

3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P

C : SPXO Crystal Oscillator

M : Multi Voltage

Feature

- Miniature Ceramic surface mount with Metal Lid
- CMOS compatible logic levels
- Tri-state function available
- Supply voltage range : 1.62V ~ 3.63V(Compatible with 1.8V, 2.5V, 3.3V)
- RoHS Compliant / Pb Free

Applications

- Wireless Devices
- Internet of Things (IoT) devices
- Ethernet/Gigabit Ethernet
- Audio, Video, Gaming products
- Micro base station



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	1.000		54.000	MHz	
Operating Temperature	T _{use}	-20		70	°C	
		-40		85	°C	
Storage Temperature Range	T _{stg}	-55		125	°C	
Supply Voltage	V _{dd}	1.62		3.63	V	
Output Load	L _{CMOS}		15		pF	
Current Consumption	I _{cc}			10	mA	1MHz ≤ Freq. < 40MHz
				20		40MHz ≤ Freq. ≤ 54MHz
Duty Cycle	SYM	45		55	%	50 % V _{dd} level, L _{CMOS} ≤ 15 pF
Rise / Fall Time	T _R / T _F			5	nS	10% V _{dd} to 90% Level
Start-up Time	T _{str}			5	mS	To 90% of Final Amplitude
High output voltage	V _{OH}	0.9V _{dd}			V	
Low output voltage	V _{OL}			0.1V _{dd}	V	
Enable Voltage High (Logic 1)	V _{IH}	0.7V _{dd}			V	Output will be disable if OE is Logic 0 Output will be enable if OE is Logic 1 or open
Enable Voltage Low (Logic 0)	V _{IL}			0.3V _{dd}	V	
Aging	f _{age}			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

Temp. \ FT	±20ppm	±25ppm	±30ppm	±50ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

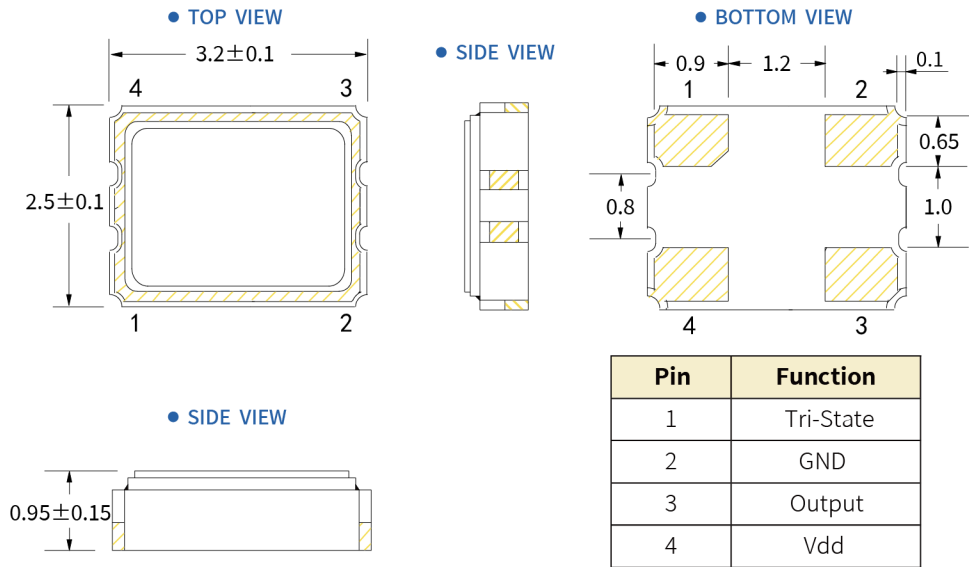
★: Available △: Conditional

All condition: Include 25°C tolerance, operating temperature range , input voltage change, aging, load change.

