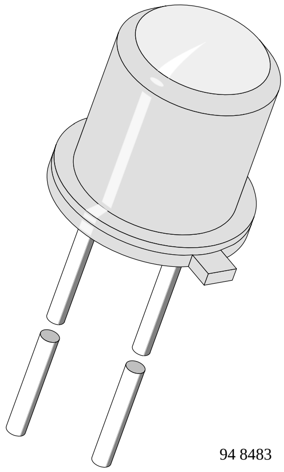
GaAlAs IR Emitting Diode in Hermetically Sealed TO18 Case

Description

TSTA7100 is a high efficiency infrared emitting diode in GaAlAs on GaAlAs technology in a hermetically sealed TO–18 package. Its glass lens provides a very high radiant intensity without external optics.



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Features

- Extra high radiant intensity
- High radiant power
- Suitable for pulse operation
- Narrow angle of half intensity $\varphi = \pm 5^\circ$
- Peak wavelength λ_p = 875 nm
- High reliability
- Good spectral matching to Si photodetectors

Applications

Radiation source in near infrared range

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	5	V
Forward Current		I_F	100	mA
Peak Forward Current	$t_p/T = 0.5$, $t_p \leqq 100\ \mu s$	I_{FM}	200	mA
Surge Forward Current	$t_p \leqq 100\ \mu s$	I_{FSM}	2.5	A
Power Dissipation		P_V	180	mW
	$T_{case} \leqq 25\ ^\circ C$	P_V	500	mW
Junction Temperature		T_j	100	°C
Storage Temperature Range		T_{stg}	–55...+100	°C
Thermal Resistance Junction/Ambient		R_{thJA}	450	K/W
Thermal Resistance Junction/Case		R_{thJC}	150	K/W

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Forward Voltage	I_F = 100 mA, t_p ≦ 20 ms	V_F		1.4	1.8	V
Breakdown Voltage	I_R = 100 μA	$V_{(BR)}$	5			V
Junction Capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		20		pF
Radiant Intensity	I_F = 100 mA, t_p ≦ 20 ms	I_e	20	50		mW/sr
Radiant Power	I_F = 100 mA, t_p ≦ 20 ms	ϕ_e		10		mW
Temp. Coefficient of ϕ_e	I_F = 100 mA	$TK_{\phi e}$		–0.7		%/K
Angle of Half Intensity		φ		±5		deg
Peak Wavelength	I_F = 100 mA	λ_p		875		nm
Spectral Bandwidth	I_F = 100 mA	Δλ		80		nm
Rise Time	I_F = 1.5 A, t_p/T = 0.01, t_p ≦ 10 μs	t_r		300		ns
Fall Time	I_F = 1.5 A, t_p/T = 0.01, t_p ≦ 10 μs	t_f		300		ns

Typical Characteristics (Tamb = 25°C unless otherwise specified)

