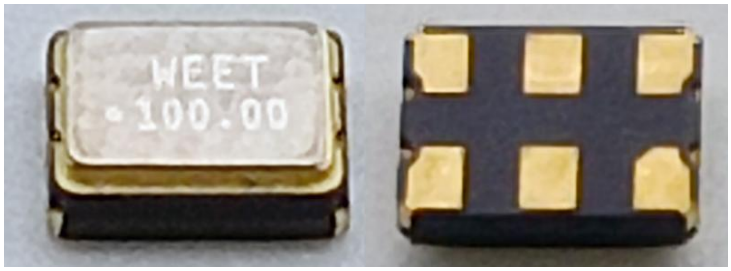
WQS-3Z3225

SMD Differential Output SPXO Crystal Oscillator
3.2×2.5×0.9 mm
90 ~ 160 MHz

WEET®
We Enhance Efficiency

Features

- Output Types: LVPECL/LVDS/HCSL
- Tri-state function available
- Low Phase Jitter :0.5pSec max.
- Pb-free/RoHS Compliant



Applications

- Networking and communications
- Gigabit Ethernet
- Fiber Channel
- SONET/SDH

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.

Electrical Specifications

Item		Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range		Freq.	90.000		160.000	MHz	
Standard Frequency		Freq.	100.000 ,106.250 ,125.000 148.500 ,150.000 ,155.520 156.250			MHz	Contact SCTF for frequencies not listed
Output			LVPECL				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_PECL		50		Ω	Vdd - 2.0 V
Current Consumption		Icc			50	mA	90MHz ⩽ Freq. < 125MHz
					75		125MHz ⩽ Freq. ⩽ 160MHz
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}	Vdd-1.025			V	
Low output voltage		V_{OL}			Vdd-1.62	V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			0.5	pSec	Period Jitter(12KHz-20MHz)
Phase Noise@156.25MHz	100 Hz		-90			dBc/Hz	
	1 KHz		-120			dBc/Hz	
	10 KHz		-140			dBc/Hz	
Aging		f_age			3	ppm	1st. Year at 25°C

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Standard Frequency		Freq.	100.000 ,106.250 ,125.000 148.500 ,150.000 ,155.520 156.250			MHz	Contact SCTF for frequencies not listed
Output			LVDS				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_LVDS		100		Ω	
Current Consumption		Icc			30	mA	90MHz ⩽ Freq. < 125MHz
					40		125MHz ⩽ Freq. ⩽ 160MHz
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}			1.6	V	
Low output voltage		V_{OL}	0.9			V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			0.5	pSec	Period Jitter(12KHz-20MHz)
Phase Noise@156.25MHz	100 Hz				-90	dBc/Hz	
	1 KHz				-120	dBc/Hz	
	10 KHz				-140	dBc/Hz	
Aging		f_age			3	ppm	1st. Year at 25°C

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Output			HCSL				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_HCSL	R_S=33 , R_L=50			Ω	
Current Consumption		Icc			35	mA	90MHz ⩽ Freq. < 125MHz
					40		125MHz ⩽ Freq. ⩽ 160MHz
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}	0.66			V	
Low output voltage		V_{OL}			0.15	V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			0.5	pSec	Period Jitter(12KHz-20MHz)
Phase Noise@156.25MHz	100 Hz				-90	dBc/Hz	
	1 KHz				-120	dBc/Hz	
	10 KHz				-140	dBc/Hz	
Aging		f_age			3	ppm	1st. Year at 25°C

