| Specification | AXIOM75LG | Rev.: 1 | Date: 2016-09-09 |
|---|---|---|---|

## Oscillator type: Ultra-Low Phase Noise OCXO with Low G-Sensitivity

| Parameter | min. | typ. | max. | Unit | Condition |
|---|---|---|---|---|---|
| **Frequency Range** | 80 | | 125 | MHz | |
| **Standard frequencies** | | 100.000/120.000 | | MHz | |
| **Frequency stability** | | | | | |
| Initial tolerance @ +25°C | | | ±300 | ppb | $V_C$ @ VREF/2 |
| vs. operating temperature range | | Option 2 & 3<br>See tables 2 & 3 | | | steady state |
| vs. supply voltage variation (pushing) | | | ±10 | ppb | $V_S$ ±5% |
| vs. load change (pulling) | | | ±5 | ppb | $R_L$ ±5% |
| Long term (aging) per day | | ±1 | ±2 | ppb | after 30 days operation |
| Long term (aging) 1st year | | ±100 | ±200 | ppb | after 30 days operation |
| **Frequency adjustment range** | | | | | |
| Electronic Frequency Control (EFC) | ±1 | ±2 | | ppm | |
| EFC voltage $V_C$ | 0 | VREF/2 | VREF | 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 (Note 2) | +7 | | | dBm | |
| Harmonics | | | -30 | dBc | |
| Spurious | | | -90 | dBc | |
| Warm-up time | | 3 | 5 | min | $\Delta f_{final}/f_0$ < ±0.1 ppm |
| Phase noise @ 100 MHz (Note 3) | | | -100<br>-130<br>-160<br>-170<br>-175 | dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz | @ 10 Hz<br>@ 100 Hz<br>@ 1 kHz<br>@ 10 kHz<br>@ ≥100 kHz |
| G-Sensitivity (Note 4) | | See table 1 | | | Option 1 |
| **Reference voltage VREF output** (Note 5) | | 10.0 | | V | |
| **Supply voltage $V_S$** (Note 5) | 11.4 | 12.0 | 12.6 | V | |
| **Current consumption** (steady state) | | | 150 | mA | @ +25°C (Note 6) |
| **Current consumption** (warm-up) | | | 350 | mA | (Note 6) |
| **Enclosure (see drawing) (LxWxH)** | | 25.8x25.8x12.7 max. | | mm | IEC 60679-3 CO 43 |
| **Weight** | | | 20 | g | |
| **Packing** | | Palette | | | |

**Notes:**

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Other output level on request
3. For other frequencies please consult factory
4. Measured with flat random vibration profile (0.01 $g^2$/Hz, 20 Hz ~ 2000 Hz)
5. Other supply and reference voltage on request
6. May be higher for wide operating temperature range

