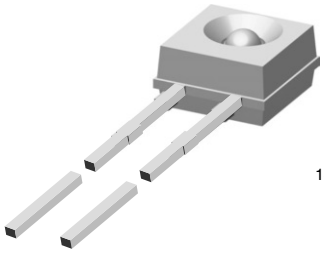
# Infrared Emitting Diode, RoHS Compliant, 950 nm, GaAs




## 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: $\varphi$ = ± 30°
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matched with detector TEKS5400
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free

e3

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) | $\varphi$ (deg) | $\lambda_P$ (nm) | $t_r$ (ns) |
|---|---|---|---|---|
| TSKS5400-FSZ | 4.5 | ± 30 | 950 | 800 |

**Note**

Test conditions see table “Basic Characteristics”

## ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---|---|---|---|
| TSKS5400-FSZ | Tape and ammopack | MOQ: 2000 pcs, 2000 pcs/ammopack | Side view lens |

**Note**

MOQ: minimum order quantity

## ABSOLUTE MAXIMUM RATINGS

| 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/ambient | J-STD-051, leads 7 mm, soldered on PCB | $R_{thJA}$ | 270 | K/W |

**Note**

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

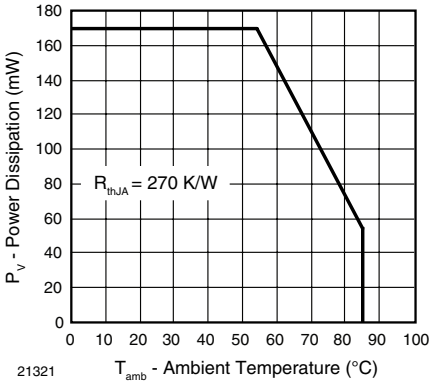



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

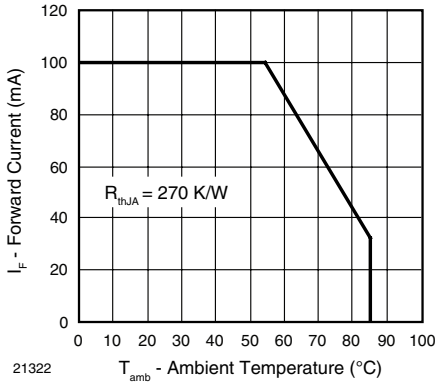



Fig. 2 - Forward Current Limit vs. Ambient Temperature

## BASIC CHARACTERISTICS

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Forward voltage | $I_F$ = 100 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 | $C_j$ | | 30 | | 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 | $TK\phi_e$ | | - 0.8 | | %/K |
| Angle of half sensitivity | | $\varphi$ | | ± 30 | | deg |
| 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 |

**Note**

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

## BASIC CHARACTERISTICS

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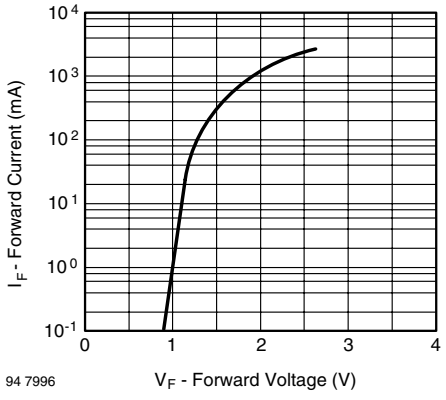



