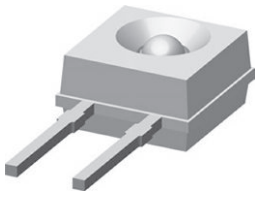
# Infrared Emitting Diode, 950 nm, GaAs



14354

## 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: φ = ± 30°
- 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

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

## DESCRIPTION

The TSKS5400S 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) | φ (°) | $\lambda_p$ (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 °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 | $t_p \leq 100$ µs | $I_{FSM}$ | 2 | A |
| Power dissipation | | $P_V$ | 170 | mW |
| Junction temperature | | $T_j$ | 100 | °C |
| Operating temperature range | | $T_{amb}$ | -25 to +85 | °C |
| Storage temperature range | | $T_{stg}$ | -40 to +100 | °C |
| Soldering temperature | t ≤ 5 s, 2 mm from case | $T_{sd}$ | 260 | °C |
| Thermal resistance junction- to-ambient | J-STD-051, leads 7 mm, soldered on PCB | $R_{thJA}$ | 270 | K/W |



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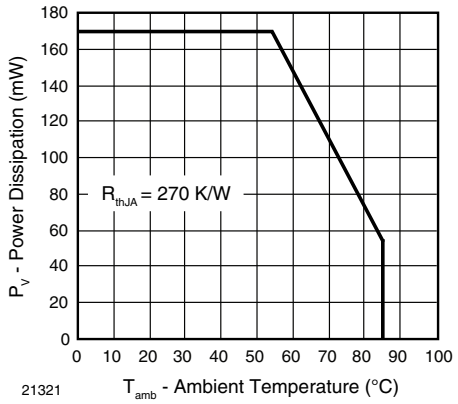



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

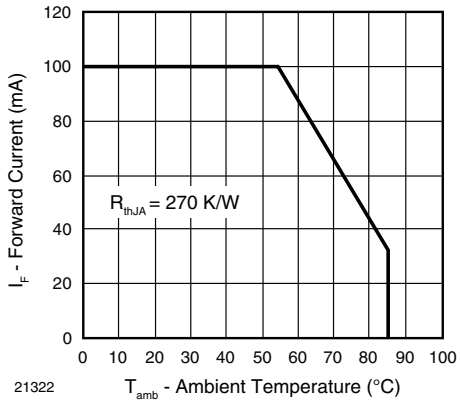



Fig. 2 - Forward Current Limit vs. Ambient Temperature

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

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

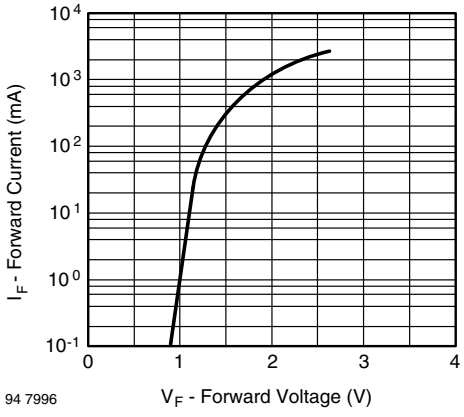



Fig. 3 - Pulse Forward Current vs. Forward Voltage

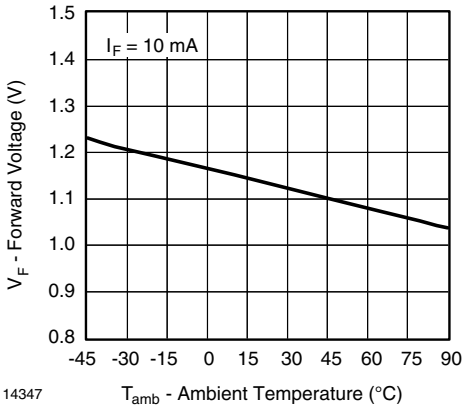



Fig. 4 - Forward Voltage vs. Ambient Temperature


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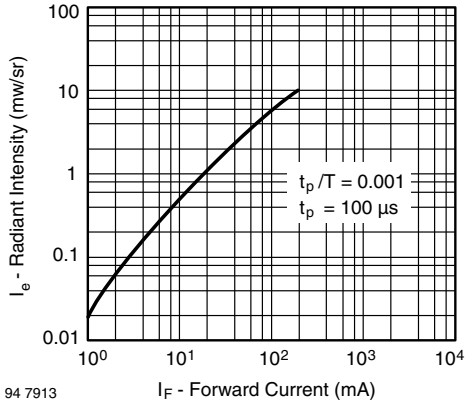



