

## ACT BSXXXX & BNXXXX Series of Wireless ( RF ) Application Crystals

Optimised for WLAN / RF applications, the BS (5x3.2mm) and BN (3.2x2.5mm) crystals are packaged in ceramic base/metal lid, seam sealed, packages with the lid grounded via the base to assist with EMI reduction. This range of devices has been especially specified / optimised to meet with the frequency control demands of Bluetooth™, Zigbee™ and other WLAN / ISM Band Low Power Radio applications. Our standard specification range offers a wide range of devices to meet with most common application. Other tighter specifications are available also - Please enquire for these.



### Specification

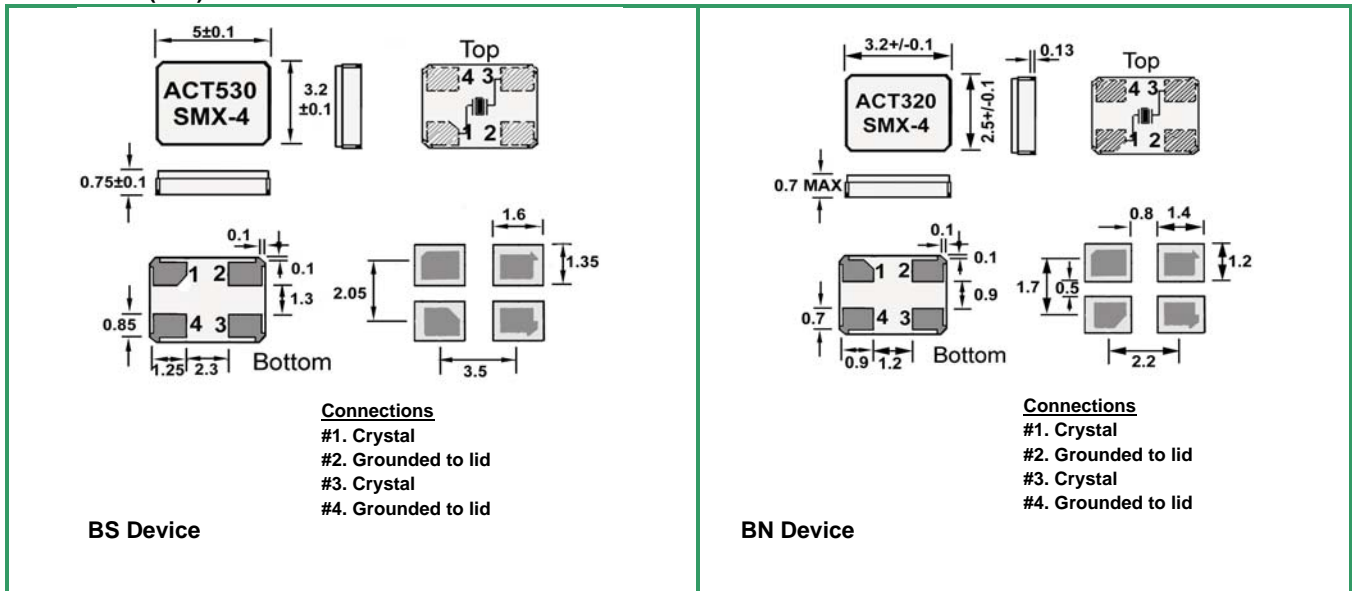
Parameter	Symbol	Specification		Condition
		BS Parts	BN Parts	
Frequency Range	fo	12~48MHz	14.7456 & 16~48MHz	AT Fundamental
Frequency Tolerance (@25°C)	$\Delta f/fo$	$\pm 10\text{ppm}$ ( $\pm 8\text{ppm}$ please enquire)		
Stability over temp range	Tc	$\pm 10\text{ppm}$ ( $\pm 8\text{ppm}$ please enquire)		
Temp Operating Range	Topr	-20~+70°C, -20~+85, -40~+85°C *		
Temp Storage Range	Tstg	-40 ~+85°C		
Equivalent Series Resistance	ESR			
		12~14.99MHz	60 $\Omega$ max	100 $\Omega$ max**
		15~19.99MHz	50 $\Omega$ max	60 $\Omega$ max**
		20~48MHz	50 $\Omega$ max	50 $\Omega$ max
Load Capacitance	CL	8~20pF 10,12,16pF std	8,9,10pF std 11,12pF available	( See Table 1 )
Shunt Capacitance	C0	5pF max		
Drive Level	DL	100 $\mu$ W max)		
Drive Level Dependency	DLD6	ESR min to max <1.3		Measurement steps:
	FLD	FL min to max <6ppm		0.01, 0.1, 1, 10, 50, 100 $\mu$ W
Insulation Resistance	IR	500M $\Omega$ min		@100V DC
Aging	Fa	$\pm 1\text{ppm}$ per/year (standard) (For $\pm 3\text{ppm}$ see ACT320/ACT530 series)		First year max @ 25°C