Fig. 3 - Pulse Forward Current vs. Forward Voltage

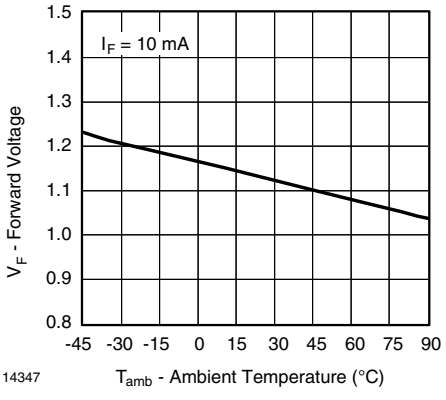



Fig. 4 - Forward Voltage vs. Ambient Temperature

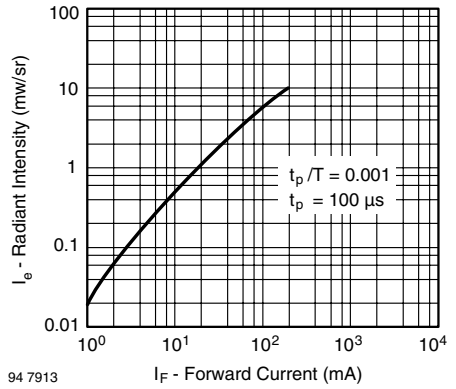



Fig. 5 - Radiant Intensity vs. Forward Current

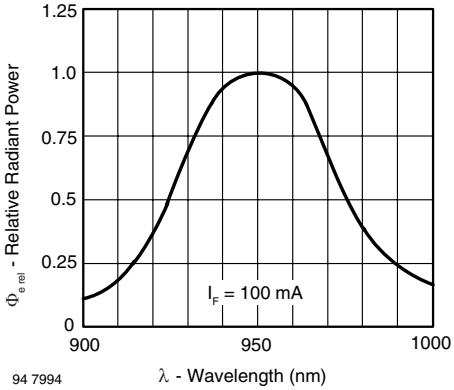



Fig. 8 - Relative Radiant Power vs. Wavelength

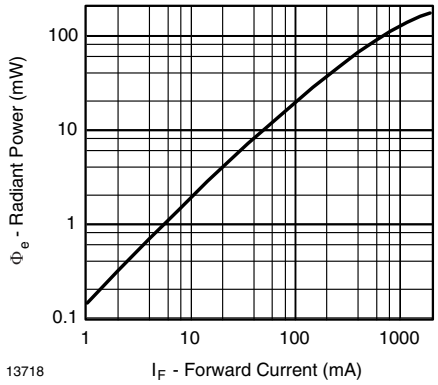



Fig. 6 - Radiant Power vs. Forward Current

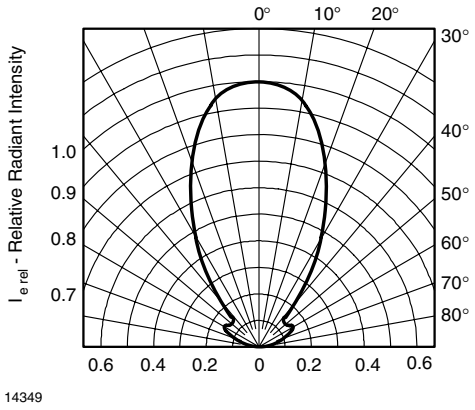



Fig. 9 - Relative Radiant Intensity vs. Angular Displacement

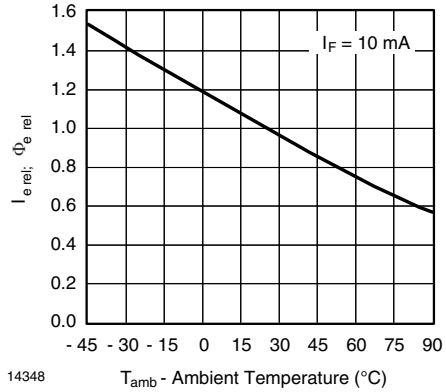
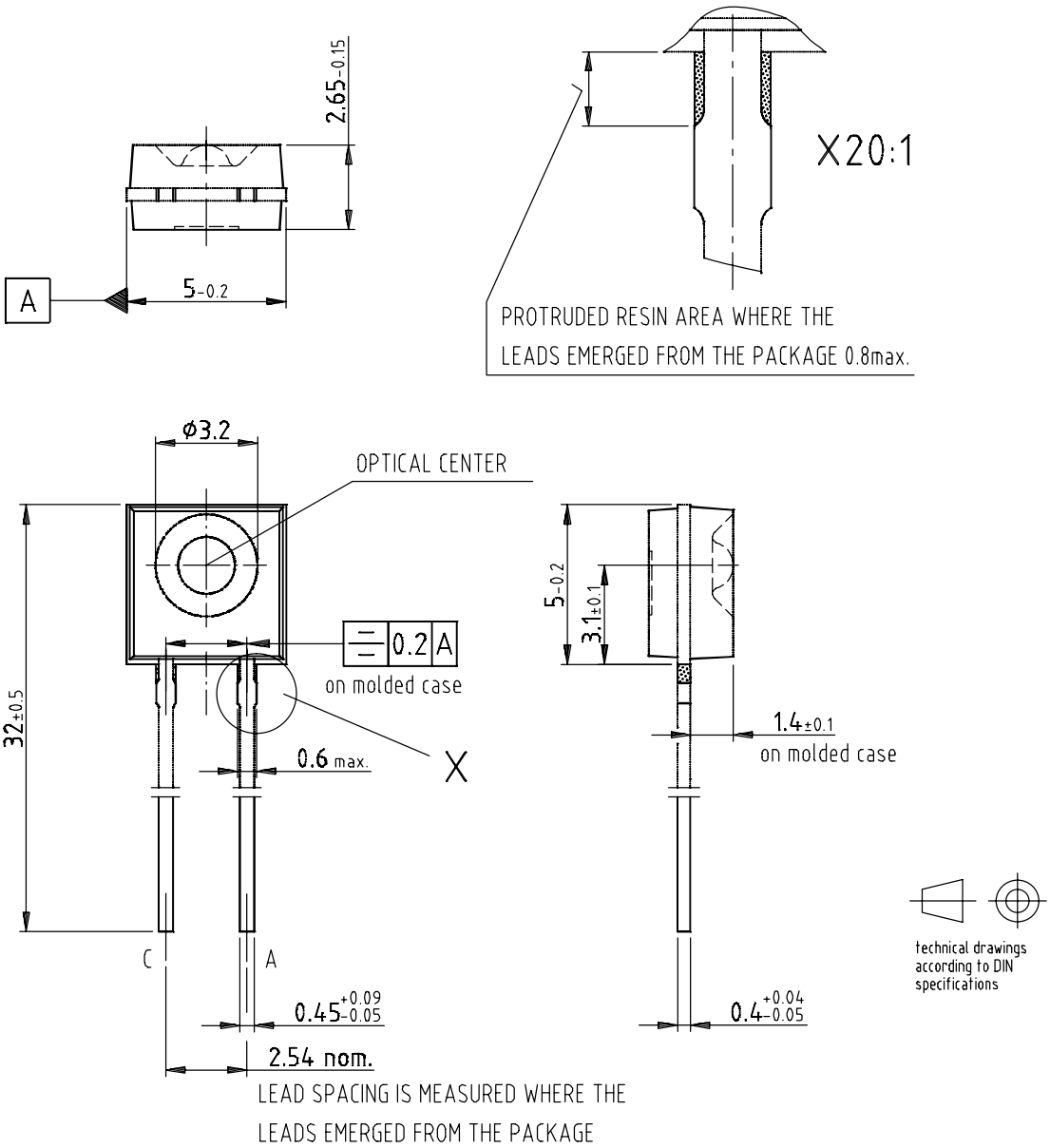



Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters




Drawing-No.: 6.544-5308.51-4
Issue: 7; 05.12.00

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