VECTRON INTERNATIONAL
A DOVER COMPANY

EX-200

Evacuated Miniature Crystal Oscillator



Description

The EX-200 Series offers a ruggedized hybrid thick film construction in a low profile hermetically sealed 16pin DDIL package, which can withstand severe environmental conditions. This product utilizes VI's EMXO technology resulting in excellent stability performance and fast warm-up with low power consumption.

Features

- Ruggedized hybrid thick film construction
- Low Power Consumption
- Previous Model: EX-240 series
- Frequency Range: 10 MHZ - 20 MHZ

Applications

- Severe Environmental Conditions

Performance Specifications

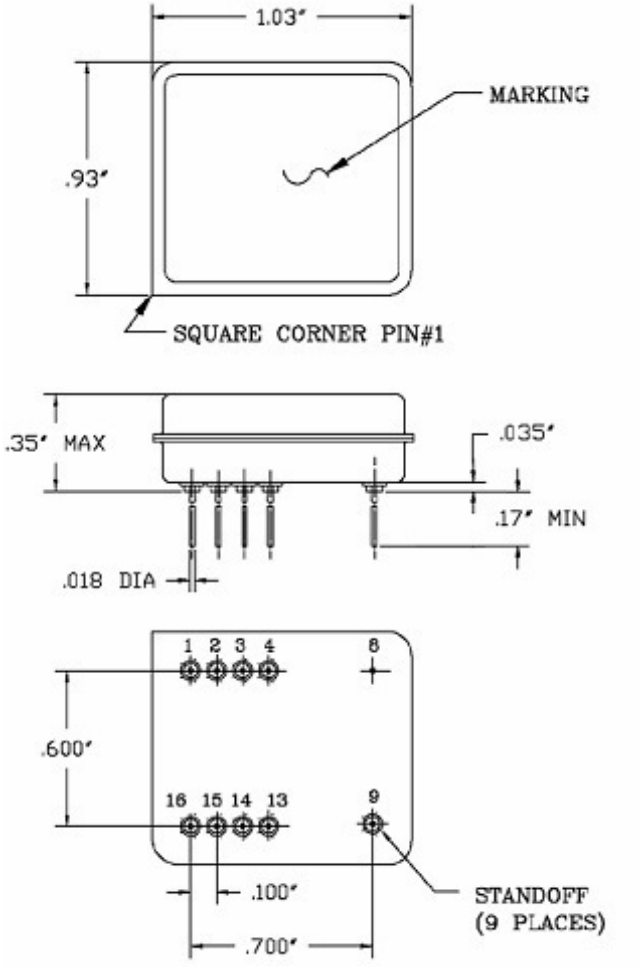
Frequency Stabilities[1]					
Parameter	Min	Typ	Max	Units	Condition
vs. operating temperature range (referenced to +25°C)	-20 -30 -50		+20 +30 +50	ppb ppb ppb	-0… +70°C -20… +70°C -40… +85°C

Performance Specifications

Frequency Stabilities[1]					
Parameter	Min	Typ	Max	Units	Condition
Initial Tolerance (for fixed frequency) vs. supply voltage change vs. load change vs. aging / day vs. aging / 1 year vs. aging / 10 year vs. aging / 10 year vs. aging / 10 year	-1.0 -10 -10 -2.0 -200 -1000 -1500 -2000		+1.0 +10 +10 +2.0 +200 +1000 +1500 +2000	ppm ppb ppb ppb ppb ppb ppb ppb	at time of shipment, nominal EFC VS ± 5% Load ± 5% after 7 days of operation 10 to <12MHz 12 to <16MHz 16 to 20MHz
Warm-up Time			90 120	seconds seconds	to ± 1ppm of final frequency @+25°C to ± 100ppb of final frequency @+25°C
Supply Voltage (Vs)					
Supply voltage (Standard)	4.75	5.0	5.25	VDC	
Supply voltage (Option)	3.135	3.3	3.465	VDC	
Power Consumption			2.5 0.7	Watts Watts	during warm-up steady state @ +25°C
RF Output					
Signal [Standard]	HCMOS				
Load		15		pF	
Signal Level (Vol)			0.1	VDC	
Signal Level (Voh)	0.9			VDC	
Rise/Fall Time			+7	ns	(10-90%)
Duty cycle	40		60	%	(Voh-Vol)/2
Signal [Option]	Sinewave				
Load		50		ohm	
Output Power (Standard)	0	+1.5	+3.0	dBm	50 ohm load
Output Power (Option)	+3.0	+4.5	+6.0	dBm	50 ohm load
Harmonics			-25	dBc	
Sub-Harmonics			-60	dBc	
Frequency Tuning (EFC)					
Tuning Range	Fixed; No adjust				
Tuning Range	Sufficient to compensate for 10 years aging				EFC (0V to 4Vdd)
Additional Parameters					
Phase Noise @ 10 MHz			-100 -130 -140 -145 -150	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz
G-Sensitivity			1	ppb/g	Test at 10g sine vibration at 100Hz
Allan Deviation			0.2	ppb	Tau = 1 sec