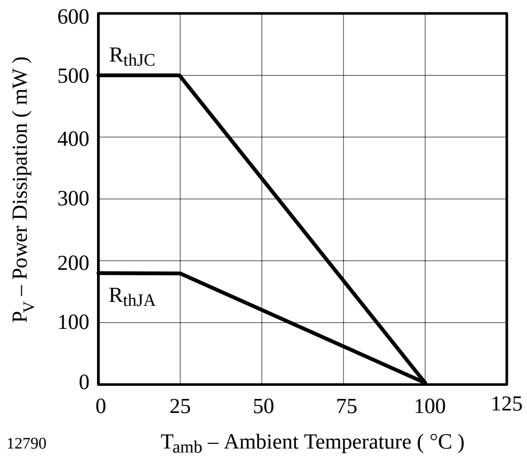


Figure 1. Power Dissipation vs. Ambient Temperature

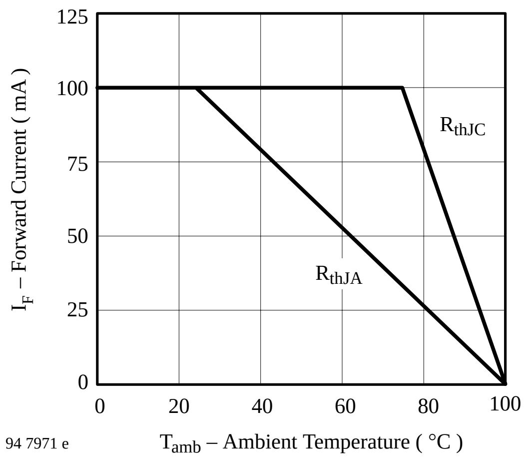


Figure 2. Forward Current vs. Ambient Temperature

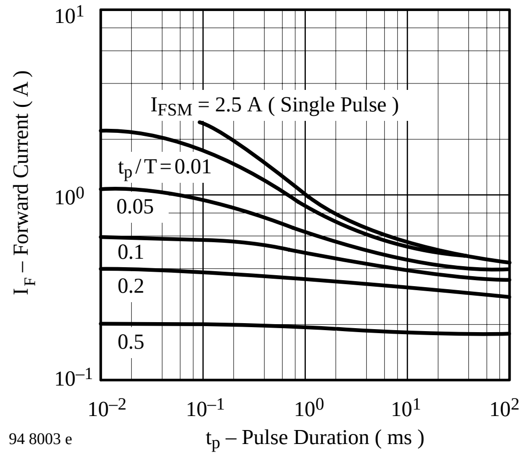


Figure 3. Pulse Forward Current vs. Pulse Duration

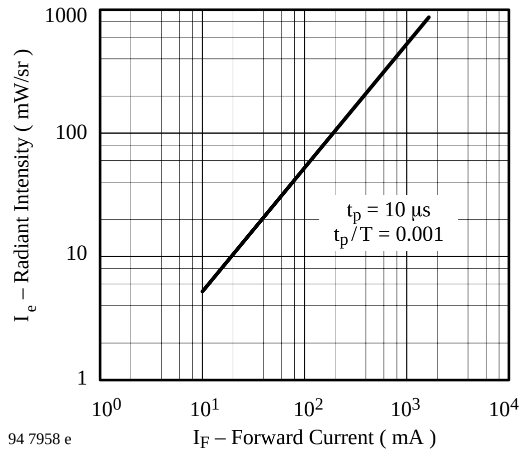


Figure 6. Radiant Intensity vs. Forward Current

