Rev. E

O-C25XXXXYY-X-XX-X
Precision SC-cut OCXO in 20x20mm Through Hole Package

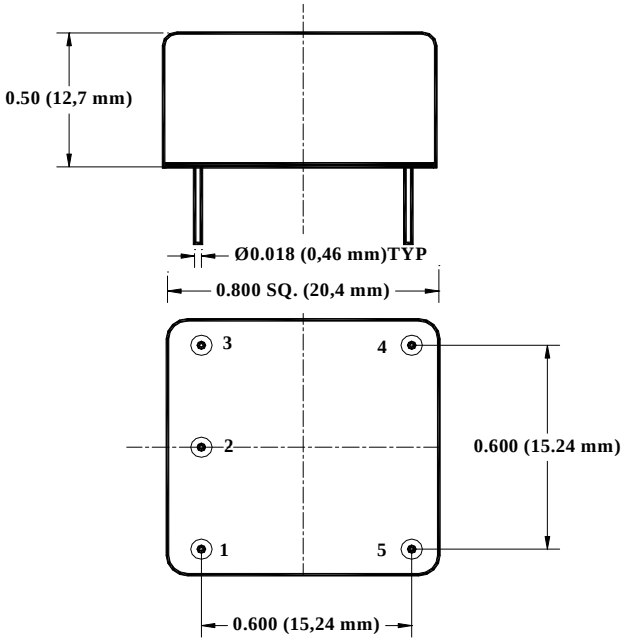
Product Data Sheet

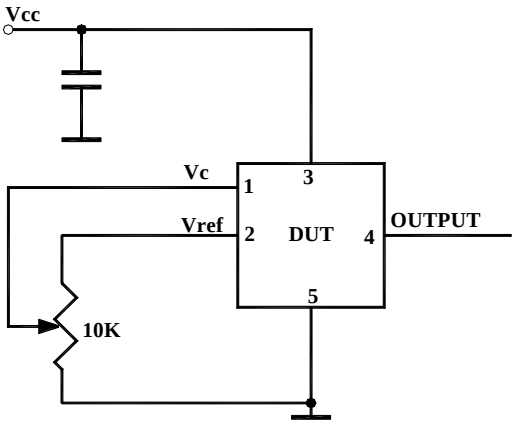
Features

- SC-cut crystal
- High Stability (from 5 ppb)
- Low Aging ($5x10^{-10}$/day)
- Very Low Phase Noise (-135 dBc/Hz @ 10 Hz)

Applications

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





NEL 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 www.nelfc.com

CRYSTAL OSCILLATORS

Data Sheet 1003E

Rev. E

O-C25XXXXYY-X-XX-X

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Absolute Maximum Ratings							
Input Break Down Voltage	Vcc		-0.5 -0.5 -0.5		13.0 5.5 4.5	V	Vcc = 12 V Vcc = 5 V Vcc = 3.3V
Storage temper.	Ts		-40		85	°C	
Control Voltage	Vc		-1		12	V	
Electrical (3)							
Frequency	F		8.0	10.000	20.000	MHz	
Frequency stability	ΔF/F	vs. Temp., total excursion		10		ppb	Peak-to-peak See chart below
		vs. Supply		1	2	ppb/5%Vcc	
Aging		per day per year, first year 10 years		5E-10 1E-7	 3.5E-7		after 30 days 5E-8 available1*
Allan Deviation		.1s to 1s		5E-12			
SSB Phase Noise		1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-105 -140 -156 -163 -169 -170	-100 -135 -155 -162 -168 -169	dBc/Hz	2*
Retrace		After 30 minutes			±10	ppb	24 hrs off
G-sensitivity		worst direction			±1.0	ppb/G	
Input Voltage	Vcc		3.15 4.75 11.4	3.3 5.0 12.0	3.45 5.25 12.6	V	See chart below to specify
Power consumption	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 add 20% Still air for all
Spectral Purity		Subharmonics Spurious Harmonics		none -35	 -80 -30	dBc	Output Code S
Load	Internally AC coupled 50 Ohm (Sinewave) 10K Ohm//15pf (CMOS)						
Warm-up time	τ	to 0.1ppm accuracy		3	5	minutes	
Output Power	Pout	Into 50 Ohm	7	10			Output Code S
Logic 1 (CMOS)	Voh		0.7Vref			V	Output Code T
Logic 0 (CMOS)	Vol				0.1Vref	V	Output Code T
Duty Cycle			45/55		55/45	%	Output Code T
Rise/Fall Time	Tr,Tf			3	5	ns	Output Code T
Control voltage	Vc		0 0 0		10 4.5 4.5	V	Option “L” Option “P” Option “S”
Reference Voltage	Vref			4.5 3.0		V	Vcc Code “0”; “F” Vcc Code “A”
Pull range		from nominal F	±0.6 ±0.4 ±0.4	±0.8 ±0.6 ±0.6		ppm	Option “L” Option “P” Option “S”
Deviation slope		Monotonic, posit.		0.16 0.27 0.4		ppm/V	Option “L” Option “P” Option “S”
Input impedance	Zin	At Vc pin	10			KOhm	
Modulation bandwidth	Fm		DC		1	KHz	Note 4

All parameters for 10 MHz

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Setability	Vc0	@25°C, Fnom.	4.5 2.0 1.25	5.0 2.25 1.5	5.5 2.5 1.75	V	Op."L", No internal bias Option "P" Option "S"
Initial Calibration		@25°C			±100	ppb	

Environmental and Mechanical

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

Electrical Connections

Pin Out	Pin #1—Vc; Pin#2 – Vref or N/C; Pin #3 – Vcc; Pin #4 – Output; Pin #5 - GND

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.
4. Older and stock units may have MBW of 150 Hz Max.

Creating a Part Number

O - C 2 5 X X XX YY - X -XX - X 10.000 MHz

OCXO

Conventional Power

Package Code

2 5 5 pin 20x20mm

Supply Voltage

Code	Specification
A	3.3V TYP
0	5 V TYP
F	12V TYP

Output

Code	Specification
S	Sinewave
T	CMOS/TTL

Temperature Stability, Total excursion, pk-pk

Code	Specification
17	$1x10^{-7}$
58	$5x10^{-8}$
28	$2x10^{-8}$
18	$1x10^{-8}$
YZ	$Yx10^{-Z}$

Temperature Range

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

Control Voltage

Code	Specification
L	0 to 10 V
P	0 to 4.5 V Vcc=5V
S	0 to 3.0V Vcc=3.3V

Aging per year, 1st year

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

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

****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		

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