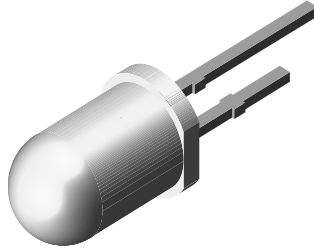




Infrared Emitting Diode, 875 nm, GaAlAs



94 8390

FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Leads with stand-off
- Peak wavelength: $\lambda_p = 875$ nm
- High reliability
- Angle of half intensity: $\varphi = \pm 12^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

DESCRIPTION

The TSHA520. series are infrared, 875 nm emitting diodes in GaAlAs technology, molded in a clear, untinted plastic package.

APPLICATIONS

- Infrared remote control and free air data transmission systems
- 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)
TSHA5200	40	± 12	875	600
TSHA5201	50	± 12	875	600
TSHA5202	60	± 12	875	600
TSHA5203	65	± 12	875	600

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSHA5200	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5201	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5202	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$
TSHA5203	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1 $\frac{3}{4}$

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS				
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	$t_p = 100 \mu s$	I_{FSM}	2.5	A
Power dissipation		P_V	180	mW
Junction temperature		T_j	100	$^\circ C$
Operating temperature range		T_{amb}	- 40 to + 85	$^\circ C$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ C$
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ C$
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	230	K/W

Note

$T_{amb} = 25 \text{ }^\circ C$, unless otherwise specified

TSHA5200, TSHA5201, TSHA5202, TSHA5203

Vishay Semiconductors Infrared Emitting Diode, 875 nm, GaAlAs

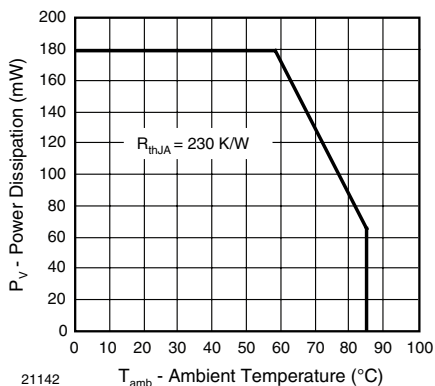


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

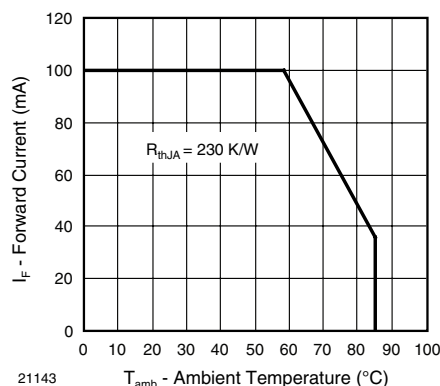


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 100 mA, t _p = 20 ms	V _F		1.5	1.8	V
Temperature coefficient of V _F	I _F = 100 mA	TK _{V_F}		- 1.6		mV/K
Reverse current	V _R = 5 V	I _R			100	μA
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	C _j		20		pF
Temperature coefficient of φ _e	I _F = 20 mA	TKφ _e		- 0.7		%/K
Angle of half intensity		φ		± 12		deg
Peak wavelength	I _F = 100 mA	λ _p		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
Rise time	I _F = 100 mA	t _r		600		ns
	I _F = 1 A	t _r		300		ns
Fall time	I _F = 100 mA	t _f		600		ns
	I _F = 1 A	t _f		300		ns
Virtual source diameter		d		3.7		mm

