

## ACT530SMX-4, ACT530SMX-2

The **ACT530SMX** family is a low cost, 4 & 2pad, high quality, low aging 5x3.2mm SMD Crystal Resonator in a ceramic base / metal lid package, seam welded for good long term reliability. The 4 pad device has the lid grounded via the package to reduce EMI issues. The wide frequency range and specification options ensure suitability for many applications.

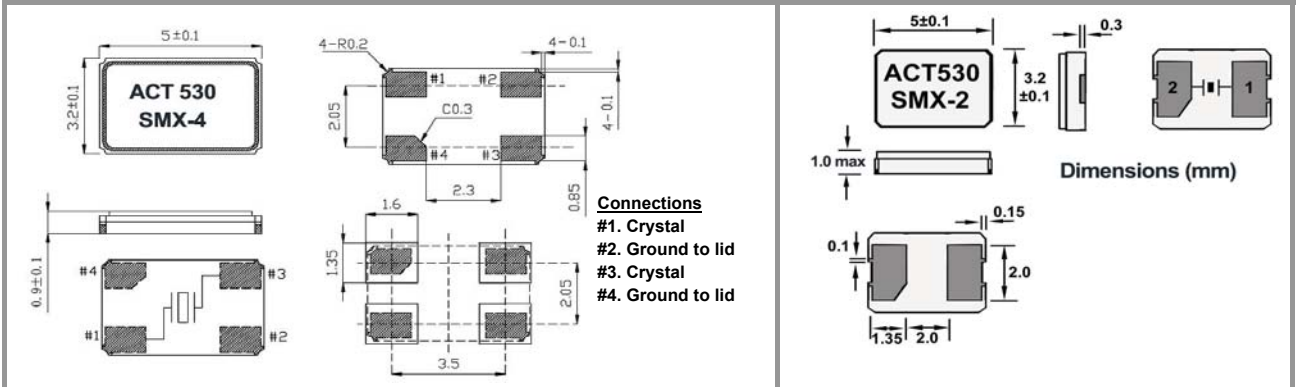
**APPLICATIONS:** Bluetooth, WLAN, Audio-visual, Pagers, Card readers, Cellular, PC & Accessories, Notebook, Audio-visual, Process Control, Consumer & Communications



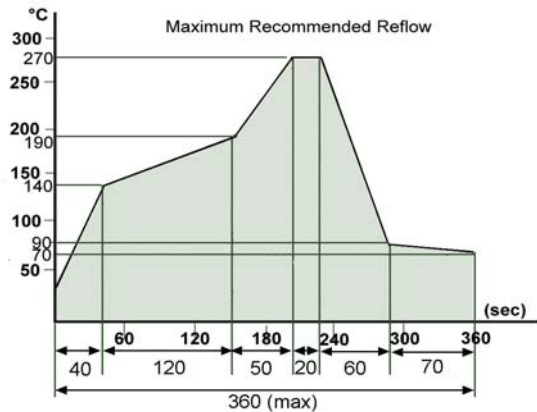
### Specification

Parameter	Symbol	Specification	Condition
Frequency Range	fo	10.0 ~ 48.0MHz ( Standard Range)	Please specify
Frequency Tolerance (@25±1°C)	Δf/fo	±10,±15,±20,±30 & ±50ppm(Std )	Table 2 Please specify
Stability over temp range	Tc	±5ppm ~ 50ppm (See table1, 2)	Please specify
Temp Operating Range	Topr	-20~+70°C & -40~+85°C Standard ( See table1, 2)	Please specify
Temp Storage Range	Tstg	-40 ~+85°C	
Equivalent Series Resistance	ESR	See table 2	
Load Capacitance	CL	8pF ~ 50pF & Series	(16,20 & 30pF Std. Please specify )
Shunt Capacitance	C0	5pF max	
Drive Level	DL	10μW typical (100μW max)	(Custom to 200μW available - Enquire)
Drive Level Dependency	DLD2 (Ω)	<12MHz 15max/ 12-20MHz 12 max />20MHz 10 max	0.01, 0.1,1,10,50,100μW steps
	FDLD	10 ppm max	
Insulation Resistance	IR	500MΩ min	@100V DC
Aging	Fa	±3ppm p/year	(First year max @ 25±5°C)

### Dimensions (mm)



### Reflow



Pad Surface Material: Gold (Au)

