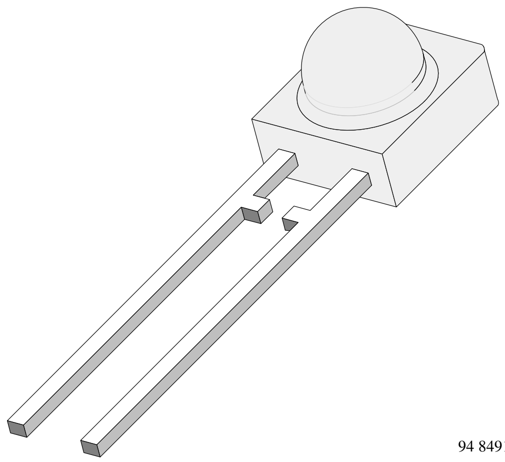
GaAs/GaAlAs Infrared Emitting Diode in Side View Package

Description

TSSP4400 is a high intensity infrared emitting diode in GaAlAs on GaAs technology, molded in a clear, blue–grey tinted plastic package with spherical side view lens. The device is spectrally matched to silicon photodiodes and phototransistors.



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Features

- High radiant power and high radiant intensity
- Suitable for high pulse current operation
- Low forward voltage
- Angle of half intensity $\varphi = \pm 22^\circ$
- Peak wavelength λ_p = 925 nm
- High reliability

Applications

High power infrared emitter in light curtains, light barriers, transmissive or reflective sensors in combination with PIN photodiodes or phototransistors.
Infrared remote control and free air transmission systems for long transmission distance and medium wide angle requirements in combination with PIN photo diodes or photo modules.
Suitable as replacement of CQX47.

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}	2.0	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	$t \leqq$ 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		1.3	1.8	V
	I_F = 1.5 A, t_p = 100 μs	V_F		2.4	3.2	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	10	23		mW/sr
	I_F = 1.5 A, t_p = 100 μs	I_e		300		mW/sr
Radiant Power	I_F = 100 mA, t_p = 20 ms	ϕ_e		18		mW
Temp. Coefficient of ϕ_e	I_F = 100 mA	$TK_{\phi e}$		–0.8		%/K
Angle of Half Intensity		φ		±22		deg
Peak Wavelength	I_F = 100 mA	λ_p		925		nm
Spectral Bandwidth	I_F = 100 mA	Δλ		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
	I_F = 1.5 A	t_r		500		ns
Fall Time	I_F = 100 mA	t_f		800		ns
	I_F = 1.5 A	t_f		500		ns