\* Please refer to Table 1, page 2.

\*\* Custom low ESR available. Please enquire

Pad Surface Material: Gold (Au)

### Dimensions (mm)



Please note that it may not be practical to combine certain specification parameters in one device.

Please refer to page two for standard specifications & part numbers

In line with our ongoing policy of product evolution and improvement, the above specification may subject to change without notice

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For quotations or further information please contact us at

3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK

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Table 1

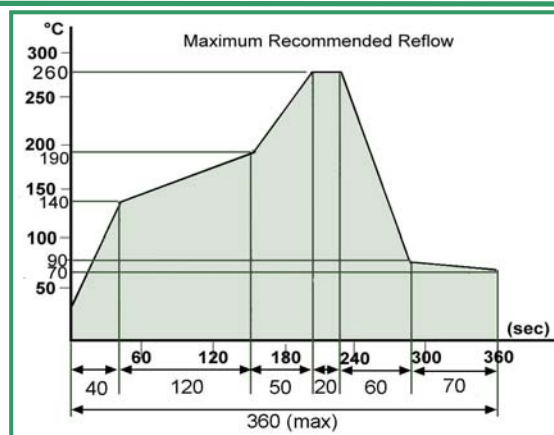
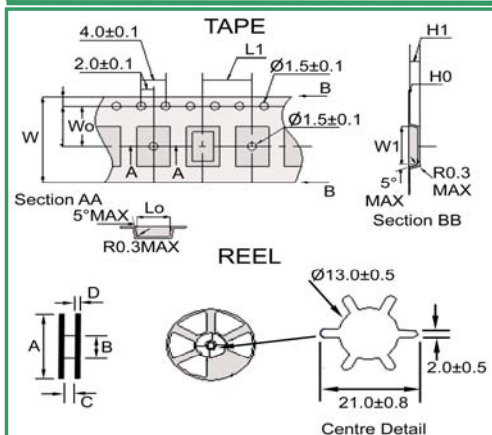
Package	Frequency (MHz)	Tolerance $\pm$ ppm	Stability $\pm$ ppm	Op/Temp °C	CL Range pF	RoHS	ACT PART No	Standard CL's
5x3.2	12.00	10	10	-20 ~ +70	8~20	Y	BS1200-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	13.00	10	10	-20 ~ +70	8~20	Y	BS1300-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	14.7456	10	10	-20 ~ +70	8~20	Y	BS1474-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	16.00	10	10	-20 ~ +70	8~20	Y	BS1600-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	20.00	10	10	-20 ~ +70	8~20	Y	BS2000-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	24.00	10	10	-20 ~ +70	8~20	Y	BS2400-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	26.00	10	10	-20 ~ +70	8~20	Y	BS2600-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	32.00	10	10	-20 ~ +70	8~20	Y	BS3200-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	40.00	10	10	-20 ~ +70	8~20	Y	BS4000-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	48.00	10	10	-20 ~ +70	8~20	Y	BS4800-WLxxSxx -PF	10pF, 12pF, 16pF
5x3.2	12.00	10	20	-20 ~ +85	8~20	Y	BS1200-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	14.7456	10	30	-20 ~ +85	8~20	Y	BS1474-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	16.00	10	10	-20 ~ +85	8~20	Y	BS1600-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	20.00	10	10	-20 ~ +85	8~20	Y	BS2000-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	24.00	10	10	-20 ~ +85	8~20	Y	BS2400-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	26.00	10	10	-20 ~ +85	8~20	Y	BS2600-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	32.00	10	10	-20 ~ +85*	8~20	Y	BS3200-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	40.00	10	10	-20 ~ +85*	8~20	Y	BS4000-WLxxMxx -PF	10pF, 12pF, 16pF
5x3.2	48.00	10	10	-20 ~ +85*	8~20	Y	BS4800-WLxxMxx -PF	10pF, 12pF, 16pF
3.2x2.5	14.7456	10	10	-20 ~ +70	8~20	Y	BN1474-WLxxSxx -PF	10pF, 12pF, 16pF
3.2x2.5	16.00	10	10	-20 ~ +70	8~12	Y	BN1600-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	20.00	10	10	-20 ~ +70	8~12	Y	BN2000-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	24.00	10	10	-20 ~ +70	8~12	Y	BN2400-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	26.00	10	10	-20 ~ +70	8~12	Y	BN2600-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	32.00	10	10	-20 ~ +70	8~12	Y	BN3200-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	40.00	10	10	-20 ~ +70	8~12	Y	BN4000-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	48.00	10	10	-20 ~ +70	8~12	Y	BN4800-WLxxSxx -PF	8pF, 9pF, 10pF
3.2x2.5	14.7456	10	30	-20 ~ +85	8~20	Y	BN1474-WLxxMxx -PF	10pF, 12pF, 16pF
3.2x2.5	16.00	10	10	-20 ~ +85	8~12	Y	BN1600-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	20.00	10	10	-20 ~ +85	8~12	Y	BN2000-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	24.00	10	10	-20 ~ +85	8~12	Y	BN2400-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	26.00	10	10	-20 ~ +85	8~12	Y	BN2600-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	32.00	10	10	-20 ~ +85*	8~12	Y	BN3200-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	40.00	10	10	-20 ~ +85*	8~12	Y	BN4000-WLxxMxx -PF	8pF, 9pF, 10pF
3.2x2.5	48.00	10	10	-20 ~ +85*	8~12	Y	BN4800-WLxxMxx -PF	8pF, 9pF, 10pF

