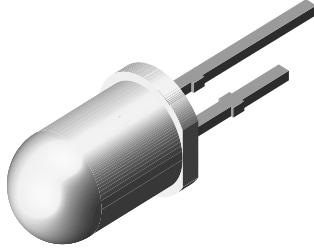




Infrared Emitting Diode, 950 nm, GaAs



94 8390

FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Leads with stand-off
- Peak wavelength: $\lambda_p = 950$ 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

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 ($^\circ$)	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-1 $\frac{3}{4}$
TSUS5201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSUS5202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25$ $^\circ$ 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	$t_p/T = 0.5$, $t_p = 100$ μ s	I_{FM}	300	mA
Surge forward current	$t_p = 100$ μ s	I_{FSM}	2.5	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	100	$^\circ$ C
Operating temperature range		T_{amb}	-40 to +85	$^\circ$ C
Storage temperature range		T_{stg}	-40 to +100	$^\circ$ C
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ$ C
Thermal resistance junction to ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	230	K/W

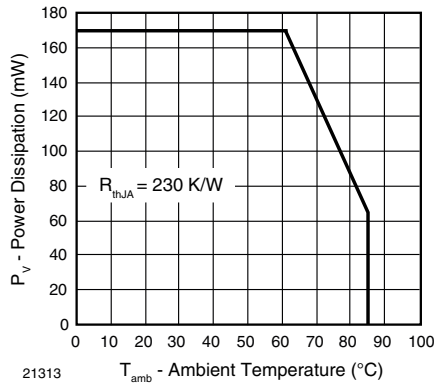


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

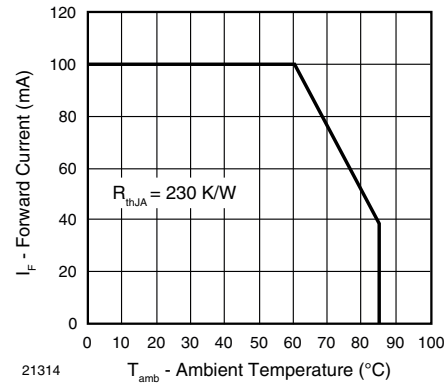


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	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	$I_F = 100\text{ mA}$	TK_{V_F}	-	-1.3	-	mV/K
Reverse current	$V_R = 5\text{ V}$	I_R	-	-	100	μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_j	-	30	-	pF
Temperature coefficient of ϕ_e	$I_F = 20\text{ mA}$	TK_{ϕ_e}	-	-0.8	-	%/K
Angle of half intensity		ϕ	-	± 15	-	$^{\circ}$
Peak wavelength	$I_F = 100\text{ mA}$	λ_p	-	950	-	nm
Spectral bandwidth	$I_F = 100\text{ mA}$	$\Delta\lambda$	-	50	-	nm
Temperature coefficient of λ_p	$I_F = 100\text{ mA}$	TK_{λ_p}	-	0.2	-	nm/K
Rise time	$I_F = 100\text{ mA}$	t_r	-	800	-	ns
	$I_F = 1.5\text{ A}$	t_r	-	400	-	ns
Fall time	$I_F = 100\text{ mA}$	t_f	-	800	-	ns
	$I_F = 1.5\text{ A}$	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)

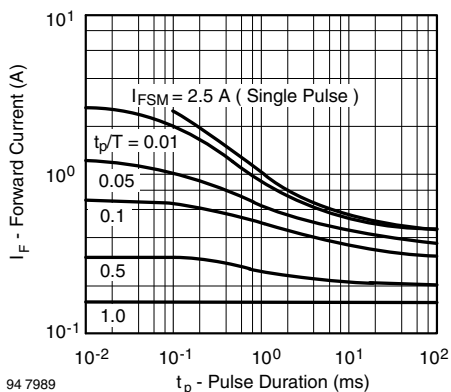


Fig. 3 - Pulse Forward Current vs. Pulse Duration

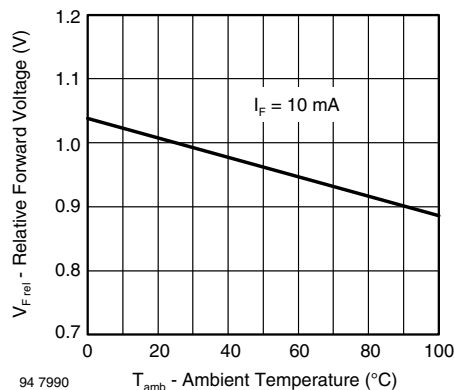


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

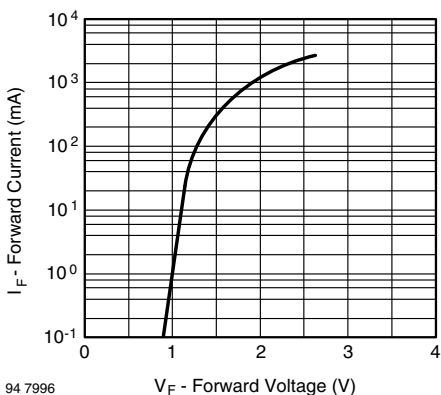


Fig. 4 - Forward Current vs. Forward Voltage

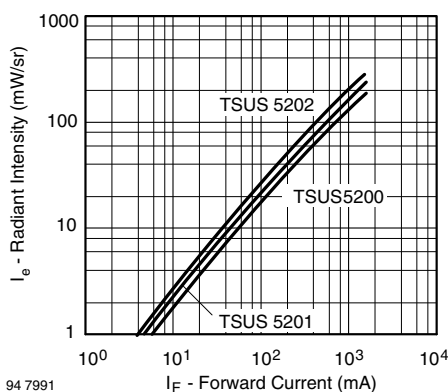


Fig. 6 - Radiant Intensity vs. Forward Current

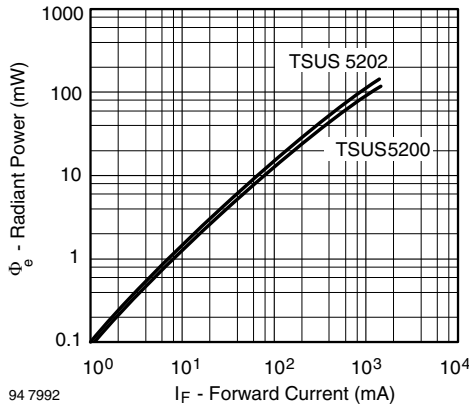


Fig. 7 - Radiant Power vs. Forward Current

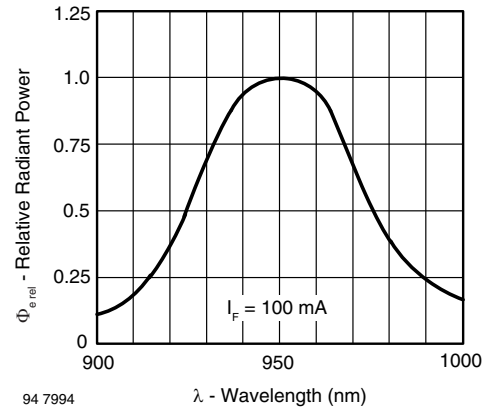


Fig. 9 - Relative Radiant Power vs. Wavelength

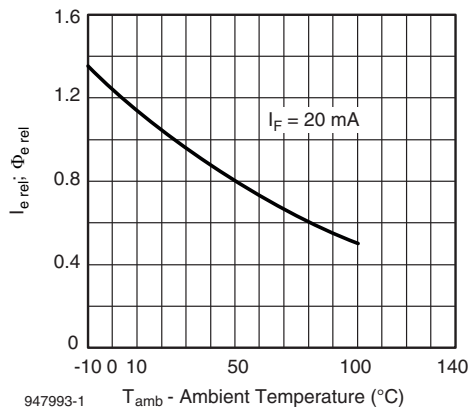


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

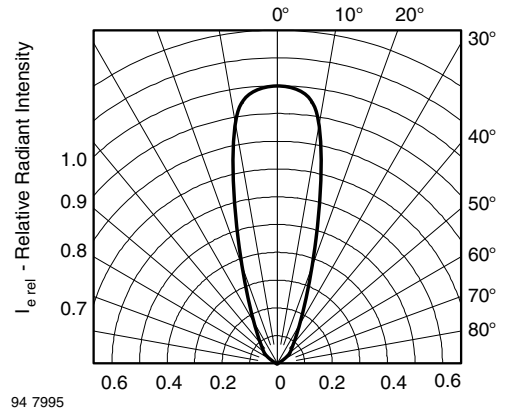
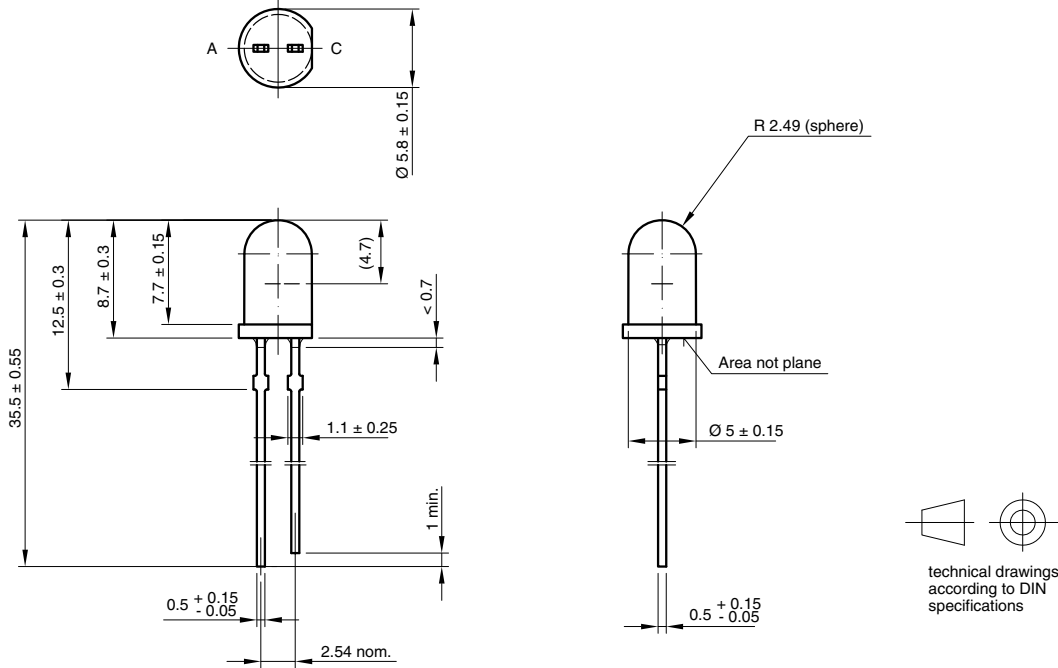


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



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