

2T/2VT Series TCXO/VC-TCXO Crystal Oscillator

2 : 2.5×2.0×0.8 mm | SMD2520-4P

T : TCXO Crystal Oscillator

VT : VC-TCXO Crystal Oscillator

Feature

- Ceramic Surface Mount Package
- Output Type: Clipped Shine Wave
- Voltage Control Function Available
- Fundamental Crystal Design
- RoHS Compliant / Pb Free

Applications

- GPS
- Wireless Communications
- Test Equipment
- Networking systems
- Industrial control & automation



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	10		52.000	MHz	
Operating Temperature	T _{use}	-20		+70	°C	
		-30		+85	°C	
		-40		+85	°C	
Storage Temperature Range	T _{stg}	-55		+125	°C	
Supply Voltage	V _{dd}	1.8 / 2.5 / 3.3			V	±5% max.
Output Waveform		Clipped Sine Wave				
Frequency Tolerance	Fo _{tol}			±2	ppm	T _{use} =25±2 °C
Frequency Vs Temperature Change	Fo _{Tc}	±0.5		±2.5	ppm	T _{use} = -40°C~+85 °C Based on frequency at +25°C
Frequency vs Load Change	Fo _{Load}			±0.2	ppm	±10% load change
Frequency vs Voltage Change	Fo _{Vdd}			±0.2	ppm	Voltage varied ±5% at 25°C
Current Consumption	I _{cc}			2	mA	
Center Voltage(VC-TCXO)	V _{cont}		1.4		V	
Control Voltage Range(VC-TCXO)	V _c	0.4		2.4	V	
Frequency Pulling Range(VC-TCXO)	PR	±8		±15	ppm	
Linearity(VC-TCXO)	L			10	%	
Duty Cycle	SYM	40		60	%	Ground level
Output Level	V _{p-p}	0.8			V	
Harmonics				-5.0	dBc	
Output Load	Load	10KΩ//10pF				
Start-up Time	T _{str}			2	mS	
Phase Noise@26MHz	T _{PN}	-130			dBc/Hz	Offset:1KHz
		-152			dBc/Hz	Offset:100KHz
Aging	f _{age}			±1	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

Temp.	FT	±0.5ppm	±1.0ppm	±1.5ppm	±2.0ppm	±2.5ppm
-20°C to +70°C		★	★	★	★	★
-30°C to +85°C		★	★	★	★	★
-40°C to +85°C		★	★	★	★	★

★: Available △: Conditional

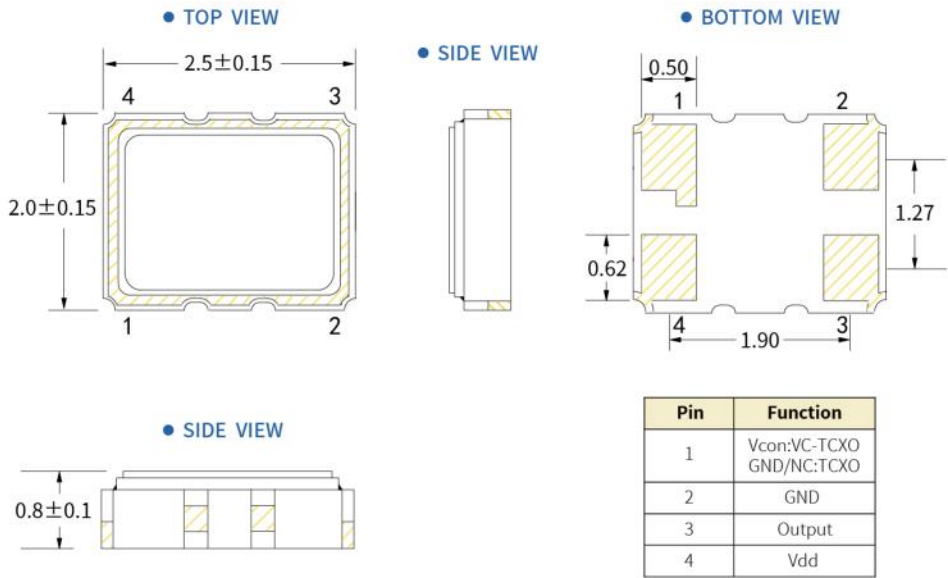
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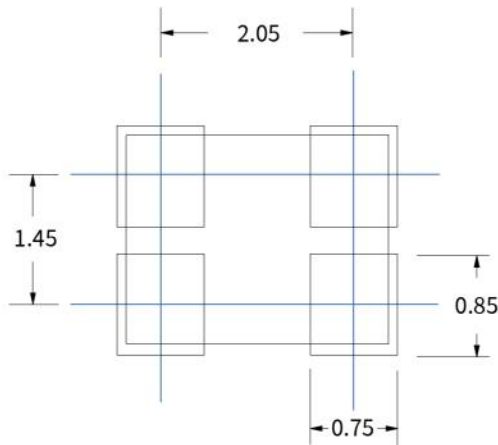
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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



