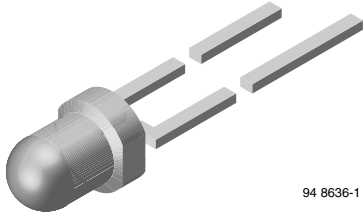


Infrared Emitting Diode, 950 nm, GaAs



94 8636-1

DESCRIPTION

TSUS4300 is an infrared, 950 nm emitting diode in GaAs technology molded in a blue tinted plastic package.

FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): $\varnothing 3$
- Peak wavelength: $\lambda_p = 950$ nm
- High reliability
- Angle of half intensity: $\varphi = \pm 16^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- Good spectral matching with Si photodetectors
- Package matches with detector TEFT4300
- Compliant to RoHS Directive 2002/795/EC and in accordance to WEEE 2002/96/EC



Note

** Please see document "Vishay Material Category Policy":
www.vishay.com/doc?99902

APPLICATIONS

- Infrared remote control and free air transmission systems with low forward voltage and small package requirements
- Emitter in transmissive sensors
- Emitter in reflective sensors

PRODUCT SUMMARY

| COMPONENT | I_e (mW/sr) | φ (deg) | λ_p (nm) | t_r (ns) |
|-----------|---------------|-----------------|------------------|------------|
| TSUS4300 | 18 | ± 16 | 950 | 800 |

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| TSUS4300 | Bulk | MOQ: 5000 pcs, 5000 pcs/bulk | T-1 |

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 | 5 | V |
| Forward current | | I_F | 100 | mA |
| Peak forward current | $t_p/T = 0.5$, $t_p = 100 \mu\text{s}$ | I_{FM} | 200 | mA |
| Surge forward current | $t_p = 100 \mu\text{s}$ | I_{FSM} | 2 | A |
| Power dissipation | | P_V | 170 | mW |
| Junction temperature | | T_j | 100 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | - 40 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} | 300 | K/W |

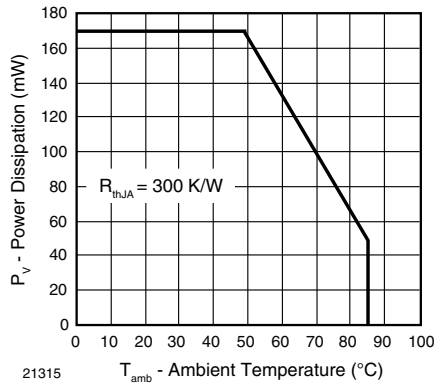


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

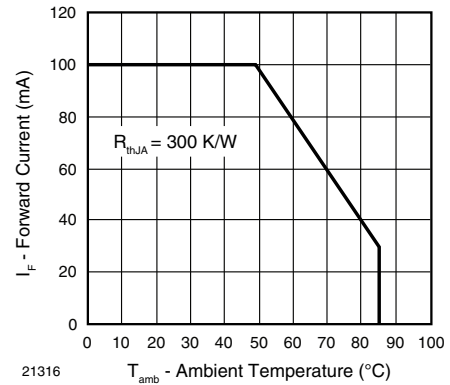


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|---|------------------|------|----------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | V_F | | 1.3 | 1.7 | V |
| | $I_F = 1.5\text{ A}$, $t_p = 100\text{ }\mu\text{s}$ | V_F | | 2.2 | | V |
| Temperature coefficient of V_F | $I_F = 100\text{ mA}$ | TK_{V_F} | | -1.3 | | mV/K |
| Reverse current | $V_R = 5\text{ V}$ | I_R | | | 100 | μA |
| Breakdown voltage | $I_R = 100\text{ }\mu\text{A}$ | $V_{(BR)}$ | 5 | 40 | | |
| Junction capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_j | | 30 | | pF |
| Radiant intensity | $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | I_e | 7 | 18 | 35 | mW/sr |
| | $I_F = 1.5\text{ A}$, $t_p = 100\text{ }\mu\text{s}$ | I_e | | 160 | | mW/sr |
| Radiant power | $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | ϕ_e | | 20 | | mW |
| Temperature coefficient of ϕ_e | $I_F = 20\text{ mA}$ | TK_{ϕ_e} | | -0.8 | | %/K |
| Angle of half intensity | | φ | | ± 16 | | deg |
| Peak wavelength | $I_F = 100\text{ mA}$ | λ_p | | 950 | | nm |
| Spectral bandwidth | $I_F = 100\text{ mA}$ | $\Delta\lambda$ | | 50 | | nm |
| Temperature coefficient of λ_p | $I_F = 100\text{ mA}$ | TK_{λ_p} | | 0.2 | | nm/K |
| Rise time | $I_F = 100\text{ mA}$ | t_r | | 800 | | ns |
| | $I_F = 1.5\text{ A}$ | t_r | | 400 | | ns |
| Fall time | $I_F = 100\text{ mA}$ | t_f | | 800 | | ns |
| | $I_F = 1.5\text{ A}$ | t_f | | 400 | | ns |
| Virtual source diameter | | d | | 2.1 | | mm |

