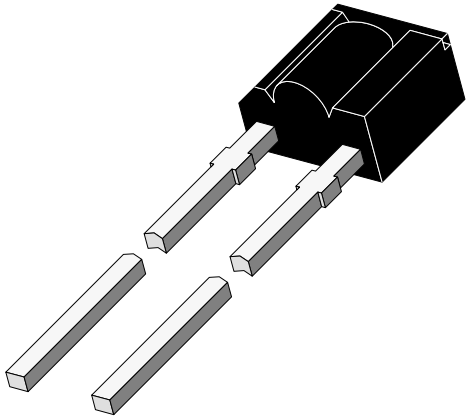
GaAs IR Emitting Diode in Side View Miniature Package

Description

TSSS 2600 is a miniature infrared emitting diode in GaAs on GaAs technology, molded in a clear, untinted plastic package with cylindrical side view lens.
The device is spectrally matched to silicon photodiodes and phototransistors.



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Features

- Low forward voltage
- Suitable for high pulse current operation
- Side view emitter for miniature design
- Horizontal angle of half intensity $\pm 25^{\circ}$
- Vertical angle of half intensity $\pm 60^{\circ}$
- Peak wavelength λ_p = 950 nm
- High reliability
- Good spectral matching to Si photodetectors

Applications

Infrared source in miniature light barriers or reflective sensor systems with short transmission distances and low forward voltage requirements.
Matching with silicon PIN photodiodes or phototransistors (e.g. TEST2600)

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	$t_p/T=0.5$, $t_p=100$ µs	I_{FM}	200	mA
Surge Forward Current	$t_p=100$ µs	I_{FSM}	2	A
Power Dissipation		P_V	170	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 ≦ 5sec, 2 mm from case	T_{sd}	260	˚C
Thermal Resistance Junction/Ambient		R_{thJA}	450	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		1.25	1.6	V
Forward Voltage	I_F = 1.5 A, t_p = 100 µs	V_F		2.2		V
Temp. Coefficient of V_F	I_F = 100mA	TK_{VF}		–1.3		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		30		pF
Radiant Intensity	I_F = 100 mA, t_p = 20 ms	I_e	1	2.6		mW/sr
Radiant Intensity	I_F = 1.5 A, t_p = 100 µs	I_e		25		mW/sr
Radiant Power	I_F = 100 mA, t_p = 20 ms	ϕ_e		12		mW
Temp. Coefficient of ϕ_e	I_F = 100 mA	$TK_{\phi e}$		–0.8		%/K
Angle of Half Intensity	horizontal	φ_1		±25		deg
Angle of Half Intensity	vertical	φ_2		±60		deg
Peak Wavelength	I_F = 100 mA	λ_p		950		nm
Spectral Bandwidth	I_F = 100 mA	$\Delta\lambda$		50		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		800		ns
Rise Time	I_F = 1.5 A	t_r		400		ns
Fall Time	I_F = 100 mA	t_f		800		ns
Fall Time	I_F = 1.5 A	t_f		400		ns

