

# SPACE OCXO plus

Space Qualified OCXO Plus – Oven Controlled Crystal Oscillator,  
General Specification (rev1)

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December, 5th 2007

## ▣ Features

- Case type (s) : 50x50 height 30mm
- Frequency range : 10 MHz to 40 MHz
- Overall frequency stability vs. temperature range from +/- 2ppb to +/-0.5 ppb under vacuum
- Frequency Control Range : depending on spec
- Ageing per year : +/- 20 ppb first year
- Output wave form : sine 50 Ohms
- Output level : 10 dBm
- Supply Voltage : +10V or +15V
- Power consumption during Warm Up : 6W
- Power consumption steady state : 4W atmospheric pressure ; 2W under vacuum
- Environmental conditions depending on customer request
- Radiation : TDR from 50kRad up to 100 kRad (Si)
- FM in accordance with MIL-PRF-55310 rev D

## ▣ Applications

**Recommended for space clock applications, navigation and positioning onboard systems**

## ▣ Environmental conditions

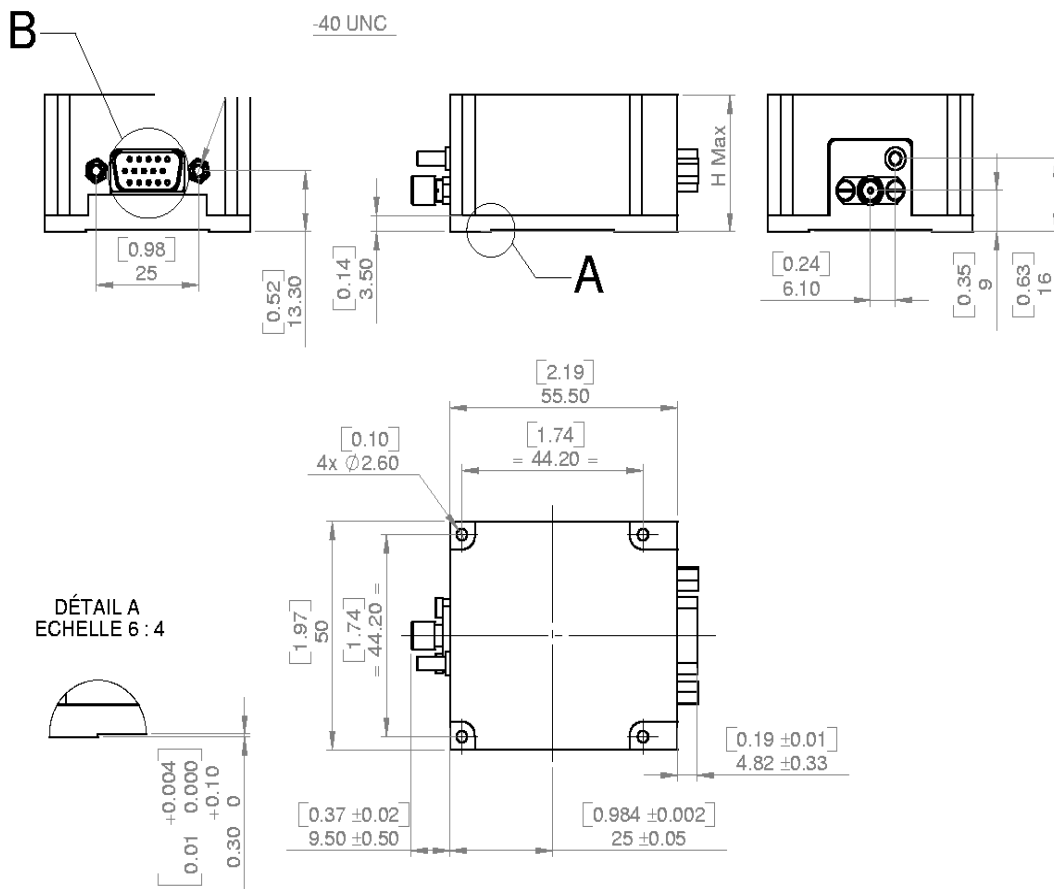
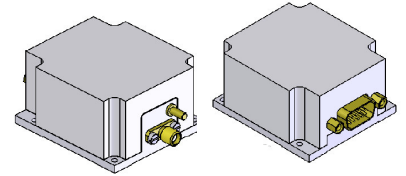
Parameters	Unit	Minimum	Typical	Maximum
Operating temperature range	°C	- 20		+ 70
Storage temperature range	°C	- 55		+ 125
Sine vibration		20g as per MIL-STD-202, Method 204, Condition D		
Random vibration		50 Grms ; 1,7g <sup>2</sup> /Hz from 100 Hz to 1000Hz		
Acceleration		25g		
Shocks (pyrotechnic shock)		1500g @ 1.5kHz		
Shocks (sawtooth) Shocks (half sine)		50g, 11ms 1200g, 11ms		
Radiation		Up to 100 kRad total dose		

