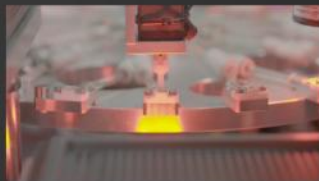


SCTF[®]



MHz 石英晶体

值得信赖的专业频率控制元件制造商



www.sctf-crystal.com

值得信赖的专业频率控制元件制造商



企业简介

Company introduction

Since 2003

专业研发、生产、销售系列石英晶体及振荡器产品

推行国际标准质量管理体系：ISO9001:2015、ISO14001: 2015、IATF16949: 2016

国家高新技术企业、专精特新企业、创新型中小型企业

符合ROHS、REACH标准

以客户为中心 视质量为生命

提供晶振及周边电路运用解决方案



SCTF 深圳市星通时频电子有限公司
SHENZHEN SCTF ELECTRONICS CO.,LTD

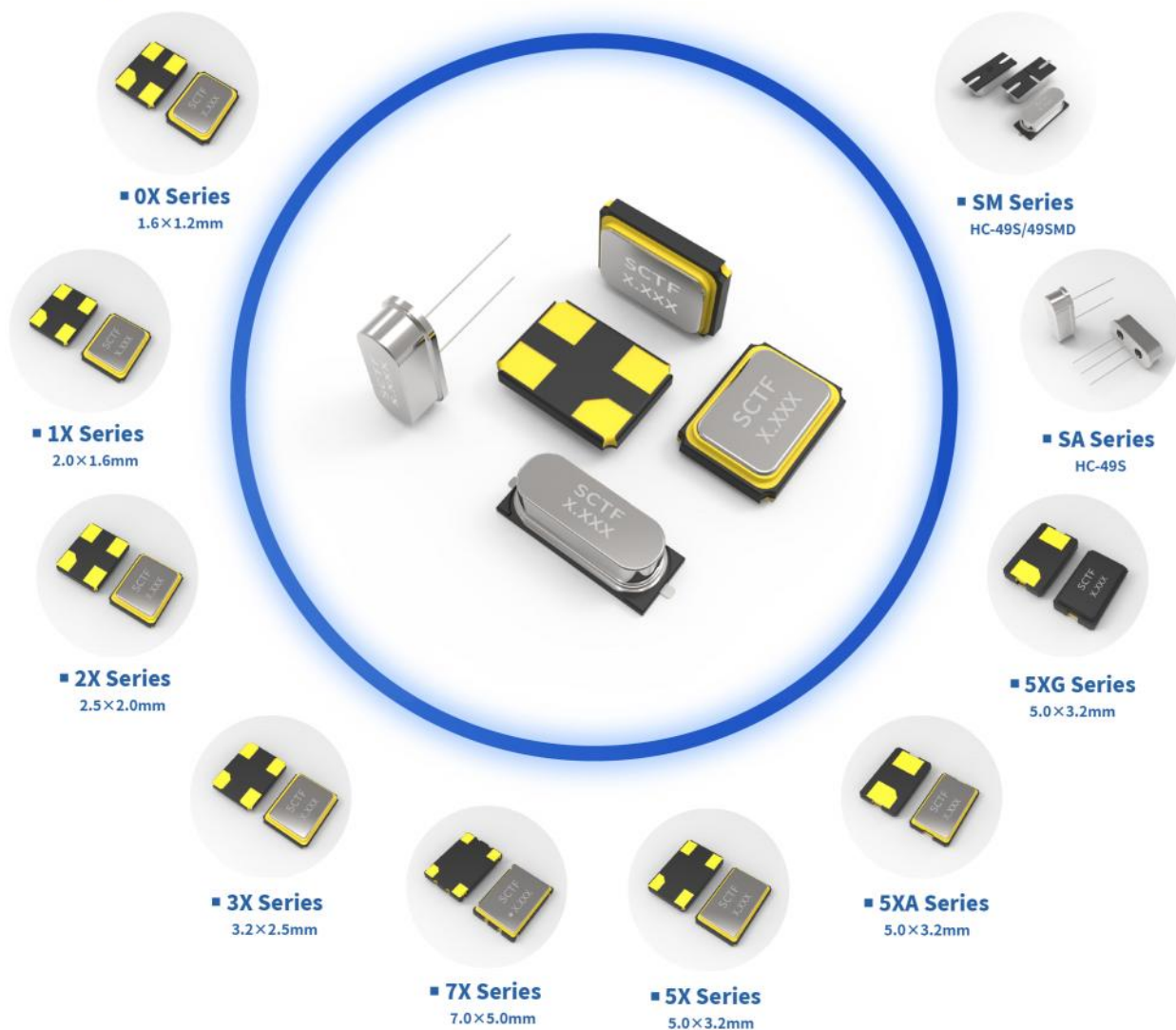
www.sctf-crystal.com

0755-86097105

sales@sctf-crystal.com

产品外观

Product Appearance



产品结构

Product Structure



产品选型指南

Product Selection Guide