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

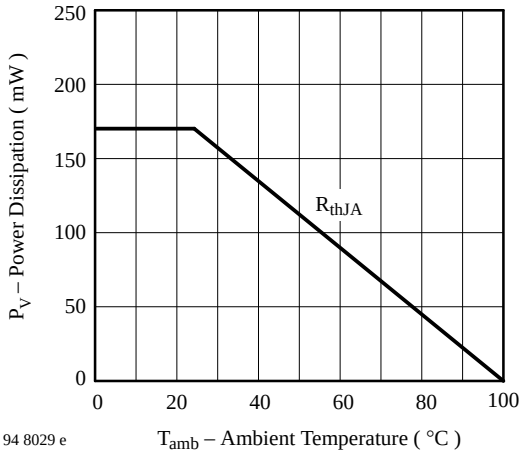


Figure 1 : Power Dissipation vs. Ambient Temperature

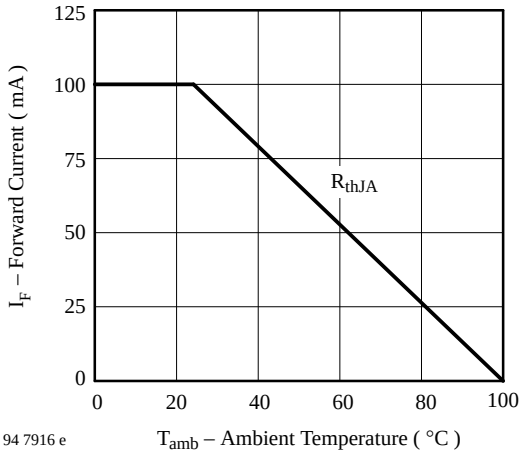


Figure 2 : Forward Current vs. Ambient Temperature

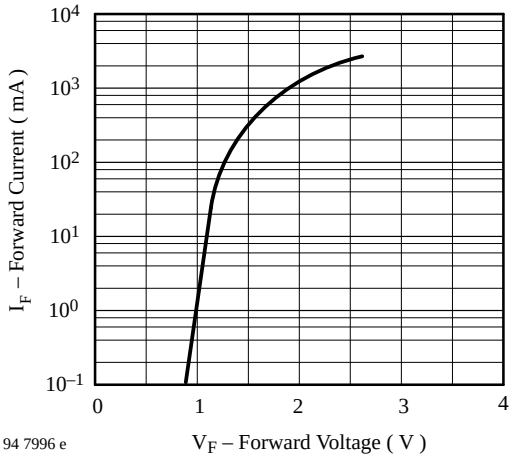


Figure 3 : Forward Current vs. Forward Voltage

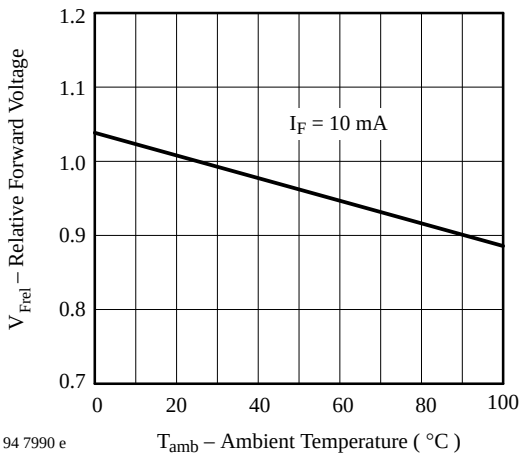


Figure 4 : Relative Forward Voltage vs. Ambient Temperature

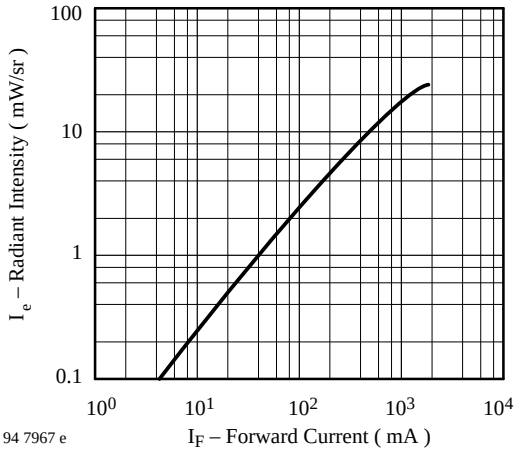


Figure 5 : Radiant Intensity vs. Forward Current

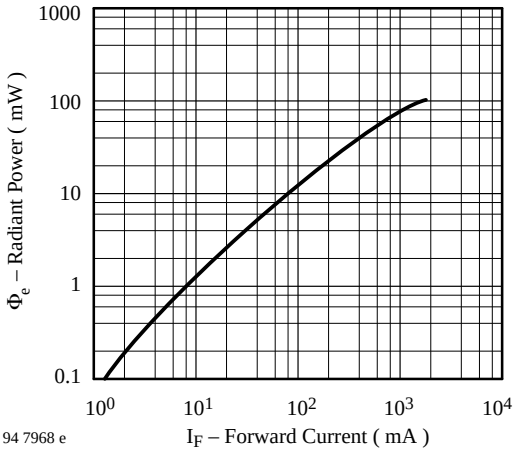