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

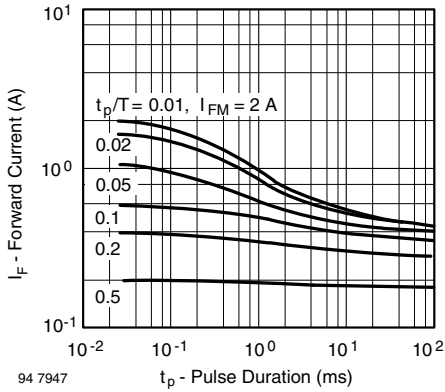


Fig. 3 - Pulse Forward Current vs. Pulse Duration

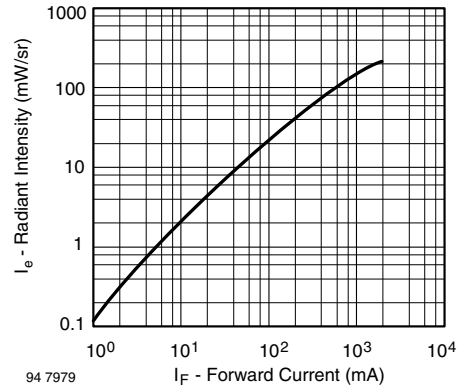


Fig. 6 - Radiant Intensity vs. Forward Current

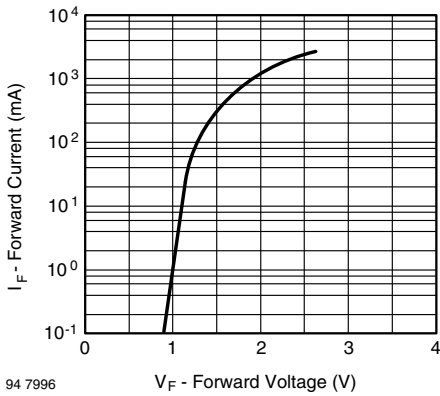


Fig. 4 - Forward Current vs. Forward Voltage

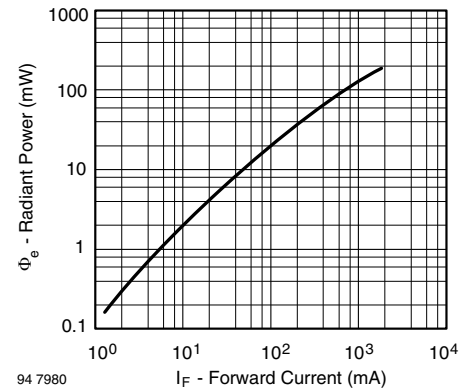


Fig. 7 - Radiant Power vs. Forward Current

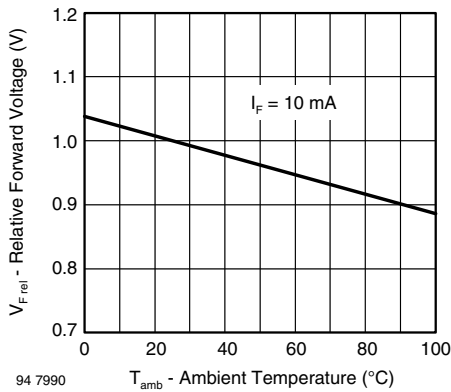