Environmental Conditions (Designed to meet)	
• Mechanical Shock (survive)	MIL-STD-202, Test Method 213, Condition E (100G, 0.5msec)
• Vibration Random (survive)	MIL-STD-202, Test Method 214, Condition I-H (20Grms, 3 minutes/axis)
• Vibration Sine (survive)	MIL-STD-202, Test Method 204, Condition D (20Grms, 20 minutes/axis)
• Thermal Shock (survive)	MIL-STD-202, Test Method 107, Condition A-2 (50 Cycles, -55°C to +85 °C)

Outline Drawing / Enclosure

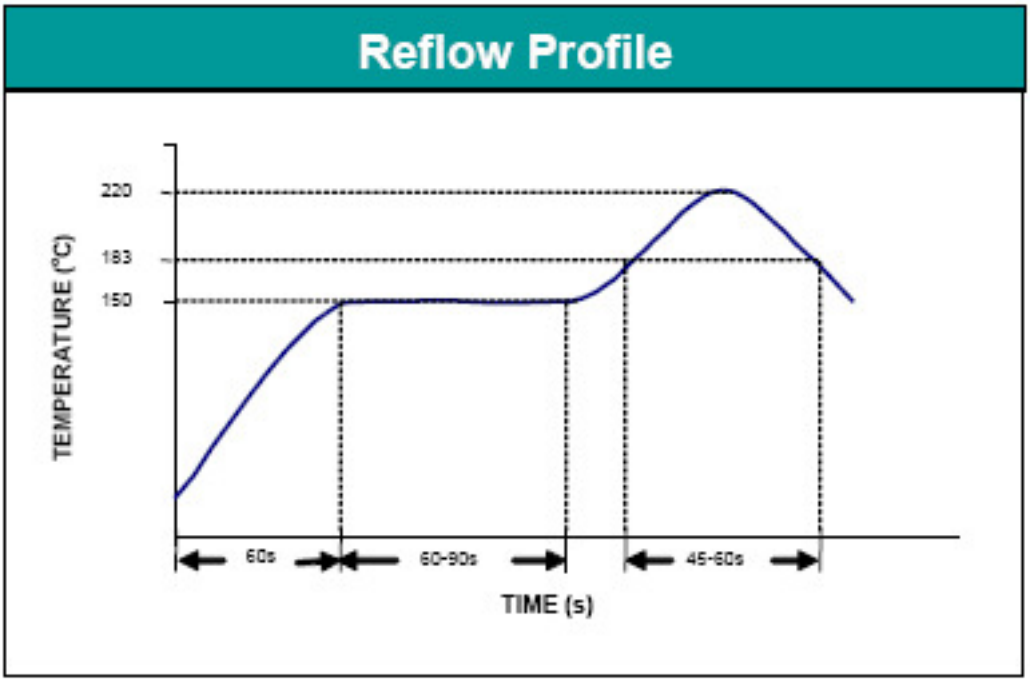


Dimensions in inches

Type A		
Code	Height "H"	Pin Length "L"
0	0.35"	0.17"

Pin Connections	
1	EFC \ No Connect
2 - 4	No Connect
8	Ground (Case)
9	RF Output
13 - 15	No Connect
16	Supply Voltage Input

Recommended Reflow Profile



Ordering Information

EX - 200 0 - D A J - 508 0 - 10M0000000

- **Product Family**
  EX: EMXO
- **Package**
  25 x 25 mm
- **Height**
  0: A0.35"
- **Supply Voltage**
  D: 5 Vdc
  E: 3.3 Vdc
- **RF Output Code**
  A: HCMOS
  E: Sinewave
- **Temperature Range**
  E: -40°C to +85°C
  J: -20°C to +70°C
  T: 0°C to +70°C
- **Stability Code**
  208: ±20ppb
  308: ±30ppb
  508: ±50ppb
- **Frequency Control**
  0: Fixed Frequency (HCMOS)
  1: Fixed Frequency (0 dBm)
  2: Fixed Frequency (+3 dBm)
  3: Electrical Tuning (HCMOS)
  4: Electrical Tuning (0 dBm)
  5: Electrical Tuning (+3 dBm)
- **Frequency**

Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

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