Note

T_{amb} = 25 °C, unless otherwise specified



TSHA5200, TSHA5201, TSHA5202, TSHA5203

Infrared Emitting Diode, 875 nm, GaAlAs Vishay Semiconductors

TYPE DEDICATED CHARACTERISTICS							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA5200	V_F		2.8	3.5	V
		TSHA5201	V_F		2.8	3.5	V
		TSHA5202	V_F		2.8	3.5	V
		TSHA5203	V_F		2.8	3.5	V
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \mu\text{s}$	TSHA5200	I_e	25	40	125	mW/sr
		TSHA5201	I_e	30	50	125	mW/sr
		TSHA5202	I_e	36	60	125	mW/sr
		TSHA5203	I_e	50	65	125	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	TSHA5200	I_e	200	330		mW/sr
		TSHA5201	I_e	260	400		mW/sr
		TSHA5202	I_e	330	460		mW/sr
		TSHA5203	I_e	400	530		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \mu\text{s}$	TSHA5200	ϕ_e		22		mW
		TSHA5201	ϕ_e		23		mW
		TSHA5202	ϕ_e		24		mW
		TSHA5203	ϕ_e		25		mW

Note

$T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

BASIC CHARACTERISTICS

$T_{amb} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

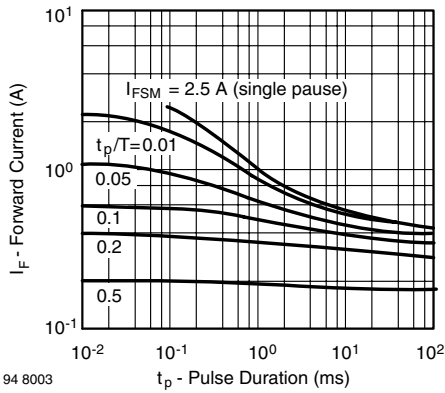


Fig. 3 - Pulse Forward Current vs. Pulse Duration

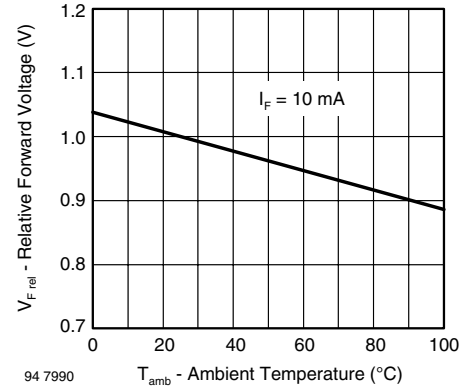


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

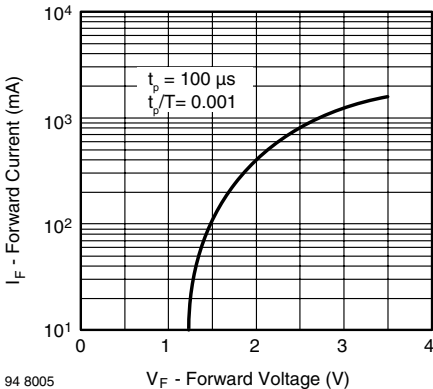


Fig. 4 - Forward Current vs. Forward Voltage

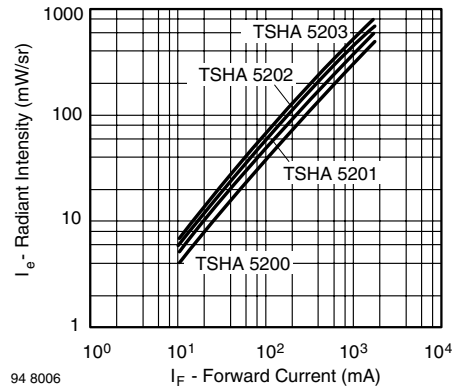
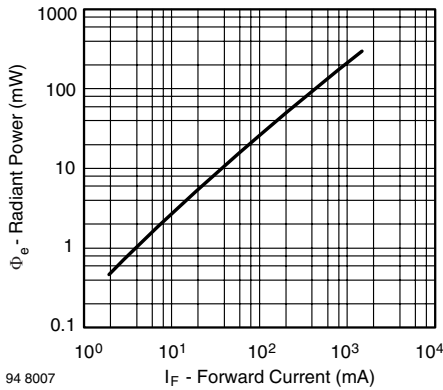