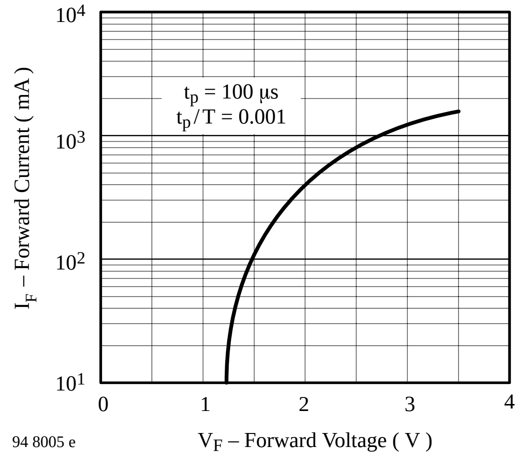


Figure 4. Forward Current vs. Forward Voltage

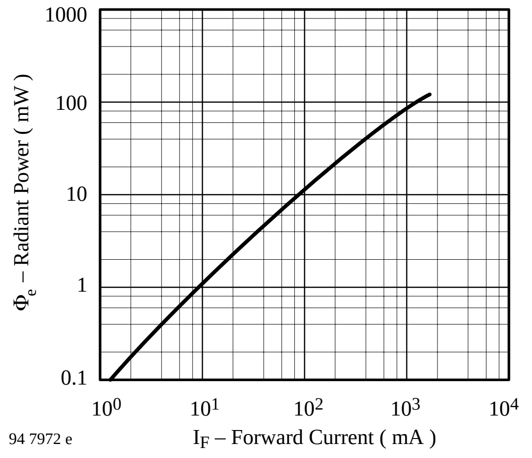


Figure 7. Radiant Power vs. Forward Current

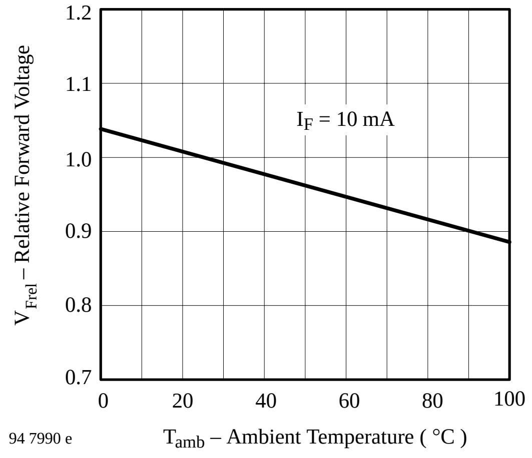


Figure 5. Relative Forward Voltage vs. Ambient Temperature

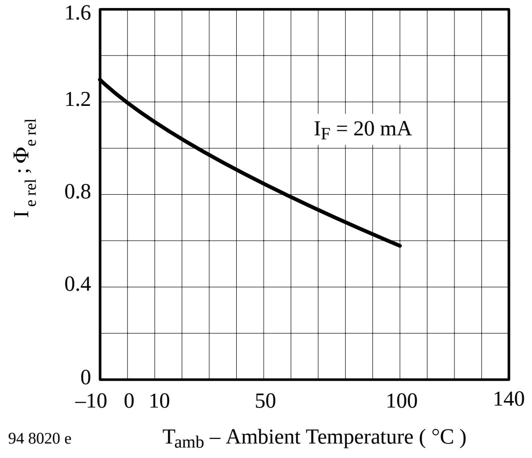


Figure 8. Rel. Radiant Intensity\Power vs. Ambient Temperature

