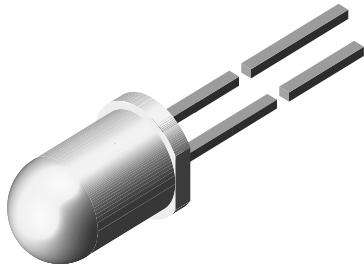


High Power Infrared Emitting Diode, 940 nm, GaAlAs, MQW



FEATURES

- Package type: leaded
- Package form: T-1 1/4
- Dimensions (in mm): Ø 5
- Peak wavelength: $\lambda_p = 940$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 25^\circ$
- 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

TSAL6400 is an infrared, 940 nm emitting diode in GaAlAs multi quantum well (MQW) technology with high radiant power and high speed molded in a blue-gray plastic package.

APPLICATIONS

- Infrared remote control units with high power requirements
- Free air transmission systems
- Infrared source for optical counters and card readers

PRODUCT SUMMARY

COMPONENT	I _e (mW/sr)	φ (°)	λ_p (nm)	t _r (ns)
TSAL6400	50	± 25	940	15

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSAL6400	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 1/4

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}	1.5	A
Power dissipation		P _V	160	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	$t \leq 5$ 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

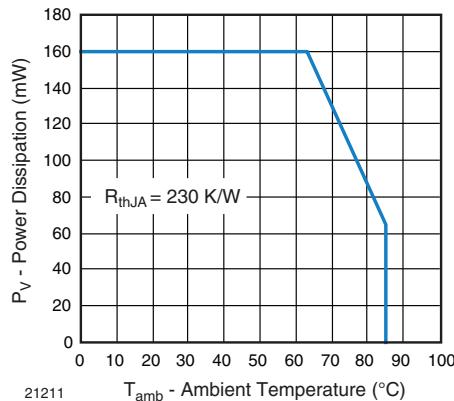


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

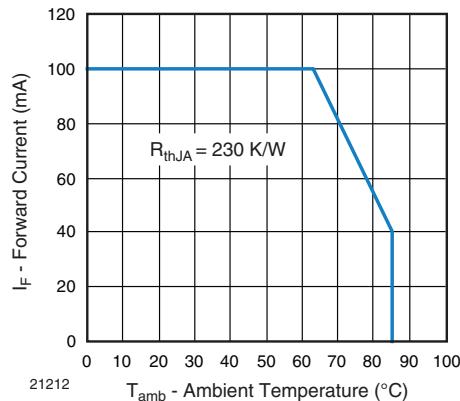


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, 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		1.35	1.6	V
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	V_F		2.2	3	V
Temperature coefficient of V_F	$I_F = 1 \text{ mA}$	TK_{VF}		-1.8		mV/K
Reverse current	$V_R = 5 \text{ V}$	I_R			10	μA
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	C_j		40		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I_e	25	50	125	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	I_e	220	420		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	ϕ_e		40		mW
Temperature coefficient of ϕ_e	$I_F = 20 \text{ mA}$	TK_{ϕ_e}		-0.6		%/K
Angle of half intensity		φ		± 25		°
Peak wavelength	$I_F = 100 \text{ mA}$	λ_p		940		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\Delta\lambda$		30		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		15		ns
Fall time	$I_F = 100 \text{ mA}$	t_f		15		ns

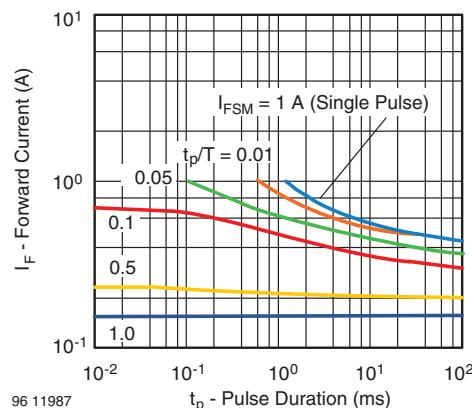
BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Pulse Forward Current vs. Pulse Duration

