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	△f/f			±10	ppm	at 25°C±2°C
Operating Temperature	T_use	-20		70	°C	
		-40		85	°C	
StorageTemperature 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

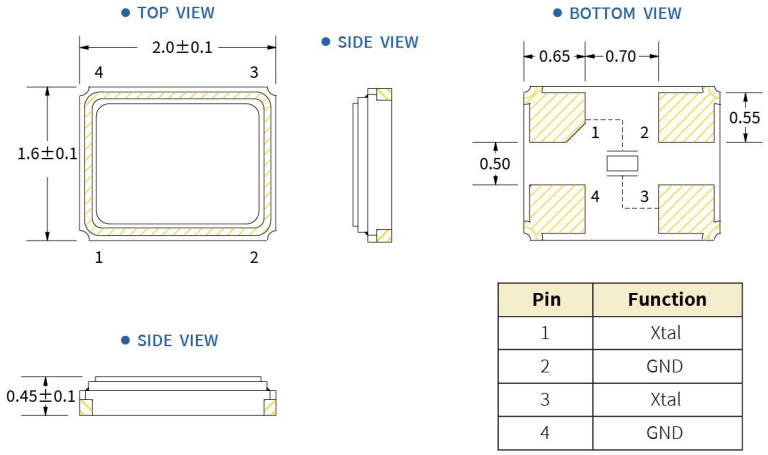
FT / Temp.	±10ppm	±15ppm	±20ppm	±30ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★: Available △: Conditional

Equivalent Series Resistance

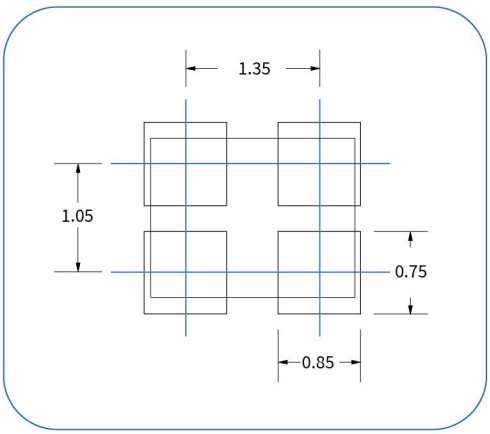
Frequency Range	ESR(Max.)
16MHz≤ Freq. <24MHz	200 Ω
24MHz≤ Freq. <26MHz	80 Ω
26MHz≤ Freq. <40MHz	60 Ω
40MHz≤ Freq. ≤54MHz	50 Ω

Dimensions (UNIT:mm)

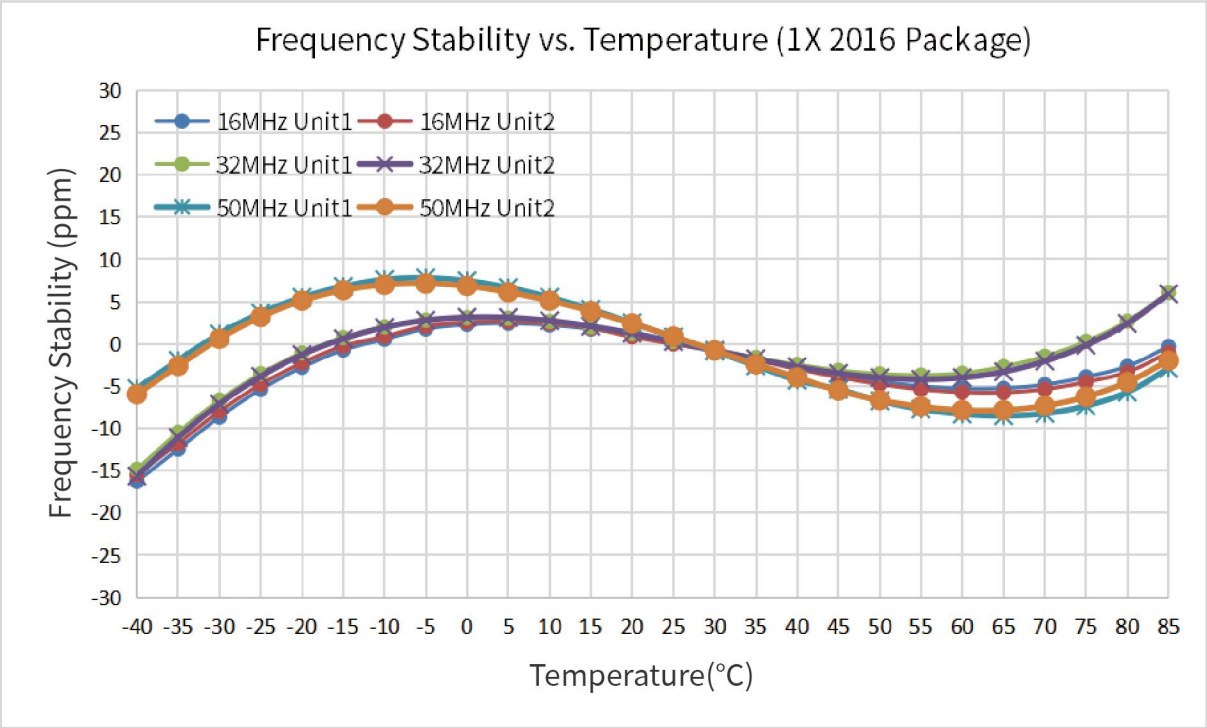


Pin	Function
1	Xtal
2	GND
3	Xtal
4	GND

Solder pad layout (UNIT:mm)



