

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 mm² 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 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

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} (μ A)	ϕ (deg)	$\lambda_{0.5}$ (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	$T_{amb} \leq 25^\circ\text{C}$	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)

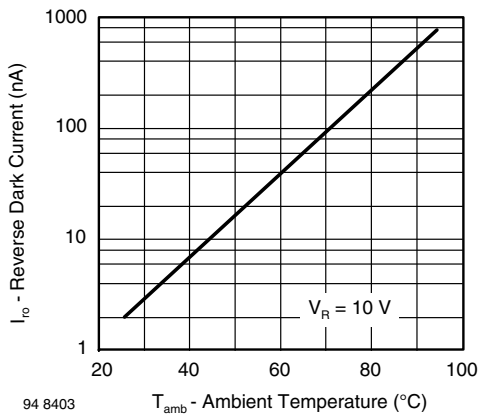


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

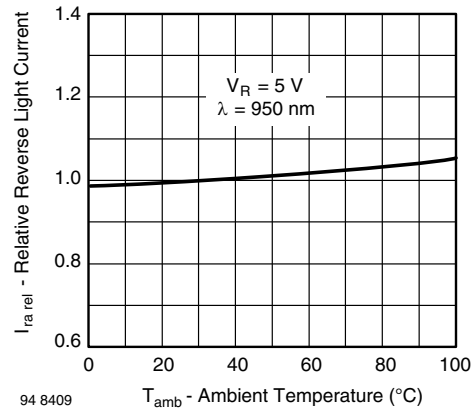
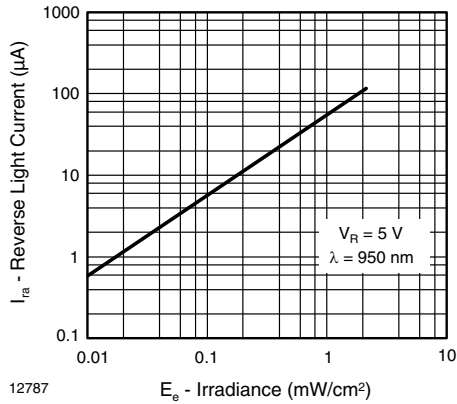
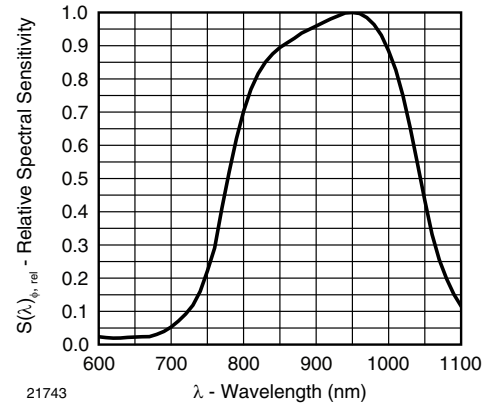


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



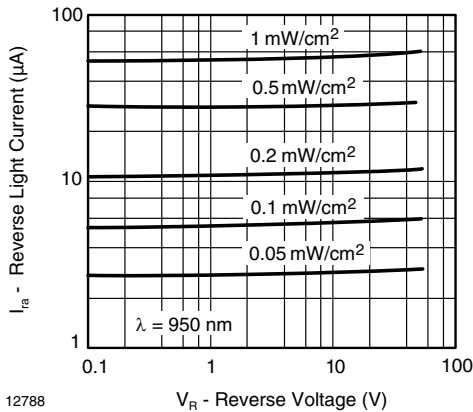
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Fig. 3 - Reverse Light Current vs. Irradiance



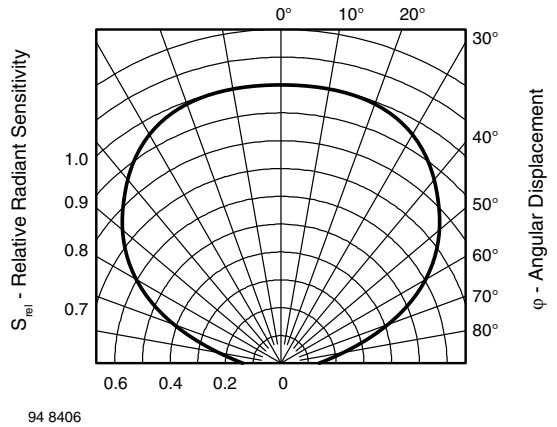
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Fig. 6 - Relative Spectral Sensitivity vs. Wavelength



