

<b>Specification</b>	<b>AXIOM175ULN</b>	Rev.: 2	Date: 2019-08-16
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**Oscillator type: Ultra-Low Phase Noise OCXO with Sine Wave Output**

Parameter	min.	typ.	max.	Unit	Condition
<b>Frequency Range</b>	80		130	MHz	
<b>Standard frequencies</b>	100.000 / 120.000			MHz	
<b>Frequency stability</b>					
Initial tolerance @ +25°C			±300	ppb	V <sub>c</sub> @ VREF/2
vs. operating temperature range	Option 2 & 3 See tables 2 & 3				steady state
vs. supply voltage variation (pushing)			±10	ppb	V <sub>s</sub> ±5%
vs. load change (pulling)			±5	ppb	R <sub>L</sub> ±5%
Long term (aging) per day		±1	±2	ppb	after 30 days operation
Long term (aging) 1 <sup>st</sup> year		±100	±200	ppb	after 30 days operation
<b>Frequency adjustment range</b>					
Electronic Frequency Control (EFC)	±1	±2		ppm	
EFC voltage V <sub>c</sub>	0	VREF/2	VREF	V	
EFC slope ( $\Delta f / \Delta V_c$ )	Positive				
EFC input impedance	100			kΩ	
<b>RF output</b>					
Signal waveform	Sine wave				
Load R <sub>L</sub>	50			Ω	±5%
Output level (Note 2)	+7	+12		dBm	
Harmonics			-30	dBc	
Spurious			-90	dBc	
Warm-up time		3	5	min	$\Delta f_{\text{final}}/f_0 < \pm 0.1$ ppm
Phase noise	See table 1				Option 1
G-Sensitivity			1.0	ppb/g	per axis
<b>Reference voltage VREF output (Note 3)</b>		10.0		V	
<b>Supply voltage V<sub>s</sub> (Note 3)</b>	11.4	12.0	12.6	V	
<b>Current consumption (steady state)</b>			150	mA	@ +25°C (Note 4)
<b>Current consumption (warm-up)</b>			350	mA	(Note 4)
<b>Enclosure (see drawing) (LxWxH) (Note 5)</b>	27.8x27.8x15.5 max.			mm	
<b>Weight</b>			20	g	
<b>Packing</b>	Palette				

**Notes:**

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Other output level on request
3. Other supply and reference voltage on request
4. May be higher for wide operating temperature range
5. Lower height H available on request

**Absolute Maximum Ratings**

Parameter	min.	max.	Unit	Condition
Supply Voltage V <sub>s</sub>	-0.5	V <sub>s</sub> + 10%	V	V <sub>s</sub> to GND
Control Voltage V <sub>c</sub>	-0.5	15	V	V <sub>c</sub> to GND
Storage Temperature	-55	+105	°C	

**Phase Noise – Option 1:**

Offset	80~110 MHz					>110~130 MHz					Unit
	A	B	C	D	E	A	B	C	D	E	
10 Hz	-90	-95	-100	-103	-105	-85	-90	-95	-97	-100	dBc/Hz
100 Hz	-120	-125	-130	-135	-137	-115	-120	-125	-127	-130	dBc/Hz
1 kHz	-150	-155	-160	-162	-164	-147	-150	-153	-155	-157	dBc/Hz
10 kHz	-170	-170	-170	-172	-174	-170	-170	-170	-170	-172	dBc/Hz
≥100 kHz	-175	-175	-175	-175	-175	-175	-175	-175	-175	-175	dBc/Hz

Table 1

Note: Other phase noise parameters on request

**Frequency stability vs. temperature**

Option 2	Stability [ppb]
25	±25
50	±50
100	±100
200	±200

Table 2

Lower Temperature		Upper Temperature	
Option 3	T [°C]	Option 3	T [°C]
0	0	A	+50
1	-10	B	+60
2	-20	C	+70
3	-30	D	+75
4	-40	E	+80
5	-55	F	+85

Table 3

Standard: "1B" = -10°C to +60°C

Temperature range [°C]	Frequency stability [Option 2]			
	25	50	100	200
0 ~ +50	X	X	X	X
-10 ~ +60	X	X	X	X
-20 ~ +70	X	X	X	X
-30 ~ +70	X	X	X	X
-40 ~ +75	O	X	X	X
-40 ~ +85	-	O	X	X
-55 ~ +85	-	-	O	X

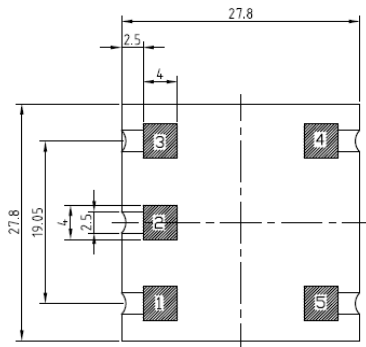
Table 4 "Availability" X = available, O = available on request, - not available

**Ordering Code**

Model	Option 1 [Phase noise]	Option 2 [Stability]	Option 3 [Temperature range]	Revision	Frequency [MHz]
AXIOM175ULN	Table 1	Table 2	Table 3	Rev.2	100.000

Example: AXIOM175ULN-C-50-1B\_Rev.2 – 100.000 MHz

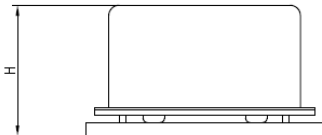
**Enclosure drawing**



no pcbtrack beneath this area

**Pin connections**

Pin #	Symbol	Function
1	RF OUT	RF Output
2	GND	Ground
3	V <sub>C</sub>	Control Voltage (EFC)
4	VREF	Reference voltage
5	V <sub>S</sub>	Supply Voltage



**Handling and Testing**

Parameter	Procedure		Source
Handling and Testing	Application Note AXAN-011		www.axtal.com
Processing	Application Note AXAN-012		www.axtal.com
Parameter	Procedure		Condition
Electrostatic discharge (ESD)			
THD devices	IEC60749-26	HBM	2000 V
SMD devices	IEC60749-27	MM	200 V
Washable	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
RoHS- Compliant	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

### Environmental conditions

Test	IEC 60068 Part ...	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test conditions (IEC)
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak: Test Qc, Fine leak: Test Qk
Solderability Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta Method 1 Test Td <sub>1</sub> Method 2 Test Td <sub>2</sub> Method 2
Shock	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 100g, 6 ms half-sine pulse
Vibration, sinusoidal	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axes, 10 Hz - 55 Hz 0,75mm; 55 Hz - 2 kHz, 10g
Vibration, random	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance tests - ageing - extended aging		5.7.1 5.7.2	108A		4.8.35	30 days @ 85°C, OCXO @25°C 1000h, 2000h, 8000h @85°C

Other environmental conditions on request

Data sheet is for information purposes only and may be subject to modifications or may be discontinued without notice.

### Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	04.12.2014	First issue	HH	HH
2	D0	16.08.2019	Frequency range extended, phase noise & stability options updated, editorial changes	HH	HH