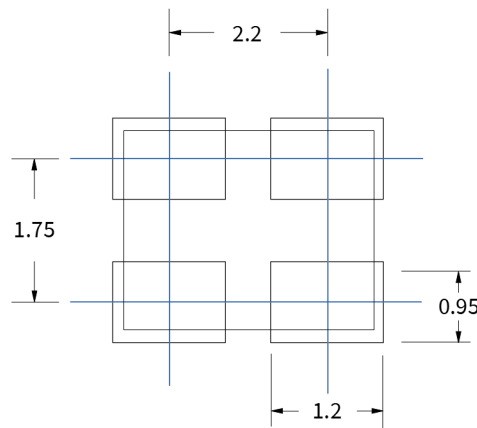
3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P C : SPXO Crystal Oscillator M : Multi Voltage

Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



Options and Part Identification : Example SX3M1.000M20F30TNN

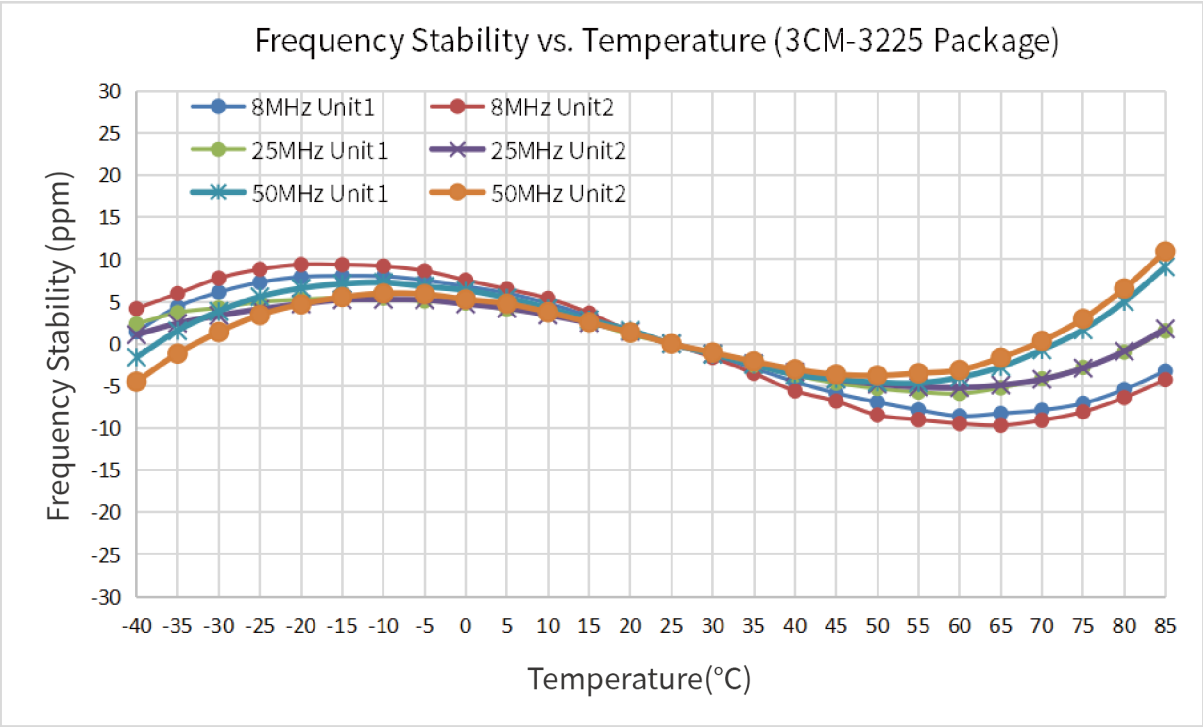
Company	Ceramic Package	Frequency Code [MHz]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise
SX	3M	X.XXX	M	20	F	30	T	N	N
Code Company		Frequency		Code Frequency Tolerance		Code Frequency Drift		Code Current	
SX SCTF		1.000 13.560 19.200 37.125		10 ±10ppm 20 ±20ppm		15 ±15ppm 20 ±20ppm 30 ±30ppm		N Standard	
	Code Ceramic Package		Code Voltage		Code Operating Temperature		Code Output		Code Phase Noise
	7M 7.0×5.0×1.3mm 5M 5.0×3.2×1.2mm 3M 3.2×2.5×0.95mm 2M 2.5×2.0×0.81mm 1M 2.0×1.6×0.75mm		M 1.62V~3.63V		E -20°C ~ +70°C F -40°C ~ +85°C		T Squarewave		N Standard