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

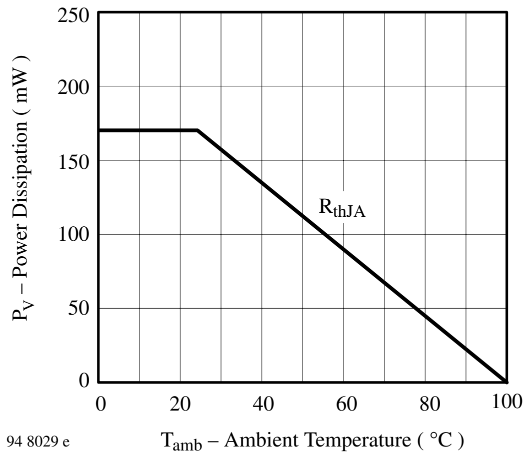


Figure 1. Power Dissipation vs. Ambient Temperature

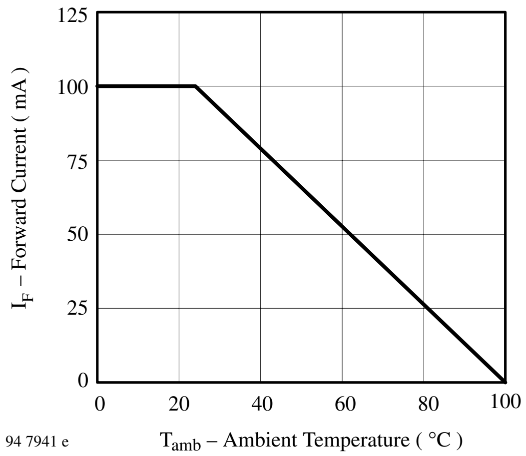


Figure 2. Forward Current vs. Ambient Temperature

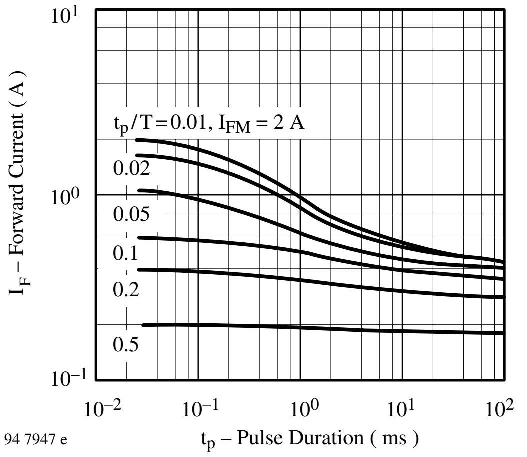


Figure 3. Pulse Forward Current vs. Pulse Duration

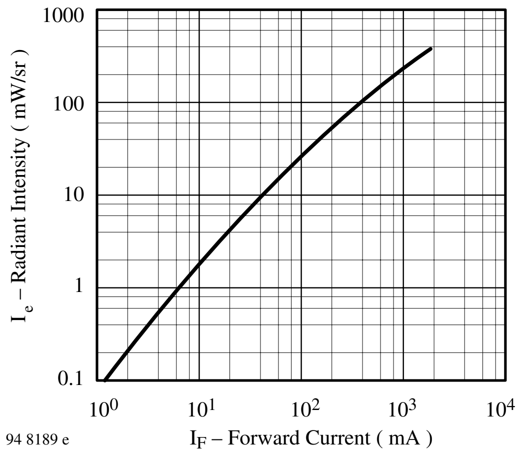


Figure 6. Radiant Intensity vs. Forward Current

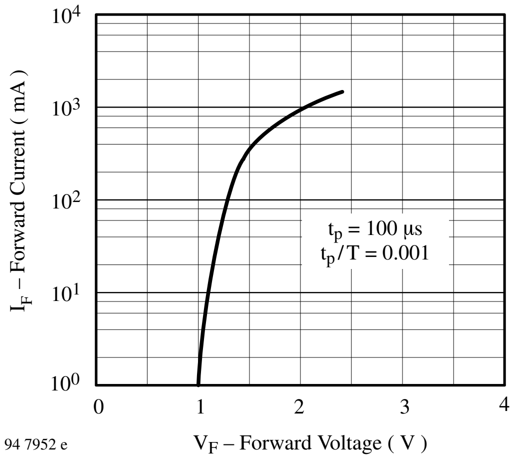


Figure 4. Forward Current vs. Forward Voltage

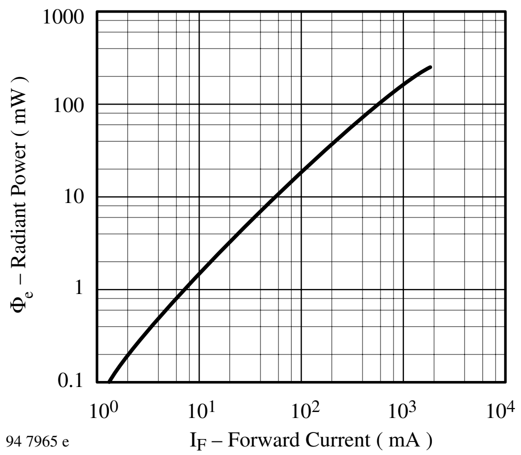


Figure 7. Radiant Power vs. Forward Current

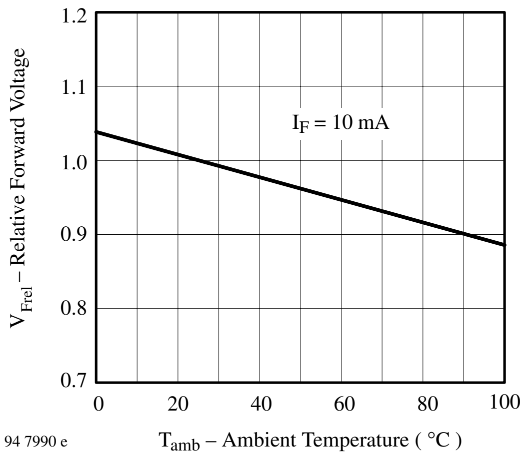


