p \leq 100 \mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p \leq 100 \mu\text{s}$	I_{FSM}	2.5	A
Power dissipation		P_V	180	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		R_{thJA}	450	K/W
Thermal resistance junction/case		R_{thJC}	150	K/W

Electrical Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = 100 \text{ mA}, t_p \leq 20 \text{ ms}$	V_F		1.4	1.8	V
Breakdown voltage	$I_R = 100 \mu\text{A}$	$V_{(BR)}$	5			V
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	C_j		20		pF

Optical Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Radiant intensity	$I_F = 100\text{ mA}$, $t_p \leq 20\text{ ms}$	I_e	3.5	6	16	mW/sr
Radiant power	$I_F = 100\text{ mA}$, $t_p \leq 20\text{ ms}$	ϕ_e		10		mW
Temp. coefficient of ϕ_e	$I_F = 100\text{ mA}$	$TK\phi_e$		- 0.7		%/K
Angle of half intensity		φ		± 30		deg
Peak wavelength	$I_F = 100\text{ mA}$	λ_p		875		nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$		80		nm
Rise time	$I_F = 1.5\text{ A}$, $t_p/T = 0.01$, $t_p \leq 10\text{ }\mu\text{s}$	t_r		300		ns
Fall time	$I_F = 1.5\text{ A}$, $t_p/T = 0.01$, $t_p \leq 10\text{ }\mu\text{s}$	t_f		300		ns
Virtual source diameter		\emptyset		0.5		mm

