

## Silicon PIN Photodiode



21726

### 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 mm<sup>2</sup> sensitive area and a daylight blocking filter matched with IR emitters operating at wavelength 870 nm or 950 nm.

### 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 mm<sup>2</sup>): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- Fast response times
- Angle of half sensitivity:  $\varphi = \pm 65^\circ$
- 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



RoHS  
COMPLIANT

### APPLICATIONS

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

### PRODUCT SUMMARY

COMPONENT	I <sub>ra</sub> (μA)	φ (deg)	λ <sub>0.5</sub> (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<sub>amb</sub> = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	60	V
Power dissipation	T <sub>amb</sub> ≤ 25 °C	P <sub>V</sub>	215	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 8	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient		R <sub>thJA</sub>	350	K/W

BASIC CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I <sub>F</sub> = 50 mA	V <sub>F</sub>		1	1.3	V
Breakdown voltage	I <sub>R</sub> = 100 μA, E = 0	V <sub>(BR)</sub>	60			V
Reverse dark current	V <sub>R</sub> = 10 V, E = 0	I <sub>ro</sub>		2	30	nA
Diode capacitance	V <sub>R</sub> = 0 V, f = 1 MHz, E = 0	C <sub>D</sub>		70		pF
	V <sub>R</sub> = 3 V, f = 1 MHz, E = 0	C <sub>D</sub>		25	40	pF
Open circuit voltage	E <sub>e</sub> = 1 mW/cm <sup>2</sup> , λ = 950 nm	V <sub>o</sub>		350		mV
Temperature coefficient of V <sub>o</sub>	E <sub>e</sub> = 1 mW/cm <sup>2</sup> , λ = 950 nm	TK <sub>V<sub>o</sub></sub>		- 2.6		mV/K
Short circuit current	E <sub>e</sub> = 1 mW/cm <sup>2</sup> , λ = 950 nm	I <sub>k</sub>		50		μA
Temperature coefficient of I <sub>k</sub>	E <sub>e</sub> = 1 mW/cm <sup>2</sup> , λ = 950 nm	TK <sub>I<sub>k</sub></sub>		0.1		%/K
Reverse light current	E <sub>e</sub> = 1 mW/cm <sup>2</sup> , λ = 950 nm, V <sub>R</sub> = 5 V	I <sub>ra</sub>	45	55		μA
Angle of half sensitivity		φ		± 65		deg
Wavelength of peak sensitivity		λ <sub>p</sub>		950		nm
Range of spectral bandwidth		λ <sub>0.5</sub>		780 to 1050		nm
Noise equivalent power	V <sub>R</sub> = 10 V, λ = 950 nm	NEP		4 x 10 <sup>-14</sup>		W/√Hz
Rise time	V <sub>R</sub> = 10 V, R <sub>L</sub> = 1 kΩ, λ = 820 nm	t <sub>r</sub>		100		ns
Fall time	V <sub>R</sub> = 10 V, R <sub>L</sub> = 1 kΩ, λ = 820 nm	t <sub>f</sub>		100		ns

