

A2X Series 2.5 x 2.0 mm SMD Automotive Crystal Resonator

A : Automotive 2 : 2.5×2.0×0.55 mm | SMD2520-4P X : Crystal Resonator

Feature

- AT-cut Crystal Construction
- Ultra miniature Ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Pb-free and RoHS/Green compliant.
- AEC-Q200 Qualified

Applications

- Industrial Control & Automation
- ADAS
- LiDAR (Light Detection and Ranging)
- Power Control & Conversion



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	12.000		54.000	MHz	
Oscillation Mode		Fundamental (AT-cut)				
Frequency Tolerance	$\Delta f/f$			± 10	ppm	at 25°C $\pm 2^\circ\text{C}$
Operating Temperature	T _{use}	-40		85	°C	
		-40		105	°C	
		-40		125	°C	
Storage Temperature Range	T _{sta}	-55		125	°C	
Shunt Capacitance	C ₀			3	pF	
Drive Level	DL		10	100	μW	
Load Capacitance	CL	6		20	pF	
Insulation Resistance	IR			500	M Ω	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

Temp. \ FT	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$	$\pm 50\text{ppm}$
-40°C to +85°C	$\triangle$	★	★	★
-40°C to +105°C		$\triangle$	★	★
-40°C to +125°C			$\triangle$	★

★: Available $\triangle$: Conditional

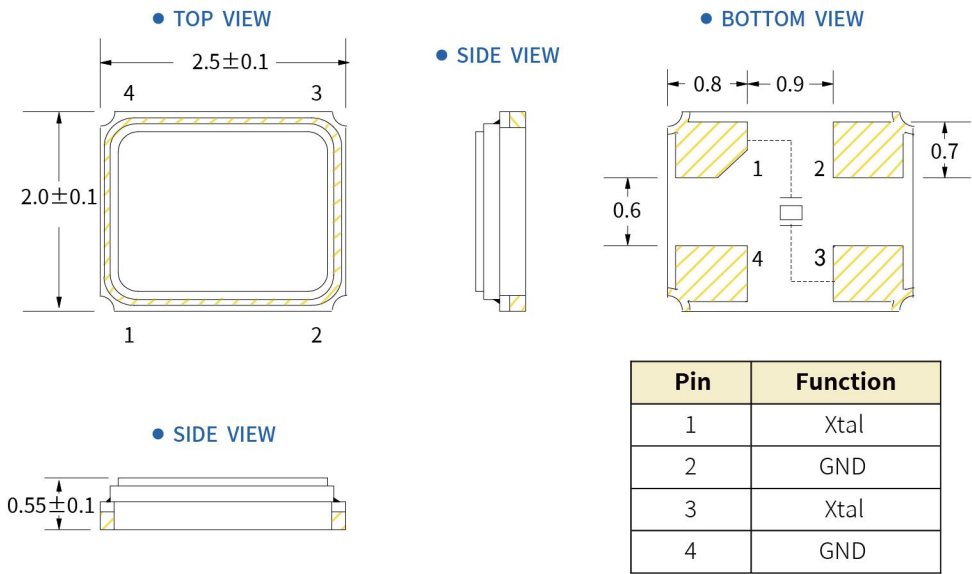
Equivalent Series Resistance

Frequency Range	ESR(Max.)
12MHz $\leq$ Freq. < 16MHz	200 Ω
16MHz $\leq$ Freq. < 20MHz	80 Ω
20MHz $\leq$ Freq. < 30MHz	60 Ω
30MHz $\leq$ Freq. < 35MHz	50 Ω
35MHz $\leq$ Freq. $\leq$ 54MHz	40 Ω

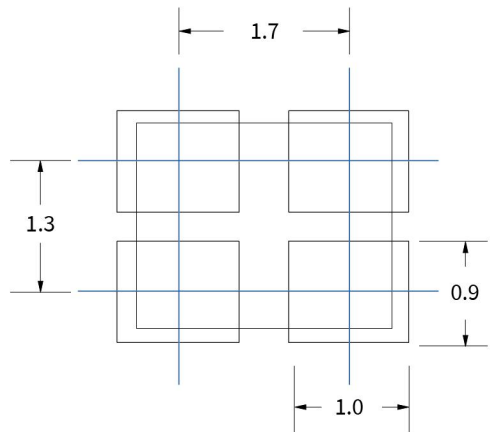
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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