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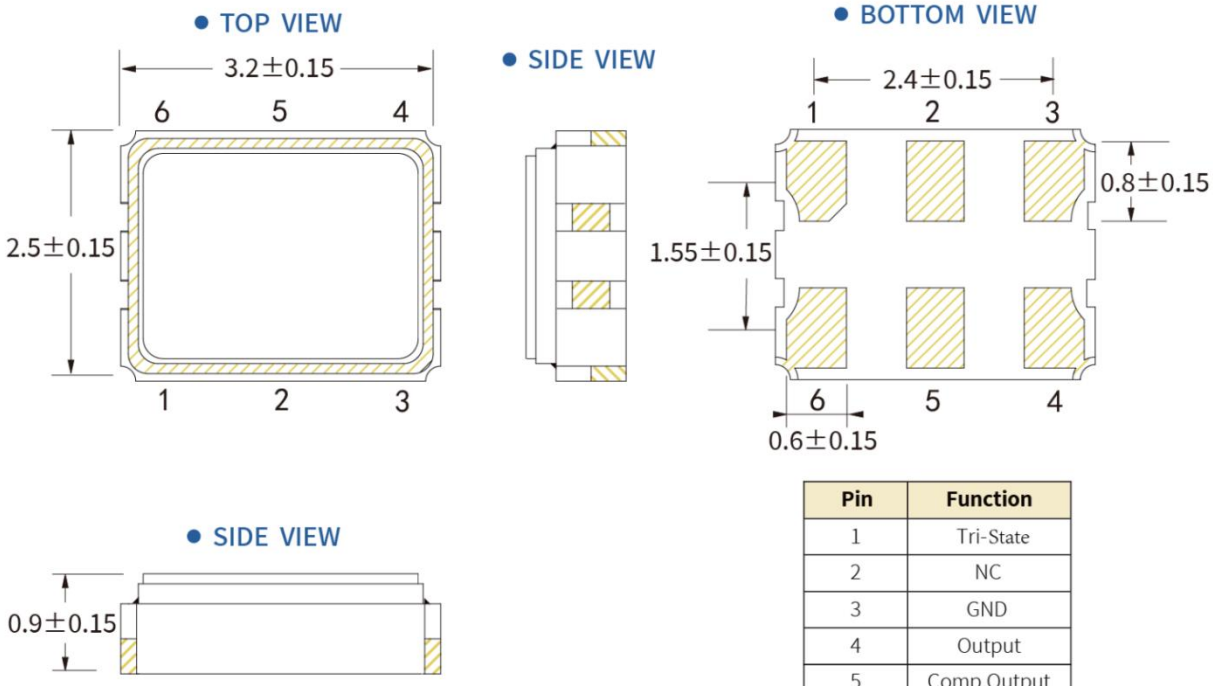
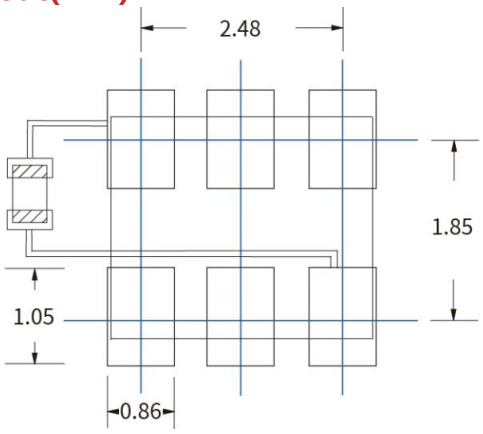
Dimensions (mm)



Pin	Function
1	Tri-State
2	NC
3	GND
4	Output
5	Comp.Output
6	Vdd

Solder pad layout(mm)



To ensure optimal oscillator performance,place a by-pass capacitor of 0.1μF as close to the part as possible between Vdd and GND pads.

Product Structure

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

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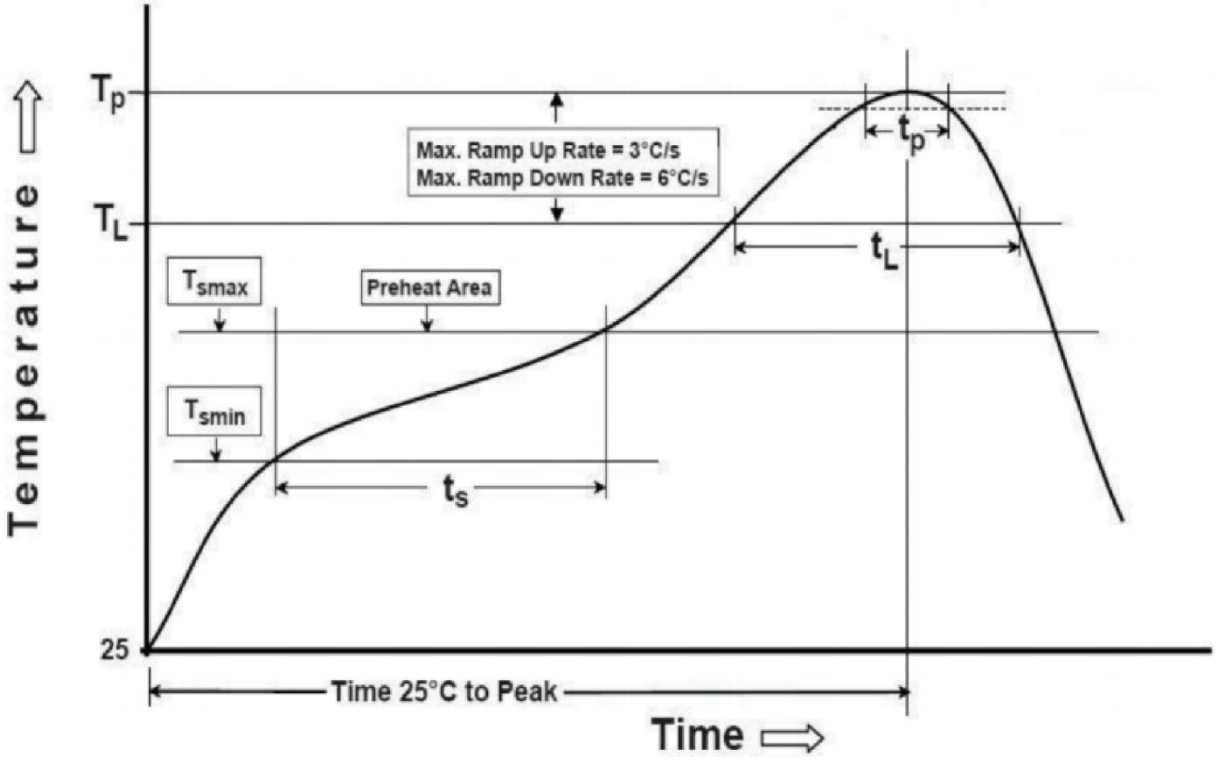
Suggested Reflow Profile



