

Rev B

O-LU25AD-XXYZXX-X-X-X-X 10.000 MHz Precision Ultra Low Phase Noise OCXO in 22x22 mm Package

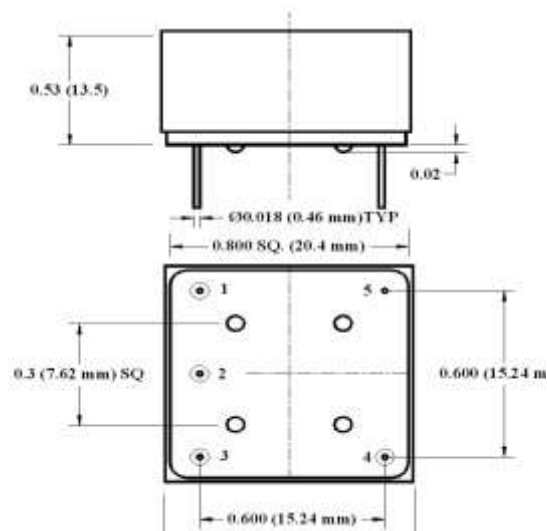
Product Data Sheet

Features

- SC-cut crystal
- High Stability
- Very Low Power consumption (0.3 W)
- Low Aging
- Ultra-Low ADEV 3E-13 @ 1 s
- Ultra-Low Phase Noise
Extraordinary(E) -120 dBc/Hz at 1 Hz
-148 dBc/Hz at 10 Hz
-170 dBc/Hz on the floor
- Sine Wave or HCMOS/TTL output

Applications

- Instrumentation, Test and Measurement
- Battery Powered Equipment
- Radar
- Tele/Data Communications
- GPS



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| Parameter | Symb | Condition | Min | Typ | Max | Unit | Note |
|------------------------------------|------|--|------|---------------------------|--|-------------|--|
| <i>Absolute Maximum Ratings</i> | | | | | | | |
| Input Break Down Voltage | Vcc | 5 V supply | -0.5 | | 5.5 | V | |
| Storage temper. | Ts | | -50 | | 90 | °C | |
| Control Voltage | Vc | | -1 | | 5.5 | V | Slope option "P" |
| | | | -1 | | 11 | | Slope option "L" |
| <i>Electrical</i> | | | | | | | |
| Frequency | F | | | 10.000 | | MHz | |
| Frequency stability | ΔF/F | vs. Temp. | | ±20 | | ppb | See chart below |
| | | vs. Supply | | 0.2 | 0.3 | ppb/10% Vcc | |
| Aging | | per day per year, first year second year | | 5E-10 5E-8 3E-8 | | | after 30 days of continuous operation |
| Allan Deviation | | 0.1s 1s 10s | | | 2E-13 3E-13 2E-12 | | E grade |
| | | 1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz | | | -120 -148 -160 -168 -170 -170 | | Extraordinary version, option E, available with slope option L |
| Retrace | | After 30 minutes | | | ±10 | ppb | 24 Hours off 3* |
| G-sensitivity | | worst direction | | | ±1.0 | ppb/G | |
| Input Voltage | Vcc | | 4.75 | 5.0 | 5.25 | V | |
| Power consumption, Still air 4* | P | steady state, 25°C, Operating temp range to 70°C start-up @ -30°C | | 0.6 0.45 0.3 2.0 | 0.7 0.55 0.4 2.5 | W | Grade "N" Grade "A" Grade "X" |
| Spectral Purity | | Subharmonics Spurious Harmonics | | none -35 | -80 -30 | dBc | |
| Load | | 10KOhm/15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave) | | | | | Output Code T Output Code S |
| Warm-up time | τ | to 0.1ppm accuracy | | 3 | 5 | minutes | |
| Output Waveform | | HCMOS/TTL compatible or Sinewave | | | | | |
| Output Power | | | +10 | +13 | | dBm | Output Code S |
| Logic 1 (CMOS) | Voh | | 3.3 | | | V | Output Code T |
| Logic 0 (CMOS) | Vol | | | | 0.1 | V | Output Code T |
| Control voltage | Vc | | 0 | | 4.5 | V | Slope option "P" |
| | | | 0 | | 10.0 | | Slope option "L" |
| Input impedance | Zin | At Vc pin | 10 | | | KOhm | |
| Modulation bandwidth | Fm | | | | 1,000 | Hz | |
| Reference Voltage | Vref | | | 4.5 | | V | |
| Output Impedance | | At Vref pin | | 100 | | Ohm | |
| Pull range | | from nominal F | ±0.4 | ±0.6 | ±0.8 | ppm | |
| Deviation slope | | Monotonic, positive Monotonic, positive | | 1.0/Vref 0.12 | | ppm/V | Slope option "P" Slope option "L" |
| Setability | Vc0 | @25°C, Fnom. NO Internal Bias | | 2.25 ± 0.5 5 ± 0.5 | | V | Slope option "P" 3* Slope option "L" |

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Notes

- 1*For highest operating temperature higher than 70°C the power consumption will be higher (about 20% for 85°C). Values listed are for test in still air environment, the values will go up while testing in the temperature chamber.
- 2*. It is recommended to specify Slope option “L” for Ultimate Phase noise performance. Recommended test equipment – Symmetricom (Microchip) 5120A-01 Phase Noise and Allan Deviation Test Set (be aware of limitations on the floor). “Clean” analog power supply i.e., HP E3610A or equivalent. It’s assumed that phase noise test is performed under static conditions (no vibration), in still air, and care is taken for minimizing EMI. The Vc port should be either grounded or connected to extremely low noise source (for example NiCd battery)
- 3*. Longer storage time, especially at low temperatures, may affect retrace, setability and long averaging times ADEV parameters. It may require few days on power for re-stabilization.
- 4*. The power consumption is affected by the operating temperature range (the higher the highest temperature – the higher the power consumption), The values in the table are for high operating temperature at 70°C.

