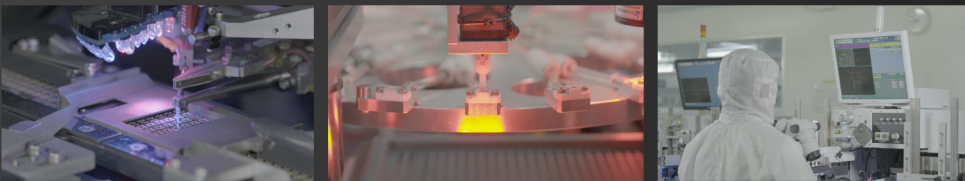


SCTF[®]



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

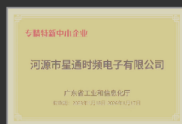
推行国际标准质量管理体系：ISO9001:2015、ISO14001: 2015、IATF16949: 2016

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

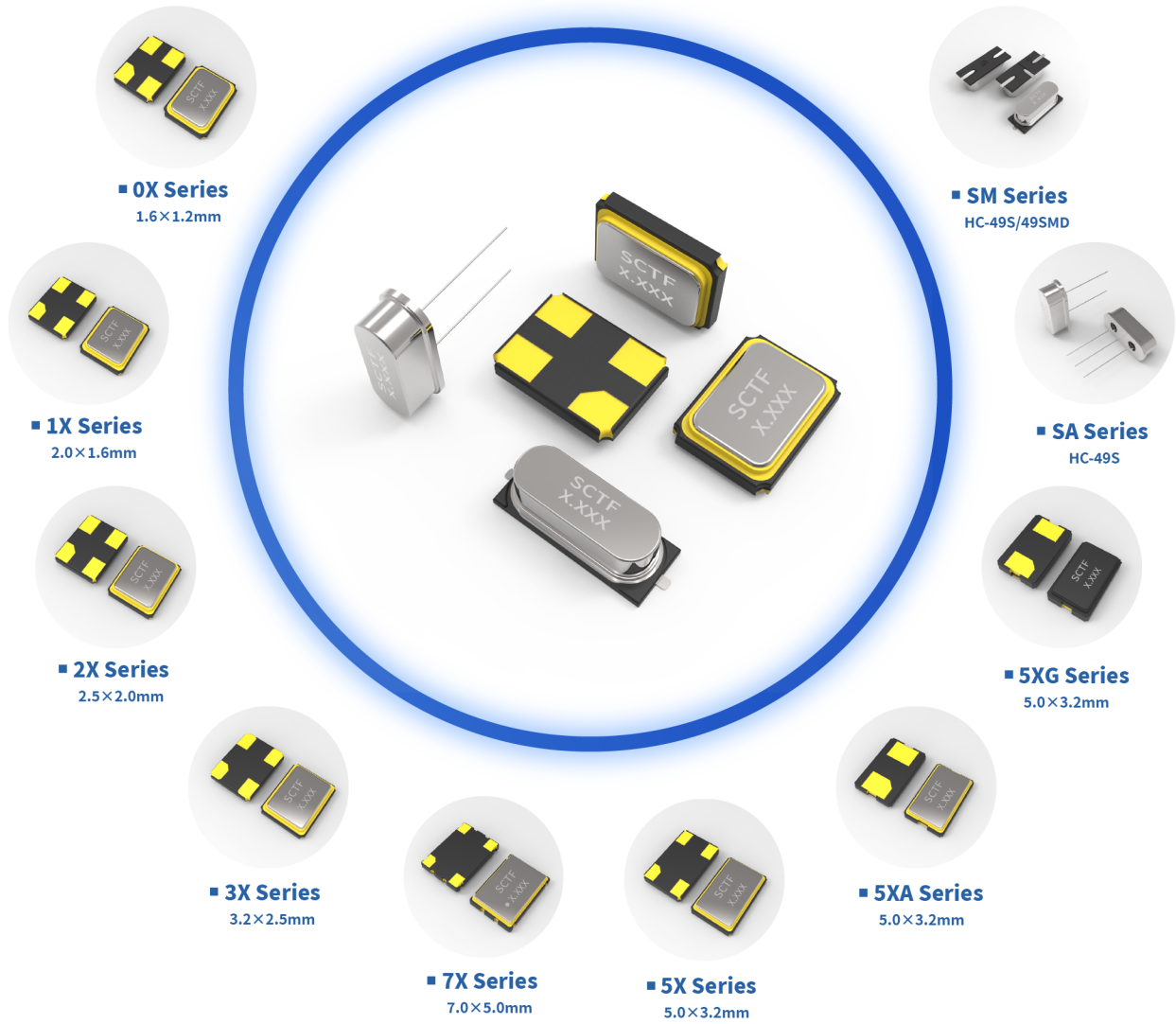
www.sctf-crystal.com

