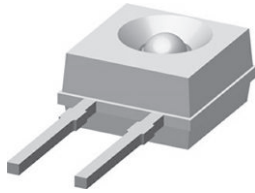




## Infrared Emitting Diode, 950 nm, GaAs



14354

### DESCRIPTION

The TSKS5400S is an infrared, 950 nm emitting diode in GaAs technology with high radiant power, molded in a clear plastic package.

### FEATURES

- Package type: leaded
- Package form: side view lens
- Dimensions (L x W x H in mm): 5 x 2.65 x 5
- Peak wavelength:  $\lambda_p = 950$  nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity:  $\phi = \pm 30^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matched with detector TEKS5400
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Photointerrupters
- Transmissive sensors, gap sensors
- Reflective sensors

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (°)	$\lambda_p$ (nm)	$t_r$ (ns)
TSKS5400S	4.5	$\pm 30$	950	800

#### Note

- Test conditions see table “Basic Characteristics”

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TSKS5400S	Bulk	MOQ: 2000 pcs, 2000 pcs/bulk	Side view lens

#### Note

- MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	6	V
Forward current		$I_F$	100	mA
Surge forward current	$t_p \leq 100 \mu\text{s}$	$I_{FSM}$	2	A
Power dissipation		$P_V$	170	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	-25 to +85	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-40 to +100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from case	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction- to-ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	270	K/W

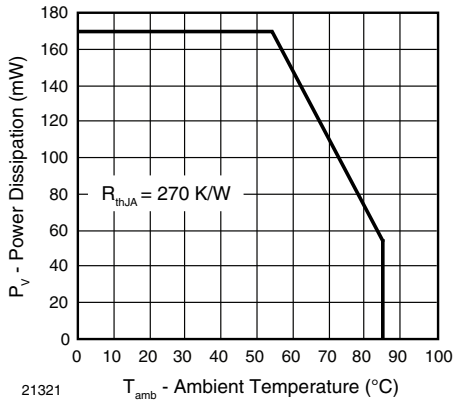


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

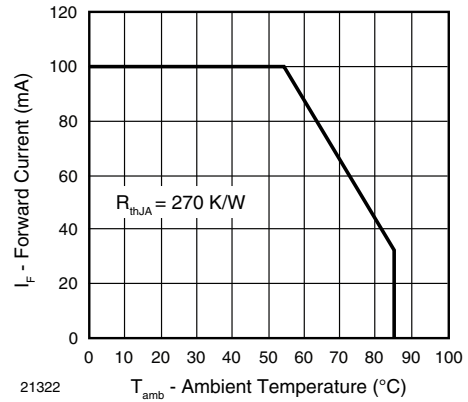


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}$ , $t_p \leq 20\text{ ms}$	$V_F$	-	1.3	1.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	6	-	-	V
Temperature coefficient of $V_F$	$I_F = 100\text{ mA}$	$TK_{V_F}$	-	-1.3	-	mV/K
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_j$	-	50	-	pF
Radiant intensity	$I_F = 100\text{ mA}$ , $t_p \leq 20\text{ ms}$	$I_e$	2	4.5	7	mW/sr
Radiant power	$I_F = 50\text{ mA}$ , $t_p \leq 20\text{ ms}$	$\phi_e$	-	10	-	mW
Temperature coefficient of $\phi_e$	$I_F = 50\text{ mA}$	$TK_{\phi_e}$	-	-1.0	-	%/K
Angle of half sensitivity		$\phi$	-	$\pm 30$	-	$^{\circ}$
Peak wavelength	$I_F = 50\text{ mA}$	$\lambda_p$	-	950	-	nm
Spectral bandwidth	$I_F = 50\text{ mA}$	$\Delta\lambda$	-	50	-	nm
Rise time	$I_F = 100\text{ mA}$	$t_r$	-	800	-	ns
	$I_F = 1\text{ A}$ , $t_p/T = 0.01$ , $t_p \leq 10\text{ }\mu\text{s}$	$t_r$	-	450	-	ns