Item Series	Size [mm]		PADS	Frequency Range [MHz]	Load Capacitance [pF]	Frequency Tolerance [@25°C; ±ppm]	Frequency Drift [±ppm]	Operating Temperature	
	L	W							
0X	1.6	1.2	4	24 ~ 54	6 ~ 20	10	20 30	-20°C~+70°C -40°C~+85°C	
1X	2.0	1.6		16 ~ 54					
2X	2.5	2.0		12 ~ 54					
3X	3.2	2.5		8 ~ 54					
5X	5.0	3.2		8 ~ 50	8 ~ 20	10 / 20			
7X	7.0	5.0		6 ~ 50					
5XA	5.0	3.2	2	8 ~ 50					
5XG									
SA	10.8	4.5		3.2 ~ 48					
SM	12.5								

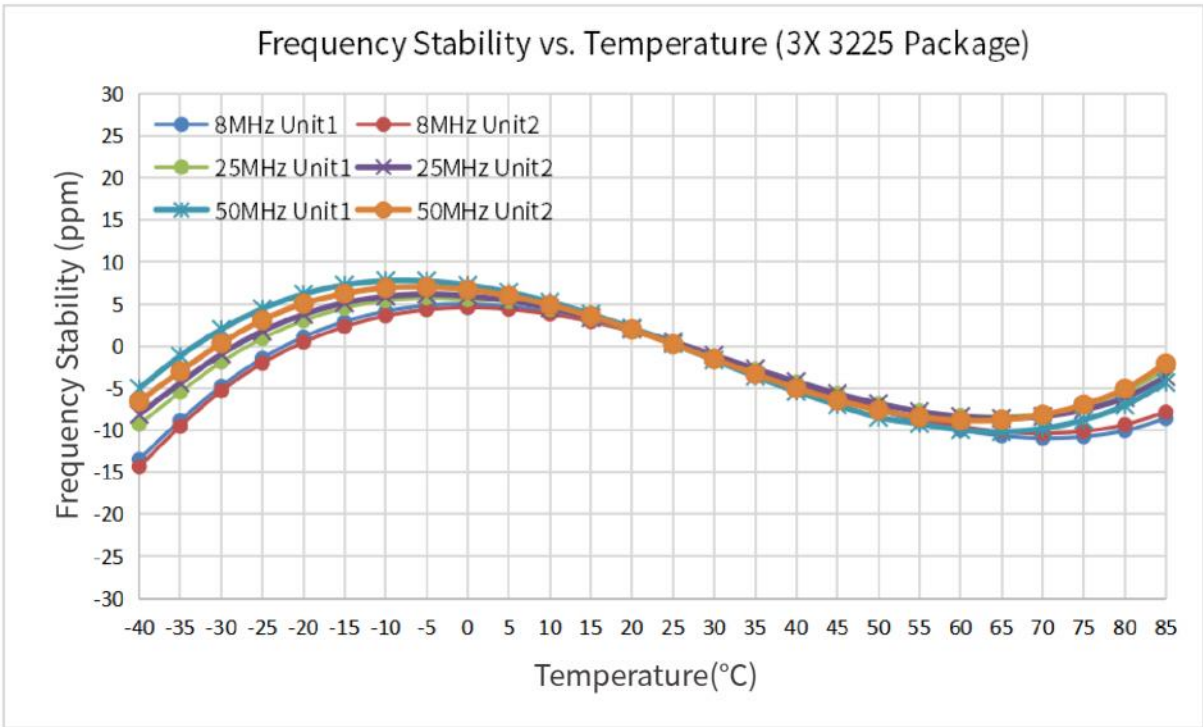
若需要更详细的资料请查询详细规格书或和我们的技术人员联系。

- 1. 选择需要的封装规格及产品系列：2.0×1.6mm;1X Series
- 2. 选择需要的频率：16.000MHz
- 3. 确定负载电容值 (CL)：12pF (指定负载请提供参数)
- 4. 选择需要的频率精度 (@+25°C)：±10ppm
- 5. 选择需要的工作温度范围：-40°C ~ +85°C
- 6. 选择需要的频率&温度特性：±30ppm