## ACT PART NUMBER

BS	xxxx	WL	xx	S	1	C	PF
BS=5x3.2mm BN= 3x2.5mm	Frequency (MHz) e.g. 3200 is 32MHz		CL (pF) 08, 09, 10, 12, 16, (etc)		First year aging 1 = $\pm$ 1ppm(std)	C= 1000pcs Tape & reel L= Loose	RoHS comp. Standard
WLAN OPTIMISED SERIES $\pm$ 10ppm frequency tolerance				S= -20~+70°C (std) M= -20 ~ +85°C			

Tighter tolerance and stability specifications may be available to order (please enquire)

-20+85\*: For most frequencies 10/15/-40+85°C or 8/13/-30+85°C may be available. (Please enquire)



1000 pcs / reel Tolerance Dimension (mm)	TAPE								REEL			
	W	Wo	W1	Lo	L1	Ho	H1		A	B	C	D
	$\pm$ 0.2	$\pm$ 0.1	$\pm$ 0.1	$\pm$ 0.1	$\pm$ 0.1	$\pm$ 0.05	$\pm$ 0.1		+0/-3	+1/-0	$\pm$ 1.5	$\pm$ 0.5
BS Part	12.0	5.5	5.3	3.5	8.0	0.4	1.0		180	60	13.0	1.2
BN Part	8.0	3.5	3.5	2.8	4.0	0.5	0.75		180	60	9	1.2

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