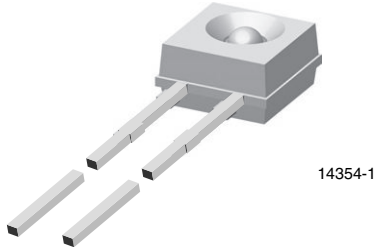


## Infrared Emitting Diode, 950 nm, GaAs



### 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)


**RoHS**  
COMPLIANT

### DESCRIPTION

The TSKS5400-FSZ is an infrared, 950 nm emitting diode in GaAs technology with high radiant power, molded in a clear plastic package.

### APPLICATIONS

- Photointerrupters
- Transmissive sensors, gap sensors
- Reflective sensors

### PRODUCT SUMMARY

| COMPONENT    | $I_e$ (mW/sr) | $\phi$ (deg) | $\lambda_p$ (nm) | $t_r$ (ns) |
|--------------|---------------|--------------|------------------|------------|
| TSKS5400-FSZ | 4.5           | $\pm 30$     | 950              | 800        |

#### Note

- Test conditions see table “Basic Characteristics”

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING        | REMARKS                         | PACKAGE FORM   |
|---------------|------------------|---------------------------------|----------------|
| TSKS5400-FSZ  | Tape and ammpack | MOQ: 2000 pcs, 2000 pcs/ammpack | 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/ambient | J-STD-051, leads 7 mm, soldered on PCB | $R_{thJA}$ | 270           | K/W              |

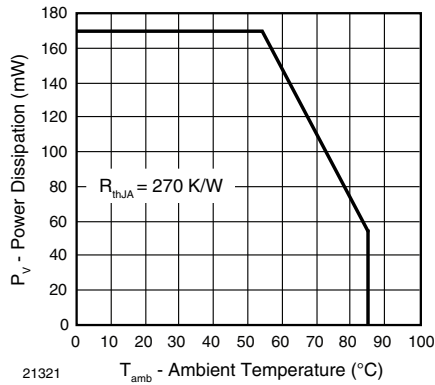


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

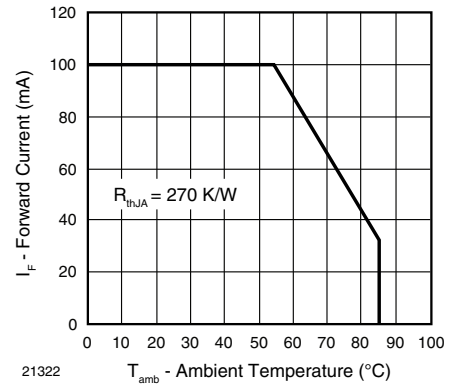


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| <b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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  | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$                      | $C_j$           |      | 30       |      | 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 $\phi_e$   | $I_F = 50\text{ mA}$   | $TK_{\phi_e}$   |      | -0.8     |      | %/K   |
| Angle of half sensitivity   |  | $\phi$          |      | $\pm 30$ |      | deg   |
| 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    |

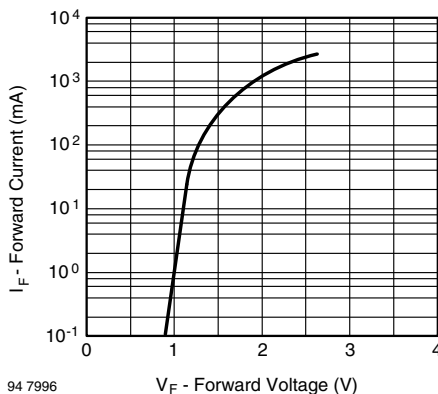
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 3 - Pulse Forward Current vs. Forward Voltage

