

Specification	AXIOM37-14LP	Rev.: 1	Date: 2016-02-29
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Oscillator type: Ultra-Low Power Low-Profile OCXO in DIL14 package
Produced in association with Magic Xtal – Model MXO37/14L

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	8		120	MHz	
Standard frequencies	10.000 / 100.000			MHz	
Frequency stability					
Initial tolerance @ +25°C		±100		ppb	V _c @ VREF/2
vs. operating temperature range	Option 2 & 3 See tables 1 & 2				steady state
vs. supply voltage variation (pushing)		±2		ppb	V _s ±5 %
vs. load change (pulling)		±2		ppb	Load ±10 %
Long term (aging) per day, after 30 days operation (Note 2)			±2 ±5	ppb ppb	< 50 MHz ≥ 50 MHz
Long term (aging) 1 st year, after 30 days operation (Note 2)			±150 ±500	ppb ppb	< 50 MHz ≥ 50 MHz
Frequency adjustment range					
Electronic Frequency Control (EFC)	±0.5	±1.0		ppm	
EFC voltage V _c	0	VREF/2	VREF	V	
EFC slope ($\Delta f / \Delta V_c$)	Positive				
EFC input impedance	100			kΩ	
RF output					
Signal waveform	HCMOS				
Load			10 5	pF pF	@ 10 MHz @ 100 MHz
Symmetry (duty cycle)	45		55	%	@ V _s /2
Rise & decay time			10	ns	@ 10% ~ 90% V _s
Spurious			-80	dBc	
Warm-up time @ +25°C (Note 3)			60	sec	$\Delta f_{\text{final}}/f_0 < \pm 0.1$ ppm
Phase noise max.	10.000 MHz	100.000 MHz			
	-97	-		dBc/Hz	@ 1 Hz
	-127	-95		dBc/Hz	@ 10 Hz
	-152	-127		dBc/Hz	@ 100 Hz
	-162	-153		dBc/Hz	@ 1 kHz
	-166	-165		dBc/Hz	@ 10 kHz
	-166	-170		dBc/Hz	@ 100 kHz
G-Sensitivity			±1	ppb/g	
Short term stability (Allan deviation)		2·10 ⁻¹¹			τ = 1 s
Reference voltage VREF output		2.8 4.2		V V	Option 1 = "33" Option 1 = "50"
Supply voltage V_s	3.15 4.75	3.3 5.0	3.45 5.25	V V	Option 1 = "33" Option 1 = "50"
Power consumption (steady state)		0.15		W	@ +25°C
Power consumption (warm-up)		0.80		W	
Enclosure (see drawing) (LxWxH)	20.6x15.2x8.0 max.			mm	
Weight			15	g	
Packing	Palette				

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Lower aging rates on request
3. Frequency referred to f_{final} at 15 minutes after switch-on

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	5	V	V_C to GND
Storage Temperature	-60	+90	°C	

Frequency stability vs. temperature

Option 2	Stability [ppb]
05	±5
10	±10
20	±20
30	±30
50	±50

Table 1

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
		F	+85

Table 2

Standard: "1B" = -10°C to +60°C

Note: Not all combinations of stability and temperature range may be available. Please consult factory.

Ordering Code

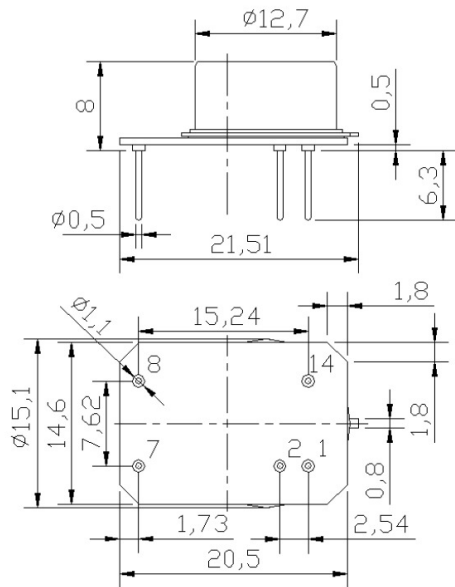
Model	Option 1 [Supply Voltage]	Option 2 [Stability]	Option 3 [Temperature range]	Revision	Frequency [MHz]
AXIOM37-14LP	33 or 50	Table 1	Table 2	Rev.1	10.000

Example: AXIOM37-14LP-50-05-1B_Rev.1 – 10.000 MHz

Handling and Testing

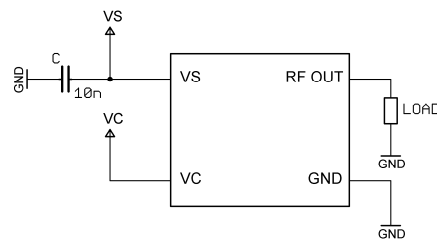
Parameter	Procedure		Source
Handling and Testing	Application Note AXAN-011		www.axtal.com
Processing	Application Note AXAN-012		www.axtal.com
Parameter	Procedure		Condition
Electrostatic discharge (ESD)			
THD devices	IEC60749-26	HBM	2000 V
SMD devices	IEC60749-27	MM	200 V
Washable	☒ Yes ☐ No		
RoHS- Compliant	☒ Yes ☐ No		

Enclosure drawing



Pin connections:

Pin #	Symbol	Function
1	V _c	Control Voltage (EFC)
2	VREF	Reference voltage
7	GND	Ground
8	RF OUT	RF Output
14	V _s	Supply Voltage



* See Application Note AXAN-011

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	2-20	5.6.3	208H		3.6.52	Test Ta Method 1
Resistance to soldering heat	2-58		210F		3.6.48	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			108A			
- ageing		5.7.1			4.8.35	30 days @ 85°C, OXCO @25°C
- extended aging		5.7.2				1000h, 2000h, 8000h @85°C

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	22.04.2015	First issue	HH	HH
1	D1	18.09.2015	Editorial changes	HH	HH
1	D2	29.02.2016	Editorial changes	HH	HH