

EWOS0535

**HIGH MECHANICAL RESISTANCE OCXO FOR SPACE APPLICATIONS,
FLIGHT PROVEN**

PRODUCT OVERVIEW

EWOS0535 is a 10 MHz OCXO using a quartz resonator with very high mechanical resistance and low accelerometric sensitivity. It has a very high frequency stability over short and medium term and is perfectly suited for LEO space missions subject to significant environmental constraints (vibrations & shocks). This OCXO is based on COTS components and is an ideal compromise in terms of cost and performance for cubesat applications, nanosat, micro-minisat, space gnss receivers, ranging functions and radio links.



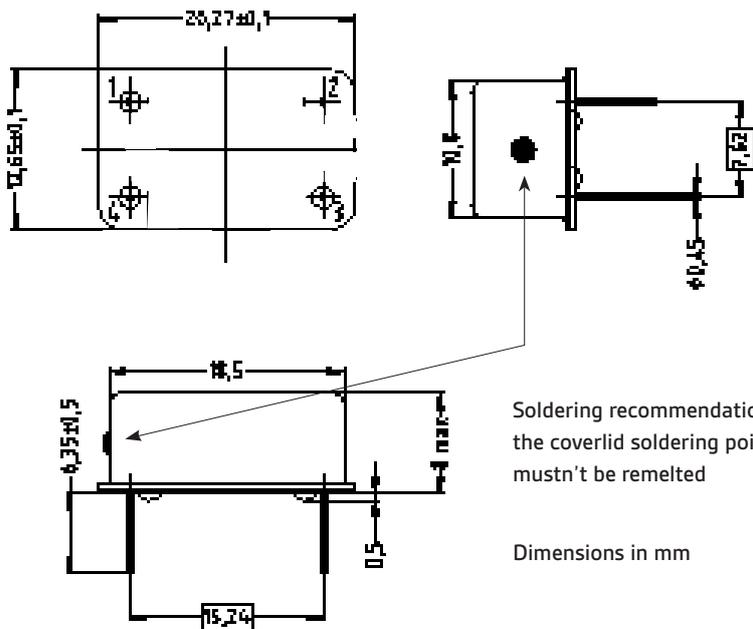
KEY FEATURES

- 10 MHz
- ±0.1 ppm (typ.) thermal sensitivity
- 300 mW @ -40°C (typ.)
- ±2ppb/day after 30 days (typ.)

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DIMENSIONS & PIN-OUT

PIN	FUNCTION
1	Frequency control
2	Ground
3	RF Out
4	Power Supply



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ELECTRICAL CHARACTERISTICS

PARAMETERS	UNIT	MIN	TYP.	MAX	NOTE	COMMENTS
Output Frequency	MHz		10		1	Nominal frequency
Frequency Tolerance	ppm		±0.5	±1	1	+25°C, Vctrl=1.5V or Rcd=20 kΩ
Temperature Range						
Operating	°C	-40		+65	1	
Storage	°C	-55		+125		
Supply Voltage	V		5 ± 5%			
Supply Current						
Warm up	mA		200	250	3	During 10 seconds
Steady state / -40°C	mA		60	70	3	
Steady state / +25°C	mA		30	35	3	Quiet environment conditions
Steady state / +65°C	mA		5	10	3	
Warm-up time						
	s			60	3	1E-7 accuracy referred to frequency measured at 25°C.
	mn			15	2	To achieve 1E-10 short term stability - quiet environment
Frequency Stability						
Vs temperature variation	ppm		±0.1	±0.25	1	-40°C to 65°C
Vs supply voltage variation	ppm		±0.05	±0.1	3	5V ± 1%
Vs load variation	ppm		±0.1	±0.2	2	(10kΩ//10pF) ±10%
Short-term			4E-11	1E-10	2	Allan deviation / 1s
Aging						
	Per day	ppb	±0.2	±5	2	After 30 days
	First year	ppm		±1	2	
	After 20 years	ppm		±5	2	Over full temperature range
Phase noise						
10 Hz	dBc/Hz		-110		1	
100 Hz	dBc/Hz		-135		1	
1 kHz	dBc/Hz		-150		1	
10 kHz	dBc/Hz		-152		1	
Control Voltage (Vctrl)	V	0	1.5	4	1	Frequency control
Frequency Shift	ppm	±5	±6		1	Referred to nominal frequency measured at 25°C. Control voltage 0V to 4V - Positive slope or 0 Ω to 1 MΩ resistance Rcd to ground
Tuning Input Impedance						
	kΩ		100		3	
	pF		100		3	
Output level	Vpp	1.6	1.8		4	Clipped sinewave - Dc cut Load 10 kΩ // 10 pF
Output Impedance						
	kΩ		1		3	
	pF		5		3	
Frequency sensitivity to acceleration			5E-10/g		3	All three axes

NOTES

1. Parameter inspected at 100%
2. Parameter inspected by sampling
3. Parameter guaranteed by design and characterization
4. Parameter guaranteed by periodical qualification

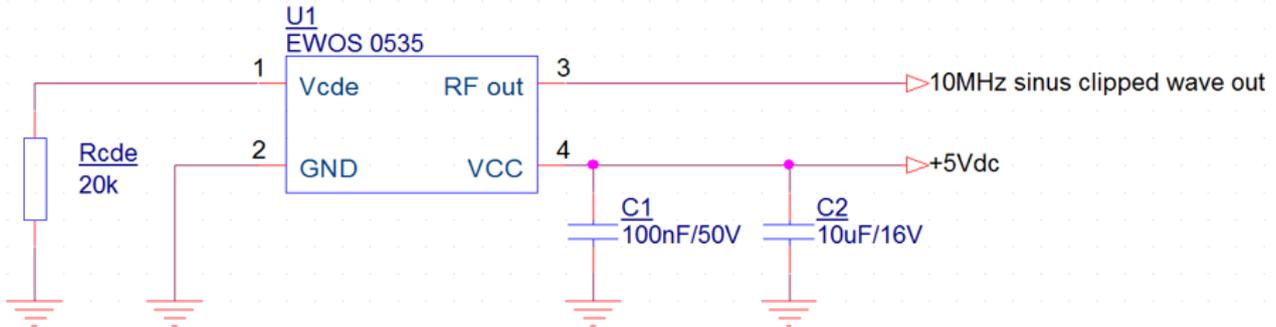
ABSOLUTE MAXIMUM RATINGS

- Supply Voltage Vcc: 0V / 6V
- Control Voltage Vctrl: 0V / 6V

Operation of the device beyond these limits may affect device reliability or may cause permanent damage.

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TYPICAL APPLICATION



Rated performance requires using good high frequency board layout techniques. It is recommended to connect decoupling capacitors (100 nF ceramic and 10 μ F tantalum capacitors) to the supply pin.

Oscillator case has to be mechanically maintained or glued on the equipment board in order not to be damaged by environment vibrations and shocks.

The resistance R_{cde} permits to adjust very precisely the frequency accuracy. This resistance must have very low temperature sensitivity.

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 \pm 5°C, t=10s \pm 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%

ORDERING INFORMATION

