



Silicon PIN Photodiode



21726

FEATURES

- Package type: surface mount
- Package form: GW, RGW
- Dimensions (L x W x H in mm): 6.4 x 3.9 x 1.2
- Radiant sensitive area (in mm²): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- Fast response times
- Angle of half sensitivity: $\phi = \pm 65^\circ$
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

DESCRIPTION

VBPW34FAS and VBPW34FASR are high speed and high sensitive PIN photodiodes. It is a surface mount device (SMD) including the chip with a 7.5 mm² sensitive area and a daylight blocking filter matched with IR emitters operating at wavelength 870 nm or 950 nm.

APPLICATIONS

- High speed detector for infrared radiation
- Infrared remote control and free air data transmissionsystems, e.g. in combination with TSFFxxxx

| PRODUCT SUMMARY | | | |
|-----------------|----------------------|---------|-------------|
| COMPONENT | I _{ra} (μA) | φ (deg) | λ0.5 (nm) |
| VBPW34FAS | 55 | ± 65 | 780 to 1050 |
| VBPW34FASR | 55 | ± 65 | 780 to 1050 |

Note

- Test conditions see table "Basic Characteristics"

| ORDERING INFORMATION | | | |
|----------------------|---------------|------------------------------|------------------|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
| VBPW34FAS | Tape and reel | MOQ: 1000 pcs, 1000 pcs/reel | Gullwing |
| VBPW34FASR | Tape and reel | MOQ: 1000 pcs, 1000 pcs/reel | Reverse gullwing |

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 | 60 | V |
| Power dissipation | T _{amb} ≤ 25 °C | P _V | 215 | mW |
| Junction temperature | | T _j | 100 | °C |
| Operating temperature range | | T _{amb} | - 40 to + 100 | °C |
| Storage temperature range | | T _{stg} | - 40 to + 100 | °C |
| Soldering temperature | Acc. reflow sloder profile fig. 8 | T _{sd} | 260 | °C |
| Thermal resistance junction/ambient | | R _{thJA} | 350 | K/W |



| BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) | | | | | | |
|--|---|-----------------------------|------|-----------------------|------|-------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | I _F = 50 mA | V _F | | 1 | 1.3 | V |
| Breakdown voltage | I _R = 100 μA, 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 _e = 1 mW/cm ² , λ = 950 nm | V _o | | 350 | | mV |
| Temperature coefficient of V _o | E _e = 1 mW/cm ² , λ = 950 nm | TK _{V_o} | | - 2.6 | | mV/K |
| Short circuit current | E _e = 1 mW/cm ² , λ = 950 nm | I _k | | 50 | | μA |
| Temperature coefficient of I _k | E _e = 1 mW/cm ² , λ = 950 nm | TK _{I_k} | | 0.1 | | %/K |
| Reverse light current | E _e = 1 mW/cm ² , λ = 950 nm, V _R = 5 V | I _{ra} | 45 | 55 | | μA |
| Angle of half sensitivity | | φ | | ± 65 | | deg |
| Wavelength of peak sensitivity | | λ _p | | 950 | | nm |
| Range of spectral bandwidth | | λ _{0.5} | | 780 to 1050 | | nm |
| Noise equivalent power | V _R = 10 V, λ = 950 nm | NEP | | 4 x 10 ⁻¹⁴ | | W/√Hz |
| Rise time | V _R = 10 V, R _L = 1 kΩ, λ = 820 nm | t _r | | 100 | | ns |
| Fall time | V _R = 10 V, R _L = 1 kΩ, λ = 820 nm | t _f | | 100 | | ns |

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



Fig. 1 - Reverse Dark Current vs. Ambient Temperature



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



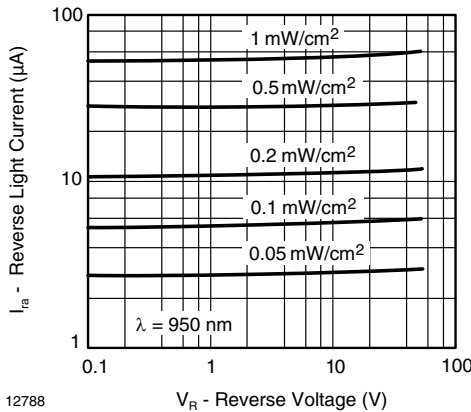
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Fig. 3 - Reverse Light Current vs. Irradiance