Figure 5. Relative Forward Voltage vs. Ambient Temperature

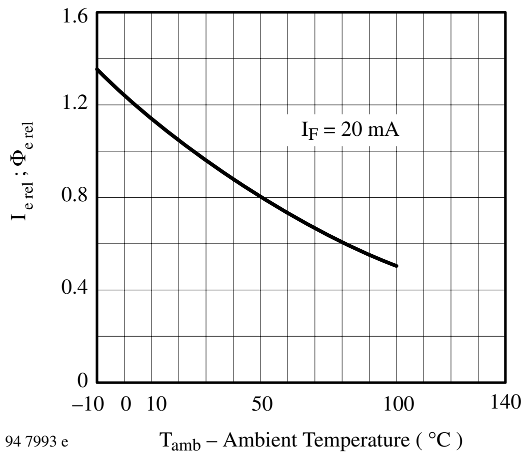


Figure 8. Rel. Radiant Intensity\Power vs. Ambient Temperature

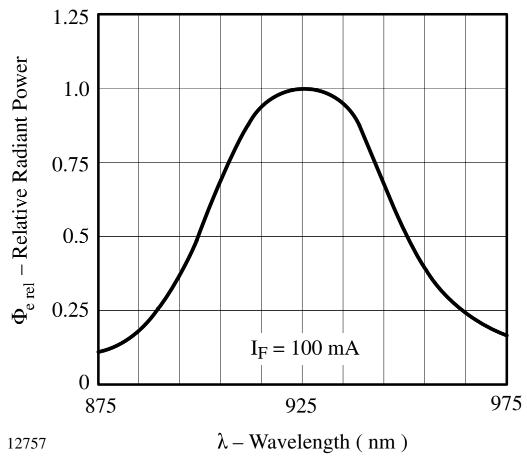


Figure 9. Relative Radiant Power vs. Wavelength

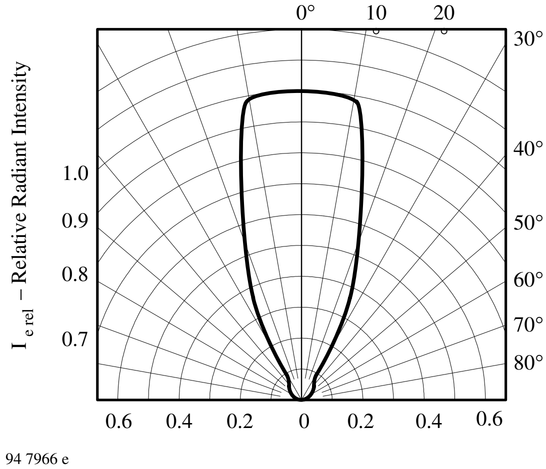
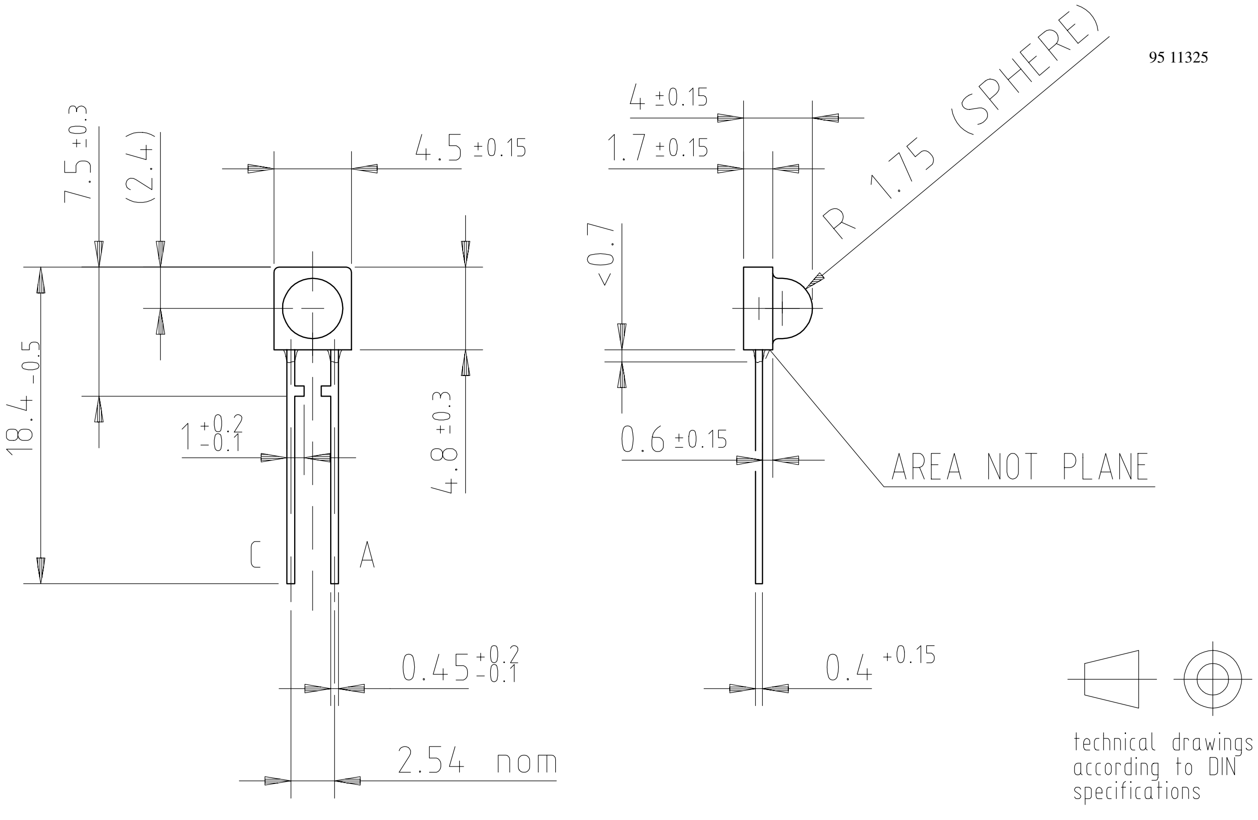


Figure 10. Relative Radiant Intensity vs. Angular Displacement

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.

2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively

2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA

3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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