



Features and Benefits

Frequency range: 8MHz – 150MHz
Supply voltage: 3.3V/5.0V
Steady power consumption: 90mW Typ.
Output waveform: HCMOS/Sine
Frequency stability vs. operating temperature: ± 2 ppb (optional)
Aging: ± 0.1 ppb/day (optional)
Operating temperature: -40°C to $+85^{\circ}\text{C}$
Size: 21.6x15.3x11.6mm

Typical Applications

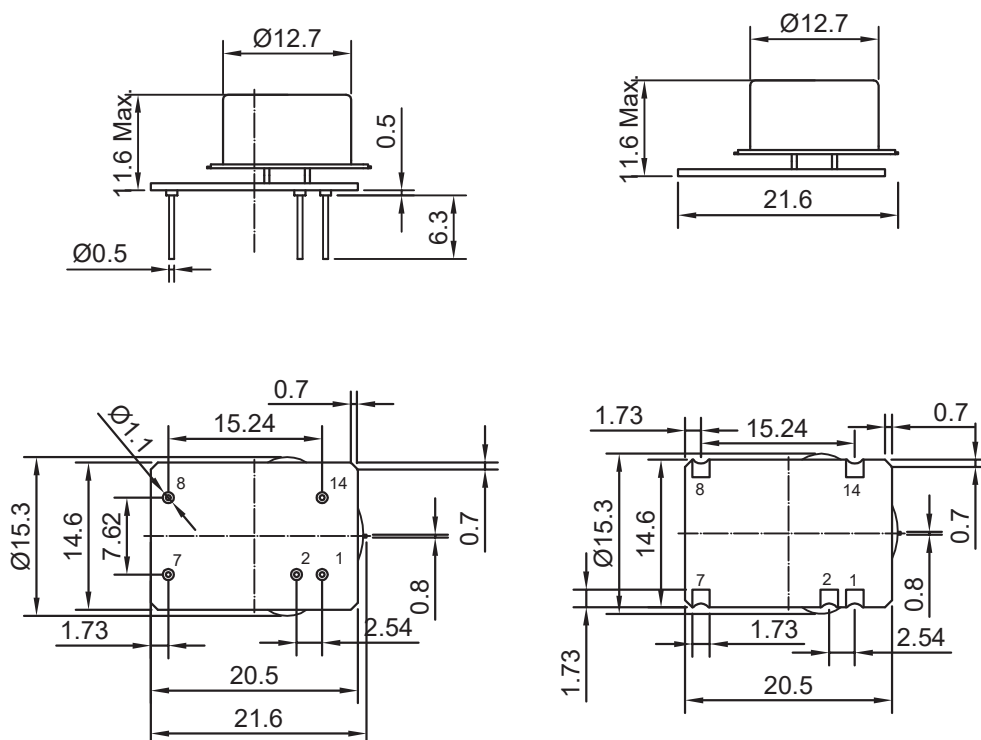
Portable Wireless Communications
Mobile Test Equipment
Beacons and Rescue Systems
Battery Powered Applications

Description

The OCXO3321AW02 is the ultra-low power, high stability, and fast warm-up OCXO. The frequency stability can less than ± 2 PPB from -40°C to $+85^{\circ}\text{C}$. It can be widely used in the battery powered communication devices.

Mechanical Drawing & Pin Connections

Drawing No: MD220024-1



Pin	Signal
1	Control voltage
2	Reference voltage
7	GND
8	Output
14	Supply voltage

Unit in mm
1mm = 0.0394 inches

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



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, $V_{CC}=0.5 \cdot V_{ref}$		±0.1		ppm	
RF Output								
Sine-wave	Level	L	$V_{CC}=5V$ $V_{CC}=3.3V$	+7 +4			dBm	
	Load	R_L			50		Ohm	
	Harmonics Level					-25	dBc	
	Sub-harmonics level			None				
HCMOS (TTL)	H-Level Voltage	V_H	$V_{CC}=5V$ $V_{CC}=3.3V$	3.8 2.4			V	
	L-Level Voltage	V_L				0.4	V	
	Load			10		15/5	Kohm pF	10/100MHz
	Duty Cycle			45		55	%	
	Rise/Fall Time					10/3	ns	10/100MHz
Power Supply								
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		90		mW	
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.
Frequency Control								
Control Voltage Range		V_C	$V_{CC}=5V$ $V_{CC}=3.3V$	0 0		4.2 2.8	V	
Tuning Range			Compliance with 10 years of aging	±0.3	±1.0		ppm	Positive slope
Reference Voltage Output		V_{ref}	$V_{CC}=5V$ $V_{CC}=3.3V$	4.0 2.7		4.3 3.1	V	
Frequency Stability								
Versus Temperature			ref 25°C	±1.0			ppb	See ordering code
Versus Supply Voltage			Ref V_{CC} typ.		±2.0		ppb	
G-Sensitivity			Worst direction, 0-1KHz vibration BW	±0.2	±1.0		ppb/G	
Retrace			24h work after 24h off			±10	ppb	10MHz
Aging	Per day		After 30 days of operation	±0.1			ppb	See ordering code
	First Year			±0.015			ppm	
SSB Phase Noise			@1Hz	-105/--		-90/--		
			@10Hz	-135 /-100		-120 /-90		
			@100Hz	-155 /-130		-145 /-120		
			@1KHz	-165 /-155		-155 /-150		
			@10KHz	-170 /-170		-165 /-165		
			@100KHz	-172 /-172		-165 /-165		
Allan Variance			1s	5		30	e-12	10MHz



Environmental Conditions	
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
Airflow Velocity	0.5m/s max.
Humidity	Non-condensing 95%
Mechanical Shock	Per MIL-STD-202, 30G half sine pulse, 11ms
Vibration	Per MIL-STD-202, 10G swept sine 0 to 2000 Hz
Soldering Conditions	Hand solder only – not reflow compatible 260°C 10s (on pins)
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage

Ordering Information

OCXO3321AW02	-	xxMHz	-	01	02	03	04	05	06
Group				Code					

For example, OCXO3321AW02-100MHz-257111 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 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

02	Stability Over Temperature		
Code	Specification	Available temperature range code	
		10MHz	100MHz
1	±1.0 ppb	1 to 5	-
2	±2.0 ppb	1 to 6	-
3	±3.0 ppb	1 to 6	-
4	±5.0 ppb	1 to 7	1
5	±10 ppb	1 to 8	1 to 6
6	±20 ppb	1 to 8	1 to 7
7	±50 ppb	1 to 8	1 to 8
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	Sinewave

*Only for temperature 1 to 5