## BASIC CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

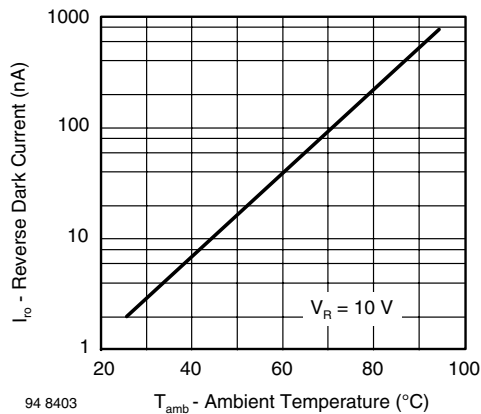


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

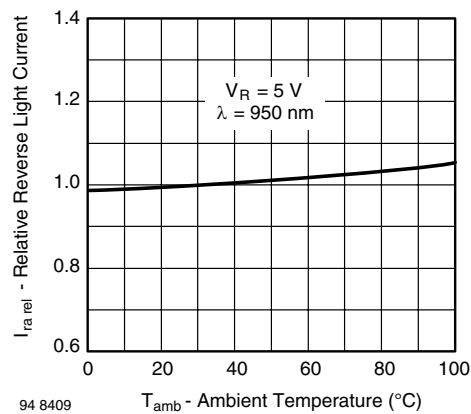
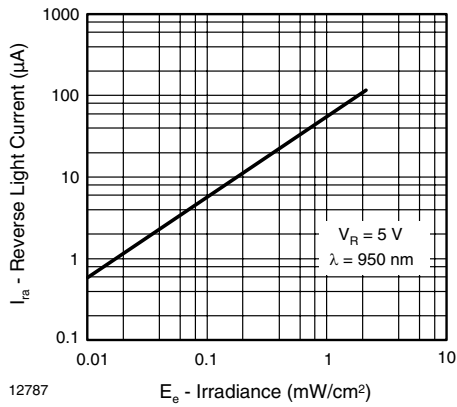
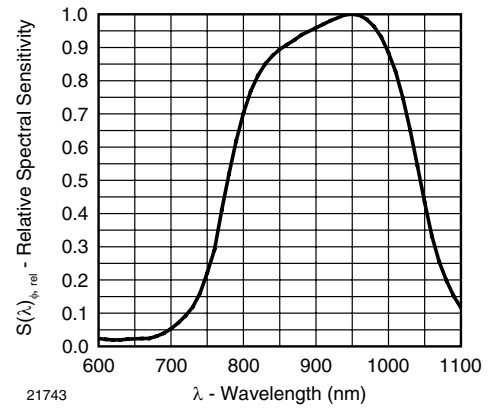