**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

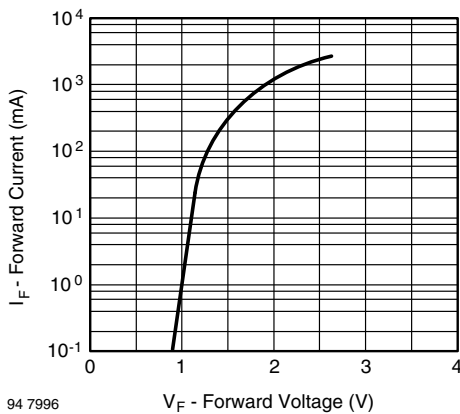


Fig. 3 - Pulse Forward Current vs. Forward Voltage

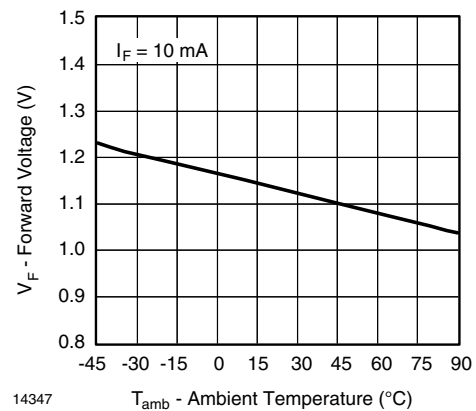


Fig. 4 - Forward Voltage vs. Ambient Temperature

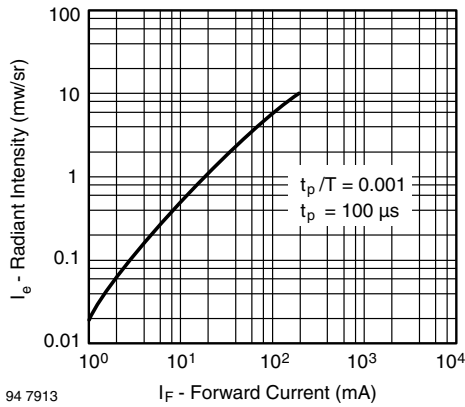


Fig. 5 - Radiant Intensity vs. Forward Current