您需要的产品是：1X Series 16.000MHz 12pF ±10ppm@25°C ±30ppm@-40~+85°C

频率温度特性曲线

Frequency Temperature Characteristics



零部件编码示意

Options and Part Identification

Options and Part Identification : Example SX3B25.000F1210F30

Company	Ceramic Package	Frequency Code [MHZ]	Vibration Mode	Load Capacitance	Frequency Tolerance	Operating Temperature	Frequency Drift	Material
SX	3B	X.XXX	F	12	10	F	30	
Code Company		Frequency	Code Vibration Mode		Code Frequency Tolerance		Code Frequency Drift	Code Others
SX SCTF		8.000	F AT - Fundamental		10 ±10ppm		15 ±15ppm	Blank Ceramic Seam
		13.560			20 ±20ppm		20 ±20ppm	G Glass Seal
		19.200					30 ±30ppm	
		24.576						
Code Ceramic Package				Code Load Capacitance		Code Operating Temperature		
0B 1.6 x 1.2 x 0.35mm [4PAD]				S Please specify CL in pf or S for series		E -20°C ~ +70°C		
1B 2.0 x 1.6 x 0.45mm [4PAD]				06 6pF		F -40°C ~ +85°C		
2B 2.5 x 2.0 x 0.55mm [4PAD]				08 8pF				
3B 3.2 x 2.5 x 0.7mm [4PAD]				10 10pF				
5B 5.0 x 3.2 x 0.8mm[4PAD]				12 12pF				
5A 5.0 x 3.2 x 0.8mm[2PAD]				20 20pF				
7B 7.0 x 5.0 x 1.0mm[4PAD]								
5A* 5.0 x 3.2 x 1.4mm[2PAD]								
SA 10.8 x 4.5 x 3.38mm[HC-49S]								
MH 12.5 x 4.5 x 4.1mm[HC-49SMD]								

5A* : This series of products adopts glass seal packaging process, the reference code example is: SX5A25.000F1210F30G.

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

0X Series 1.6 x 1.2 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ultra thin Seam sealed ceramic surface mount
- Package Size: 1.6 x 1.2 x 0.35 mm
- Pb-free and RoHS/Green compliant

Applications

- Audio Devices
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	24.000		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}	-20		+70	°C	
		-40		+85	°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	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

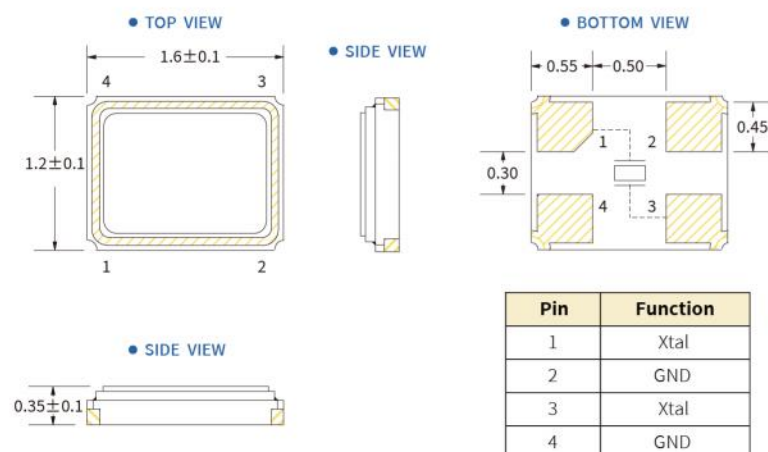
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	$\triangle$	★	★	★
-40°C to +85°C		$\triangle$	★	★