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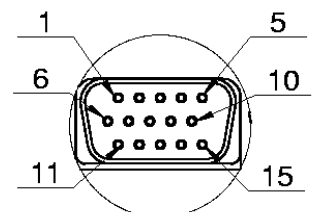
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## ▣ Mechanical characteristics



Pin number	Name	Function
1	Vc	Voltage control for electrical tuning
2 – 3 – 4 - 12	NC	Electrical & mechanical ground
6 – 7 – 8 – 13 – 14 – 15	GND	Electrical & Mechanical ground
9 – 10 - 5	Vcc	Power supply
11	Vref	Reference voltage
SMA connector	Fout	Frequency output



**Table 1 : Pin description 1**

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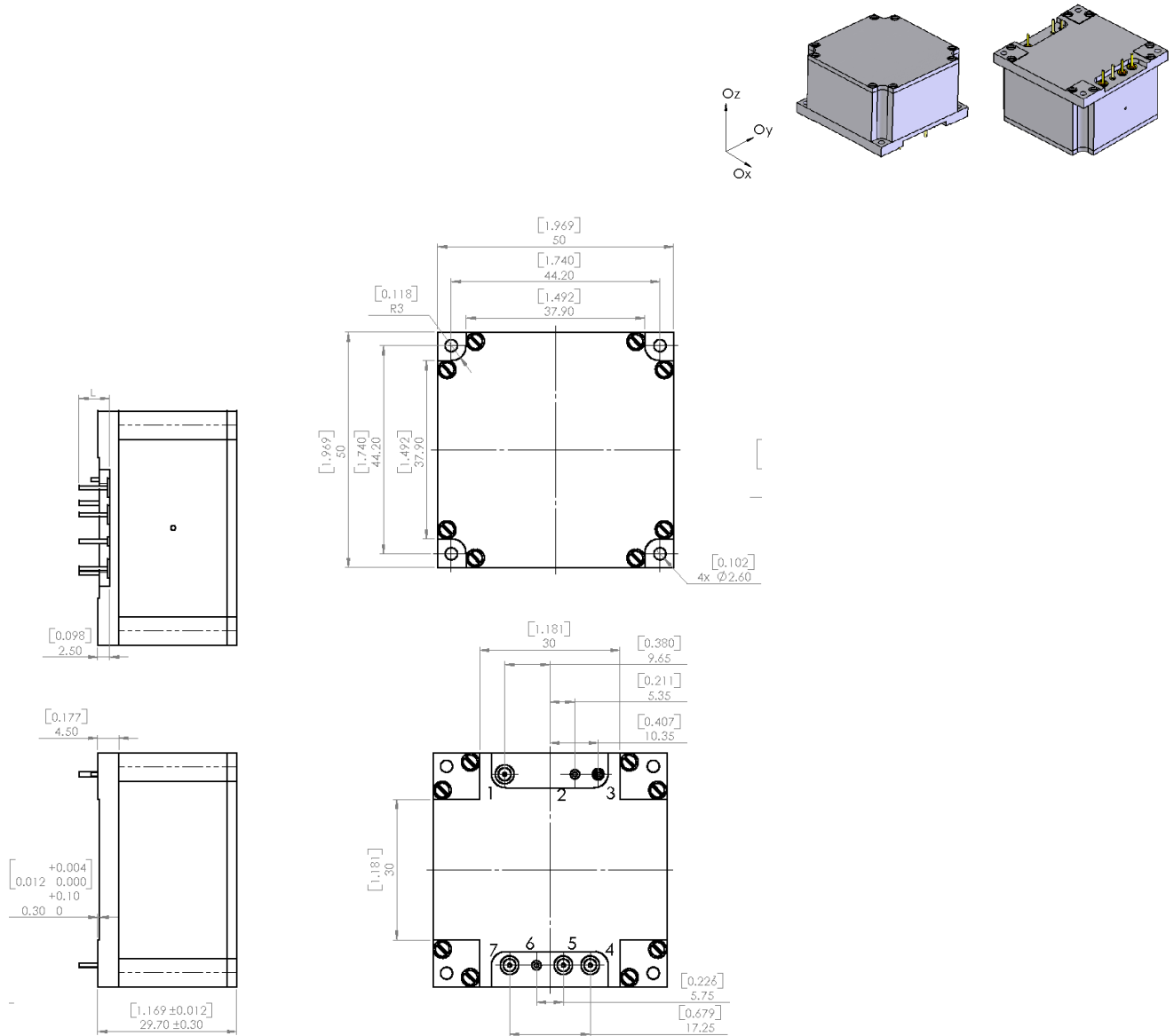