0755-86097105

sales@sctf-crystal.com

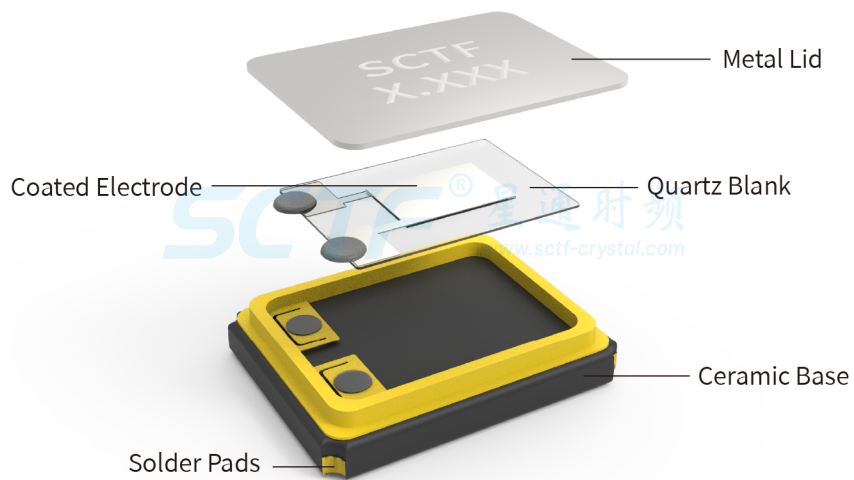
产品外观

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	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							
7X	7.0	5.0		6 ~ 50							
5XA	5.0	3.2	2	8 ~ 50	8 ~ 20	10 / 20					
5XG											
SA	10.8	4.5		3.2 ~ 48							
SM	12.5										

