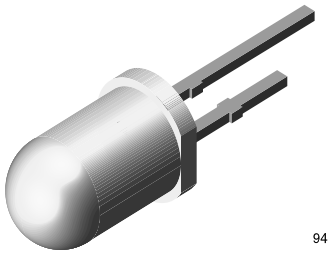
Infrared Emitting Diode, 950 nm, GaAs



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FEATURES

- Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Leads with stand-off
- Peak wavelength: λ_p = 950 nm
- High reliability
- Angle of half intensity: φ = ± 15°
- 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

RoHS COMPLIANT

GREEN (5-2008)**

Note

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

DESCRIPTION

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

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	VALUE	UNIT
Reverse voltage		V_R	5	V
Forward current		I_F	150	mA
Peak forward current	t_p/T = 0.5, t_p = 100 µs	I_{FM}	300	mA
Surge forward current	t_p = 100 µs	I_{FSM}	2.5	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	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

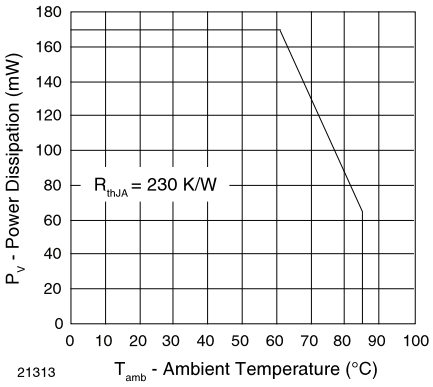


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

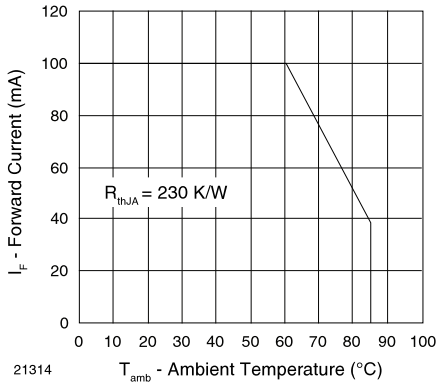


Fig. 1 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
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
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
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j		30		pF
Temperature coefficient of ϕ_e	I_F = 20 mA	$TK\phi_e$		- 0.8		%/K
Angle of half intensity		φ		± 15		deg
Peak wavelength	I_F = 100 mA	λ_p		950		nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$		50		nm
Temperature 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		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

TYPE DEDICATED CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I_F = 1.5 A, t_p = 100 µs	TSUS5200	V_F		2.2	3.4	V
		TSUS5201	V_F		2.2	3.4	V
		TSUS5202	V_F		2.2	2.7	V
Radiant intensity	I_F = 100 mA, t_p = 20 ms	TSUS5200	I_e	10	20	50	mW/sr
		TSUS5201	I_e	15	25	50	mW/sr
		TSUS5202	I_e	20	30	50	mW/sr
	I_F = 1.5 A, t_p = 100 µs	TSUS5200	I_e	95	180		mW/sr
		TSUS5201	I_e	120	230		mW/sr
		TSUS5202	I_e	170	280		mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	TSUS5200	ϕ_e		13		mW
		TSUS5201	ϕ_e		14		mW
		TSUS5202	ϕ_e		15		mW