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

3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

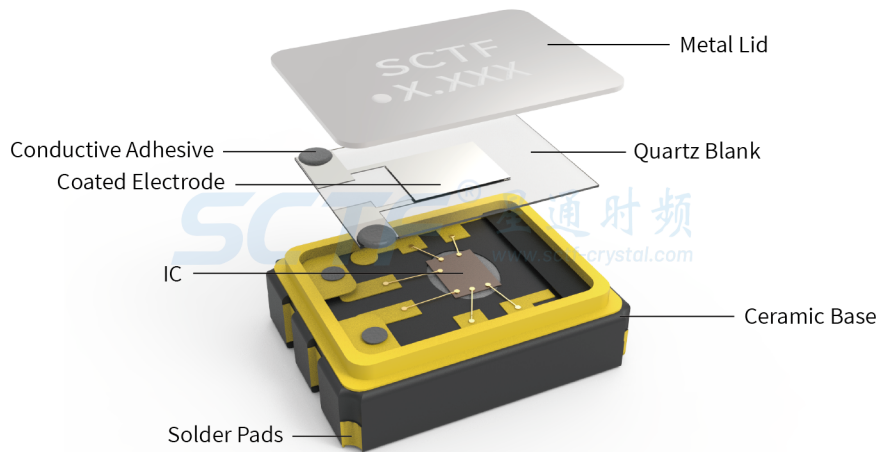
3 : 3.2×2.5×0.95 mm | SMD3225-4P C : SPXO Crystal Oscillator M : Multi Voltage