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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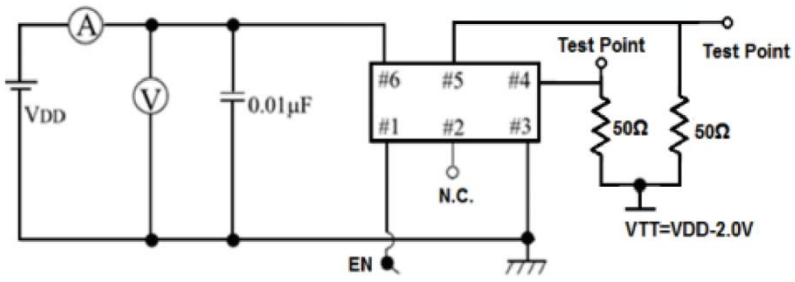
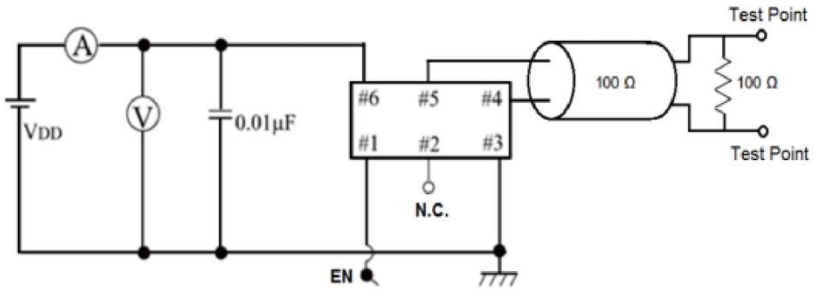
Testing circuit

- LVPECL



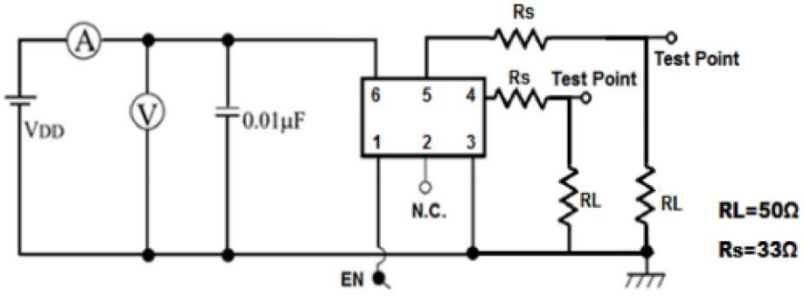
※ Notes: PIN 1 connected to Vdd or floating, the product is working properly;connected to GND,stops working.