Options and Part Identification : Example SX2T25.000B010J020S

Company	Ceramic Package	Frequency Code [MHz]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output
SX	2T	X.XXX	B	010	J	020	S
Code Company		Frequency		Code Frequency Tolerance		Code Frequency Drift	
SX SCTF		19.200		010 ±1ppm		010 ±1ppm	
		25.000		020 ±2ppm		020 ±2ppm	
		26.000					
		32.000					
			Code Voltage		Code Operating Temperature		Code Output
			D 1.8V		E -20°C ~ +70°C		S Clipped Sine Wave
			H 2.5V		J -30°C ~ +85°C		
			B 3.3V		F -40°C ~ +85°C		
	Code Ceramic Package						
	1T 2.0×1.6×0.7mm TCXO						
	2T 2.5×2.0×0.8mm TCXO						
	3T 3.2×2.5×0.9mm TCXO						
	1VT 2.0×1.6×0.7mm VCTCXO						
	2VT 2.5×2.0×0.8mm VCTCXO						
	3VT 3.2×2.5×0.9mm VCTCXO						

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

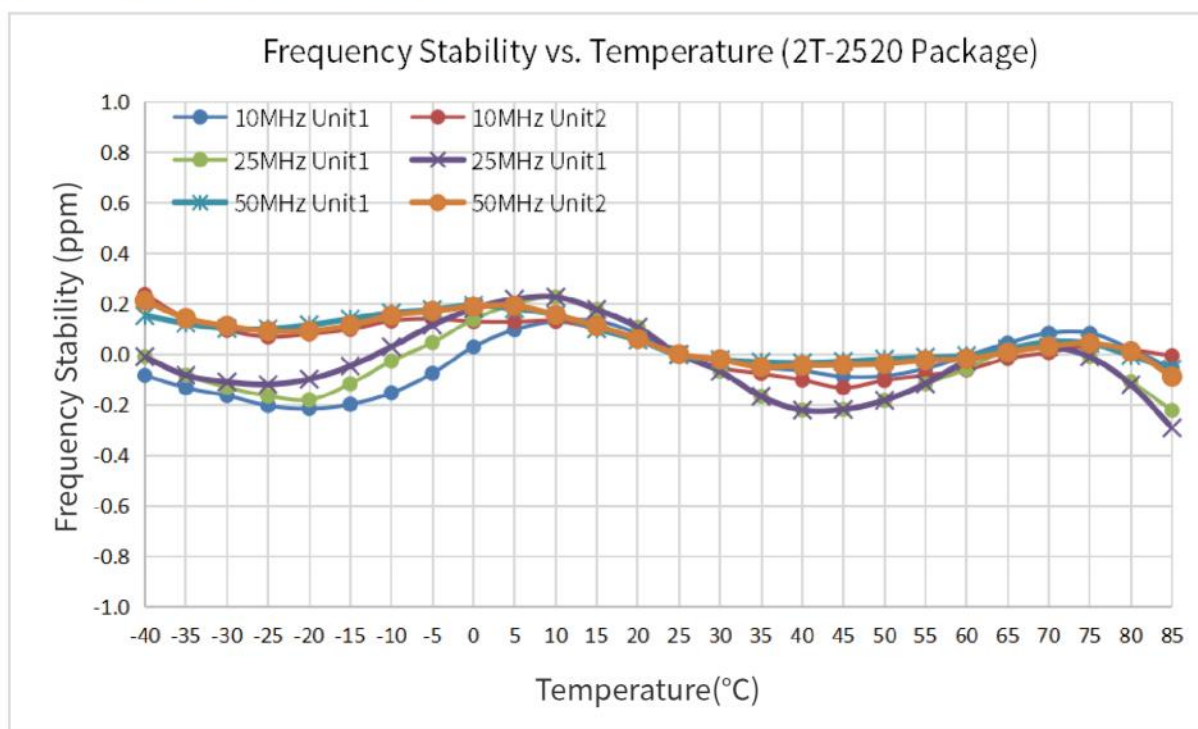
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Frequency Temperature Characteristics



