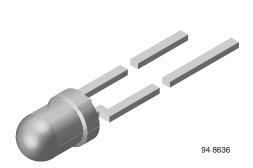


HALOGEN FREE

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.

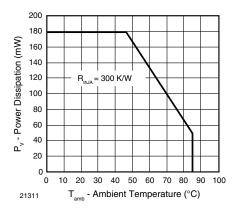
· Test conditions see table "Basic Characteristics"

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		





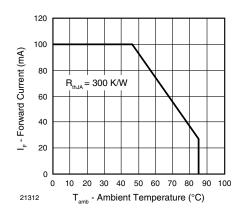


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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)

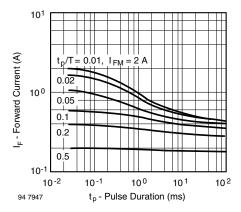


Fig. 3 - Pulse Forward Current vs. Pulse Duration

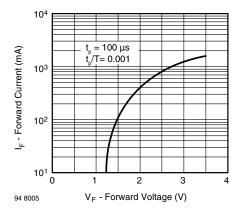


Fig. 4 - Forward Current vs. Forward Voltage

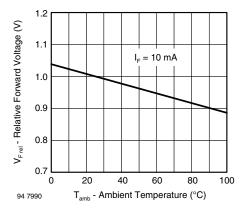


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

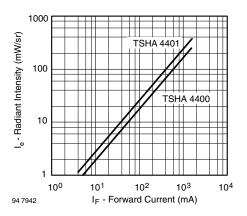


Fig. 6 - Radiant Intensity vs. Forward Current

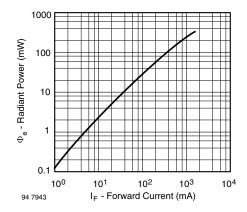


Fig. 7 - Radiant Power vs. Forward Current

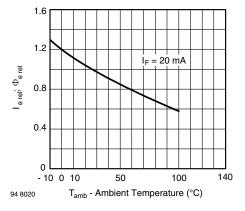
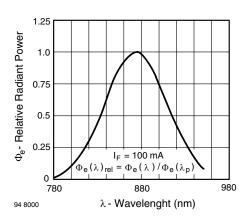


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature







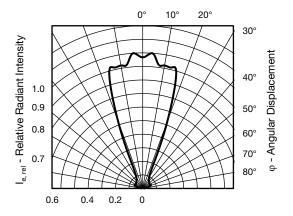
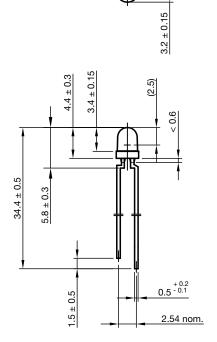
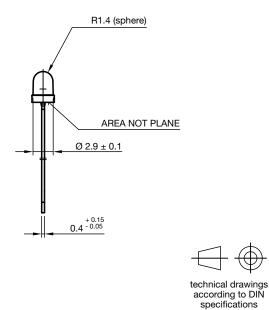


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5264.01-4

Issue: 4; 28.07.14



Legal Disclaimer Notice

Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.