Specification	AXPLO100	Rev.: 4	Date: 2019-08-14

Oscillator type: Phase-Locked Ultra-Low Noise OCXO (PLOCXO)

Parameter	min.	typ.	max.	Unit	Condition
Reference frequency (input) f_{REF}	5		100	MHz	(Note 2)
Output frequency f_{OUT}	50		150	MHz	(Note 2)
Frequency stability (free running)					
frequency tolerance at delivery			±300	ppb	
vs. operating temperature range			±100	ppb	
vs. supply voltage variation (pushing)			±10	ppb	V_S ±5%
vs. load change (pulling)			±10	ppb	R_L ±5%
Long term (aging) per day			±1	ppb	after 30 days operation
Long term (aging) per year			±100	ppb	after 30 days operation
Reference input					
Frequency accuracy			±0.5	ppm	
Signal waveform		Sine wave			
Input level	0		+13	dBm	
Input impedance		50		Ω	
RF output					
Signal waveform		Sine wave			
Load R_L		50		Ω	±5%
Output level (Note 3)	+9	+12		dBm	
Harmonics			-30	dBc	
Spurious			-80	dBc	Including PLL products
Phase noise @ 100 MHz (Note 4, 5)			-130 -160 -172 -175	dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 100 Hz @ 1 kHz @ 10 kHz @ ≥100 kHz
PLL Parameters (Note 6)					
Loop frequency f_{Loop}		10		Hz	
Channel spacing f_{Ch}		1		MHz	
Lock detect (LD) output	 3.5	0 5	1.5	V V	Out of lock Locked
Supply voltage V_S	11.4	12.0	12.6	V	
Current consumption (warm-up)			450	mA	
Current consumption (steady state)			200	mA	@ +25°C
Operating temperature range	-10		+60	°C	
Enclosure (see drawing) (LxWxH)		54x40x19		mm	h = 2.0
Weight			60	g	
Packing		Palette			

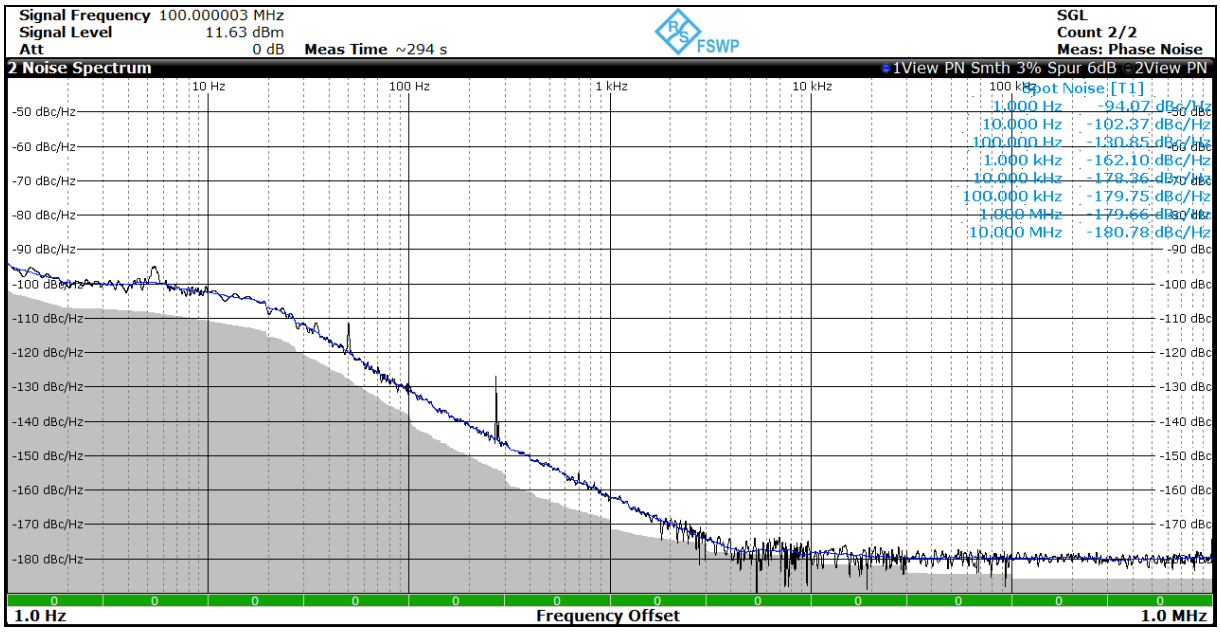
Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Integer-N PLL with $f_{OUT} = f_{REF} \cdot M$ or $f_{OUT} = f_{REF} \cdot M/N$
3. Higher output level (up to 15 dBm) on request
4. Phase noise for other frequencies please consult factory
5. Phase noise performance for <100 Hz in locked state depends on reference oscillator
6. PLL can be tailored to customer requirements