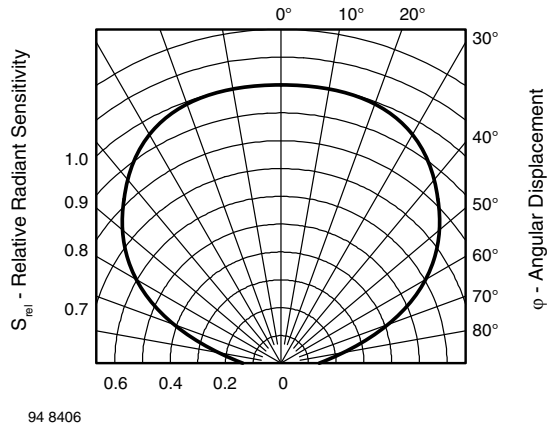
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Fig. 6 - Relative Spectral Sensitivity vs. Wavelength



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Fig. 4 - Reverse Light Current vs. Reverse Voltage



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Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

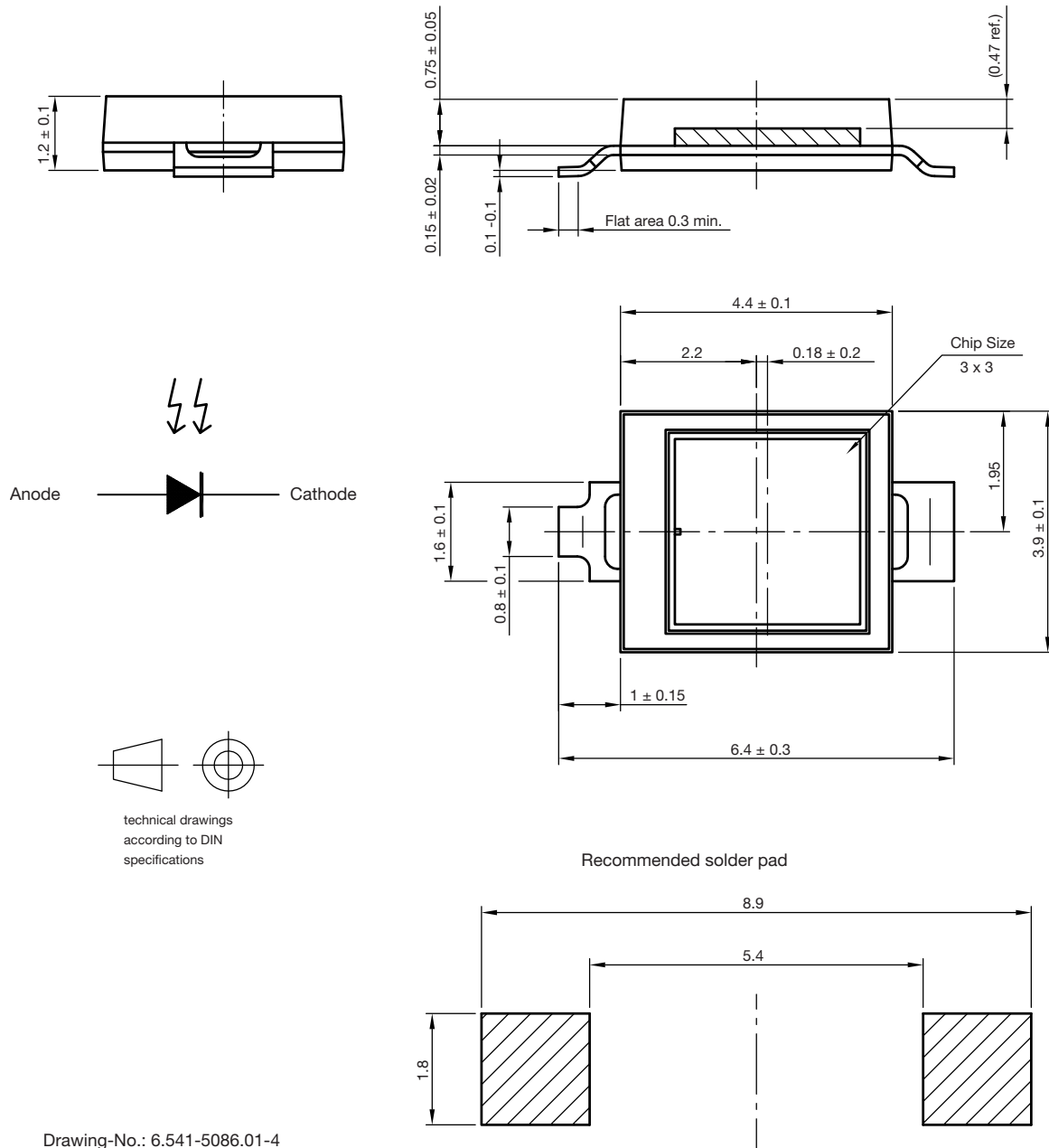


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Fig. 5 - Diode Capacitance vs. Reverse Voltage