Fig. 6 - Radiant Intensity vs. Forward Current

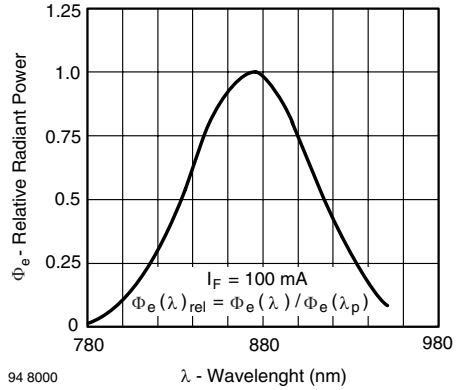
TSHA5200, TSHA5201, TSHA5202, TSHA5203



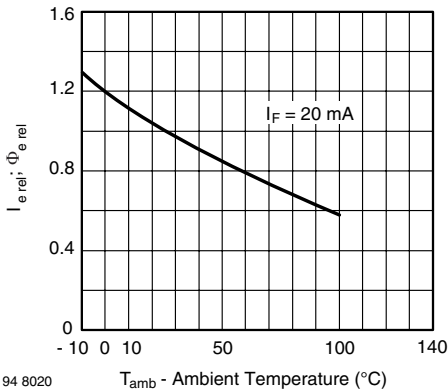
Vishay Semiconductors Infrared Emitting Diode, 875 nm, GaAlAs



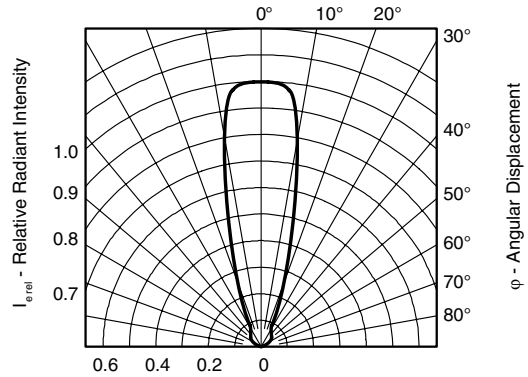
94 8007 I_F - Forward Current (mA)
Fig. 7 - Radiant Power vs. Forward Current



94 8000 λ - Wavelength (nm)
Fig. 9 - Relative Radiant Power vs. Wavelength

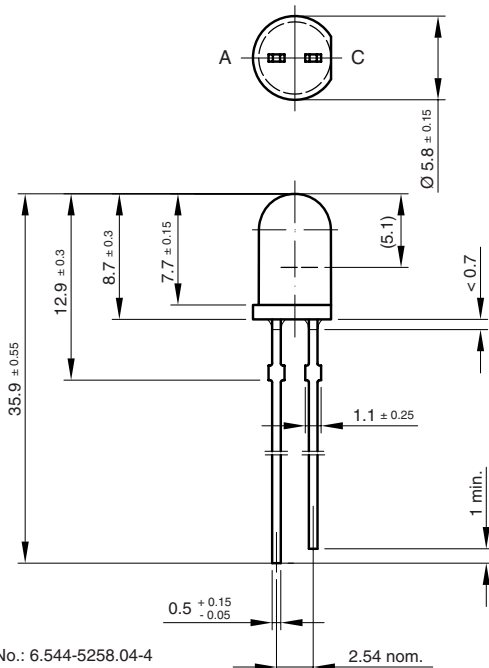


94 8020 T_{amb} - Ambient Temperature (°C)
Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

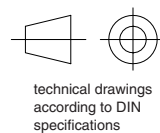
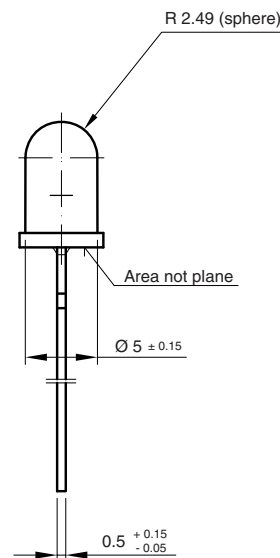


94 8008 ϕ - Angular Displacement
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5258.04-4
Issue: 8; 19.05.09
96 12121





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 and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. 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.