Specification	AXIOM210	Rev.: 3	Date: 2015-02-17

Oscillator type: Ultra-Low Phase Noise OCXO in Vibration-isolated Package

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	50		130	MHz	
Standard frequencies		100.000 / 120.000		MHz	
Frequency stability					
Initial tolerance @+25°C			±300	ppb	@ V_C = 5V
vs. operating temperature range		±100	±200	ppb	steady state (Note 2)
vs. supply voltage variation (pushing)			±10	ppb	V_S ±5%
Long term (aging) per day			±2	ppb	after 30 days operation
Long term (aging) per year			±100	ppb	after 30 days operation
Frequency adjustment range					
Electronic Frequency Control (EFC)	±1	±2		ppm	
EFC voltage V_C	1	5	9	V	
EFC slope ($\Delta f / \Delta V_C$)		Positive			
EFC input impedance	100			kΩ	
RF output					
Signal waveform		Sine wave			
Load R_L		50		Ω	±5%
Output level	+7			dBm	
Harmonics		-40	-30	dBc	
Spurious at rest			-90	dBc	
Phase noise at rest		See table 1			Option 2
Phase noise under random vibration		See table 2			Option 3
Warm-up time @ +25°C			5	min	$\Delta f_{final}/f_0 < \pm 0.1$ ppm
Supply voltage V_S	11.4	12.0	12.6	V	(Note 3)
Current consumption (steady state)			300	mA	@ +25°C
Current consumption (warm-up)			500	mA	
Operating temperature range	-40		+85	°C	(Note 2)
Enclosure (see drawings) (LxWxH)		50.0x50.0x30.0 max.		mm	Option 1 “H” or “S” (Note 4)
Weight			200	g	

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Other stability and temperature range on request
3. Other supply voltage on request
4. Other enclosure height on request. Please consult factory

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
Supply Voltage V_S	-0.5	V_S + 10%	V	V_S to GND
Control Voltage V_C	-0.5	15	V	V_C to GND
Storage Temperature	-55	+125	°C	

Phase Noise – Option 2:

Offset	100 MHz					120 MHz					Unit
	A	B	C	D	E	A	B	C	D	E	
10 Hz	-90	-95	-97	-100	-105	-85	-90	-95	-97	-100	dBc/Hz
100 Hz	-125	-130	-132	-135	-137	-118	-122	-125	-127	-130	dBc/Hz
1 kHz	-155	-158	-160	-162	-164	-148	-150	-153	-155	-157	dBc/Hz
10 kHz	-165	-168	-170	-172	-174	-160	-165	-168	-170	-172	dBc/Hz
≥100 kHz	**-175**	**-175**	**-175**	**-175**	**-175**	**-175**	**-175**	**-175**	**-175**	**-175**	dBc/Hz

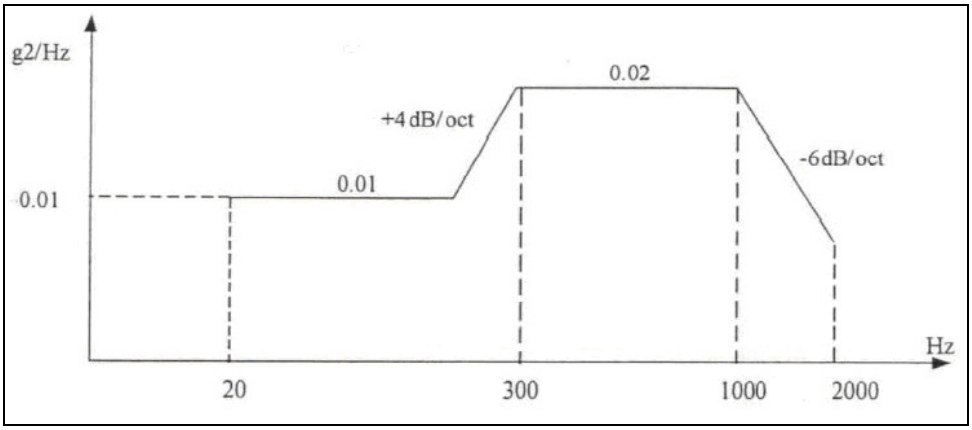
Table 1

Vibration sensitivity – Option 3:

Option	Phase noise @ 1 kHz *	Unit
140	-140	dBc/Hz
145	-145	dBc/Hz
150	-150	dBc/Hz
155	**-155**	dBc/Hz

Table 2 *** see vibration profile below**

Vibration profile



PSD = 0.02 g²/Hz according to RTCA/DO160E Curve C

Functional test: 1 hour each direction
Endurance test: 3 hours each direction at 2 times the PSD level of the functional test