★: Available $\triangle$: Conditional

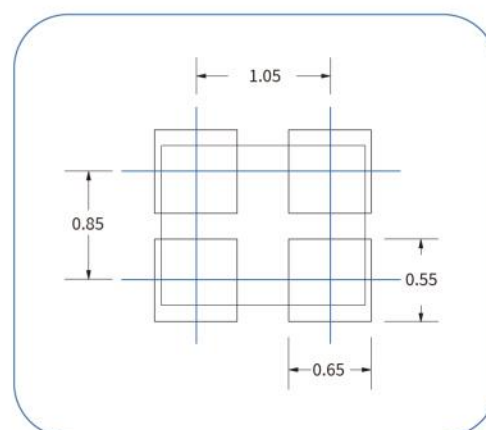
Equivalent Series Resistance

Frequency Range	ESR(Max.)
24MHz $\leq$ Freq. < 32MHz	200 Ω
32MHz $\leq$ Freq. < 36MHz	100 Ω
36MHz $\leq$ Freq. $\leq$ 54MHz	80 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



1X Series 2.0 x 1.6 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ultra miniature Seam sealed ceramic surface mount
- High temperature, high precision and reliability Characteristics
- Package Size: 2.0 x 1.6 x 0.45mm
- Pb-free and RoHS/Green compliant

Applications

- Audio Devices
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	16.000		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}	-20		+70	°C	
		-40		+85	°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	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

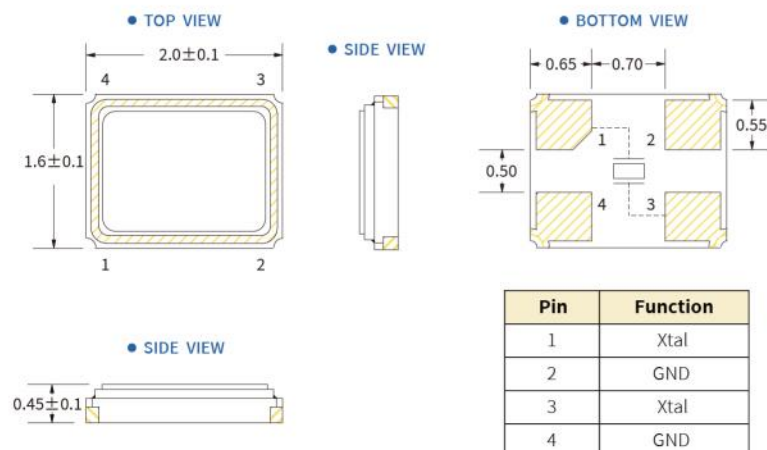
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

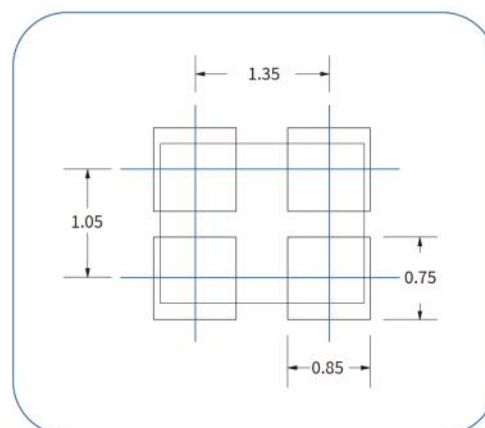
Equivalent Series Resistance

Frequency Range	ESR(Max.)
16MHz $\leq$ Freq. < 24MHz	200 Ω
24MHz $\leq$ Freq. < 26MHz	80 Ω
26MHz $\leq$ Freq. < 40MHz	60 Ω
40MHz $\leq$ Freq. $\leq$ 54MHz	50 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



2X Series 2.5 x 2.0 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ultra miniature Ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Package Size: 2.5 x 2.0 x 0.55mm
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



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}	-20		+70	°C	
		-40		+85	°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	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

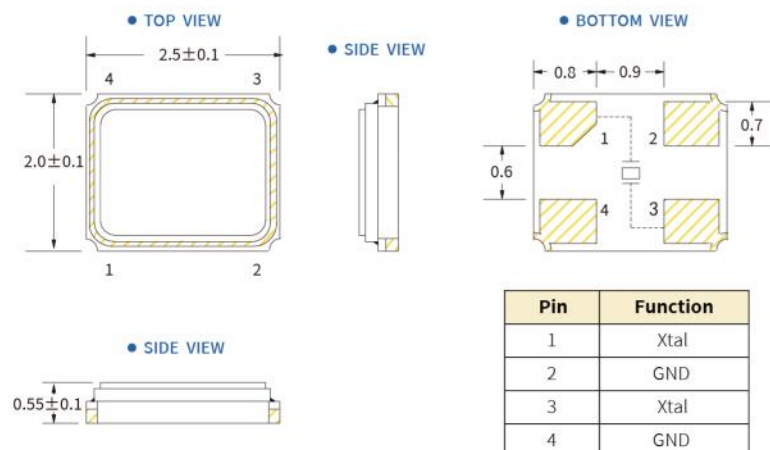
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	$\triangle$	★	★	★
-40°C to +85°C		$\triangle$	★	★