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



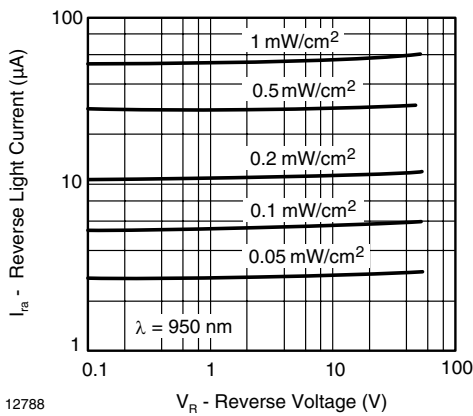
12787

Fig. 3 - Reverse Light Current vs. Irradiance



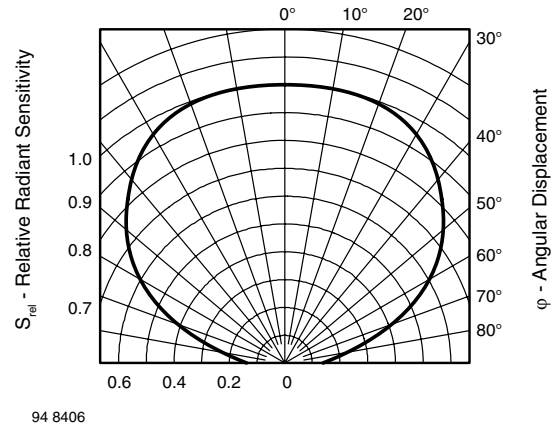
21743

Fig. 6 - Relative Spectral Sensitivity vs. Wavelength



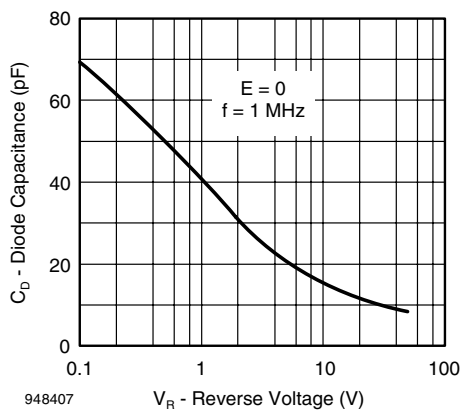
12788

Fig. 4 - Reverse Light Current vs. Reverse Voltage



94 8406

Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement



948407

Fig. 5 - Diode Capacitance vs. Reverse Voltage

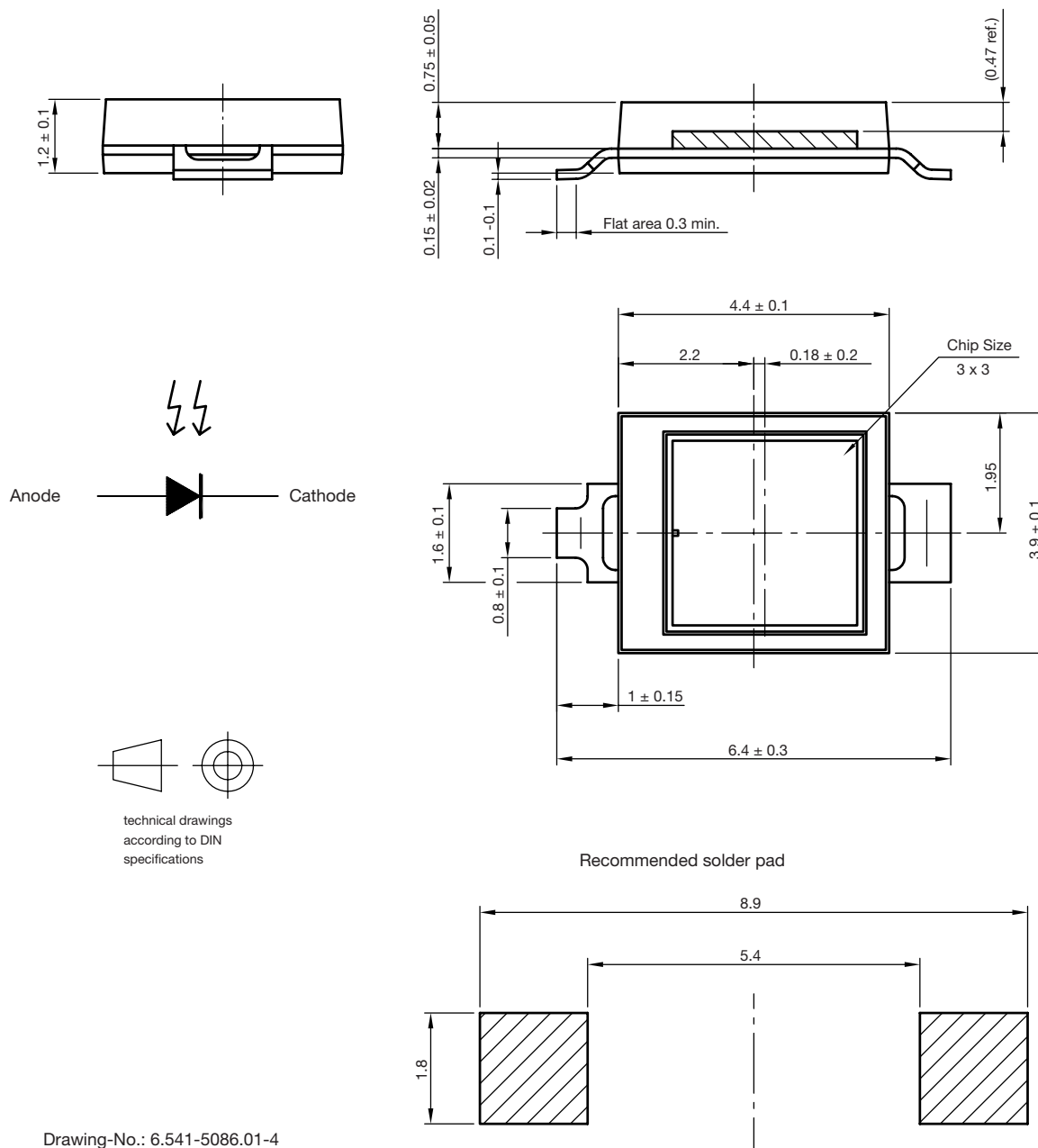
# VBPW34FAS, VBPW34FASR

Vishay Semiconductors

Silicon PIN Photodiode



## PACKAGE DIMENSIONS FOR VBPW34FAS in millimeters



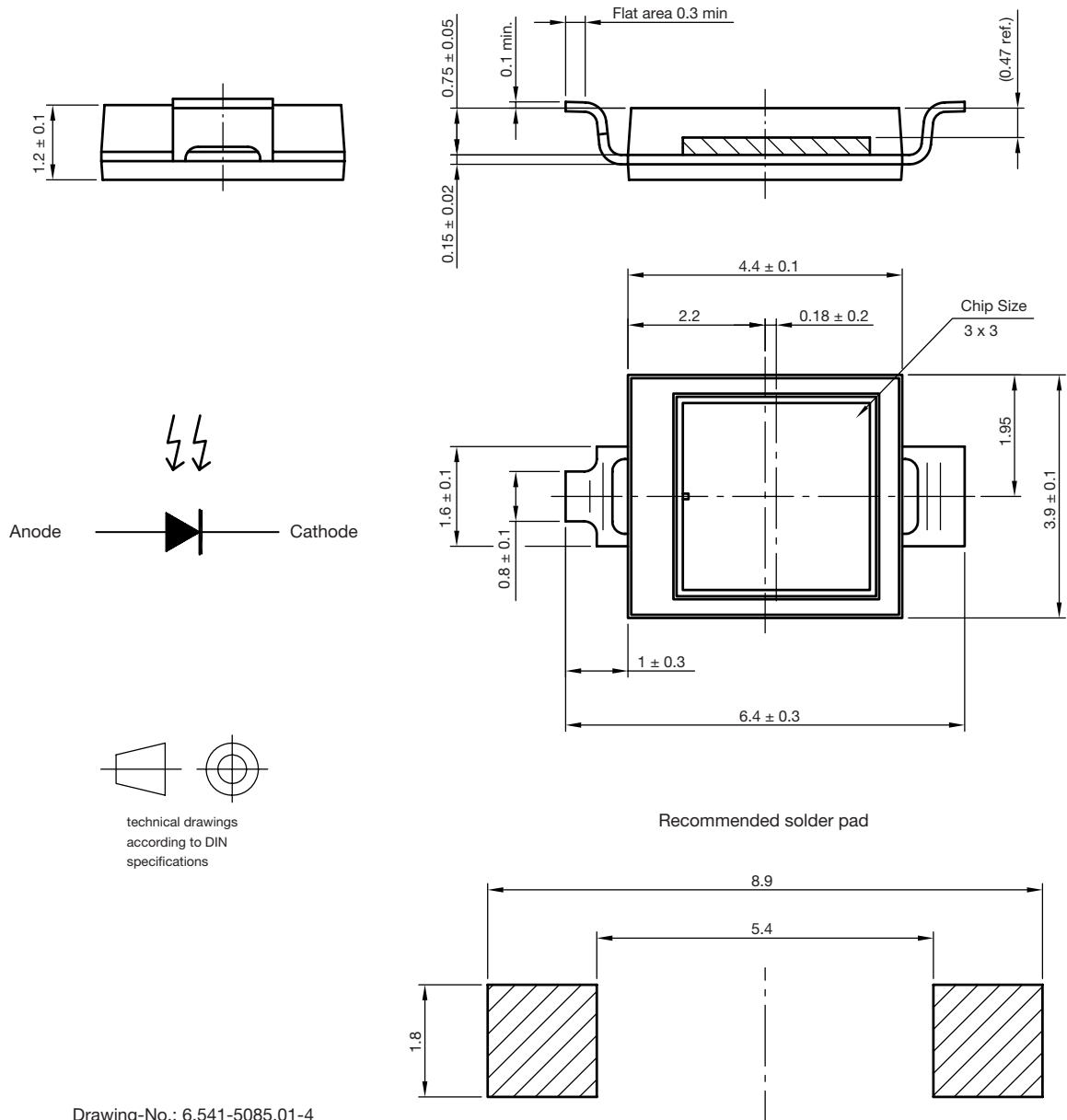
technical drawings  
according to DIN  
specifications