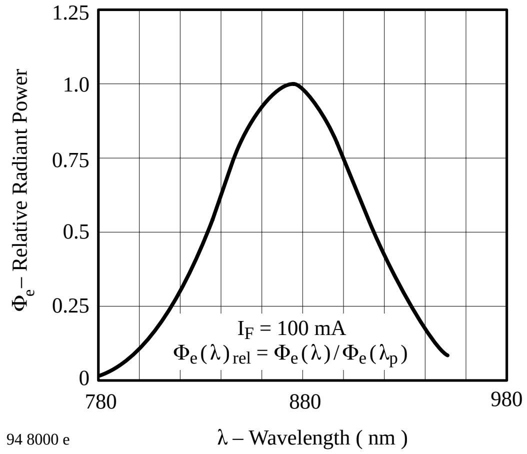


Figure 9. Relative Radiant Power vs. Wavelength

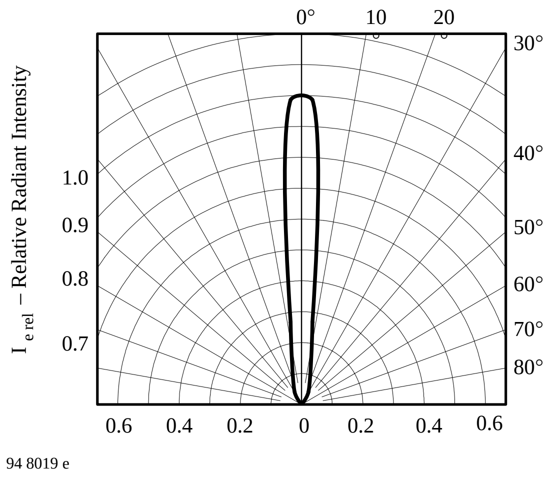
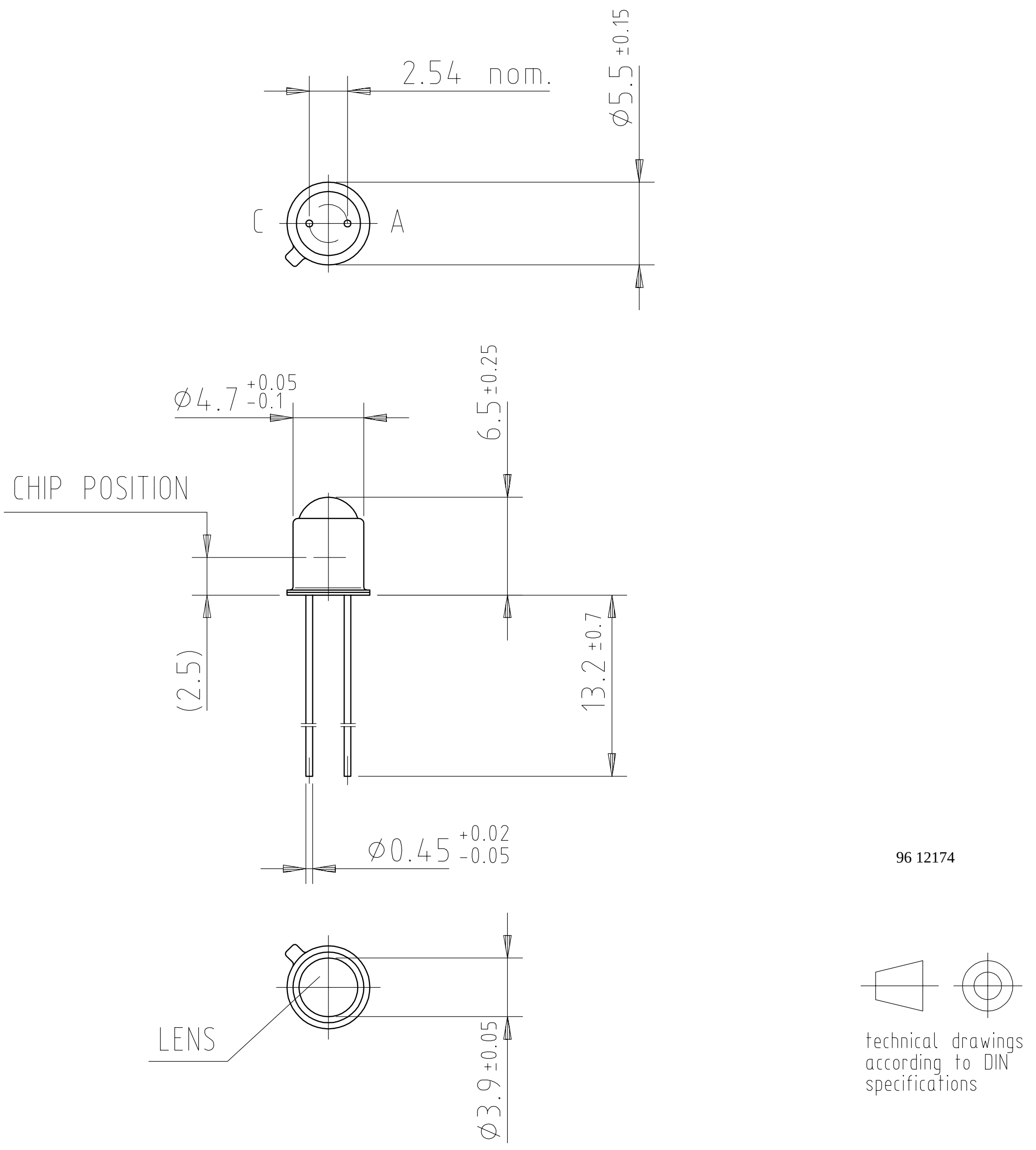


Figure 10. Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



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.

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