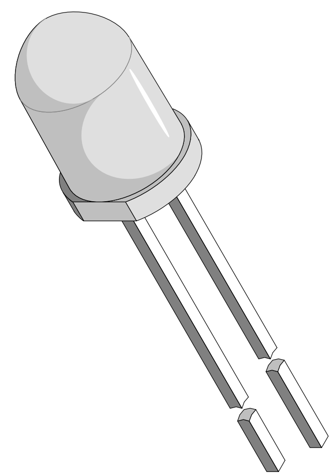
GaAlAs Infrared Emitting Diode with Collimating Lens

Description

TSCA6000 is a high intensity infrared emitting diode in GaAlAs on GaAlAs technology, molded in a clear, untinted ø 5 mm plastic package.
A high efficiency chip technology combined with an aspherical shaped lens provides a collimated radiation of outstanding intensity ratings.



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Features

- Extra high radiant power and ultra high radiant intensity
- Suitable for DC and high pulse current operation
- Special T–1¾ (ø 5 mm) package with aspherical lens
- Extra narrow angle of half intensity $\varphi = \pm 4^\circ$
- Peak wavelength λ_p = 875 nm
- High reliability
- Good spectral matching to Si photodetectors

Applications

Special light barriers
Optical initiators
Distance meters
Thickness meters
Digital encoders
Scanners

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	$t_p/T=0.5$, $t_p=100\ \mu s$	I_{FM}	200	mA
Surge Forward Current	$t_p=100\ \mu s$	I_{FSM}	2.5	A
Power Dissipation		P_V	210	mW
Junction Temperature		T_j	100	°C
Operating Temperature Range		T_{amb}	–55...+100	°C
Storage Temperature Range		T_{stg}	–55...+100	°C
Soldering Temperature	$t \leqq$ 5sec, 2 mm from case	T_{sd}	260	°C
Thermal Resistance Junction/Ambient		R_{thJA}	350	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		1.5	1.8	V
Forward Voltage	I_F = 1.5 A, t_p = 100 µs	V_F		3.2	4.9	V
Temp. Coefficient of V_F	I_F = 100mA	TK_{VF}		–1.6		mV/K
Reverse Current	V_R = 5 V	I_R			100	µA
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	70	120		mW/sr
Radiant Intensity	I_F = 1.5 A, t_p = 100 µs	I_e	850	1400		mW/sr
Radiant Power	I_F = 100 mA, $t_p \leqq$ 20 ms	ϕ_e		20		mW
Temp. Coefficient of ϕ_e	I_F = 20 mA	$TK_{\phi e}$		–0.7		%/K
Angle of Half Intensity		φ		±4		deg
Peak Wavelength	I_F = 100 mA	λ_p		875		nm
Spectral Bandwidth	I_F = 100 mA	$\Delta\lambda$		80		nm
Temp. Coefficient of λ_p	I_F = 100 mA	$TK_{\lambda p}$		0.2		nm/K
Rise Time	I_F = 100 mA	t_r		600		ns
Rise Time	I_F = 1.5 A	t_r		300		ns
Fall Time	I_F = 100 mA	t_f		600		ns
Fall Time	I_F = 1.5 A	t_f		300		ns