Frequency Temperature Characteristics

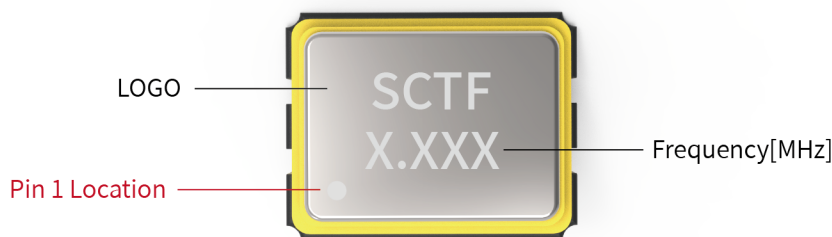


Product Structure&Marking Information

Product Structure



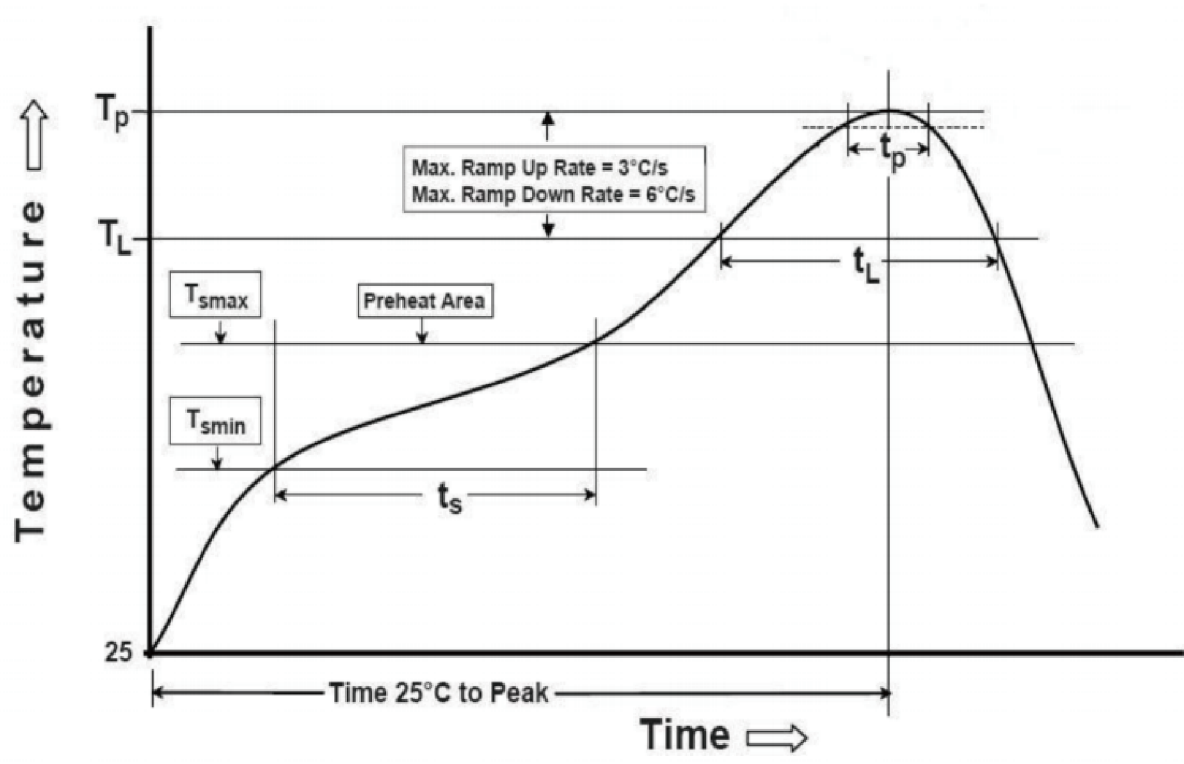
Marking Information



3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P C : SPXO Crystal Oscillator M : Multi Voltage

Suggested Reflow Profile



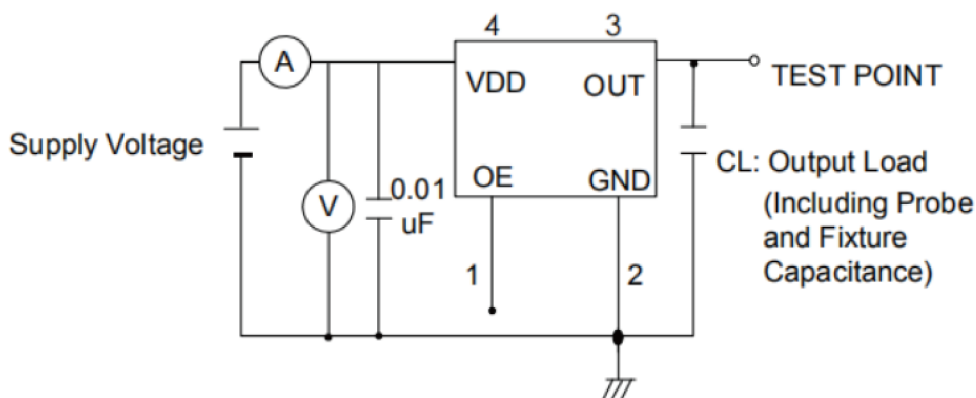
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak <ul style="list-style-type: none">● Temperature Min (Ts min)● Temperature Max (Ts max)● Time (Ts min to Ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (TL to Tp)	3°C/ second max.	3°C/ second max.
Time maintained above <ul style="list-style-type: none">● 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.	