Figure 2 : Oscillator outline 2

Pin number	Name	Function
1		Oven Alarm
2 – 6	GND	Electrical & mechanical ground
3	Fout	Frequency output
4	Vc	Voltage control for electrical tuning
5	Vref	Reference voltage
7	Vcc	Supply voltage

Table 2 : Pin description 1

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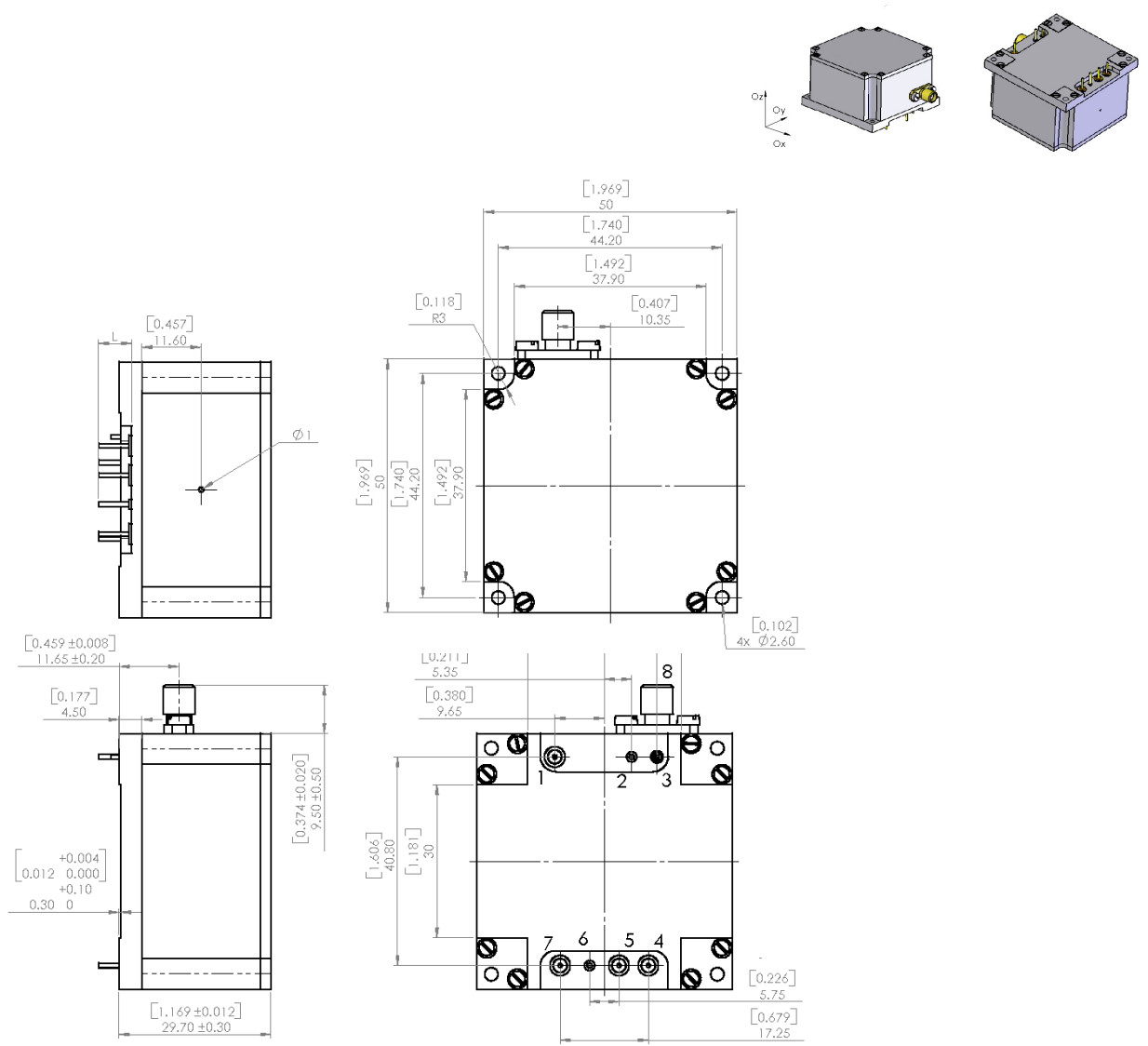


