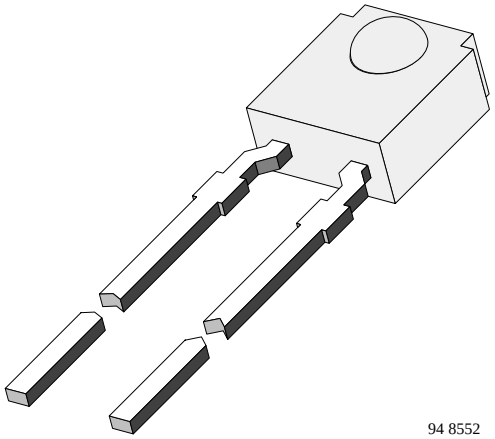
GaAlAs IR Emitting Diode in Side View Miniature Package

Description

TSSA 2500 is a high efficiency infrared emitting diode in GaAlAs on GaAlAs technology, molded in a clear, untinted miniature plastic side view package.
A small spherical lens provides an improved radiant intnsity..
The diode is case compatible to the TEST2500 phototransistor, allowing the user to assemble his own optical interrupters.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Features

- High radiant power
- Suitable for high pulse current operation
- Side view emitter for miniature design
- Angle of half intensity $\varphi = \pm 25^{\circ}$
- Peak wavelength $\lambda_p = 875$ nm
- High reliability

Applications

High power infrared emitter in miniature light barriers, transmissive or reflective sensors.
Infrared remote control and free air transmission systems with small package size requirements in combination with PIN photodiodes or phototransistors.
Package matching with phototransistor TEST 2500.
Because of the reduced radiance absorption in glass at the wavelength of 875 nm, TSSA 2500 is suitable for systems with panes in the transmission range between emitter and detector.

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}	1.5	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		1.5	1.8	V
Forward Voltage	I_F = 1.5 A, t_p = 100 µs	V_F		3.2		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	3.5	10		mW/sr
Radiant Intensity	I_F = 1.5 A, t_p = 100 µs	I_e		120		mW/sr
Radiant Power	I_F = 100 mA, t_p = 20 ms	ϕ_e		15		mW
Temp. Coefficient of ϕ_e	I_F = 100 mA	$TK_{\phi e}$		–0.7		%/K
Angle of Half Intensity		φ		±25		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)

