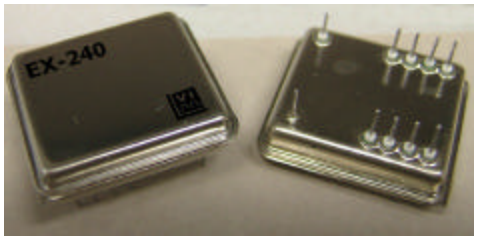
Oven Controlled Crystal Oscillators (OCXO's)

EX-240 (EMXO™)



Description:

The EX-240 Series offers a ruggedized hybrid thick film construction in a low profile, hermetically sealed 16 pin DDIL package, which can withstand severe environmental conditions. This product series utilizes VI's EMXO™ technology resulting in excellent stability performance and fast warm-up with low power consumption.

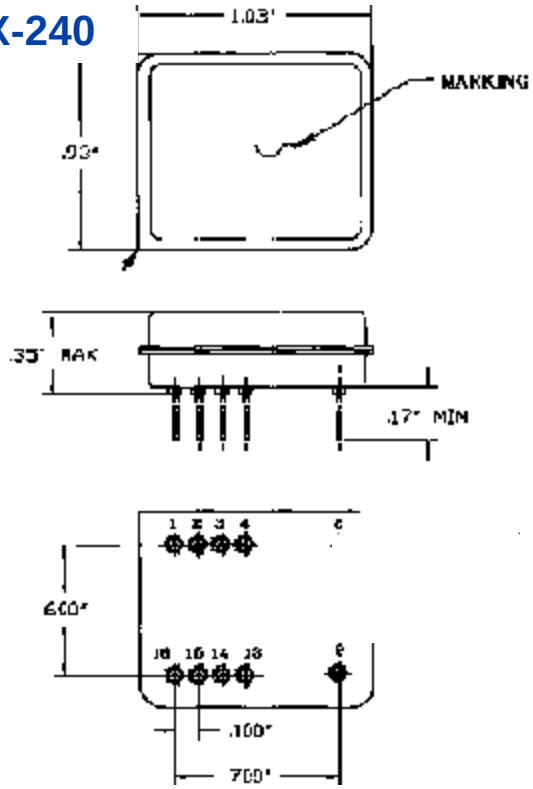
Features:

* Temperature Stability: to ±1 x 10^{-8} over 0°C to +50°C
* Acceleration Sensitivity: < 1 x 10^{-9} / g Total Gamma
* Low power consumption: < 0.7 W @ +25°C
* Shock: 1,000g's peak, 0.5 ms
* Vibration: 20g peak to 2 kHz (Sine), 30 Grms overall to 2 kHz (Random)

Performance Characteristics

Parameter	Characteristics
Frequency Range:	10 to 20.48 MHz
Package Size:	See next page for drawings and dimensions (reduced height option is available)
Supply Voltage:	(**C**) +5 Vdc ±5%, (**D**): +3.3 Vdc ±5%
Supply Current (Steady State):	<140 mA @ +25°C , <220 mA @ -40°C with +5V supply <210 mA @ +25°C , <330 mA @ -40°C with +3.3V supply (reduced current option is available)
Turn-on Current:	<500 mA with +5Vdc supply, <600 mA with +3.3 Vdc supply
Output Type:	(**A**) HCMOS
Level "0" and "1":	<0.4 Volts, >0.9 Vdd
Rise/Fall Time (10-90%):	<7 ns
Symmetry (Duty Cycle):	50/50 ±10% (at 50% Vdd)
Output Type:	(**H**) +3 dBm minimum into 50 ohms
Harmonics:	- 20 dBc
Spurious:	- 60 dBc
Temperature Stability: (Note: Tighter stabilities and wider temperature ranges are available, please consult factory.)	**B-108** = ± 10 ppb over 0°C to +50°C **C-208** = ± 20 ppb over 0°C to +70°C **D-308** = ± 30 ppb over -20°C to +70°C **F-508** = ± 50 ppb over -40°C to +85°C
Aging (10MHz Typical):	<1x10^{-9} /day average, <1x10^{-7} / year average, <1x10^{-6} /10 years
Short-Term Stability (Allan Deviation):	<1x10^{-10}, 0.1 seconds to 10 seconds
Phase Noise: (typical at 10 MHz, Static Condition)	Offset / Phase Noise 10 Hz / -100 dBc/Hz 100 Hz / -130 dBc/Hz 1 kHz / -140 dBc/Hz 10 kHz / -145 dBc/Hz 100 kHz / -150 dBc/Hz
Frequency vs. Supply:	<2.5x10^{-9} per percent change
Warm-up (Restabilization): (frequency relative to that 1 hour after turn-on, following 24 hours off time, at +25°C)	Standard / Optional (consult factory) <±1x10^{-6} / 60 seconds / 45 seconds <±1x10^{-7} / 120 seconds / 90 seconds
Electrical Frequency Adjust:	>± 1ppm range with 0 to Vdd input voltage
Acceleration Sensitivity: (10 MHz)	1x10^{-9}/g Total Gamma, standard 5x10^{-10}/g available at 10 MHz (consult factory)

