Magic Xtal Ltd.

Only Magic Technologies!

MXO37/8D

Revised in September 2021

Low power high durable miniature OCXO

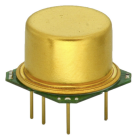
Features

Very small sizes
8 mm height is available
Low power consumption: 0.23W at +25°C
Very high mechanical strength: to up 1000G, 0,5 ms shocks,
Vibration up to 30G to 2000Hz sine
High frequency stability: to ± 10 ppb over -40°C to 85°C
Fast warming up: 60s to 0.1ppm accuracy
Operational frequency range: 8 – 100 MHz

Typical Applications

Portable and battery fed wireless
Mobile test equipment
Beacons & Rescue systems
Equipment working at severe mechanical factors

8 DIP compatible

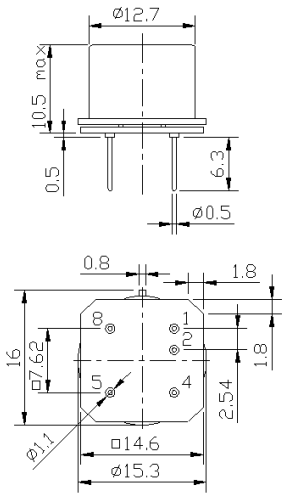


RoHS compliant

Description

The MXO37 series uses the internal heating resonator (IHR) technology with arrangement of the whole oven system together with the crystal plate inside the TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and its warm-up time providing at that excellent temperature stability, low phase-noise and aging. The MXO37/8D model utilizes essentially strengthened mechanical construction of the IHR enabling extraordinary mechanical durability.

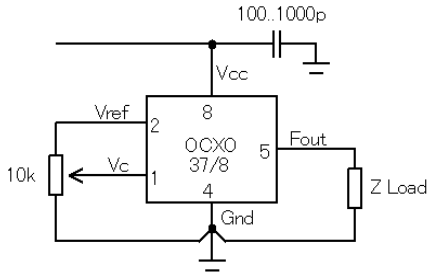
Physical Dimensions



8 mm height is available. Please consult the factory.

The manufacturer reserves the right to reduce the external dimensions without changing of connecting dimensions.

Pin Connections



Pin	Signal
1	Electrical tuning
2	Reference voltage
4	GND
5	RF Out
8	+V Supply

YOU ARE WELCOME TO CONTACT US: By mail: 2nd Teplovoznay street, build. 2, Omsk, Russia, 644039. P.O.Box: 3302, ZIP code: 644039, Omsk, Russia.
Fax & Telephone: +7 (3812) 433-967, 433-968. E-mail: *mxl@mxtal.ru*. Website: www.magicxtal.com

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Specification

Parameter		Sym.	Conditions	Value			Unit	Note
				Min.	Typ.	Max.		
Frequency range		f_0		8		100	MHz	
Initial tolerance		$(f-f_0)/f_0$	+25ºC, V_C=0.5*V_{ref}		±0.1		ppm	
RF output								
HCMOS (TTL) option	Load			10		15/5	kOhm pF	10/100 MHz
	H-level voltage	V_H	V_{CC}=5 V V_{CC}=3.3 V	3.7 2.4			V	
	L-level voltage	V_L				0.4	V	
	Duty cycle			45		55	%	
	Rise/Fall time					10/3	ns	10/100 MHz
Sub-harmonics level				none				
Power supply								
Voltage		V_{CC}		4.75 3.15	5.0 3.3	5.25 3.45	V	
Power consumption			Warm-up time Steady state, +25ºC		230	1200	mW	10MHz, -40ºC..85ºC
Warm-up time		t_{up}	at +25ºC to Δf/f=1e-7 at +25ºC to Δf/f=1e-8		60 120		s	ref. to freq. after 15 min. of operation
Frequency control								
Control voltage range		V_C	V_{CC}=5 V V_{CC}=3.3 V	0 0		4.2 2.8	V	
Tuning range			Compliance with 10 years of aging	±0.3	±1.0		ppm	positive slope
Reference voltage		V_{ref}	V_{CC}=5 V V_{CC}=3.3 V	4.1 2.7	4.2 2.8	4.3 2,9	V	
Frequency stability								
vs. temperature			ref. 25ºC, air flow 0.5 m/s max.	±10			ppb	See ordering code
vs. supply voltage			ref V_{CC} typ.		±2.0		ppb	
G – sensitivity			worst direction, 0 – 1kHz vibration BW (for 0 – 2kHz BW consult the factory)	±0.2	±1.0		ppb/G	
Retrace			24h work after 24h off			±10	ppb	10MHz
SSB Phase noise			1 Hz	-100/----		-85/----	dBc/Hz	10/100MHz V_{CC}=5V
			10 Hz	-130/-95		-115/-85		
			100 Hz	-148/-125		-143/-115		
			1 kHz	-155/-150		-150/-145		
			10 kHz	-163/-163		-160/-158		
			100 kHz	-165/-163		-160/-160		
Allan deviation			1 s	5		30	e-12	10MHz
Aging	per day		after 30 days of operation	±0.1			ppb	10MHz see ordering code
	first year			±0.015			ppm	

Environmental, mechanical conditions	
Airflow velocity	0.5 m/s maximum
Operating temperature range	See ordering code
Storage temperature range	-60ºC to +85ºC
Power voltage	-0.5V to V_{CC}+20%
Control voltage	-0.5V to 6V
Humidity	Non-condensing 95%
Mechanical shock	Per MIL-STD-202, 500G half sine pulse, 1ms (1000G half sine pulse, 0,5ms — is available as option)
Vibration	Per MIL-STD-202, 10G sweep sine 0 to 2000Hz (30G sweep sine 0 to 2000Hz — is available as option)
Soldering conditions	Hand solder only – not reflow compatible. 260ºC 10s (on pins)
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage

For ordering code — see next page

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Ordering code

MXO37/8D	C	58	C	5	- 10 МГц
	1	**2**	**3**	**4**	

1	**Temperature range**
Code	*Specification*
A	0ºC..50ºC
B	-10ºC..60ºC
C	0ºC..70ºC
D	-20ºC..70ºC
E	-30ºC..70ºC
F	-40ºC..85ºC
G	-55ºC..85ºC
Q	-60ºC..85ºC

2	**Stability over temperature**		
Code	*Specific.*	*Temperature range code available for 10MHz 5V*	*Temperature range code available for 100MHz 5V*
XY	±Xe-Y		
59	±5e-9	A, B	-
18	±1e-8	A, B, C, D, E, F	-
28	±2e-8	A, B, C, D, E, F, G	A
38	±3e-8	A, B, C, D, E, F, G, Q	A, B
58	±5e-8	A, B, C, D, E, F, G, Q	A, B, C, D, E
17	±1e-7	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G, Q

3	**Aging per day/year, ppb/ppm**	
Code	*Specification*	
A	0.1/0.015*	≤10 MHz
B	0.2/0.02	
Z	0.3/0.03	
C	0.5/0.05	≤20 MHz
D	1/0.1	≤40 MHz
E	1.5/0.15	≤50 MHz
F	2/0.2	≤100 MHz
G	3/0.3	
H	5/0.5	≤100 MHz

* available for temperature range A,B,C,D,E

4	**Supply voltage**
Code	*Specification*
3	3.3V±5%
5	5V±5%

Deviation of the parameters is possible on customer's requirements. Please consult the factory.

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