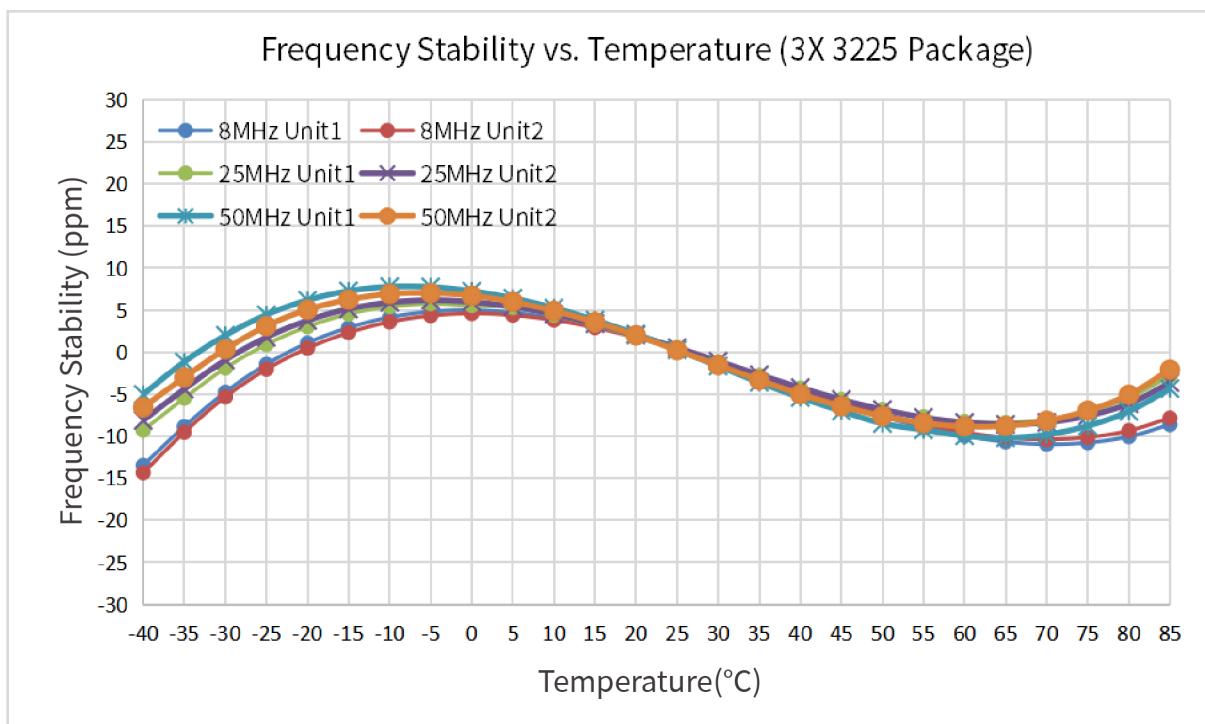
若需要更详细的资料请查询详细规格书或和我们的技术人员联系。

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.

OX 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 ± 2°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

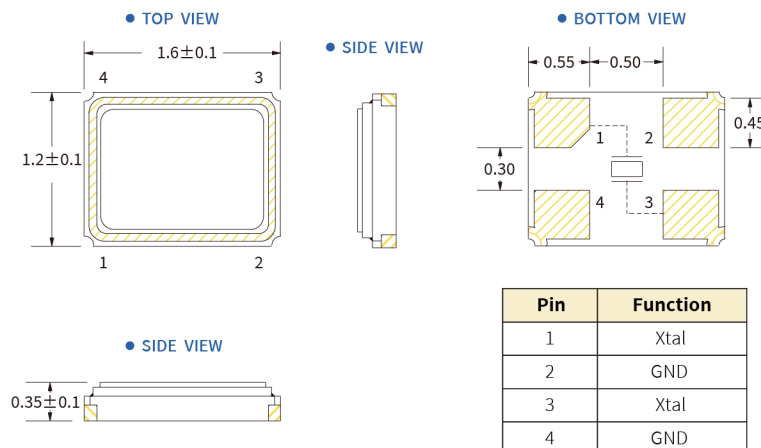
Temp. \ FT	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

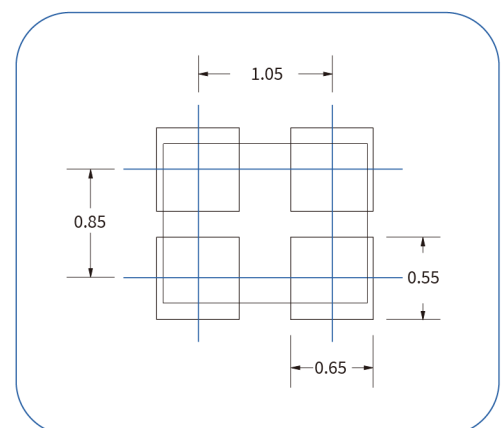
Equivalent Series Resistance

Frequency Range	ESR(Max.)
24MHz ≤ Freq. < 32MHz	200 Ω
32MHz ≤ Freq. < 36MHz	100 Ω
36MHz ≤ Freq. ≤ 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 ± 2°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

