

**O-CEHXXXXYY-X-XX-X**  
**Precision SC-cut OCXO in 36x27mm “Europack”**

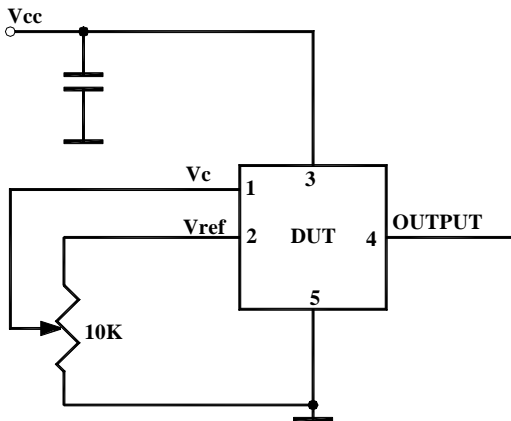
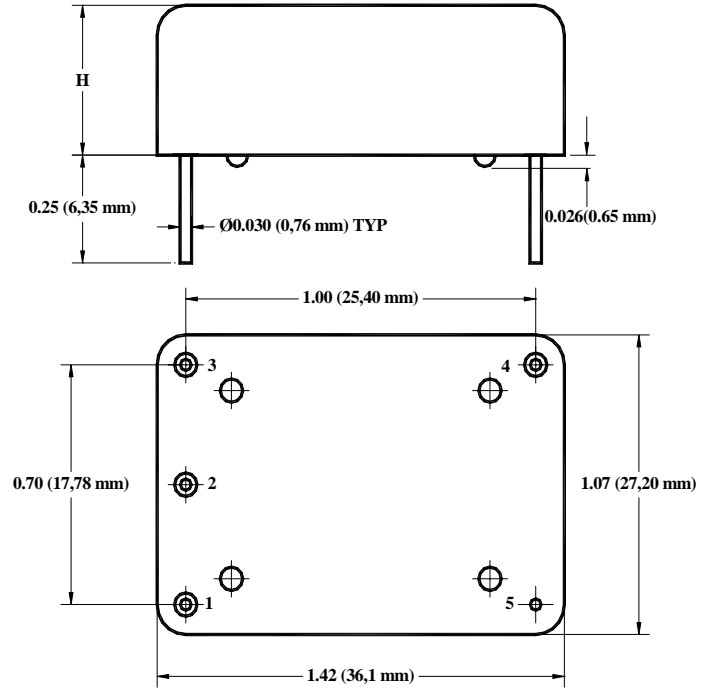
**Product Data Sheet**

**Features**

- SC-cut crystal
- Excellent Stability
- Low Aging ( $5 \times 10^{-10}$ /day)
- Very Low Phase Noise (-135 dBc/Hz @ 10 Hz)

**Applications**

- Instrumentation
- Telecommunication Systems
- Data Communications
- GPS
- COTS/Dual use



H code	Height, inches, TYP
5	0.5 (12.7 mm)
6	0.63 (16 mm)
7	0.75 (19 mm)

Code 6 is standard unless code 5 is requested. Code 7 is for special requirements.

O-CEHXXXXYY-X-XX-X

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
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**Absolute Maximum Ratings**

<b>Input Break Down Voltage</b>	V <sub>cc</sub>		-0.5		13.0	V	V <sub>cc</sub> = 12 V
			-0.5		5.5		V <sub>cc</sub> = 5 V
<b>Storage temper.</b>	T <sub>s</sub>		-40		85	°C	
<b>Control Voltage</b>	V <sub>c</sub>		-1		12	V	

