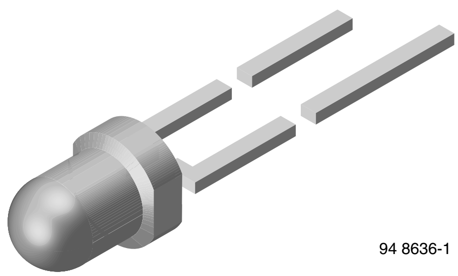
Infrared Emitting Diode, 950 nm, GaAs



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DESCRIPTION

TSUS4300 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: λ_p = 950 nm
- High reliability
- Angle of half intensity: φ = ± 16°
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matches with detector TEFT4300
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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)
TSUS4300	18	± 16	950	800

Note
- Test conditions see table “Basic Characteristics”

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSUS4300	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1
TSUS4300-ASZ	Ammopack	MOQ: 10 000 pcs, 2000 pcs/box	T-1

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 µs	I_{FM}	200	mA
Surge forward current	t_p = 100 µs	I_{FSM}	2	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}	300	K/W

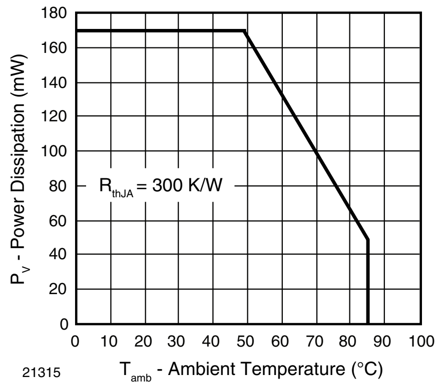


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

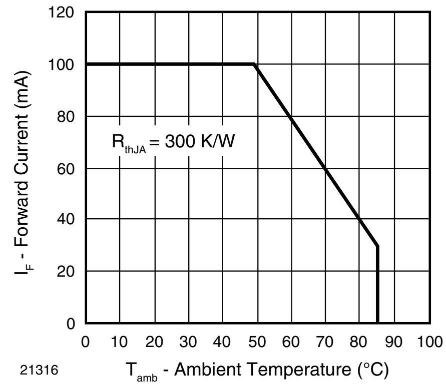


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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
	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	-	
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j	-	30	-	pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	7	18	35	mW/sr
	I_F = 1.5 A, t_p = 100 μs	I_e	-	160	-	mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕ_e	-	20	-	mW
Temperature coefficient of ϕ_e	I_F = 20 mA	$TK\phi_e$	-	-0.8	-	%/K
Angle of half intensity		φ	-	± 16	-	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	-	2.1	-	mm

