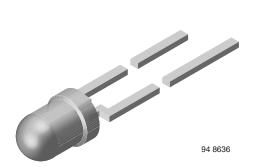
HALOGEN FREE

GREEN



Vishay Semiconductors

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



DESCRIPTION

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

FEATURES

Package type: leadedPackage 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: $\varphi = \pm 25^{\circ}$

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 <u>www.vishay.com/doc?99912</u>

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 INFORMATI	TION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
TSAL4400	bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1	

Note

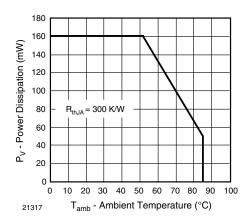
MOQ: minimum order quantity

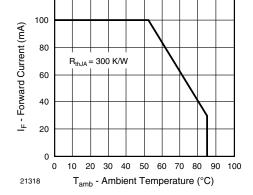
ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage		V _R	5	V	
Forward current		I _F	100	mA	
Peak forward current	$t_p/T = 0.5, t_p = 100 \mu s$	I _{FM}	200	mA	
Surge forward current	t _p = 100 μs	I _{FSM}	1.5	Α	
Power dissipation		P _V	160	mW	
Junction temperature		Tj	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	

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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	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.35	1.6	V
	$I_F = 1 \text{ A, } t_p = 100 \mu\text{s}$	V _F		2.6	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	μΑ
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj		60		pF
Padical interest	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I _e	16	36	80	mW/sr
Radiant intensity	$I_F = 1 \text{ A, } t_p = 100 \mu\text{s}$	I _e	135	290		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 mA	TKφ _e		-0.6		%/K
Angle of half intensity		φ		± 25		deg
Peak wavelength	I _F = 100 mA	λρ		940		nm
Spectral bandwidth	I _F = 100 mA	Δλ		25		nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _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)

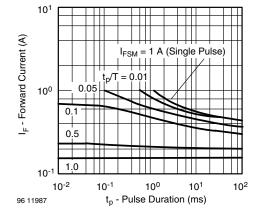


Fig. 3 - Pulse Forward Current vs. Pulse Duration

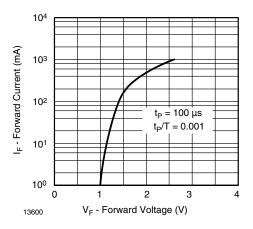


Fig. 4 - Forward Current vs. Forward Voltage

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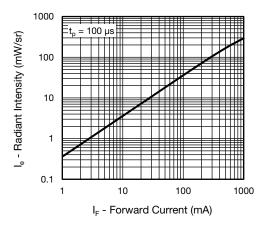


Fig. 5 - Radiant Intensity vs. Forward Current

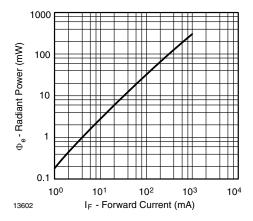


Fig. 6 - Radiant Power vs. Forward Current

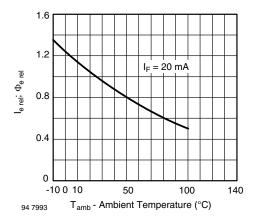


Fig. 7 - Rel. Radiant Intensity/Power vs. Ambient Temperature

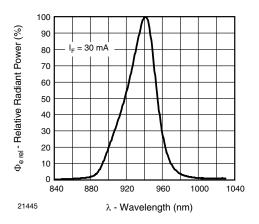


Fig. 8 - Relative Radiant Power vs. Wavelength

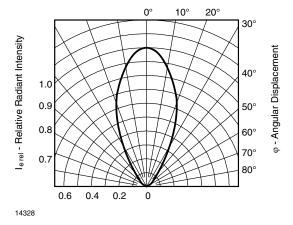
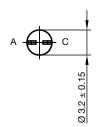


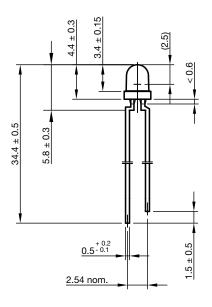
Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

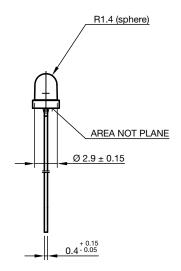


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PACKAGE DIMENSIONS in millimeters









Drawing-No.: 6.544-5255.01-4

Issue: 9; 28.07.14



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