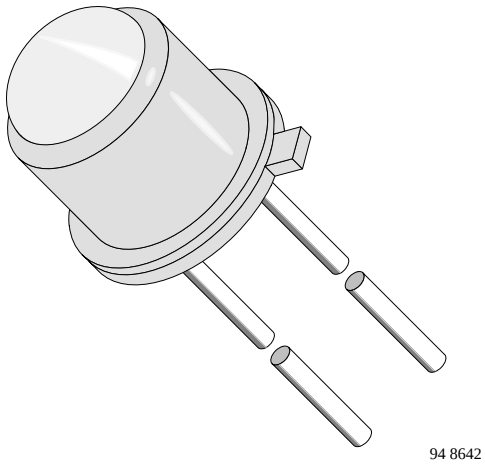
GaAs IR Emitting Diodes in Hermetically Sealed TO18 Case

Description

The TSTS 730. series are infrared emitting diodes in standard GaAs technology in a hermetically sealed TO–18 package. Their glass lenses provide a high radiant intensity without external optics.



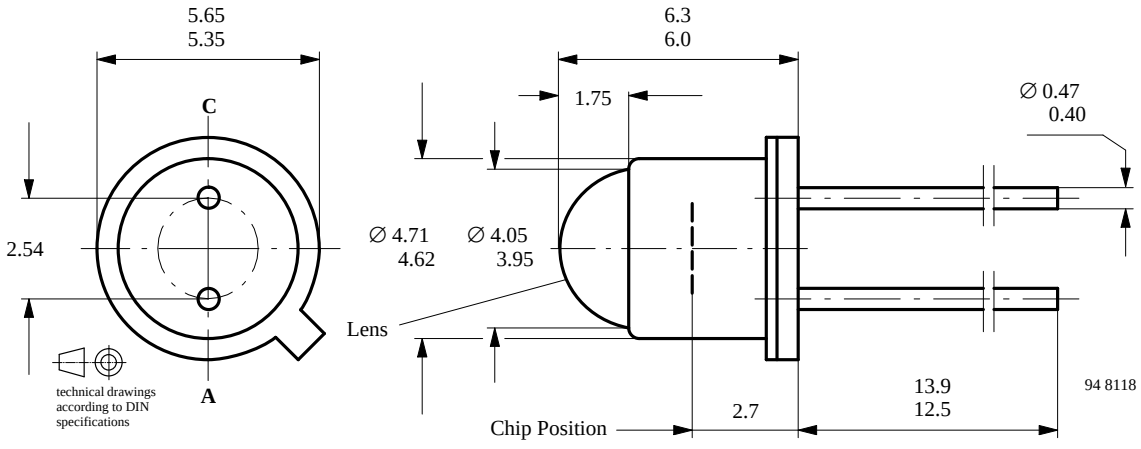
Features

- High radiant intensity
- Suitable for pulse operation
- Angle of half intensity $\varphi = \pm 12^\circ$
- Peak wavelength $\lambda_p = 950$ nm
- High reliability
- Good spectral matching to Si photodetectors

Applications

Radiation source in near infrared range

Dimensions in mm



Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	5	V
Forward Current	$T_{case} \leqq 25$ ˚C	I_F	250	mA
Peak Forward Current	$t_p/T=0.5$, $t_p \leqq 100\mu s$, $T_{case} \leqq 25$˚C	I_{FM}	500	mA
Surge Forward Current	$t_p \leqq 100$ µs	I_{FSM}	2.5	A
Power Dissipation		P_V	170	mW
Power Dissipation	$T_{case} \leqq 25$ ˚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, $t_p \leqq 20$ ms	V_F		1.3	1.7	V
Breakdown Voltage	I_R = 100 µA	$V_{(BR)}$	5			V
Junction Capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		50		pF
Radiant Power	I_F = 100 mA, $t_p \leqq 20$ ms	ϕ_e		7		mW
Temp. Coefficient of ϕ_e	I_F = 100 mA	$TK_{\phi e}$		–0.8		%/K
Angle of Half Intensity		φ		±12		deg
Peak Wavelength	I_F = 100 mA	λ_p		950		nm
Spectral Bandwidth	I_F = 100 mA	$\Delta\lambda$		50		nm
Rise Time	I_F=1.5A, $t_p/T=0.01$, $t_p \leqq 10\mu s$	t_r		400		ns
Fall Time	I_F=1.5A, $t_p/T=0.01$, $t_p \leqq 10\mu s$	t_f		400		ns

Type Dedicated Characteristics

T_{amb} = 25°C

Parameter	Type	Test Conditions	Symbol	Min	Typ	Max	Unit
Radiant Intensity	TSTS7300	I_F=100mA, t_p=20ms	I_e	4			mW/sr
	TSTS7301	I_F=100mA, t_p=20ms	I_e	6.3		12.5	mW/sr
	TSTS7302	I_F=100mA, t_p=20ms	I_e	10		20	mW/sr
	TSTS7303	I_F=100mA, t_p=20ms	I_e	16		32	mW/sr

