

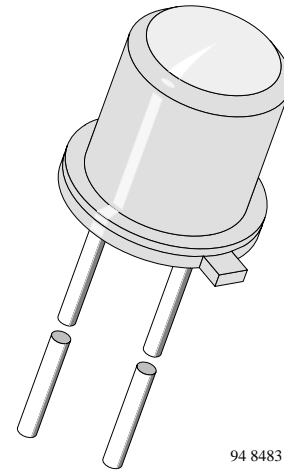
GaAs IR Emitting Diodes in Hermetically Sealed TO18 Case

Description

TSTS 710. series are infrared emitting diodes in standard GaAs technology in a hermetically sealed TO-18 package. Their glass lenses provide a very high radiant intensity without external optics.

Features

- Very high radiant intensity
- Suitable for pulse operation
- Narrow angle of half intensity $\varphi = \pm 5^\circ$
- Peak wavelength $\lambda_p = 950 \text{ nm}$
- High reliability
- Good spectral matching to Si photodetectors

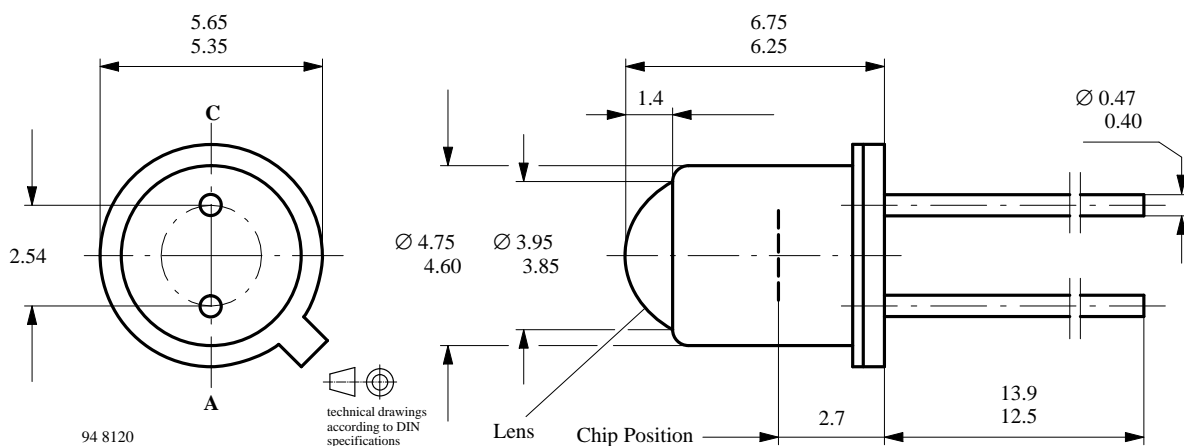


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Applications

Radiation source in near infrared range

Dimensions in mm



Absolute Maximum Ratings

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Test Conditions	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
Power Dissipation	$T_{case} \leq 25^{\circ}\text{C}$	P_V	500	mW
Junction Temperature		T_j	100	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55...+100	$^{\circ}\text{C}$
Thermal Resistance Junction/Ambient		R_{thJA}	450	K/W
Thermal Resistance Junction/Case		R_{thJC}	150	K/W

Basic Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Test Conditions	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
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		50		pF
Radiant Power	$I_F = 100\text{ mA}, t_p \leq 20\text{ ms}$	ϕ_e		7		mW
Temp. Coefficient of ϕ_e	$I_F = 100\text{ mA}$	TK_{ϕ_e}		-0.8		%/K
Angle of Half Intensity		φ		± 5		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	$I_F=1.5\text{A}, t_p/T=0.01, t_p \leq 10\mu\text{s}$	t_r		400		ns
Fall Time	$I_F=1.5\text{A}, t_p/T=0.01, t_p \leq 10\mu\text{s}$	t_f		400		ns

Type Dedicated Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Type	Test Conditions	Symbol	Min	Typ	Max	Unit
Radiant Intensity	TSTS7100	$I_F=100\text{mA}, t_p=20\text{ms}$	I_e	10			mW/sr
	TSTS7101	$I_F=100\text{mA}, t_p=20\text{ms}$	I_e	12.5		25	mW/sr
	TSTS7102	$I_F=100\text{mA}, t_p=20\text{ms}$	I_e	20		40	mW/sr
	TSTS7103	$I_F=100\text{mA}, t_p=20\text{ms}$	I_e	32		64	mW/sr

Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

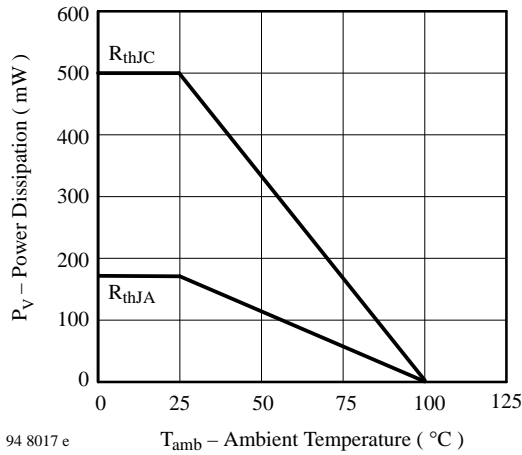


Figure 1 : Power Dissipation vs. Ambient Temperature

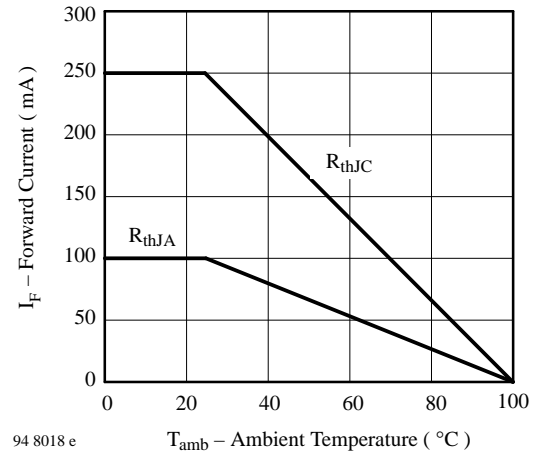


Figure 2 : Forward Current vs. Ambient Temperature

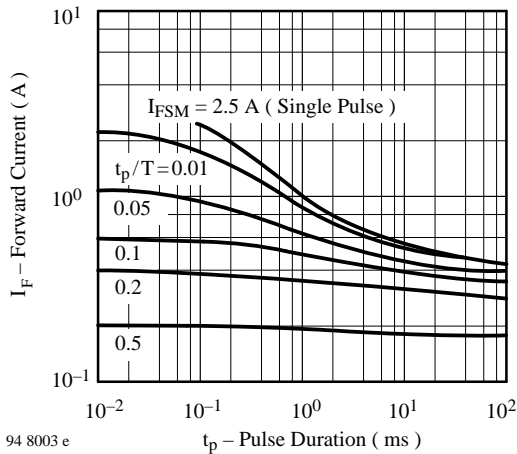


Figure 3 : Pulse Forward Current vs. Pulse Duration

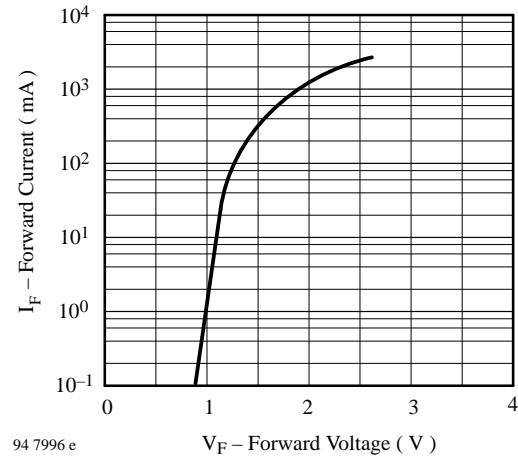


Figure 4 : Forward Current vs. Forward Voltage

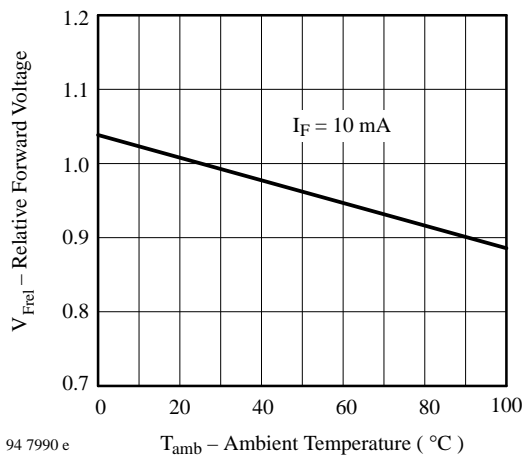


Figure 5 : Relative Forward Voltage vs. Ambient Temperature

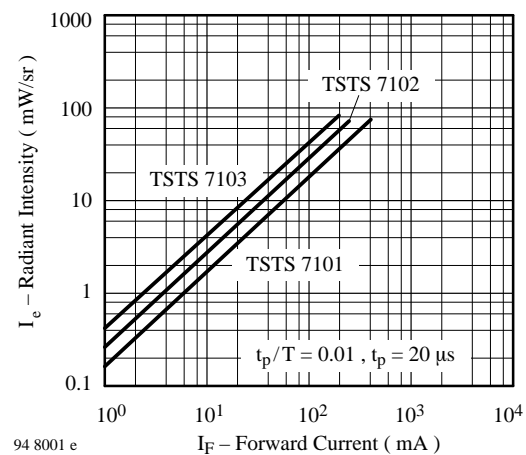