★: Available $\triangle$: Conditional

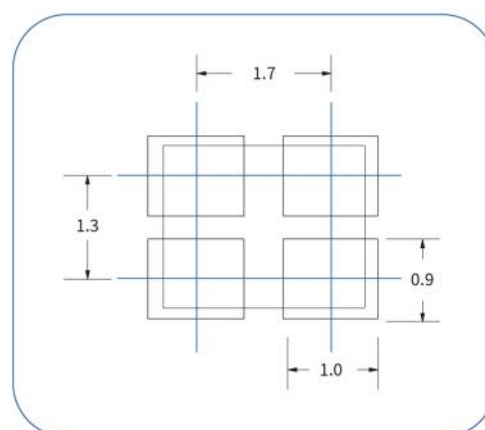
Equivalent Series Resistance

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

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



3X Series 3.2 x 2.5 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ultra miniature ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Package Size: 3.2 x 2.5 x 0.7mm
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	8.000		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}	-20		+70	°C	
		-40		+85	°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	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

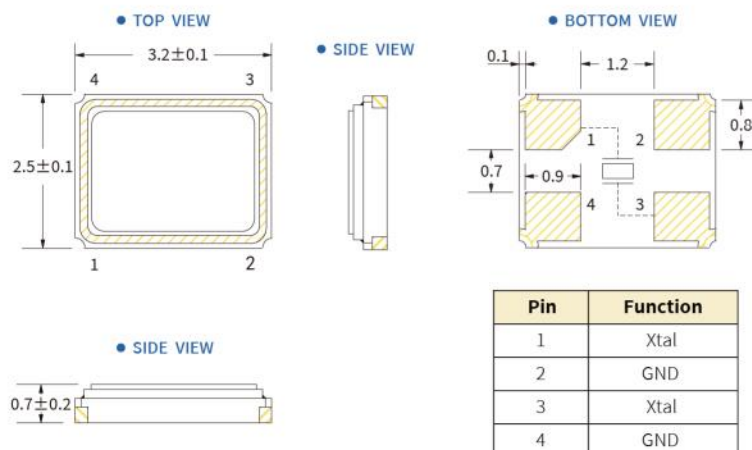
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

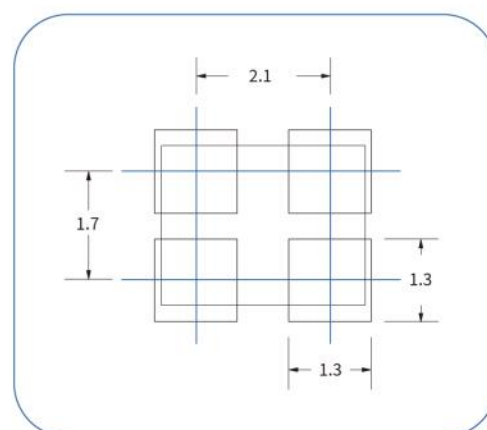
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz ≤ Freq. < 10MHz	300 Ω
10MHz ≤ Freq. < 16MHz	100 Ω
16MHz ≤ Freq. < 20MHz	60 Ω
20MHz ≤ Freq. ≤ 54MHz	30 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



5X Series 5.0 x 3.2 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Miniature Ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Package Size: 5.0 x 3.2 x 0.8mm
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	8.000		50.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			5	pF	
Drive Level	DL		10	300	μW	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

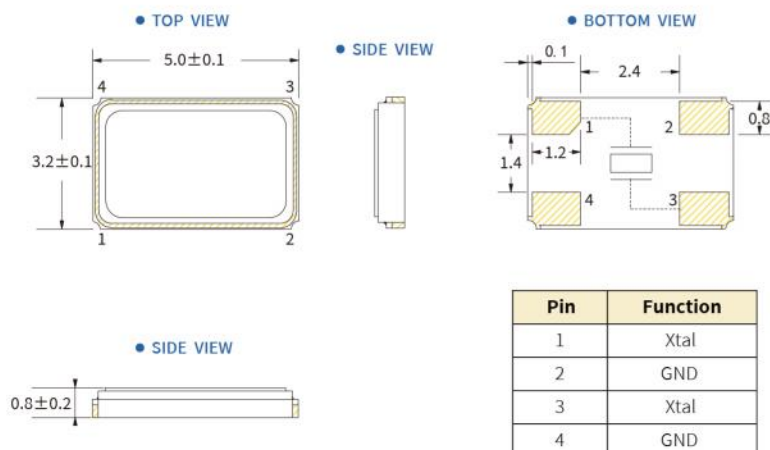
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	$\triangle$	★	★	★
-40°C to +85°C		$\triangle$	★	★

