



### Features and Benefits

- Very low power consumption (to 70mW at +25°C)
- High frequency stability (to ± 5 ppb over -40°C to 85°C)
- Very fast warming-up to 30 s
- Very low phase-noise level (-172 dBc/Hz, floor)
- Low aging (to 0.1ppb/day, 0.015ppm/year)
- Fundamental operation at up to 150 MHz

### Typical Applications

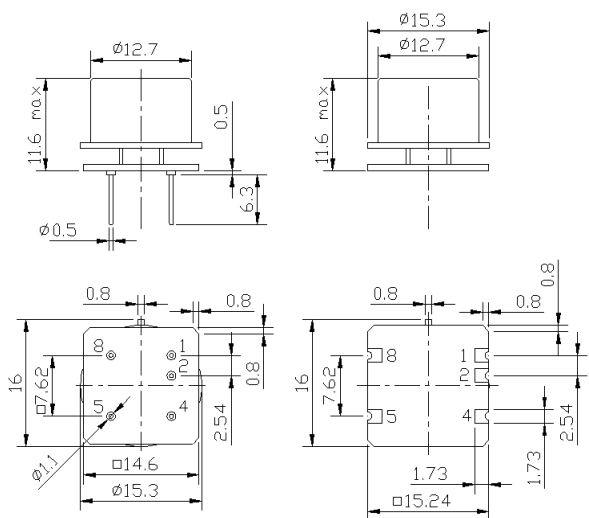
- Portable Wireless Communications
- Mobile Test equipment
- Beacons & Rescue systems
- Battery Powered Applications

### Description

The crystal plate inside the TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and warm-up time. In spite of very small sizes and extremely low power consumption these oscillators exhibit excellent frequency stability and low phase-noise level comparable with that of the high-end conventional OCXO designs. The OCXO3318AW\_series have DIP8 compatible sizes and pins-out and are the world smallest high stability OCXOs.

### Mechanical Drawing & Pin Connections

Drawing No: MD140077-5



Pin	Signal
1	Electrical tuning
2	Reference voltage
4	GND
5	RF Out
8	+V Supply

Note: We reserves the right to reduce the external dimensions without changing of connecting dimensions.

Unit in mm  
1mm = 0.0394 inches



**Specifications**

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency Range	$F_{nom}$		8		150	MHz	
<b>RF Output</b>							
Signal Waveform			HCMOS(TTL) option				
Load	$R_L$		10kohm/5pf (10kohm/5pf)				100MHz(10MHz)
H-Level Voltage	$V_H$	$V_{cc}=5V$	3.8			V	
		$V_{cc}=3.3V$	2.4			V	
L- Level Voltage	$V_L$				0.4	V	
Duty Cycle			45		55	%	
Rise/Fall time				10/3		ns	10MHz/100MHz
Signal Waveform			Sinewave option				
Level		$V_{cc}=5V$	+7			dBm	
		$V_{cc}=3.3V$	+4				
Load				50		ohm	
Harmonics					-25	dBc	
Sub-Harmonics				none		dBc	
<b>Power Supply</b>							
Reference Voltage	$V_{ref}$	$V_{cc}=5V$	4.1	4.2	4.3	V	
		$V_{cc}=3.3V$	2.7	2.8	2.9	V	
Supply Voltage	$V_{cc}$		4.75	5.0	5.25	V	
			3.15	3.3	3.45		
Warm-up Time	$T_{up}$	at +25°C to $\Delta f/f=1e-7$	30	60		sec	ref. to freq. after 15 min. of operation
		at +25°C to $\Delta f/f=1e-8$		120		sec	
Power Consumption		Steady state, +25°C		90		mW	10MHz, -40°C +85°C
		Warm-up			1200	mW	
<b>Frequency Adjustment Range</b>							
Electronic Frequency Control (EFC)		Compliance with 10 years of aging	From $\pm 0.3$ to $\pm 1.0$			ppm	
EFC voltage	$V_c$	$V_{cc}=5V$	0		4.2	V	
		$V_{cc}=3.3V$	0		2.8	V	
EFC Slope			positive				
<b>Frequency Stability</b>							
Versus Operating Temperature Range		ref. 25°C, air flow 0.5 m/s max.	$\pm 5.0$			ppb	See ordering information
Initial Tolerance	$(f-f_0)/f_0$	+25°C, $V_c=0.5 \cdot V_{ref}$		$\pm 0.1$		ppm	
Versus supply voltage	$V_s$	ref VCC typ		$\pm 2$		ppb	
G – sensitivity		worst direction, 0 – 1kHz vibration BW (for 0 – 2kHz BW consult the factory)	$\pm 0.2$	$\pm 1.0$		ppb/G	
Retrace		24h work after 24h off			$\pm 10$	ppb	10MHz
Aging Per Day		after 30 days of operation	$\pm 0.1$			ppb	10MHz see ordering information
Aging 1 <sup>st</sup> Year			$\pm 0.015$			ppm	
Allan Variance		1s	5		30	e-12	10MHz
SSB Phase noise		1Hz	-105/---		-90/---	dBc/Hz	10/100MHz $V_{cc}=5V$
		10Hz	-135/-100		-120/-90	dBc/Hz	
		100Hz	-155/-130		-145/-120	dBc/Hz	
		1kHz	-165/-155		-155/-150	dBc/Hz	
		10kHz	-170/-170		-165/-165	dBc/Hz	
		100kHz	-172/-172		-165/-165	dBc/Hz	