Product Structure&Marking Information

Product Structure



Marking Information



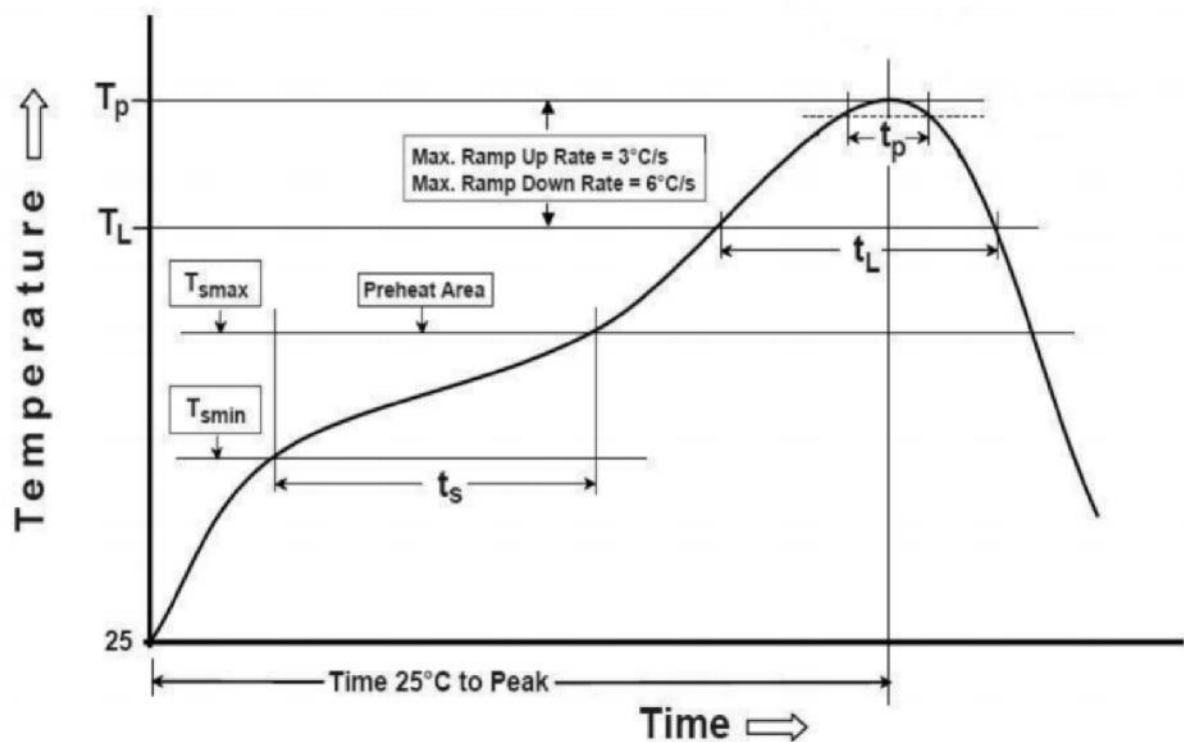
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Suggested Reflow Profile



Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (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.
Suggest reflow times	2 Times max.	

