

Silicon PIN Photodiode



DESCRIPTION

TEFD4300 is a silicon PIN photodiode with high radiant sensitivity in clear, T-1 plastic package. It is sensitive to visible and near infrared radiation.

FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): \varnothing 3
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 20^\circ$
- Package matched with IR emitter series VSLB3940, TSUS4300, and TSAL4400
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- High speed photo detector for data transmission
- Optical switches
- Counters and sorters
- Interrupters
- Encoders
- Position sensors

PRODUCT SUMMARY

| COMPONENT | I_{ra} (μA) | φ (deg) | $\lambda_{0.1}$ (nm) |
|-----------|----------------------|-----------------|----------------------|
| TEFD4300 | 17 | ± 20 | 350 to 1120 |

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| TEFD4300 | Bulk | MOQ: 5000 pcs, 5000 pcs/bulk | T-1 |

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ C$, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-------------------------------------|----------------------------------------------|------------|-------------|------------|
| Reverse voltage | | V_R | 60 | V |
| Power dissipation | $T_{amb} \leq 25^\circ C$ | P_V | 215 | mW |
| Junction temperature | | T_j | 100 | $^\circ C$ |
| Operating temperature range | | T_{amb} | -40 to +100 | $^\circ C$ |
| Storage temperature range | | T_{stg} | -40 to +100 | $^\circ C$ |
| Soldering temperature | $t \leq 3$ s, 2 mm from case | T_{sd} | 260 | $^\circ C$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 450 | K/W |

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------|------|----------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 50\text{ mA}$ | V_F | | 1 | | V |
| Breakdown voltage | $I_R = 100\text{ }\mu\text{A}$, $E = 0$ | $V_{(BR)}$ | 60 | | | V |
| Reverse dark current | $V_R = 10\text{ V}$, $E = 0$ | I_{r0} | | 0.15 | 3 | nA |
| Diode capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_D | | 3.3 | | pF |
| | $V_R = 5\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_D | | 1.2 | | pF |
| Open circuit voltage | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | V_{OC} | | 350 | | mV |
| Temperature coefficient of V_{OC} | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | $TK_{V_{OC}}$ | | -2.6 | | mV/K |
| Short circuit current | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | I_k | | 15 | | μA |
| Temperature coefficient of I_k | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | TK_{I_k} | | 0.1 | | %/K |
| Reverse light current | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$, $V_R = 5\text{ V}$ | I_{ra} | 9 | 17 | 27 | μA |
| Angle of half sensitivity | | ϕ | | ± 20 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 950 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.1}$ | 350 | | 1120 | nm |
| Rise time | $V_R = 10\text{ V}$, $R_L = 1\text{ k}\Omega$, $\lambda = 820\text{ nm}$ | t_r | | 100 | | ns |
| Fall time | $V_R = 10\text{ V}$, $R_L = 1\text{ k}\Omega$, $\lambda = 820\text{ nm}$ | t_f | | 100 | | ns |

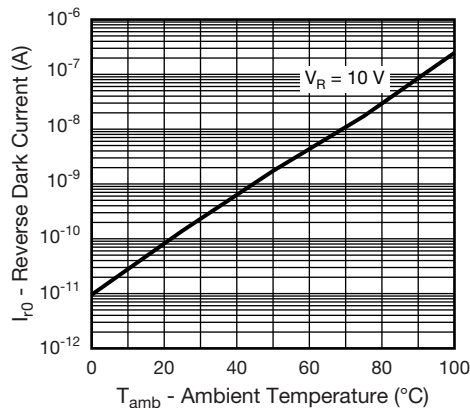
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