Environmental and Mechanical

| | |
|------------------------------|---|
| Operating temp. range | 0°C to 70°C Standard, Other options – see chart below |
| Mechanical Shock | Per MIL-STD-202, 30G, 11ms |
| Vibration | Per MIL-STD-202, 5G to 2000 Hz |
| Soldering Conditions | 260°C for 10s Max leads only |

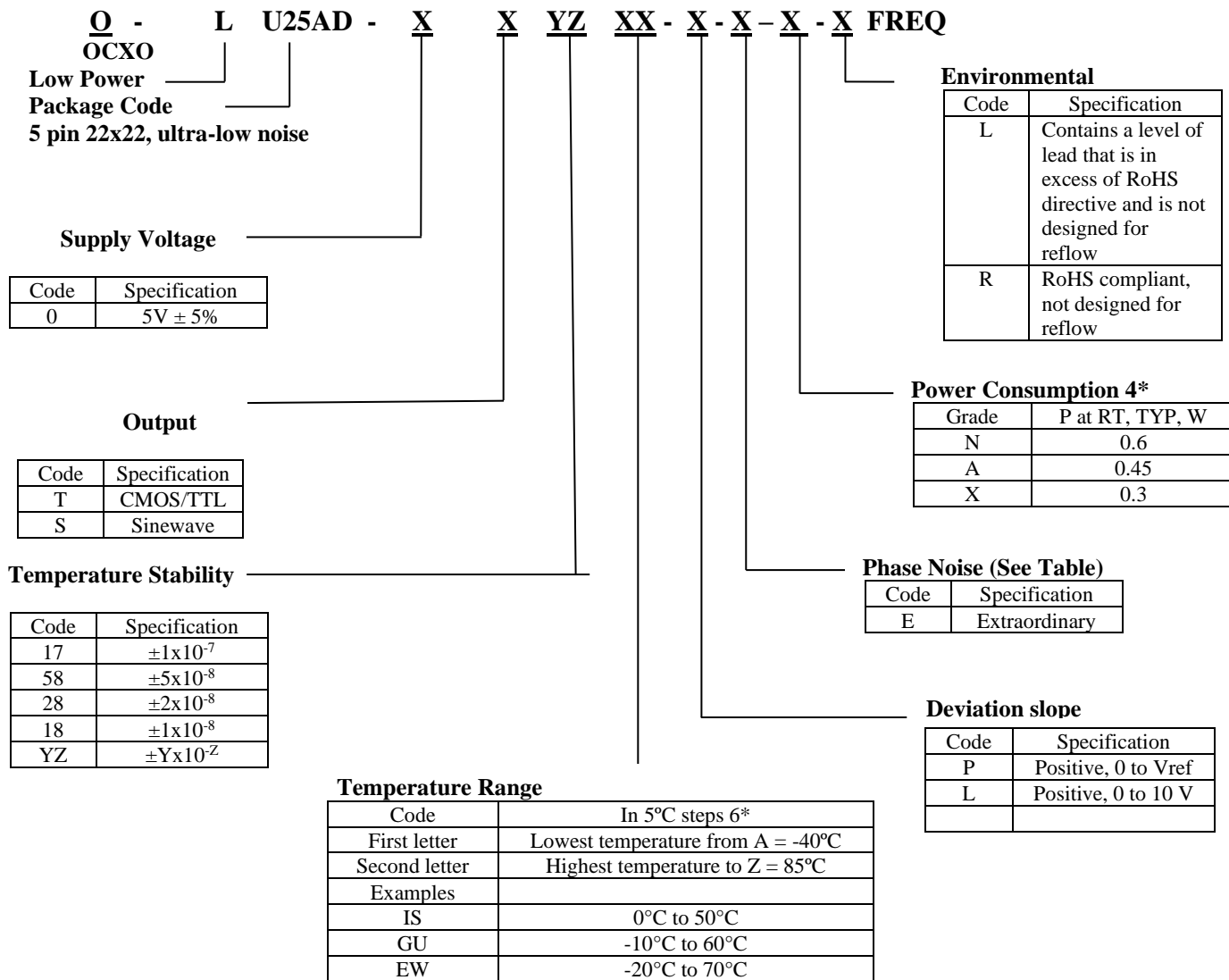
Electrical Connections

| | |
|----------------|--|
| Pin Out | Pin #1-Vc; Pin#2 – Vref; Pin #3 – Vcc; Pin #4- Output ; Pin #5- GND; |
|----------------|--|

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Creating a Part Number



Not all combinations are available. Consult Factory.

6*Temperature Code Table

| Letter | Temp °C | Letter | Temp °C | Letter | Temp °C | Letter | Temp °C | Letter | Temp °C | Letter | Temp °C |
|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| A | -40 | F | -15 | K | 10 | P | 35 | U | 60 | Z | 85 |
| B | -35 | G | -10 | L | 15 | Q | 40 | V | 65 | | |
| C | -30 | H | -5 | M | 20 | R | 45 | W | 70 | | |
| D | -25 | I | 0 | N | 25 | S | 50 | X | 75 | | |
| E | -20 | J | 5 | O | 30 | T | 55 | Y | 80 | | |