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

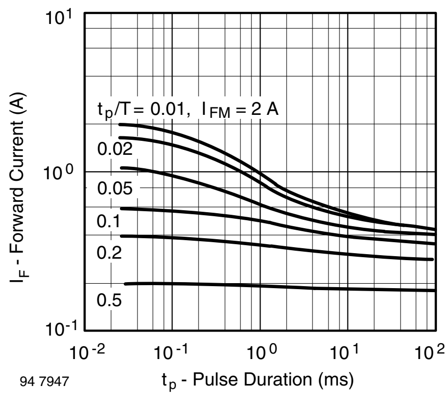


Fig. 3 - Pulse Forward Current vs. Pulse Duration

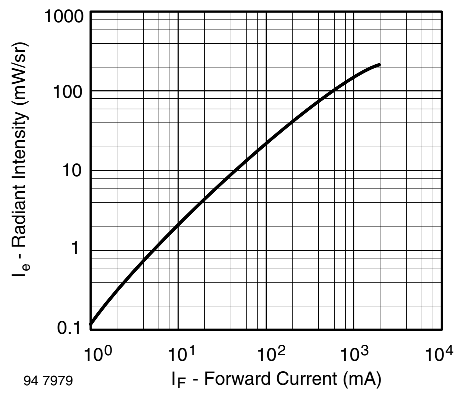


Fig. 6 - Radiant Intensity vs. Forward Current

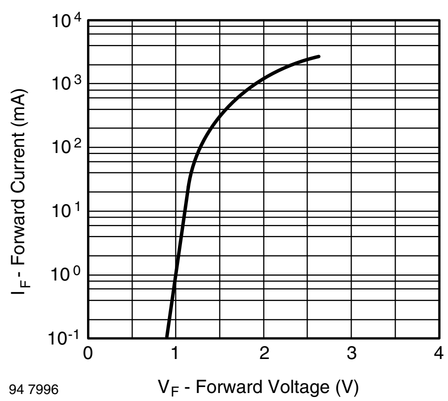


Fig. 4 - Forward Current vs. Forward Voltage

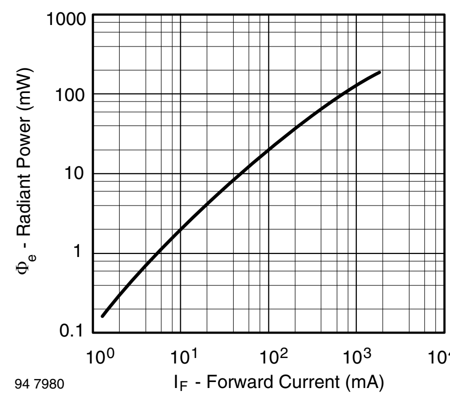


Fig. 7 - Radiant Power vs. Forward Current

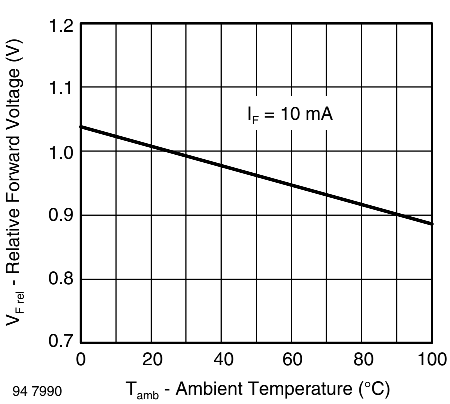


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

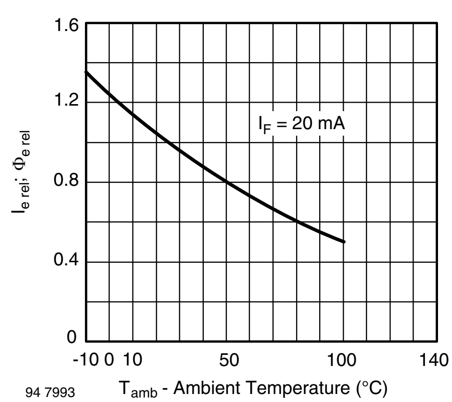


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

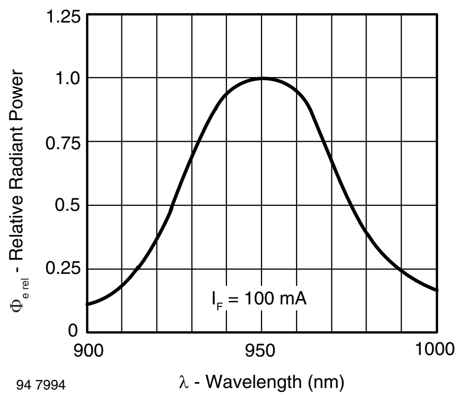


Fig. 9 - Relative Radiant Power vs. Wavelength

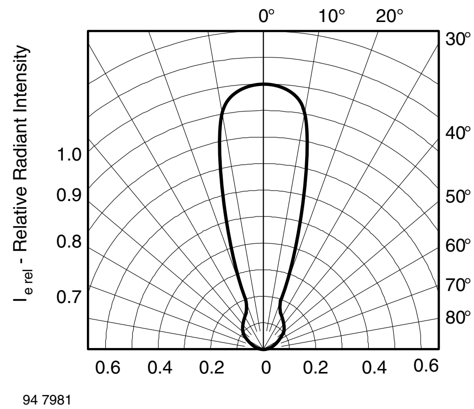
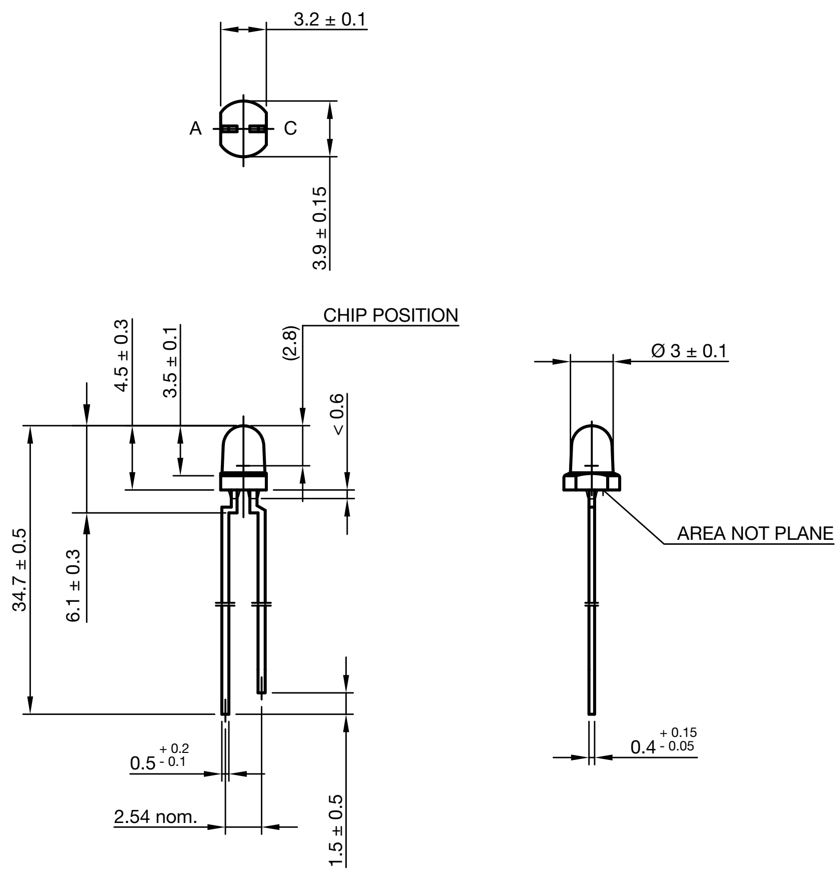
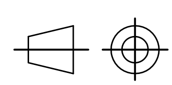


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5269.02-4
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