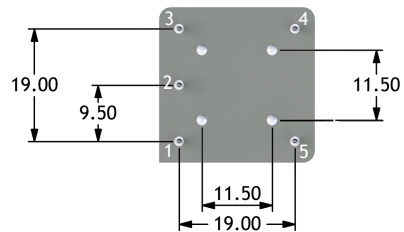
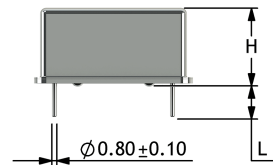
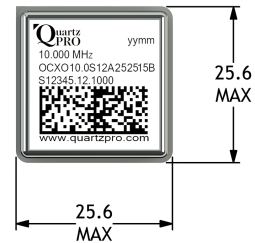


## DETAILED SPECIFICATION FOR OCXO PART # OCXO12.8L33A252513B



### KEY FEATURES

- ✓  $f$  12.800 MHz
- ✓ HERMETICALLY SEALED 25x25x13 MM PACKAGE
- ✓ 3.3 V SUPPLY VOLTAGE
- ✓ LVC MOS OUTPUT

### DESCRIPTION

Hermetically sealed for best environmental immunity. Wide temperature range. Fixed frequency output. Tight temperature stability ( $\pm 6$  ppb  $-20 / +70$  deg C).

### DETAILED SPECIFICATION ► ELECTRICAL

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

Item	Parameter	Condition	Min.	Typ.	Max.	Unit	Note
1.1	Supply voltage input		3.135	3.30	3.465	V	
1.2	Supply current at power on	at 25°C		910 / 3.0	1060 / 3.5	mA / W	
1.3	Supply current at steady state	at 25°C		300 / 1.0	430 / 1.5	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

2.1	Transfer slope			Positive			
2.2	Input impedance					kohm	
2.3	Min frequency	@ Vc min				ppm	Vc min = 0V
2.4	Nom frequency	@ Vc nom				ppb	Vc nom = 2.0 V
2.5	Max frequency	@ Vc max				ppm	Vc max = 4.0 V
2.6	Tuning sensitivity					ppb/mV	
2.7	Tuning linearity					%	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	-50	+90	Deg C

## DETAILED SPECIFICATION FOR OCXO PART # OCXO12.8L33A252513B

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

Item	Parameter	Condition	Min.	Typ.	Max.	Unit	Note
4.1	Load			15		pF	
4.2	Output Level	VOH / VOL	> 2.4		< 0.5	V	
4.3	Duty Cycle		40		60	%	
4.4	Rise / Fall time			< 2.2	< 5.0	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				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			-135	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				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 ( $\tau$ )	0,1s					1 h after power on and still air
4.9.2	Sample time ( $\tau$ )	1.0s			< 1·E <sup>-11</sup>		1 h after power on and still air
4.9.3	Sample time ( $\tau$ )	10s					1 h after power on and still air
4.9.4	Sample time ( $\tau$ )	100s					1 h after power on and still air

## 5. FREQUENCY CHARACTERISTICS

5.1	Stability vs temperature	Min T/ Max T	-6		+6	ppb p-p	External Vc connected
5.2	Calibration accuracy	at 25°C and Vc nom				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			5	min	< ±100 ppb from final freq. after PO for 1hour
5.5	Long term stability (aging)	Per day	-0.5		+0.5	ppb	After 30 days of continues operation At 25°C
5.6	Long term stability (aging)	First year	-80		+80	ppb	After 30 days of continues operation At 25°C
5.7	Long term stability (aging)	After first year				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%	-2.0	± 1.0	+2.0	ppb	
5.10	Vcc change	Vcc ± 5%	-2.0	± 0.5	+2.0	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 # OCXO12.8L33A252513B

### 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 # OCXO12.8L33A252513B

### 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	NC	NC
4	NC	NC
5	Supply Voltage	V <sub>cc</sub>

#### 13. MECHANICAL DIMENSIONS

Parameter	(mm)
H = Height	12.8 MAX
L = Pin length	5.4 ±0.8

#### 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:  
DIMENSIONS ARE IN MILLIMETERS

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

