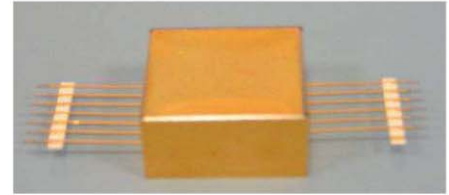


For this product, full and detailed specifications can be delivered on request.
Specific request can be addressed to RAKON info@rakon.fr

Product Description

This ITAR free Space Flat Pack VCXO is featured by excellent pulling range of +/- 70ppm, good ageing characteristics of +/- 1 ppm per year, low power consumption of 0.15W, compact package size (20x20x13mm), and weight of 20g. The main applications are space synthesizers and transponders. These Space Flat Pack VCXOs are manufactured following the guidelines of MIL-PRF-55310 (Class 1, type 2, level S).



Features

- Frequency Range : 10MHz to 40 MHz
- Supply Voltage : +5V or +12V
- Low Consumption : 30 mA max
- Frequency Stability vs. Operating Temperature : from +/- 10ppm to +/- 15ppm
- Ageing : +/- 5ppm over 15 years
- Output Wave Form : sine 50 Ohms
- Output Level : from 0 to 8 dBm
- Component selected as per ECSS-Q-ST-60C
- Materials selected as per ECSS-Q-70
- Manufactured following the guidelines of:
 - MIL-PRF-55310 (Class 1, type 2, level S)
 - ECSS-Q-ST-70-08C and ECSS-Q-ST-70-38C

Applications

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

Specifications

1.0 Environmental conditions

Line	Parameters	Conditions/remarks	Min	Nom	Max	Unit
1.1	Operating Temperature	Temperature option A	0	25	50	°C
		Temperature option B	-20	25	70	°C
		Temperature option C	-40	25	85	°C
1.2	Switch-on Temperature	TSo	-40		85	°C
1.3	Non-Operating Temperature	TNOp	-55		125	°C
1.4	Random Vibration	Level as per MIL-STD-202), Method 214, Condition I-K (47,60 Grms)				
1.5	Sine Vibration	Level as per MIL-STD-202), Method 204, Condition D (20G)				
1.6	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)				
1.7	Radiation	TID : 100 kRad, low dose rate No SEL up to LET=60 MeV/mg/cm ²				

