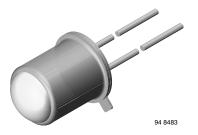
Vishay Semiconductors



Infrared Emitting Diode, RoHS Compliant, 875 nm, GaAIAs



TSTA7100 is an infrared, 875 nm emitting diode in GaAlAs technology in a hermetically sealed TO-18 package with

FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): Ø 4.7
- Peak wavelength: $\lambda_p = 875 \text{ nm}$
- High reliability
- High radiant power
- · High radiant intensity
- Angle of half intensity: $\phi = \pm 5^{\circ}$
- · Low forward voltage
- Suitable for high pulse current operation
- · Good spectral matching with Si photodetectors
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

APPLICATIONS

• Radiation source near infrared range

PRODUCT SUMMARY COMPONENT Ie (mW/sr) φ (deg) λP (nm) tr (ns) TSTA7100 50 ±5 875 600

Note

lens.

DESCRIPTION

Test conditions see table "Basic Characteristics"

| ORDERING INFORMATION | | | | | | | |
|----------------------|-----------|------------------------------|--------------|--|--|--|--|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM | | | | |
| TSTA7100 | Bulk | MOQ: 1000 pcs, 1000 pcs/bulk | TO-18 | | | | |

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 | $t_p/T=0.5,t_p\leq 100\;\mu s$ | I _{FM} | 200 | mA | | |
| Surge forward current | $t_p \le 100 \ \mu s$ | I _{FSM} | 2.5 | А | | |
| Devuer disaination | | Pv | 180 | mW | | |
| Power dissipation — | $T_{case} \le 25 \ ^{\circ}C$ | Pv | 500 | mW | | |
| Junction temperature | | Tj | 100 | °C | | |
| Storage temperature range | | T _{stg} | - 55 to + 100 | °C | | |
| Thermal resistance junction/ambient | leads not soldered | R _{thJA} | 450 | K/W | | |
| Thermal resistance junction/case | leads not soldered | R _{thJC} | 150 | K/W | | |

Note

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





Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors 875 nm, GaAlAs

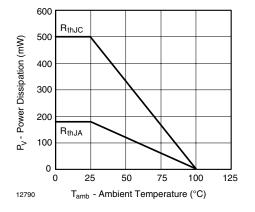


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

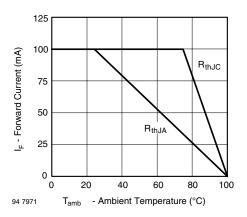


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS | | | | | | | |
|---------------------------------------|---|-------------------|------|-------|------|-------|--|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT | |
| Forward voltage | $I_F = 100 \text{ mA}, t_p \le 20 \text{ ms}$ | V _F | | 1.4 | 1.8 | V | |
| Breakdown voltage | I _R = 100 μA | V _(BR) | 5 | | | V | |
| Junction capacitance | V _R = 0 V, f = 1 MHz, E = 0 | Cj | | 20 | | pF | |
| Radiant intensity | I_F = 100 mA, $t_p \le$ 20 ms | l _e | 20 | 50 | 100 | mW/sr | |
| Radiant power | I_F = 100 mA, $t_p \le$ 20 ms | φe | | 10 | | mW | |
| Temperature coefficient of ϕ_{e} | I _F = 100 mA | TKφ _e | | - 0.7 | | %/K | |
| Angle of half intensity | | φ | | ± 5 | | deg | |
| Peak wavelength | I _F = 100 mA | λρ | | 875 | | nm | |
| Spectral bandwidth | I _F = 100 mA | Δλ | | 80 | | nm | |
| Rise time | I _F = 100 mA | t _r | | 600 | | ns | |
| | $I_F = 1.5 \text{ A}, t_p/T = 0.01, t_p \le 10 \ \mu s$ | tr | | 300 | | ns | |
| Virtual source diameter | | d | | 1.5 | | mm | |

Note

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

BASIC CHARACTERISTICS

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

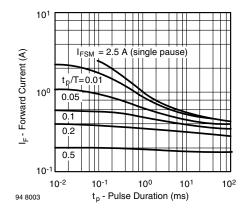


Fig. 3 - Pulse Forward Current vs. Pulse Duration

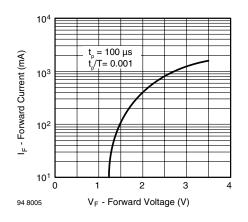


Fig. 4 - Forward Current vs. Forward Voltage

TSTA7100



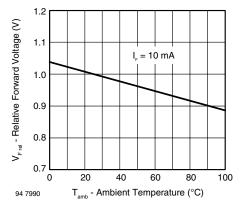


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

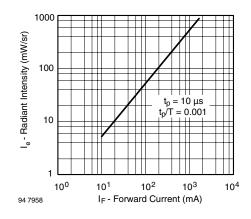


Fig. 6 - Radiant Intensity vs. Forward Current

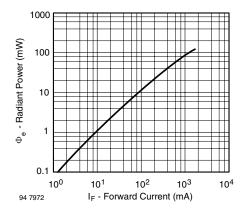


Fig. 7 - Radiant Power vs. Forward Current

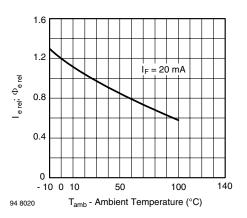


Fig. 8 - Rel. Radiant Intensity/Power vs. Ambient Temperature

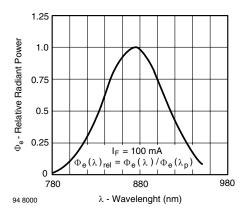


Fig. 9 - Relative Radiant Power vs. Wavelength

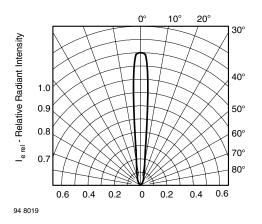


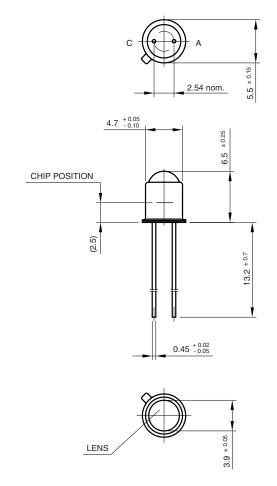
Fig. 10 - Relative Radiant Intensity vs. Angular Displacement





Infrared Emitting Diode, RoHS Compliant, Vishay Semiconductors 875 nm, GaAlAs

PACKAGE DIMENSIONS in millimeters





technical drawings according to DIN specifications

Drawing-No.: 6.503-5002.01-4 Issue: 2; 24.08.98 96 12174



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 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.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.