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

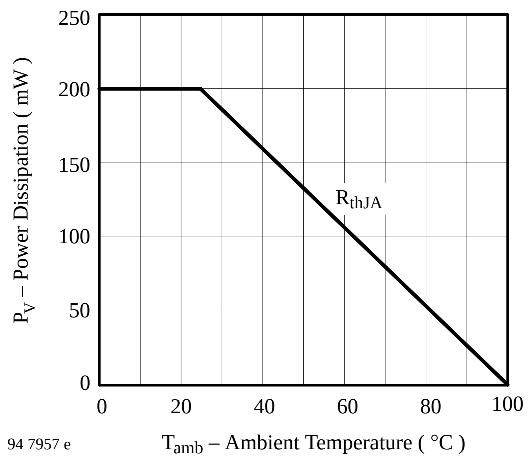


Figure 1 : Power Dissipation vs. Ambient Temperature

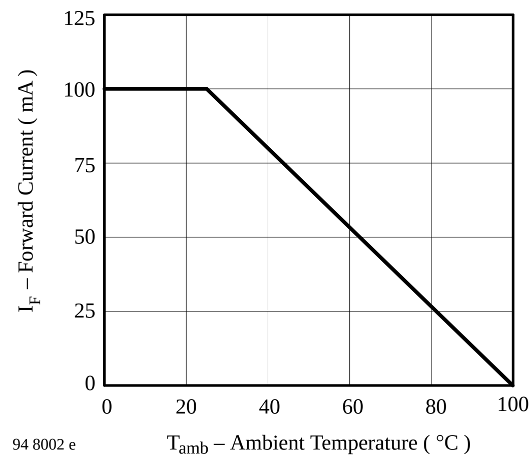


Figure 2 : Forward Current vs. Ambient Temperature

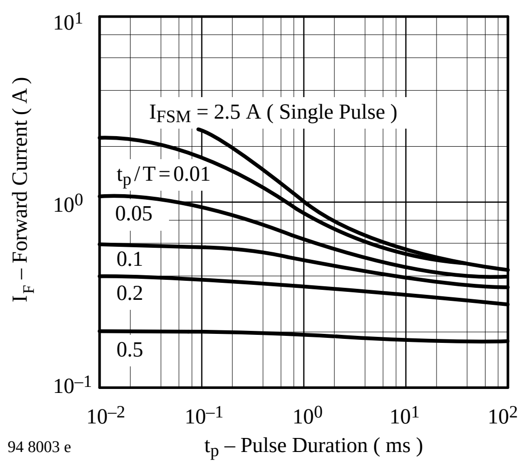


Figure 3 : Pulse Forward Current vs. Pulse Duration

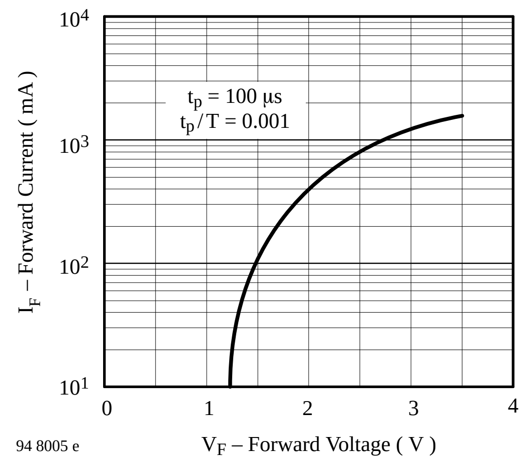


Figure 4 : Forward Current vs. Forward Voltage

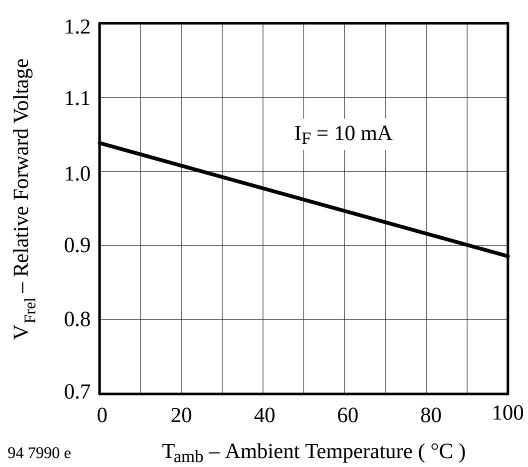


Figure 5 : Relative Forward Voltage vs. Ambient Temperature

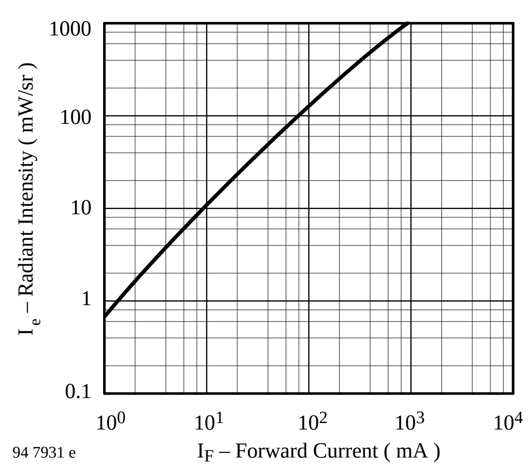


