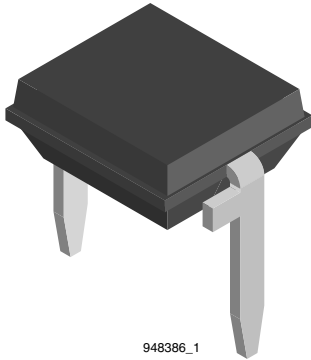


Silicon PIN Photodiode, RoHS Compliant



FEATURES

- Package type: leaded
- Package form: top view
- Dimensions (in mm): 5.4 x 4.3 x 3.2
- Radiant sensitive area (in mm²): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity: $\phi = \pm 65^\circ$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

DESCRIPTION

BP104 is a PIN photodiode with high speed and high radiant sensitivity in miniature, flat, top view plastic package with daylight blocking filter. Filter bandwidth is matched with 900 nm to 950 nm IR emitters.

BP104S is packed in tubes, specifications like BP104.

APPLICATIONS

- High speed detector for infrared radiation
- Infrared remote control and free air data transmission systems, e.g. in combination with TSALxxxx series IR emitters

PRODUCT SUMMARY

| COMPONENT | I_{ra} (μA) | ϕ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|----------------------|--------------|----------------------|
| BP104 | 45 | ± 65 | 870 to 1050 |
| BP104S | 45 | ± 65 | 870 to 1050 |

Note

Test condition see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| BP104 | Bulk | MOQ: 3000 pcs, 3000 pcs/bulk | Top view |
| BP104S | Tube | MOQ: 1800 pcs, 45 pcs/tube | Top view |

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS

| 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 | T_{sd} | 260 | $^\circ C$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 350 | K/W |

Note

$T_{amb} = 25^\circ C$, unless otherwise specified



| BASIC CHARACTERISTICS | | | | | | |
|--------------------------------|---|-----------------|------|---------------------|------|----------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Breakdown voltage | $I_R = 100 \mu A, E = 0$ | $V_{(BR)}$ | 60 | | | V |
| Reverse dark current | $V_R = 10 V, E = 0$ | I_{ro} | | 2 | 30 | nA |
| Diode capacitance | $V_R = 0 V, f = 1 MHz, E = 0$ | C_D | | 70 | | pF |
| | $V_R = 3 V, f = 1 MHz, E = 0$ | C_D | | 25 | 40 | pF |
| Open circuit Voltage | $E_o = 1 mW/cm^2, \lambda = 950 nm$ | V_o | | 350 | | mV |
| Short circuit current | $E_o = 1 mW/cm^2, \lambda = 950 nm$ | I_k | | 38 | | μA |
| Reverse light current | $E_o = 1 mW/cm^2, \lambda = 950 nm, V_R = 5 V$ | I_{ra} | 40 | 45 | | μA |
| Angle of half sensitivity | | φ | | ± 65 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 950 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 870 to 1050 | | nm |
| Noise equivalent power | $V_R = 10 V, \lambda = 950 nm$ | NEP | | 4×10^{-14} | | W/ \sqrt{Hz} |
| Rise time | $V_R = 10 V, R_L = 1 k\Omega, \lambda = 820 nm$ | t_r | | 100 | | ns |
| Fall time | $V_R = 10 V, R_L = 1 k\Omega, \lambda = 820 nm$ | t_f | | 100 | | ns |

