rakon

Space Temperature Compensated Xtal Oscillator

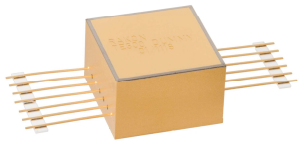
TE 300

TCXO Series 300

For this product, a full detailed specification can also be delivered on request.
Specific request can be addressed to RAKON info@rakon.fr

Product Description

This High performance ITAR-Free Flat Pack TCXO provides a combination of overall stability down to ±1.5ppm with low power consumption of 0,15W all over the temperature range of -40°C up to +85°C and an excellent phase noise.
Major applications of this TCXO are transponders, GPS receivers, digital cards, down and up converters.
Space Flat Pack TCXOs (20x20x13mm) are manufactured in accordance with MIL-PRF-55310 (Class 1, type 3, level S).



Features

- ITAR-Free
- Frequency Range : 10MHz to 100 MHz
- Supply Voltage : +5V or +12V
- Low Consumption : 30 mA max
- Frequency Stability vs. Operating Temperature : from ± 0.5ppm to ± 5ppm
- Ageing : ± 5ppm over 15 years
- Output Wave Form : sine 50 Ohms
- Output Level : from 0 to 8 dBm
- Hermetic case
- Component selected as per ECSS-Q-ST-60C
- Materials selected as per ECSS-Q-70
- Manufacturing in accordance with:
  - MIL-PRF-55310 (Class 1, type 3, level S,B)
  - ECSS-Q-ST-70-08C and ECSS-Q-ST-70-38C

Applications

- GPS receivers
- Converters
- Board calculators
- Synthesizers
- FGU

Specifications

1.0 Environmental conditions

Parameter	Conditions/remarks	Min	Nom	Max	Unit
Operating Temperature	Option A	0	25	50	°C
	Option B	-20	25	70	°C
	Option C	-40	25	85	°C
Switch-on Temperature	TSo	-40		85	°C
Non-Operating Temperature	TNOp	-55		125	°C
Random Vibration	Level as per MIL-STD-202, Method 214, Condition I-K (46,3 Grms)				
Sine Vibration	Level as per MIL-STD-202, Method 204, Condition D (20G)				
Shocks	Mechanical shock as per MIL-STD-202, Method 213, Condition E (half sine with a peak acceleration of 1000g for duration of 0.5 msec)				
Radiation	TID : 100 kRad, low dose rate No SEL up to LET = 60 MeV/mg/cm²				

2.0 Electrical interface

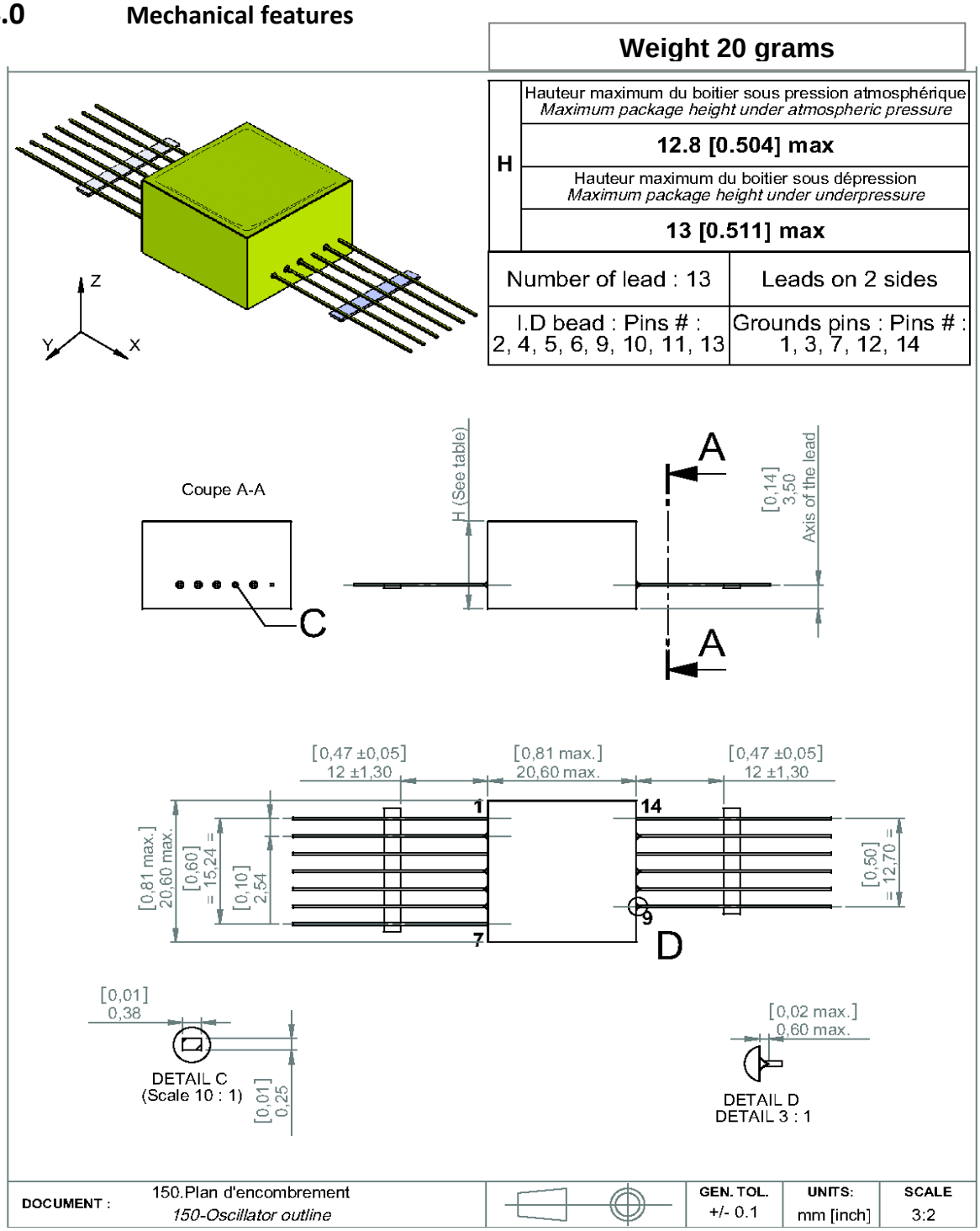
Parameters	Conditions/remarks	Min	Nom	Max	Unit
Power supply	Option 1	4.75	5	5.25	V
	Option 2	11.4	12	12.6	V
Load Impedance		45	50	55	Ω
Adjustment resistor	Radj / Calibration option 1	0	RadjNom*	10	κΩ