## Absolute Maximum Ratings

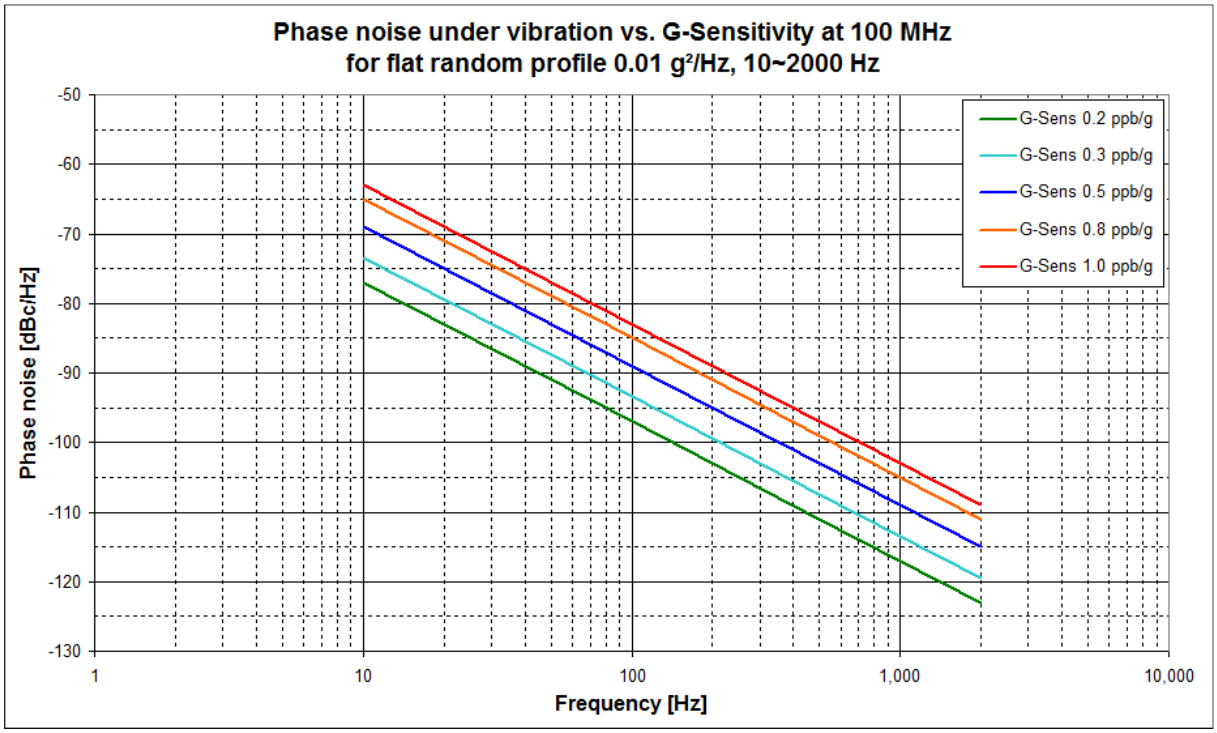
| Parameter | min. | max. | Unit | Condition |
|---|---|---|---|---|
| Supply Voltage $V_S$ | -0.5 | $V_S$ + 10% | V | $V_S$ to GND |
| Control Voltage $V_C$ | -0.5 | 15 | V | $V_C$ to GND |
| Storage Temperature | -55 | +125 | °C | |

## G-Sensitivity:

| Option 1 | G-Sensitivity worst axis | Unit |
|---|---|---|
| **A** | 0.8 | ppb/g |
| **B** | 0.5 | ppb/g |
| **C** | 0.4 | ppb/g |
| **D** | 0.3 | ppb/g |
| **E** | 0.25 | ppb/g |

**Table 1**

## Phase noise vs. G-Sensitivity at 100 MHz




Note: Double PSD results in 3 dB worse phase noise

## Frequency stability vs. temperature

| Option 2 | Stability [ppb] |
|---|---|
| 05 | ±5 |
| 10 | ±10 |
| 25 | ±25 |
| 50 | ±50 |
| 100 | ±100 |
| 200 | ±200 |

**Table 2**

| Lower Temperature | | Upper Temperature | |
|---|---|---|---|
| Option 3 | T [°C] | Option 3 | T [°C] |
| 0 | 0 | A | +50 |
| 1 | -10 | B | +60 |
| 2 | -20 | C | +70 |
| 3 | -30 | D | +75 |
| 4 | -40 | E | +80 |
| 5 | -55 | F | +85 |

**Table 3** **Standard: "1B" = -10°C to +60°C**

| Temperature range [°C] | Frequency stability [Option 2] | | | | | |
|---|---|---|---|---|---|---|
| | 05 | 10 | 25 | 50 | 100 | 200 |
| **0 ~ +50** | O | X | X | X | X | X |
| **-10 ~ +60** | O | X | X | X | X | X |
| **-20 ~ +70** | O | X | X | X | X | X |
| **-30 ~ +70** | O | O | X | X | X | X |
| **-40 ~ +75** | - | O | X | X | X | X |
| **-40 ~ +85** | - | - | O | X | X | X |
| **-55 ~ +85** | - | - | O | X | X | X |