Figure 3 : Oscillator outline 3

Pin number	Name	Function
1		Oven Alarm
2 – 6	GND	Electrical & mechanical ground
3	Fout	Frequency output
4	Vc	Voltage control for electrical tuning
5	Vref	Reference voltage
7	Vcc	Supply voltage

Table 3 : Pin description 3

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## ▣ Performance characteristics

Electrical Parameters	Unit	Minimum	Typical	Maximum
<b>Frequency output</b>				
Nominal frequency range	MHz	5	10	40
Output level (50 $\Omega$ load)	dBm	5		8
Harmonics level	dBc			- 40
Spurious (offset > 50 Hz)	dBc			- 80
<b>Phase noise in static conditions @ 10 MHz</b>				
@ 1 Hz offset	ppb			- 110
@ 10 Hz offset	ppb			- 135
@ 100 Hz offset	ppb			- 145
@ 1 kHz offset	ppb			- 150
@ 10 kHz offset or greater	ppb			- 155
<b>Allan variance</b>				
@ 0.1 s	ppb			0.002
@ 1 s	ppb			0.002
@ 10 s	ppb			0.01
<b>Free running mode (Vctrl pin NC)</b>				
Initial setting	ppb			10
Stability vs. temperature	ppb			$\pm 1$
Stability vs. 5 % supply voltage variation	ppb			0.1
Stability vs. 10 % load variation	ppb			0.1
Aging over first year	ppb			20
Retrace	ppb			2
<b>Electrical tuning (Vctrl pin)</b>				
Relative pulling frequency range	ppb	$\pm 200$		$\pm 500$
Input impedance	$\Omega$	10k		
Voltage range Option	V <sub>DC</sub>	0		8
<b>Reference voltage (Vref pin)</b>				
Nominal value	V <sub>DC</sub>	7.5		8.5
<b>Supply voltage (Vcc pin)</b>				
Voltage range	V <sub>DC</sub>	9.5	12	15.75
Supply power @ 25 °C under vacuum	W			2
Supply power @ warm up	W			7