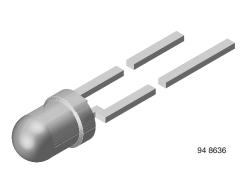
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Vishay Semiconductors

Infrared Emitting Diode, 950 nm, GaAs



DESCRIPTION

TSUS4400 is an infrared, 950 nm emitting diode in GaAs technology molded in a blue tinted plastic package.

FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): Ø 3
- Peak wavelength: $\lambda_p = 950 \text{ nm}$
- High reliability
- Angle of half intensity: $\varphi = \pm 18^{\circ}$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

- Infrared remote control and free air transmission systems with low forward voltage and small package requirements
- Emitter in transmissive sensors
- Emitter in reflective sensors

PRODUCT SUMMARY					
COMPONENT	l _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
TSUS4400	15	± 18	950	800	

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TSUS4400	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1	

Note

• MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25 \text{ °C}$, 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}	2	A	
Power dissipation		Pv	170	mW	
Junction temperature		Тj	100	°C	
Operating temperature range		T _{amb}	-40 to + 85	°C	
Storage temperature range		T _{stg}	-40 to +100	°C	
Soldering temperature	$t \le 5$ s, 2 mm from case	T _{sd}	260	°C	
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	300	K/W	

1 For technical questions, contact: <u>emittertechsupport@vishay.com</u> Document Number: 81054

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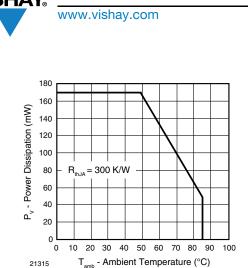


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

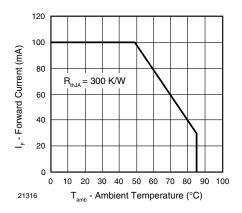


Fig. 2 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 100 mA, t _p = 20 ms	V _F		1.3	1.7	V
	I _F = 1.5 A, t _p = 100 μs	V _F		2.2		V
Temperature coefficient of V _F	I _F = 100 mA	TK _{VF}		-1.3		mV/K
Reverse current	V _R = 5 V	I _R			100	μA
Breakdown voltage	I _R = 100 μA	V _(BR)	5	40		μA
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj		30		pF
Radiant intensity	I _F = 100 mA, t _p = 20 ms	l _e	7	15	35	mW/sr
	I _F = 1.5 A, t _p = 100 μs	l _e		140		mW/sr
Radiant power	I _F = 100 mA, t _p = 20 ms	фе		20		mW
Temperature coefficient of ϕ_{e}	I _F = 20 mA	ΤKφ _e		-0.8		%/K
Angle of half intensity		φ		± 18		deg
Peak wavelength	I _F = 100 mA	λρ		950		nm
Spectral bandwidth	l _F = 100 mA	Δλ		50		nm
Temperature coefficient of λ_p	l _F = 100 mA	ΤΚλρ		0.2		nm/K
Rise time	I _F = 100 mA	t _r		800		ns
	I _F = 1.5 A	t _r		400		ns
Fall time	I _F = 100 mA	t _f		800		ns
	I _F = 1.5 A	t _f		400		ns
Virtual source diameter		d		2.1		mm



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

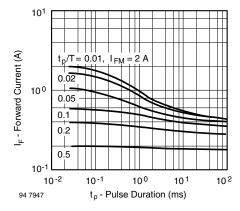


Fig. 3 - Pulse Forward Current vs. Pulse Duration

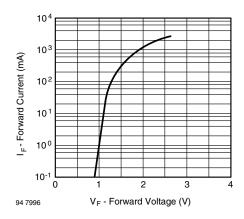


Fig. 4 - Forward Current vs. Forward Voltage

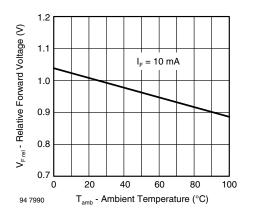


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

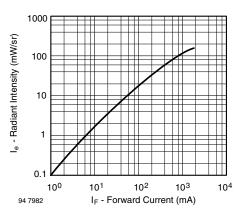


Fig. 6 - Radiant Intensity vs. Forward Current

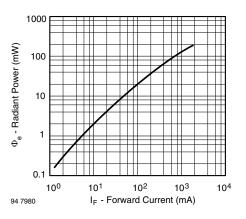


Fig. 7 - Radiant Power vs. Forward Current

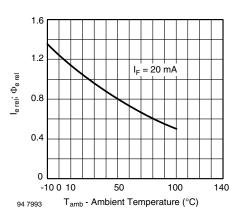


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

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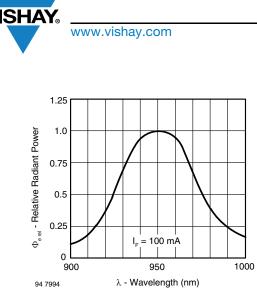


Fig. 9 - Relative Radiant Power vs. Wavelength

С

PACKAGE DIMENSIONS in millimeters

94 7994

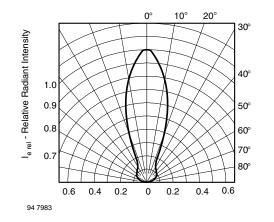
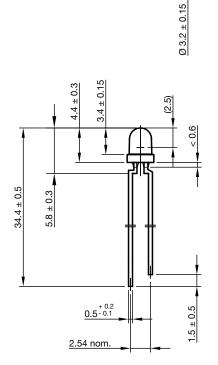
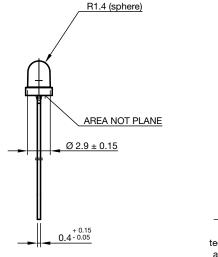


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement







technical drawings according to DIN specifications

Drawing-No.: 6.544-5255.01-4 Issue: 9; 28.07.14

4

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