

Specification	AXIOM70/75-85	Rev.: 1	Date: 2022-03-10
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Oscillator type: 10 MHz High Stability OCXO with multiple options
Replacement for Morion MV85 and MV291

Parameter	min.	typ.	max.	Unit	Condition
Nominal frequency	10.000			MHz	(Note 2)
Frequency stability					
Initial tolerance @ +25°C			±50	ppb	V _c @ VREF/2
vs. operating temperature range	Option 3 & 4 / Tables 2 & 3				steady state
vs. supply voltage variation (pushing)		±0.5	±5	ppb	V _s ±5%
vs. load change (pulling)		±0.5	±5	ppb	R _L ±5%
Long term (aging) per day		±0.1	±0.5	ppb	after 30 days operation
Long term (aging) per month		±2	±5	ppb	after 30 days operation
Long term (aging) per year		±20	±50	ppb	after 30 days operation
Long term (aging) over 15 years			±500	ppb	after 30 days operation
Frequency adjustment range					
Electronic Frequency Control (EFC)	±0.5	±0.8	±1.2	ppm	(Note 3)
EFC voltage V _c	0	VREF/2	VREF	V	
EFC slope (Δf / ΔV _c)	Positive				
EFC input impedance	100			kΩ	
RF output					
Signal waveform	AXIOM70	AXIOM75			
	HCMOS	Sine wave			
Load R _L	10 kΩ / 15 pF	50 Ω			
Output	VREF Level 45~55 % <5 ns Rise/Fall	> 0 dBm typ. +9 dBm < -30 dBc			(Note 4)
Warm-up time @ +25°C			2	min	Δf _{final} /f ₀ < ±100 ppb
Phase Noise	Option 2 / Table 1				
Short term stability (Allan deviation)		2·10 ⁻¹²	5·10 ⁻¹²		τ = 1 s
Reference voltage VREF output		3.0		V	Option 1 = "33"
		4.5		V	Option 1 = "50"
		5.0		V	Option 1 = "12"
Supply voltage V_s	3.15	3.3	3.45	V	Option 1 = "33"
	4.75	5.0	5.25	V	Option 1 = "50"
	11.4	12.0	12.6	V	Option 1 = "12"
Current consumption (steady state) @ +25°C			450	mA	Option 1 = "33"
			300	mA	Option 1 = "50"
			150	mA	Option 1 = "12"
Current consumption (warm-up)			900	mA	Option 1 = "33"
			600	mA	Option 1 = "50"
			300	mA	Option 1 = "12"
Enclosure (see drawing) (LxWxH)	25.8x25.8x12.7 max.			mm	IEC 60679-3 CO 43
Weight			20	g	
Packing	Palette				

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated.
2. Please consult factory for other frequencies in the range 10~30 MHz.
3. Tuning range sufficient to compensate for 15 years aging, temperature stability and initial tolerance.
4. Sine wave output level can be adjusted to customer requirements up to +14 dBm. 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	15	V	V_c to GND
Storage Temperature	-55	+105	°C	

Phase noise

Offset	Option 2						Unit
	A	B	C	D	E	F	
1 Hz	-85	-95	-95	-100	-108	-110	dBc/Hz
10 Hz	-115	-120	-125	-130	-138	-140	dBc/Hz
100 Hz	-140	-140	-145	-150	-150	-158	dBc/Hz
1 kHz	-150	-150	-150	-155	-155	-165	dBc/Hz
≥10 kHz	-155	-155	-155	-160	-160	-170	dBc/Hz

Table 1

Note: Typical phase noise performance for options A~D is at least 5 dB better.

Frequency stability vs. temperature

Option 3	Stability [ppb]
3	±3
5	±5
10	±10
25	±25
50	±50
100	±100

Table 2

Lower Temperature		Upper Temperature	
Option 4	T [°C]	Option 4	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

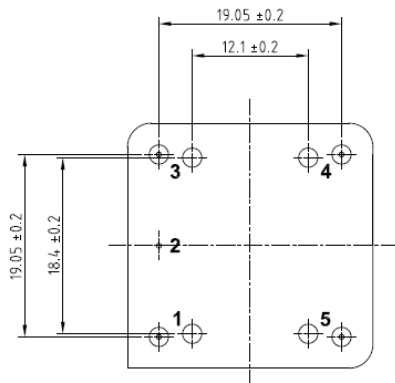
Ordering Code

Model	Option 1 [Supply Voltage]	Option 2 [Phase Noise]	Option 3 [Stability]	Option 4 [Temperature range]	Revision	Frequency [MHz]
AXIOM70-85 (HCMOS)	33	Table 1	Table 2	Table 3	Rev.1	10.000
AXIOM75-85 (Sine)	50					
	12					

Example: AXIOM75-85-12-C-10-1B_Rev.1 – 10.000 MHz

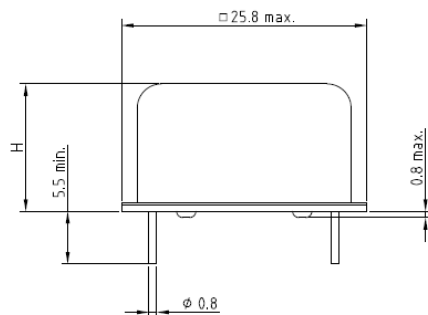
Note: Not all combinations of options may be available. Please consult factory.

Enclosure drawing



Pin connections

Pin #	Symbol	Function
1	RF OUT	RF Output
2	GND	Ground
3	V _C	Control Voltage (EFC)
4	VREF	Reference Voltage
5	V _S	Supply Voltage



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

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	10.03.2022	First issue	HH	ME