Drawing-No.: 6.541-5086.01-4

Issue: 1; 15.04.10

22105

**PACKAGE DIMENSIONS FOR VBPW34FASR** in millimeters



Drawing-No.: 6.541-5085.01-4

Issue: 1; 15.04.10

22104

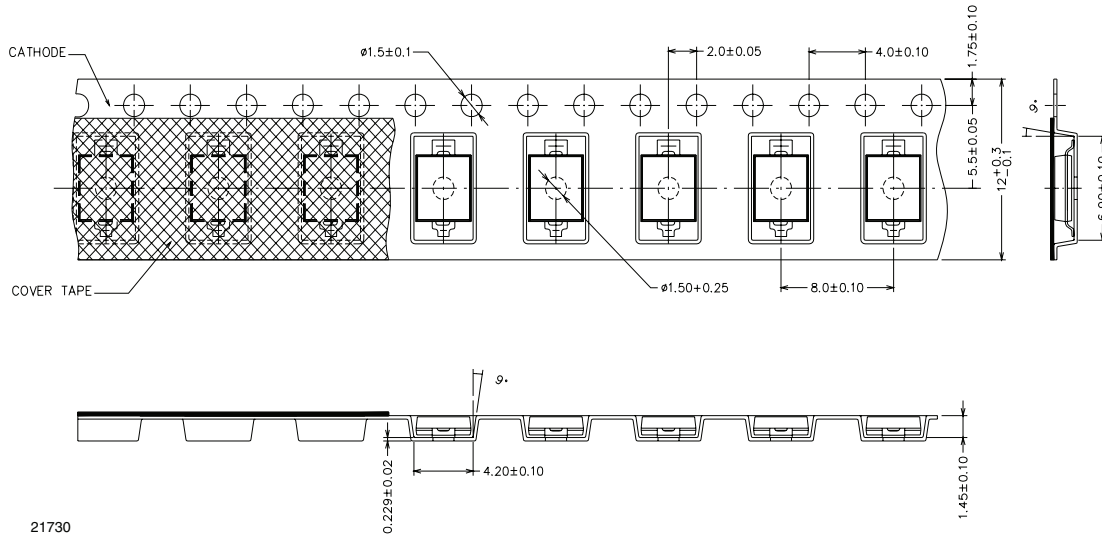
# VBPW34FAS, VBPW34FASR

Vishay Semiconductors

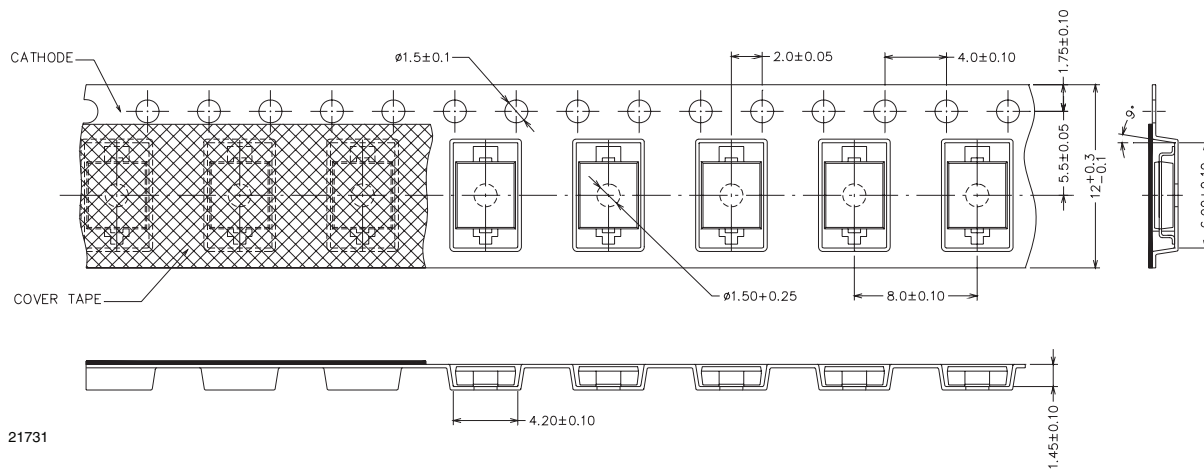
Silicon PIN Photodiode



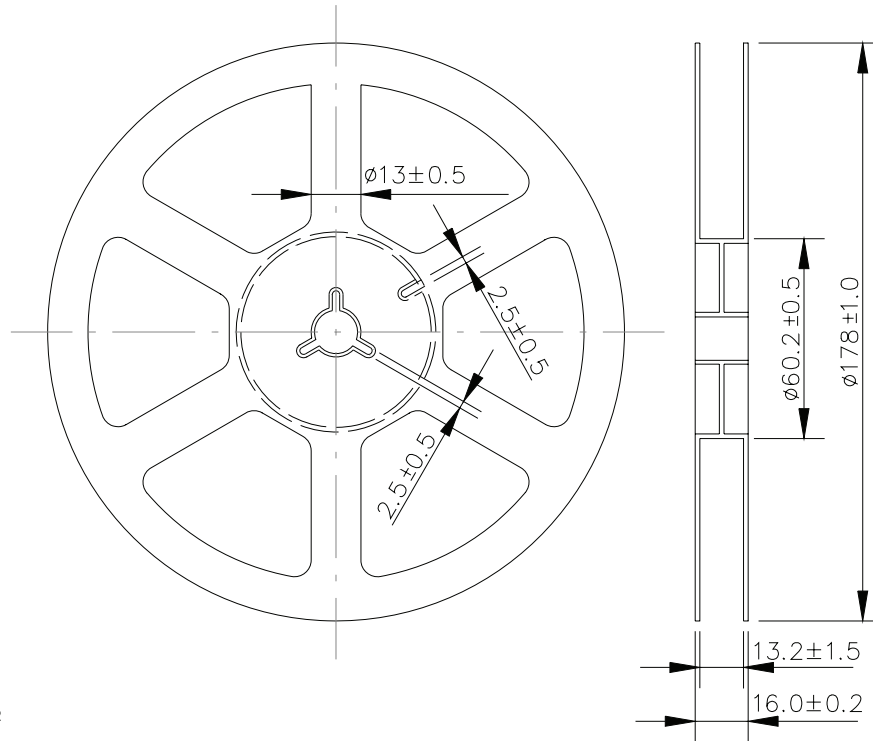
## TAPING DIMENSIONS FOR VBPW34FAS in millimeters



## TAPING DIMENSIONS FOR VBPW34FASR in millimeters

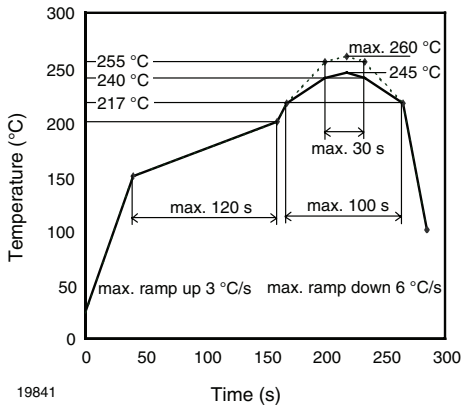


**REEL DIMENSIONS FOR VBPW34FAS AND VBPW34FASR** in millimeters



21732

**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:  $T_{amb} < 30\text{ °C}$ ,  $RH < 60\%$

**DRYING**

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or recommended conditions:  
 192 h at  $40\text{ °C} (+ 5\text{ °C})$ ,  $RH < 5\%$   
 or  
 96 h at  $60\text{ °C} (+ 5\text{ °C})$ ,  $RH < 5\%$ .

## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.