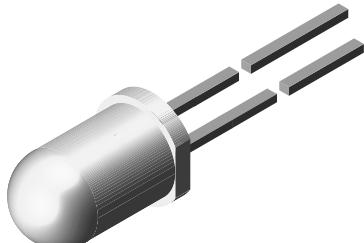


High Power Infrared Emitting Diode, 940 nm, GaAlAs, MQW



94 8389



RoHS
COMPLIANT
HALOGEN FREE
GREEN
(5-2008)

FEATURES

- Package type: leaded
- Package form: T-1 3/4
- Dimensions (in mm): Ø 5
- Peak wavelength: $\lambda_p = 940$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\phi = \pm 10^\circ$
- 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

DESCRIPTION

TSAL6100 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
- IR source for smoke detectors

PRODUCT SUMMARY

COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)
TSAL6100	170	± 10	940	15

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSAL6100	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 3/4

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 ≤ 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

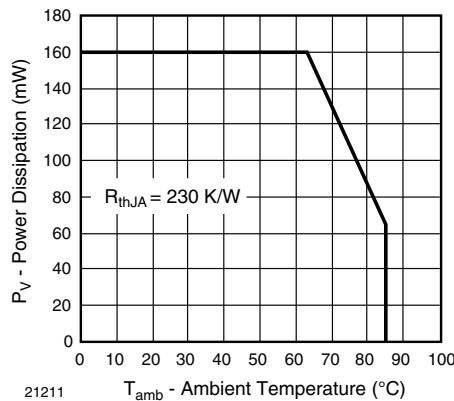


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

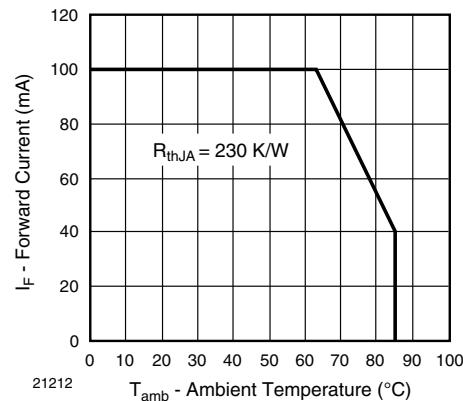


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100$ mA, $t_p = 20$ ms	V_F		1.35	1.6	V
	$I_F = 1$ A, $t_p = 100$ μ s	V_F		2.2	3	V
Temperature coefficient of V_F	$I_F = 1$ mA	TK_{VF}		-1.8		mV/K
Reverse current	$V_R = 5$ V	I_R			10	μ A
Junction capacitance	$V_R = 0$ V, $f = 1$ MHz, $E = 0$	C_j		40		pF
Radiant intensity	$I_F = 100$ mA, $t_p = 20$ ms	I_e	80	170	400	mW/sr
	$I_F = 1$ A, $t_p = 100$ μ s	I_e	650	1450		mW/sr
Radiant power	$I_F = 100$ mA, $t_p = 20$ ms	ϕ_e		40		mW
Temperature coefficient of ϕ_e	$I_F = 20$ mA	$TK\phi_e$		-0.6		%/K
Angle of half intensity		ϕ		± 10		deg
Peak wavelength	$I_F = 100$ mA	λ_p		940		nm
Spectral bandwidth	$I_F = 100$ mA	$\Delta\lambda$		30		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		15		ns
Fall time	$I_F = 100$ mA	t_f		15		ns

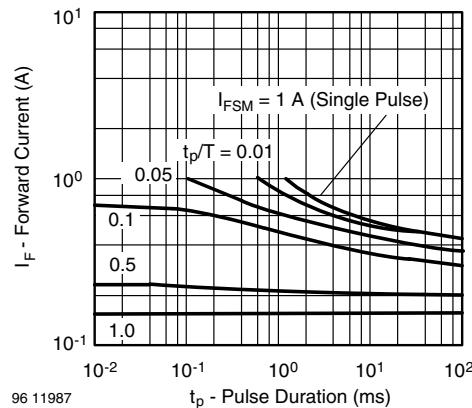
BASIC CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Pulse Forward Current vs. Pulse Duration