Note

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

BASIC CHARACTERISTICS

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

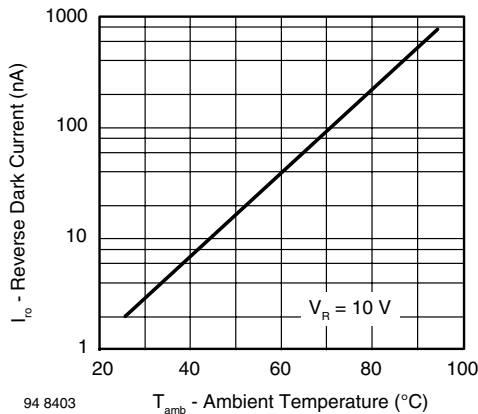


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

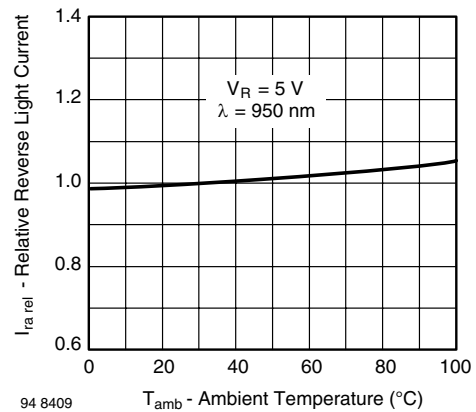


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

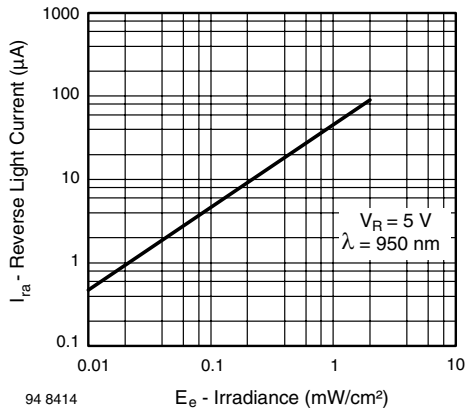


Fig. 3 - Reverse Light Current vs. Irradiance

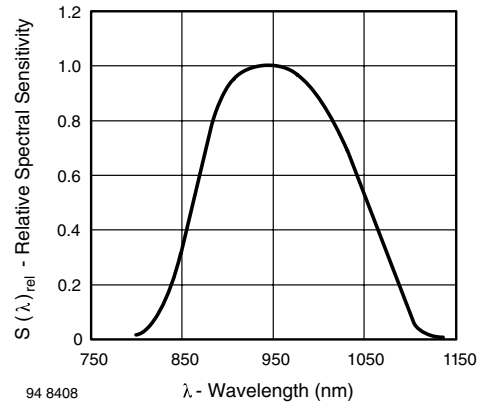


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

