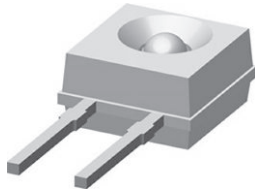




Infrared Emitting Diode, 950 nm, GaAs



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



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Photointerrupters
- Transmissive sensors, gap sensors
- Reflective sensors

PRODUCT SUMMARY

| COMPONENT | I_e (mW/sr) | ϕ (°) | λ_p (nm) | t_r (ns) |
|-----------|---------------|------------|------------------|------------|
| TSKS5400S | 4.5 | ± 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 |

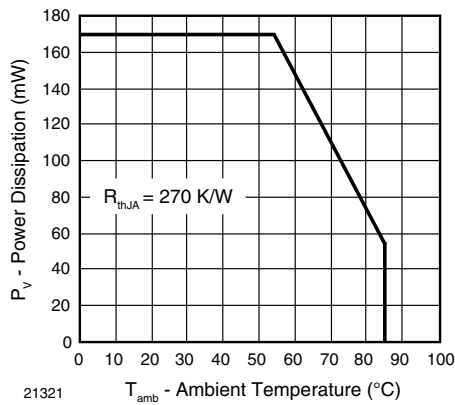


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

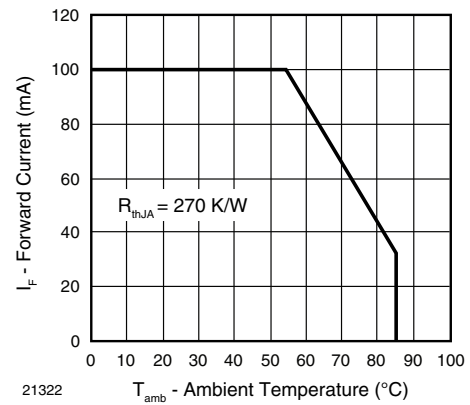


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| 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 | $I_F = 50\text{ mA}$, $t_p \leq 20\text{ ms}$ | ϕ_e | - | 10 | - | mW |
| Temperature coefficient of ϕ_e | $I_F = 50\text{ mA}$ | TK_{ϕ_e} | - | -1.0 | - | %/K |
| Angle of half sensitivity | | ϕ | - | ± 30 | - | $^{\circ}$ |
| Peak wavelength | $I_F = 50\text{ mA}$ | λ_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)

