



## Features and Benefits

Miniature DIP8 sizes  
Very low power consumption(to 130mW at +25°C)  
High frequency stability(less than $\pm 5$ ppb over -40°C to +85°C)  
Very fast warming-up (up to 30s)  
Very low phase-noise level (-172dBc/Hz, floor)  
Low aging (to 0.1ppb/day, 0.15ppm/year)  
Fundamental operation at up to 150MHz

## Typical Applications

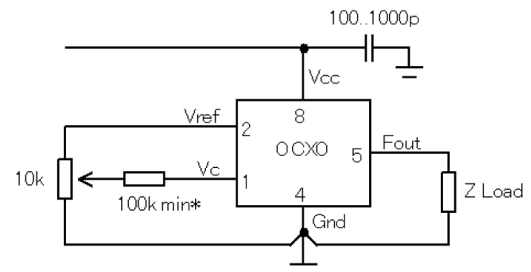
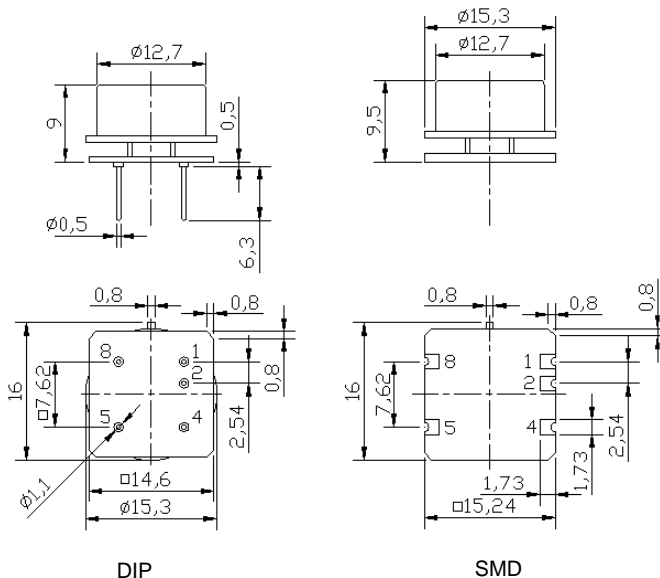
Portable Wireless Communications  
Mobile Test Equipment  
Beacons and Rescue Systems  
Battery Powered Applications

## 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 OCXO3313C models have DIP8 compatible sizes and pins-out and are among the world smallest high stability OCXOs.

## Mechanical Drawing & Pin Connections

Drawing No: MD140077-4



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

Unit in mm

1mm = 0.0394 inches



## Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	$f_0$		8		150	MHz	
Initial Tolerance	$(f-f_0)/f_0$	+25°C, $V_C=0.5 \cdot V_{ref}$		±0.1		ppm	
<b>RF Output</b>							
Sine-wave	Level	$V_{CC}=5V$ $V_{CC}=3.3V$	+7 +4			dBm	
	Load	$R_L$		50		Ohm	
	Harmonics Level				-25	dBc	
Sub-harmonics level			None				
HCMOS (TTL)	Load		10		15/5	Kohm pF	10/100MHz
	High Level Voltage	$V_H$ $V_{CC}=5V$ $V_{CC}=3.3V$	3.8 2.4			V	
	Low Level Voltage	$V_L$			0.4	V	
	Duty Cycle		45		55	%	
	Rise/Fall Time				10/3	ns	10/100MHz
<b>Power Supply</b>							
Voltage	$V_{CC}$		4.75 3.15	5.0 3.3	5.25 3.45	V	
Power Consumption		Warm-up			1200	mW	10MHz, -40° C to +85° C
		Steady-state, +25°C	130	180			
Warm-up Time:	$T_{up}$	At+25° C to $\Delta f/f=1e-8$ At+25° C to $\Delta f/f=1e-7$	30	120 60		s	ref. frequency after 15 min work.
<b>Frequency Control</b>							
Control Voltage Range	$V_C$	$V_{CC}=5V$ $V_{CC}=3.3V$	0 0		4.3 2.8	V	
Tuning Range		Compliance with 10 years of aging	±0.3	±1.0		ppm	Positive slope
Reference Voltage Output	$V_{ref}$		4.1 2.7	4.2 2.8	4.4 2.9	V	
<b>Frequency Stability</b>							
Versus Temperature		ref 25°C	±5			ppb	See ordering code
Versus Supply Voltage		Ref $V_{CC}$ typ.		±2		ppb	
Versus Acceleration		Worst direction	±0.3	±1.0		ppb/G	
Retrace		24h work after 24h off			±10	ppb	10MHz
Aging	Per day	After 30 days of operation	±0.1			ppb	10MHz
	First Year		±0.15			ppm	See ordering code
SSB Phase Noise		1Hz	-105/--		-90/--	dBc/Hz	10MHz/100MHz
		10 Hz	-135/-100		-120/-90		
		100 Hz	-155/-130		-145/-120		
		1 KHz	-165/-155		-155/-150		
		10 KHz	-170/-170		-165/-165		
		100 KHz	-172/-172		-165/-165		
Allan Variance		1s	5		40	e-12	10MHz
<b>Environmental Conditions</b>							
Operating temperature range		-40°C to +85°C(See ordering code)					
Storage temperature range		-60°C to +85 °C					
Power Voltage		-0.5V to $V_{CC}+20\%$					
Control Voltage		-0.5V to +6V					
Humidity		Non-condensing 95%					
Mechanical Shock		Per MIL-STD-202, 30G half sine pulse, 11ms					
Vibration		Per MIL-STD-202, 10G swept sine 10 to 2000 Hz					
Solderability		Hand solder only – not reflow compatible 260°C 10s (on pins)					
Soldering Condition		Washing with water or alcohol based detergent allowed only with final enough drying stage					



## Ordering Information

OCXO3313C	-	xxMHz	-	01	02	03	04	05	06
Group				Code					

For example, OCXO3313C- -100MHz-247111 denotes the OCXO has the following specifications:

Frequency	100MHz
Temperature Range	-10°C to +60°C
Stability Over Temperature	±10ppb
Aging per day / year	2ppb / 0.2ppm
Supply Voltage	3.3V ±10%
Output	HCMOS
Package	DIP

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

02	Stability Over Temperature		
Code	Specification	Available temperature range code	
		10MHz	100MHz
1	±2.0 ppb	1 to 2	-
2	±3.0 ppb	1 to 5	-
3	±5.0 ppb	1 to 6	-
4	±10 ppb	1 to 8	1 to 2
5	±20 ppb	1 to 8	1 to 5
6	±30 ppb	1 to 8	1 to 6
7	±50 ppb	1 to 8	1 to 7
8	±100 ppb	1 to 8	1 to 8

03	Aging per day/year, ppb/ppm
Code	Specification
1	0.1/0.015
2	0.2/0.02
3	0.3/0.03
4	0.5/0.05
5	1/0.1
6	1.5/0.15
7	2/0.2
8	3/0.3
9	5/0.5

04	Supply Voltage
Code	Specification
1	3.3V±5%
2	5.0V±5%

06	Packaging
Code	Specification
1	DIP
2	SMD

05	RF Output
Code	Specification
1	HCMOS
2	Sine-wave