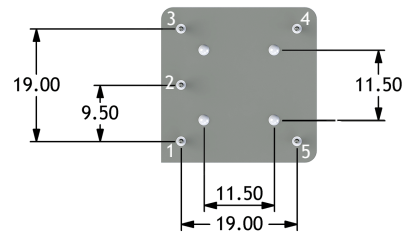
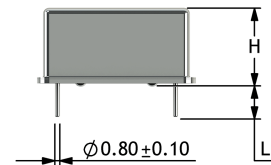
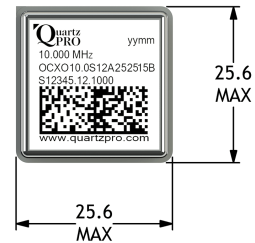


## DETAILED SPECIFICATION FOR OCXO PART # OCXO13.0H50A252513B

### KEY FEATURES

- $f$  13.000 MHz
- HERMETICALLY SEALED 25x25x13 MM PACKAGE
- 5.0 V SUPPLY VOLTAGE
- HCMOS OUTPUT



### DESCRIPTION

Hermetically sealed for best environmental immunity. Voltage controlled input for external control of output frequency.

### DETAILED SPECIFICATION ► ELECTRICAL

#### 1. POWER SUPPLY CHARACTERISTICS (pin 5)

Item	Parameter	Condition	Min.	Typ.	Max.	Unit	Note
1.1	Supply voltage input		4.75	5.0	5.25	V	
1.2	Supply current at power on	at 25°C		540 / 2.7	650 / 3.4	mA / W	
1.3	Supply current at steady state	at 25°C		190 / 1.0	250 / 1.3	mA / W	In still air 5 min after power on
1.4	Supply current at steady state	at Min T				mA / W	In still air 5 min after power on
1.5	Supply current at steady state	at Max T				mA / W	In still air 5 min after power on

#### 2. CONTROL VOLTAGE INPUT (pin 3)

2.1	Transfer slope			Positive			
2.2	Input impedance		100			kohm	
2.3	Min frequency	@ Vc min	-2.0		-1.0	ppm	Vc min = 0V
2.4	Nom frequency	@ Vc nom	-200		+200	ppb	Vc nom = 2.0 V
2.5	Max frequency	@ Vc max	+1.0		+2.0	ppm	Vc max = 4.0 V
2.6	Tuning sensitivity			1.0		ppb/mV	
2.7	Tuning linearity		-10		+10	%	Deviation from a straight line fit

#### 3. TEMPERATURE

			Min T		Max T	
3.1	Temperature range	operating	-20		+70	Deg C
3.2	Temperature range	storage	-55		+105	Deg C

## DETAILED SPECIFICATION FOR OCXO PART # OCXO13.0H50A252513B

### 4A. OUTPUT SIGNAL FOR HCMOS, LVCMOS, CMOS (pin 1)

Item	Parameter	Condition	Min.	Typ.	Max.	Unit	Note
4.1	Load			15		pF	
4.2	Output Level	VOH / VOL	> 4.5		< 0.5	V	
4.3	Duty Cycle		45		55	%	
4.4	Rise / Fall time			< 2.2	< 6.0	ns	

### 4B. OUTPUT SIGNAL FOR SINEWAVE (pin 1)

4.5	Output Level	Sinewave				dBm	Load 50 ohm
4.6	Harmonics					dBc	
4.7	Non harmonics					dBc	

### 4.8 Short term stability Frequency domain, Phase Noise L(f)

4.8.1	Phase Noise @ offset frequency	1 Hz		-85	-80	dBc / Hz	1 h after power on and still air
4.8.2	Phase Noise @ offset frequency	10 Hz		-120	-115	dBc / Hz	1 h after power on and still air
4.8.3	Phase Noise @ offset frequency	100 Hz			-140	dBc / Hz	1 h after power on and still air
4.8.4	Phase Noise @ offset frequency	1KHz			-145	dBc / Hz	1 h after power on and still air
4.8.5	Phase Noise @ offset frequency	10KHz			-150	dBc / Hz	1 h after power on and still air
4.8.6	Phase Noise @ offset frequency	100KHz				dBc / Hz	1 h after power on and still air

### 4.9 Short term stability Time domain, Allan Deviation sy(t)

4.9.1	Sample time (τ)	0,1s					1 h after power on and still air
4.9.2	Sample time (τ)	1.0s		< 4E <sup>-11</sup>	< 5E <sup>-11</sup>		1 h after power on and still air
4.9.3	Sample time (τ)	10s					1 h after power on and still air
4.9.4	Sample time (τ)	100s					1 h after power on and still air

## 5. FREQUENCY CHARACTERISTICS

5.1	Stability vs temperature	Min T/ Max T	-25		+25	ppb p-p	External Vc connected
5.2	Calibration accuracy	at 25°C and Vc nom	-200		+200	ppb	At delivery, 30 min after power on
5.3	Frequency retrace *	15 min after Power On				ppb	Value 15 min after power ON compared to frequency prior to power OFF
5.4	Warm up time	at Vc Nom and 25°C			10	min	< ±200 ppb from final freq. after PO for
5.5	Long term stability (aging)	Per day	-1.0		+1.0	ppb	After 30 days of continues operation At 25°C
5.6	Long term stability (aging)	First year	-100		+100	ppb	After 30 days of continues operation At 25°C
5.7	Long term stability (aging)	After first year	-30		+30	ppb	After 30 days of continues operation At 25°C
5.8	Start up time	At 25°C and Vc nom				s	From power on to 67 % of V out
5.9	Load change	Cl ± 5%	-5.0	± 1.0	+5.0	ppb	
5.10	Vcc change	Vcc ± 5%	-10.0	± 1.0	+10.0	ppb	

\* Retrace test precondition Power ON 24 h Power OFF 24 h and Vc nom and 25°C.