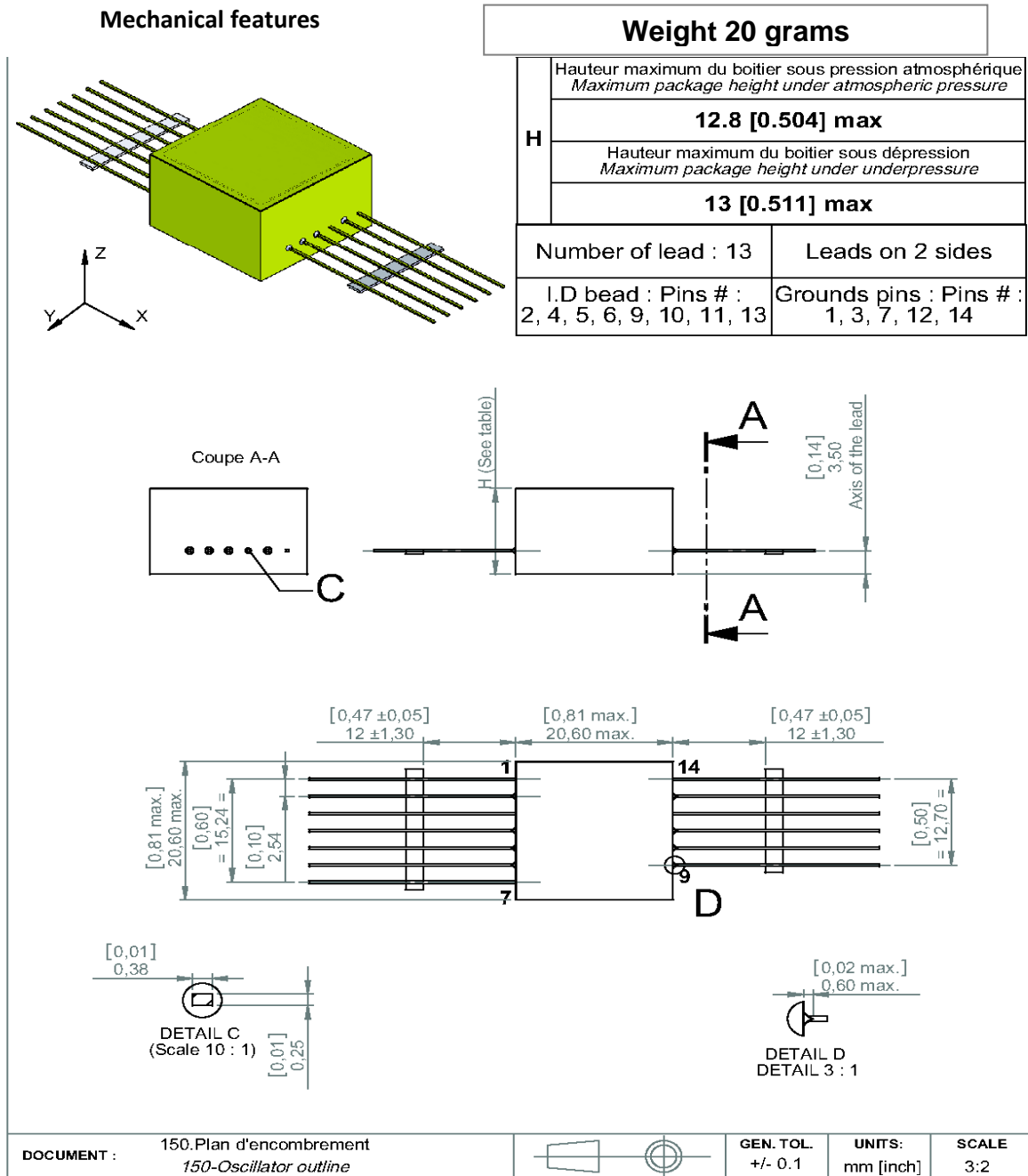
2.0 Electrical interface

Line	Parameters	Conditions/remarks	Min	Nom	Max	Unit
2.1	Power supply	Supply option 1	4.75	5.0	5.25	V
		Supply option 2	11.4	12.0	12.6	V
2.2	Load Impedance		45	50	55	Ω
2.3	Control voltage		0		5	V
2.4	Adjustment Resistor	Radj Calibration option A	0		10	k Ω
		Calibration option B	NA	NA	NA	

3.0 Performances

Line	Parameters	Conditions/Remarks	Min	Typ	Max	Unit	
3.1	Nominal Frequency		10		40	MHz	
3.2	Steady state input current power	(Rnom)			30	mA	
3.3	Initial frequency accuracy	Calibration option A Rnom			± 1	ppm	
3.4	Frequency adjustment	Calibration option A					
			Negative slope				
			RadjMin	+5			ppm
3.5	Frequency control	Control voltage option A	± 40			ppm	
		Control voltage option B	± 70			ppm	
3.6	Frequency stability vs temperature	Temperature option A		± 10		ppm	
		Temperature option B		± 10			
		Temperature option C		± 15			
3.7	Frequency variation vs. supply voltage	Over Operating Temperature		± 0.5		ppm	
3.8	Frequency variation vs. load	Over Operating Temperature		± 0.5		ppm	
3.9	Frequency ageing	Over 1 years			± 1	ppm	
3.10	Output waveform			Sine			
3.11	Output level		0			dBm	
3.12	Harmonics level				- 30	dBc	
3.13	Spurious level				- 80	dBc	
3.14	Phase noise	noisefloor			- 145	dBc/Hz	

4.0 Mechanical features



5.0 Pin description

Line	Pin number	Name	Function
5.1	1-3-7-12-14	GND	Electrical & Mechanical Ground
5.2	2	Vcc	Supply Voltage
5.3	4	Radj	Calibration option A Resistor Adjustment
		NC	Calibration option B Do not connect
5.4	6	Vc	Control voltage input
5.5	5-9-10-11	NC	Do not connect
5.6	13	Fout	Frequency Output

6.0 Model philosophy

Representativeness	Engineering Model	Engineering Qualification Model	Qualification Model	Flight Model	Flight Model + Lot Acceptance test
	(option A)	(options B, C)	(option D)	(options E, F, G, H)	(option I)
Component	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	Swept quartz ESCC3501 Stabilized	Swept quartz ESCC3501 Stabilized	Swept quartz ESCC3501 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 following the guidelines of 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:

