Specification	AXE238	Rev.: 1	Date: 2018-10-26

Oscillator type: **Ultra-Low Noise SPXO in Vibration-isolated Package for very high random vibration levels**

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	50		130	MHz	
Standard frequencies	100.000 / 120.000			MHz	
Frequency stability					
Overall stability (Note 2)			±80	ppm	
vs. operating temperature range			±30	ppm	
vs. supply voltage variation			±1	ppm	V_S ±5%
Long term (aging) per day			±0.01	ppm	after 30 days operation
Long term (aging) per year			±0.5	ppm	after 30 days operation
Frequency adjustment range					
Electronic Frequency Control (EFC)		N.A.			
RF output					
Signal waveform	Sine wave				
Load R_L	50			Ω	±5%
Output level	+10			dBm	
Harmonics			-30	dBc	
Spurious at rest			-90	dBc	
Phase noise at rest @ 100 MHz			-100 -130 -160 -170 -175	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ ≥100 kHz
Phase noise @ 100 MHz under random vibration with 0.1 g^2/Hz, 20 ~ 2000 Hz (Note 3)		-95 -90 -142 -145	-85 -80 -138 -140 -170 -175	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 2 kHz @ 10 kHz @ ≥100 kHz
Start-up time (Note 4)			20	ms	
Supply voltage V_S	11.4	12.0	12.6	V	
Current consumption			50	mA	
Operating temperature range	-40		+85	°C	
Enclosure (see drawing) (LxWxH)	38x38x19 max.			mm	
Enclosure drawing number	AXZ10.01119.02				
Weight			150	g	

Notes:

1. Terminology and test conditions according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Allows for any and all degrading contributions, including initial tolerance, temperature stability, supply and load change and aging
3. For other vibration profiles please consult factory. For lower PSD level of 0.01 g^2/Hz, 20 ~ 2000 Hz the phase noise under vibration will be 10 dB better.
4. Oscillator is within specification limits

Absolute Maximum Ratings

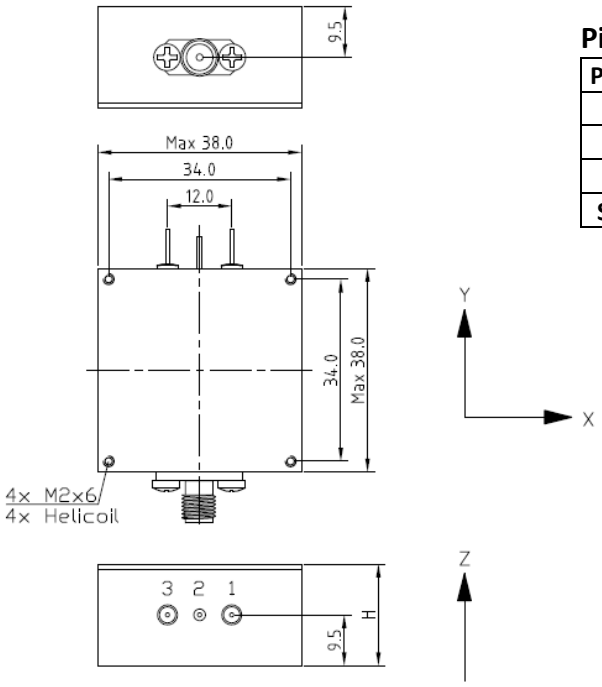
Parameter	min.	max.	Unit	Condition
Supply Voltage V_S	-0.5	V_S + 10%	V	V_S to GND
Storage Temperature	-55	+105	°C	

Ordering Code

Model	Revision	Frequency [MHz]
AXE238	Rev.1	100.000

Example: AXE238_Rev.1 – 100.000 MHz

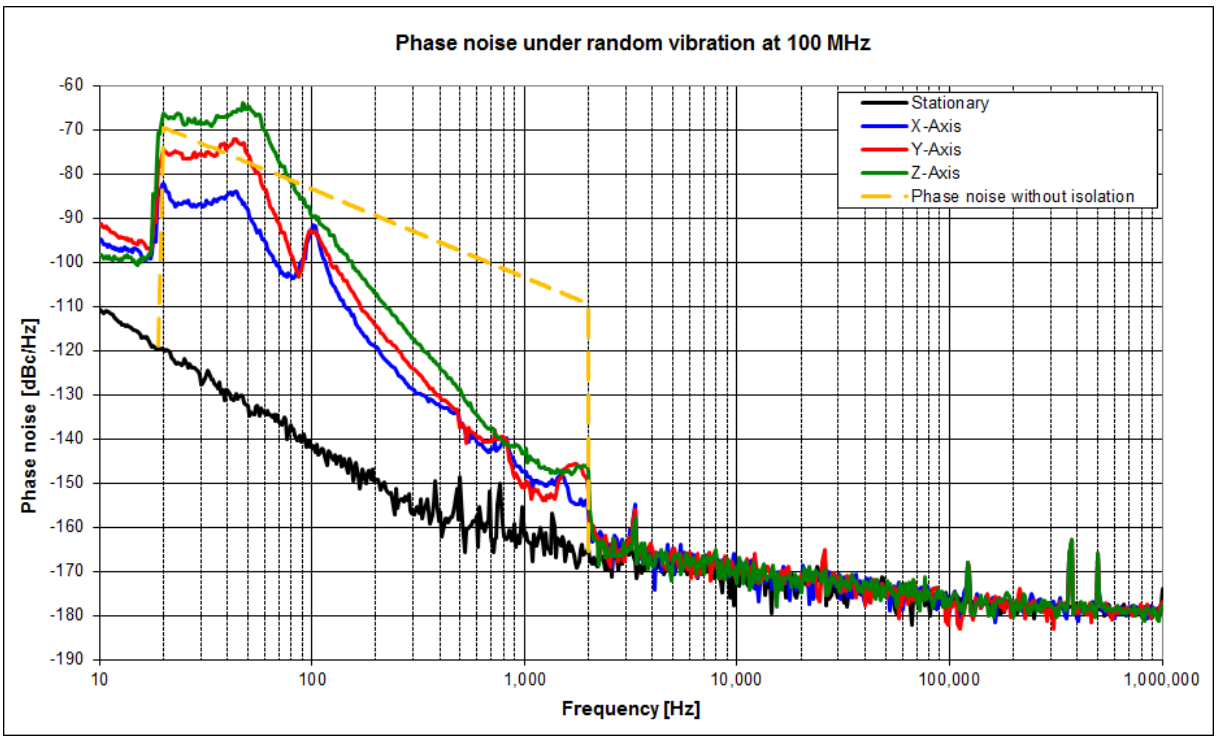
Enclosure drawing



Pin connections:

Pin #	Symbol	Function
1	V_S	Supply Voltage
2	GND	Ground
3	NC	No Connection
SMA	RF OUT	RF Output

Phase noise response under random vibration at 100 MHz



Typical phase noise response for random vibration profile 0.1 g²/Hz, 20 ~ 2000 Hz

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		

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	TBD	TBD	TBD	TBD	TBD	200 g half-sine pulse, TBD ms 50 g half-sine pulse, TBD ms
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	26.10.2018	First issue	ME	HH