

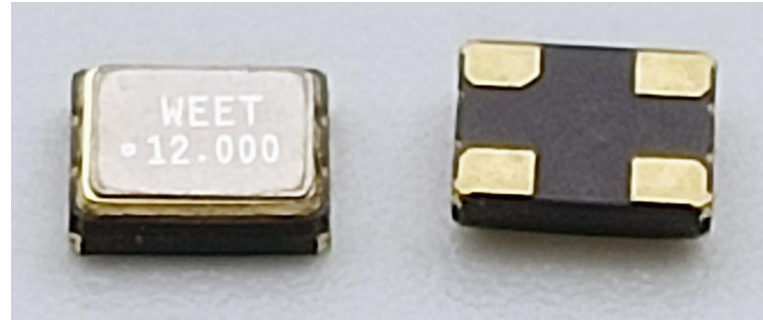
## Features

- 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.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	1.000		160.000	MHz	
Operating Temperature	T <sub>use</sub>	-20		70	°C	
		-40		85	°C	
Storage Temperature Range	T <sub>stg</sub>	-55		125	°C	
Supply Voltage	V <sub>dd</sub>	1.62	1.8/2.5/3.3/5.0	5.5	V	
Output Load	L <sub>CMOS</sub>		15		pF	
Current Consumption	I <sub>cc</sub>			10	mA	1MHz ≤ Freq. < 40MHz
				20		40MHz ≤ Freq. < 80MHz
				40		80MHz ≤ Freq. < 160MHz
Duty Cycle	SYM	45		55	%	50 % V <sub>dd</sub> level, L <sub>CMOS</sub> ≤ 15 pF
Rise / Fall Time	T <sub>R</sub> / T <sub>F</sub>			5	nS	10% V <sub>dd</sub> to 90% Level
Start-up Time	T <sub>str</sub>			5	mS	To 90% of Final Amplitude
High output voltage	V <sub>OH</sub>	0.9V <sub>dd</sub>			V	
Low output voltage	V <sub>OL</sub>			0.1V <sub>dd</sub>	V	
Enable Voltage High (Logic 1)	V <sub>IH</sub>	0.7V <sub>dd</sub>			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 <sub>IL</sub>			0.3V <sub>dd</sub>	V	
Aging	f <sub>age</sub>			3	ppm	1st. Year at 25°C

## Frequency Stability & Operating Temperature Range

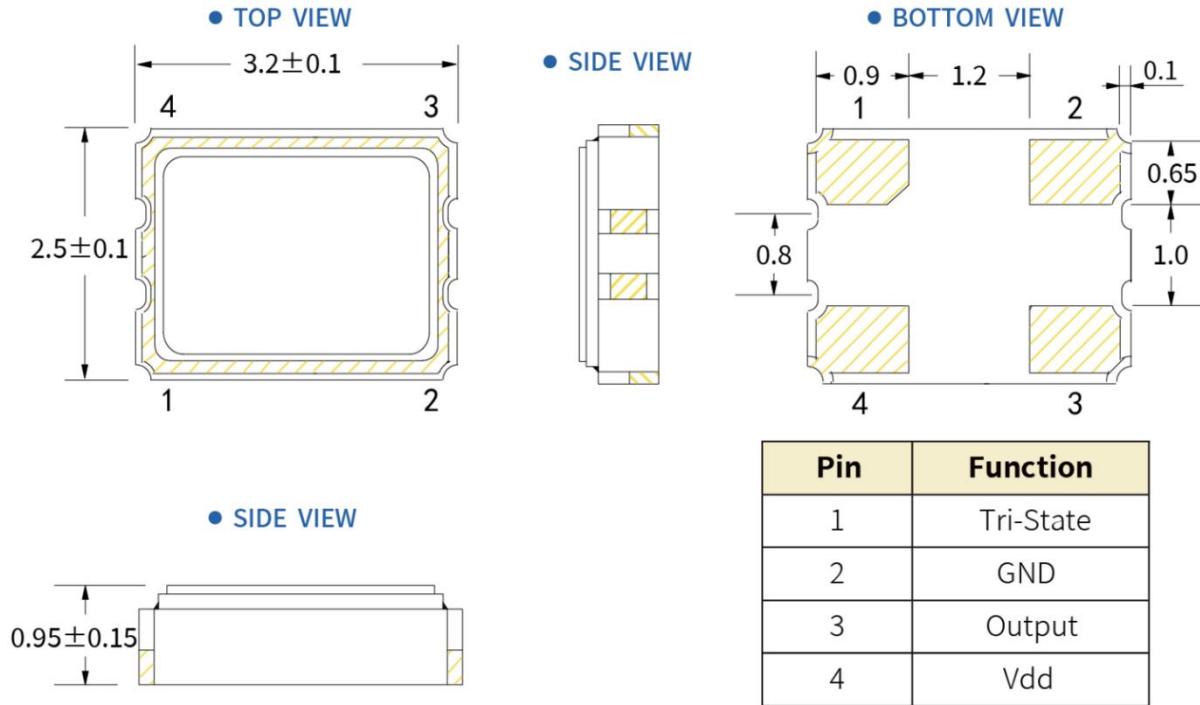
Temp.	FT	±20ppm	±25ppm	±30ppm	±50ppm
	-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★	