3C Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P

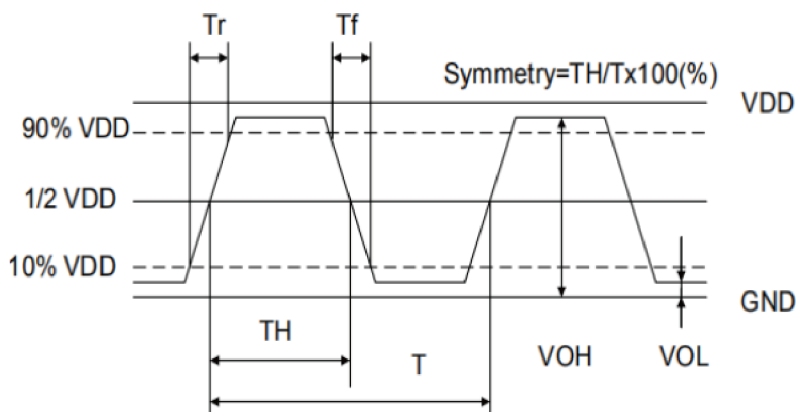
C : SPXO Crystal Oscillator

Testing Circuit



※ Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

Waveform Conditions



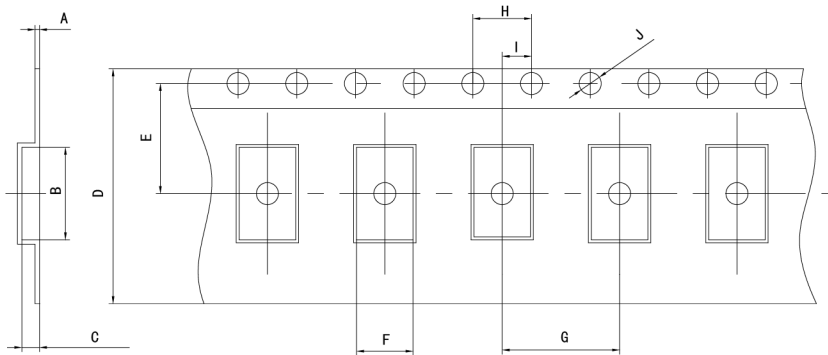
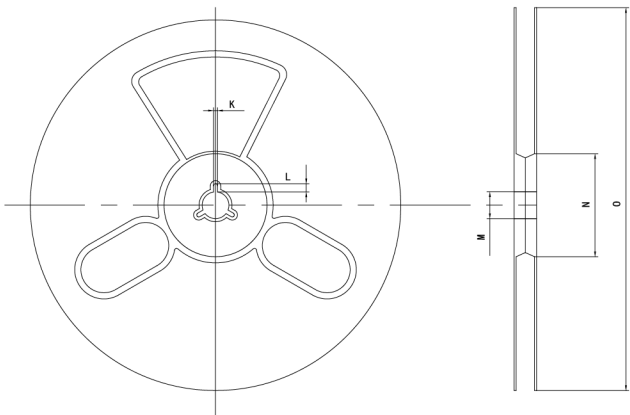
Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P C : SPXO Crystal Oscillator M : Multi Voltage

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
3CM	0.25±0.05	3.5±0.1	1.4±0.1	8.0±0.1	3.5±0.1	2.70±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

3CM Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P C : SPXO Crystal Oscillator M : Multi Voltage

Common Frequencies – MHz

3CM Series				
1.000	1.024	1.8432	2.000	2.048
2.176	2.4576	2.500	3.072	3.579545
3.6864	4.000	4.096	4.9152	5.000
5.5296	6.000	6.144	6.7458	6.780
7.200	7.3728	7.680	8.000	8.192
10.000	11.0592	11.2896	12.000	12.288
12.500	13.000	13.560	14.31818	14.7456
16.000	16.384	18.432	19.200	19.6608
20.000	22.1184	22.5792	24.000	24.576
25.000	26.000	27.000	27.120	28.63636
29.4912	30.000	32.000	32.768	33.000
33.330	33.333	33.3333	36.000	37.125
37.400	38.400	38.880	40.000	40.680
45.000	45.1584	48.000	49.152	50.000
54.000				