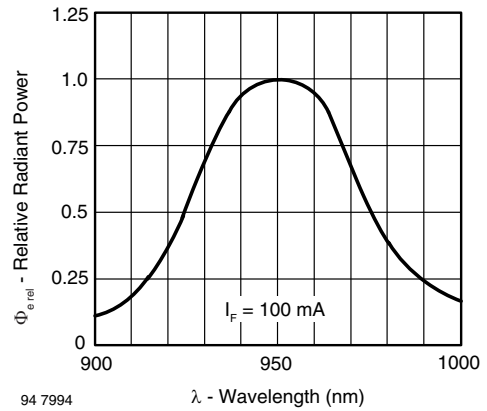


Fig. 8 - Relative Radiant Power vs. Wavelength

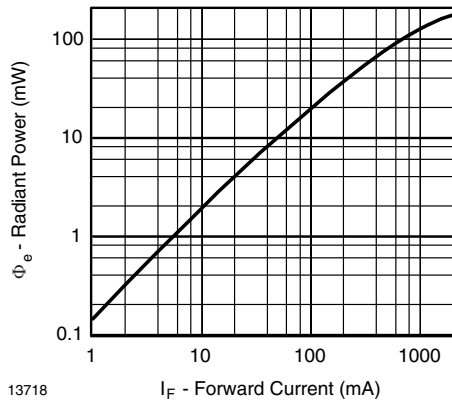


Fig. 6 - Radiant Power vs. Forward Current

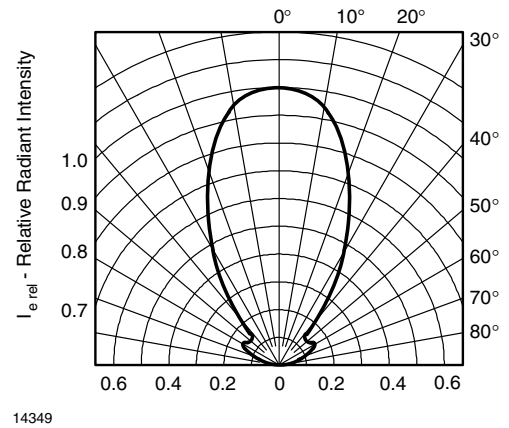


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

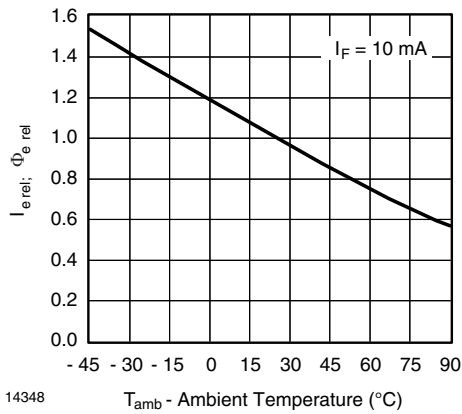
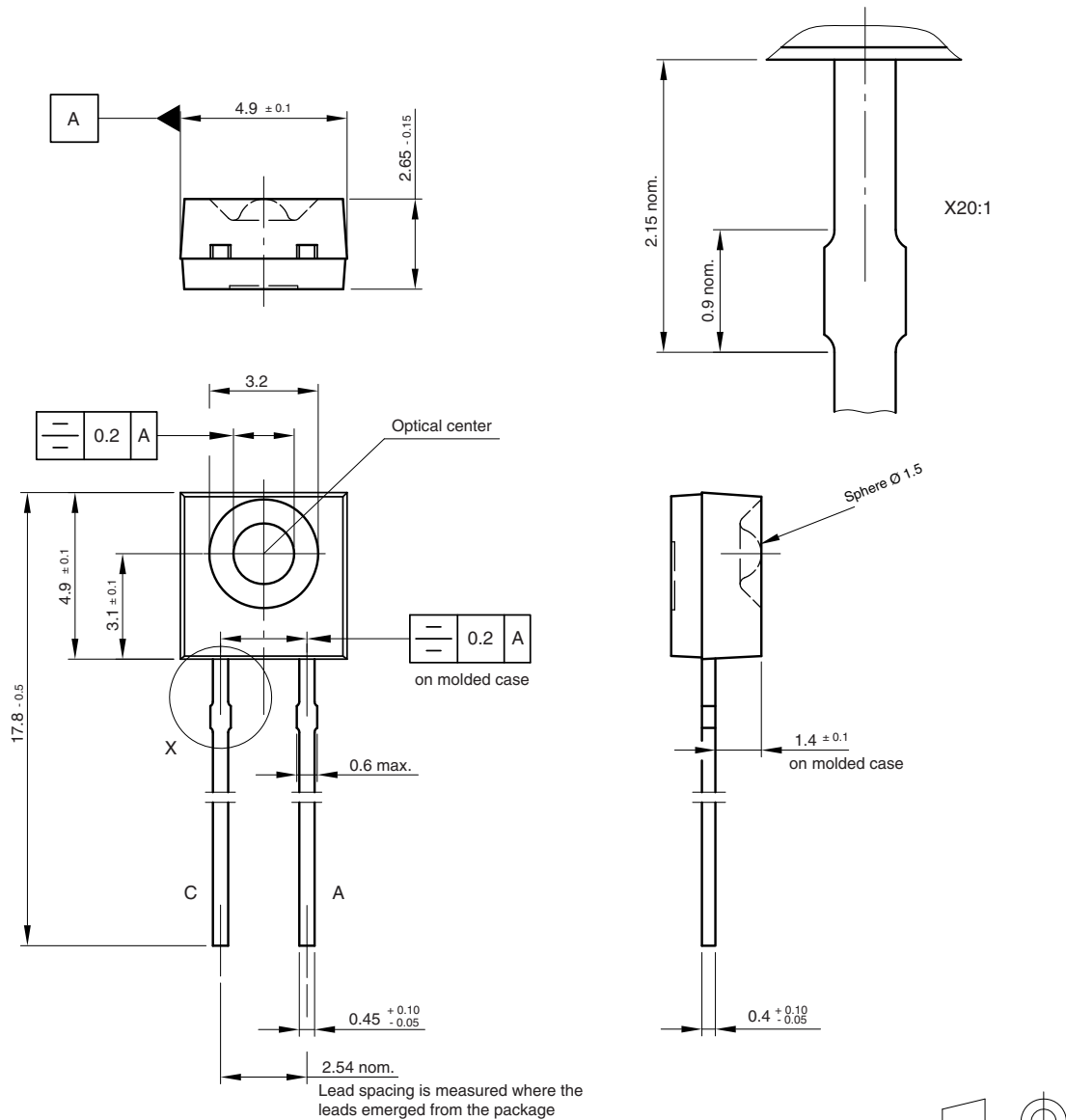


