

Specification	AXIOM15ULN	Rev.: 2	Date: 2019-08-19
Oscillator type: Ultra Low Phase Noise Miniature OCXO with Sine Wave Output			

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	80		125	MHz	
Standard frequencies	100.000 / 120.000			MHz	
Frequency stability					
Initial tolerance @ +25°C		±100	±200	ppb	V _c @ VREF/2
vs. operating temperature range	Option 2 & 3 See tables 2 & 3				steady state
vs. supply voltage variation (pushing)			±10	ppb	V _s ±5%
vs. load change (pulling)			±5	ppb	R _L ±5%
Long term (aging) per day			±2	ppb	after 30 days operation
Long term (aging) 1 st year			±200	ppb	after 30 days operation
Frequency adjustment range					
Electronic Frequency Control (EFC)	±1	±2		ppm	
EFC voltage V _c	0		VREF	V	
EFC slope (Δf / ΔV _c)	Positive				
EFC input impedance	100			kΩ	
RF output					
Signal waveform	Sine wave				
Load R _L	50			Ω	±5%
Output level (Note 2)	+7			dBm	
Harmonics			-30	dBc	
Warm-up time			3	min	Δf _{final} /f ₀ < ±0.1 ppm
Phase noise	See table 1				Option 1
G-Sensitivity			1.0	ppb/g	per axis
Reference voltage VREF output (Note 3)		10.0		V	
Supply voltage V_s (Note 3)	11.4	12.0	12.6	V	
Current consumption (steady state)			100	mA	@ +25°C (Note 4)
Current consumption (warm-up)			300	mA	(Note 4)
Enclosure (see drawing) (LxWxH) (Note 5)	25.6x22.2x14 max.			mm	IEC 60679-3 CO 28
Weight			10	g	
Packing	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 on request

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
Supply Voltage V _s	-0.5	V _s + 10%	V	V _s to GND
Control Voltage V _c	-0.5	15	V	V _c to GND
Storage Temperature	-55	+105	°C	

Phase Noise – Option 1:

Offset	80~110 MHz					>110~125 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	-165	-165	-165	-168	-170	-165	-165	-165	-165	-168	dBc/Hz
≥100 kHz	-170	-170	-170	-170	-170	-170	-170	-170	-170	-170	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

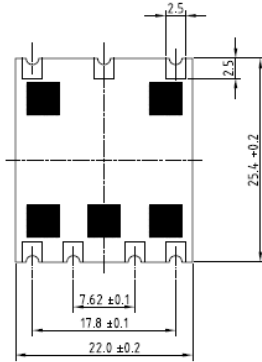
Table 4 "Availability" X = available, O = available on request, - not available

Ordering Code

Model	Option 1 [Phase noise]	Option 2 [Stability]	Option 3 [Temperature range]	Revision	Frequency [MHz]
AXIOM15ULN	Table 1	Table 2	Table 3	Rev.2	100.000

Example: AXIOM15ULN-C-25-1B_Rev.2 – 100.000 MHz

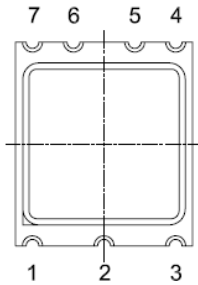
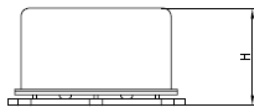
Enclosure drawing



■ no pcbtrack
beneath this
area

Pin connections

Pin #	Symbol	Function
1	V _c	Control Voltage (EFC)
2	VREF	Reference Voltage
3	V _s	Supply Voltage
4	RF OUT	RF Output
5	N.C.	No Connection
6	N.C.	No Connection
7	GND	Ground



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 ₁ Method 2 Test Td ₂ 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	31.10.2016	First issue	HH	HH
2	D0	19.08.2019	Frequency range extended, phase noise & stability options updated, editorial changes	HH	HH