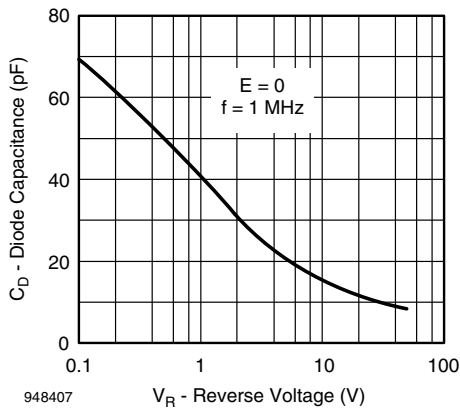
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Fig. 4 - Reverse Light Current vs. Reverse Voltage



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Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

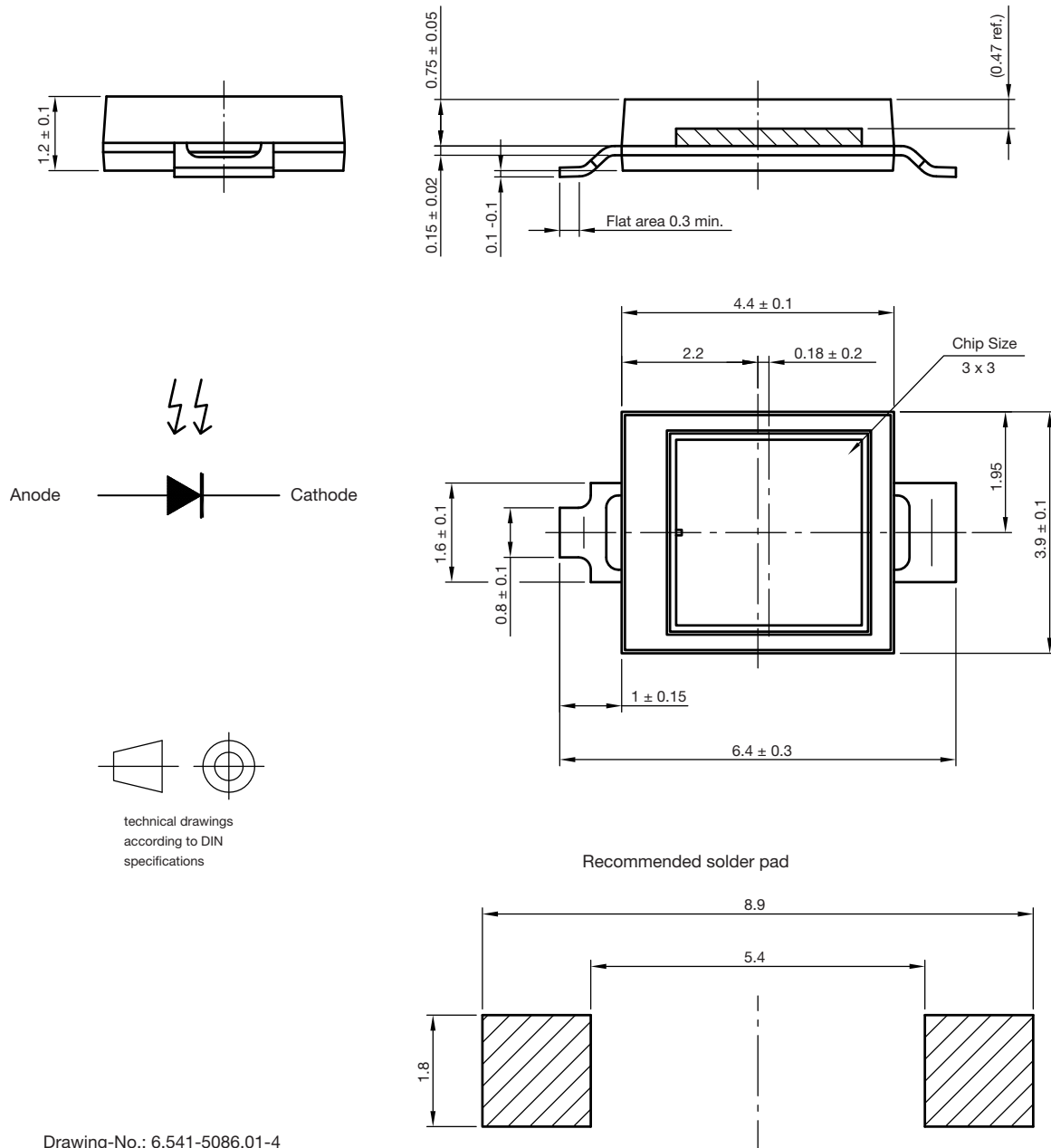


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Fig. 5 - Diode Capacitance vs. Reverse Voltage