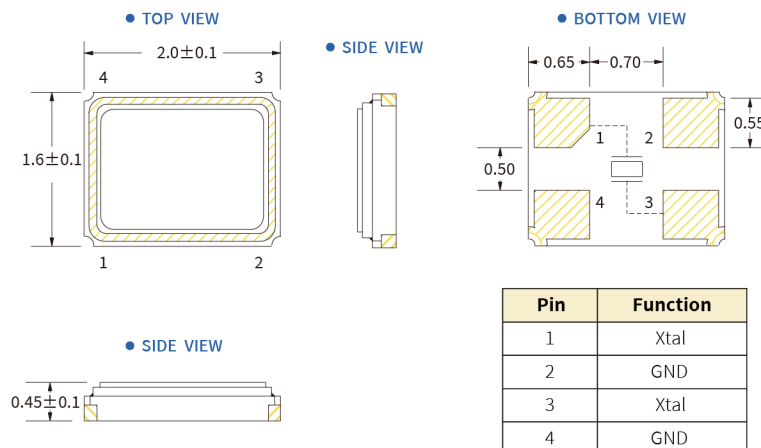
Temp. \ FT	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

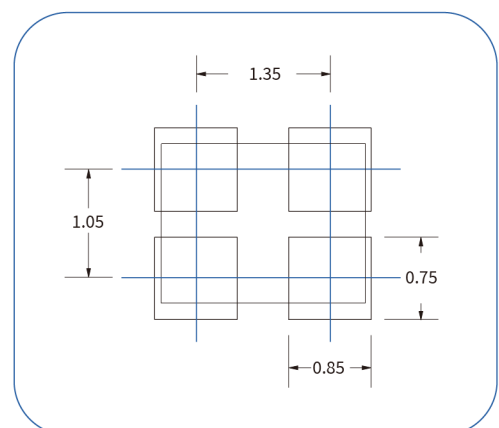
Equivalent Series Resistance

Frequency Range	ESR(Max.)
16MHz ≤ Freq. < 24MHz	200 Ω
24MHz ≤ Freq. < 26MHz	80 Ω
26MHz ≤ Freq. < 40MHz	60 Ω
40MHz ≤ Freq. ≤ 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 ± 2°C
Operating Temperature	T_use	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T_sta	-55		+125	°C	
Shunt Capacitance	C0			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

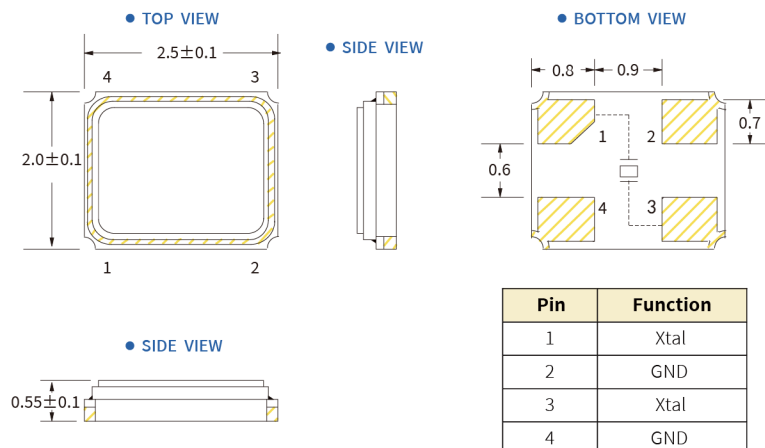
Temp. \ FT	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

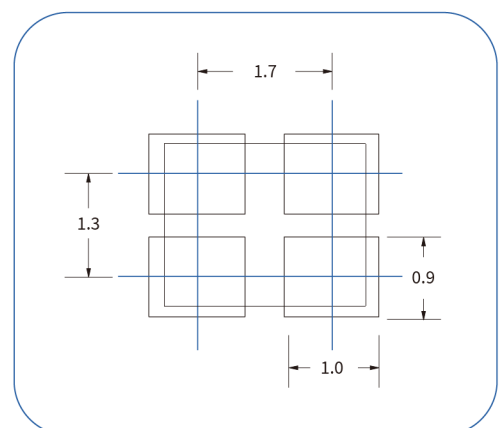
Equivalent Series Resistance

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

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



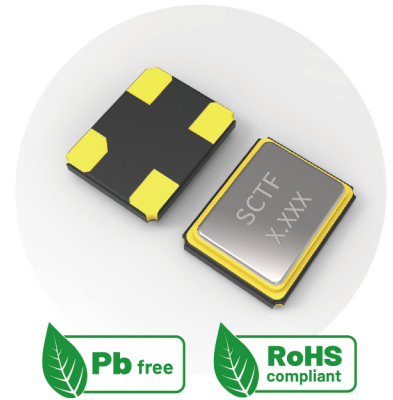
3X Series 3.2 x 2.5 mm SMD Crystal

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 ± 2°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

