AXTAL ADVANCED XTAL PRODUCTS

| Specification | AXLE20 | Issue: 03 | Date: 2005-05-22 |
|---|---|---|---|

# Oscillator type : TCXO

| Parameter | min. | typ. | max. | Unit | Condition | |
|---|---|---|---|---|---|---|
| **Frequency range** | 9 | | 33 | MHz | | |
| **Standard frequencies** | 10 / 16.384 /19.44 | | | MHz | | |
| **Frequency stability** | | | | ppm | | |
| Initial tolerance | | ± 1 | | ppm | @+25°C | |
| vs. temperature in operating temperature range (steady state) | Frequency stability | | | | Temperature | Option I |
| | | | ± 2.5<br>± 1.5<br>± 0.8 | ppm<br>ppm<br>ppm | -40°~+85°C<br>-20°~+70°C<br>0°~+50°C | "25"<br>"15"<br>"08" |
| vs. supply voltage variation | | | ± 0.2 | ppm | | |
| vs. load change | | | ± 0.2 | ppm | | |
| long term (aging) per year | | | ± 1 | ppm | @ +40°C | |
| **Frequency adjustment range** | | | | | | |
| Electronic Frequency Control (EFC) | ± 5 | | | ppm | | |
| EFC voltage $V_C$ | 0.25<br>0.30 | | 4.75<br>3.0 | V<br>V | Option II = "50"<br>Option II = "33" | |
| EFC slope ($\Delta f / \Delta V_C$) | negative | | | | | |
| EFC linearity | | | | % | | |
| EFC input impedance | 100 | | | kΩ | | |
| **RF output** | | | | | | |
| Signal waveform | Clipped Sinus | | | | | |
| Load | 10 kΩ // 10 pF | | | | | |
| Amplitude | 0.8 | | | V | peak-to-peak | |
| Start-up time | | | 4 | ms | | |
| Phase noise<br>@16.384 MHz | | -85<br>-115<br>-130<br>-145 | | dBc<br>dBc<br>dBc<br>dBc | 10 Hz<br>100 Hz<br>1000 Hz<br>10000 Hz | |
| **Supply voltage $V_S$** | 4.75<br>3.13 | 5.0<br>3.3 | 5.25<br>3.47 | V | Option II = "50"<br>Option II = "33" | |
| **Current consumption** (steady state) | | | 5 | mA | @ +25°C | |
| **Operable temperature range** | -45 | | +90 | °C | | |
| **Storage temperature range** | -45 | | +90 | °C | | |
| **Enclosure (see drawing)** | 19.1x13.1x5 max | | | mm | IEC 61837 CO 30 | |
| **Weight** | | | 5 | gram | | |
| **Packing** | Tape & reel | | | | IEC 60286-3 | |
| **ESD Sensitivity** | 1500 | | | V | HBM as IEC 61000-4-2 | |

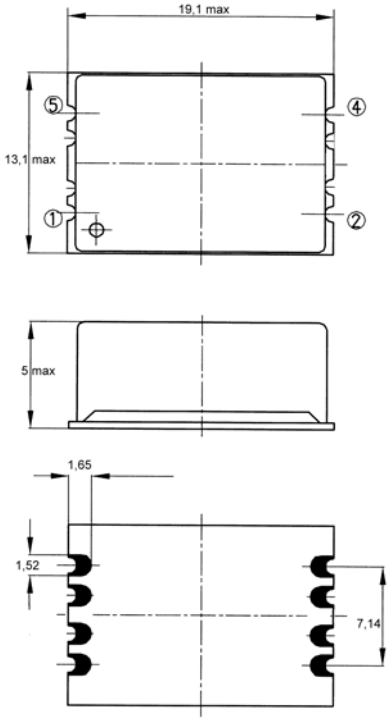
**Notes:**

1. Terminology and test conditions are according to IEC standard IEC60679-1, unless otherwise stated
2. Overall frequency stability = initial tolerance + temp.stability + supply & load change + aging

## Ordering Code:

| Model (Specification) | Option I | Option II | Frequency [MHz] |
|---|---|---|---|
| AXLE20 | 25 | 33 | 12.800 |

## Enclosure drawing




## Pin connections

| Pin # | Symbol | Function |
|---|---|---|
| 1 | $V_C$ | Control Voltage (EFC) |
| 2 | GND | Ground |
| 4 | RF OUT | RF Output |
| 5 | $V_S$ | Supply Voltage |
| Other pins: Internal connections | | |

## Environmental conditions

| Test | IEC 60068 Part ... | IEC 60679-1 clause ... | Test conditions |
|---|---|---|---|
| Visual inspection, dimensions | | 4.3 | Enclosure styles as in IEC 60679-3 or 61837, if applicable |
| Sealing tests (if applicable) | 2-17 | 4.6.2 | Gross leak: Test Qc,<br>Fine leak: Test Qk |
| Solderability<br>Resistance to soldering heat | 2-20<br>2-58 | 4.6.3 | Test Ta (235 ± 5)°C Method 1<br>Test Tb Method 1A, 5s |
| Shock* | 2-27 | 4.6.8 | Test Ea, 3 x per axes 100g, 6 ms half-sine pulse |
| Bump* | 2-29 | 4.6.6 | Test Eb, 4000 bumps per Axes, 40g, 6 ms |
| Free fall* | 2-32 | 4.6.9 | Test Ed procedure 1,<br>2 drops from 1m height |
| Vibration, sinusoidal* | 2-6 | 4.6.7 | Test Fc, 30 min per axes,<br>10 Hz - 55 Hz 0,75mm; 55 Hz - 2 kHz, 10g |
| Rapid change of temperature | 2-14 | 4.6.5 | Test Na, 10 cycles at extremes of operating temperature range |
| Dry heat | 2-2 | 4.6.14 | Test Ba, 16 h at upper temperature indicated by climatic category |
| Damp heat, cyclic* | 2-30 | 4.6.15 | Test Db variant 1 severity b),<br>55°C/95% r.H., 6 cycles |
| Cold | 2-1 | 4.6.16 | Test Aa, 2 h at lower temperature indicated by climatic category |
| Climatic sequence* | 1-7 | 4.6.17 | Sequence of 4.6.14, 4.6.15 (1st cycle), 4.6.16, 4.6.15 (5 cycles) |
| Damp heat, steady state* | 2-3 | 4.6.18 | Test Ca, 56 days |
| Endurance tests<br>- ageing<br>- extended aging | | <br>4.7.1<br>4.7.2 | <br>30 days @ 85°C, OCXO @25°C<br>1000h, 2000h, 8000h @85°C |