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

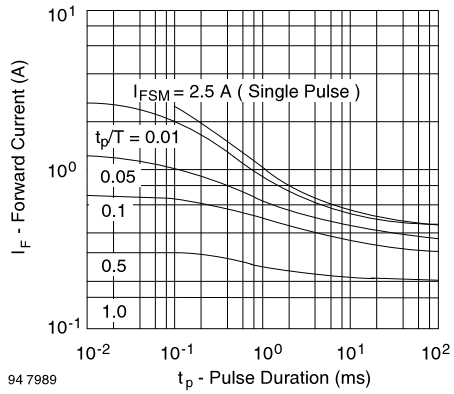


Fig. 2 - Pulse Forward Current vs. Pulse Duration

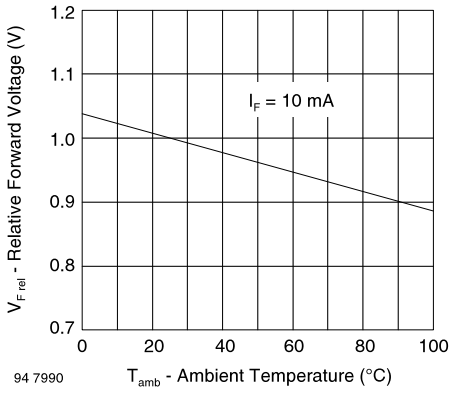


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

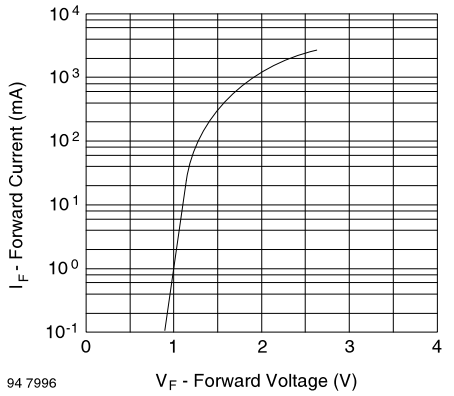


Fig. 3 - Forward Current vs. Forward Voltage

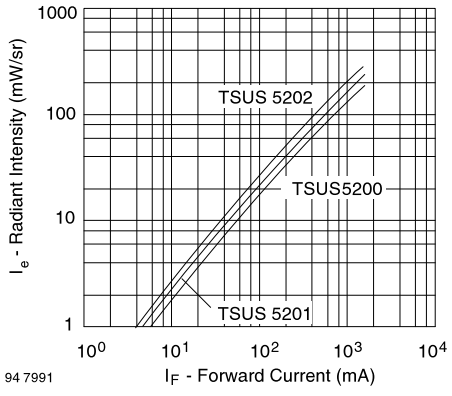


Fig. 5 - Radiant Intensity vs. Forward Current

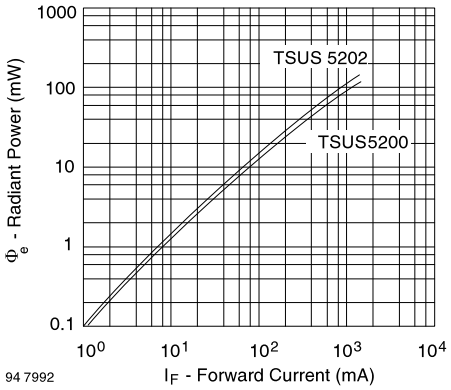


Fig. 6 - Radiant Power vs. Forward Current

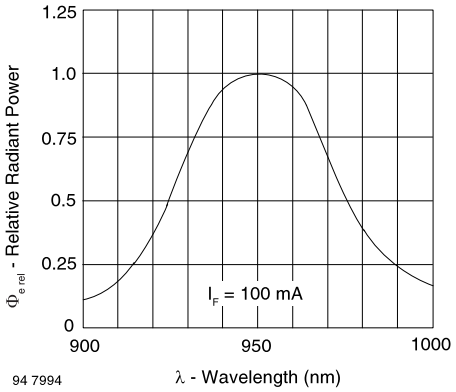


Fig. 8 - Relative Radiant Power vs. Wavelength

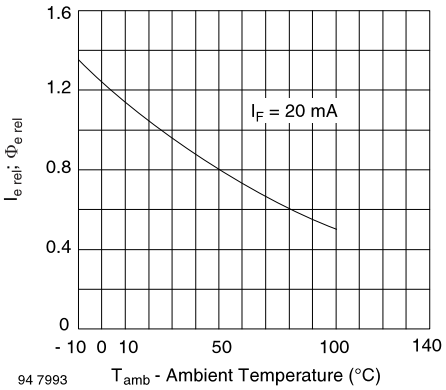


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

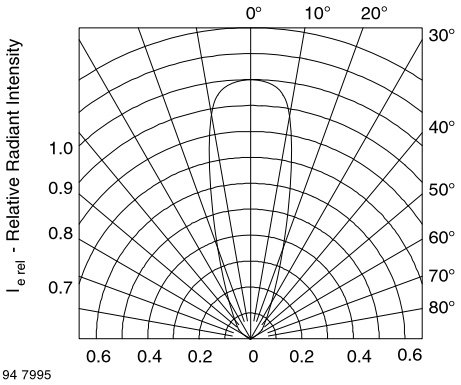
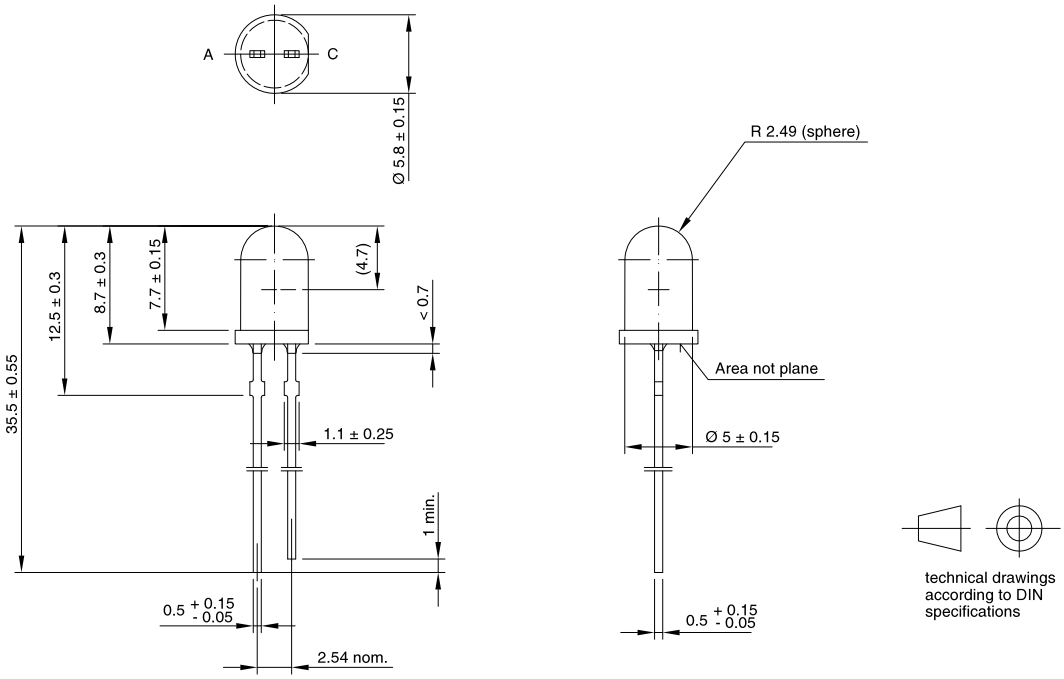


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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