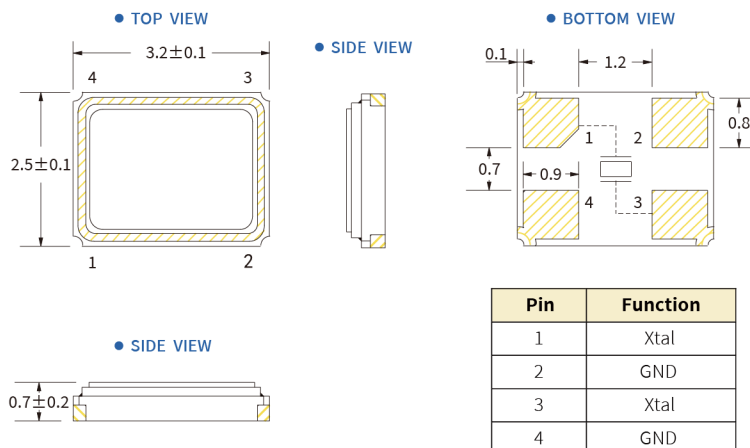
Temp. \ FT	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

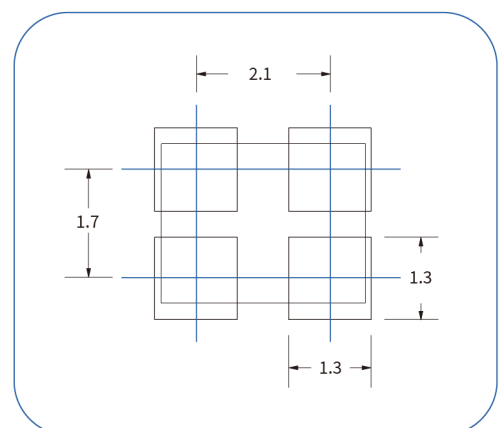
Equivalent Series Resistance

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	C0			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

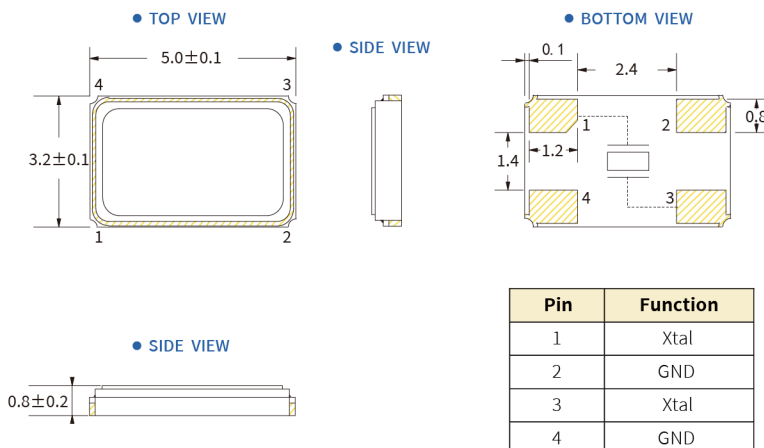
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

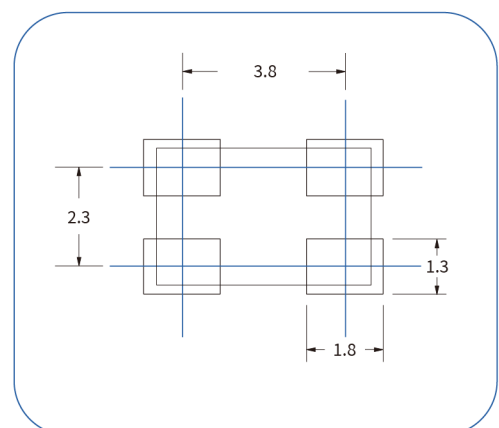
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz \leq Freq. < 10MHz	100 Ω
10MHz \leq Freq. < 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	C0			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