★: Available $\triangle$: Conditional

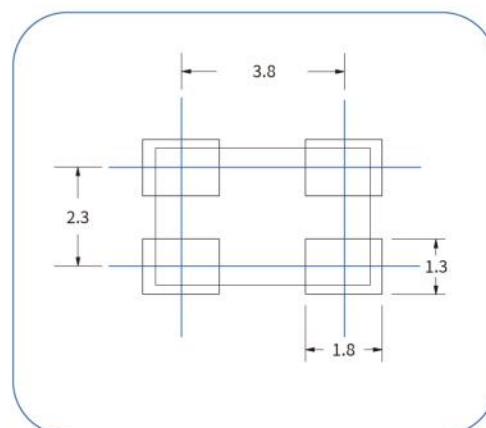
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz $\leq$ Freq. < 10MHz	100 Ω
10MHz $\leq$ Freq. < 16MHz	80 Ω
16MHz $\leq$ Freq. < 20MHz	50 Ω
20MHz $\leq$ Freq. < 24MHz	40 Ω
24MHz $\leq$ Freq. $\leq$ 50MHz	30 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



5XA Series 5.0 x 3.2 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Miniature Ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Package Size: 5.0 x 3.2 x 0.8mm (2PAD)
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	8.000		50.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			5	pF	
Drive Level	DL		10	300	μW	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

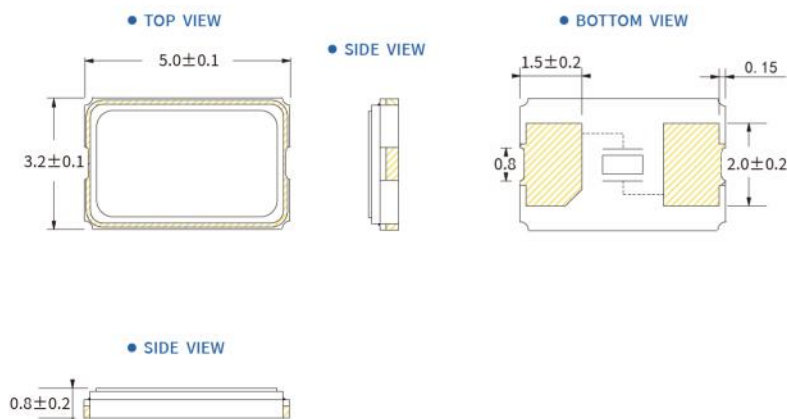
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

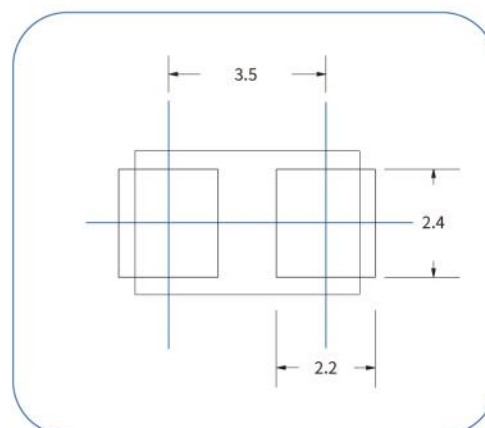
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz $\leq$ Freq. < 10MHz	100 Ω
10MHz $\leq$ Freq. < 16MHz	80 Ω
16MHz $\leq$ Freq. < 20MHz	50 Ω
20MHz $\leq$ Freq. < 24MHz	40 Ω
24MHz $\leq$ Freq. $\leq$ 50MHz	30 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



5XG Series 5.0 x 3.2 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ceramic surface mount with glass sealed
- Package Size: 5.0 x 3.2 x 1.4mm (2PAD)
- Excellent heat resistance, high precision, and high reliability.
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	8.000		50.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			5	pF	
Drive Level	DL		10	300	μW	
Load Capacitance	CL	8		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