## 6A. REFERENCE VOLTAGE

6.1	Reference Voltage					V	
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## 6B. OVEN ALARM

6.2	High level					V	Oven is ready (steady state)
6.3	Low level					V	Oven is warming up

## DETAILED SPECIFICATION FOR OCXO PART # OCXO13.0H50A252513B

### DETAILED SPECIFICATION ► ENVIRONMENTAL

#### 7. VIBRATION IEC 60068-2-6 Fc

Line	Description	Parameter	Condition	Units	Notes
7.1	Type and frequency range	Sinewave 10 - 500 Hz			
7.2	Sweep parameters	Amplitude 10 - 55 Hz	0.75	mm	
7.3	Sweep parameters	Acceleration 55 - 500 Hz	10	g	
7.4	Sweep rate and direction	1 octave / minute = 6 minutes	up / down = 12	min	
7.5	Direction and number of sweeps	x,y and z	10		
7.6	Duration	6 min x 2 sweeps x 10 sweeps	120 x 3 = 360	min	
7.7	Type and frequency range	Sinewave 10 - 500 Hz			

#### 8. SHOCK IEC 60068-27 Ea

8.1	Pulse waveform	Half sine	40 (peak)	g	
8.2	Puls length		11	ms	
8.3	Direction, sign and number of shocks	x,y and z	5 pos & 5 neg		In each 6 directions

#### 9. TEMPERATURE CYCLING IEC 60068-2-14 Na

9.1	Low temperature		-40	Dec C	
9.2	High temperature		+85	Dec C	
9.3	Transition time		2 - 3	min	
9.4	Exposure time	Time in each temperature	10	min	
9.5	Number of cycles		5		

#### 10. ADDITIONAL INFORMATION

10.1	Soldering	No clean solder and hand soldering recommended.			
10.2	Cleaning	Possible			
10.3	ESD	Parts are sensitive to Electro Static Discharge. Please use normal ESD precautions.			

## DETAILED SPECIFICATION FOR OCXO PART # OCXO13.0H50A252513B

### DETAILED SPECIFICATION ► MECHANICAL

#### 11. LABEL MARKING

Frequency	in MHz
Part / Specification #	18 digits
Bar code content	Order #, Order line, Serial #
Bar code type	Data Matrix Code (ECC200)
Date code	2 last digits in Year (yy) and Week (ww) Example 0922 (Year 2009), (Week 22)
▼ Triangle in corner designates pin 1	

#### 12. PIN / PAD ASSIGNMENT

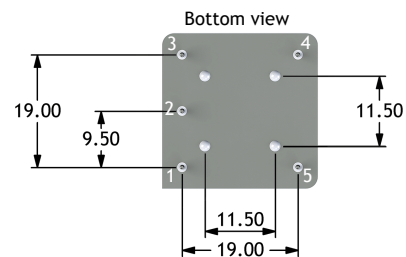
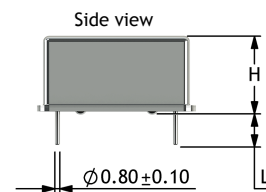
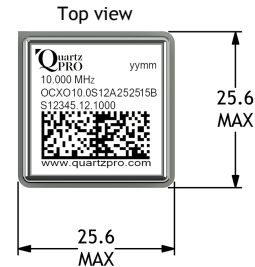
Pin / Pad	Function	Assignment
1	Output signal	Out
2	Ground	Gnd
3	Control Voltage in	V <sub>c</sub>
4	NC	NC
5	Supply Voltage	V <sub>cc</sub>

#### 13. MECHANICAL DIMENSIONS

Parameter	(mm)
H = Height	12.8 MAX
L = Pin length	5.2 ±0.7

#### 14. REVISION HISTORY

	Date	Description
14.1	2009.02.06	First issue
14.2	2014.08.15	New detailed datasheet
14.3		
14.4		
14.5		
14.6		



UNLESS OTHERWISE SPECIFIED :

TITLE OCXO252513-H-W

	NAME	SIGN.	DATE	TOLERANCES	DWG NO.	OCXO252513-H-W
DRAWN	Vikram Singh	VS	2009.02.06	MATERIAL A	REV.	0.1
CHK'D	Anders Aven	AA	2009.02.07	MATERIAL B		
APPV'D	Anders Olsen	AO	2009.02.07	WEIGHT GR		
NOTE						

SHEET 1 OF 1