



Features and Benefits

- Frequency range: 5-100MHz
- Supply voltage: 3.3V,5.0V
- Steady power consumption: 1-1.2W
- Output waveform: HCMOS
- Frequency stability vs. operating temperature: $\pm 0.1-2.0$ ppb
- Aging: ± 0.015 ppm per year
- Phase noise@100KHz: -173dBc/Hz
- Operating temperature: -40°C to +85°C
- Size: 20.2x20.2x13.8mm

Typical Applications

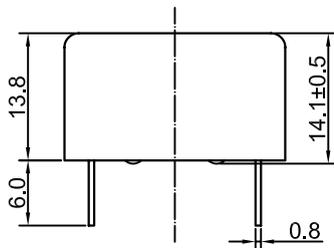
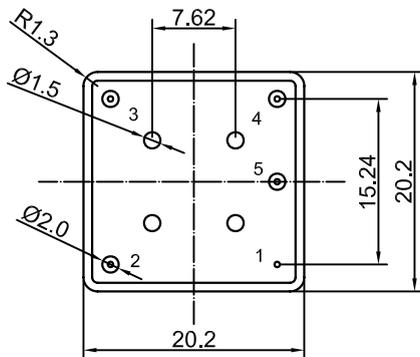
- Rubidium Standard Replacement
- GPS Receivers
- Instrumentation
- Stratum 2 Clock Systems

Description

DOCXO2020AW_HCMOS offers high frequency stability, low long-term aging and low phase noise, all in a compact package to suit the different communication needs.

Mechanical Drawing & Pin Connections

Drawing No: MD140069-9



Pin Connections

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

Unit in mm
1mm = 0.0394 inches



Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	F ₀		5		100	MHz	
RF Output							
Signal Waveform			HCMOS				
High-Voltage		V _{cc} =5.0V	3.7			V	
		V _{cc} =3.3V	2.4				
Low-Voltage					0.4	V	
Load			10			kΩ	
Rise/Fall time					15/5	pF	10/100MHz
Duty Cycle					10/3	ns	10/100MHz
			45		55	%	
Sub-harmonics level		Operational frequency ≤20 MHz		none		dBc	
		Operational frequency >20MHz			-40	dBc	Frequency multiplier used
Power Supply							
Supply Voltage	V _{cc}		3.15	3.3	3.45	V	
			4.75	5.0	5.25	V	
Warm-up Time	T _{up}	At +25°C to Δf/f=1e-7			180	sec	ref to freq after 15 min of operation
Power Consumption		Steady state, +25°C		1000	1200	mW	10MHz, -40°C to +85°C
		Warm-up			4500	mW	
Frequency Adjustment Range							
Electronic Frequency Control (EFC)		Compliance with 10 years of aging	±0.3			ppm	Positive
EFC voltage	V _c	V _{cc} =3.3V	0		3.1	V	
		V _{cc} =5.0V	0		4.3	V	
Reference voltage	V _{ref}	V _{cc} =3.3V	2.7		3.1	V	
		V _{cc} =5.0V	4.0		4.3	V	
Frequency Stability							
Versus Operating Temperature Range		@+25°C air flow 0.5 m/s max.	±0.1		±2	ppb	Please consult our sales
Initial Tolerance @+25°C		(f-f ₀)/f ₀	±0.01	±0.1		ppm	V _c =0.5V _{ref}
Versus supply voltage	V _s	Ref V _{cc} typ		±0.2		ppb	
G – sensitivity		worst direction, 0 – 1kHz vibration BW (for 0 – 2kHz BW consult the factory)	±0.2	±1.0		ppb/G	
Retrace		24h work after 24h off			±10	ppb	10MHz
Allan deviation		1s	1.5		20	e-12	10MHz
Aging Per Day		After 30 days of operation	±0.1			ppb	Please consult our sales
Aging 1 st Year			±0.015			ppm	
SSB Phase noise		1Hz	-110/---		-90/---	dBc	10/100MHz, V _{cc} =5.0V
		10Hz	-140/-100		-120/-90	dBc	
		100Hz	-155/-130		-145/-120	dBc	
		1kHz	-165/-155		-155/-150	dBc	
		10kHz	-170/-170		-165/-165	dBc	
	100kHz	-170/-173		-165/-165	dBc		
Environmental, Mechanical Conditions							
Operating temperature range	-40°C to +85°C (pls consult our sales)						
Storage temperature range	-60°C to +85°C						
Power voltage	-0.5V to V _{cc} +20%						
Control voltage	-0.5V to 6V						
Air flow velocity	0.5 m/s maximum						
Humidity	Hermetically sealed						
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms						
Vibration	Per MIL-STD-202, 10G swept sine 10 to 2000Hz (5G swept sine 10 to 500Hz for OCXO with 0.5mm pins)						
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						