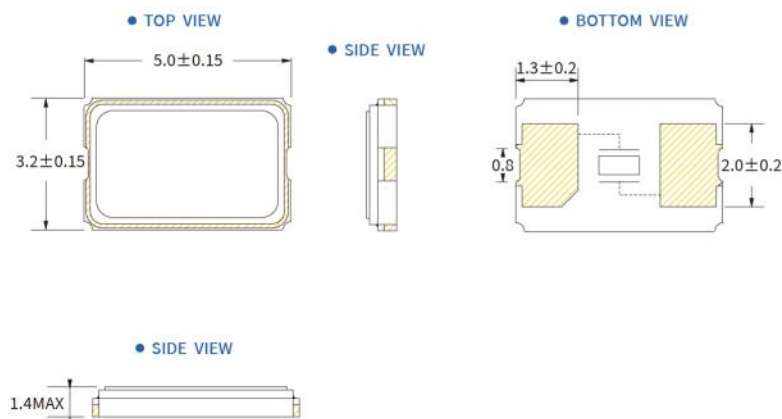
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

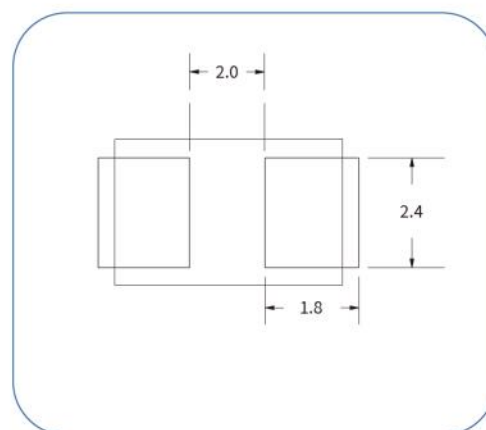
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz $\leq$ Freq. <10MHz	100 Ω
10MHz $\leq$ Freq. <12MHz	80 Ω
12MHz $\leq$ Freq. <16MHz	60 Ω
16MHz $\leq$ Freq. <20MHz	50 Ω
20MHz $\leq$ Freq. <24MHz	40 Ω
24MHz $\leq$ Freq. $\leq$ 50MHz	30 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



7X Series 7.0 x 5.0 mm SMD Crystal

Feature

- AT-cut Crystal Construction
- Ceramic surface mount with Metal Lid
- Package Size: 7.0 x 5.0 x 1.0mm
- Excellent heat resistance, high precision, and high reliability
- Pb-free and RoHS/Green compliant

Applications

- Industrial applications
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	6.000		50.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			5	pF	
Drive Level	DL		100	300	μW	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	MΩ	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

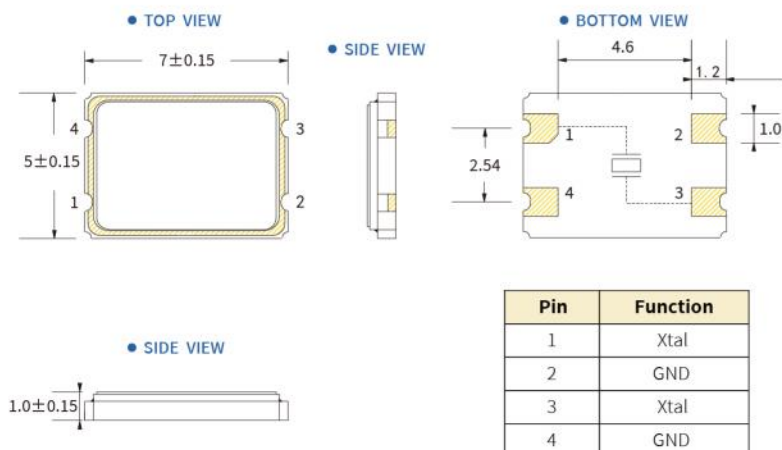
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