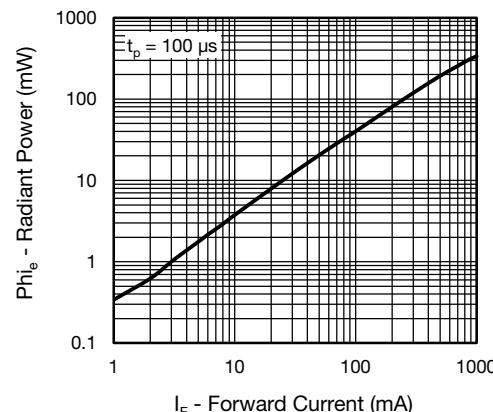


Fig. 6 - Radiant Power vs. Forward Current

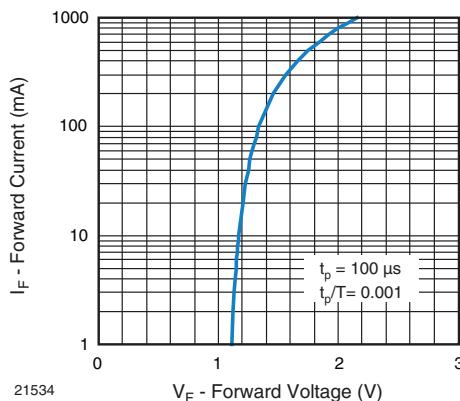


Fig. 4 - Forward Current vs. Forward Voltage

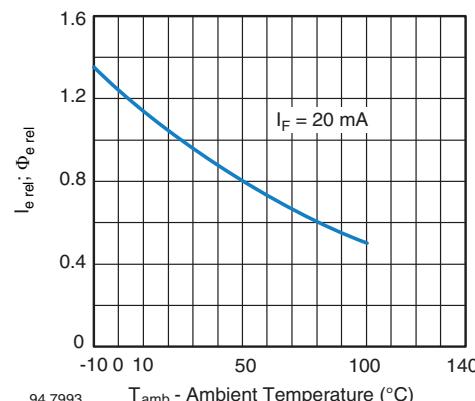


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

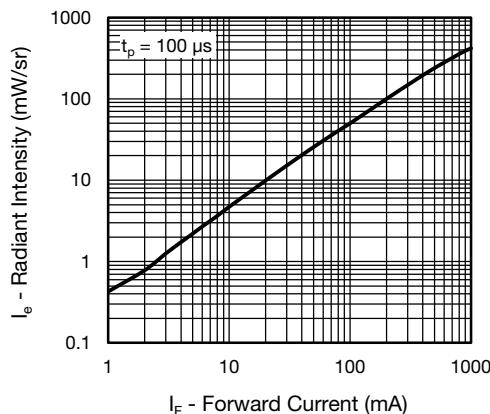


