

## Infrared Emitting Diode Chip, 950 nm, GaAs



21642

### FEATURES

- Package type: chip
- Package form: single chip
- Dimensions (L x W x H in mm): 0.37 x 0.37 x 0.265
- Peak wavelength:  $\lambda_p = 950$  nm
- High reliability
- 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


**RoHS**  
COMPLIANT

### DESCRIPTION

T163VU is an infrared, 950 nm emitting diode chip in GaAs technology. Anode is the bond pad on top.

### GENERAL INFORMATION

The datasheet is based on Vishay optoelectronics sample testing under certain predetermined and assumed conditions, and is provided for illustration purpose only. Customers are encouraged to perform testing in actual proposed packaged and used conditions. Vishay optoelectronics die products are tested using Vishay optoelectronics based quality assurance procedures and are manufactured using Vishay optoelectronics established processes. Estimates such as those described and set forth in this datasheet for semiconductor die will vary depending on a number of packaging, handling, use, and other factors. Therefore sold die may not perform on an equivalent basis to standard package products.

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
T163VU	1.2	-	950	800

#### Note

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
T163VU-SF-F	Wafer sawn on foil without any frame	MOQ: 25 000 pcs	Chip

#### Note

MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		$I_F$	100	mA
Reverse voltage		$V_R$	5	V
Surge forward current	$t_p = 100 \mu s$	$I_{FSM}$	1.5	A
Junction temperature		$T_j$	125	°C
Operating temperature range		$T_{amb}$	- 40 to + 100	°C
Storage temperature range		$T_{stg1}$	- 40 to + 100	°C
Storage temperature range on foil		$T_{stg2}$	- 40 to + 50	°C

#### Note

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

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}$ , $t_p = 20 \text{ ms}$	$V_F$		1.3		V
	$I_F = 1 \text{ A}$ , $t_p = 100 \mu\text{s}$	$V_F$		1.8		V
Temperature coefficient of $V_F$	$I_F = 100 \text{ mA}$	$TK_{V_F}$		- 1.3		mV/K
Junction capacitance	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ , $E = 0$	$C_j$		30		pF
Radiant intensity	$I_F = 100 \text{ mA}$ , TO-18 gold header assembly	$I_e$		1.2		mW/sr
Radiant power (epoxy encapsulated)	$I_F = 100 \text{ mA}$	$\phi_e$		22		mW
Temperature coefficient of $\phi_e$	$I_F = 100 \text{ mA}$	$TK\phi_e$		- 0.8		%/K
Peak wavelength	$I_F = 100 \text{ mA}$	$\lambda_p$		950		nm
Spectral bandwidth	$I_F = 100 \text{ mA}$	$\lambda_{0.5}$		50		nm
Temperature coefficient of $\lambda_p$	$I_F = 100 \text{ mA}$	$TK\lambda_p$		0.2		nm/K
Rise time, fall time	$I_F = 20 \text{ mA}$	$t_r$ , $t_f$		800		ns
	$I_F = 1 \text{ A}$	$t_r$ , $t_f$		400		ns

### Note

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

### BASIC CHARACTERISTICS

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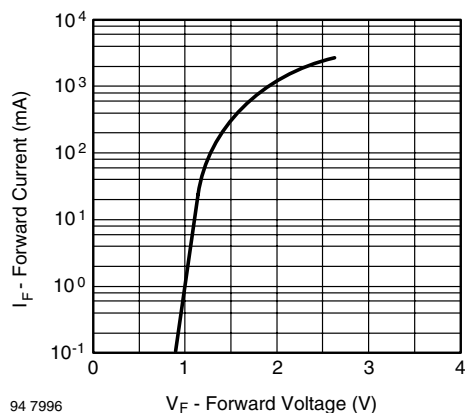


