

2C Series 2.5 x 2.0 mm SMD Crystal Oscillator

2 : 2.5×2.0×0.81 mm | SMD2520-4P

C : SPXO Crystal Oscillator

Feature

- Ultra 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	1.8/2.5/3.3	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		△	★	★

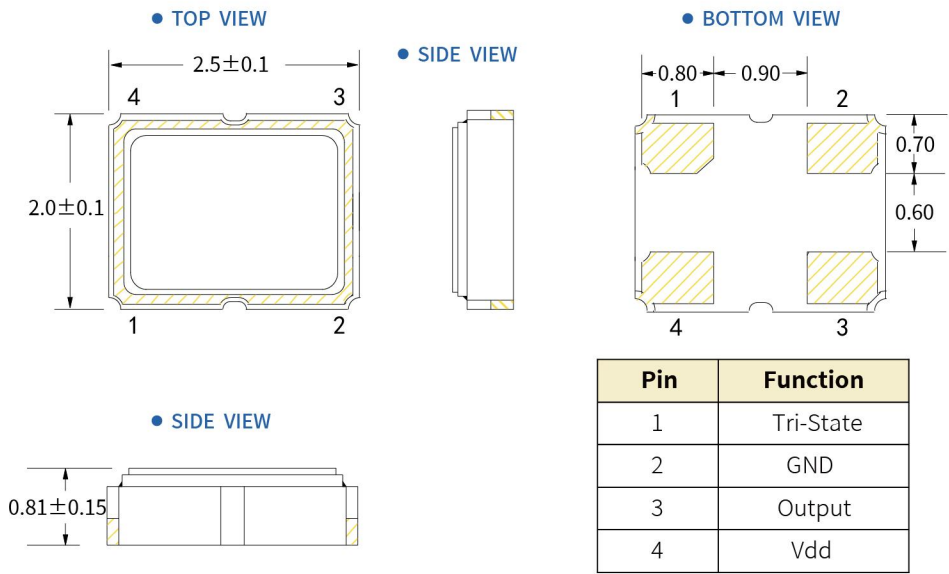
★: Available △: Conditional

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

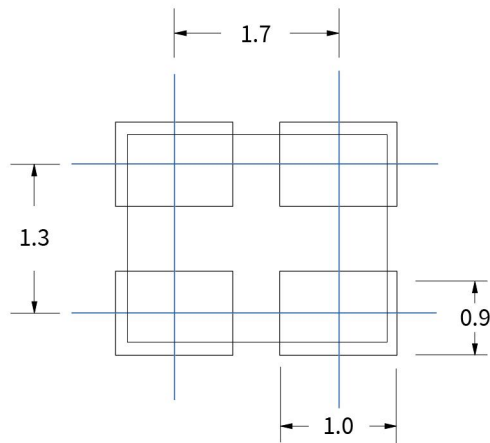
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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



Options and Part Identification : Example SX2M1.000B20F30TNN

Company	Ceramic Package	Frequency Code [MHz]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise
SX	2M	X.XXX	B	20	F	30	T	N	N
Code	Company	Frequency	Code	Frequency Tolerance	Code	Frequency Drift	Code	Current	Code
SX	SCTF	1.000		10 ±10ppm		15 ±15ppm		N Standard	
		13.560		20 ±20ppm		20 ±20ppm			
		19.200				30 ±30ppm			
		37.125							
Code	Ceramic Package	Code	Voltage	Code	Operating Temperature	Code	Output		Code
1M	2.0×1.6×0.75mm	D	1.8V	E	-20°C ~ +70°C	T	CMOS 15pF		N Standard
2M	2.5×2.0×0.81mm	H	2.5V	F	-40°C ~ +85°C	H	CMOS 30pF		
3M	3.2×2.5×0.95mm	B	3.3V			G	CMOS 50pF		
5M	5.0×3.2×1.2mm	A	5.0V						
7M	7.0×5.0×1.3mm								
OA	12.7×12.7×5.4 mm [PXO-8]								
OB	20.4×12.8×4.9 mm [PXO-14]								