Fig. 5 - Radiant Intensity vs. Forward Current

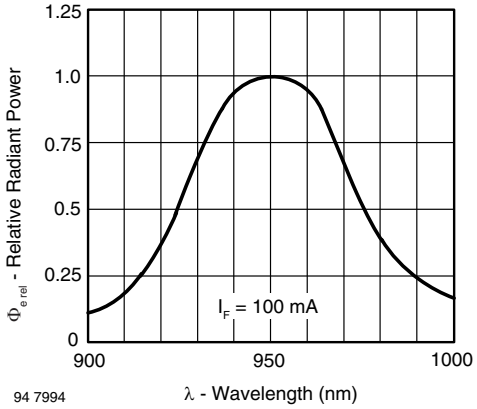



Fig. 8 - Relative Radiant Power vs. Wavelength

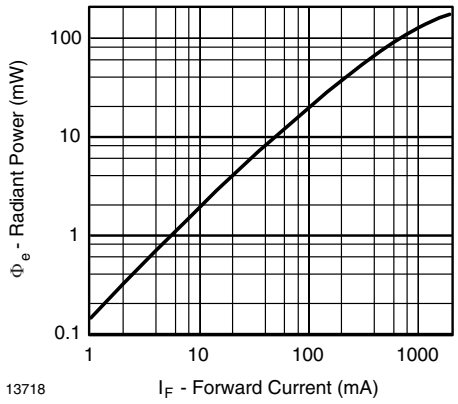



Fig. 6 - Radiant Power vs. Forward Current

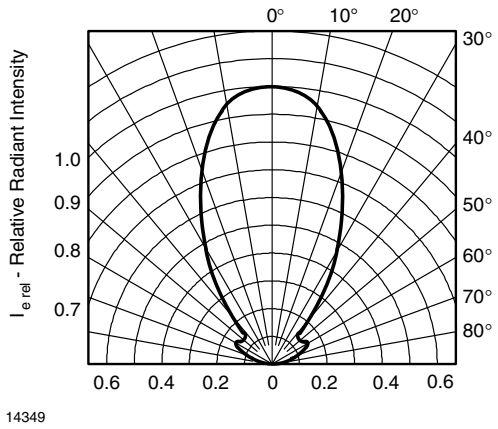



Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

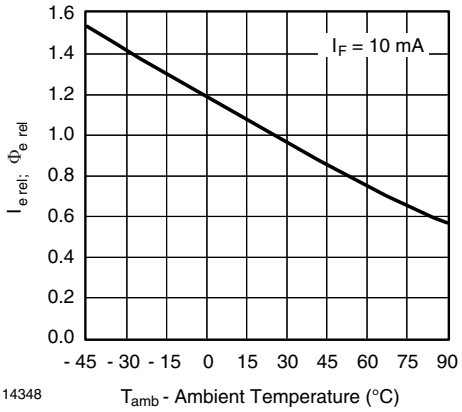
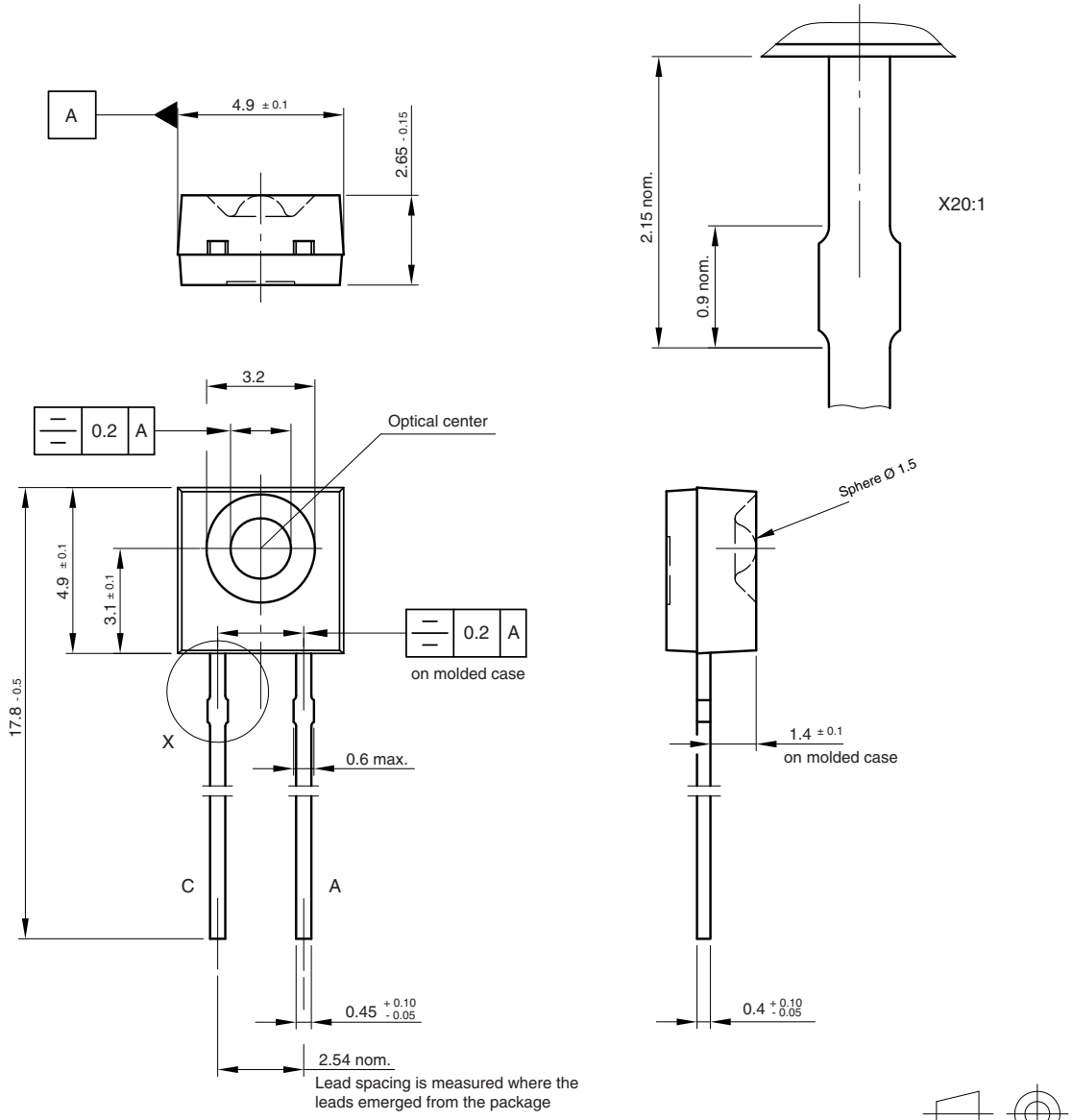



Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature


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**PACKAGE DIMENSIONS** in millimeters



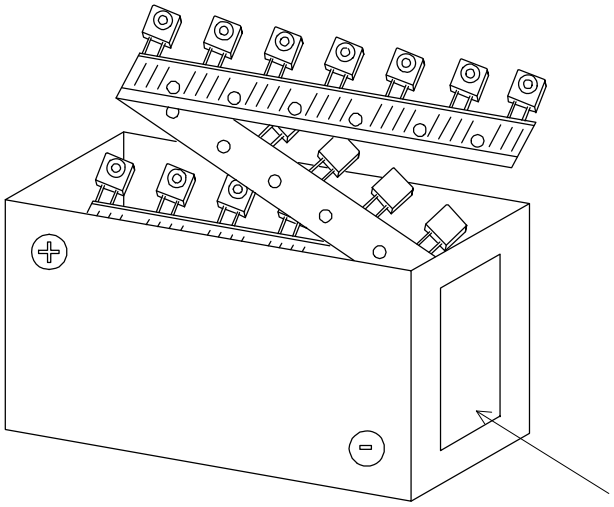

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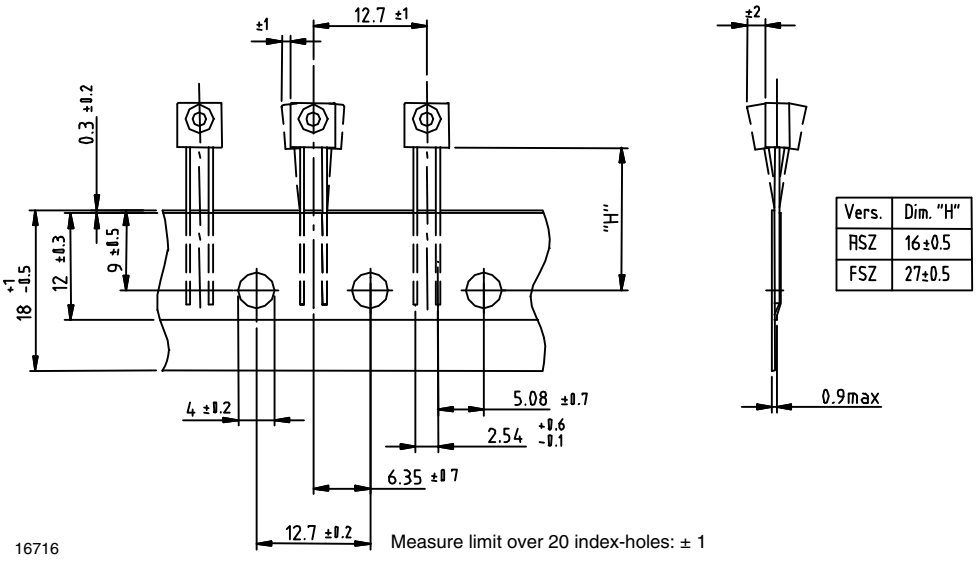
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## TAPE AND AMMOPACK STANDARDS DIMENSIONS in millimeters



Labeling: barcode-label see 5.6.4




| Vers. | Dim. "H" |
|---|---|
| RSZ | 16±0.5 |
| FSZ | 27±0.5 |

Measure limit over 20 index-holes: ± 1



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