★: Available    △: Conditional

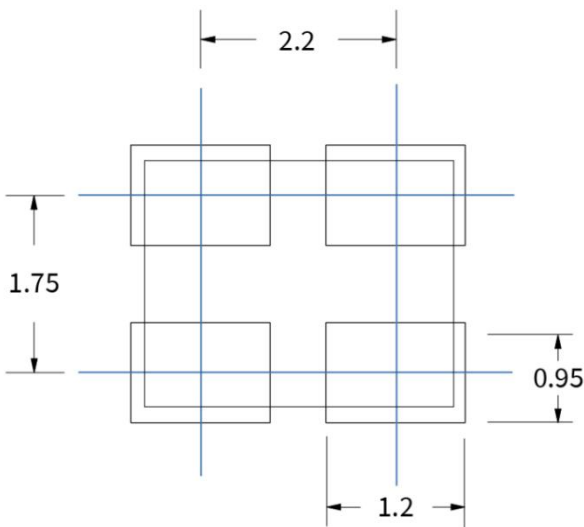
All condition: Include 25°C tolerance, operating temperature range , input voltage change, aging, load change.



**Dimensions (mm)**



**Solder pad layout(mm)**

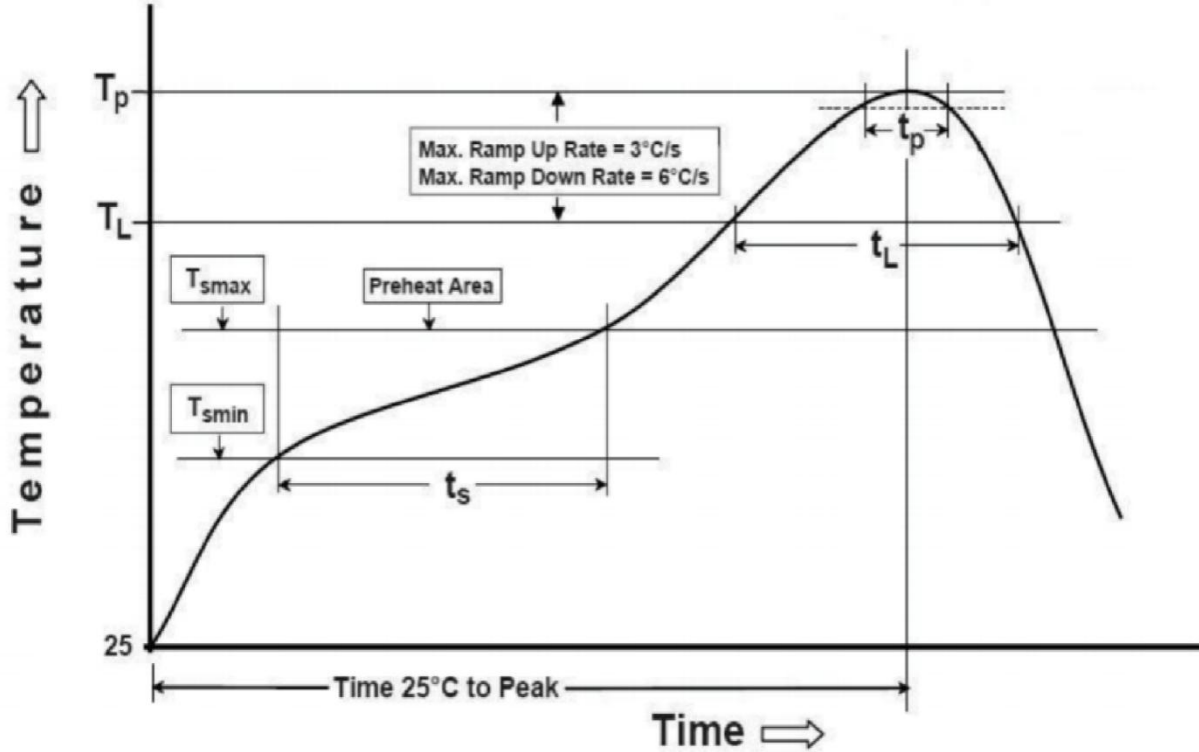


**Product Structure**

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



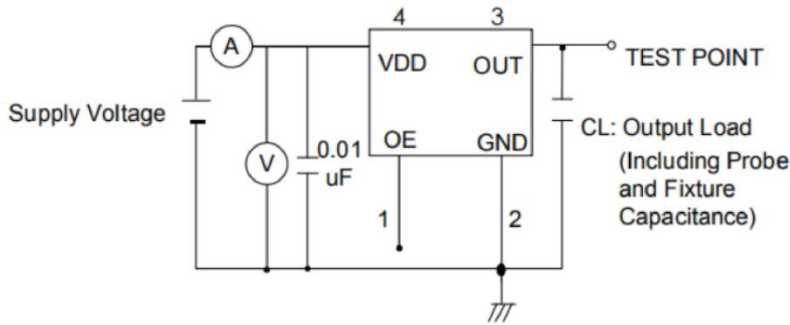
**Suggested Reflow Profile**



Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min ( T <sub>s</sub> min ) ● Temperature Max ( T <sub>s</sub> max ) ● Time ( T <sub>s</sub> min to T <sub>s</sub> max )	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate ( T <sub>L</sub> to T <sub>p</sub> )	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature ( T <sub>L</sub> ) ● Time ( t <sub>L</sub> ) maintained above T <sub>L</sub>	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature ( T <sub>p</sub> )	235°C	260°C
Time within 5° C of the specified classification temperature ( T <sub>p</sub> )	20 seconds	30 seconds
Ramp - down rate ( T <sub>p</sub> to T <sub>L</sub> )	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
<b>Suggest reflow times</b>	<b>2 Times max.</b>	