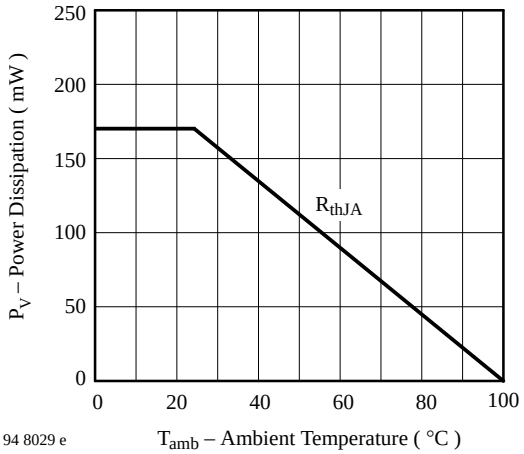


Figure 1 : Power Dissipation vs. Ambient Temperature

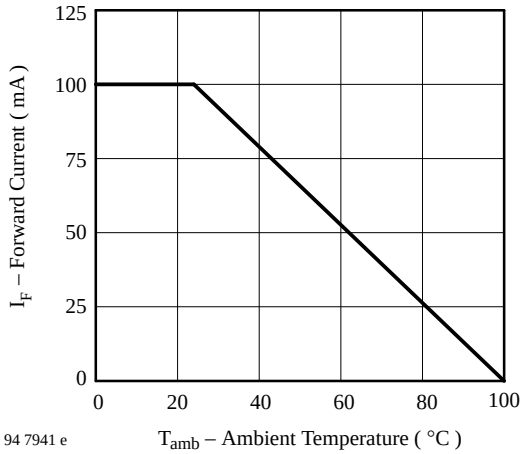


Figure 2 : Forward Current vs. Ambient Temperature

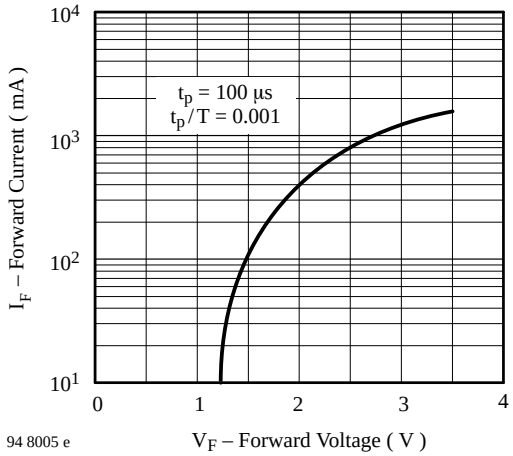


Figure 3 : Forward Current vs. Forward Voltage

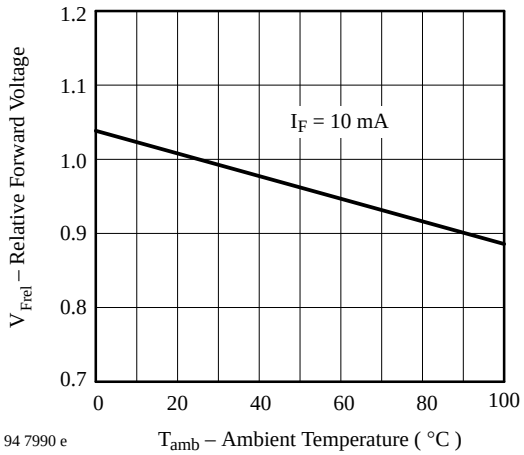


Figure 4 : Relative Forward Voltage vs. Ambient Temperature

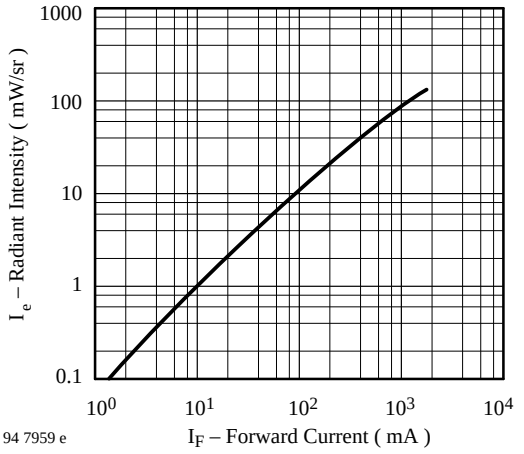


Figure 5 : Radiant Intensity vs. Forward Current