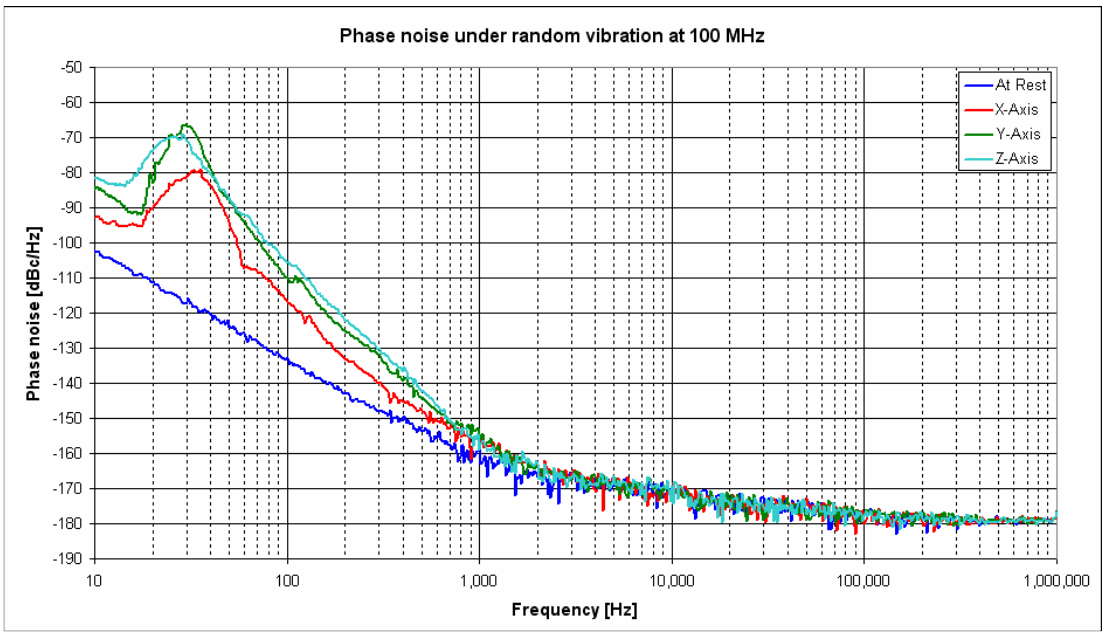
Notes: - Other vibration profiles on request (max. PSD = 0.04 g²/Hz for $f_{VIBRATION}$ < 15 Hz)
- Available enclosure height depends on vibration profile

Ordering Code

Model	Option 1 [Package]	Option 2 [Phase noise]	Option 3 [Vibration sensitivity]	Revision	Frequency [MHz]
AXIOM210	"H" or "S"	Table 1	Table 2	Rev.3	100.000

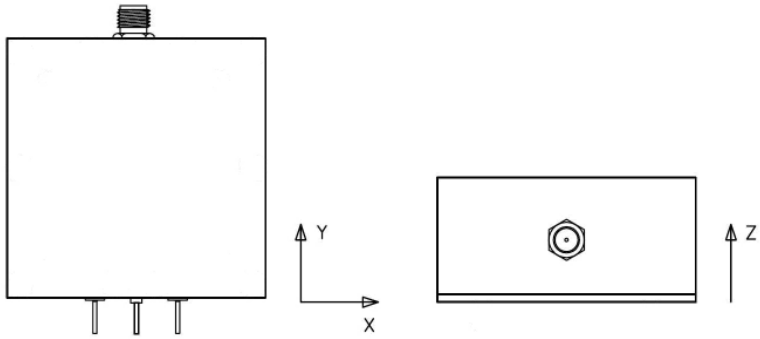
Example: AXIOM210H-A-140_Rev.3 – 100.000 MHz

Phase noise response under random vibration at 100 MHz



Typical phase noise response for vibration sensitivity option "155"