- LVDS



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

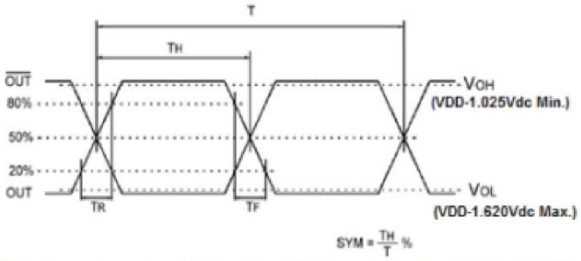
- HCSL



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

Waveform Conditions

- LVPECL



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

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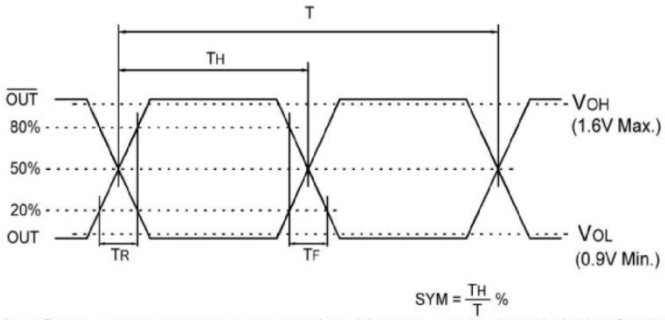
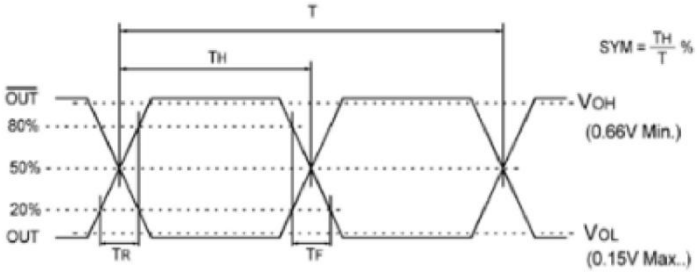
- LVDS



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

- HCSL



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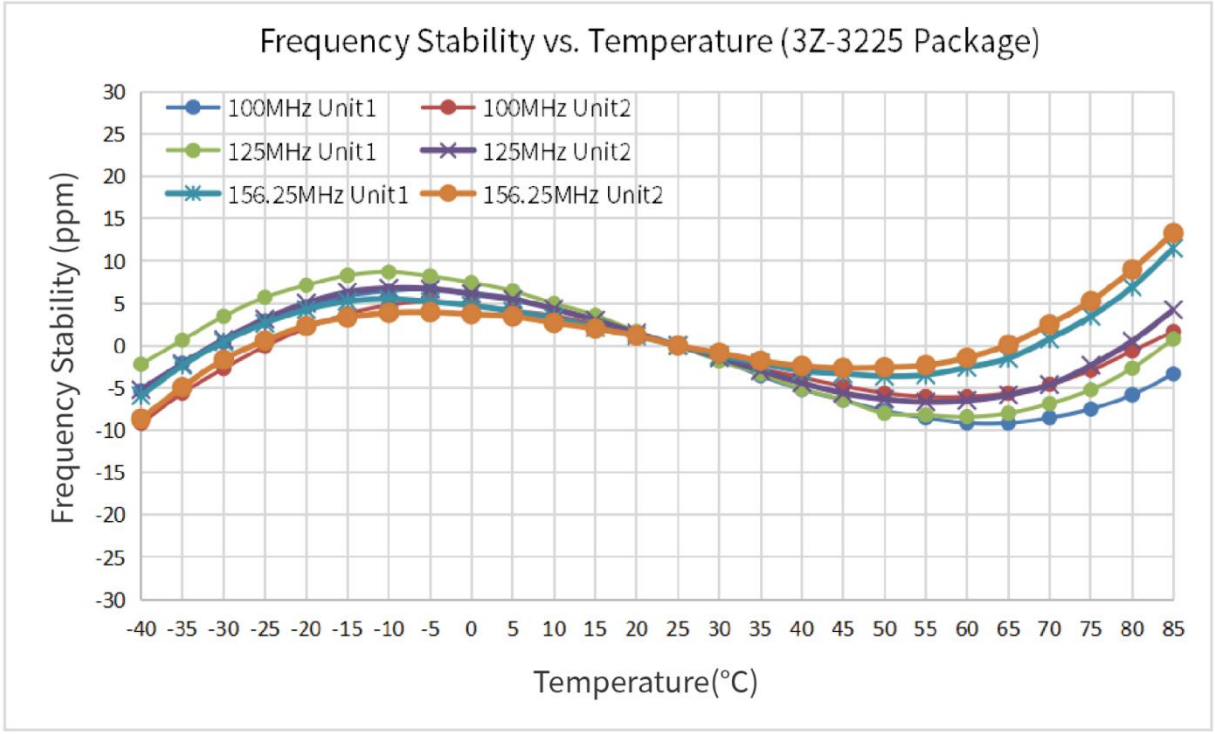
Frequency Temperature Characteristics



PN Structure:

WQS-3Z3225100.000B20F30DNNTR

WQS-3Z3225 100.000MHz 3.3V ±20ppm -40+85C ±30ppm LVDS Tape Reel RoHS

WQS-	3Z3225	100.000	B	20	F	30	D	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)

100.000	106.250	125.000	148.500	150.000
155.520	156.250			

2. Supply Voltage

D	1.8V
H	2.5V
B	3.3V

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

P	LVPECL
D	LVDS
H	HCSL

7. Current Consumption

N	Standard

8. Phase Noise

N	Standard

9. Packing

T	Tape Reel
B	Bulk

10. RoHS

R	RoHS

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