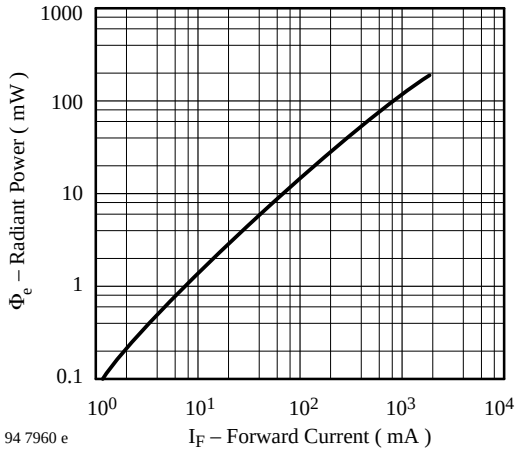


Figure 6 : Radiant Power vs. Forward Current

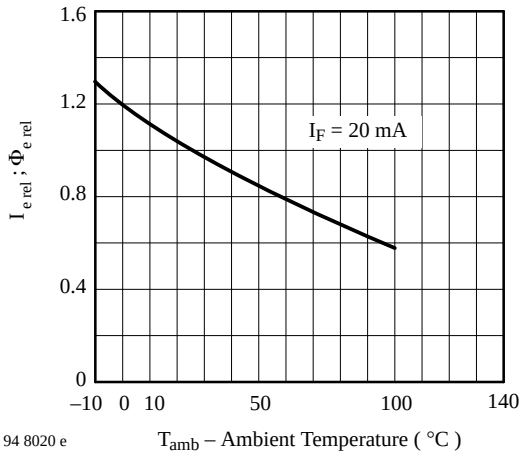


Figure 7 : Rel. Radiant Intensity\Power vs. Ambient Temperature

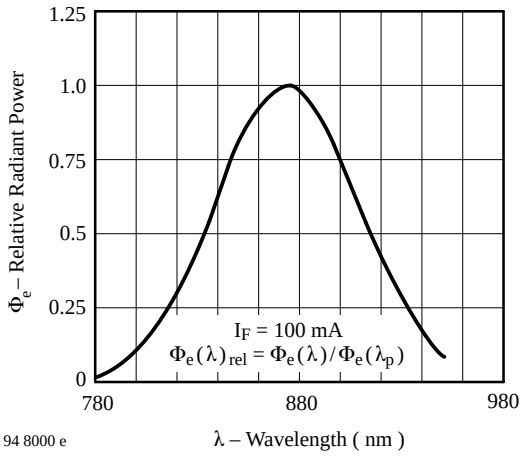


Figure 8 : Relative Radiant Power vs. Wavelength

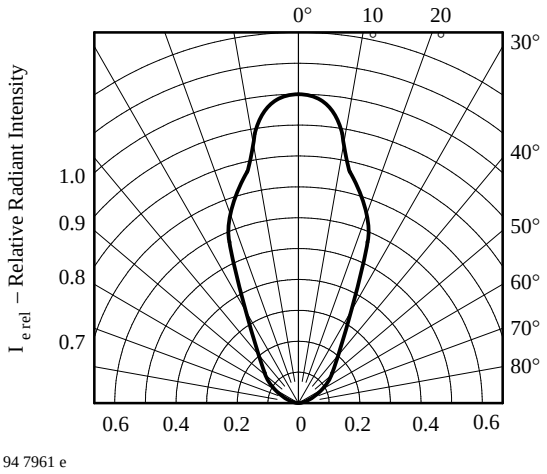
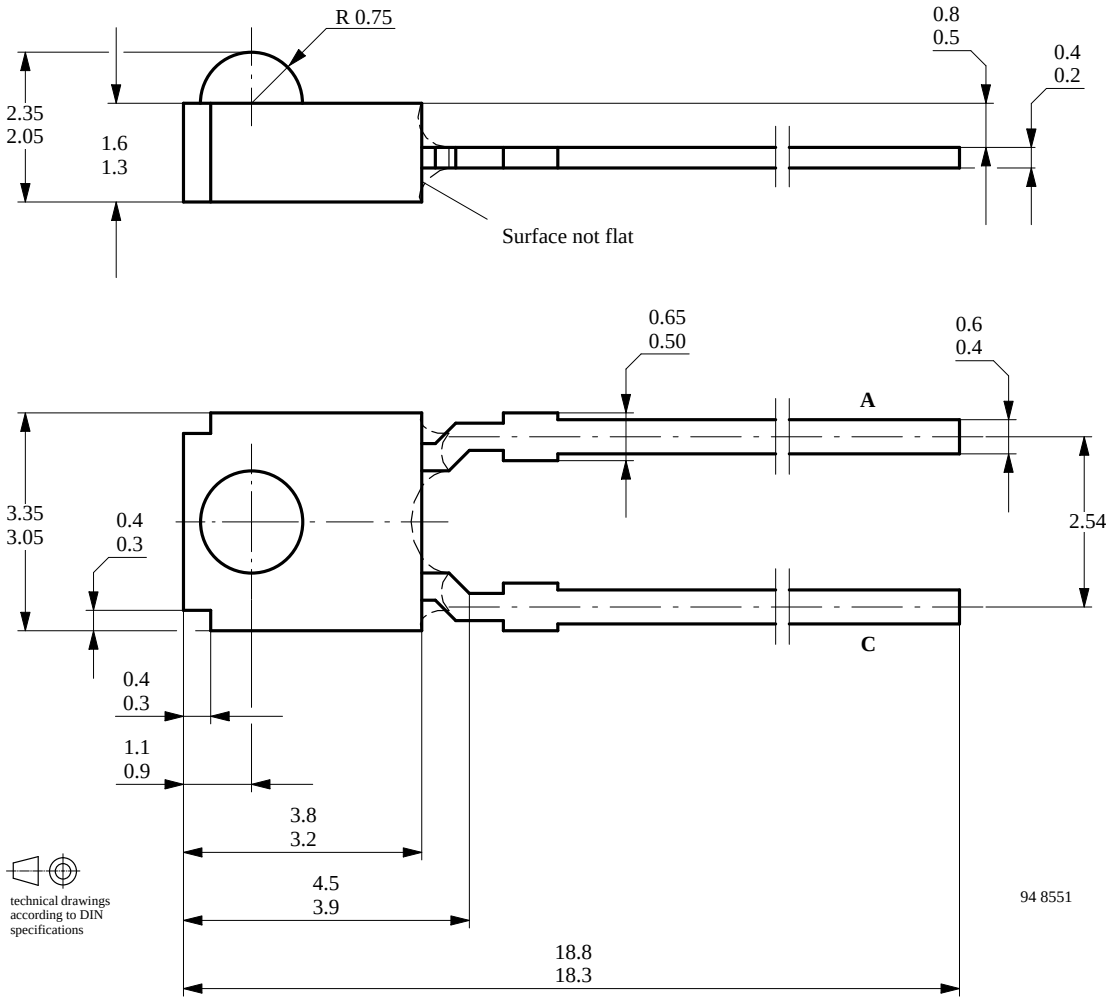


Figure 9 : Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



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