Please note that all parameters can not necessarily be specified in the same device  
 Customer to specify : Frequency, Frequency Tolerance, Temperature Stability, Operating Temperature & Load Capacitance  
 In line with our ongoing policy of product evolution and improvement, the above specification may subject to change without notice

ISO9001:2000 Registered

For quotations or further information please contact us at:  
 3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK

<http://www.actcrystals.com>

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 Date: 19-09-2012

## ACT530SMX-4(2)

Table 1

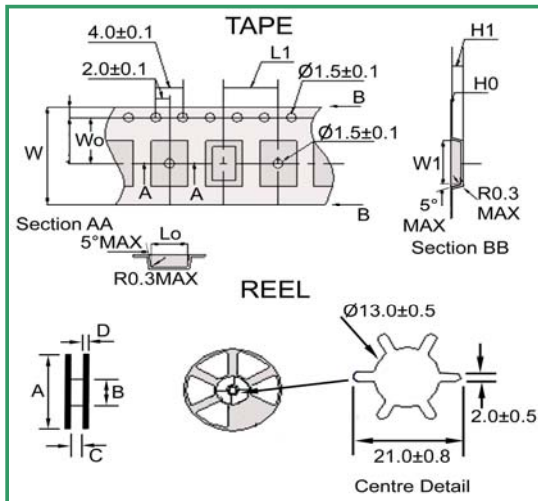
Stability Temp	+/- 5ppm	+/- 10ppm	+/- 20ppm	+/- 30ppm	+/- 50ppm	
0~+50°C	✦	✓	✓	✓	✓	✦ See Table 2
-10~+60°C	✦	✓	✓	✓	✓	
-20~+70°C		✓	✓	✓	✓	✓ Standard stabilities
-30~+80°C		✦	✦	✓	✓	
-40~+85°C		✦	✦	✓	✓	

Table 2

Fundamental Frequency	MAX ESR	Tightest Tolerance	Tightest stability ( Standard Operating Temp Range) Refer to Table 1
MHz	Ω	ppm	ppm
10MHz ~ ≤ 16MHz	100	±10 ppm	-40~+85C ±30ppm -20~ 70C ±10ppm
12MHz ~ ≤ 16MHz	80	±10 ppm	-40~+85C ±20ppm -20~ 70C ±10ppm
16MHz ~ ≤ 20MHz	60	±10 ppm	-40~+85C ±20ppm -20~ 70C ±10ppm
20MHz ~ ≤ 30MHz	40	±10 ppm	-40~+85C ±15ppm -20~ 70C ±10ppm
30MHz ~ ≤ 48MHz	30	±10 ppm	-40~+85C ±15ppm -20~ 70C ±10ppm

### Tape & Reel Specification (mm)

( Standard reel: 1K pcs each reel )



Tolerance Dimension	TAPE							REEL			
	W	Wo	W1	Lo	L1	Ho	H1	A	B	C	D
	±0.2	±0.1	±0.1	±0.1	±0.1	±0.1	±0.05	±0.1	±1.0	±0.2	±0.2
	12.0	5.5	5.4	3.6	8.0	0.3	1.5	178	62	12.5	2.0

