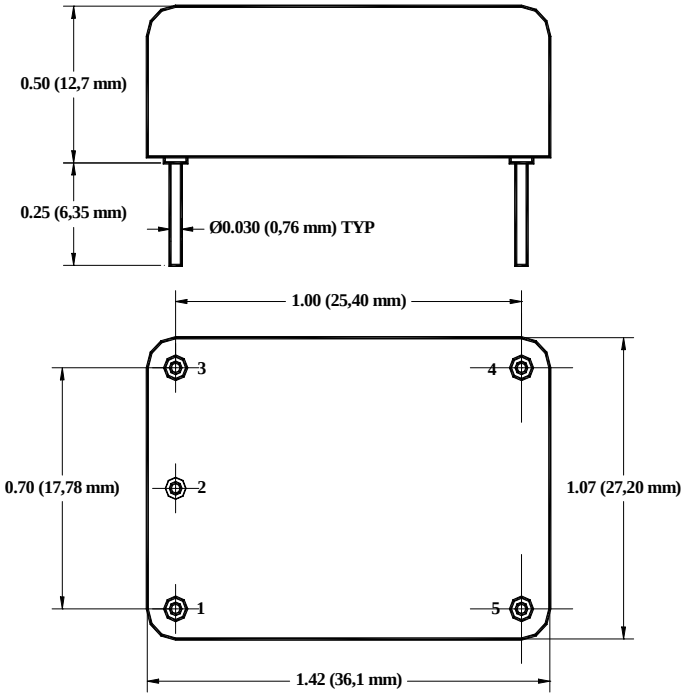
OE-XBFXXXX-X Series
HF/UHF TCVCXO
Ultra Low Phase Noise

Rev. C

Description: The OE-XBFXXXX Series of temperature compensated, voltage controlled crystal oscillators (TCVCXO), provides High and Ultra High Frequency with excellent temperature stability, extremely low phase noise and jitter with a variety of different output types in a standard Europack.



Features

- **Standard "Europack"**
- **Very Low Phase Jitter and Phase Noise**
- **Excellent Frequency Stability**
- **Ultra High Frequency – up to 2.5 GHz**
- **Sine-Wave output**
- **Stratum3 available**

Creating a Part Number

OE - X BF X X X X - X - FREQ

Package Code
OE 7 Pin 25x22x7mm

Supply Voltage

Code	Specification
0	5V ±5%
A	3.3V ±5%

TCXO/TCVCXO Option

Code	Specification
X	No V. Control
V	W/ V. Control

Output Type

Code	Specification
S	Sine-wave

Temp. Frequency Stability

Code	Specification
1	±1.0 ppm
2	±2.5 ppm
3	±0.28 ppm

Temperature Range

Code	Specification
E	-10°C to 60°C
B	0°C to 70°C
C	-20°C to 70°C
D	-40°C to 85°C

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

Not all combinations available – consult factory

NEL FREQUENCY CONTROLS, INC.
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OE-XBFXXXX-X Series
HF/UHF SMD TCVCXO

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Specifications (1)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Electrical							
Frequency Range	F		30		2,500	MHz	
Input Voltage	Vcc		3.135 4.75	3.30 5.0	3.465 5.25	V	A 0
Input Current	Icc				30 100 140	mA	@100MHz, 3.3V @622MHz, 3.3V @1000MHz, 3.3V
Frequency Stab.	ΔF/F	Overall, available			±4.6		20 years
Frequency Stability	ΔF/F	vs. Temperature vs. Vcc aging		±0.5 ±0.1 ±1 ±3.5	±1	ppm ppm/V ppm/year ppm	See chart First Year 10 years
Calibration	ΔF/F	As shipped, 25ºC		±0.5	±1	ppm	
Load		CMOS Sine PECL LVDS	15pf/10K Ohm Internally AC-coupled 50 Ohm 50 Ohm to Vcc-2V or Thevenin equivalent 100 Ohm between the outputs receiving end				
Output power (2)	P	Sine-wave Into 50 Ohms </=400MHz	0 4	3 7		dBm	3.3V 5.0V
		>400MHz	-5 0	0 5	5		3.3V 5.0V
Start up time	Ts			2	10	ms	
Phase Jitter		1σ		0.4 0.2	1 0.4	ps	100Hz to 20MHz 12KHz to 20MHz
Subharmonics		PECL, LVDS, Sine PECL, Sine CMOS, Sine		-45 -40	-40 -35 None	dBc	F>250MHz F>1,000MHz F<250MHz
Spurious					-60	dBc	
Harmonics		Sine-wave		-30	-25 -20	dBc	F<1,000MHz F ≥1,000MHz
SSB Phase Noise		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz		-80 -110 -140 -155 -160		dBc/Hz	@100MHz
SSB Phase Noise		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz		-60 -90 -120 -130 -135		dBc/Hz	@1,000MHz

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Electrical (continued)

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Input Impedance				> 10KOhm			
Control voltage	Vc		0		3.3	V	
Modulation bandwidth	MB		100 Hz				Contact Factory for wider MB
Deviation		Vc=0V to 3.3V,25°C	±5	±7		ppm	

Note 1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load
2) Higher output power available – consult factory (current consumption may increase)

Absolute Maximum Ratings

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Input Break Down Voltage	Vcc		-0.5		5.5	V	
Storage temp.	Ts		-40		105	° C	
Contr. Voltage	Vc		-1		9	V	

Environmental and Mechanical

Operating temp. range	0°C to 70°C , -40°C to 85°C, see chart, page 1
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
Vibration	Per MIL-STD-883, Method 2007, Cond. A
Soldering Conditions	260ºC 10 seconds, leads only
Hermetic Seal	Leak rate less than $1x10^{-8}$ atm.cc/s of helium (crystal only)

Electrical Connections

Pin Out	Pin #1-Vc ; Pin#2 – Vref; Pin #3 – Vcc; Pin #4- Output ; Pin #5- GND;

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