Typical Characteristics

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

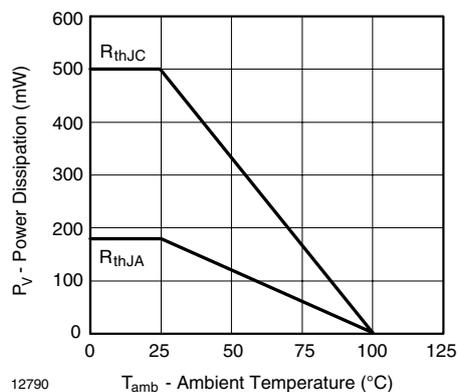


Figure 1. Power Dissipation vs. Ambient Temperature

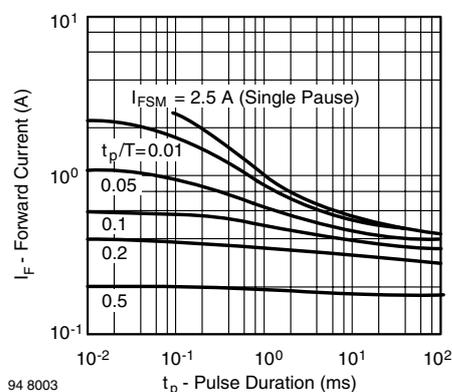


Figure 3. Pulse Forward Current vs. Pulse Duration

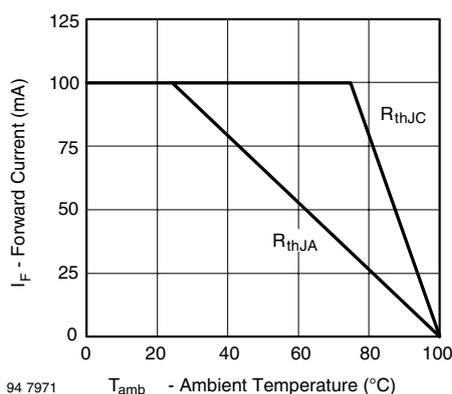


Figure 2. Forward Current vs. Ambient Temperature

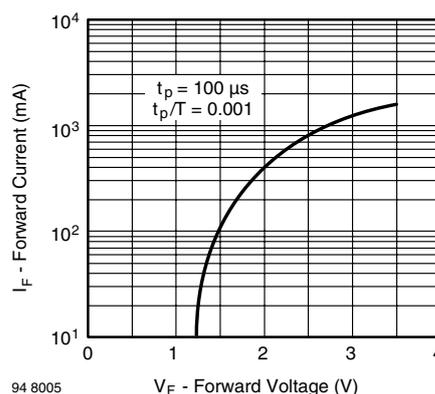


Figure 4. Forward Current vs. Forward Voltage

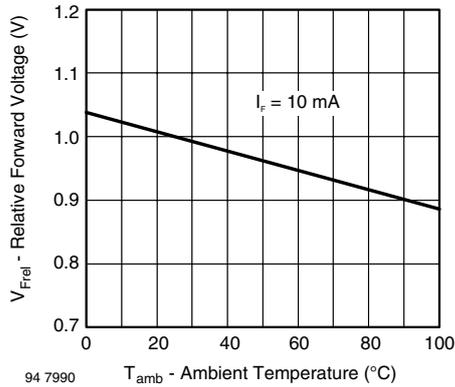


Figure 5. Relative Forward Voltage vs. Ambient Temperature

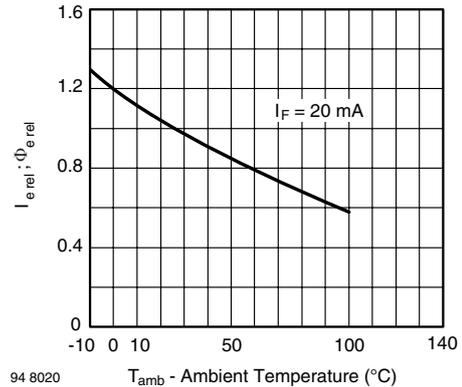


Figure 8. Rel. Radiant Intensity/Power vs. Ambient Temperature

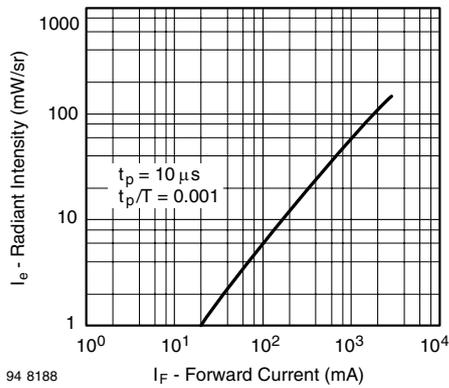


Figure 6. Radiant Intensity vs. Forward Current

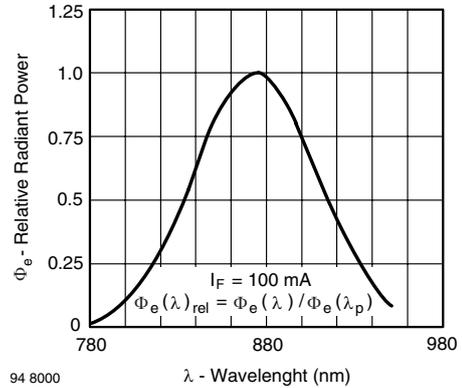


Figure 9. Relative Radiant Power vs. Wavelength

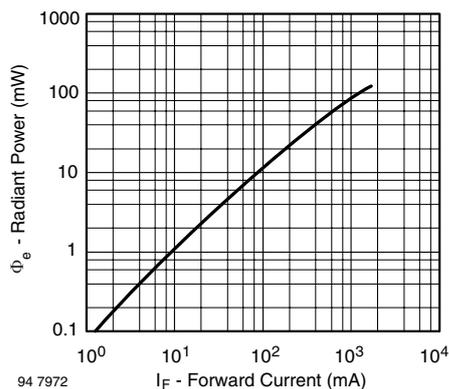


Figure 7. Radiant Power vs. Forward Current

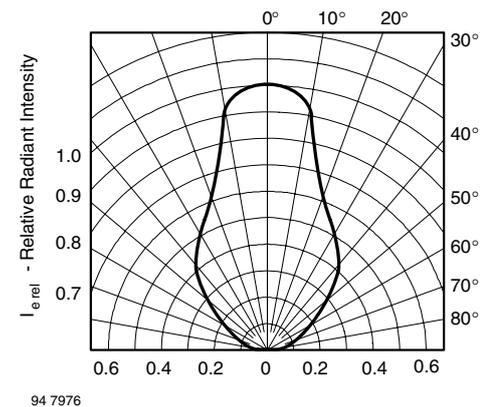
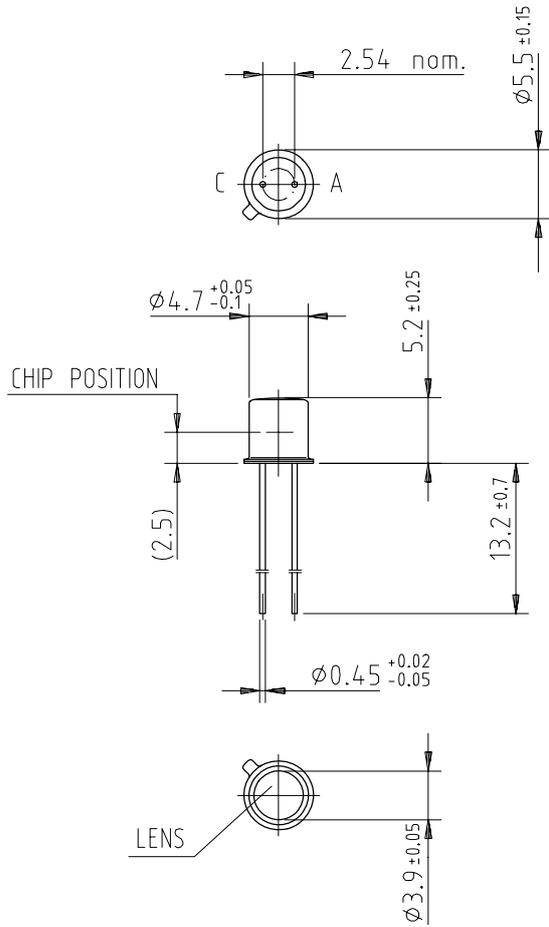
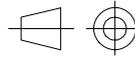


Figure 10. Relative Radiant Intensity vs. Angular Displacement

Package Dimensions in mm



96 12173



technical drawings
according to DIN
specifications



Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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