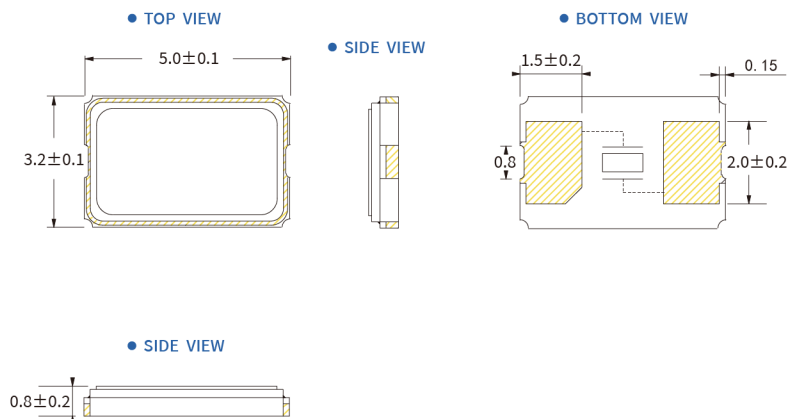
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

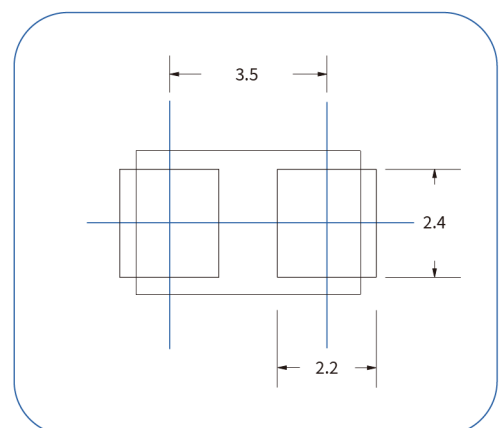
Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz \leq Freq. < 10MHz	100 Ω
10MHz \leq Freq. < 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	C0			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

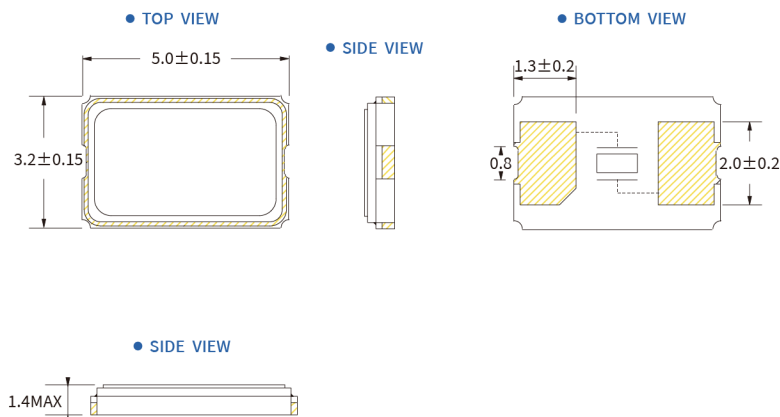
Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★

★: Available Δ : Conditional

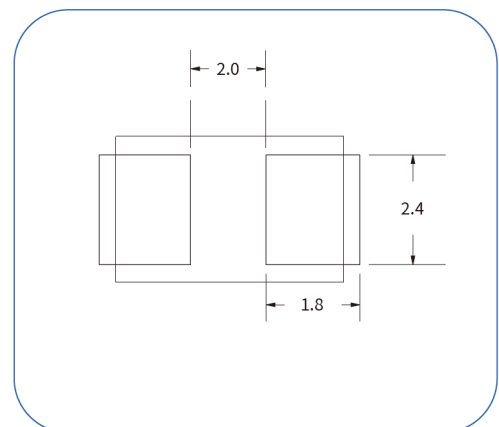
Equivalent Series Resistance

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 ± 2°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