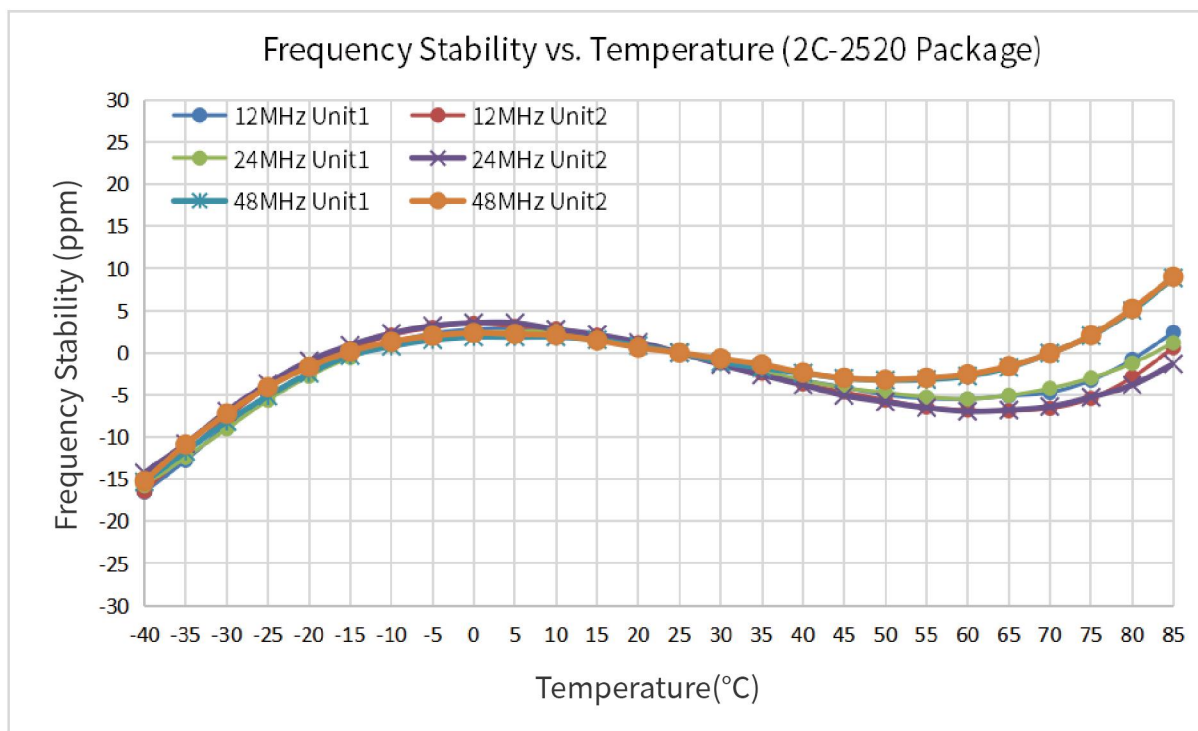
If you have other parameter requirements, you can contact **SCTF** at any time.

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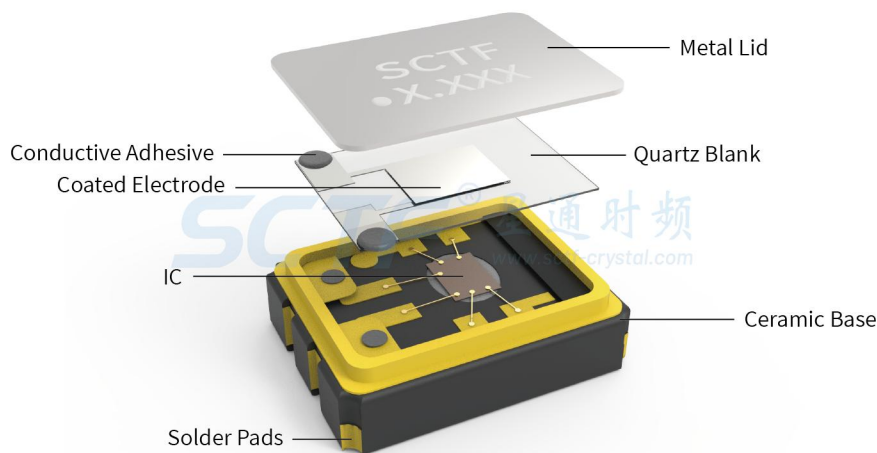
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Frequency Temperature Characteristics