Figure 6 : Radiant Intensity vs. Forward Current

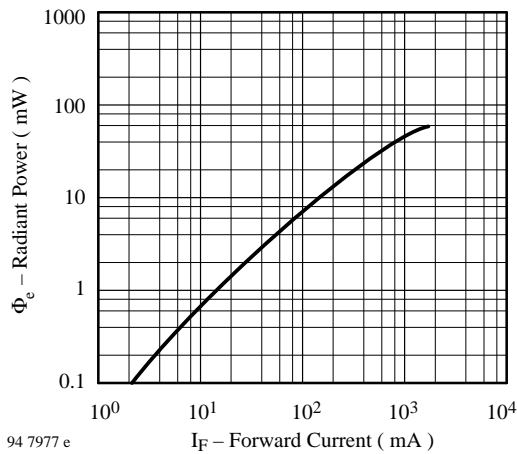


Figure 7 : Radiant Power vs. Forward Current

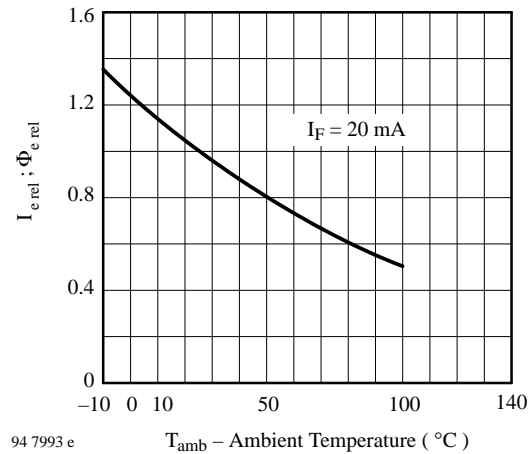


Figure 8 : Rel. Radiant Intensity/Power vs. Ambient Temperature

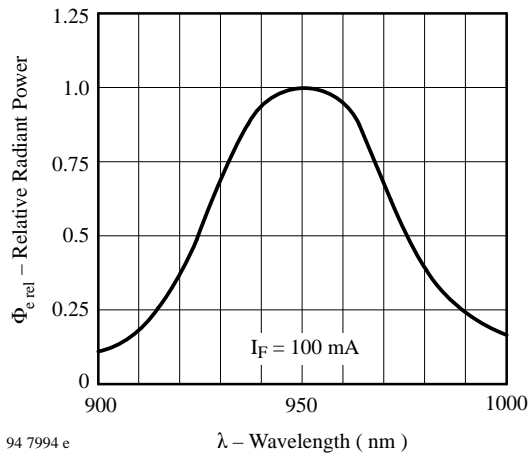


Figure 9 : Relative Radiant Power vs. Wavelength

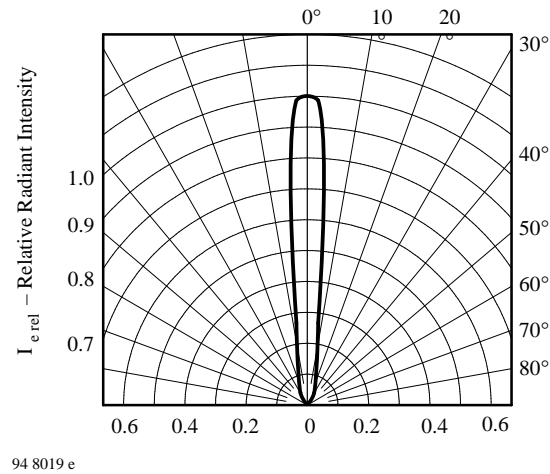


Figure 10 : Relative Radiant Intensity vs. Angular Displacement

We reserve the right to make changes to improve technical design without further notice.

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