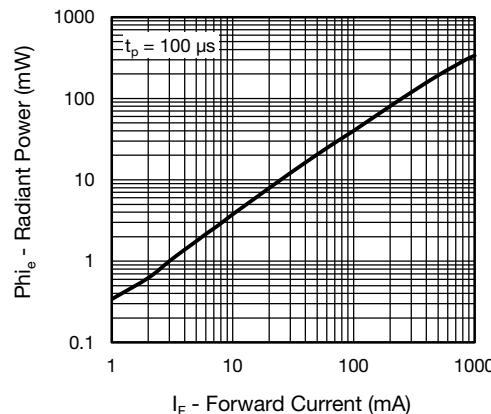


Fig. 6 - Radiant Power vs. Forward Current

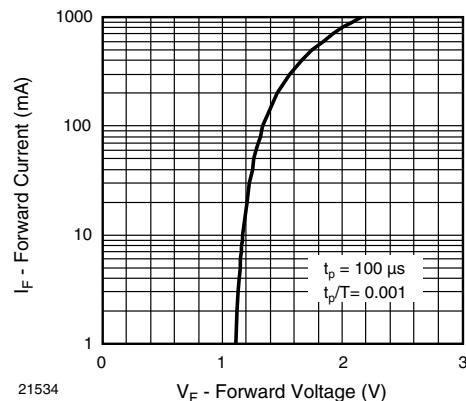


Fig. 4 - Forward Current vs. Forward Voltage

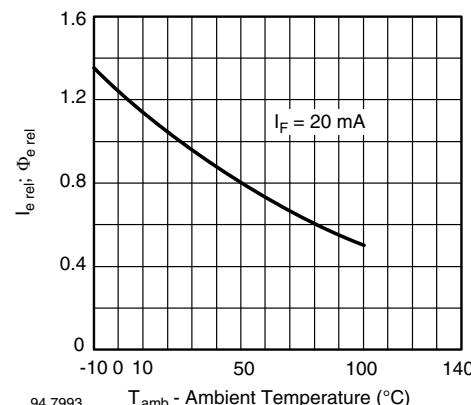


Fig. 7 - Rel. Radiant Intensity/Power vs. Ambient Temperature

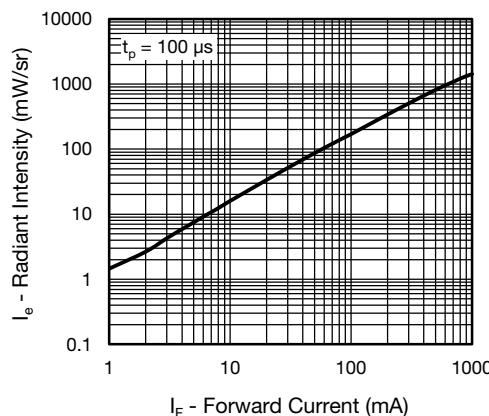