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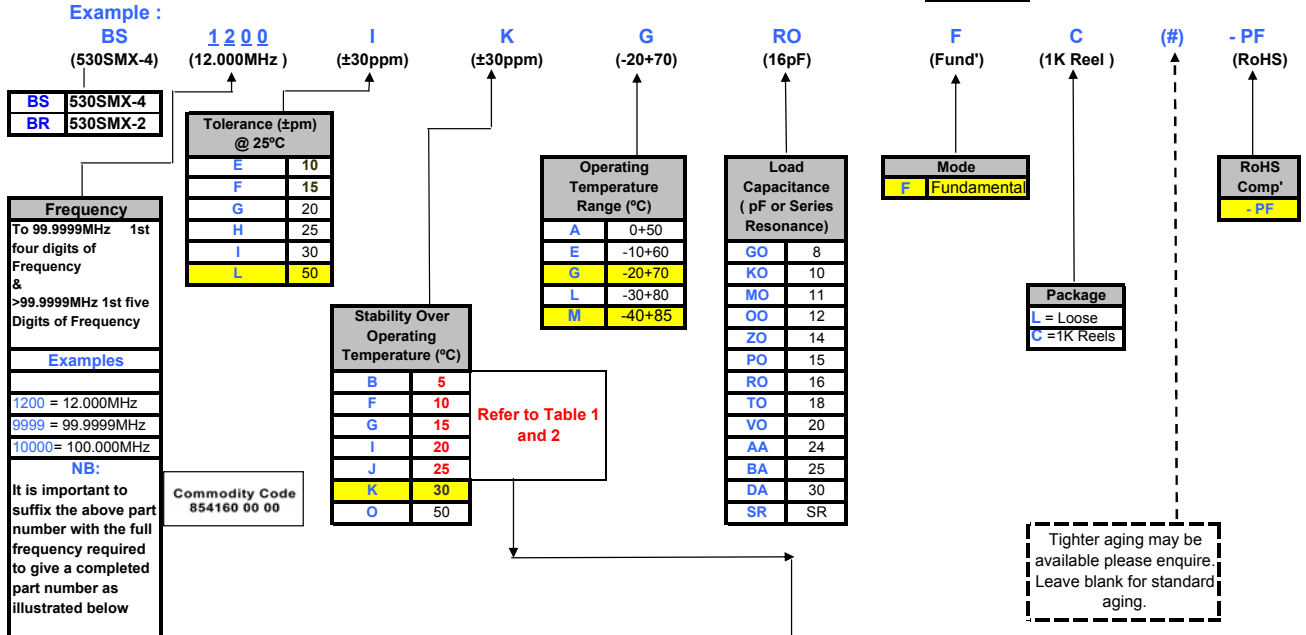
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**SERIES : ACT530MX-4 Part numbering code is BS**

  = Standard



**Frequency**  
 To 99.9999MHz 1st four digits of Frequency &  
 >99.9999MHz 1st five Digits of Frequency

**Examples**  
 1200 = 12.000MHz  
 9999 = 99.9999MHz  
 10000 = 100.000MHz

**NB:**  
 It is important to suffix the above part number with the full frequency required to give a completed part number as illustrated below

**Full Example Part Number**  
**BS1200IKGROFC-PF 12.00MHz**

Table 1

Stability Temp	+/- 5ppm	+/- 10ppm	+/- 20ppm	+/- 30ppm	+/- 50ppm	
0~+50°C	+	✓	✓	✓	✓	+ See Table 2
-10+60°C	+	✓	✓	✓	✓	
-20+70°C		✓	✓	✓	✓	✓ Standard stabilities
-30+80°C		+	+	✓	✓	
-40+85°C		+	+	✓	✓	

Table 2

Frequency MHz	MAX ESR $\Omega$	Tightest ppm	Tightest stability ppm (Standard T op)
Fundamental			
F <10MHz Specials	70	$\pm 10$ ppm	-40~+85C $\pm 30$ ppm 20~ 70C $\pm 10$ ppm
10MHz $\sim \leq 16$ MHz	100	$\pm 10$ ppm	-40~+85C $\pm 30$ ppm 20~ 70C $\pm 10$ ppm
12MHz $\sim \leq 16$ MHz	80	$\pm 10$ ppm	-40~+85C $\pm 20$ ppm 20~ 70C $\pm 10$ ppm
16MHz $\sim \leq 20$ MHz	60	$\pm 10$ ppm	-40~+85C $\pm 20$ ppm 20~ 70C $\pm 10$ ppm
20MHz $\sim \leq 30$ MHz	40	$\pm 10$ ppm	-40~+85C $\pm 15$ ppm 20~ 70C $\pm 10$ ppm
30MHz $\sim \leq 48$ MHz	30	$\pm 10$ ppm	-40~+85C $\pm 15$ ppm 20~ 70C $\pm 10$ ppm

**NOTES :**

- 1) Tighter Tolerances and Stabilities and other Operating Temperature Ranges may be available. As each of these specification parameters impact on each other, it is not always possible to combine all options in one device. Therefore, if a specification not catered for above is required, please contact us directly for the relevant part number code(s).
- 2) ACT are always happy to consider truly custom specification parts which may require non-standard specification parameters, specific testing, customer requested AQL requirements, non standard packaging or taping and reeling and custom marking. Such devices would normally be allocated a custom specification part number which is wholly customer specific.  
 ( EG : A 12.00MHz custom ACT530SMX-2 device may have a part number such as BS1200C- C1500-PF)
- 3) A guide to availability of tighter stabilities appears in the tables above.
- 4) Frequencies below 10.000MHz are prefixed with a "0" (eg: 0900 = 9MHz. Whereas 10.000MHz is 1000