Options and Part Identification : Example SXA2B12.000F1010G30

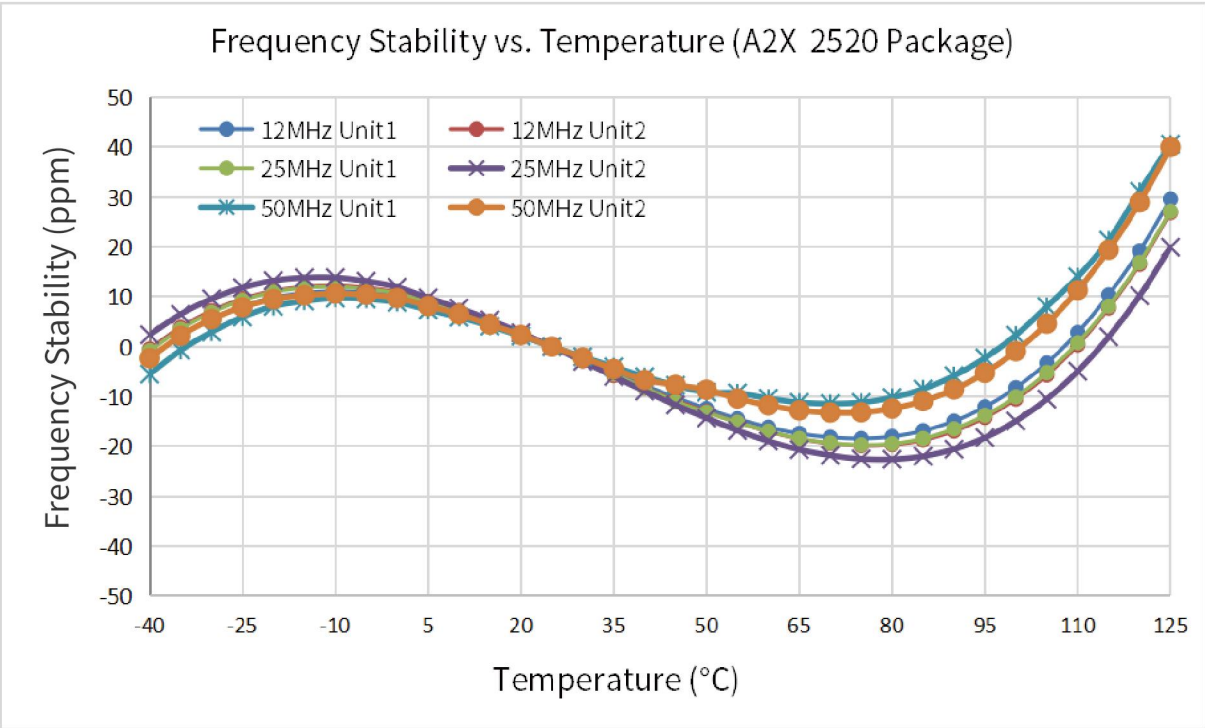
Company	Ratings	Ceramic Package	Frequency Code [MHz]	Vibration Mode	Load Capacitance	Frequency Tolerance	Operating Temperature	Frequency Drift
SX	A	2B	X.XXX	F	10	10	G	30
Code Company			Frequency	Code Vibration Mode		Code Frequency Tolerance		Code Frequency Drift
SX SCTF			12.000	F AT - Fundamental		10 ±10ppm 20 ±20ppm		15 ±15ppm 20 ±20ppm 30 ±30ppm 50 ±50ppm
	Code Ratings				Code Load Capacitance			
	Blank Standard				S Please specify CL in pF or S for series			
	A AEC-Q100, AEC-Q200				06 6pF 08 8pF 10 10pF 12 12pF 20 20pF		Code Operating Temperature	
		Code Ceramic Package					F -40°C ~ +85°C G -40°C ~ +105°C M -40°C ~ +125°C	
		0B 1.6 x 1.2 x 0.35mm [4PAD] 1B 2.0 x 1.6 x 0.45mm [4PAD] 2B 2.5 x 2.0 x 0.55mm [4PAD] 3B 3.2 x 2.5 x 0.7mm [4PAD] 5B 5.0 x 3.2 x 0.8mm [4PAD] 5A 5.0 x 3.2 x 0.8mm [2PAD]						

If you have other parameter requirements, you can contact **SCTF** at any time.