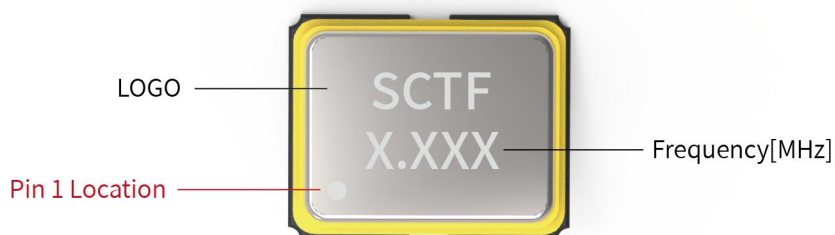


Product Structure&Marking Information

• Product Structure



• Marking Information

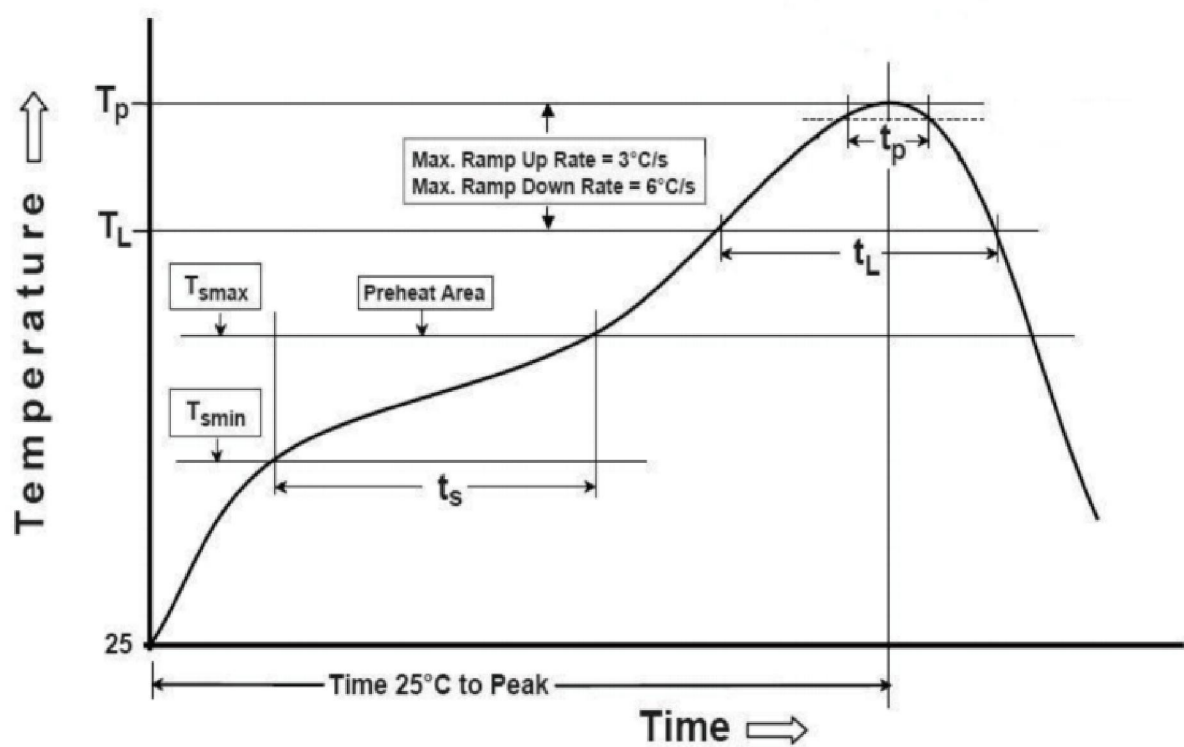


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Suggested Reflow Profile



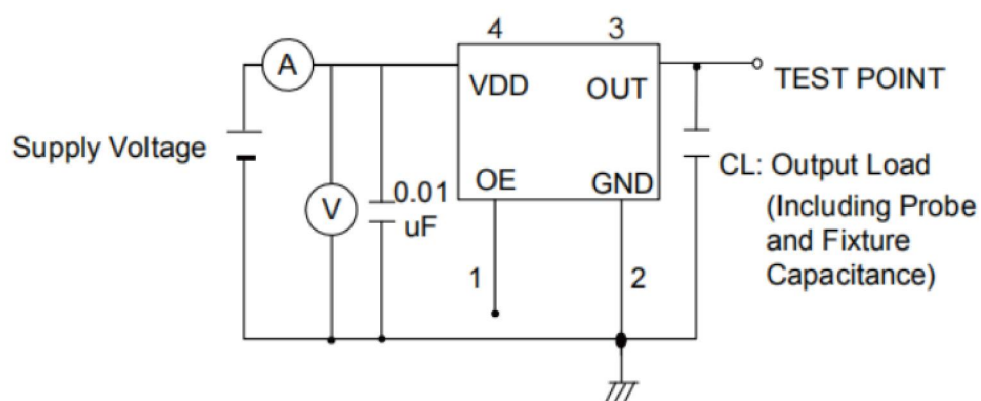
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (T_{smin}) ● Temperature Max (T_{smax}) ● Time (T_{smin} to T_{smax})	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (T_L to T_p)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (T_L) ● Time (t_L) maintained above T_L	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (T_p)	235°C	260°C
Time within 5° C of the specified classification temperature (T_p)	20 seconds	30 seconds
Ramp - down rate (T_p to T_L)	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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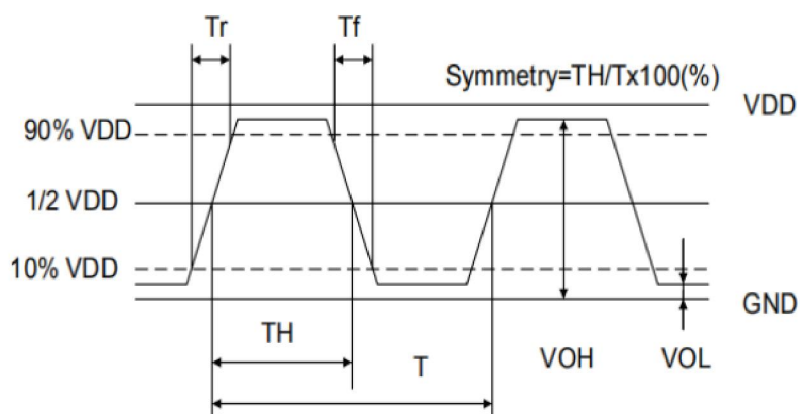