Frequency Temperature Characteristics

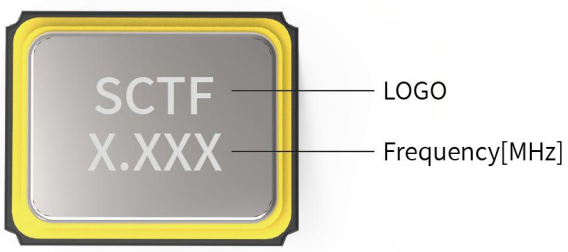


Product Structure&Marking Information

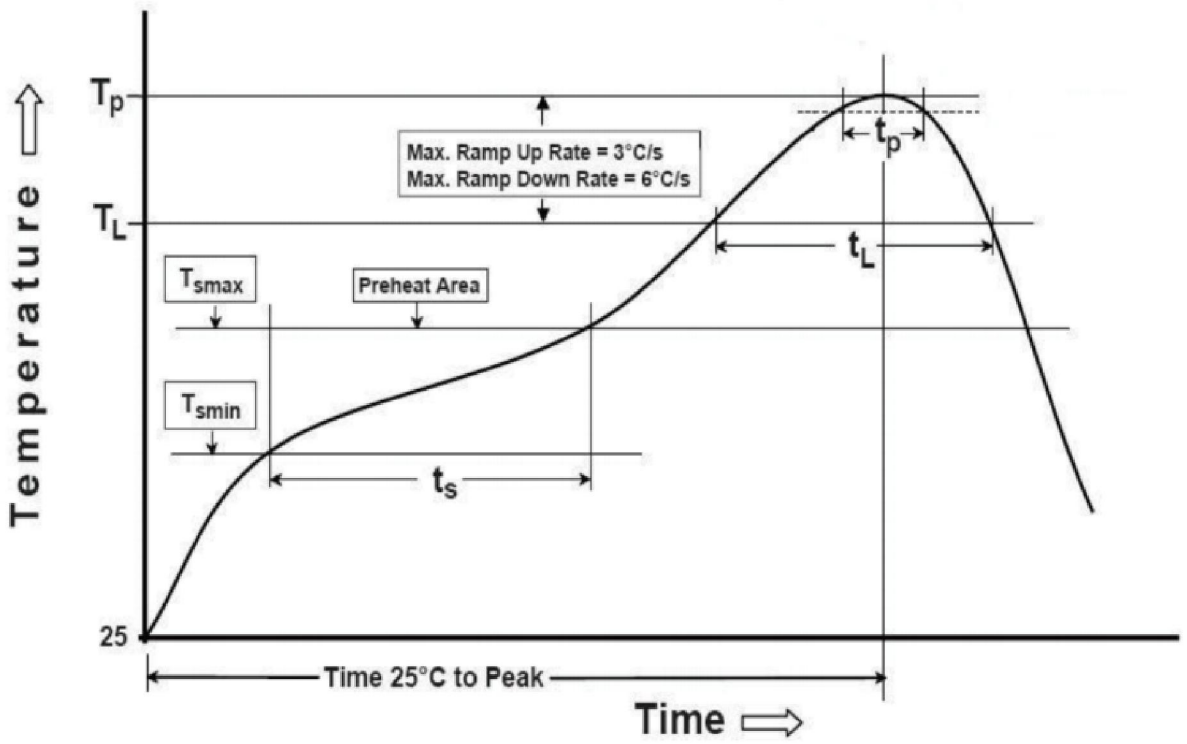
- Product Structure



- Marking Information



Suggested Reflow Profile

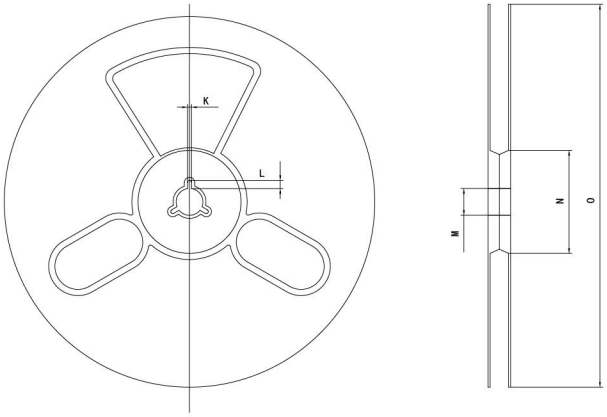


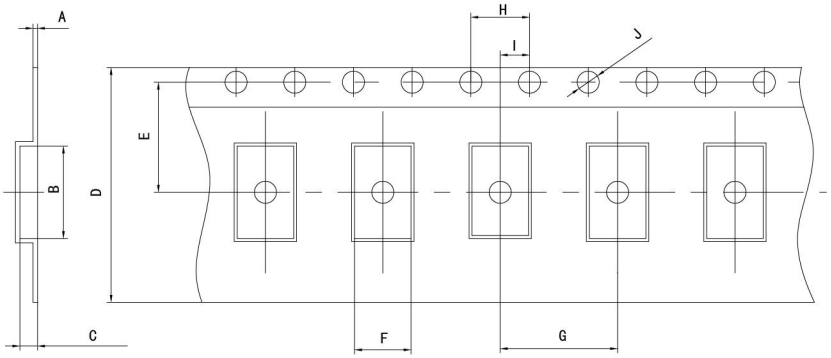
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (Ts min) ● Temperature Max (Ts max) ● Time (Ts min to Ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (TL to Tp)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (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.
Suggust reflow times	**2 Times max.**	

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
1X	0.25±0.05	2.25±0.1	0.7±0.1	8.0±0.3	3.5±0.1	1.85±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

1X Series				
16.000	19.200	20.000	24.000	24.305
24.576	25.000	26.000	27.000	27.120
30.000	32.000	32.768	36.000	37.400
38.400	40.000	48.000	50.000	52.000
54.000				