

Vishay Semiconductors

GREEN

Infrared Emitting Diode, 950 nm, GaAs



DESCRIPTION

TSUS5200 is an infrared, 950 nm emitting diode in GaAs technology molded in a blue-gray tinted plastic package.

FEATURES

Package type: leadedPackage form: T-1¾

• Dimensions (in mm): Ø 5

· Leads with stand-off

• Peak wavelength: $\lambda_p = 950 \text{ nm}$

· High reliability

• Angle of half intensity: $\varphi = \pm 15^{\circ}$

• Low forward voltage

Suitable for high pulse current operation

· 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 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	I _e (mW/sr)	φ (deg)	λ _P (nm)	t _r (ns)	
TSUS5200	20	± 15	950	800	
TSUS5201	25	± 15	950	800	
TSUS5202	30	± 15	950	800	

Note

· Test conditions see table "Basic Characteristics"

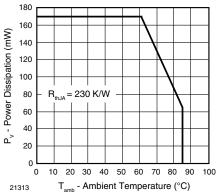
ORDERING INFORMATION						
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM			
TSUS5200	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾			
TSUS5201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾			
TSUS5202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾			

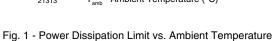
Note

· MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	SYMBOL VALUE			
Reverse voltage		V _R	5	V		
Forward current		l _F	150	mA		
Peak forward current	$t_p/T = 0.5, t_p = 100 \mu s$	I _{FM}	300	mA		
Surge forward current	t _p = 100 μs	I _{FSM}	2.5	Α		
Power dissipation		P _V	170	mW		
Junction temperature		Tj	100	°C		
Operating temperature range		T _{amb}	- 40 to + 85	°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	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	230	K/W		

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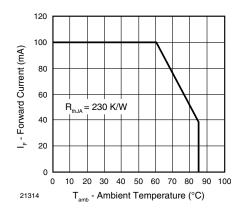


Fig. 1 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	N SYMBOL MIN. TYP.		MAX.	UNIT		
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.3	1.7	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	μΑ	
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	C _j		30		pF	
Temperature coefficient of φ _e	I _F = 20 mA	ΤΚφ _e - 0.8			%/K		
Angle of half intensity		φ		± 15		deg	
Peak wavelength	I _F = 100 mA	λρ		950		nm	
Spectral bandwidth	I _F = 100 mA	Δλ		50		nm	
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p		0.2		nm/K	
	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	
	I _F = 1.5 A	t _f		400		ns	
Virtual source diameter		d		3.8		mm	



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TYPE DEDICATED CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
		TSUS5200	V _F		2.2	3.4	V
Forward voltage	$I_F = 1.5 \text{ A}, t_p = 100 \ \mu \text{s}$	TSUS5201	V_{F}		2.2	3.4	V
		TSUS5202	V_{F}	IBOL MIN. TY I/F 2. I/F <td< td=""><td>2.2</td><td>2.7</td><td>V</td></td<>	2.2	2.7	V
		TSUS5200	l _e	10	20	50	mW/sr
	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	TSUS5201	l _e	15	25	50 ı	mW/sr
Radiant intensity		TSUS5202	l _e	20	30	50	mW/sr
nadiant intensity		TSUS5200	l _e	95	180		mW/sr
	$I_F = 1.5 \text{ A}, t_p = 100 \ \mu \text{s}$	TSUS5201	l _e	120	230		mW/sr
		TSUS5202	l _e	170	280		mW/sr
		TSUS5200	φ _e		13		mW
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	TSUS5201	фе		14		mW
		TSUS5202	φ _e		15		mW

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

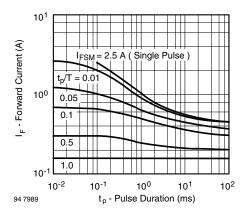


Fig. 2 - Pulse Forward Current vs. Pulse Duration

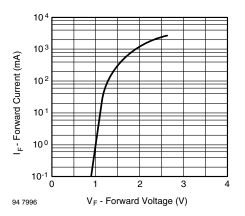


Fig. 3 - Forward Current vs. Forward Voltage

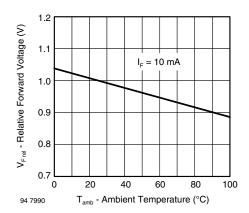


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

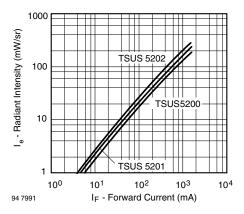


Fig. 5 - Radiant Intensity vs. Forward Current

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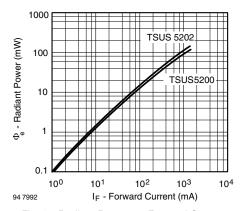


Fig. 6 - Radiant Power vs. Forward Current

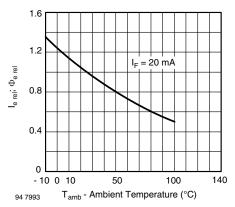


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

1.25 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 94 7994 λ - Wavelength (nm)

Fig. 8 - Relative Radiant Power vs. Wavelength

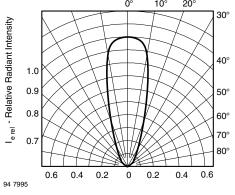
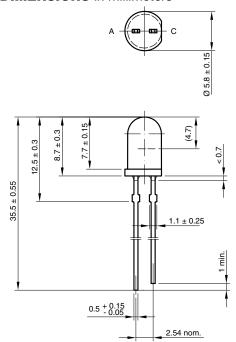
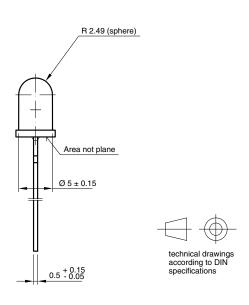


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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