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
Supply Voltage V_S	-0.5	V_S + 10%	V	V_S to GND
Reference Input Level	-	+15	dBm	
Storage Temperature	-55	+105	°C	

Typical phase noise performance @ 100 MHz in locked state



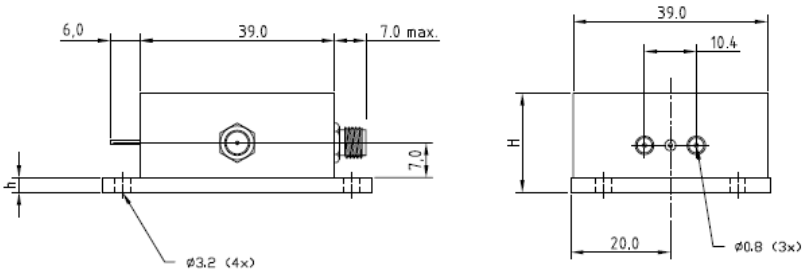
Note: Locked to Ultra-Low Noise 10 MHz OCXO

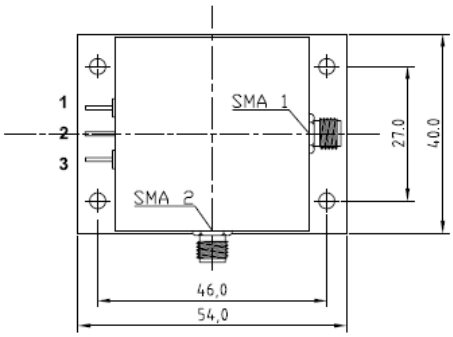
Ordering Code

Model	Input Frequency [MHz]	Output Frequency [MHz]	Revision
AXPLO100	10.000	100.000	Rev.4

Example: AXPLO100-10.000-100.000_Rev.4

Enclosure drawing

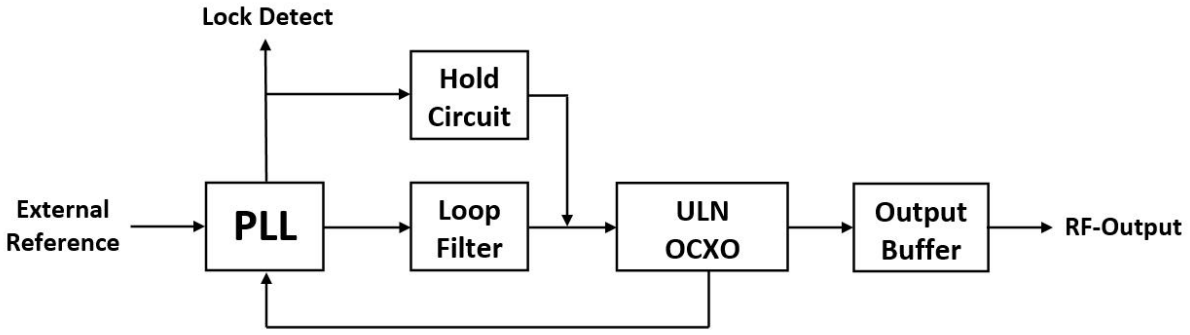




Pin connections:

Pin #	Symbol	Function
1	LD	Lock Detect Output
2	GND	Ground
3	V_S	Supply Voltage
SMA1	RF OUT	RF Output
SMA2	FREF	Reference Frequency Input

Block diagram & Functional description



(1) Ultra-Low Noise OCXO is locked to external reference. Low frequency loop filter guarantees phase noise clean-up for offset frequencies above 100 Hz or can be tailored to customer requirements.
(2) In free-running mode, the hold circuit sets the OCXO tuning voltage close to the nominal frequency.

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	✖ Yes ☐ No		
RoHS- Compliant	✖ Yes ☐ 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	01.10.2012	First issue	BN	BN
2	D0	20.06.2014	Various parameters updated, environmental conditions updated, editorial changes	HH	HH
3	D0	05.02.2015	Stability vs. temperature, pushing and pulling changed	HH	HH
4	D0	14.08.2019	Major update – Input & output frequency range extended, improved performance of several parameters, typical values and additional information added, editorial changes	HH	ME