

VCXO ULN HF D

Ultra Low Noise Voltage Controlled Crystal Oscillator,
General Specification (rev1)

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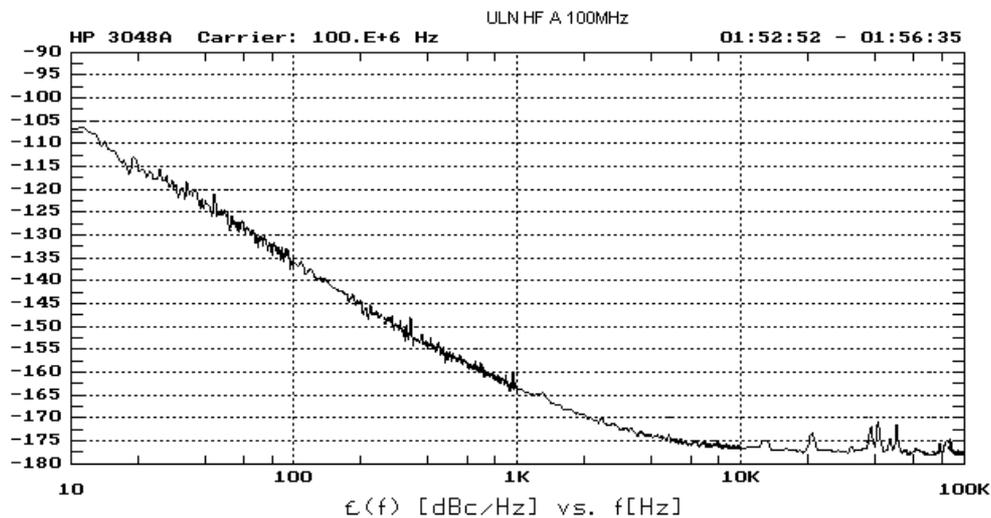
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General Specification (rev1)

December 5th, 2007

▣ Features

- Ultra Low Noise (ULN), Voltage Controlled, Crystal Oscillator (VC)XO
- Frequency range : 80 to 125 MHz
- Ultra low phase noise @ 100 MHz : - 158 dBc/Hz @ 1 kHz offset
- 174 dBc/Hz @ 10 kHz offset (noise floor)
- Operating temperature range : [-40 – +85 °C]
- Airborne environment
- 7-pin machined package with inner shock absorbers + SMA connector for the frequency output
- Typical phase noise @ 100 MHz (static conditions):



▣ Applications

Airborne military equipment

Radar & Telecom

▣ Environmental conditions

Parameters	Unit	Minimum	Typical	Maximum
Operating temperature range	°C	- 40		+ 85
Storage temperature range	°C	- 55		+ 125
Relative humidity		Up to 100% at Ta = 0°C to 85°C without condensing		
Vibration, random		As per MIL-STD-810, Issue F (cat 5)		
Vibration, sine		As per MIL-STD-810, method 519.5 procedure IV		
Acceleration		As per MIL-STD-810, method 513.5 procedures I,II and III		
Shock (half sine)		As per MIL-STD-810, method 516.5 procedure I		

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▣ Mechanical characteristics

