



Features and Benefits

- 20 MHz HCMOS low noise output
- 158 dBc/Hz @ 1 KHz offset typ.
- 165 dBc/Hz @ 10 KHz offset typ.
- Less than 220 mA turn-on current for 60 seconds typ.
- Less than 35 mA steady-state current typical @ +25C
- Less than +/- 50 ppb over -40C to +85C
- Less than +/- 50 ppb per year aging
- Less than 9.5 mm total height stack up

Typical Applications

- Frequency Reference for Mobile Radio
- Frequency Reference for small cell base stations
- Low Power Frequency Reference for battery powered test instruments

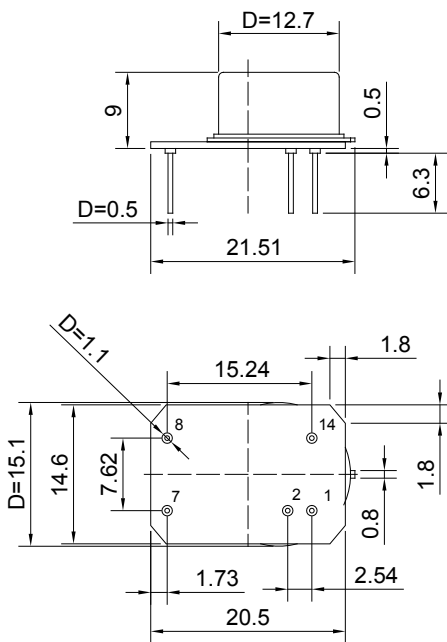
Description

This custom 20 MHz design version represents the latest generation of internally heated resonator design and processing techniques offering outstanding phase noise and overall frequency stability in a package volume 60% smaller than a traditional 25.6 mm x 25.6 mm x 12.7 mm industry standard.

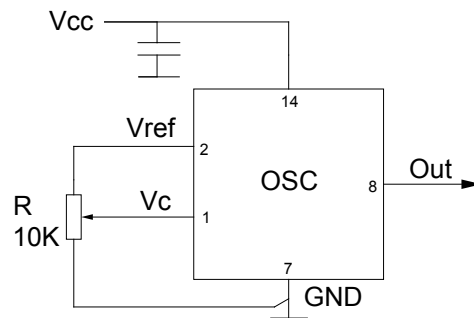
Mechanical Drawing & Pin Connections

Drawing No: MD140075-2

Physical dimensions



Schematic connections



Pin	Signal
1	Electrical tuning
2	Reference voltage
7	GND
8	RF Out
14	+V Supply

Unit: mm
 1mm=0.039inch



Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	F _{nom}			20.000000		MHz	
Initial Tolerance		at+25°C ,V _c =V _{c0}	-0.1		0.1	ppm	
RF Output							
Waveform :				HCMOS			
H-level voltage	V _H		3.8			V	
L-level voltage	V _L				0.4	V	
Load	R _L		10			KOhm	
	C _L				10	pF	
Duty cycle			45	50	55	%	
Frequency control							
Input impedance	R _{in}			11		KOhm	
				5		pF	
Input BW		-3dB level		160		Hz	
Voltage range	V _c		0		4.2	V	
Preset control voltage	V _{c0}	disconnected V _c pin	1.9	2.1	2.3	V	
Slope				positive			
Frequency Turning Range	(f _L -f)/f	V _c =0 V		-1	-0.5	ppm	+
	(f-f)/f	V _c =V _{c0}		0		ppm	
	(f _H -f)/f	V _c =V _{ref}	0.5	1		ppm	
Reference Voltage	V _{ref}		4.1	4.2	4.3	V	
Output resistance of V _{ref}				91		Ohm	
Power Supply							
Voltage	V _{cc}		4.75	5.0	5.25	V	
Warm-up current	I _{ST}	V _{cc} =5.0V	120		220	mA	
Continuous current	I _{cc}	at+25°C , V _{cc} =5.0V		35	50	mA	
Frequency warm-up Time:	T _{up}	to Δf/f = 1e ⁻⁷ at +25°C		60	90	s	
Frequency Stability							
Vs. Temperature		Ref. 25°C			+/- 50	ppb	
Vs. Supply Voltage		Ref Vcc typ.			+/-2	ppb	
vs. load		5% change			+/-2	ppb	
Aging	per day	after 30days of operation			+/-0.5	ppb	
	first year				+/-0.05	ppm	
SSB Phase noise		1 Hz		-90		dBc/Hz	
		10 Hz		-120			
		100 Hz		-145			
		1 KHz		-158			
		10KHz		-165			
		100 KHz		-168			
Environmental Conditions							
Power voltage	-0.5 to 6.0 V						
Control voltage	-1.0 to 9.0 V						
Storage temperature range	-60°C to 90°C						
Operating temperature range	-40°C to 85°C						
Humidity	Non-condensing 95%						
Mechanical Shock	MIL-STD-202, 30G half sine pulse, 11 ms						
Vibration	MIL-STD-202, 5G swept sine, 10 to 2000 Hz						
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage						
Soldering Conditions	Hand solder only – not reflow compatible 260°C 10s(on pins)						