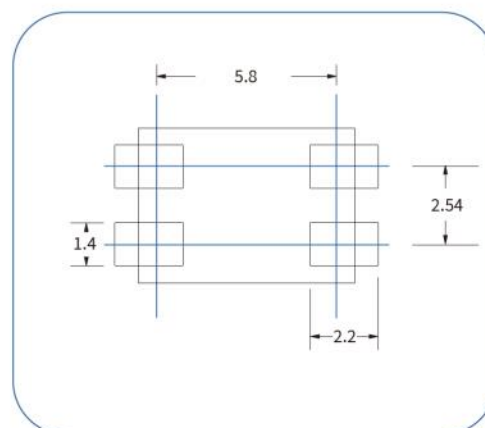
Equivalent Series Resistance

Frequency Range	ESR(Max.)
6MHz $\leq$ Freq. < 8MHz	100 Ω
8MHz $\leq$ Freq. < 10MHz	60 Ω
10MHz $\leq$ Freq. < 14MHz	50 Ω
14MHz $\leq$ Freq. < 20MHz	40 Ω
20MHz $\leq$ Freq. $\leq$ 50MHz	30 Ω

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



SA Series 10.8 x 4.5 mm Crystal

Feature

- Low profile resistance weld type Thru Hole quartz crystal.
- High reliability & Low cost.
- Tight stability & extended temperature
- Pb-free and RoHS/Green compliant

Applications

- Consumer Electronics
- Home Devices
- Communication, Test equipment
- Portable Devices



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	3.200		48.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			7	pF	
Drive Level	DL		100	500	μW	
Load Capacitance	CL	8		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

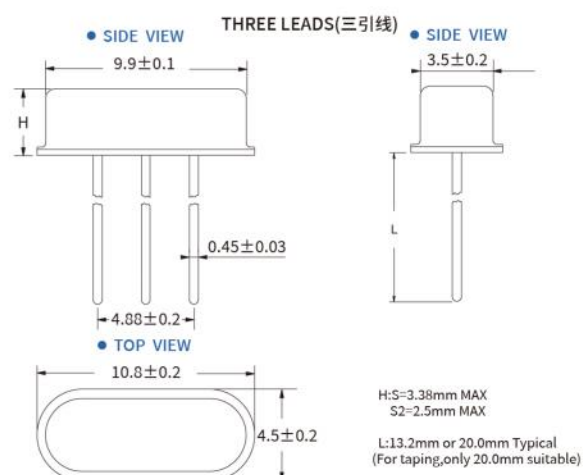
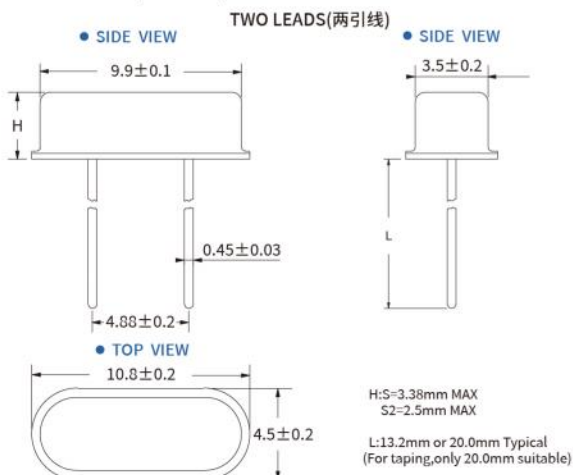
Temp.	FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★	★
-40°C to +85°C		Δ	★	★	★

★: Available Δ : Conditional

Equivalent Series Resistance

Frequency Range	ESR(Max.)
3.2MHz $\leq$ Freq. < 3.579MHz	150 Ω
3.579 MHz $\leq$ Freq. < 4MHz	120 Ω
4MHz $\leq$ Freq. < 5MHz	100 Ω
5MHz $\leq$ Freq. < 6MHz	80 Ω
6MHz $\leq$ Freq. < 10MHz	60 Ω
10MHz $\leq$ Freq. < 14MHz	35 Ω
14MHz $\leq$ Freq. < 20MHz	30 Ω
20MHz $\leq$ Freq. $\leq$ 48MHz	25 Ω

Dimensions (UNIT:mm)



SM Series 12.5 x 4.5 mm Crystal

Feature

- Hermetically sealed quartz crystal in resistance-welded SMD and through hole packages.
- High reliability & Low cost.
- Tight stability & extended temperature
- Pb-free and RoHS/Green compliant

Applications

- Consumer Electronics
- Home Devices
- Communication, Test equipment
- Portable Devices



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	3.200		48.000	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}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{sta}	-55		+125	°C	
Shunt Capacitance	C ₀			7	pF	
Drive Level	DL		100	500	μW	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	M Ω	at DC 100V
Aging	f _{age}			3	ppm	1st. Year at 25°C

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Dimensions (UNIT:mm)