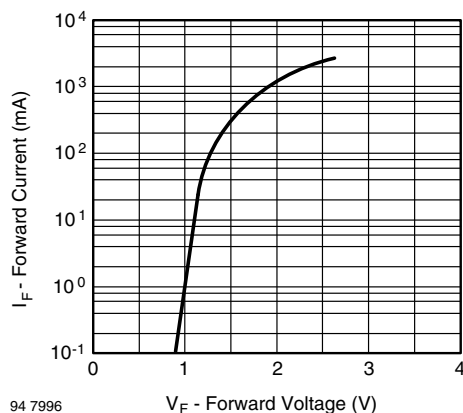


Fig. 3 - Pulse Forward Current vs. Forward Voltage

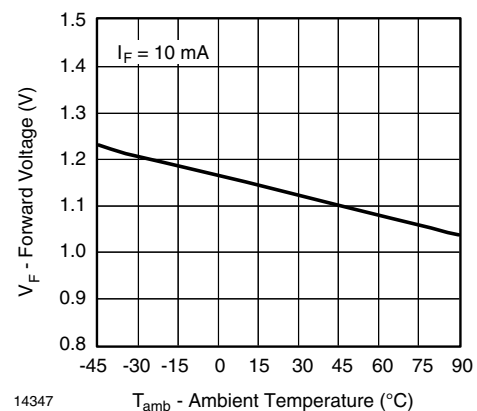


Fig. 4 - Forward Voltage vs. Ambient Temperature

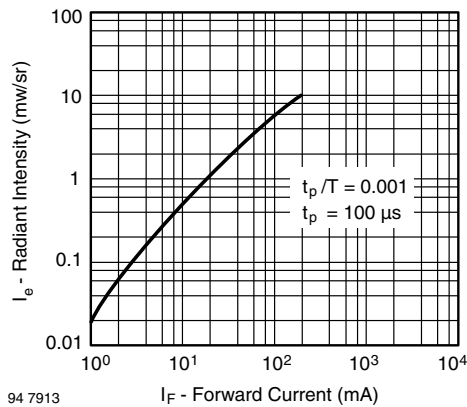


Fig. 5 - Radiant Intensity vs. Forward Current

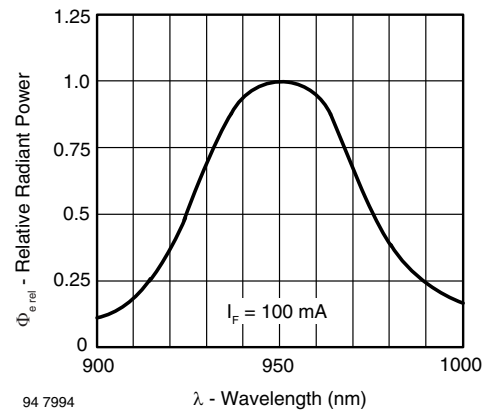


Fig. 8 - Relative Radiant Power vs. Wavelength

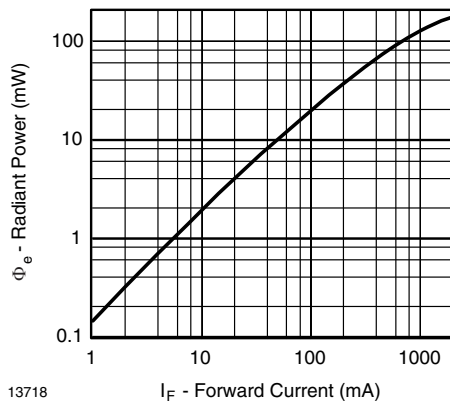


Fig. 6 - Radiant Power vs. Forward Current

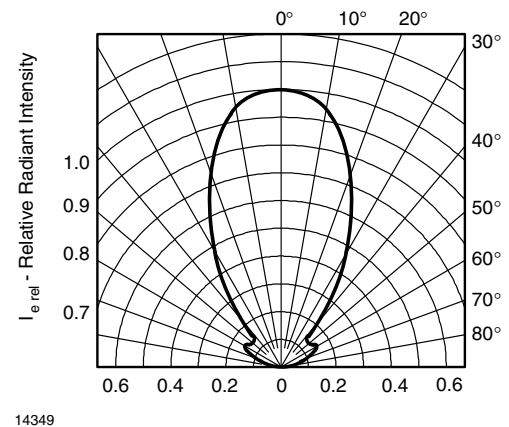


Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

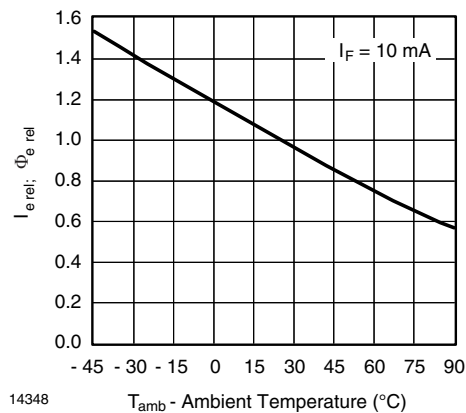


Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature

Technical drawing of the X201 package showing top, side, and detail views with dimensions and callouts.

Top View:

- Overall width: 4.9 ± 0.1
- Overall height: 2.65 ± 0.15
- Callout A points to the top edge.

Side View:

- Overall height: 2.15 nom.
- Lead height: 0.9 nom.
- Magnification: X20:1

Detail View (Top):

- Width: 3.2
- Height: 4.9 ± 0.1
- Inner height: 3.1 ± 0.1
- Callout A points to the top edge.
- Callout 0.2 points to the top edge.
- Callout A points to the top edge.
- Optical center is indicated.
- on molded case


Detail View (Side):

- Overall height: 17.8 ± 0.5
- Lead height: 0.6 max.
- Lead spacing: $0.45 \begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$
- Lead width: 2.54 nom.
- Callout A points to the lead.
- Callout C points to the lead.
- Callout X points to the lead.

