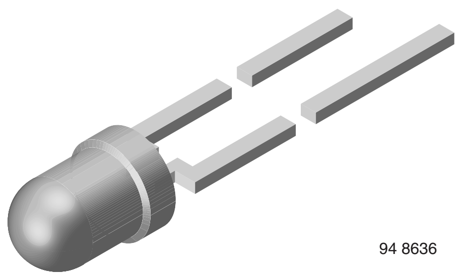
High Power Infrared Emitting Diode, 940 nm, GaAlAs, MQW



FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): Ø 3
- Peak wavelength: λ_p = 940 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: φ = ± 25°
- 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

Pb-free
e2
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

DESCRIPTION

TSAL4400 is an infrared, 940 nm emitting diode in GaAlAs, MQW technology with high radiant power molded in a blue-gray plastic package.

APPLICATIONS

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

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ (deg)	λ_p (nm)	t_r (ns)
TSAL4400	36	± 25	940	15

Note

- Test conditions see table “Basic Characteristics“

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSAL4400	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1
TSAL4400-RSZ	Ammopack	MOQ: 8000 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}	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}	300	K/W

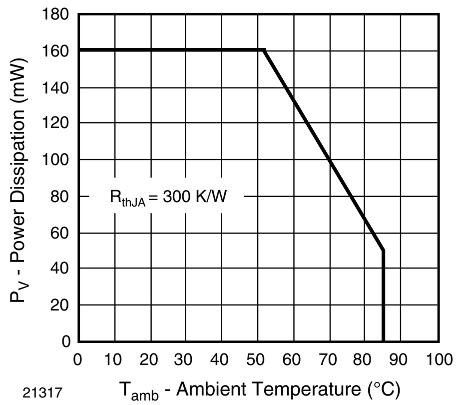


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

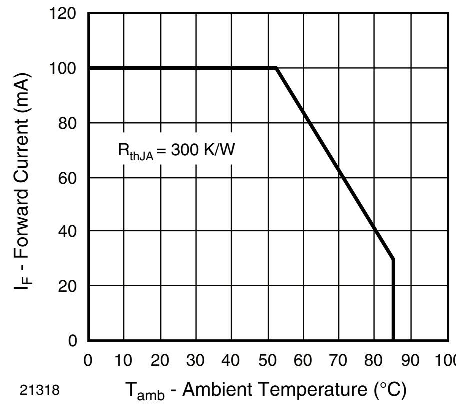


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	-	1.35	1.6	V
	I_F = 1 A, t_p = 100 μs	V_F	-	2.6	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	μA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_j	-	60	-	pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	16	36	80	mW/sr
	I_F = 1 A, t_p = 100 μs	I_e	135	290	-	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	-	± 25	-	deg
Peak wavelength	I_F = 100 mA	λ_p	-	940	-	nm
Spectral bandwidth	I_F = 100 mA	$\Delta\lambda$	-	25	-	nm
Temperature coefficient of λ_p	I_F = 100 mA	$TK\lambda_p$	-	0.25	-	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 °C, unless otherwise specified)