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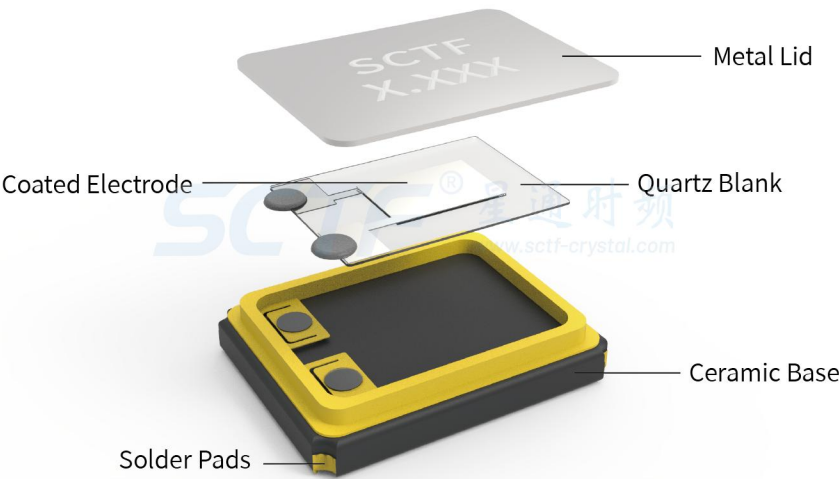
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Frequency Temperature Characteristics