Figure 6 : Radiant Intensity vs. Forward Current

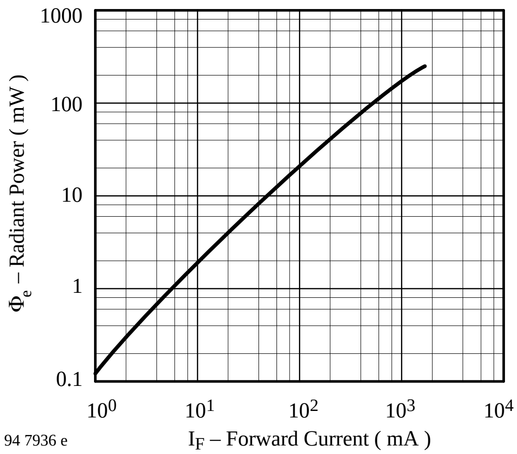


Figure 7 : Radiant Power vs. Forward Current

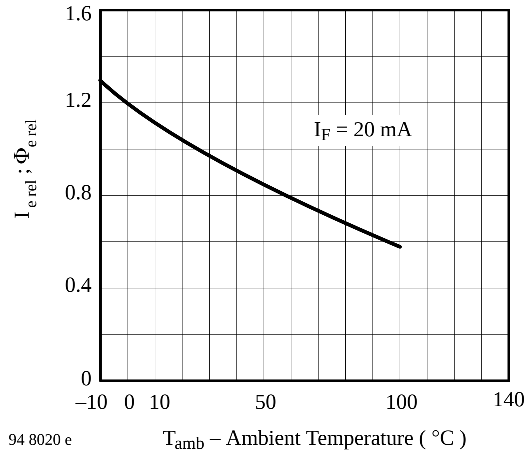


Figure 8 : Rel. Radiant Intensity\Power vs. Ambient Temperature

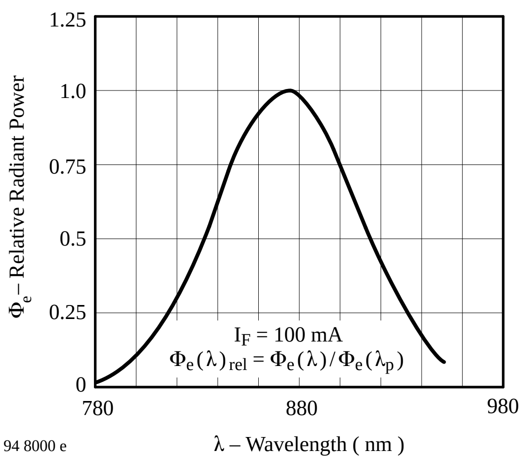


Figure 9 : Relative Radiant Power vs. Wavelength

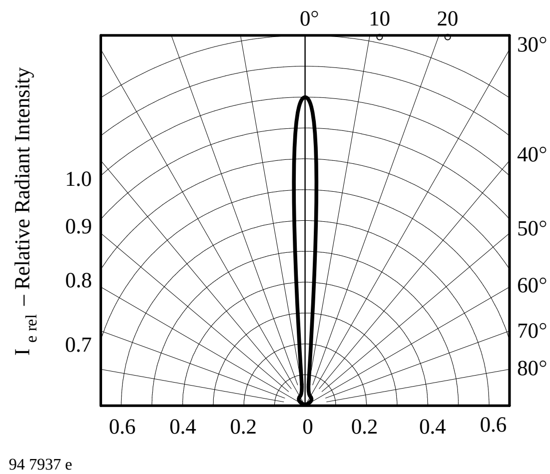
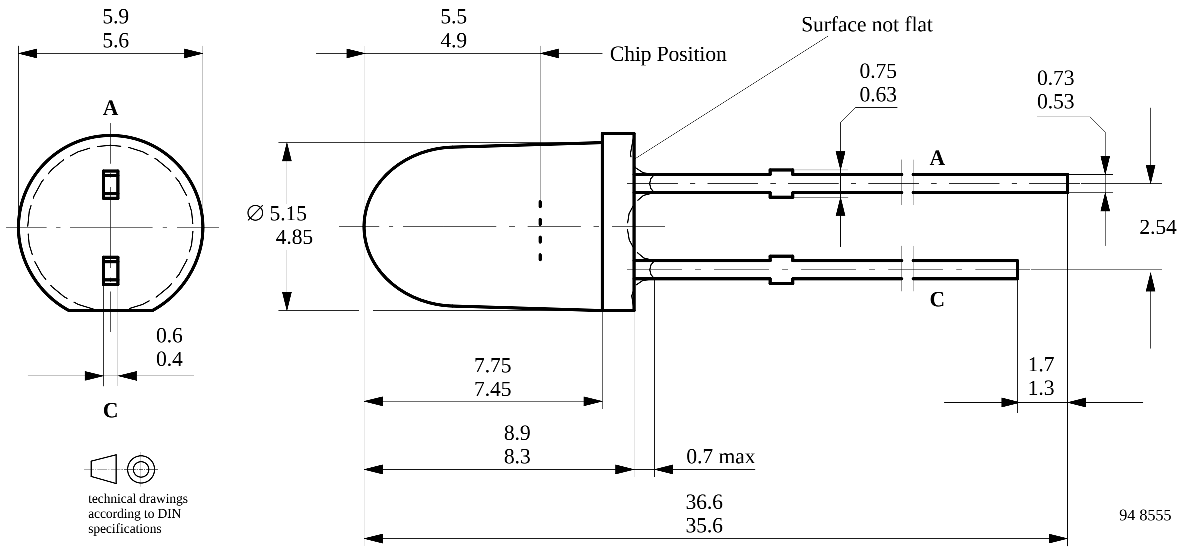


Figure 10 : Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



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