PACKAGE DIMENSIONS FOR VBPW34FAS in millimeters



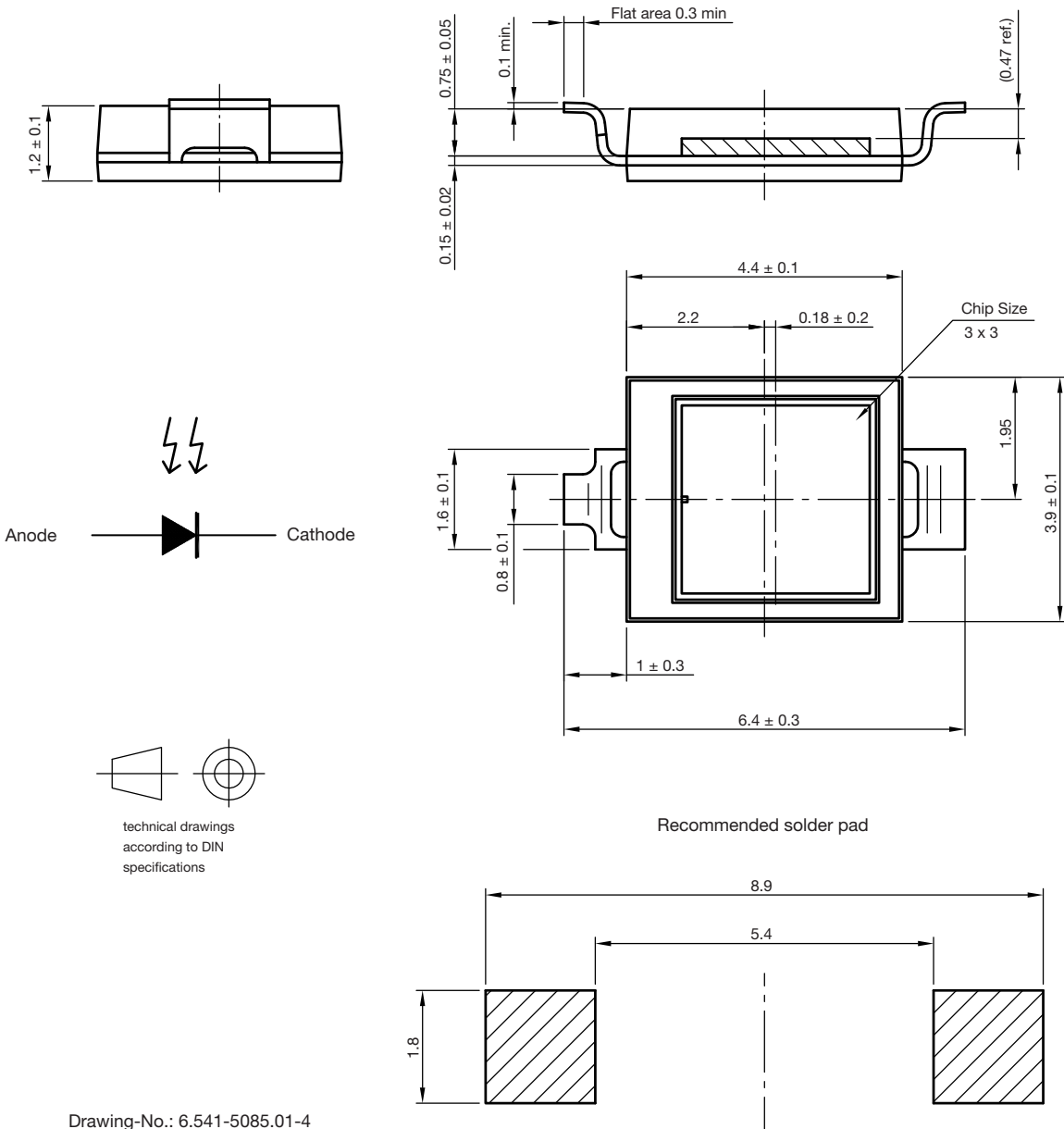
Drawing-No.: 6.541-5086.01-4

Issue: 1; 15.04.10

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PACKAGE