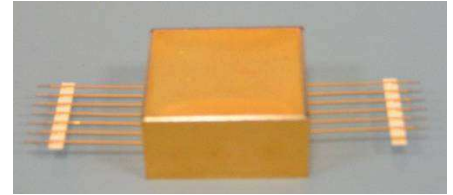


For this product, full and detailed specifications can be delivered on request.
Specific request can be addressed to RAKON info@rakon.fr

Product Description

This High performance ITAR Free Flat Pack TCXO provides a combination of overall stability down to +/-0.5ppm, with low power consumption of 0,15W all over temperature range up to -40..+85°C and excellent phase noise. Major applications of this TCXO are transponders, GPS receivers, digital cards and down and up converters. Space Flat Pack TCXOs (25x25x13.2mm) are manufactured in accordance with MIL-PRF-55310 (Class 1, type 3, level S).



Features

- 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 : square CMOS compatible
- 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

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 (46,3 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

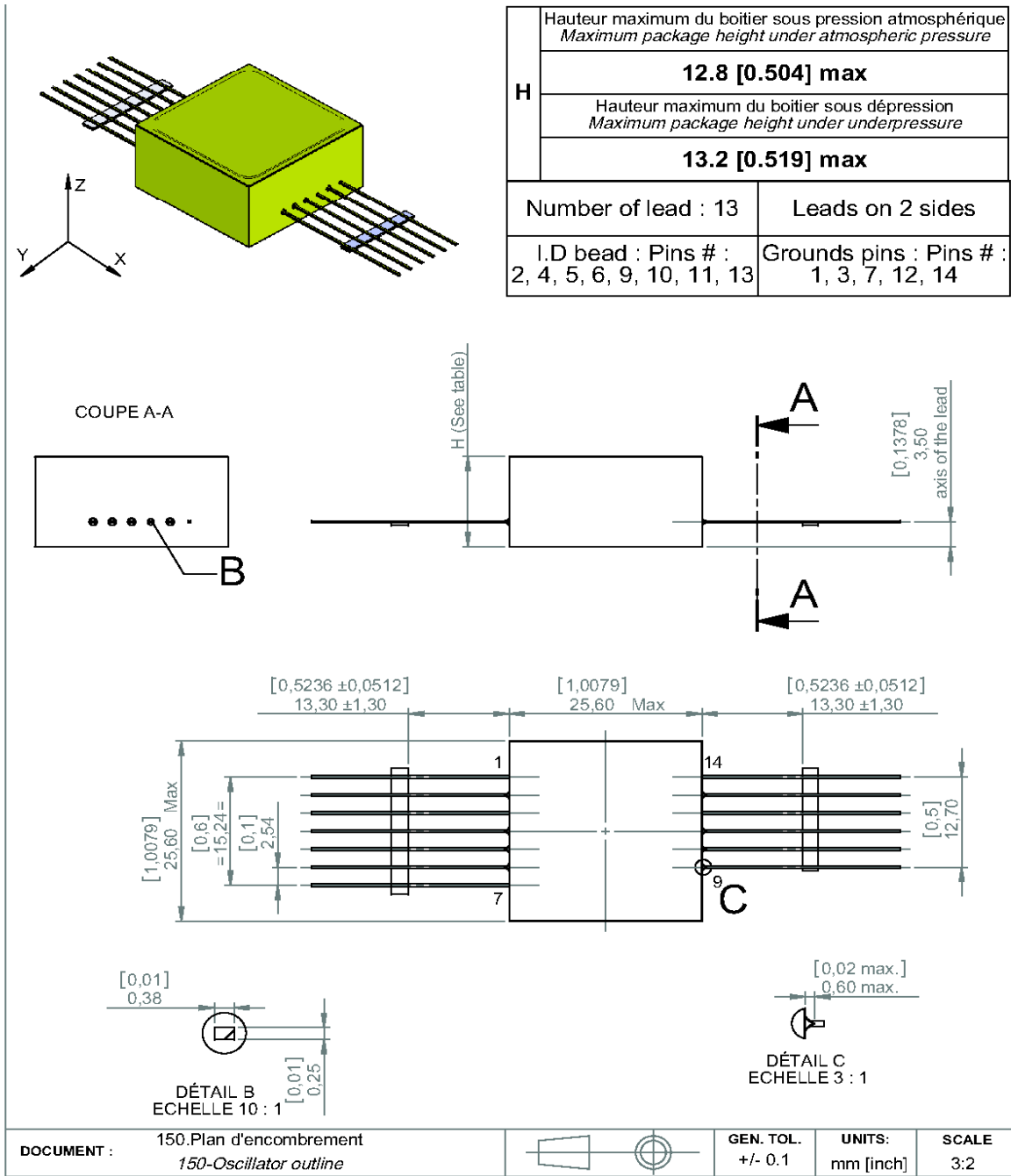
Line	Parameters	Conditions/remarks	Min	Nom	Max	Unit
2.1	Power supply	Supply option 1	4.75	5.0	5.25	V
		Supply option 2	11.4	12.0	12.6	
2.2	Load Impedance	10 MHz ≤ Frequency < 30 MHz, In parallel with 1 kΩ	13	15	18	pF
		30 MHz ≤ Frequency < 50 MHz, In parallel with 1 kΩ	6.2	7	7.5	pF
		50 MHz ≤ Frequency < 100 MHz, In parallel with 1 kΩ	4.2	4.7	5.1	pF
2.3	Adjustment Resistor	Radj Calibration option 1	0		10	kΩ

3.0 Performances

Line	Parameters	Conditions/Remarks	Min	Typ	Max	Unit
3.1	Nominal Frequency		10		100	MHz
3.2	Steady state supply power	(Rnom)			30	mA
3.3	Initial frequency accuracy	Calibration option 1 Rnom			± 1	ppm
3.4	Frequency adjustment	Calibration option 1	RadjMin	Negative slope		
				RadjMax	+5	
3.5		Calibration option 2		NA		
3.6	Frequency stability vs temperature	Temperature option A			± 0.5	ppm
		Temperature option B			± 1	ppm
		Temperature option C			± 5	ppm
3.7	Frequency variation vs. supply voltage	Over Operating Temperature			± 0.1	ppm
3.8	Frequency variation vs. load	Over Operating Temperature			± 0.2	ppm
3.9	Frequency ageing	Over 1 year			± 1	ppm
3.10		Over 15 years			± 5	ppm
3.11	Output waveform	AHCMOS compatible			Square	
3.12	Output level	VOL			0.4	V
3.13		VOH	2.4			V
3.14	Duty cycle		45		55	%
3.15	Rise time	10%-90% of Vcc			5	ns
3.16	Fall time	90%-10% of Vcc			5	ns

4.0 Mechanical features

Weight 25 grams



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 - 5 - 8 - 9 - 10 - 11	NC	Do not connect
5.4	6	Radj	Calibration option 1 Resistor Adjustment
5.5	13	Fout	Frequency Output

6.0 Model philosophy

Representativeness	Engineering Model (option A)	Engineering Qualification Model (options B, C)	Qualification Model (option D)	Flight Model (options E, F, G, H)	Flight Model + Lot Acceptance test (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 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:

