

EWOS5500

Low Power OCXO (NewSpace), Flight Proven

PRODUCT OVERVIEW

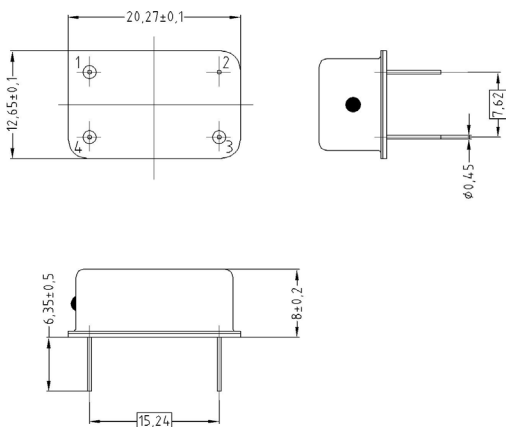
EWOS5500 provides the world best trade-off between performances, reliability & cost while high precision and low power OCXO is needed for large scale Space projects. It is an ideal choice for large or very large satellite constellations. EWOS5500 offers excellent short-term stability, low thermal sensitivity and can be delivered in several thousand units at low cost. It is Flight Proven since Feb. 2019 and can be used for NewSpace (GNSS positioning, Ranging or TTC Radios functions) for mini or micro-satellites with LEO orbit. EWOS5500 uses Syrlinks' proprietary ASIC that has been tested against radiations up to 100 kRad.



KEY FEATURES

- 20 MHz
- ± 0.25 ppm typical frequency stability in $-40^{\circ}\text{C}/+75^{\circ}\text{C}$
- 335 mW @ -40°C (typ.)
- High mechanical robustness: MIL-STD-883 M2002 Cond B: 1500g / 0.5ms / 1/2 sine
- High resistance to radiations (aggravated tests have been performed up to 100kRad)

DIMENSIONS & PIN-OUT



| PIN NUMBER | FUNCTION |
|------------|----------------|
| 1 | Do not connect |
| 2 | Ground |
| 3 | RF Out |
| 4 | Power Supply |

ORDERING INFORMATION

EWOS 5500

ELECTRICAL CHARACTERISTICS

| PARAMETERS | Unit | Min | Typ. | Max | Note | Comments |
|----------------------------------------------|----------------|-----|--------|--------|------|-------------------------------------------------------------------------------------------------------------------------|
| Output Frequency | MHz | | 20 | | 1 | Nominal frequency |
| Frequency Tolerance | ppm | | ±0.5 | ±2 | 1 | @ +25°C, referred to nominal frequency |
| Temperature Range | | | | | | |
| • Operating | °C | -40 | | +75 | | |
| • Storage | °C | -55 | | +85 | | |
| Supply Voltage | V | | 5 ± 5% | | | |
| Supply Current | | | | | | |
| • Warm up | mA | | 200 | 250 | 2 | |
| • Steady state / -40°C | mA | | 67 | 73 | 1 | |
| • Steady state / +25°C | mA | | 33 | 37 | 1 | Quiet environment conditions |
| • Steady state / +75°C | mA | | 8 | 12 | 1 | |
| Warm-up time | | | | | | |
| | s | | | 90 | 2 | 1E-7 accuracy referred to frequency measured at 25°C. To achieve 1E-10 short term stability - quiet environment |
| | mn | | | 15 | 2 | |
| Frequency Stability | | | | | | |
| • Vs temperature variation | ppb | | ±250 | ±500 | 1 | -40°C to +75°C unless otherwise specified |
| • Vs supply voltage variation | ppb | | ±50 | ±100 | 2 | 5V ± 5% |
| • Vs load variation | ppb | | ±50 | ±100 | 2 | (10 KΩ//10 pF) ± 10% |
| • Short-term (tau=1s) | | | 9E-11 | 3E-10 | 2 | Allan deviation |
| • Medium-term stability | | | | | | |
| | Slope | /mn | ±2E-9 | ±5E-9 | 1 | Thermal slope 30°C/hour |
| | Sigma | | 1E-9 | 3E-9 | 1 | |
| • Aging | | | | | | |
| | | ppm | ±0.25 | ±1 | 2 | First year |
| | | ppm | ±1 | ±3 | 2 | 10 years |
| Radiation Effects (without shielding) | | | | | | |
| Frequency shift | | | | | | 100 krad radiation See CNES report DCT/RF/HT/2006/0021806 |
| | Oscillator ON | ppm | | +0.66 | 2 | |
| | Oscillator OFF | ppm | | +0.24 | 2 | |
| Phase Noise | | | | | | |
| • 100 Hz | | | | dBc/Hz | -135 | -125 |
| • 1 KHz | | | | dBc/Hz | -150 | -145 |
| Output Level | | | | | | |
| | Vpp | 1.0 | 1.7 | | 2 | Clipped sinewave - DC cut - Load 10KΩ//10 pF - Note: LC network recommended at output (see typical application drawing) |
| Output Impedance | | | | | | |
| | KΩ | | 1 | | 2 | |
| | pF | | 5 | | 2 | |

Notes

1. Parameter inspected at 100%
2. Parameter guaranteed by design

NON-CONFORMITY

| | | |
|------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------|
| PIND | MIL-STD-883-M2020 Cond.A | Not compliant PIND test not performed in production |
| RGA H₂O Relative Humidity Level | MIL-STD-883 M1018 | Not compliant RH level between 2500 ppm and 10 000 ppm given as indicative value, not guaranteed |

PIND test not performed in production and EWOS5500 is non-compliant with PIND standard MID.

ENVIRONMENTAL CONDITIONS

| | |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shocks | 1500G peak / 0.5 ms / 3 axis ; MIL-STD-883 method 2002, Test Condition B |
| Vibrations | 16.91 Grms / 10 to 2000 Hz Random / 3 min per axis, MIL STD 202-214 cond E |
| Soldering instructions | Hand soldering with recommended pins temperature: 235°C ±5°C, t=10s ±05s (260°C max for 5s max) Selective wave soldering with limitation of pre-heating to reach the max temperature of 85°C (body of component) and 3 s max at max temperature Use of no-clean solder paste When connecting a pad to a copper plane, thermal pads are recommended |
| Mounting instructions | Metallic Case glued onto the PCB, without glue overflow into the metallized holes No spacer material between OCXO and PCB |
| PCB cleaning/washing | Washable with a temperature below 85°C |

OCXO HERMETICITY

| | |
|--|-------------------------------------------------|
| | Metallic housing hermetically sealed |
| | Fine Leaks and Gross Leaks tests performed 100% |

EWOS5500 V1.0 | Updated on 29th november 2019 | This document is the property of Syrlinks. Information contained is not contractual & is susceptible to modifications without advance notice.