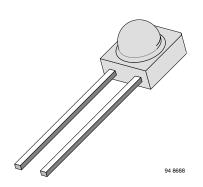
RoHS

GREEN



Vishay Semiconductors

High Speed Infrared Emitting Diode, 890 nm, GaAlAs Double Hetero



DESCRIPTION

TSSF4500 is an infrared, 890 nm emitting diode in GaAlAs double hetero (DH) technology with high radiant power and high speed, molded in a clear, untinted plastic package.

FEATURES

• Package type: leaded

Package form: side view

• Dimensions (L x W x H in mm): 4.5 x 4 x 4.8

Peak wavelength: λ_p = 890 nm

· High reliability

· High radiant power

High radiant intensity

• Angle of half intensity: $\varphi = \pm 22^{\circ}$

• Low forward voltage

· Suitable for high pulse current operation

• High modulation bandwidth: f_c = 12 MHz

· Good spectral matching with Si photodetectors

 Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

APPLICATIONS

- Infrared high speed remote control and free air data transmission systems with high modulation frequencies or high data transmission rate requirements
- TSSF4500 is ideal for the design of transmission systems according to IrDA requirements and for carrier frequency based systems (e.g. ASK/FSK - coded, 450 kHz or 1.3 MHz)

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
TSSF4500	20	± 22	890	30	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	CODE PACKAGING		PACKAGE FORM		
TSSF4500	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view		

Note

· MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	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 μs	I _{FSM}	1.5	Α	
Power dissipation		P _V	160	mW	



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ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Junction temperature		Tj	100	°C	
Operating temperature range		T _{amb}	- 40 to + 100	°C	
Storage temperature range		T _{stg}	- 40 to + 100	°C	
Soldering temperature	t ≤ 5 s, 2 mm from case	T _{sd}	260	°C	
Thermal resistance junction/ambient	Leads not soldered	R _{thJA}	450	K/W	

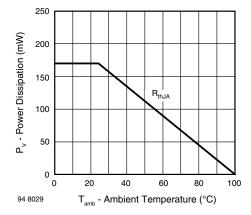


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

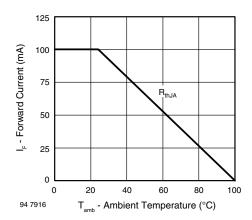


Fig. 2 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Famusard valtage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.35	1.6	V
Forward voltage	$I_F = 1.5 \text{ A}, t_p = 100 \mu \text{s}$	V _F		2.4		V
Temperature coefficient of V _F	I _F = 1 mA	TK _{VF}		- 1.8		mV/K
Reverse current	V _R = 5 V	I _R			10	μΑ
Junction capacitance	$V_R = 0 \text{ V, } f = 1 \text{ MHz, } E = 0$	Cj		160		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	l _e	10	20	50	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \ \mu\text{s}$	l _e		200		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фe		35		mW
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		- 0.7		%/K
Angle of half intensity		φ		± 22		deg
Peak wavelength	I _F = 100 mA	λ_{p}		890		nm
Spectral bandwidth	I _F = 100 mA	Δλ		40		nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p		0.2		nm/K
Rise time	I _F = 100 mA	t _r		30		ns
Fall time	I _F = 100 mA	t _f		30		ns
Cut-off frequency	I _{DC} = 70 mA, I _{AC} = 30 mA pp	f _c		12		MHz
Virtual source diameter		d		2.1		mm

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BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

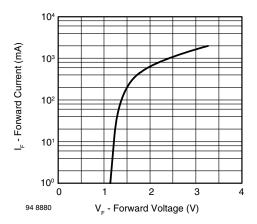


Fig. 3 - Forward Current vs. Forward Voltage

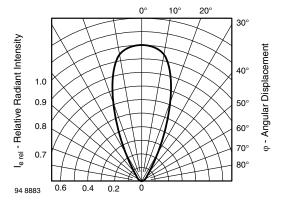


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

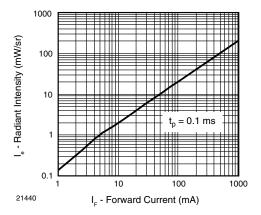


Fig. 4 - Radiant Intensity vs. Forward Current

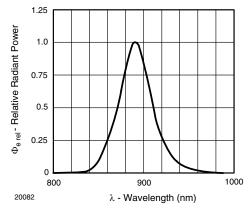
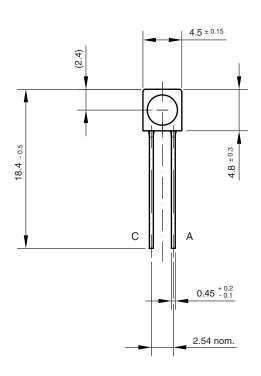


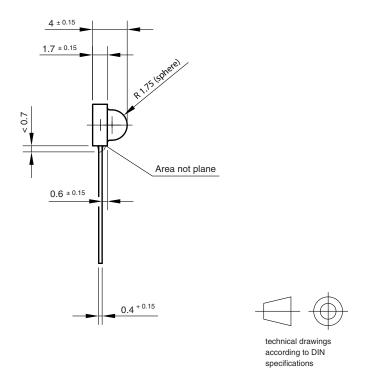
Fig. 5 - Relative Radiant Power vs. Wavelength

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PACKAGE DIMENSIONS in millimeters





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Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

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