

|                      |                 |         |                  |
|----------------------|-----------------|---------|------------------|
| <b>Specification</b> | <b>AXIOM450</b> | Rev.: 1 | Date: 2018-10-15 |
|----------------------|-----------------|---------|------------------|

**Oscillator type: VHF Ultra-Low Phase Noise OCXO in Eurocase Package**

| Parameter                                        | min.              | typ. | max.                                | Unit                                           | Condition                                                |
|--------------------------------------------------|-------------------|------|-------------------------------------|------------------------------------------------|----------------------------------------------------------|
| <b>Frequency range</b>                           | 160               |      | 500                                 | MHz                                            | Multiplication (Note 2)                                  |
| <b>Frequency stability</b>                       |                   |      |                                     |                                                |                                                          |
| Initial tolerance @ +25°C                        |                   |      | ±200                                | ppb                                            | @ V <sub>c</sub> = 5.0 V                                 |
| vs. operating temperature range                  |                   |      | ±500                                | ppb                                            | steady state                                             |
| vs. supply voltage variation (pushing)           |                   |      | ±10                                 | ppb                                            | V <sub>s</sub> ±5%                                       |
| vs. load change (pulling)                        |                   |      | ±5                                  | ppb                                            | R <sub>L</sub> ±5%                                       |
| Long term (aging) per day                        |                   | ±1   | ±2                                  | ppb                                            | after 30 days operation                                  |
| Long term (aging) 1 <sup>st</sup> year           |                   | ±100 | ±200                                | ppb                                            | after 30 days operation                                  |
| <b>Frequency adjustment range</b>                |                   |      |                                     |                                                |                                                          |
| Electronic Frequency Control (EFC)               | ±1                | ±2   |                                     | ppm                                            |                                                          |
| EFC voltage V <sub>c</sub>                       | 1.0               | 5.0  | 9.0                                 | V                                              | (Note 3)                                                 |
| EFC slope ( $\Delta f / \Delta V_c$ )            | Positive          |      |                                     |                                                |                                                          |
| EFC input impedance                              | 100               |      |                                     | kΩ                                             |                                                          |
| <b>RF output</b>                                 |                   |      |                                     |                                                |                                                          |
| Signal waveform                                  | Sine wave         |      |                                     |                                                |                                                          |
| Load R <sub>L</sub>                              | 50                |      |                                     | Ω                                              | ±5%                                                      |
| Output level                                     | +11               | +13  | +15                                 | dBm                                            |                                                          |
| Harmonics                                        |                   | -50  | -40                                 | dBc                                            |                                                          |
| Sub-harmonics (multiples of f <sub>OUT</sub> /N) |                   | -60  | -50                                 | dBc                                            | (Note 2)                                                 |
| Spurious                                         |                   |      | -90                                 | dBc                                            |                                                          |
| Warm-up time @ +25°C                             |                   |      | 5                                   | min                                            | $\Delta f_{\text{final}}/f_0 < \pm 0.1 \text{ ppm}$      |
| Phase noise @ 250 MHz (Note 4)                   |                   |      | -95<br>-125<br>-150<br>-162<br>-164 | 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                                    |                   | 0.5  |                                     | ppb/g                                          |                                                          |
| <b>Supply voltage V<sub>s</sub></b>              | 11.4              | 12.0 | 12.6                                | V                                              |                                                          |
| <b>Current consumption</b> (steady state)        |                   |      | 250                                 | mA                                             | @ +25°C                                                  |
| <b>Current consumption</b> (warm-up)             |                   |      | 500                                 | mA                                             |                                                          |
| <b>Operating temperature range</b>               | -40               |      | +85                                 | °C                                             |                                                          |
| <b>Enclosure (see drawing) (LxWxH)</b>           | 36.1x27.2x20 max. |      |                                     | mm                                             | IEC 60679-3 CO 08                                        |
| <b>Weight</b>                                    |                   |      | 40                                  | g                                              |                                                          |
| <b>Packing</b>                                   | Palette           |      |                                     |                                                |                                                          |

**Notes:**

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Multiplication factor N depends on frequency
3. Other tuning voltages on request
4. Please consult factory for phase noise of other frequencies

## Absolute Maximum Ratings

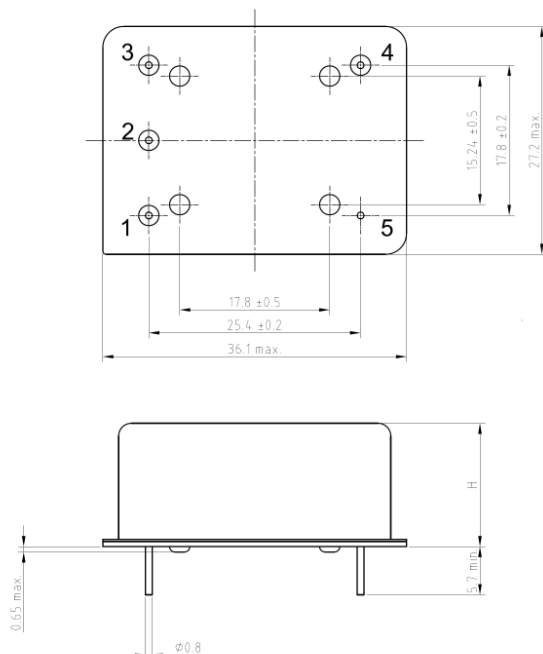
| Parameter             | min. | max.         | Unit | Condition    |
|-----------------------|------|--------------|------|--------------|
| Supply Voltage $V_S$  | -0.5 | $V_S + 10\%$ | V    | $V_S$ to GND |
| Control Voltage $V_C$ | -0.5 | 15           | V    | $V_C$ to GND |
| Storage Temperature   | -55  | +105         | °C   |              |

## Ordering Code

| Model    | Revision | Frequency [MHz] |
|----------|----------|-----------------|
| AXIOM450 | Rev.1    | 250.000         |

Example: AXIOM450\_Rev.1 – 250.000 MHz

## Enclosure drawing



## Pin connections:

| Pin # | Symbol | Function              |
|-------|--------|-----------------------|
| 1     | $V_C$  | Control Voltage (EFC) |
| 2     | N.C.   | No Connection         |
| 3     | $V_S$  | Supply Voltage        |
| 4     | RF OUT | RF Output             |
| 5     | GND    | Ground                |

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

### Environmental conditions

| Test                                             | IEC<br>60068<br>Part ... | IEC<br>60679-1<br>Clause | MIL-STD-<br>202G<br>Method | MIL-STD-<br>810F<br>Method | MIL-PRF-<br>55310D<br>Clause | Test conditions (IEC)                                                              |
|--------------------------------------------------|--------------------------|--------------------------|----------------------------|----------------------------|------------------------------|------------------------------------------------------------------------------------|
| Sealing tests<br>(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<br>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 <sub>1</sub> Method 2<br>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,<br>6 ms half-sine pulse                                |
| Vibration,<br>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,<br>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  |                          | 5.7.1<br>5.7.2           | 108A                       |                            | 4.8.35                       | 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<br>[dd.mm.yyyy] | Remarks     | Author | Checked |
|------|---------|----------------------|-------------|--------|---------|
| 1    | D0      | 15.10.2018           | First issue | HH     | HH      |