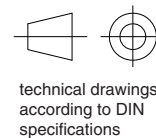
Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature



PACKAGE DIMENSIONS in millimeters



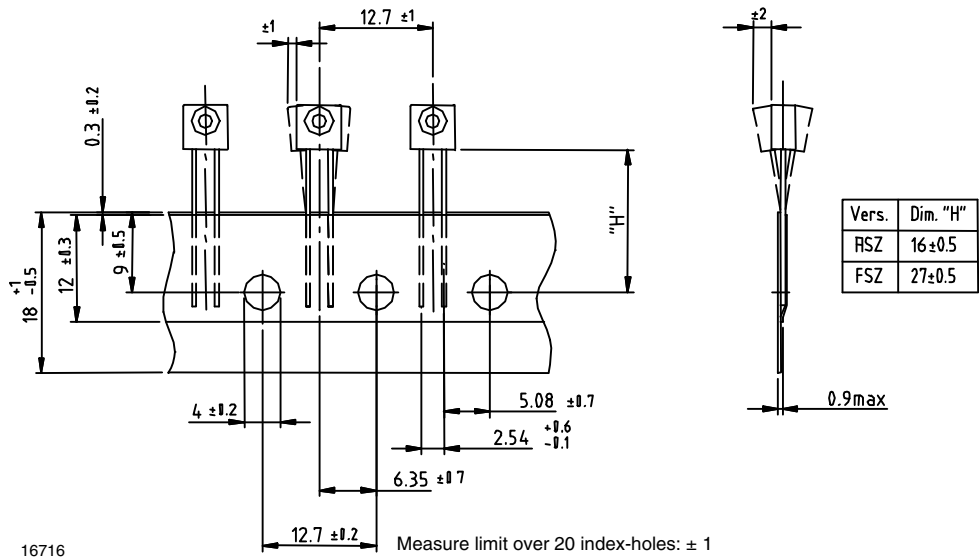
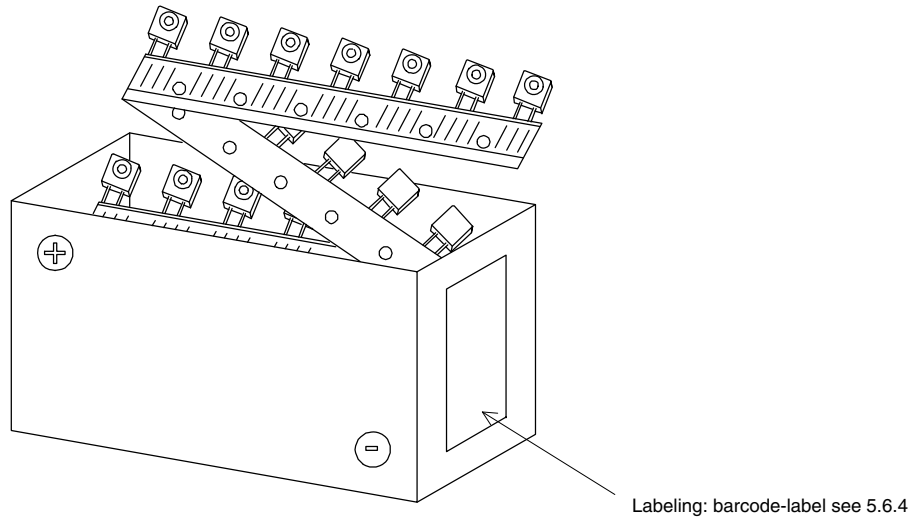
Protruded resin area where the leads emerged from the package 0.8 max.



Drawing-No.: 6.544-5306.51-4  
 Issue: 6; 04.07.02  
 14307



**TAPE AND AMMOPACK STANDARDS DIMENSIONS** in millimeters





## **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. 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.