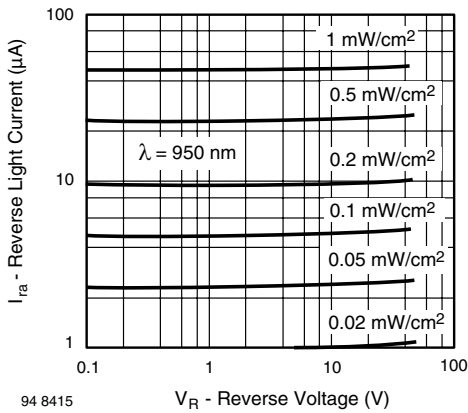


Fig. 4 - Reverse Light Current vs. Reverse Voltage

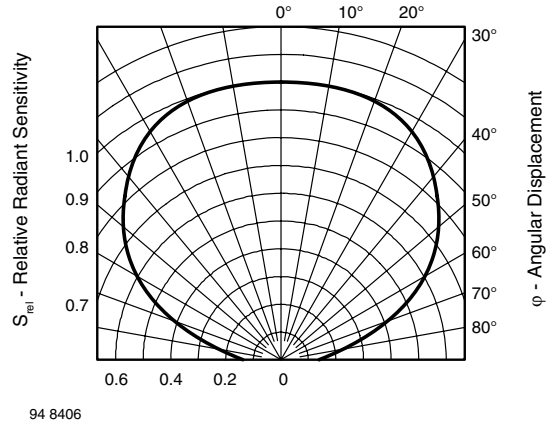


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

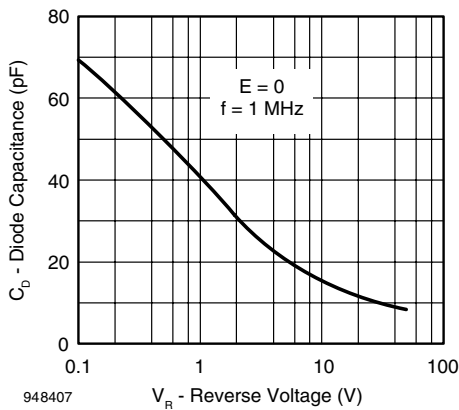
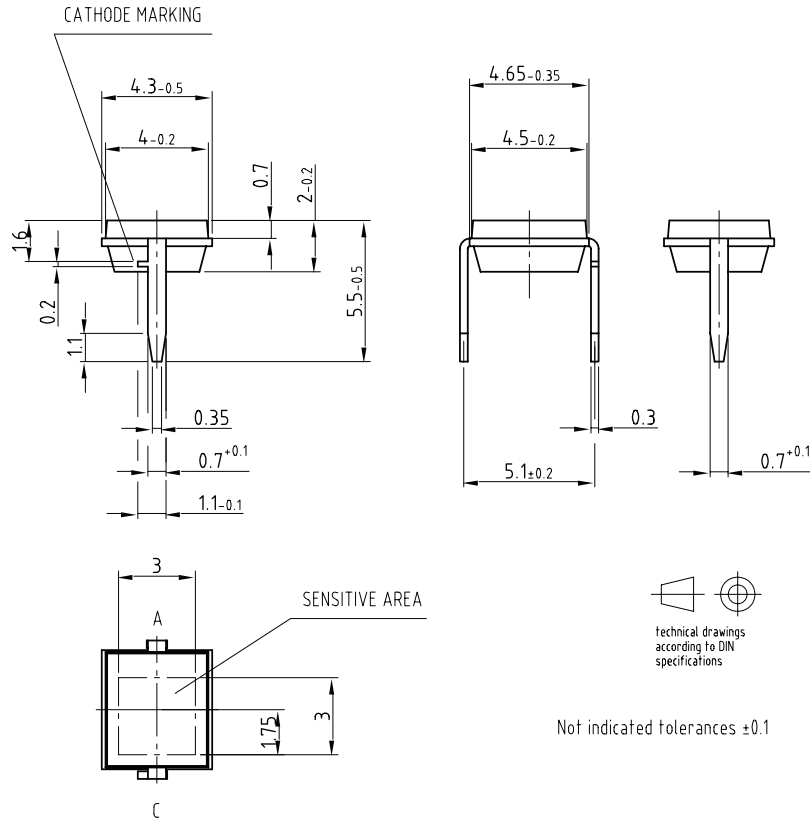


Fig. 5 - Diode Capacitance vs. Reverse Voltage



PACKAGE DIMENSIONS in millimeters



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TUBE PACKAGING DIMENSIONS in millimeters

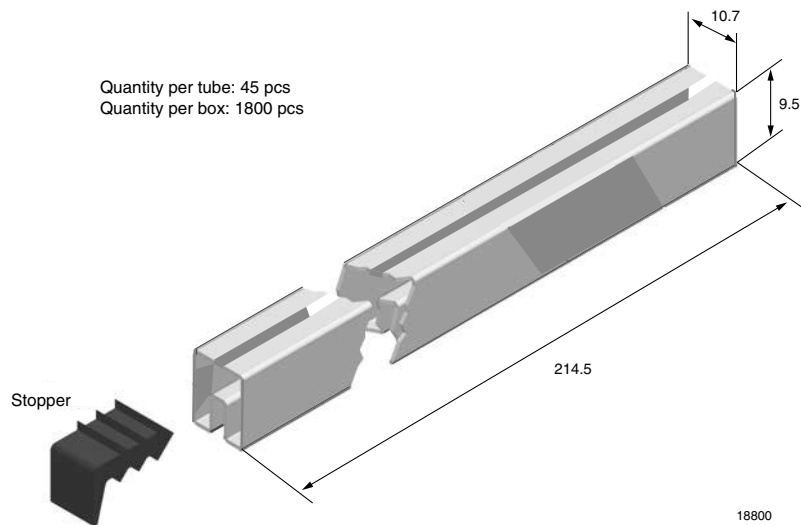


Fig. 8 - Drawing Proportions not scaled