Specification of High Power IR Emitting Diode Chip

FEATURES

- Package type: chip
- Package form: single chip
- Technology: surface emitter
- Dimensions chip (L x W x H in mm): 0.260 x 0.260 x 0.17
- Peak wavelength: λ = 940 nm
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

TS9410VB is a high power infrared, 940 nm surface emitting diode in GaAlAs technology with high radiant power and high speed. Polarity configuration is “n-up”.

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	ϕ_e (mW)	φ (deg)	λ_p (nm)	t_r (ns)
TS9410VB	20	60	940	10

Note

- Test condition see table “Basic Characteristics”

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TS9410VB-SD-F	Wafer sawn on foil with disco frame	MOQ: 385 000 pcs	Chip

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		I_F	100	mA
Reverse voltage		V_R	10	V
Surge forward current	t_p/T = 0.1, t_p = 100 µs	I_{FSM}	500	mA
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	-40 to +100	°C
Storage temperature range chip		T_{stg1}	-40 to +110	°C
Storage temperature range on foil		T_{stg2}	0 to +40	°C

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 20 mA	V_F	-	1.3	-	V
	I_F = 50 mA		-	1.4	-	
Radiant power (1)	I_F = 20 mA	ϕ_e	-	8	-	mW
	I_F = 50 mA		-	20	-	
Reverse current	V_R = 10 V	I_R	-	-	1	µA
Angle of half intensity	I_F = 50 mA	φ	-	60	-	deg
Peak wavelength	I_F = 50 mA	λ_p	925	940	955	nm
Spectral bandwidth	I_F = 50 mA	$\lambda_{0.5}$	-	50	-	nm
Rise time / fall time	I_F = 50 mA	t_r, t_f	-	10	-	ns

Note

(1) The measurements are based on samples of die which are mounted on a TO-18 gold header without resin coating

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

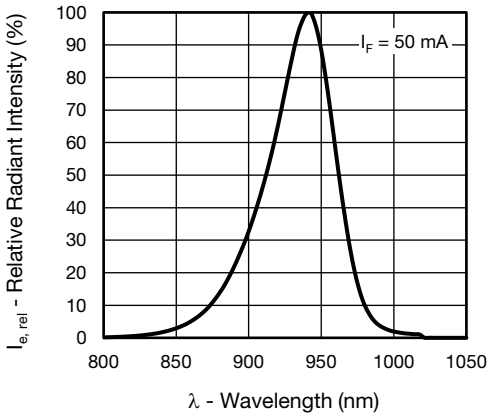


Fig. 1 - Relative Spectral Emission
$\phi_{e\ rel} = f(\lambda)$

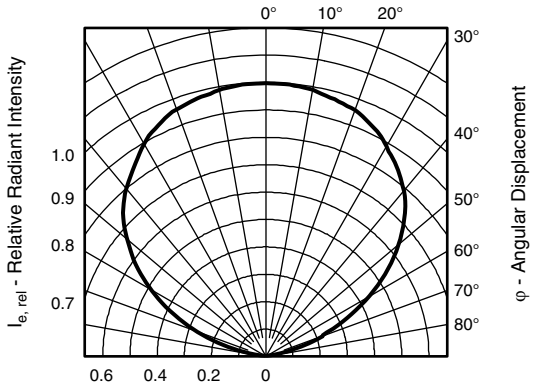
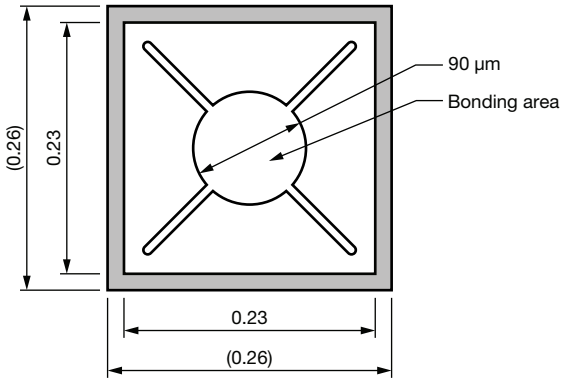


Fig. 2 - Radiant Characteristics
$I_{rel} = f(\varphi)$

DIMENSIONS



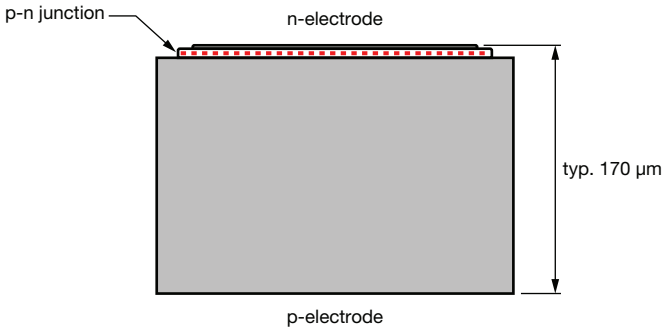


Fig. 3 - Sectional View

MECHANICAL DIMENSIONS					
PARAMETER	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Length of chip edge (x-direction)	L_x	-	0.26	-	mm
Length of chip edge (y-direction)	L_y	-	0.26	-	mm
Die height	H	-	0.17	-	mm
Diameter of bondpad	d	0.08	0.09	0.10	mm

ADDITIONAL INFORMATION	
Frontside metallization, cathode	Gold alloy
Backside metallization, anode	Gold alloy
Dicing	Sawing
Die bonding technology	Epoxy bonding

Note

- 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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