

SMD SPXO Crystal Oscillator 3.2×2.5×0.95 mm 1 ~ 160 MHz

Features

- > Ultra Miniature Ceramic surface mount with Metal Lid
- CMOS compatible logic levels
- Tri-state function available
- Supply voltage range: 1.62V~5.5V(Compatible with 1.8V, 2.5V, 3.3V,5.0V)
- 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.	Тур.	Max.	Unit	Notes
Frequency Range	Freq.	1.000		160.000	MHz	
On anotine Town and the	T use	-20		70	°C	
Operating Temperature	T_use	-40		85	°C	
StorageTemperature Range	T_stg	-55		125	°C	
Supply Voltage	Vdd	1.62	1.8/2.5/3.3/5.0	5.5	V	
Output Load	L_CMOS		15		pF	
				10		1MHz ≤ Freq. < 40MHz
Current Consumption	lcc			20	mA	40MHz ≤ Freq. < 80MHz
				40		80MHz ≤ Freq. < 160MHz
Duty Cycle	SYM	45		55	%	50 % Vdd level, L_CMOS ≤ 15 pF
Rise / Fall Time	TR / TF			5	nS	10% Vdd to 90% Level
Start-up Time	T_str			5	mS	To 90% of Final Amplitude
High output voltage	Voн	0.9Vdd			V	
Low output voltage	Vol			0.1Vdd	V	
Enable Voltage High (Logic 1)	Vıн	0.7Vdd			V	Output will be disable if OE is Logic 0
Enable Voltage Low (Logic 0)	VIL			0.3Vdd	V	Output will be enable if OE is Logic 1 or open
Aging	f_age			3	ppm	1st. Year at 25°C

Frequency Stability & Operating Temperature Range

FT Temp.	±20ppm	±25ppm	±30ppm	±50ppm
-20°C to +70°C	Δ	*	*	*
-40°C to +85°C		Δ	*	*

★: Available △: Conditional

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



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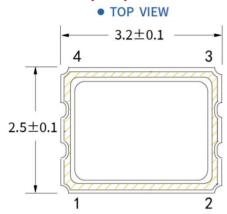
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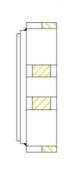


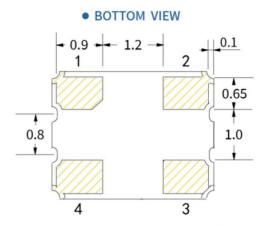
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Dimensions (mm)







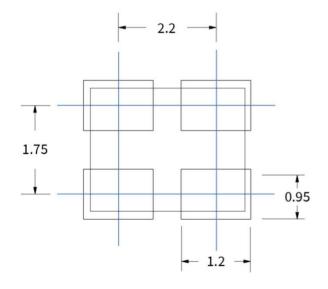


• SIDE VIEW



Pin	Function
1	Tri-State
2	GND
3	Output
4	Vdd

Solder pad layout(mm)



Product Structure

- Metal Lid
- Conductive Adhesive, Coated Electrode, Quartz Blank
- IC, Solder Pads, Ceramic Base



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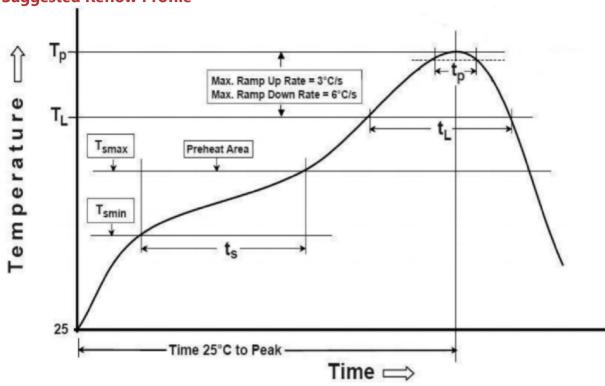
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Suggested Reflow Profile



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.	
Suggust reflow times	2 Times max.		



