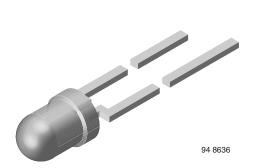


HALOGEN FREE

GREEN

Infrared Emitting Diode, 875 nm, GaAlAs



The TSHA440. series are infrared, 875 nm emitting diodes in

GaAlAs technology, molded in a clear, untinted plastic

FEATURES

Package type: leadedPackage form: T-1

• Dimensions (in mm): Ø 3

• Peak wavelength: $\lambda_p = 875 \text{ nm}$

High reliability

• Angle of half intensity: $\varphi = \pm 20^{\circ}$

· 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



- Infrared remote control and free air data transmission systems with comfortable radiation angle
- This emitter series is dedicated to systems with panes in transmission space between emitter and detector, because of the low absorption of 875 nm radiation in glass

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	$λ_p$ (nm)	t _r (ns)	
TSHA4400	20	± 20	875	600	
TSHA4401	30	± 20	875	600	

Note

DESCRIPTION

package.

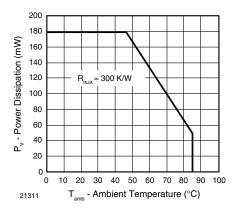
· Test conditions see table "Basic Characteristics"

ORDERING INFORMATION						
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM			
TSHA4400	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1			
TSHA4401	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}	2	Α		
Power dissipation		P _V	180	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}	300	K/W		





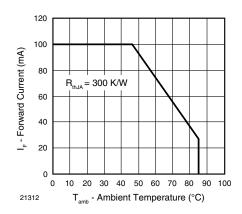


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	N. TYP. MAX		UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.5	1.8	V
	$I_F = 1.5 \text{ A}, t_p = 100 \mu \text{s}$	V _F		3.2	4.9	V
Temperature coefficient of V _F	I _F = 100 mA	TK _{VF}		-1.6		mV/K
Reverse current	V _R = 5 V	I _R			100	μΑ
Junction capacitance	$V_R = 0 \text{ V, } f = 1 \text{ MHz, } E = 0$	C _j		20		pF
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		-0.7		%/K
Angle of half intensity		φ		± 20		deg
Peak wavelength	I _F = 100 mA	λρ		875		nm
Spectral bandwidth	I _F = 100 mA	Δλ		80		nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p		0.2		nm/K
Phys. Res.	I _F = 100 mA	t _r		600		ns
Rise time	I _F = 1.5 A	t _r		300		ns
Fall time	I _F = 100 mA	t _f		600		ns
	I _F = 1.5 A	t _f		300		ns
Virtual source diameter		d	•	1.8		mm

TYPE DEDICATED CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
	L = 100 mA + = 20 ma	TSHA4400	l _e	12	20	60	mW/sr
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$ $I_F = 1.5 \text{ mA}, t_p = 100 \mu\text{s}$	TSHA4401	l _e	16	30	60	mW/sr
nadiant intensity		TSHA4400	l _e	140	240		mW/sr
		TSHA4401	I _e	190	360		mW/sr
Radiant power	L = 100 mA + = 20 ma	TSHA4400	фe		20		mW
	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	TSHA4401	фe		24		mW

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

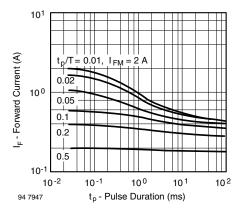


Fig. 3 - Pulse Forward Current vs. Pulse Duration

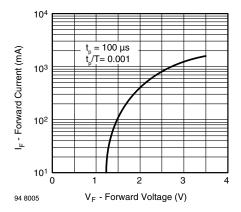


Fig. 4 - Forward Current vs. Forward Voltage

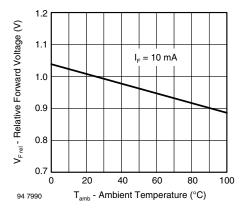


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

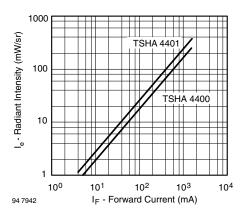


Fig. 6 - Radiant Intensity vs. Forward Current

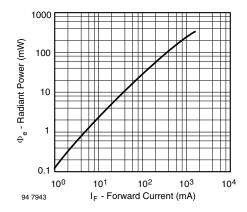


Fig. 7 - Radiant Power vs. Forward Current

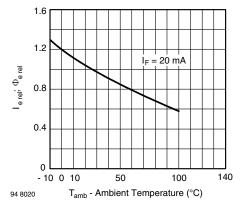
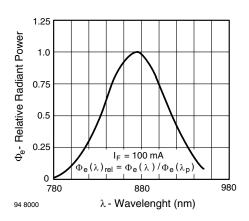


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature







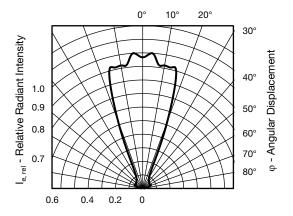
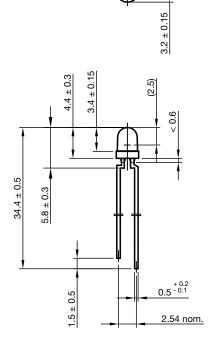
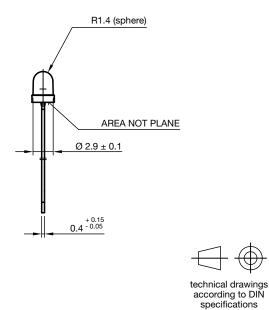


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5264.01-4

Issue: 4; 28.07.14



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