Vibration orientation

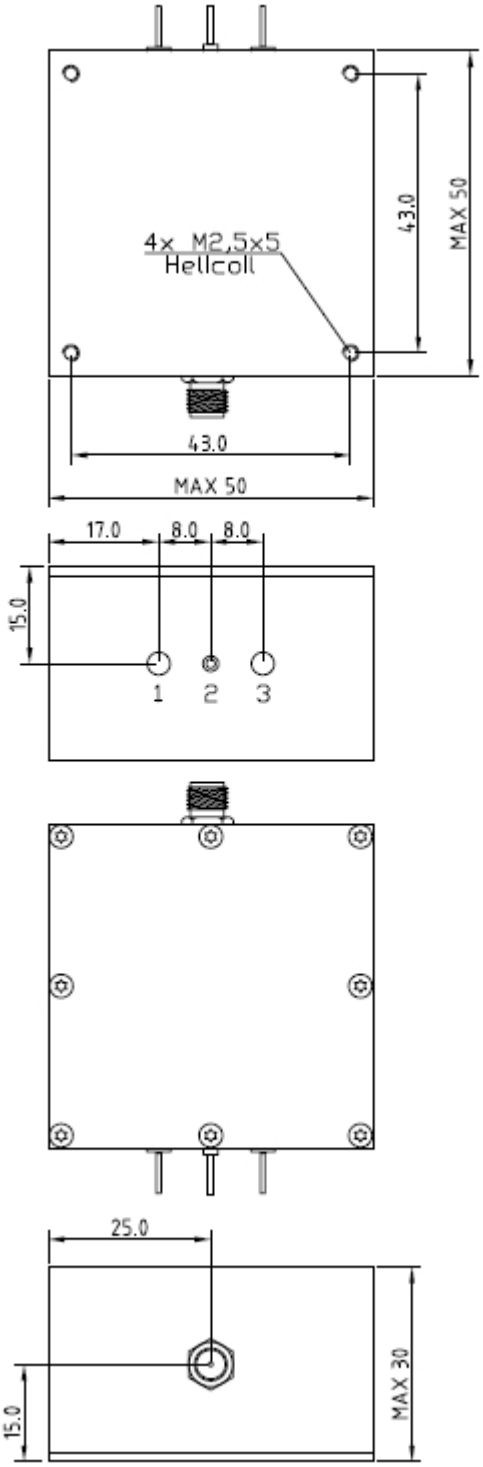


Handling and Testing

Parameter	Procedure		Source
Handling and Testing	Application Note AXAN-011		www.axtal.com
Processing	Application Note AXAN-012		www.axtal.com
Parameter	**Procedure**		**Condition**
Electrostatic discharge (ESD)			
THD devices	IEC60749-26	HBM	2000 V
SMD devices	IEC60749-27	MM	200 V
Washable	✖ Yes ☐ No		
RoHS- Compliant	✖ Yes ☐ No		

Enclosure drawings

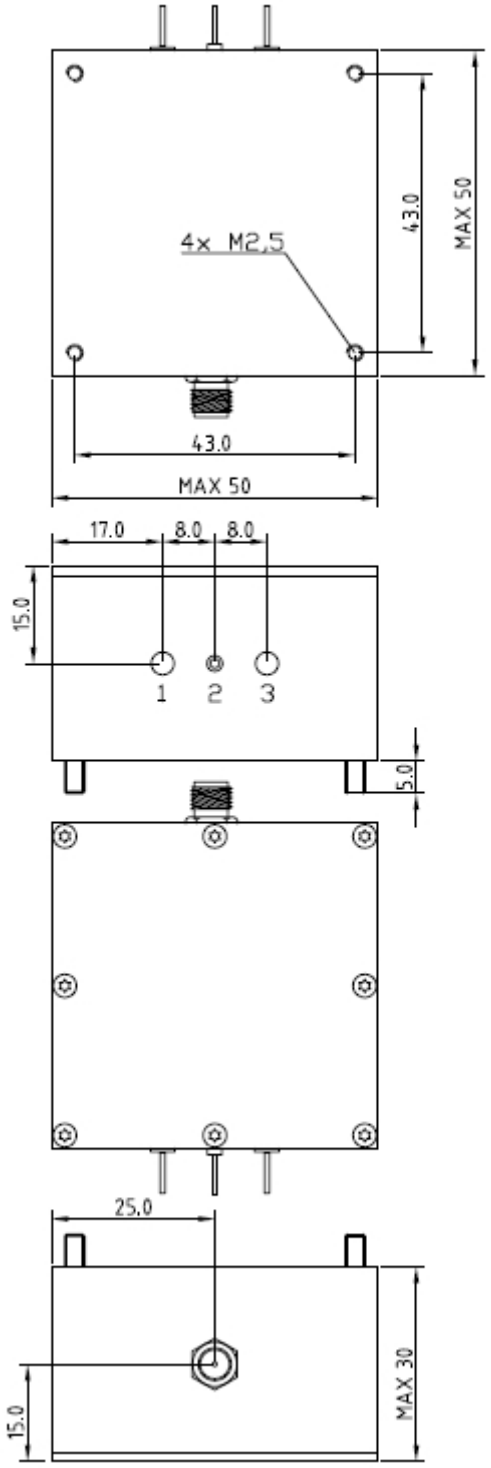
Package Option H “Threaded Holes”



Pin connections:

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

Package Option S “Threaded Studs”



Pin connections:

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

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 Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta Method 1 Test Td_1 Method 2 Test Td_2 Method 2
Shock*	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 100g, 6 ms half-sine pulse
Vibration, sinusoidal*	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axes, 10 Hz - 55 Hz 0,75mm; 55 Hz - 2 kHz, 10g
Vibration, random*	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance tests - ageing - extended aging		 5.7.1 5.7.2	108A		 4.8.35	 30 days @ 85°C, OCXO @25°C 1000h, 2000h, 8000h @85°C

Other environmental conditions on request

Data sheet is for information purposes only and may be subject to modifications or may be discontinued without notice.

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	25.11.2013	First issue	HH	BN
2	D0	17.07.2014	New enclosure drawing with changed package height, various parameters and environmental conditions updated, editorial changes	HH	HH
3	D0	17.02.2015	Package options added (replaces AXIOM200)	HH	HH