AXTAL ADVANCED XTAL PRODUCTS

Specification	AXLE5032LN	Rev.: 1	Date: 2016-01-30

Oscillator type: Low Noise High Stability (VC)TCXO in 5x3.2 mm package

Parameter	min.	typ.	max.	Unit	Condition
Frequency range	10		52	MHz	
Nominal frequencies	10, 12.8, 13, 16, 16.384, 20, 25, 26, 40, 50			MHz	Other frequencies on request
Frequency stability					
Initial tolerance @ 25°C			±1	ppm	@ V_{Cnom} Note 2
vs. operating temperature range	± 0.2 to ± 2.0			ppm	Option 4&5 (Tables 1~3)
vs. supply voltage variation			±0.05	ppm	V_S ±5 %
vs. load change			±0.05	ppm	Load ±10 %
Long term (aging) 1st year			±1	ppm	@+40°C Note 3
Frequency adjustment range					
Electronic Frequency Control (EFC)	±5		±10	ppm	Option 1 = "V"
EFC voltage V_C	0.5	1.5	2.5	V	
EFC slope ($\Delta f / \Delta V_C$)	Positive				
EFC input impedance	100			kΩ	
RF output					
Signal waveform	Clipped Sine Wave HCMOS				Option 3 = "C" Option 3 = "H"
Load	10 kΩ || 10 pF 12 pF (15 pF max.)				Option 3 = "C" Option 3 = "H"
Amplitude (peak-peak)	0.8			V	Option 3 = "C"
VOL			0.4	V	Option 3 = "H"
VOH	2.4			V	
Duty cycle	45		55	%	
Rise/fall time			6	ns	
Phase noise @ 10.000 MHz *with EFC-function (Option 1 = "V") **without EFC-function (Option 1 = "_")		-120* -140* -153*	-125** -145** -155**	dBc/Hz dBc/Hz dBc/Hz	@ 100 Hz @ 1 kHz @ 10 kHz ~ 100 kHz
Enable/Disable funtion					
Supply voltage V_S (Note 4)	2.565 4.75	2.7 5.0	2.835 5.25	V V	Option 2 = "27" Option 2 = "50"
Current consumption			3 8	mA mA	Option 3 = "C" Option 3 = "H"
Enclosure (see drawing) (LxWxH)	5.0x3.2x1.5			mm	
Weight			3	g	
Packing	Tape & Reel				IEC 60286-3

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Tolerance will be increased after reflow soldering
3. Lower aging on request
4. Supply voltage 3.0 V or 3.3 V on request
5. All combinations of options might not be available. Please consult factory

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	6	V	V_C to GND
Storage Temperature	-55	+105	°C	

Frequency stability vs. temperature

Option 4	Stability* [ppm]
02	±0.2
028	±0.28
05	±0.5
10	±1.0
15	±1.5
20	±2.0

Table 1

Lower Temperature		Upper Temperature	
Option 5	T [°C]	Option 5	T [°C]
0	0	A	+50
1	-10	B	+60
2	-20	C	+70
3	-30	D	+75
4	-40	E	+80
5	-50	F	+85
6	-55	G	+90
		H	+95

Table 2

*stability referred to $(f_{max}+f_{min})/2$

Temperature range [°C]	Frequency stability [Option 2]					
	02	028	05	10	15	20
-20 ~ +70	O	O	X	X	X	X
-40 ~ +85	O	O	XX	X	X	X
-55 ~ +95	-	-	-	O	O	O

Table 3 "Availability" XX = Standard, X = available, O = available on request, - not available

Ordering Code

Model	Option 1 [EFC]*	Option 2 [Supply Voltage]	Option 3 [RF output]	Option 4 [Stability]	Option 5 [Temperature range]	Revision	Frequency [MHz]
AXLE5032LN	_ or "V"	27 or 50	C or H	Table 1	Table 2	Rev.1	10.000

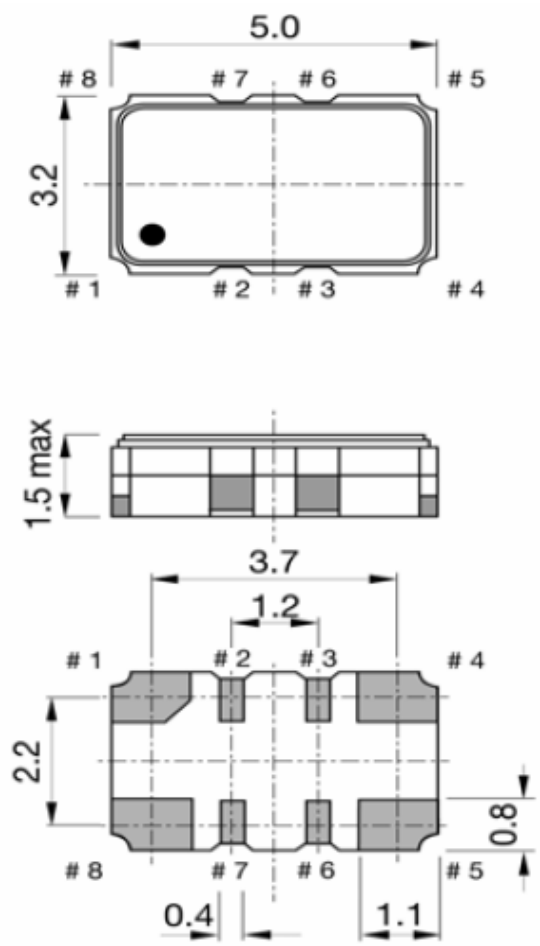
Example: AXLE5032LN-V-50-C-05-4F_Rev.1 – 10.000 MHz

Handling and Testing

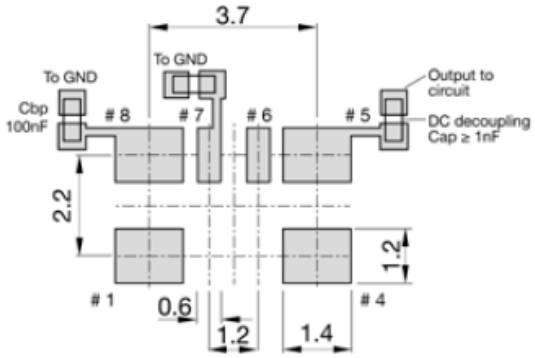
Parameter	Procedure	Source
Handling and Testing	Application Note AXAN-011	www.axtal.com
Processing	Application Note AXAN-012	www.axtal.com

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



Soldering pattern:



Pin connections

Pin #	Symbol	Function
1	I.C. or V_C	Do not connect or Control Voltage (EFC)
2	I.C.	Do not connect
3	I.C.	Do not connect
4	GND	Ground
5	RF OUT	RF Output. For Clipped Sine wave connect DC-decoupling cap of 1nF
6	OE	Tristate or do not connect
7	PNF	Phase noise filter External capacitor 33 nF
8	V_S	Supply Voltage Connect external bypass capacitor of 100 nF

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	D1	30.01.2016	First issue AXLE5032LN	BN	BN