Typical Characteristics (T_{amb} = 25°C unless otherwise specified)

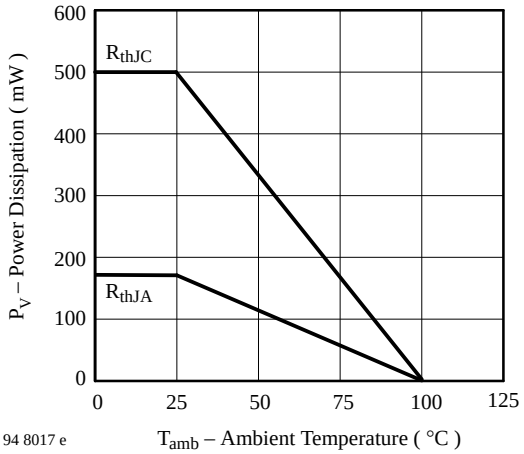


Figure 1 : Power Dissipation vs. Ambient Temperature

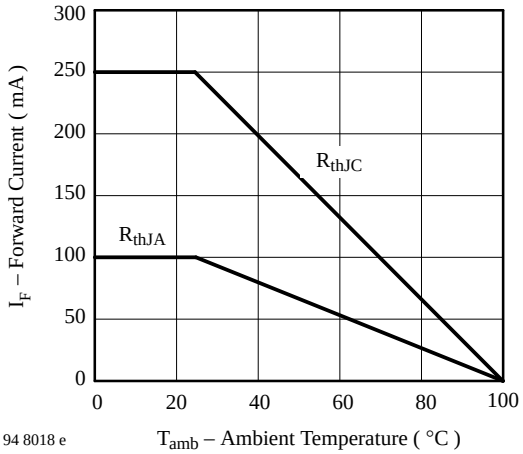


Figure 2 : Forward Current vs. Ambient Temperature

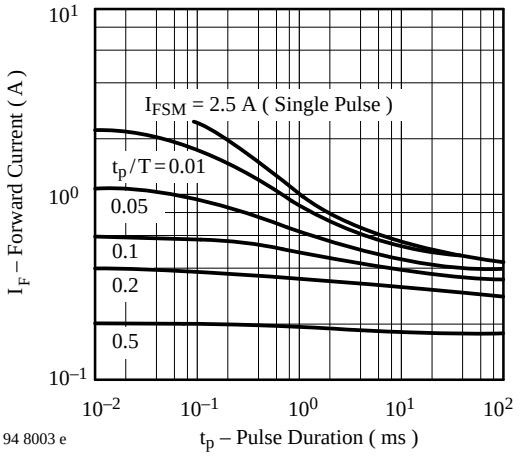


Figure 3 : Pulse Forward Current vs. Pulse Duration

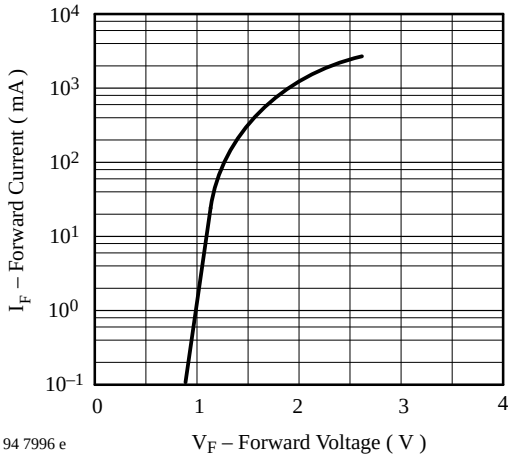


Figure 4 : Forward Current vs. Forward Voltage

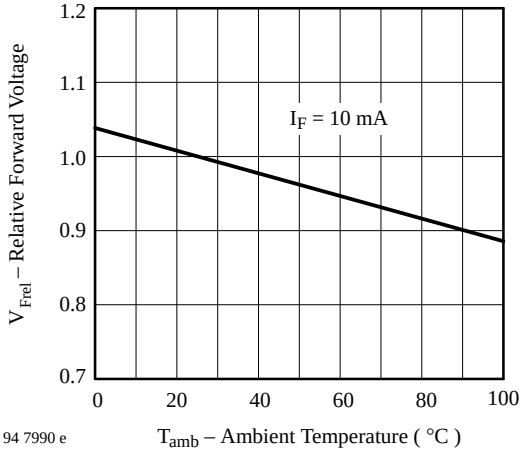


Figure 5 : Relative Forward Voltage vs. Ambient Temperature

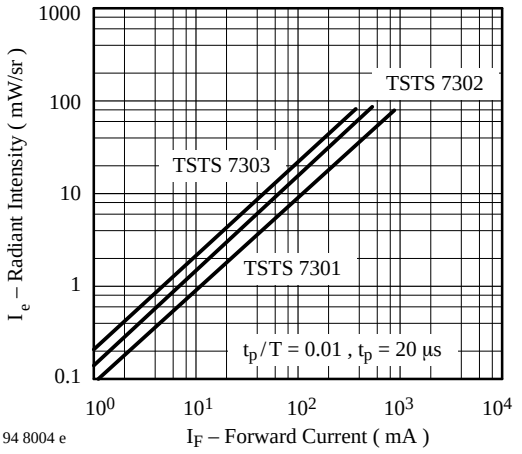


Figure 6 : Radiant Intensity vs. Forward Current

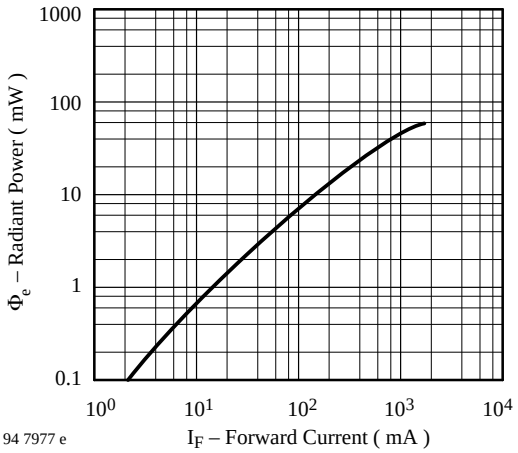


Figure 7 : Radiant Power vs. Forward Current