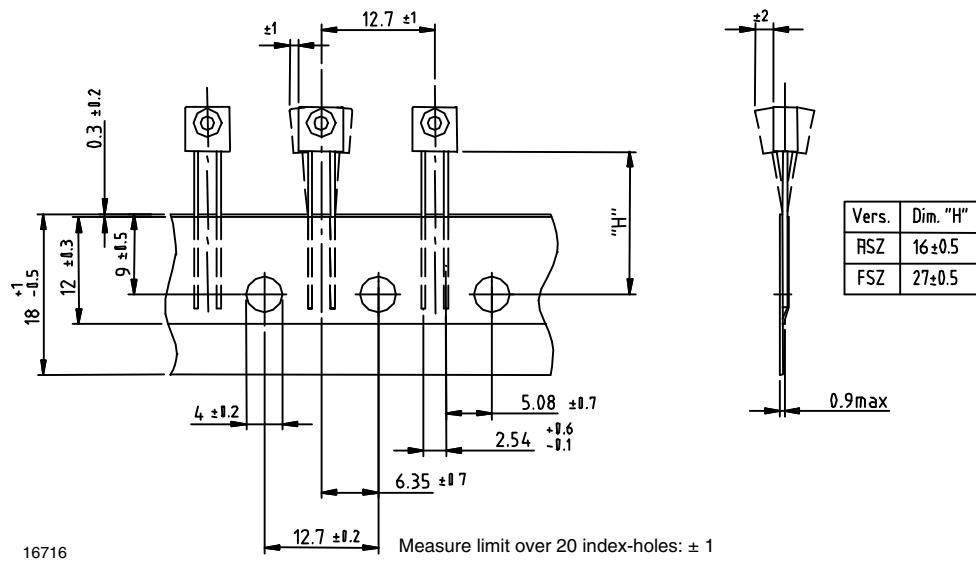
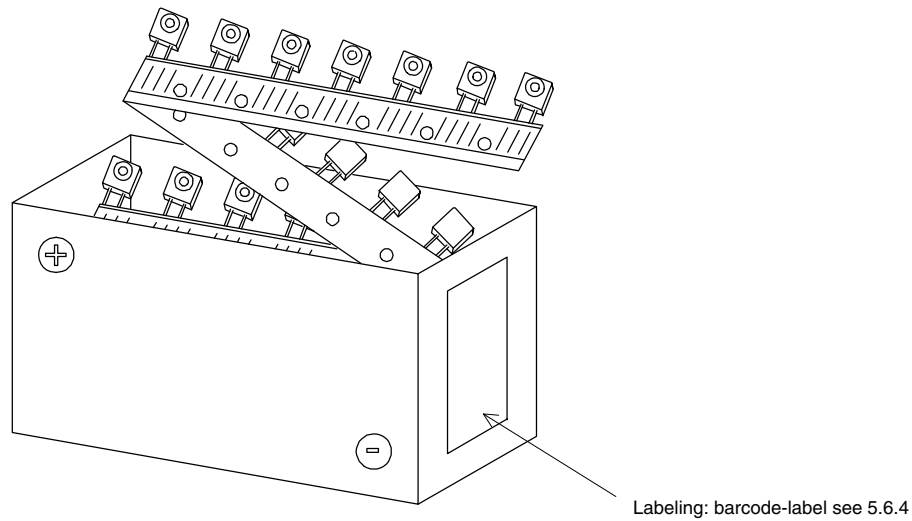
Detail View (Bottom):

- Lead width: $0.4 \begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$
- Lead height: 1.4 ± 0.1 on molded case
- Sphere $\varnothing 1.5$ is indicated.

Lead spacing is measured where the leads emerged from the package



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TAPE AND AMMOPACK STANDARDS DIMENSIONS in millimeters




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