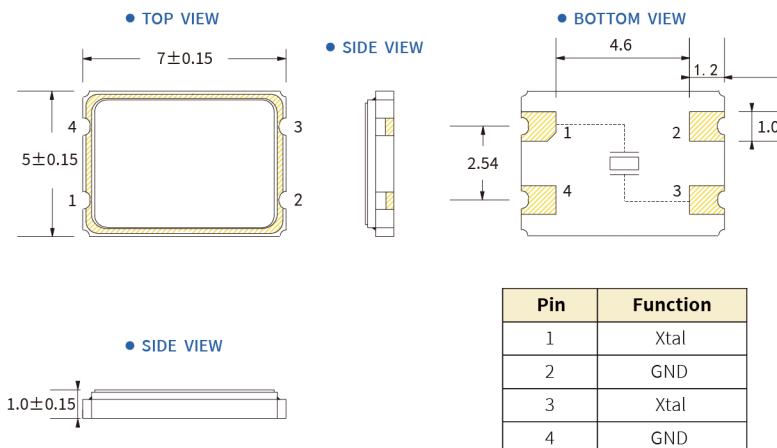
Temp. \ FT	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

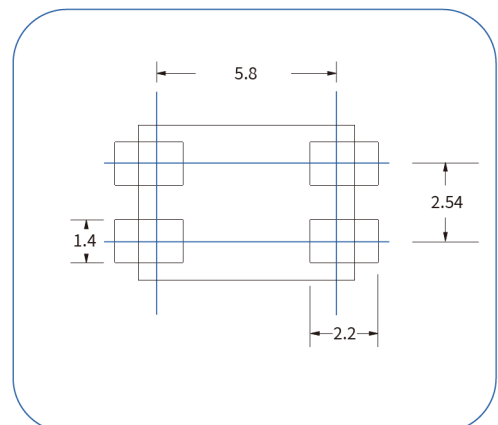
Equivalent Series Resistance

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

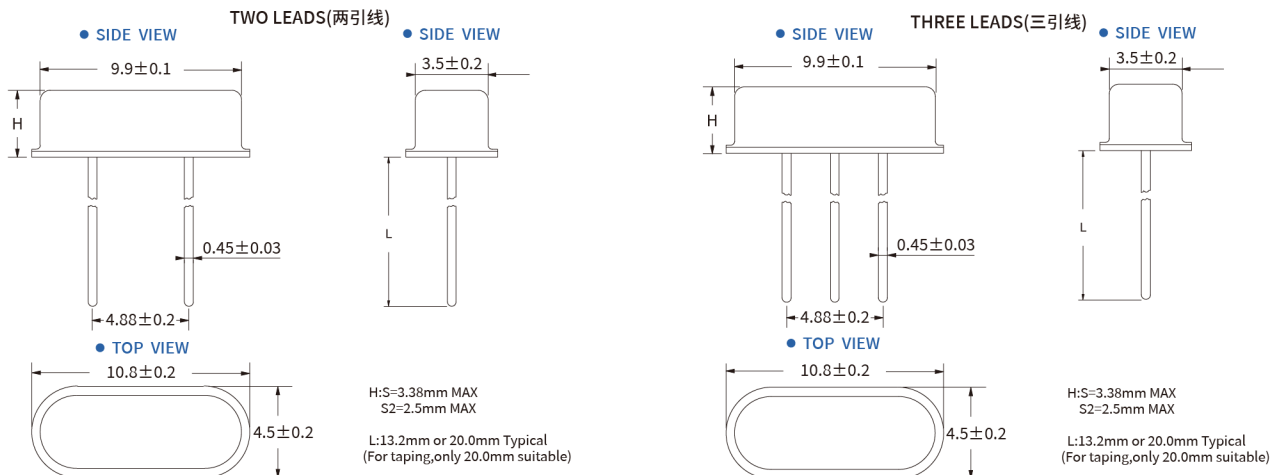
Temp.	FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
	-20°C to +70°C	Δ	★	★	★
-40°C to +85°C		Δ	★	★	★

★: 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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