

Specification	AXLE2000	Rev.: 1	Date: 2016-02-01
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Oscillator type: SHF Low Phase Noise TCXO in Connectorized Package

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	3		12	GHz	Multiplication (Note 2)
Frequency stability					
Initial tolerance @ +25°C			±1.0	ppm	
vs. operating temperature range	±0.5 to ±5 See tables 1 & 2			ppm	Option 1 & 2
vs. supply voltage variation (pushing)			±0.1	ppm	$V_s \pm 5\%$
vs. load change (pulling)			±0.1	ppm	$R_L \pm 5\%$
Long term (aging) 1 st year			±1.0	ppm	after 30 days operation
RF output					
Signal waveform	Sine wave				
Load R_L	50			Ω	±5%
Output level	+10	+13		dBm	
Harmonics			-30	dBc	
Sub-harmonics			-40	dBc	
Spurious			-80	dBc	(Note 3)
PLL Products			-60	dBc	
Phase noise		-120	-110	dBc/Hz	@ 100 kHz
Lock detect (LD) output		0	1.0	V	Out of lock
	2.3	3.3		V	Locked
Supply voltage V_s	11.4	12.0	12.6	V	
Current consumption		250	350	mA	
Enclosure (see drawing) (LxWxH)	50.0x50.0x21.0 max.			mm	
Weight			60	g	
Packing	Palette				

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Frequency multiplication factor N depends on output frequency f_{OUT}
3. Internal PLL with TCXO reference

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
Supply Voltage V_s	-0.5	$V_s + 10\%$	V	V_s to GND
Storage Temperature	-55	+105	°C	

Frequency stability vs. temperature

Option 1	Stability [ppm]
05	±0.5
10	±1.0
15	±1.5
20	±2.0
25	±2.5
30	±3.0
35	±3.5
50	±5.0

Table 1

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

Table 2

Ordering Code

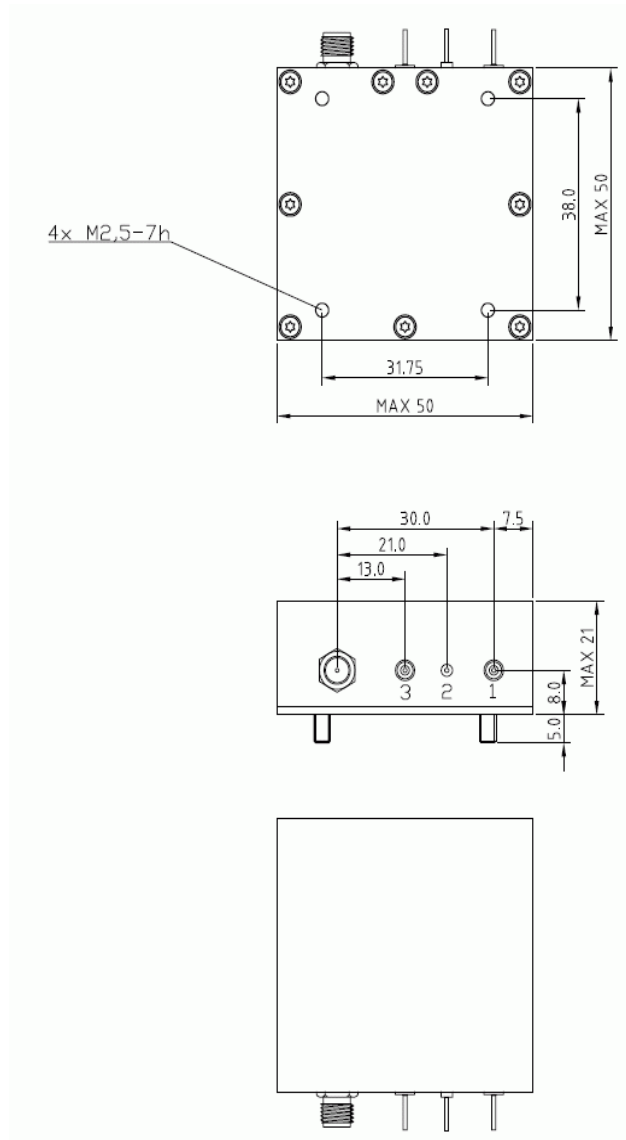
Model	Option 1 [Stability]	Option 2 [Temperature range]	Revision	Frequency [GHz]
AXLE2000	Table 1	Table 2	R1	6.500

Example: AXLE2000-10-2C_R1 – 6.500 GHz

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		

Enclosure drawing



Pin connections:

Pin #	Symbol	Function
1	V _s	Supply Voltage
2	GND	Ground
3	LD	Lock Detect Output
SMA	RF OUT	RF Output

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	21.09.2015	First issue	HH	HH
1	D1	01.02.2016	PLL Spurious added	HH	HH