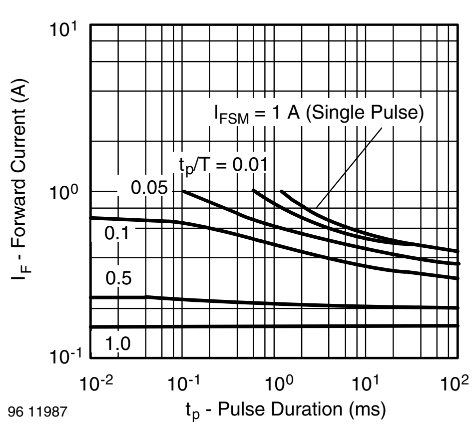


Fig. 3 - Pulse Forward Current vs. Pulse Duration

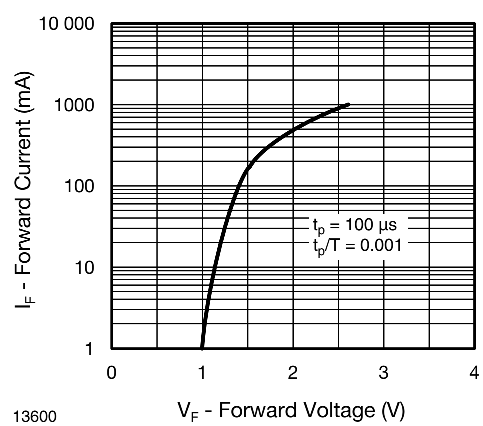


Fig. 4 - Forward Current vs. Forward Voltage

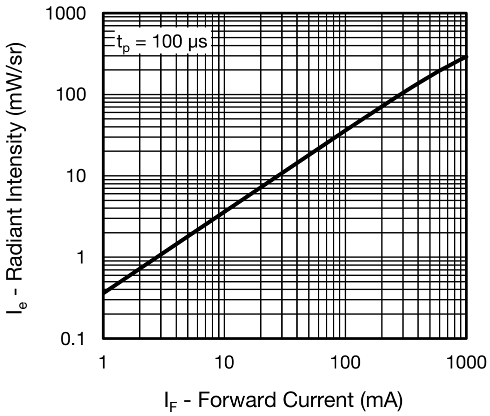


Fig. 5 - Radiant Intensity vs. Forward Current

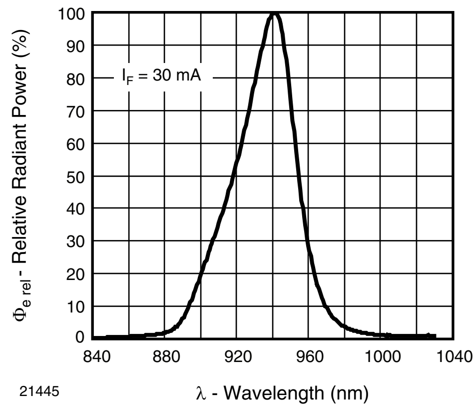


Fig. 8 - Relative Radiant Power vs. Wavelength

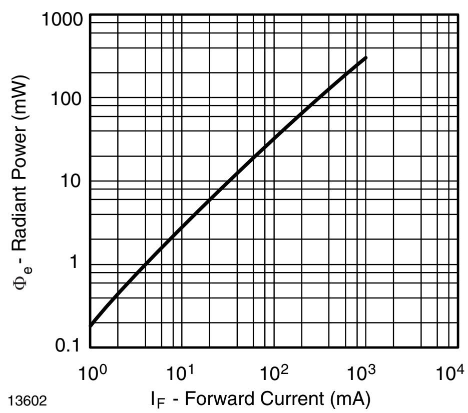


Fig. 6 - Radiant Power vs. Forward Current

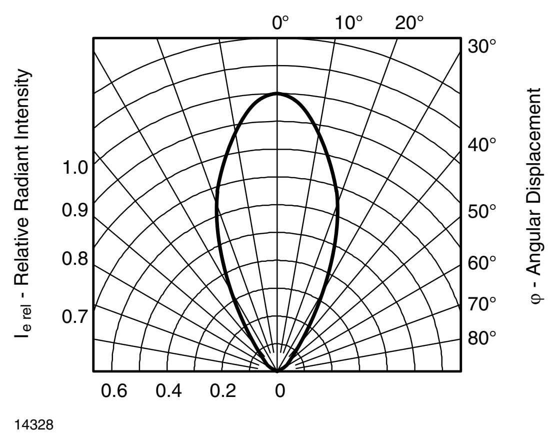


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

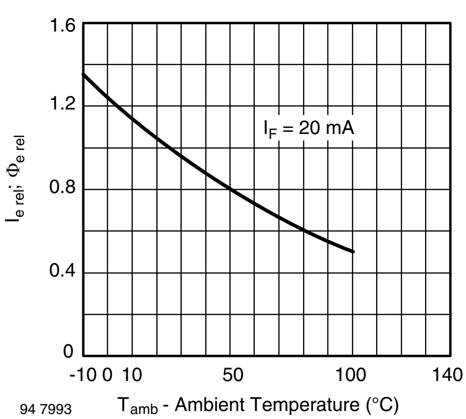
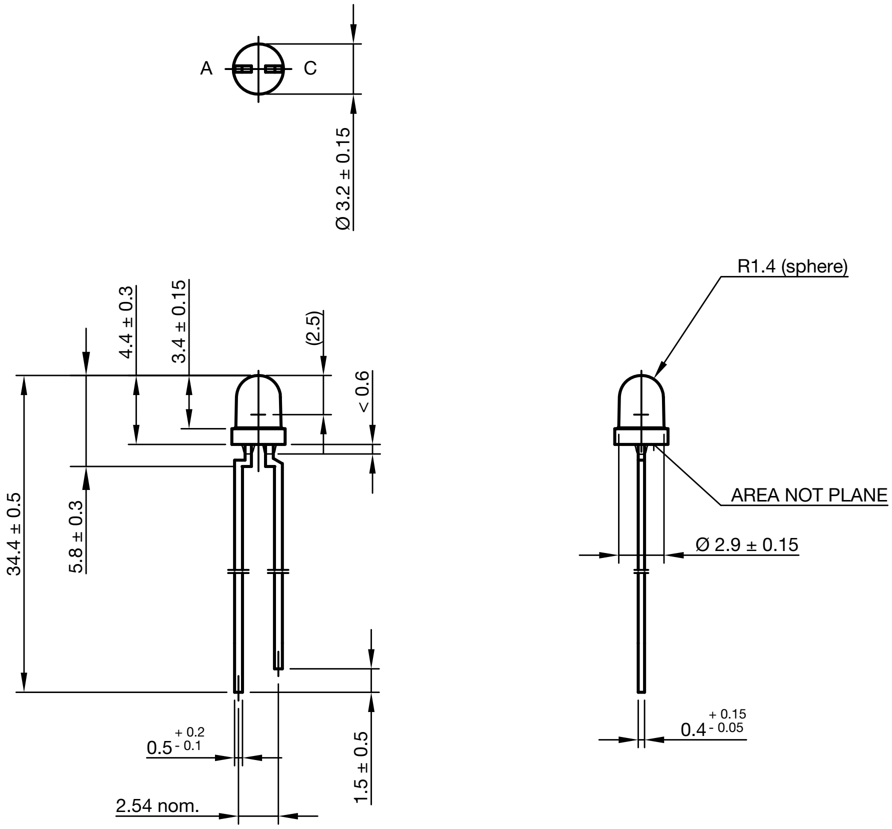
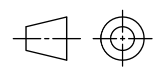


Fig. 7 - Rel. Radiant Intensity/Power vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters





technical drawings
according to DIN
specifications

Drawing-No.: 6.544-5255.01-4
Issue: 9; 28.07.14

For technical questions, contact: emittertechsupport@vishay.com

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