Fig. 5 - Relative Forward Voltage vs. Ambient Temperature

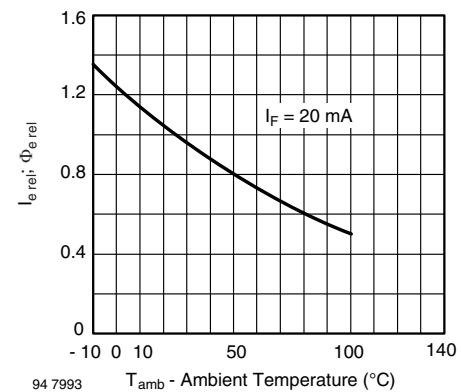


Fig. 8 - Relative Radiant Intensity/Power vs. Ambient Temperature

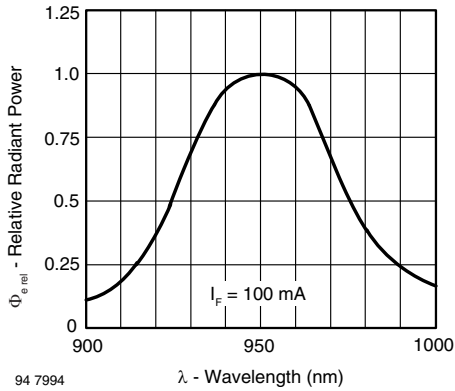


Fig. 9 - Relative Radiant Power vs. Wavelength

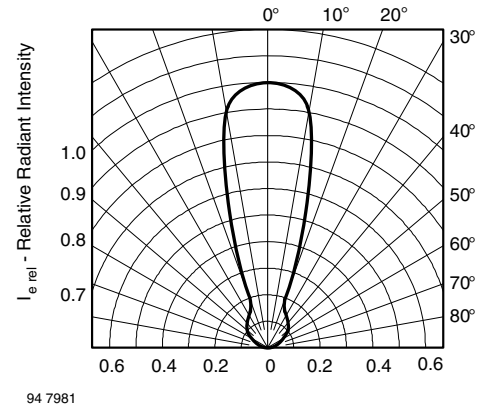
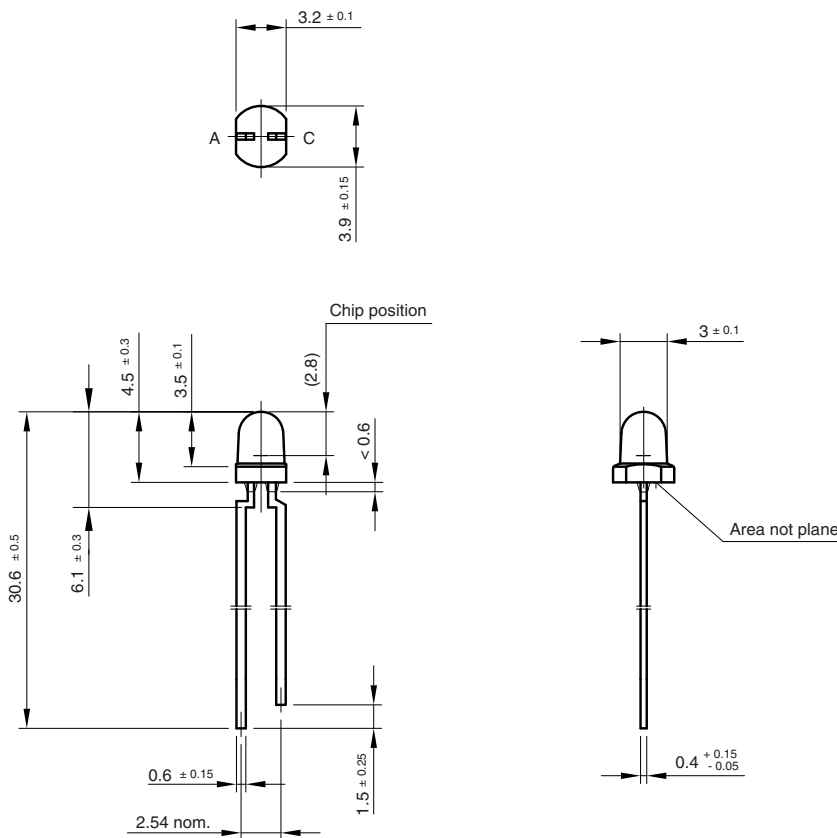


Fig. 10 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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