Environmental, Mechanical Conditions	
Airflow velocity	0.5 m/s maximum
Operating temperature range	See ordering information
Storage temperature range	-60°C to 85°C
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms
Soldering conditions	Hand solder only – not reflow compatible. 260°C 10s (on pins)
Humidity	Non-condensing 95%
Power Voltage	-0.5V to Vcc+20%
Control Voltage	-0.5V to 6V
Vibration	Per MIL-STD-202, 10G swept sine 0 to 2000Hz
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage

**Ordering Information**

OCXO3318AW	-	100MHz	-	x	x	x	x	x	x
Group				01	02	03	04	05	06

For example, OCXO3318AW-100MHz-1-1-2-2 denotes the OCXO has the following specifications:

Package type: 8DIP  
 Temperature Range: 0°C to +50°C  
 Stability Over Temperature: ±5ppb  
 Aging per day / per year: 0.2ppb/0.02ppm  
 Supply Voltage: 5V  
 Output: Sinewave

01 Packaging type	
Code	Specification
1	8DIP
2	SMD

02 Temperature Range	
Code	Specification
1	0°C to +50°C
2	-10°C to +60°C
3	0°C to +70°C
4	-20°C to +70°C
5	-30°C to +70°C
6	-40°C to +85°C
7	-55°C to +85°C
8	-60°C to +85°C

03		Frequency Stability	
Code	Spec	Temperature range code available for 10MHz 5V	Temperature range code available for 100MHz 5V
1	±3ppb	1,2	--
2	±5ppb	1,2,3,4,5,6	--
3	±10ppb	1,2,3,4,5,6,7	1,2
4	±20ppb	1,2,3,4,5,6,7,8	1,2,3,4
5	±30ppb	1,2,3,4,5,6,7,8	1,2,3,4,5,6
6	±50ppb	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7
7	±100ppb	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8

04 Aging per day/per year, ppb/ppm	
Code	Specification
1	0.1/0.015 <=10MHz
2	0.2/0.02 <=10MHz
3	0.3/0.03 <=10MHz
4	0.5/0.05 <=20MHz
5	1/0.1 <=40MHz
6	1.5/0.15 <=50MHz
7	2/0.2 <=120MHz
8	3/0.3 <=120MHz
9	5/0.5 <=150MHz

05 Supply Voltage	
Code	Specification
1	3.3V±5%
2	5V±5%

06 Output	
Code	Specification
1	HCMOS/TTL
2	Sinewave