DIMENSIONS FOR VBPW34FASR in millimeters



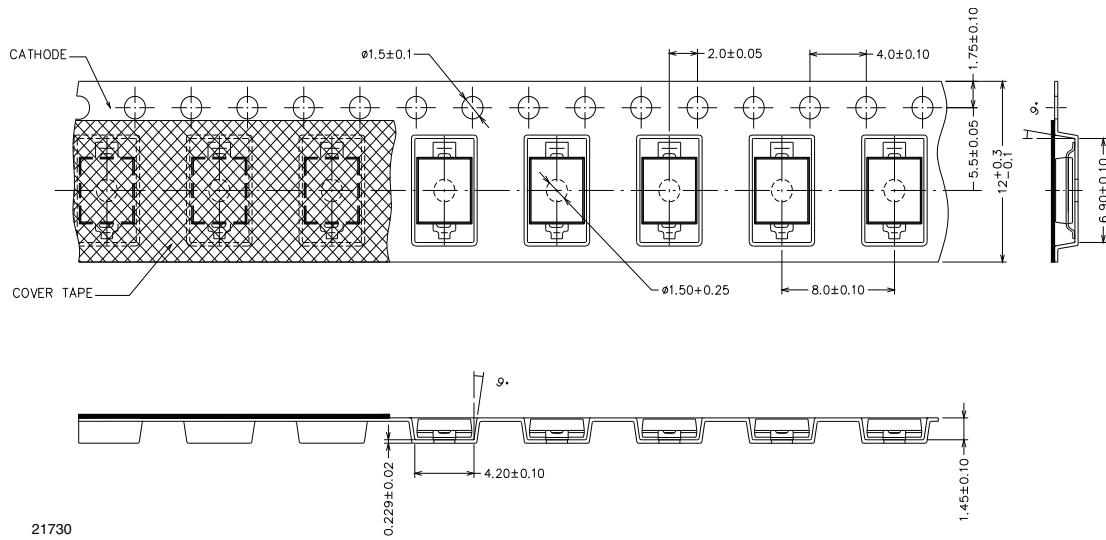
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Issue: 1; 15.04.10