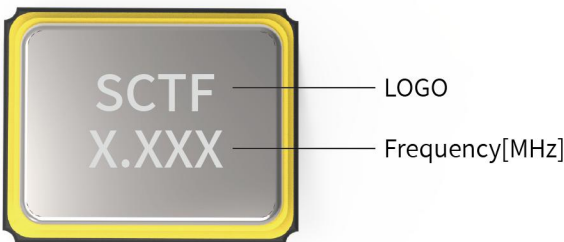


Product Structure&Marking Information

Product Structure



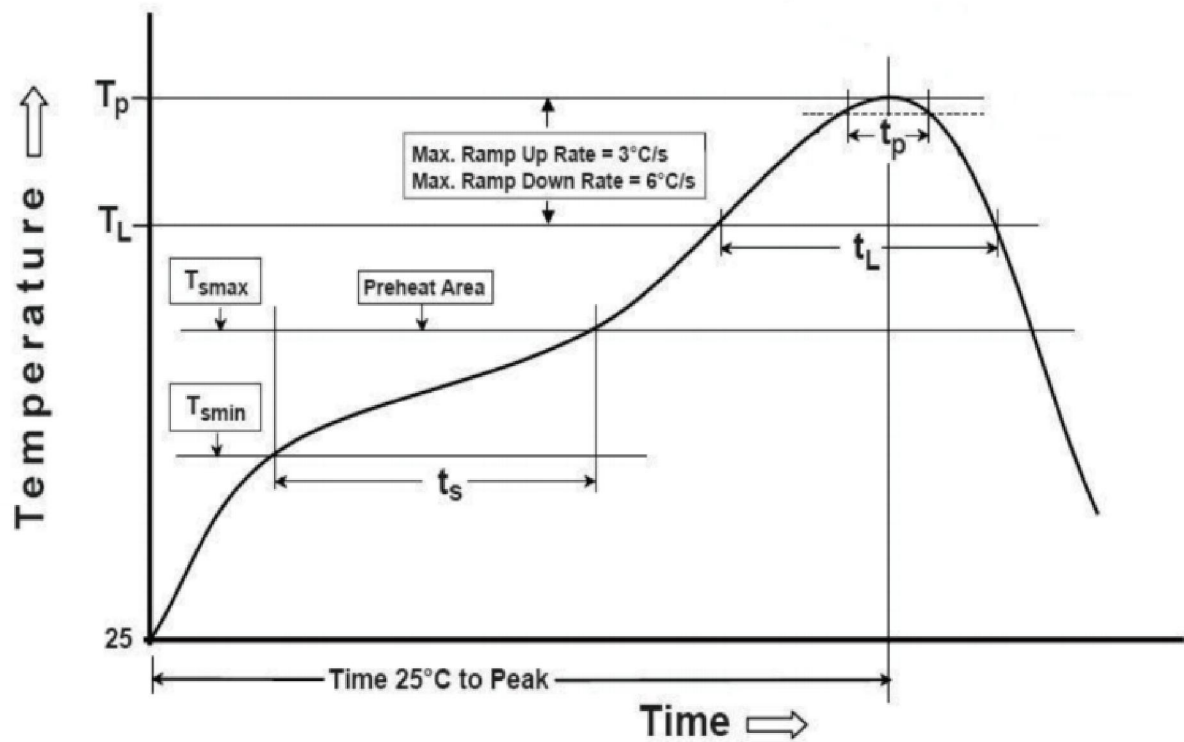
Marking Information



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Suggested Reflow Profile



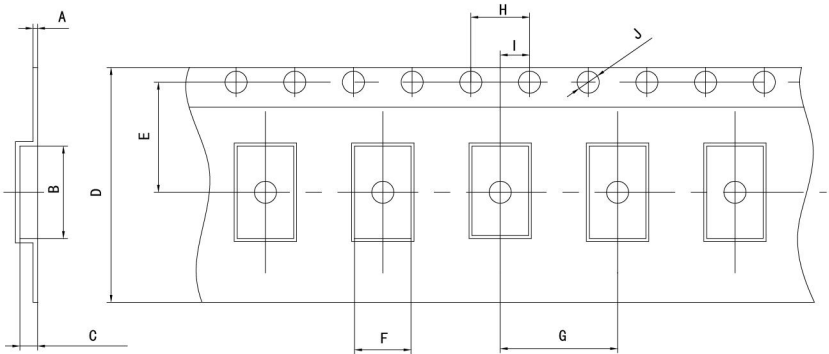
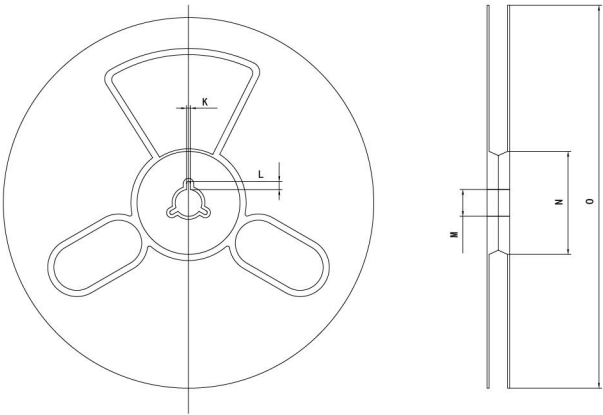
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (Ts min) ● Temperature Max (Ts max) ● Time (Ts min to Ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (TL to Tp)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (TL) ● Time (tL) maintained above TL	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time within 5° C of the specified classification temperature (Tp)	20 seconds	30 seconds
Ramp - down rate (Tp to TL)	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
Suggest reflow times	2 Times max.	

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Packaging Information

T=Tape and reel (3,000pcs/reel)



Pocket Tape Dimensions(mm)

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A2X	0.25±0.05	2.25±0.1	0.8±0.1	8.0±0.1	3.5±0.1	2.25±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ60±1	φ180±1

Common Frequencies – MHz

A2X Series				
12.000	12.288	14.31818	16.000	16.384
18.432	19.200	20.000	22.1184	22.5792
24.000	24.305	24.576	25.000	26.000
27.000	27.120	28.63636	30.000	32.000
37.400	38.400	40.000	48.000	50.000
52.000	54.000			