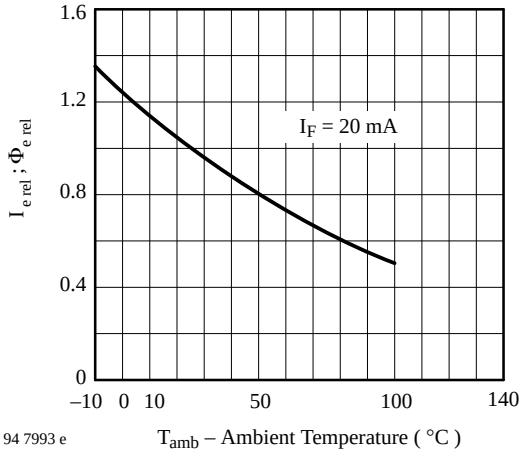


Figure 8 : Rel. Radiant Intensity\Power vs. Ambient Temperature

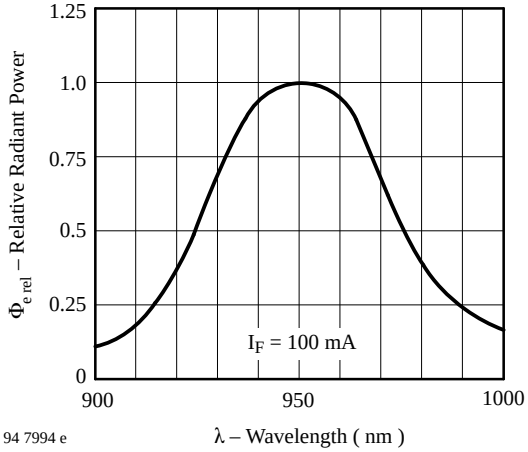


Figure 9 : Relative Radiant Power vs. Wavelength

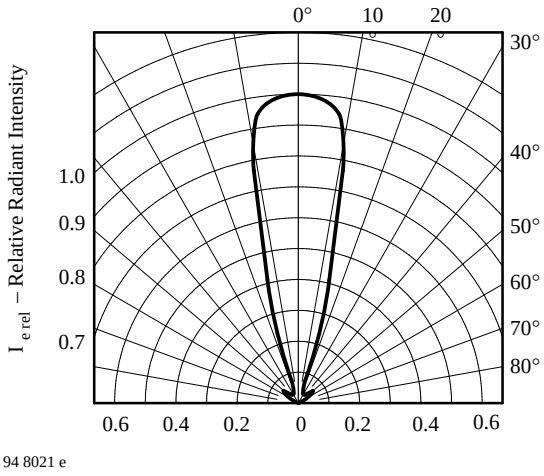


Figure 10 : Relative Radiant Intensity vs. Angular Displacement

We reserve the right to make changes to improve technical design without further notice. Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use TEMIC products for any unintended or unauthorized application, the buyer shall indemnify TEMIC 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.

TEMIC TELEFUNKEN microelectronic GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax Number: 49 (0)7131 67 2423