Fig. 1 - Forward Current vs. Forward Voltage

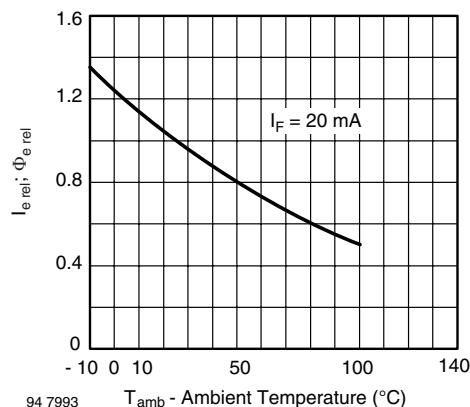


Fig. 3 - Relative Radiant Intensity/Power vs. Ambient Temperature

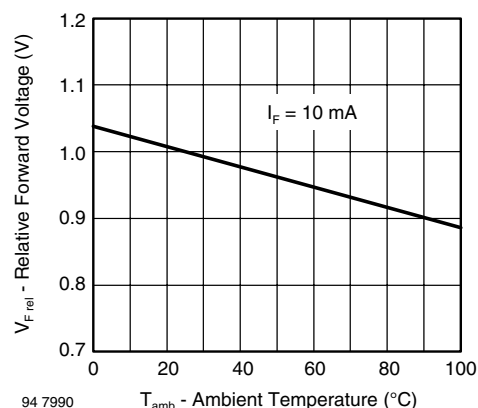


Fig. 2 - Relative Forward Voltage vs. Ambient Temperature

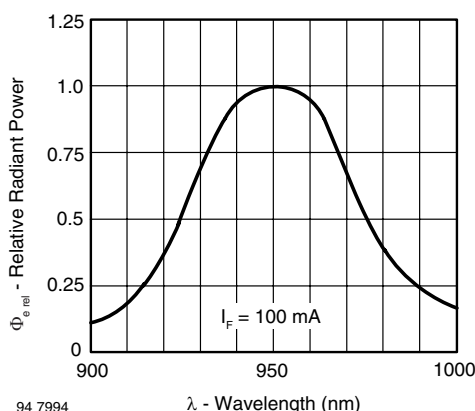


Fig. 4 - Relative Radiant Power vs. Wavelength



<b>MECHANICAL DIMENSIONS</b>					
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>MIN.</b>	<b>TYP.</b>	<b>MAX.</b>	<b>UNIT</b>
Length of chip edge (x-direction)	L <sub>x</sub>		0.37		mm
Length of chip edge (y-direction)	L <sub>y</sub>		0.37		mm
Emission area	A <sub>E</sub>		0.34 x 0.34		mm <sup>2</sup>
Die height	H		0.265		mm
Diameter of bondpad	d		0.14		mm

<b>ADDITIONAL INFORMATION (1)</b>	
Frontside metallization, anode	Aluminum
Backside metallization, cathode	Gold alloy
Dicing	Sawing
Die bonding technology	Epoxy bonding

**Note**

(1) All chips are checked in accordance with the Vishay Semiconductor, specification of visual inspection FVOV6870. The visual inspection shall be made in accordance with the "specification of visual inspection as referenced". The visual inspection of chip backside is performed with stereo microscope with incident light and 40x to 80x magnification. The quality inspection (final visual inspection) is performed by production. An additional visual inspection step as special release procedure by QM is not installed.

**HANDLING AND STORAGE CONDITIONS**

- The hermetically sealed shipment lots shall be opened in temperature and moisture controlled cleanroom environment only. It is mandatory to follow the rules for disposition of material that can be hazardous for humans and environment.
- Product must be handled only at ESD safe workstations. Standard ESD precautions and safe work environments are as defined in MIL-HDBK-263.
- Singulated die are not to be handled with tweezers. A vacuum wand with non metallic ESD protected tip should be used.

**PACKING**

Chips are fixed on adhesive foil. Upon request the foils can be mounted on plastic frame or disco frame. For shipment, the wafers are arranged to stacks and hermetically sealed in plastic bags to ensure protection against environmental influence (humidity and contamination).

Use for recycling reliable operators only. We can help getting in touch with your nearest sales office. By agreement we will take back packing material, if it is sorted. You will have to bear the costs of transport. We will invoice you for any costs incurred for packing material that is returned unsorted or which we are not obliged to accept.



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