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Testing Circuit



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

Waveform Conditions



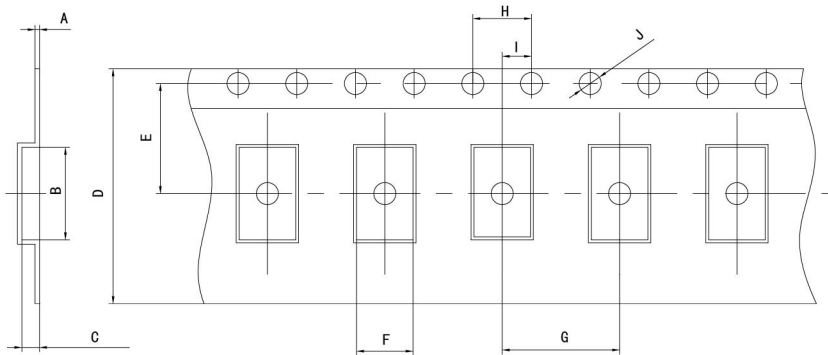
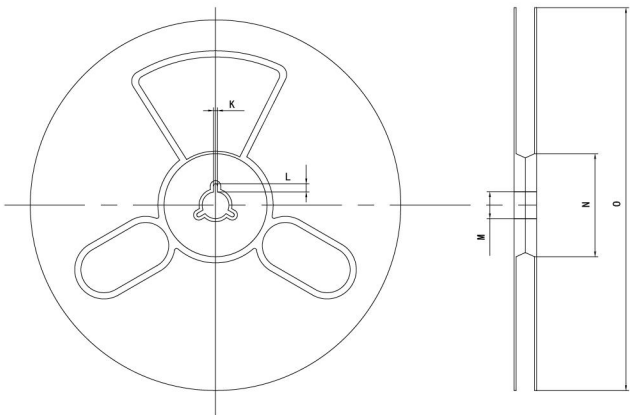
Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

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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
2C	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

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Common Frequencies – MHz

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1.000	1.8432	2.000	2.048	3.579545
3.6864	4.000	4.096	4.9152	6.000
6.144	6.780	7.3728	8.000	8.192
10.000	11.0592	11.2896	12.000	12.288
13.000	13.560	14.31818	14.7456	16.000
16.384	18.432	19.200	20.000	22.1184
22.5792	24.000	24.576	25.000	26.000
27.000	28.63636	29.4912	30.000	32.000
32.768	33.000	33.330	33.333	33.3333
37.125	38.400	40.000	45.1584	48.000
49.152	50.000	54.000		