RoHS

GREEN

(5-2008)**



Vishay Semiconductors

High Speed Infrared Emitting Diode, 870 nm, GaAlAs Double Hetero



DESCRIPTION

TSFF5510 is an infrared, 870 nm emitting diode in GaAlAs double hetero (DH) technology with high radiant power and high speed, molded in a clear, untinted plastic package.

FEATURES

Package type: leadedPackage form: T-1¾

• Dimensions (in mm): Ø 5

Leads with stand-off

• Peak wavelength: $\lambda_p = 870 \text{ nm}$

High reliability

High radiant power

· High radiant intensity

• Angle of half intensity: $\varphi = \pm 38^{\circ}$

• Low forward voltage

· Suitable for high pulse current operation

• High modulation bandwidth: f_c = 24 MHz

· 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": www.vishay.com/doc?99902

APPLICATIONS

- Infrared video data transmission between camcorder and TV set
- Free air data transmission systems with high data transmission rates

PRODUCT SUMMARY				
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)
TSFF5510	32	± 38	870	15

Note

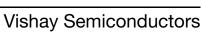
• Test conditions see table "Basic Characteristics"

ORDERING INFORMATI	ON		
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSFF5510	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	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}	230	K/W	





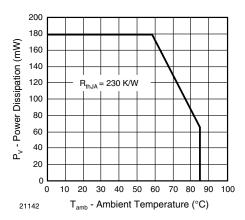


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

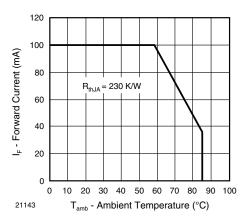


Fig. 1 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F	1.3	1.45	1.7	V
Forward voltage	$I_F = 450 \text{ mA}, t_p = 100 \mu \text{s}$	V _F	1.5	1.75	2.1	V
	$I_F = 1 \text{ A}, t_p = 100 \mu \text{s}$	V _F		2.1		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		110		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I _e	16	32	48	mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фe		55		mW
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		- 0.35		%/K
Angle of half intensity		φ		± 38		deg
Peak wavelength	I _F = 100 mA	λρ		870		nm
Spectral bandwidth	I _F = 100 mA	Δλ		55		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
Cut-off frequency	$I_{DC} = 70 \text{ mA}, I_{AC} = 30 \text{ mA pp}$	f _c		24		MHz



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

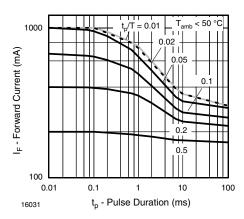


Fig. 2 - Pulse Forward Current vs. Pulse Duration

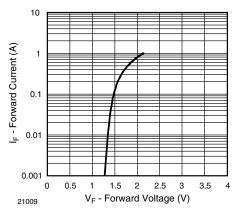


Fig. 3 - Forward Current vs. Forward Voltage

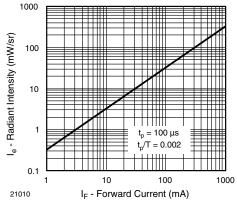


Fig. 4 - Radiant Intensity vs. Forward Current

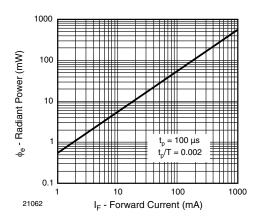


Fig. 5 - Radiant Power vs. Forward Current

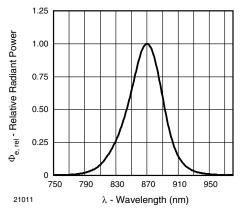


Fig. 6 - Relative Radiant Power vs. Wavelength

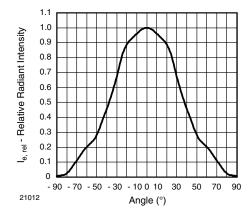
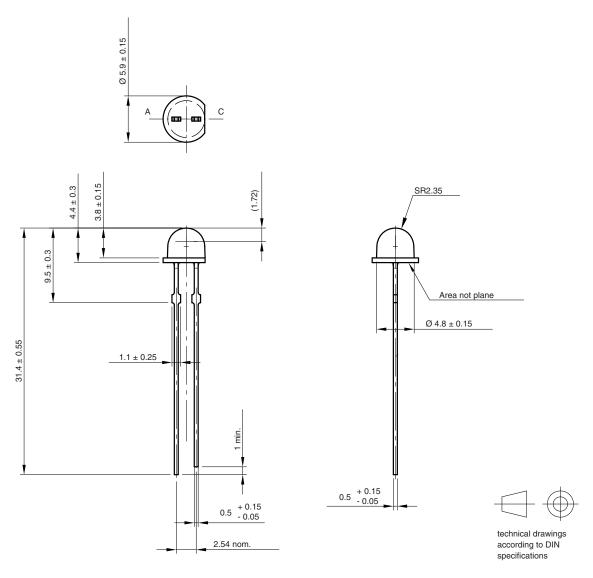


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000



PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5390.01-4 Issue: 2; 19.05.09 20796

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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

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.