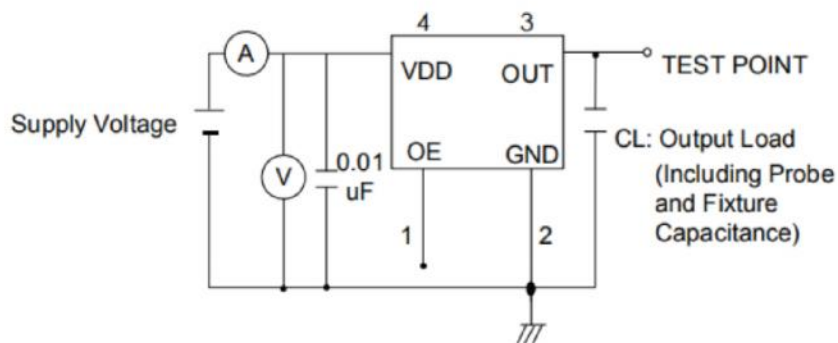
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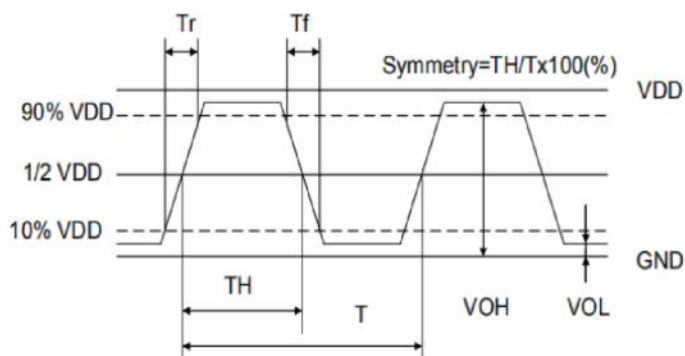
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Testing Circuit



※ 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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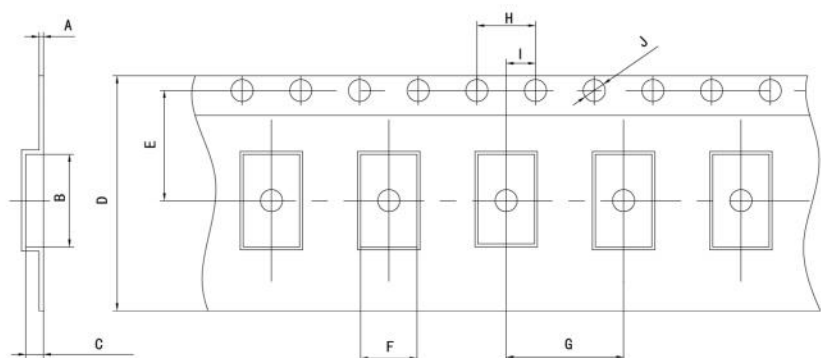
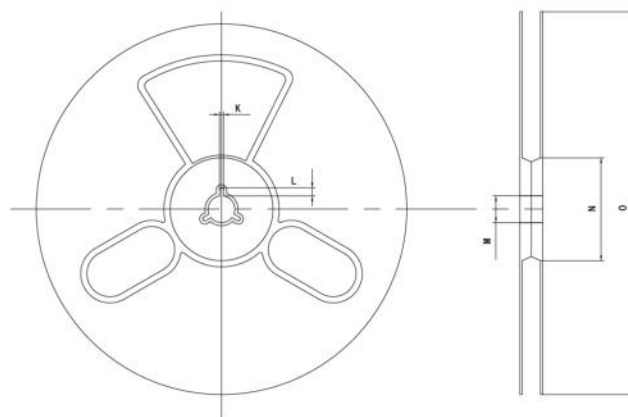
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Packaging Information

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
2T/2VT	0.30±0.05	2.8±0.1	1.15±0.1	8.0±0.2	3.5±0.05	2.3±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.5	4.0±1.0	φ13±0.5	φ60±1	φ180±1

Common Frequencies – MHz

2T/2VT Series				
1.000	1.024	2.000	2.048	3.579545
3.6864	4.000	4.096	4.9152	6.000
6.144	7.3728	8.000	8.192	10.000
11.0592	11.2896	12.000	12.288	14.7456
16.000	16.384	18.432	20.000	22.1184
22.5792	24.000	24.576	25.000	26.000
27.000	30.000	32.000	32.768	33.000
33.3333	36.000	40.000	45.000	45.1584
49.152	50.000			