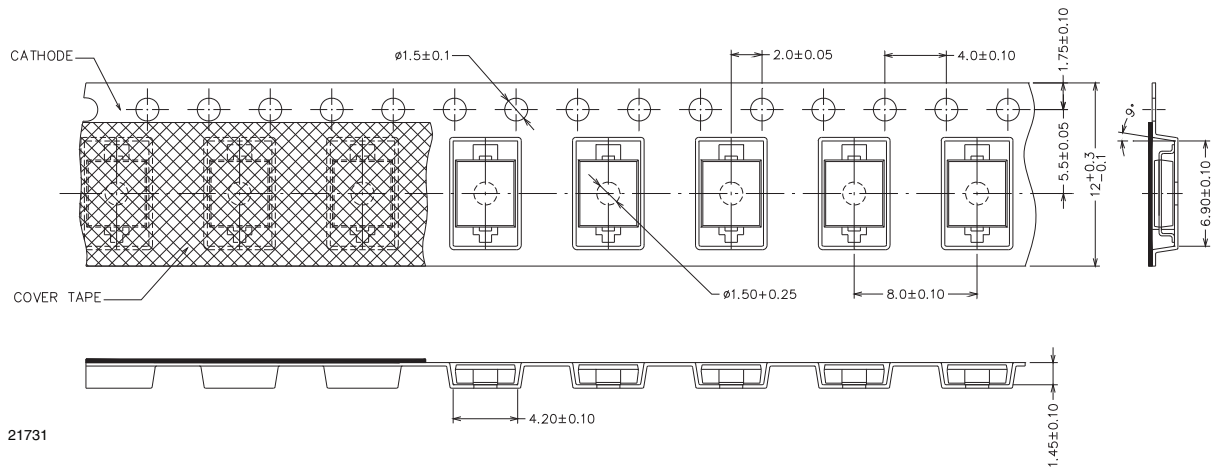
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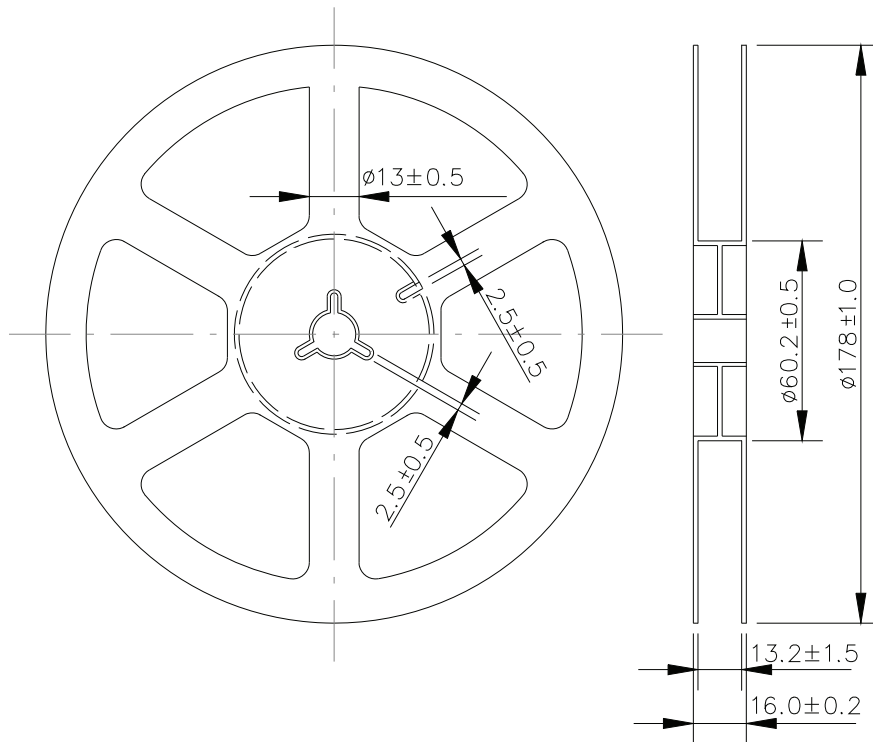
TAPING DIMENSIONS FOR VBPW34FAS in millimeters



TAPING DIMENSIONS FOR VBPW34FASR in millimeters

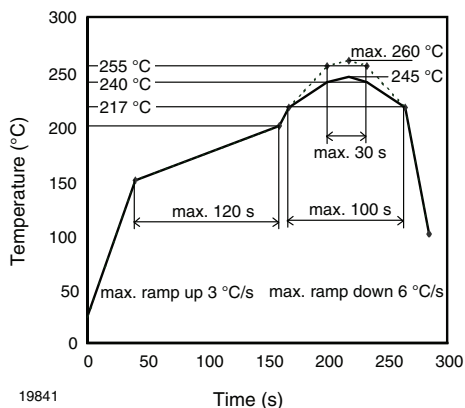


REEL DIMENSIONS FOR VBPW34FAS AND VBPW34FASR in millimeters



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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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