Fig. 5 - Radiant Intensity vs. Forward Current

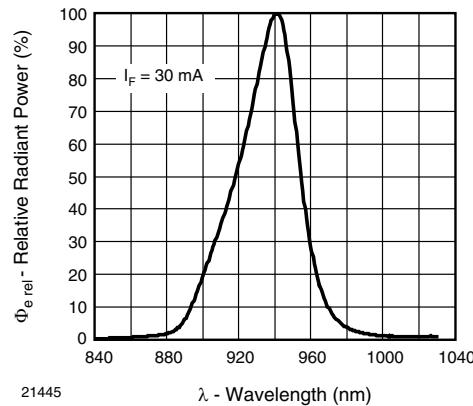


Fig. 8 - Relative Radiant Power vs. Wavelength

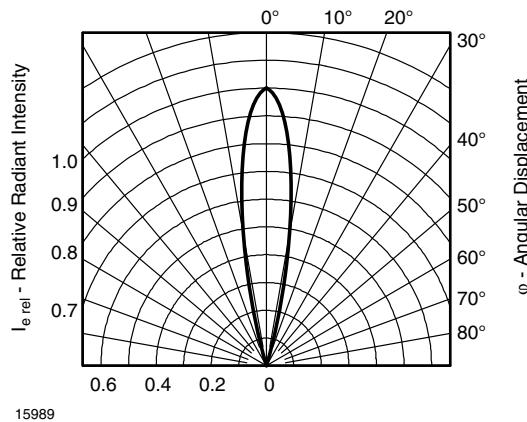
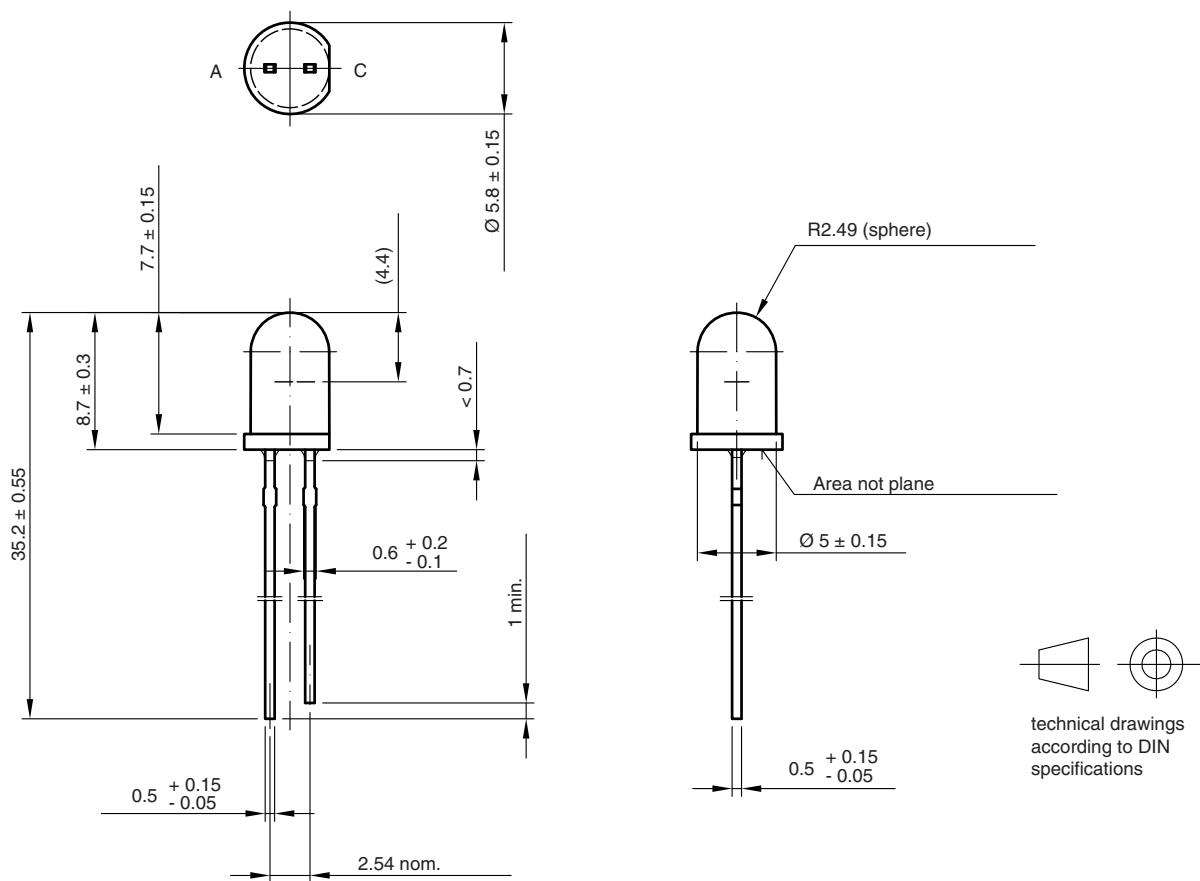


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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