

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:

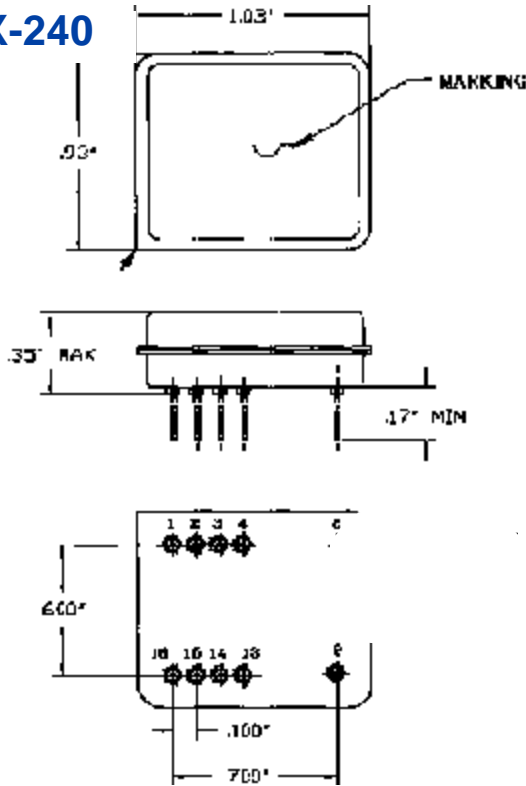
- * Temperature Stability: to $\pm 1 \times 10^{-8}$ over 0°C to +50°C
- * Acceleration Sensitivity: $< 1 \times 10^{-9}$ / g Total Gamma
- * Low power consumption: < 0.7 W @ +25°C
- * Shock: 1,000g's peak, 0.5 ms
- * Vibration: 20g peak to 2 kHz (Sine), 30 Grms overall to 2 kHz (Random)

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 $\pm 5\%$, (D) : +3.3 Vdc $\pm 5\%$		
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 $\pm 10\%$ (at 50% Vdd)		
Output Type:	(H) +3 dBm minimum into 50 ohms		
Harmonics:	- 20 dBc		
Spurious:	- 60 dBc		
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 factory.)		
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)
	< $\pm 1 \times 10^{-6}$	60 seconds	45 seconds
	< $\pm 1 \times 10^{-7}$	120 seconds	90 seconds
Electrical Frequency Adjust:	> ± 1 ppm 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)		

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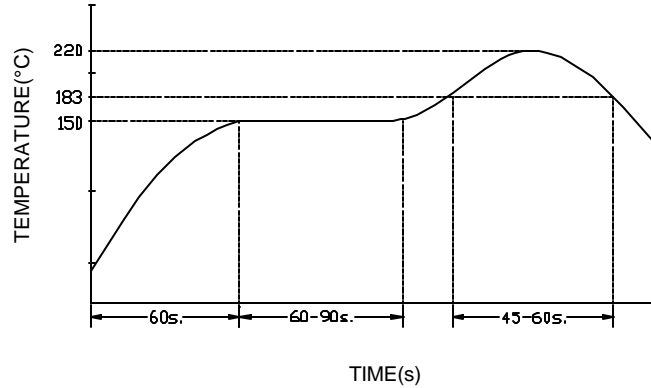


240 Package Outline Drawing

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



OCXO

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 - 508 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.

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

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