Note: RadjNom will be indicated on final test report

3.0 Performances

Parameters	Conditions/Remarks	Min	Typ	Max	Unit
Nominal Frequency		10		100	MHz
Steady state power supply				0.2	W
Initial frequency accuracy				± 1	ppm
Frequency adjustment	Calibration option 1 / negative slope	5		-5	ppm
Frequency-temperature stability	Temperature option A			± 0.5	ppm
	Temperature option B			± 1	ppm
	Temperature option C			± 5	ppm
Frequency variation vs. supply voltage	Over Operating Temperature			± 0.1	ppm
Frequency variation vs. load	Over Operating Temperature			± 0.2	ppm
Start up time				10	ms
Frequency ageing	Over 1 year			± 1	ppm
	Over 15 years			± 5	ppm
Output waveform		Sine			
Output level	Supply voltage option 1	0			dBm
	Supply voltage option 2	7			dBm
Harmonics level				-30	dBc
Spurious level	100 Hz to 100kHz			-80	dBc
Static Phase noise	@ 10 Hz offset			-75	dBc/Hz
	@ 100 Hz offset			-105	dBc/Hz
	@ 1 kHz offset			-130	dBc/Hz
	(noise floor) @ 10 kHz offset			-145	dBc/Hz
Allan Variance	1s			1	ppb

4.0 Mechanical features



5.0 Pin description

Pin number	Name	Description
1,3,7,12,14	GND	Electrical & Mechanical ground
2	Vcc	Supply voltage
4,5,8,9,10,11	NC	Do not Connect
6	Radj	Frequency adjustment option 1
13	Fout	Frequency output

6.0 Model philosophy

Representativeness	Engineering Model	Engineering Qualification Model	Qualification Model	Flight Model	Flight Model + Lot Acceptance test
Options	**A**	**B, C**	**D**	**E, F, G, H**	**I**
Components	Passive commercial parts, Active parts from the same manufacturer of HiRel parts	Mil Grade parts procured from the same manufacturer of HiRel parts	HiRel Parts	HiRel Parts	HiRel Parts
Crystal material	Swept quartz stabilized	Swept quartz stabilized	ESCC3501 Swept quartz stabilized	ESCC3501 Swept quartz stabilized	ESCC3501 Swept quartz stabilized
Mechanical interface	Flight representative in form-fit-function	Flight representative in form-fit-function	Flight design	Flight design	Flight design
Electrical interface	Flight design	Flight design	Flight design	Flight design	Flight design
Tests	Acceptance testing	Qualification testing	Qualification testing (including screening)	Acceptance testing (including screening)	Acceptance testing (including screening)+ LAT
Workmanship	IPC610	ECSS-Q-ST-70-08 & 70-38	ECSS-Q-ST-70-08 & 70-38	ECSS-Q-ST-70-08 & 70-38	ECSS-Q-ST-70-08 & 70-38

7.0 Flight Model Screening according to MIL-PRF-55310

- Full Level S (option E)
- Level S with combined burn in aging of 480 hours (option F)
- Full Level B (option G)
- Level B with combined burn in aging of 480 hours (option H)

Lot Acceptance test could be performed on all screening options

8.0 Options for Engineering Qualification Model

- Production manufacturing, qualification flow including qualification mechanical tests (option B)
- Production manufacturing, electrical tests only (option C)

9.0 Deliverable documentation

- Test data
- Full specification
- Certificate of Conformity (CoC)

10.0 Ordering part number definition

The part number breakdown is defined as follows: