RoHS

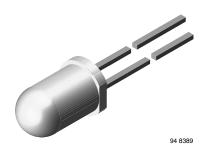
COMPLIANT

GREEN



Vishay Semiconductors

High Power Infrared Emitting Diode, 940 nm, GaAlAs/GaAs



DESCRIPTION

TSAL7400 is an infrared, 940 nm emitting diode in GaAlAs/GaAs technology with high radiant power molded in a clear, untinted plastic package.

FEATURES

- · Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Peak wavelength: $\lambda_p = 940 \text{ nm}$
- 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

** Please see document "Vishay Material Category Policy": <u>www.vishay.com/doc?99902</u>

APPLICATIONS

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

PRODUCT SUMMARY

COMPONENT	l _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)
TSAL7400	40	± 25	940	800

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
TSAL7400	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾		

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	А	
Power dissipation		Pv	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	$t \le 5$ 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	

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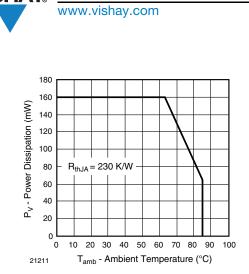


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

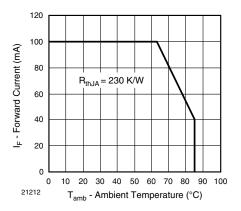


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	μA
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj		25		pF
De dia di internetti	I _F = 100 mA, t _p = 20 ms	l _e	25	40	125	mW/sr
Radiant intensity	$I_F = 1 \text{ A}, t_p = 100 \ \mu \text{s}$	l _e	220	310		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	ф _е		35		mW
Temperature coefficient of ϕ_{e}	I _F = 20 mA	TKø _e		- 0.6		%/K
Angle of half intensity		φ		± 25		deg
Peak wavelength	l _F = 100 mA	λρ		940		nm
Spectral bandwidth	l _F = 100 mA	Δλ		50		nm
Temperature coefficient of λ_p	l _F = 100 mA	ΤΚλρ		0.2		nm/K
Rise time	l _F = 100 mA	t _r		800		ns
Fall time	I _F = 100 mA	t _f		800		ns
Virtual source diameter		d		2.2		mm

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

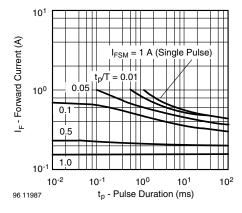


Fig. 3 - Pulse Forward Current vs. Pulse Duration

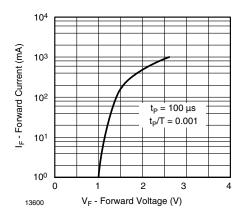


Fig. 4 - Forward Current vs. Forward Voltage

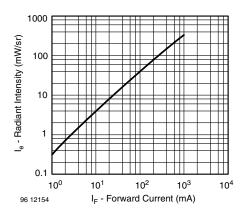


Fig. 5 - Radiant Intensity vs. Forward Current

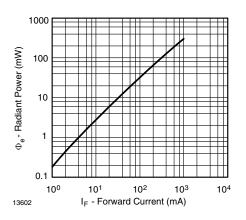


Fig. 6 - Radiant Power vs. Forward Current

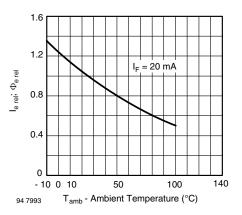


Fig. 7 - Relative Radiant Intensity/Power vs. Ambient Temperature

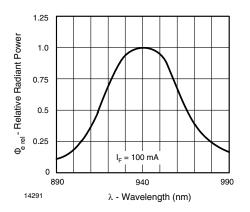


Fig. 8 - Relative Radiant Power vs. Wavelength

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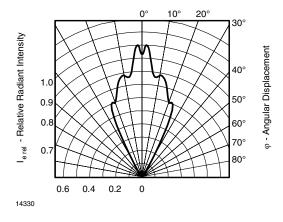
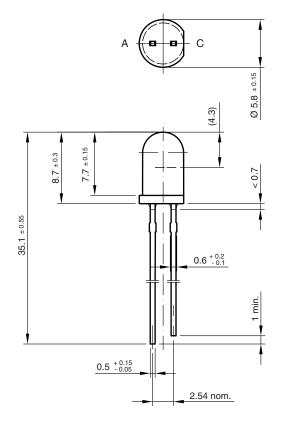
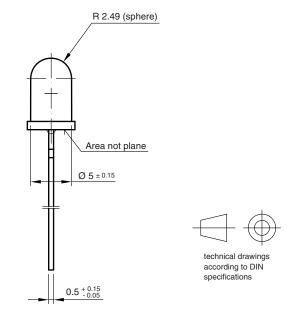


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5259.07-4 Issue: 4; 19.05.09 14340

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