Figure 6 : Radiant Power vs. Forward Current

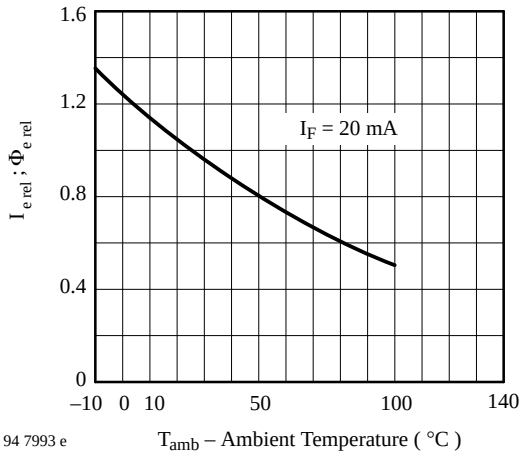


Figure 7 : Rel. Radiant Intensity\Power vs. Ambient Temperature

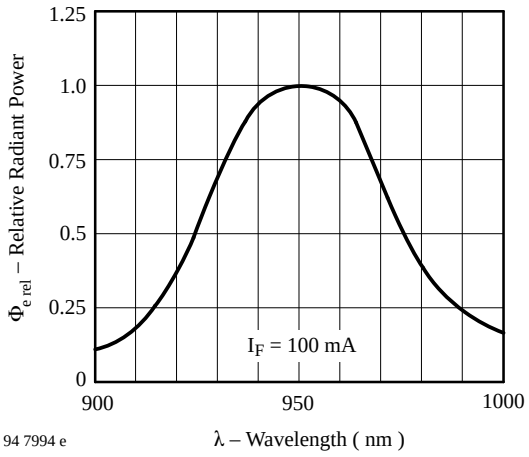


Figure 8 : Relative Radiant Power vs. Wavelength

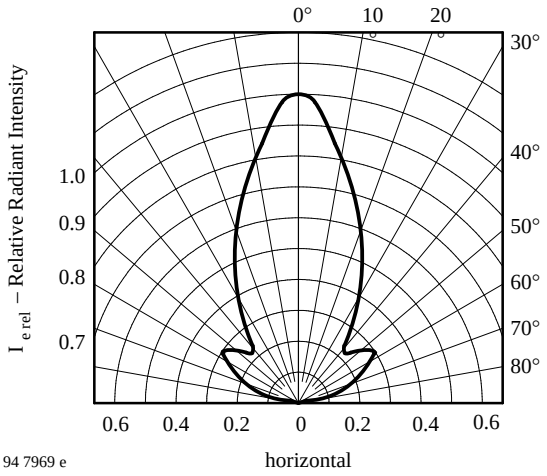


Figure 9 : Relative Radiant Intensity vs. Angular Displacement

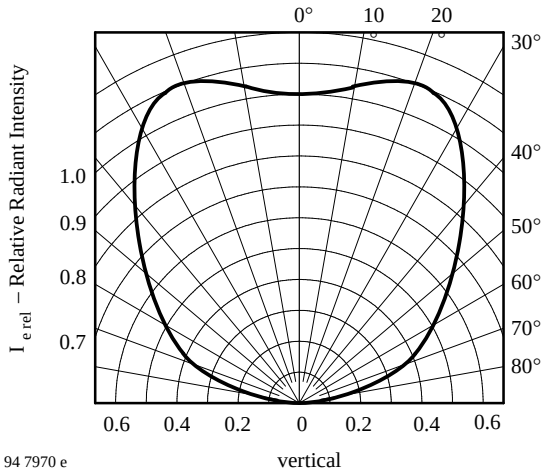
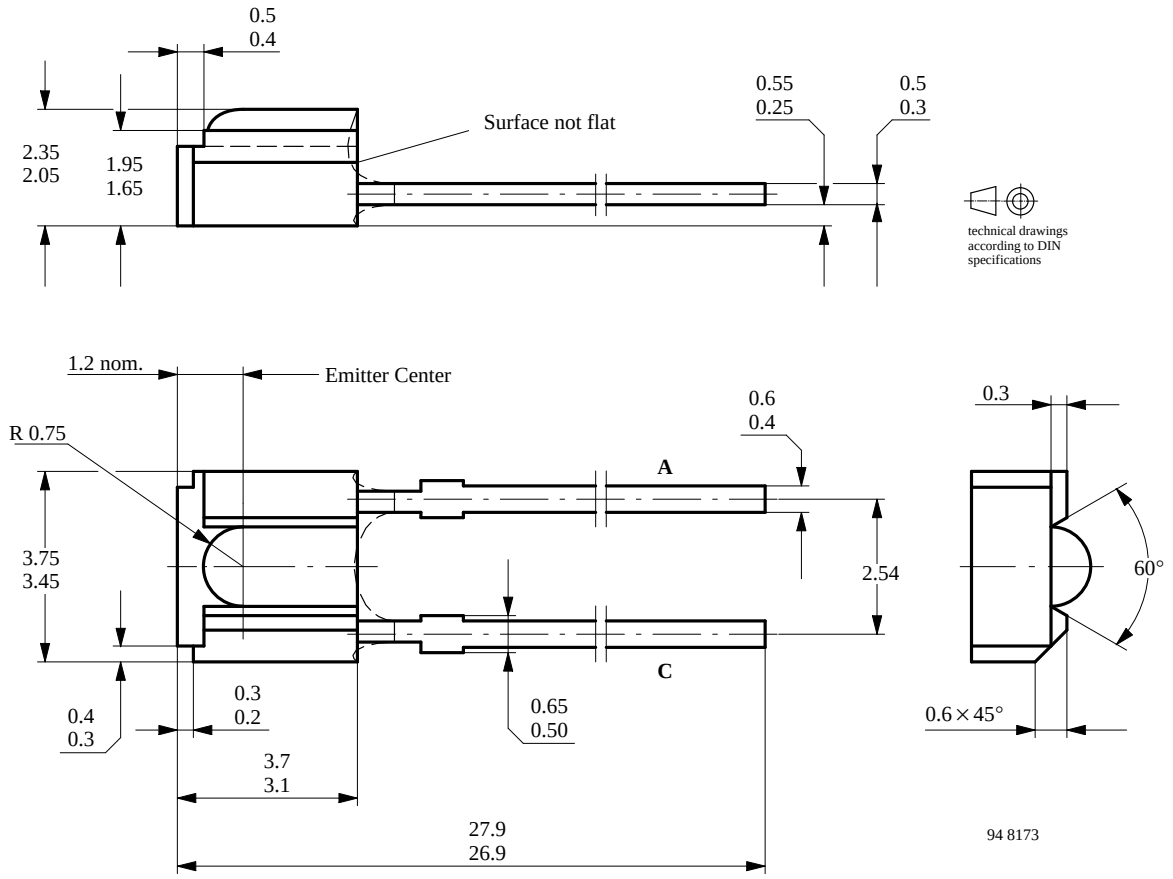


Figure 10 : Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



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