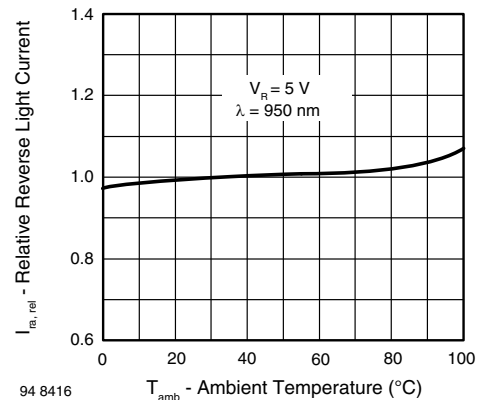


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

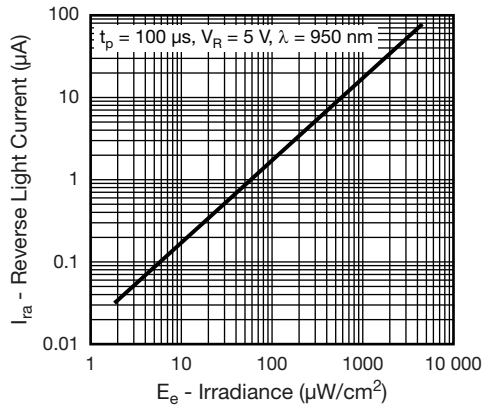


Fig. 3 - Reverse Light Current vs. Irradiance

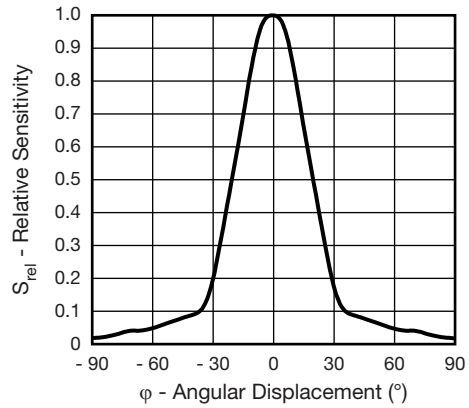


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

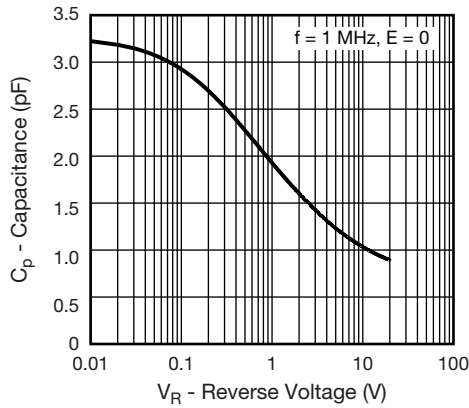


Fig. 4 - Diode Capacitance vs. Reverse Voltage

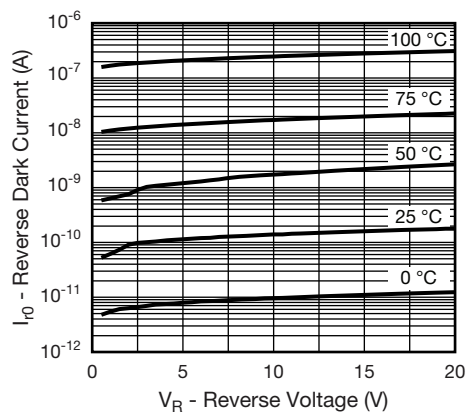


Fig. 7 - Dark Current vs. Reverse Voltage

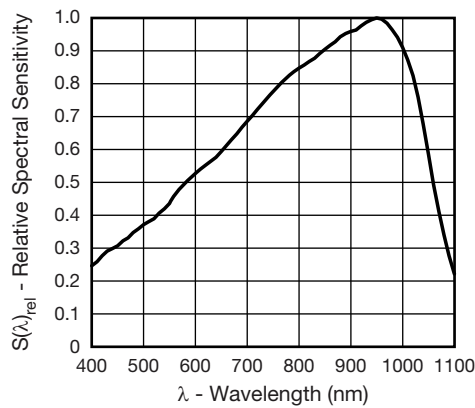
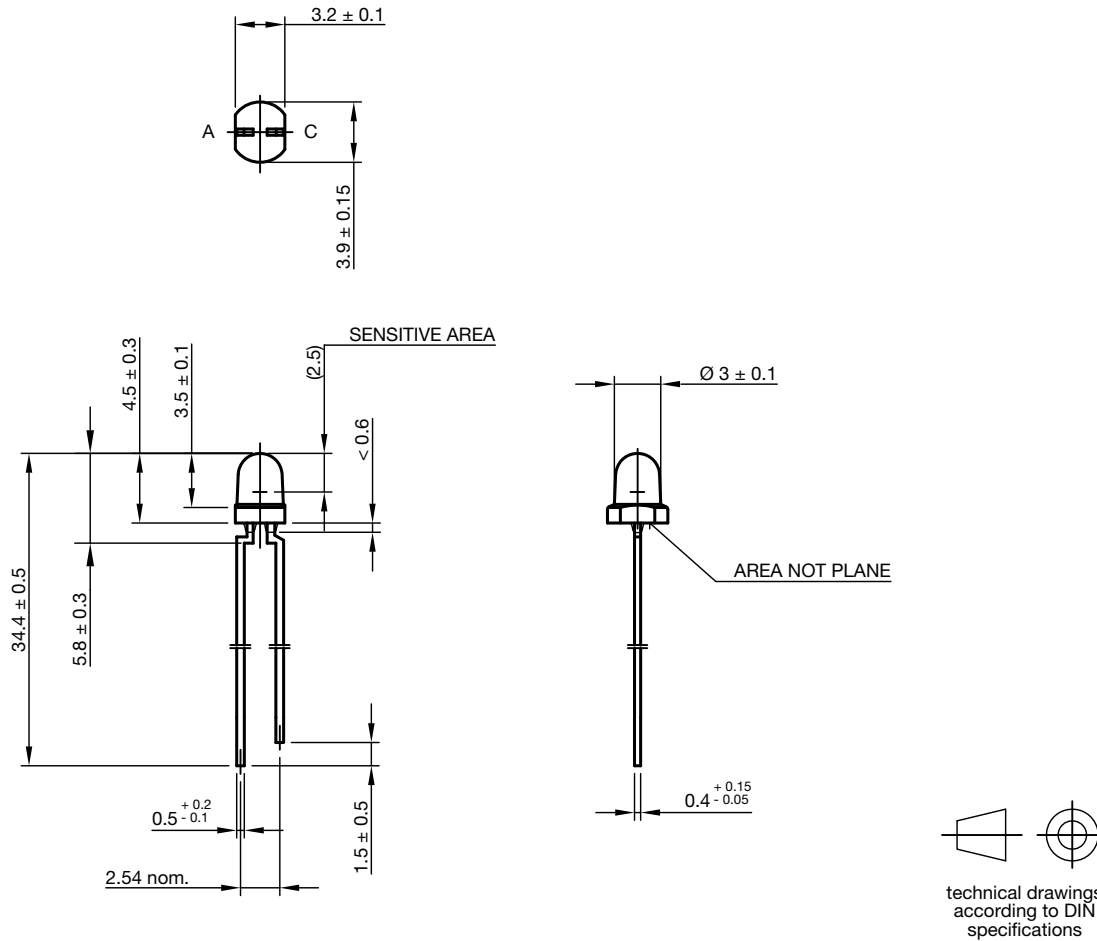


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength



PACKAGE DIMENSIONS in millimeters



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