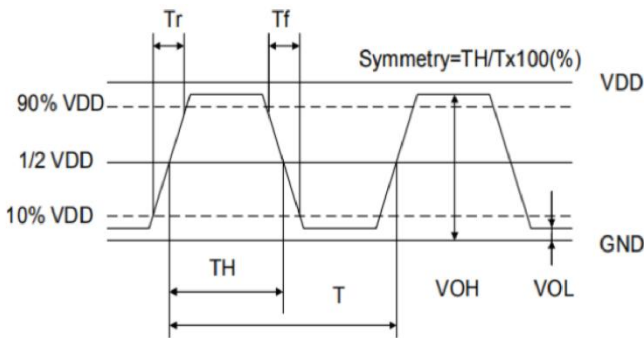


**Testing circuit**



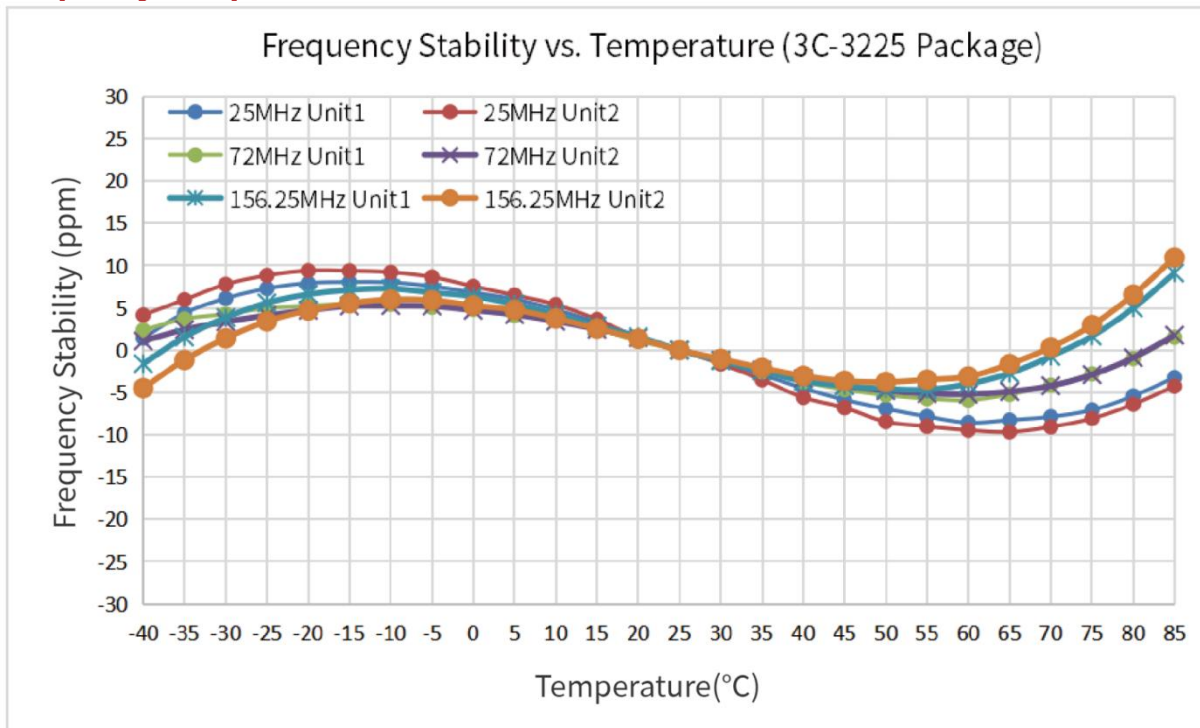
※ Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

**Waveform Conditions**



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

**Frequency Temperature Characteristics**





**PN Structure:**

WQS-OSC32251.000B20F30TNNTR

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

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

**1. Frequency Code(MHz)**

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	60.000	64.000	65.536	66.000
66.666	72.000	75.000	80.000	96.000
100.000	125.000	133.000	148.500	156.250

**2. Supply Voltage**

D	1.8V
H	2.5V
B	3.3V
A	5.0V



### 3. Frequency Tolerance

10	±10ppm
20	±20ppm

### 4. Operating Temperature

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

### 5. Frequency Drift

15	±15ppm
20	±20ppm
30	±30ppm

### 6. Output

T	Squarewave
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### 7. Current Consumption

N	Standard
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### 8. Phase Noise

N	Standard
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### 9. Packing

T	Tape Reel
B	Bulk

### 10. RoHS

R	RoHS
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