PACKAGE DIMENSIONS FOR VBPW34FAS in millimeters



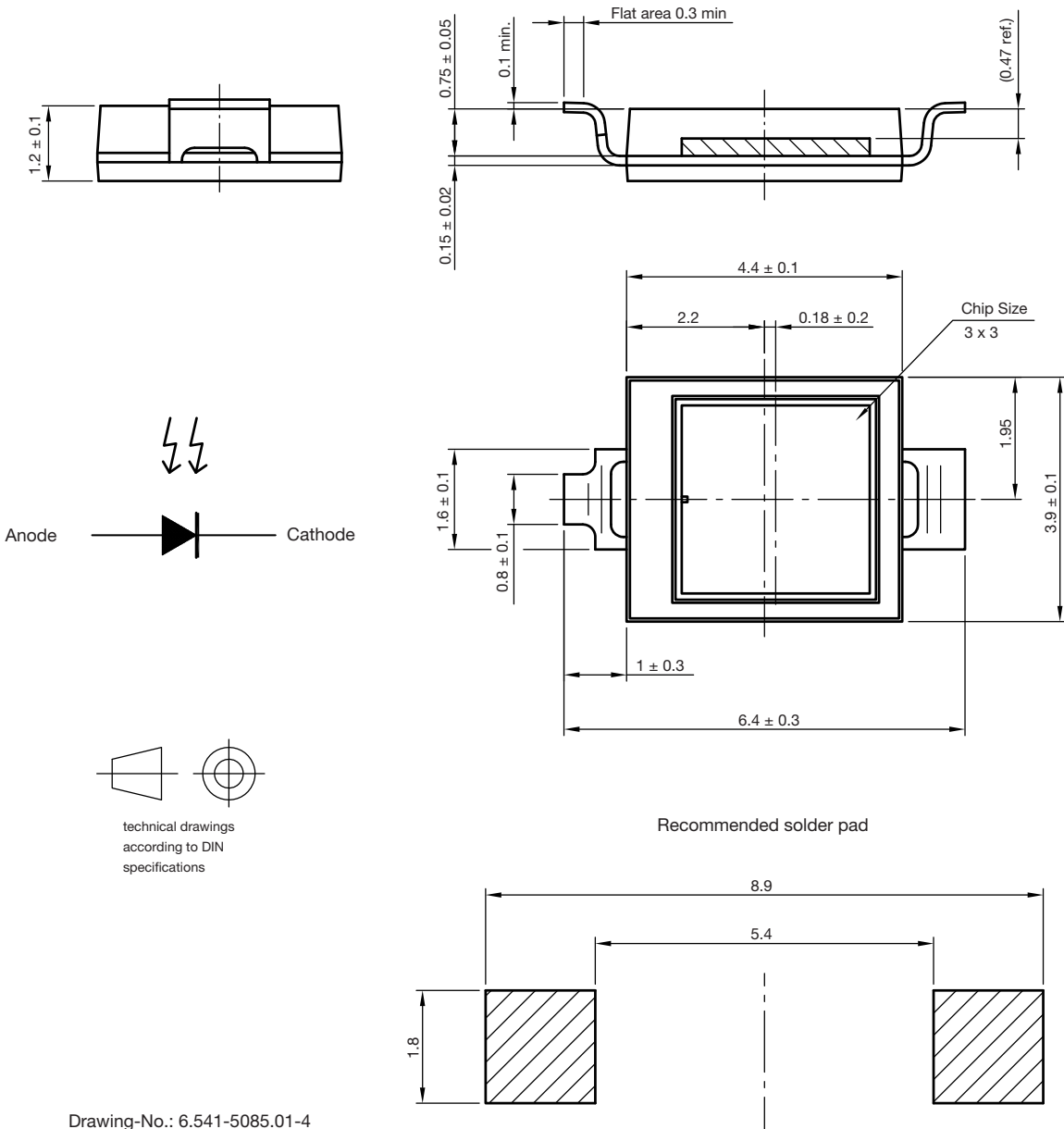
Drawing-No.: 6.541-5086.01-4

Issue: 1; 15.04.10

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PACKAGE DIMENSIONS FOR VBPW34FASR in millimeters



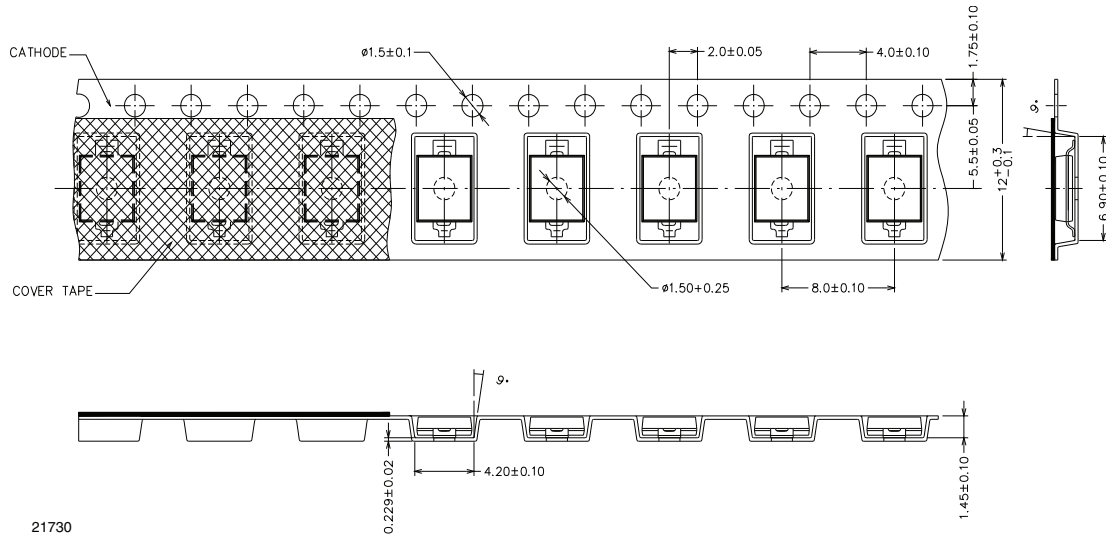
Drawing-No.: 6.541-5085.01-4

Issue: 1; 15.04.10

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TAPING DIMENSIONS FOR VBPW34FAS in millimeters



TAPING DIMENSIONS FOR VBPW34FASR in millimeters

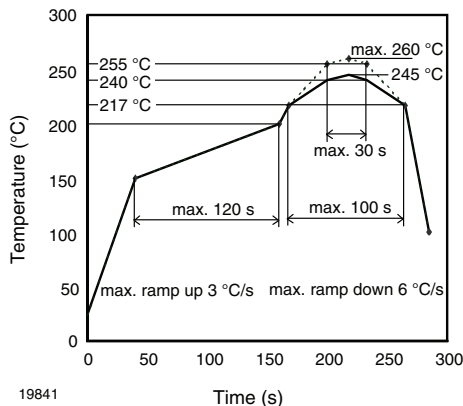


REEL DIMENSIONS FOR VBPW34FAS AND VBPW34FASR in millimeters



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SOLDER PROFILE



19841

Fig. 8 - Lead (Pb)-free Reflow Solder Profile
acc. J-STD-020

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

FLOOR LIFE

Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:

Moisture sensitivity: level 3

Floor life: 168 h

Conditions: $T_{amb} < 30\text{ }^{\circ}\text{C}$, $\text{RH} < 60\%$

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or recommended conditions:

192 h at $40\text{ }^{\circ}\text{C}$ (+ 5 °C), $\text{RH} < 5\%$

or

96 h at $60\text{ }^{\circ}\text{C}$ (+ 5 °C), $\text{RH} < 5\%$.



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