Fig. 5 - Radiant Intensity vs. Forward Current

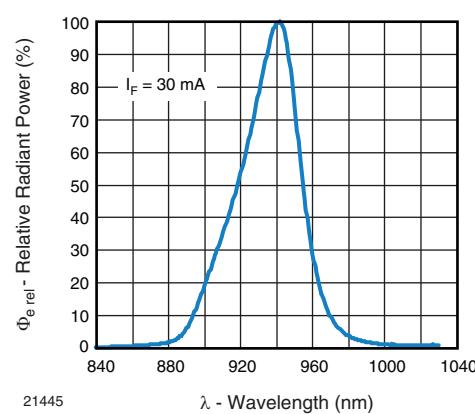


Fig. 8 - Relative Radiant Power vs. Wavelength

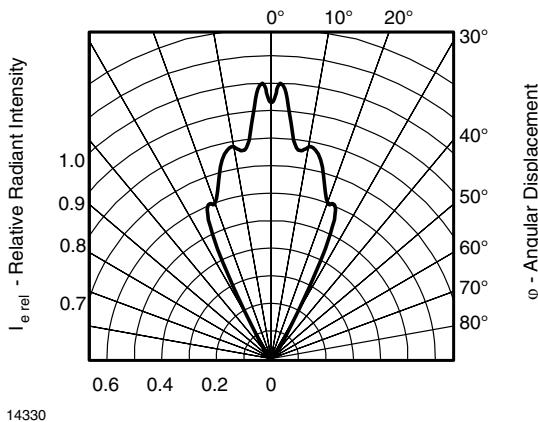
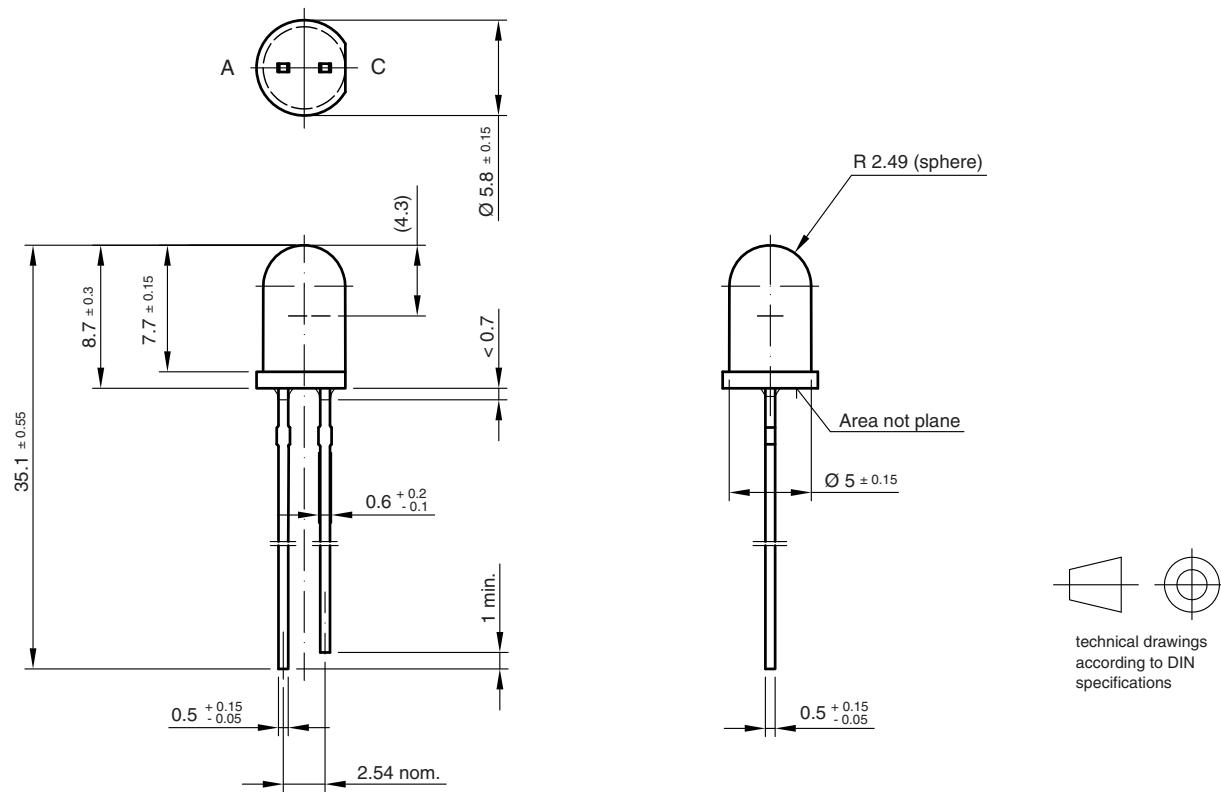


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5259.07-4

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