EX-240

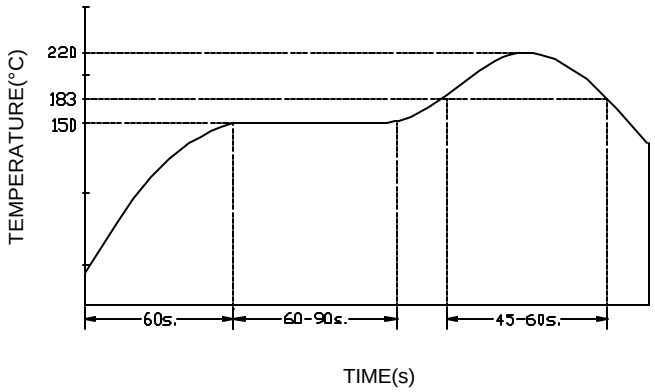


240 Package Outline Drawing

Pin	Function
1	Frequency Control
2-4	N/C. Internal use ONLY
8	Case, Ground
9	Output
13-15	N/C
16	Supply

Pin numbers are for reference, only, they do not appear on unit

Reflow Profile



Environmental Specifications (designed to meet)

Shock - 1000g's peak, 0.5 ms per MIL-STD-202, Method 213, Condition E
Vibration (Sine) - 20g peak to 2 kHz per MIL-STD-202, Method 204, Condition D
Vibration (Random)- 30 Grms overall per MIL-STD-202, Method 214, Condition I-H
Acceleration - 1000g per MIL-STD-202, Method 212, Condition C
Thermal Shock - 50 cycles, -55C to +85C per MIL-STD 202, Method 107, Condition A-2
Altitude - 70,000 ft per MIL-STD 202, Method 105, Condition C
Seal - Hermetic per MIL-STD-202, Method 112, Condition C
Humidity - 90% RH per MIL-STD-202, Method 103, Condition A

Capabilities

VI can offer this series with screening and conformance inspection based upon MIL-PRF-55310 for Product level B. Also, a reduced current option is available. Please contact your local VI representative or VI for details.

Ordering Information

EX - 240 – C A F – 5 0 8 A – 12.800 MHz

EX = EMXO

Package
240

Supply Voltage
C = 5.0 Vdc ±5%
D = 3.3 Vdc ±5%

Output
A = HCMOS
H = + 3dBm sine

Temperature & Stability
B-108 = ± 10 ppb over 0°C to +50°C
C-208 = ± 20 ppb over 0°C to +70°C
D-308 = ± 30 ppb over -20°C to +70°C
F-508 = ± 50 ppb over -40°C to +85°C
Note: Tighter stabilities and wider temperature ranges are available, please consult the factory.

Other Options
A = Electrical Frequency Adjust (standard)
F = Fixed Frequency, No Frequency Adjust, Initial Accuracy at +25°C is ±1 ppm

Output Frequencies

10.000 MHz	16.384 MHz
10.230 MHz	19.440 MHz
12.800 MHz	20.000 MHz
13.000 MHz	20.480 MHz