Magic Xtal Ltd

ONLY MAGIC TECHNOLOGIES!

MXOCE

Revised in January 2007

MXOC Series - High Stability Low Phase-Noise OCXO

Features

High Stability (up to ± 4x10^{-9} over -40°C to +80°C)
Low Phase Noise (-165 dBc/Hz, TYP, floor)
Low Aging
Wide Frequency Range: 5 to 200 MHz
Compact Package

Typical Applications

GPS Receivers
Cellular Base Stations
Instrumentation
Stratum 3E clock systems
VSAT, INMARSAT

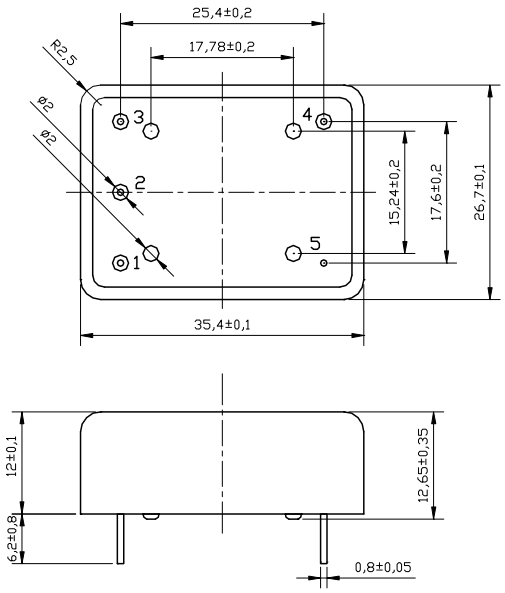
Packaging type E: "Europack" 36x27x12 mm

RoHS compliant

Description

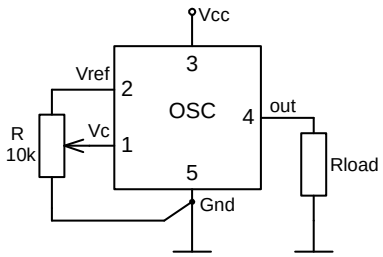
The MXOC series oven-controlled crystal oscillators are intended for wide applications where high temperature stability, low aging, low phase-noise along and compact sizes are major requirements. The module approach to the OCXO design allowed providing the same performance in a variety of small packages (MXOCE, MXOCI, MXOCR, MXOCS models). The OCXOs of MXOC series are fabricated for 5-250 MHz range, for above 30 MHz - using internal multiplication circuitry.

Physical Dimensions



*±2e-9 temperature stability option has 12.7 mm packaging height

Pin Connections



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

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Specification

MXOC Series High Stability Low Phase-Noise OCXO

Parameter		Sym.	Conditions	Value Min.	Value Typ.	Value Max.	Unit	Note
Frequency range		f_0		5		250	MHz	
RF output								
HCMOS (TTL) option	Load			10		15	kOhm pF	
	H-level voltage	V_H		3.9			V	
	L-level voltage	V_L				0.4	V	
	Duty cycle			45		55	%	
	Rise/Fall time					10	ns	for 10 MHz operational frequency
Sine-wave option	Level	L		+6	+8	+10	dBm	
	Load	R_L			50		Ohm	
	Harmonics level					-25	dBc	
Sub-harmonics level			Operational frequency <30 MHz Operational frequency ≥30 MHz		none	 -40	 dBc	 Frequency multiplier used
Power supply								
Voltage		V_{cc}		4.75	5.0	5.25	V	3.3V, 12V optional
Power consumption			Warm-up state Steady state, +25ºC		3.2 1	3.5 1.2	W W	
Warm-up time		t_{up}	to Δf/f=1e-7, at +25ºC			180	s	ref. to frequency after 30 min.
Frequency control*								
Control voltage range		V_c	V_{cc}=5 or 12 V V_{cc}=3.3 V	0 0		4.3 2.8	V V	Positive tuning slope (standard option)
Tuning range				±0.5	±1		ppm	
Reference voltage		V_{ref}	V_{cc}=5 or 12 V V_{cc}=3.3 V	4.19 2.73	4.3 2.8	4.41 2.87	V V	
Frequency stability								
vs. temperature			-30ºC to +70ºC, ref 25ºC		±10		ppb	See chart below
vs. supply voltage			ref Vcc typ.		±1		ppb	
vs. acceleration			Worst direction			±1	ppb/G	
SSB Phase noise			1 Hz		-95		dBc/Hz	tor 10MHz operational frequency
			10 Hz		-125			
			100 Hz		-145			
			1 kHz		-155			
			10 kHz		-165			
Allan variance			1 s		10		e-12	
Aging	per day		after 30 days of operation			±0.5	ppb	Standard option **S** (see chart below)
	first year					±50	ppb	
	for 20 years					±0.5	ppm	

Environmental, mechanical conditions.	
Operating temperature range	-30ºC to +70ºC Standard. Other options - see chart below.
Storage temperature range	-60ºC to +90ºC
Humidity	Hermetically sealed
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms
Vibration	Per MIL-STD-202, 5G swept sine 10 to 500 Hz
Soldering conditions	260ºC 10s

* No frequency control option – on customer requirement

Ordering code

MXOCE	-	C	18	S	5	T	-	10 MHz
		1	2	3	4	5		

1	Temperature range
Code	*Specification*
A	0ºC..50ºC
B	-10ºC..60ºC
C	0ºC..70ºC
D	-20ºC..70ºC
E	-30ºC..70ºC
F	-40ºC..80ºC

2	Stability over temperature	
Code	*Specification*	*Temperature range code available*
XZ	±Xe-Y	
29	±2e-9	A…E
59	±5e-9	A…F
18	±1e-8	A…F
28	±2e-8	A…F
58	±5e-8	A…F
17	±1e-7	A…F

3	Aging		
Code	*Specification*	*Per day**	*First year**
L	Relaxed	1 ppb	100 ppb
S	Standard	0.5 ppb	50 ppb
P	Improved	0.2 ppb	30 ppb

* for 10 MHz operational freq.

4	Supply voltage
Code	*Specification*
3	3.3V±5%
5	5V±5%
2	12V±10%

5	Output
Code	*Specification*
T	HSMOS/TTL
S	Sinewave

Deviation of the parameters is possible on customers' requirements.

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