**Table 4 "Availability"** **X = available, O = available on request, - not available**

## Ordering Code

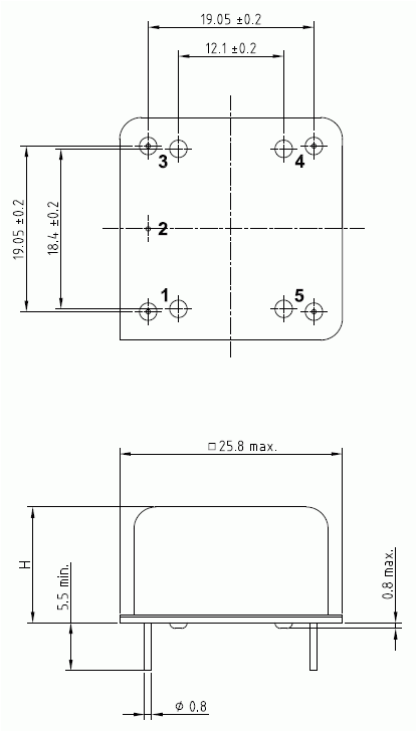
| Model | Option 1 [G-Sensitivity] | Option 2 [Stability] | Option 3 [Temperature range] | Revision | Frequency [MHz] |
|---|---|---|---|---|---|
| AXIOM75LG | Table 1 | Table 2 | Table 3 | Rev.1 | 100.000 |

**Example: AXIOM75LG-B-25-1B_Rev.1 – 100.000 MHz**

## Handling and Testing

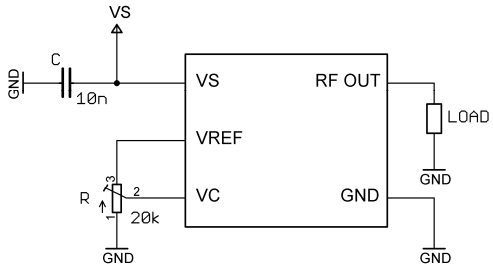
| Parameter | Procedure | | Source |
|---|---|---|---|
| Handling and Testing | Application Note AXAN-011 | | www.axtal.com |
| Processing | Application Note AXAN-012 | | www.axtal.com |
| | | | |
| **Parameter** | **Procedure** | | **Condition** |
| Electrostatic discharge (ESD) | | | |
| THD devices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

## Enclosure drawing




## Pin connections

| Pin # | Symbol | Function |
|---|---|---|
| **1** | RF OUT | RF Output |
| **2** | GND | Ground |
| **3** | $V_C$ | Control Voltage (EFC) |
| **4** | VREF | Reference Voltage |
| **5** | $V_S$ | Supply Voltage |




* See Application Note AXAN-011

## 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,<br>Fine leak: Test Qk |
| Solderability<br>Resistance to soldering heat | 2-20<br>2-58 | 5.6.3 | 208H<br>210F | | 3.6.52<br>3.6.48 | Test Ta Method 1<br>Test $Td_1$ Method 2<br>Test $Td_2$ Method 2 |
| Shock* | 2-27 | 5.6.8 | 213B | 516.4 | 3.6.40 | Test Ea, 3 x per axes 100g,<br>6 ms half-sine pulse |
| Vibration, sinusoidal* | 2-6 | 5.6.7.1 | 201A<br>204D | 516.4-4 | 3.6.38.1<br>3.6.38.2 | Test Fc, 30 min per axes,<br>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<br>3.6.38.4 | Test Fdb |
| Endurance tests<br>- ageing<br>- extended aging | | <br>5.7.1<br>5.7.2 | 108A | | <br>4.8.35 | <br>30 days @ 85°C, OCXO @25°C<br>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 | 07.05.2014 | First issue | HH | HH |
| 1 | D1 | 09.09.2016 | PN vs. G-Sensitivity Example Chart added | HH | HH |