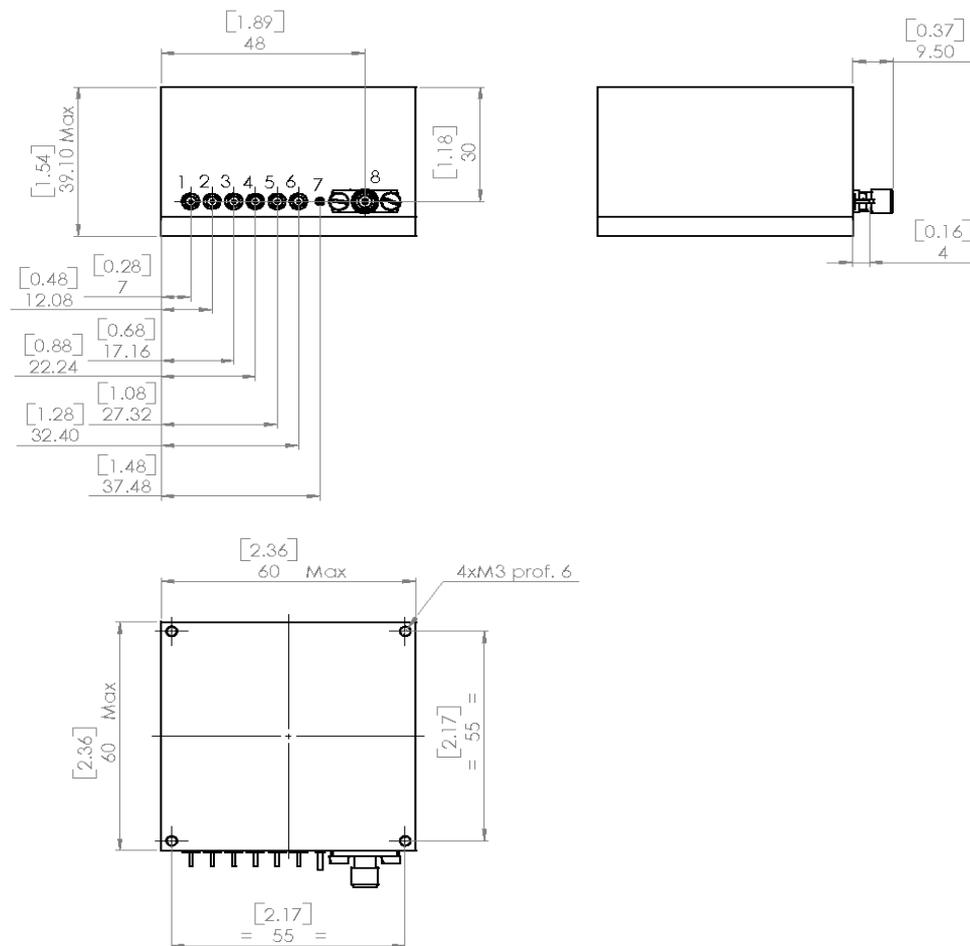


Figure 1 : Oscillator outline

Pin number	Name	Function
1	Vcc oven	Supply voltage of oven
2	Ground oven	Ground of oven
3	Oven alarm	Oven alarm
4	Vcc RF	Supply voltage
5	Vc	Electrical & mechanical ground
6	Vref	Reference voltage
7	Ground, case	Ground of RF
8	SF	Output signal

Table 1: Pin description

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▣ Performance Characteristics

Electrical Parameters	Unit	Minimum	Typical	Maximum
Frequency output (SMA Connector)				
Nominal frequency range	MHz	80	100	125
Output level (50 Ω load)	dBm	11	13	15
Output VSWR (Fo ± 1.5 MHz)	-			2:1
Harmonics level	dBc			- 30
Spurious (offset > 50 Hz)	dBc			- 70
Phase noise in static conditions @ 100 MHz				
@ 10 Hz offset	dBc/Hz		-105	- 100
@ 100 Hz offset	dBc/Hz		-135	- 130
@ 1 kHz offset	dBc/Hz		-163	- 158
@ 10 kHz offset or greater	dBc/Hz		-176	- 174
Phase noise in static conditions @ 120 MHz				
@ 10 Hz offset	dBc/Hz			- 93
@ 100 Hz offset	dBc/Hz			- 123
@ 1 kHz offset	dBc/Hz			- 155
@ 10 kHz offset or greater	dBc/Hz			- 172
g-sensitivity				
@ 25 Hz offset (resonance)	/g			2.5 10 ⁻⁹
@ 100 Hz offset	/g			4.5 10 ⁻¹¹
@ 1 kHz offset	/g			2.5 10 ⁻¹²
Free running mode (Vctrl pin NC)				
Initial setting	ppm			± 3
Stability vs. temperature	ppm			± 30
Stability vs. 5 % supply voltage variation	ppm			± 0.1
Stability vs. 10 % load variation	ppm			± 0.1
Aging over first year	ppm			± 0.5
Aging over 10 year	ppm			± 2
Retrace	ppm			± 5
Supply voltage (Vcc pin)				
Voltage range	V _{DC}	14.5	15	15.5
Supply current @ 25 °C	mA			50

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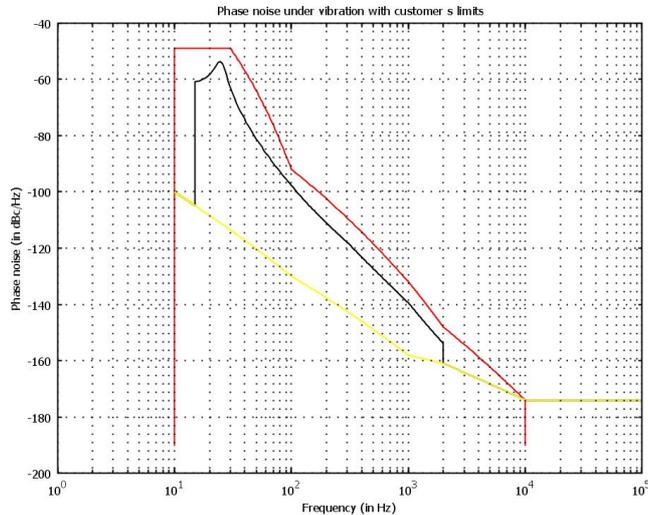


Figure 2 : Phase noise curves @ 100 MHz

Above is represented in yellow, the theoretical curve of the phase noise in static conditions and in black the phase noise in dynamic conditions.

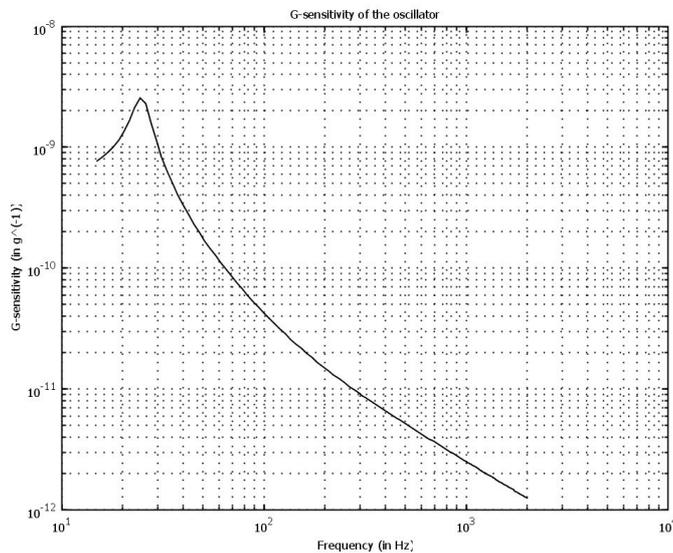


Figure 3 : G-sensitivity of the oscillator

Above is represented the g-sensitivity of the oscillator