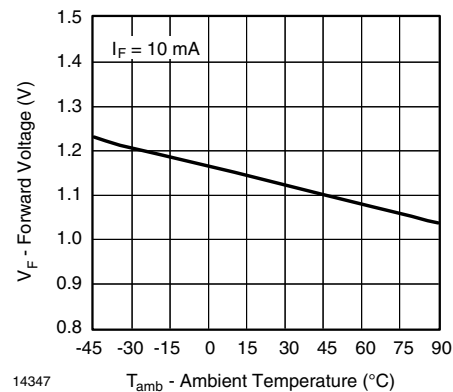


Fig. 4 - Forward Voltage vs. Ambient Temperature

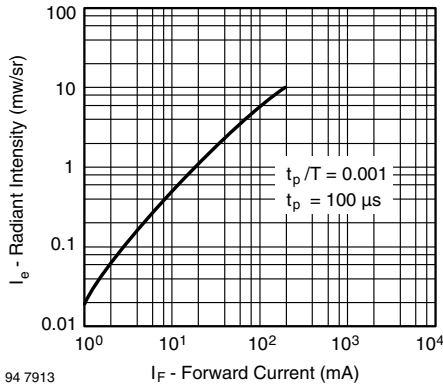


Fig. 5 - Radiant Intensity vs. Forward Current

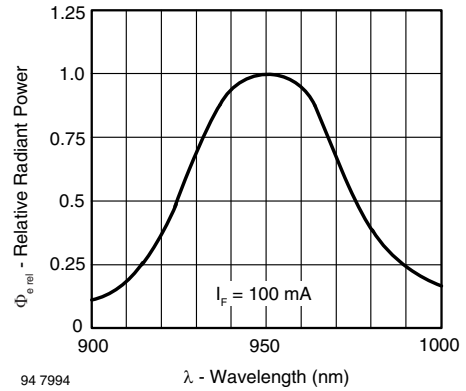


Fig. 8 - Relative Radiant Power vs. Wavelength

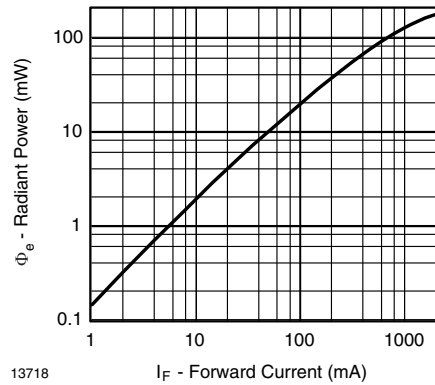


Fig. 6 - Radiant Power vs. Forward Current

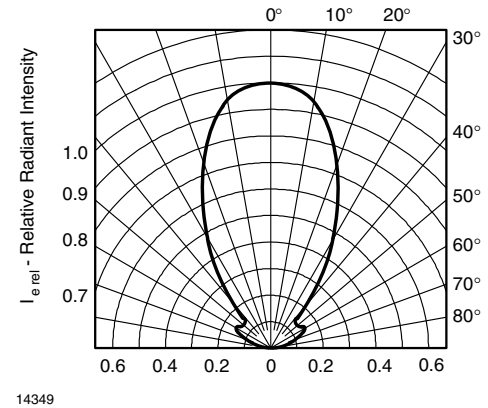


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

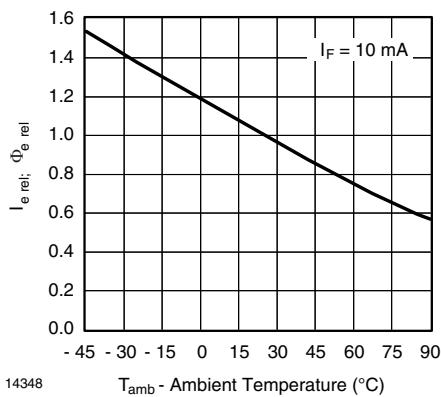
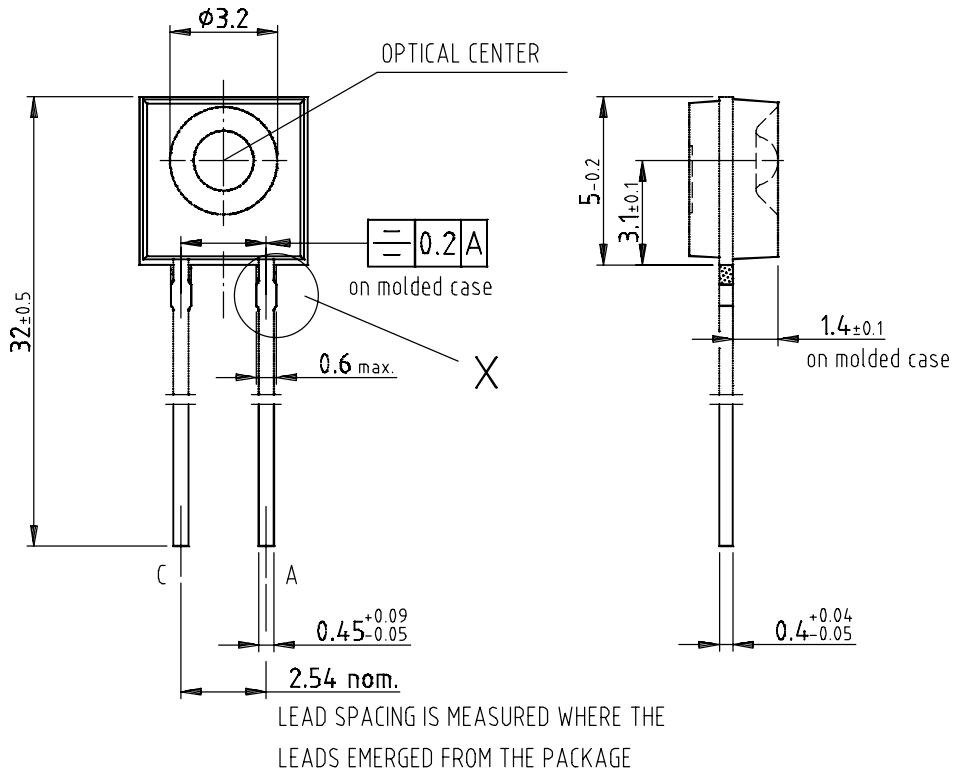
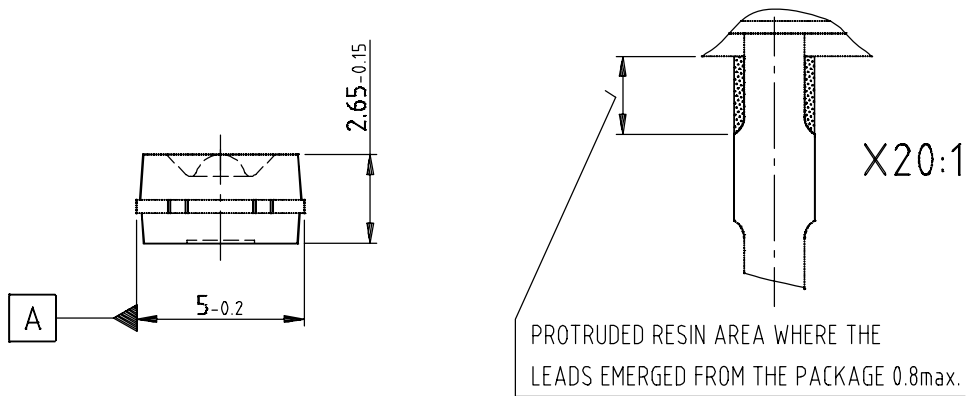


Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature



PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.544-5308.51-4

Issue: 7; 05.12.00

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