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| 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 | dBc/Hz | @ 10 Hz |
| | | | -130 | dBc/Hz | @ 100 Hz |
| | | | -160 | dBc/Hz | @ 1 kHz |
| | | | -170 | dBc/Hz | @ 10 kHz |
| | | | -175 | dBc/Hz | @ ≥100 kHz |
| Phase noise @ 100 MHz under random vibration with 0.1 g ² /Hz, 20 ~ 2000 Hz (Note 3) | | -95 | -85 | dBc/Hz | @ 10 Hz |
| | | -90 | -80 | dBc/Hz | @ 100 Hz |
| | | -142 | -138 | dBc/Hz | @ 1 kHz |
| | | -145 | -140 | dBc/Hz | @ 2 kHz |
| | | | -170 | dBc/Hz | @ 10 kHz |
| | | | -175 | dBc/Hz | @ ≥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 g²/Hz, 20 ~ 2000 Hz the phase noise under vibration will be 10 dB better.
4. Oscillator is within specification limits

Absolute Maximum Ratings

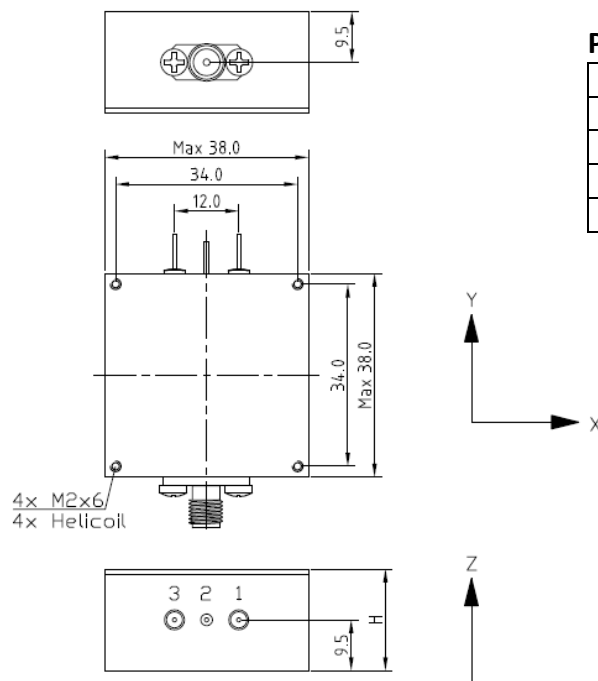
| Parameter | min. | max. | Unit | Condition |
|----------------------|------|--------------|------|--------------|
| Supply Voltage V_s | -0.5 | $V_s + 10\%$ | V | V_s to GND |
| Storage Temperature | -55 | +105 | °C | |

Ordering Code

| Model | Revision | Frequency [MHz] |
|--------|----------|-----------------|
| AXE238 | Rev.1 | 100.000 |

Example: AXE238_Rev.1 – 100.000 MHz

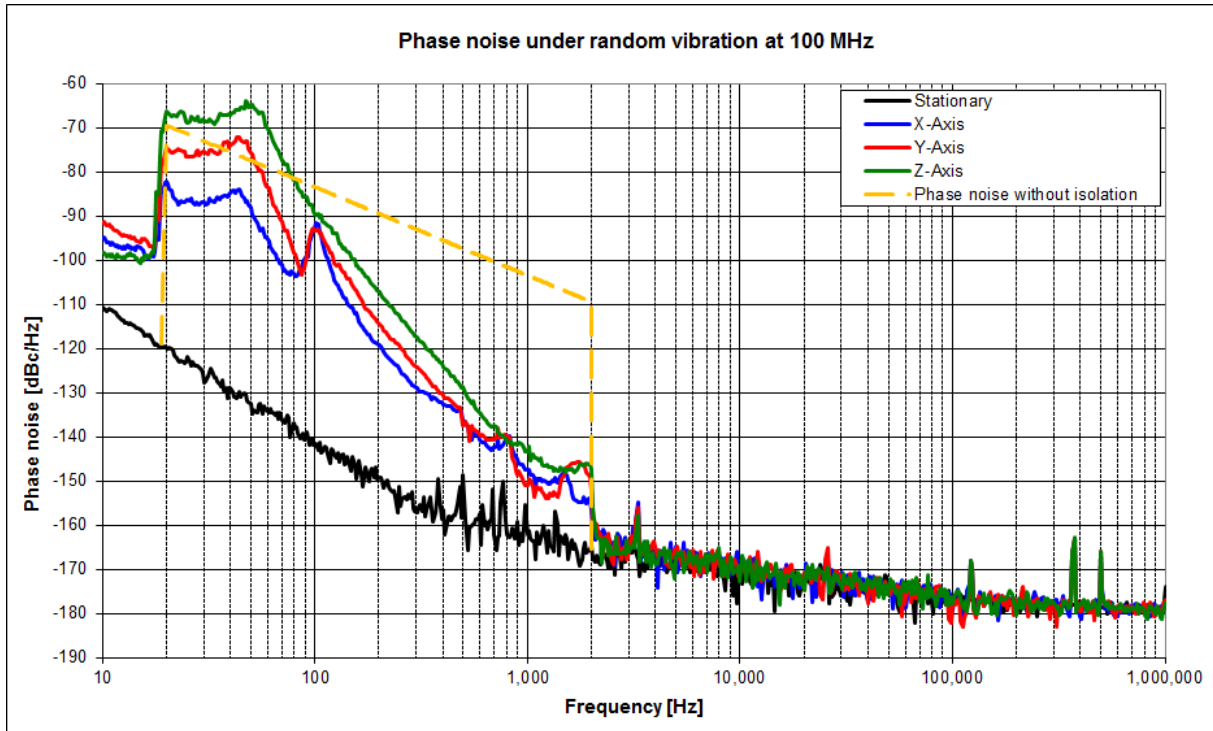
Enclosure drawing



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 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| RoHS- Compliant | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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 |