



### Features and Benefits

- Low noise 200MHz sine wave output
- 120 dBc/Hz @ 100 Hz and -140 dBc/Hz @ 1 KHz
- Rugged packaged with SMA output
- Less than ±200 ppb frequency stability over -40°C to +85°C

### Typical Applications

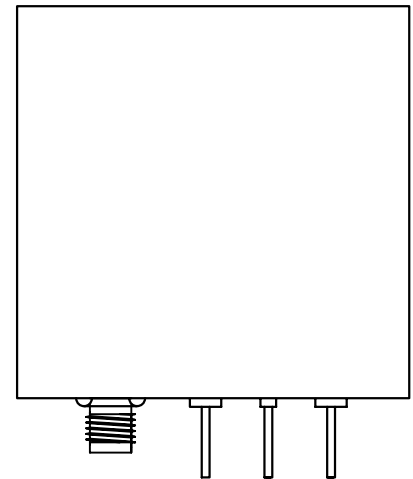
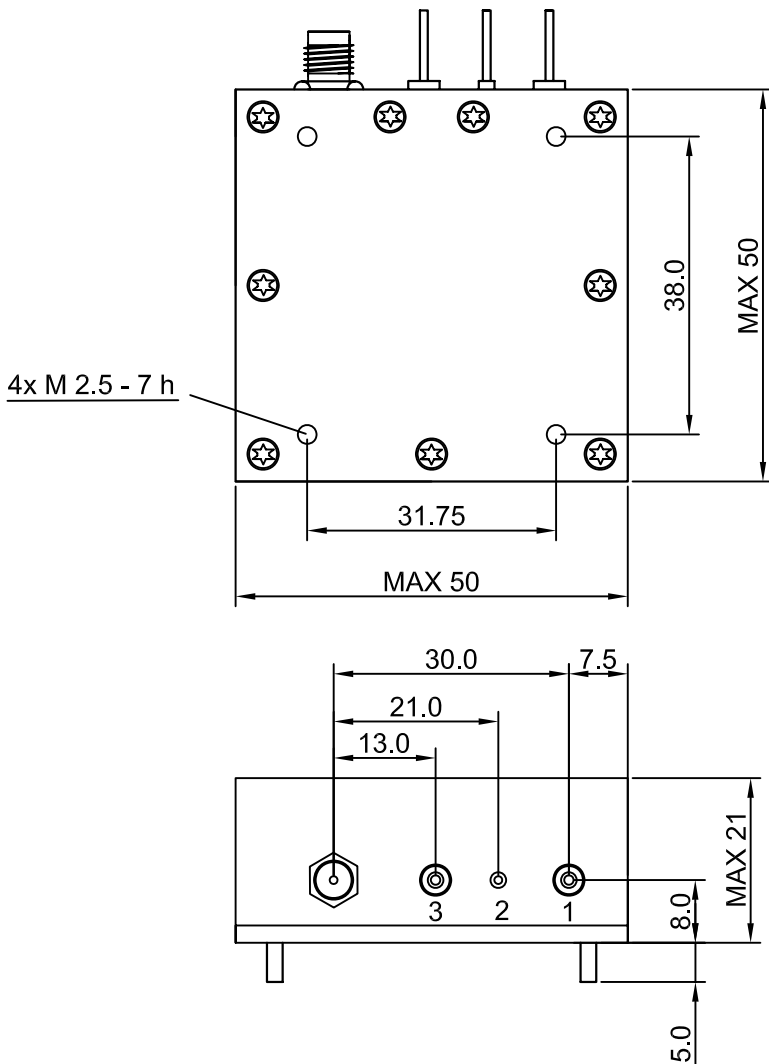
Ideal for reference clock for X-band transponders

### Description

Use of advanced low noise quartz crystal technology and processes to generate a highly stable 200 MHz reference clock output.

### Mechanical Drawing & Pin Connections

Drawing No: MD1600, \$-%



### Pin Connection:

Pin#	Symbol	Function
1	Vs	Supply Voltage
2	GND	Ground
3	Vc	Control Voltage(EFC)
SMA	RF OUT	RF Output

Unit in mm  
1mm = 0.0394 inches



Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Nominal Frequency	F <sub>nom</sub>			200.000		MHz	
Signal Waveform			Sine wave				
Load	R <sub>L</sub>	±5%		50		Ω	
Output Level			+7	+10	+13	dBm	
Harmonics				-35	-30	dBc	
Sub-harmonics		Multiples of f <sub>OUT</sub> /2		-40	-30	dBc	
Spurious					-90	dBc	
<b>Power Supply</b>							
Supply Voltage	V <sub>s</sub>		11.4	12.0	12.6	V	
Current Consumption	Steady State	@ +25°C			300	mA	
	Warm-up				700		
Warm-up Time @+25°C		Δf <sub>final</sub> /f <sub>0</sub> ≤ ±0.1ppm			5	mins	
<b>Frequency Adjustment Range</b>							
Electronic Frequency Control (EFC)			±1.5		±3	ppm	
EFC Voltage	V <sub>c</sub>		0	4.0	8.0	V	
EFC Slope	Δf/ΔV <sub>c</sub>			Positive			
EFC Input Impedance			100			kΩ	
Modulation Bandwidth		@3dB	150			Hz	
<b>Frequency Stability</b>							
Versus Operating Temperature Range		-40°C to 85°C			±200	ppb	
Initial Tolerance at +25°C		@ V <sub>c</sub> = 4.0V			±500	ppb	
Versus Supply Voltage variation (pushing)		V <sub>s</sub> ±5%			±10	ppb	
Versus Load change (pulling)		R <sub>L</sub> ±5%			±5	ppb	
Long Term Aging per day		After 30 days operation		±1	±2	ppb	
Long Term Aging 1 <sup>st</sup> year				±100	±200		
Long Term Aging 10 years					±1.5		
Phase noise						dBc/Hz	
			10 Hz		-90		
			100 Hz		-120		
			1 kHz		-140		
			10 kHz		-155		
		≥100 kHz			-165		

Temperature and Absolute Maximum Ratings

Parameter	Sym	Min.	Max.	Unit	Condition
Operating Temperature		-40	+85	°C	
Storage Temperature		-55	+105	°C	
Supply Voltage	V <sub>s</sub>	-0.5	V <sub>s</sub> +10%	V	V <sub>s</sub> to GND
Control Voltage	V <sub>c</sub>	-0.5	15	V	V <sub>c</sub> to GND
Enclosure (LxWxH)		50.0 x 50.0 x 21.0 max		mm	
Weight			60	g	

Environmental Conditions

Test	IEC 60068 Part...	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test Conditions (IEC)
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak; Test Qc Fine leak: Test Qk
Solderability	2-20	5.6.3	208H		3.6.52	Test Ta Method 1
Resistance to soldering heat	2-58		210F		3.6.48	Test Td <sub>1</sub> Method 2 Test Td <sub>2</sub> Method 2
Shock	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 100g, 6ms half-sine pulse
Vibration, Sinusoidal	2-6	5.6.7.1	201A	516.4-4	3.6.38.1	Test Fc, 30 min per axes, 10 Hz – 55 Hz 0, 75mm; 55 Hz – 2 kHz, 10g
			204D		3.6.38.2	
Vibration, random	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance Tests			108A			
- Aging		5.7.1			4.8.35	30 days @ +85°C, OCXO @+25 1000h, 2000h, 8000h @+85°C
- Extended aging		5.7.2				