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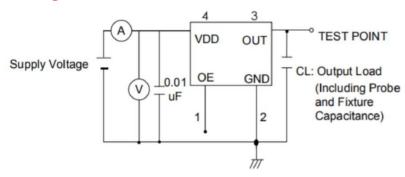






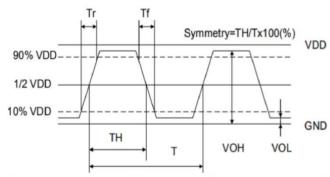
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Testing circuit



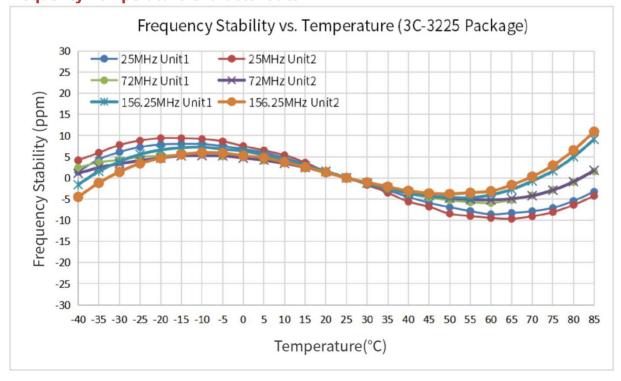
* Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

Waveform Conditions



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

Frequency Temperature Characteristics





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PN Structure:

WQS-OSC32251.000B20F30TNNTR

WQS-OSC3225 1.000MHz 3.3V \pm 20ppm -40+85C \pm 30ppm Tape Reel RoHS

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WQS-	OSC3225	1.000	<u>B</u>	<u>20</u>	F	30	Т	N	N	Т	R
<u> </u>	<u>Series</u>	<u>Frequency</u> <u>Code(MHz)</u>	<u>Supply</u> <u>Voltage</u>	<u>Frequency</u> <u>Tolerance</u>	Operating Temperature	<u>Frequency</u> <u>Drift</u>	<u>Output</u>	<u>Current</u> <u>Consumption</u>	<u>Phase</u> <u>Noise</u>	<u>Tape</u> <u>Reel</u>	<u>RoHS</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	7	<u>8</u>	<u>9</u>	<u>10</u>

1. Frequency Code(MHz)

(IVITIZ)			
1.024	1.8432	2.000	2.048
2.4576	2.500	3.072	3.579545
4.000	4.096	4.9152	5.000
6.000	6.144	6.7458	6.780
7.3728	7.680	8.000	8.192
11.0592	11.2896	12.000	12.288
13.000	13.560	14.31818	14.7456
16.384	18.432	19.200	19.6608
22.1184	22.5792	24.000	24.576
26.000	27.000	27.120	28.63636
30.000	32.000	32.768	33.000
33.333	33.3333	36.000	37.125
38.400	38.880	40.000	40.680
45.1584	48.000	49.152	50.000
60.000	64.000	65.536	66.000
72.000	75.000	80.000	96.000
125.000	133.000	148.500	156.250
	1.024 2.4576 4.000 6.000 7.3728 11.0592 13.000 16.384 22.1184 26.000 30.000 33.333 38.400 45.1584 60.000 72.000	1.024 1.8432 2.4576 2.500 4.000 4.096 6.000 6.144 7.3728 7.680 11.0592 11.2896 13.000 13.560 16.384 18.432 22.1184 22.5792 26.000 27.000 30.000 32.000 33.333 33.3333 38.400 38.880 45.1584 48.000 60.000 64.000 72.000 75.000	1.024 1.8432 2.000 2.4576 2.500 3.072 4.000 4.096 4.9152 6.000 6.144 6.7458 7.3728 7.680 8.000 11.0592 11.2896 12.000 13.000 13.560 14.31818 16.384 18.432 19.200 22.1184 22.5792 24.000 26.000 27.000 27.120 30.000 32.000 32.768 33.333 33.3333 36.000 45.1584 48.000 49.152 60.000 64.000 65.536 72.000 75.000 80.000

2. Supply Voltage

D	1.8V
Н	2.5V
В	3.3V
А	5.0V



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3. Frequency Tolerance

10	\pm 10ppm
20	\pm 20ppm

4. Operating Temperature

E	-20+70C
F	-40+85C

5. Frequency Drift

15	\pm 15ppm
20	\pm 20ppm
30	\pm 30ppm

6. Output

7. Current Consumption

N	Standard

8. Phase Noise

N	Standard

9. Packing

Т	Tape Reel
В	Bulk

10.RoHS



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