**Electrical (3)**

<b>Frequency</b>	F		8.0	10.000	20.000	MHz	
<b>Frequency stability</b>	ΔF/F	vs. Temp., total excursion		10		ppb	Peak-to-peak See chart below
		vs. Supply		1	2	ppb/5% V <sub>cc</sub>	
<b>Aging</b>		per day per year, first year 10 years		5E-10 1E-7	3.5E-7		after 30 days 5E-8 available1*
<b>Allan Variance</b>		.1s to 1s		5E-12			
<b>SSB Phase Noise</b>		1Hz		-105	-100	dBc/Hz	2*
		10 Hz		-140	-135		
		100 Hz		-156	-155		
		1 KHz		-163	-162		
		10 KHz		-169	-168		
		100 KHz		-170	-169		
<b>Retrace</b>		After 30 minutes			±10	ppb	24 hrs off
<b>G-sensitivity</b>		worst direction			±1.0	ppb/G	
<b>Input Voltage</b>	V <sub>cc</sub>		4.75 11.4	5.0 12.0	5.25 12.6	V	See chart below to specify
<b>Power consumption</b>	P	steady state, 25°C steady state, -30°C start-up @ -30°C		0.7 1.5 2.5	1.0 3.2	W	Standard Operating Temperature, for Op Temp. 85 °C ad 20% Still air for all
<b>Spectral Purity</b>		Subharmonics Spurious Harmonics		none -35	-80 -30	dBc	
<b>Load</b>		10KOhm//15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave)					Output Code T Output Code S
<b>Warm-up time</b>	τ	to 0.1ppm accuracy		3	5	minutes	
<b>Output Power</b>			+7	+10		dBm	Output Code S
<b>Logic 1 (CMOS)</b>	V <sub>oh</sub>		0.7 V <sub>ref</sub>			V	Output Code T
<b>Logic 0 (CMOS)</b>	V <sub>ol</sub>				0.1 V <sub>ref</sub>	V	Output Code T
<b>Control voltage</b>	V <sub>c</sub>		0 0		10 4.5	V	Option "L" Option "P"
<b>Reference Voltage</b>	V <sub>ref</sub>			4.5		V	Option "P"
<b>Pull range</b>		from nominal F	±0.6 ±0.4	±0.8 ±0.6		ppm	Option "L" Option "P"
<b>Deviation slope</b>		Monotonic, posit.		0.16 0.27		ppm/V	Option "L" Option "P"
<b>Input impedance</b>	Z <sub>in</sub>	At V <sub>c</sub> pin	10			KOhm	
<b>Modulation bandwidth</b>	F <sub>m</sub>		150			Hz	
<b>Setability</b>	V <sub>c0</sub>	@25°C, F <sub>nom</sub> .	4.5 2.0	5.0 2.25	5.5 2.5	V	Op."L", No internal bias Option "P"
<b>Initial Calibration</b>		@25°C			±100	ppb	

All parameters for 10 MHz

**Environmental and Mechanical**

<b>Operating temp. range</b>	0°C to 70°C Standard, Other options – see chart below
<b>Mechanical Shock</b>	Per MIL-STD-202, 30G, 11ms
<b>Vibration</b>	Per MIL-STD-202, 5G to 2000 Hz
<b>Soldering Conditions</b>	260°C for 10s Max leads only



FREQUENCY  
CONTROLS, INC.

357 Beloit Street, P.O. Box 457, Burlington, WI 53105-0457 U.S.A. Phone 262/763-3591 FAX 262/763-2881

Email: [nelsales@nelfc.com](mailto:nelsales@nelfc.com) www.nelfc.com

**O-CEHXXXXYY-X-XX-X**

**Electrical Connections**

<b>Pin Out</b>	Pin #1-- Vc ; Pin#2 – Vref; Pin #3 – Vcc; Pin #4 – Output; Pin #5 - GND
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Notes:

1. Aging rates are proportional to the operating frequency. Pull range will be adjusted accordingly to provide for lifetime possibility to set on frequency
2. Close to the carrier phase noise deteriorates with increase in frequency.
3. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.

### Creating a Part Number

**O - C E H X X XX YY - X -XX - X    10.000 MHz**

**OCXO**  
Conventional Power Package Code  
E 5 pin 36x27mm

Height code per drawing

Supply Voltage

Code	Specification
0	5 V TYP
F	12V TYP

Output

Code	Specification
S	Sinewave
T	HCMOS/TTL

Temperature Stability, Total excursion, pk-pk

Code	Specification
17	1x10 <sup>-7</sup>
58	5x10 <sup>-8</sup>
28	2x10 <sup>-8</sup>
18	1x10 <sup>-8</sup>
YZ	Yx10 <sup>-Z</sup>

**Environmental**

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant, not designed for reflow

Aging per year, 1<sup>st</sup> year

Insert value per year x 1E-8	
Examples	
05	5E-8
10	1E-7

Control Voltage

Code	Specification
L	0 to 10 V
P	0 to 4.5 V

Temperature Range

Code	In 5°C steps **
First letter	Lowest temperature from A = -40°C
Second letter	Highest temperature to Z = 85°C
Examples	
IS	0°C to 50°C
GU	-10°C to 60°C
EW	-20°C to 70°C

**\*\*Temperature Code Table**

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

