

Helping Customers Innovate, Improve & Grow



## 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

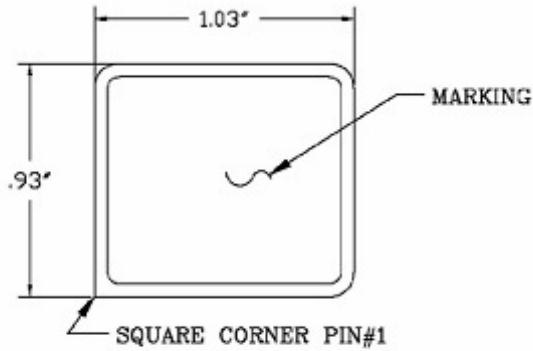
## Performance Specifications

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

## Performance Specifications

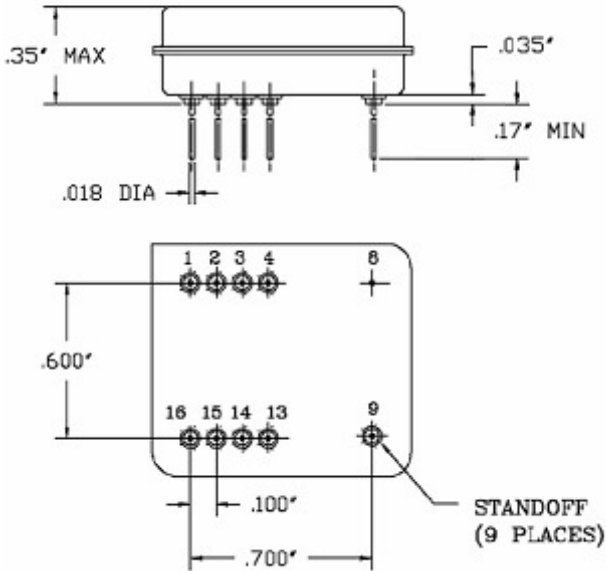
Frequency Stabilities <sup>1</sup>					
Parameter	Min	Typ	Max	Units	Condition
Initial Tolerance (for fixed frequency)	-1.0		+1.0	ppm	at time of shipment, nominal EFC VS ± 5% Load ± 5% after 7 days of operation
vs. supply voltage change	-10		+10	ppb	
vs. load change	-10		+10	ppb	
vs. aging / day	-2.0		+2.0	ppb	
vs. aging / 1 year	-200		+200	ppb	
vs. aging / 10 year	-1000		+1000	ppb	
vs. aging / 10 year	-1500		+1500	ppb	
vs. aging / 10 year	-2000		+2000	ppb	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	dBc/Hz	10 Hz
			-130	dBc/Hz	100 Hz
			-140	dBc/Hz	1 KHz
			-145	dBc/Hz	10 KHz
			-150	dBc/Hz	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



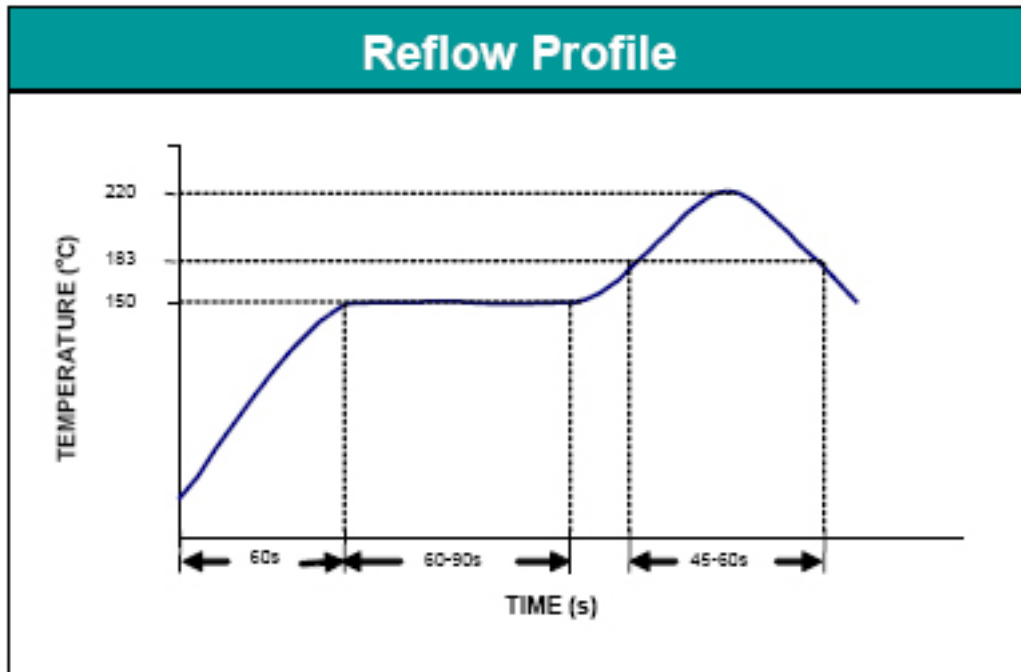
Dimensions in inches

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

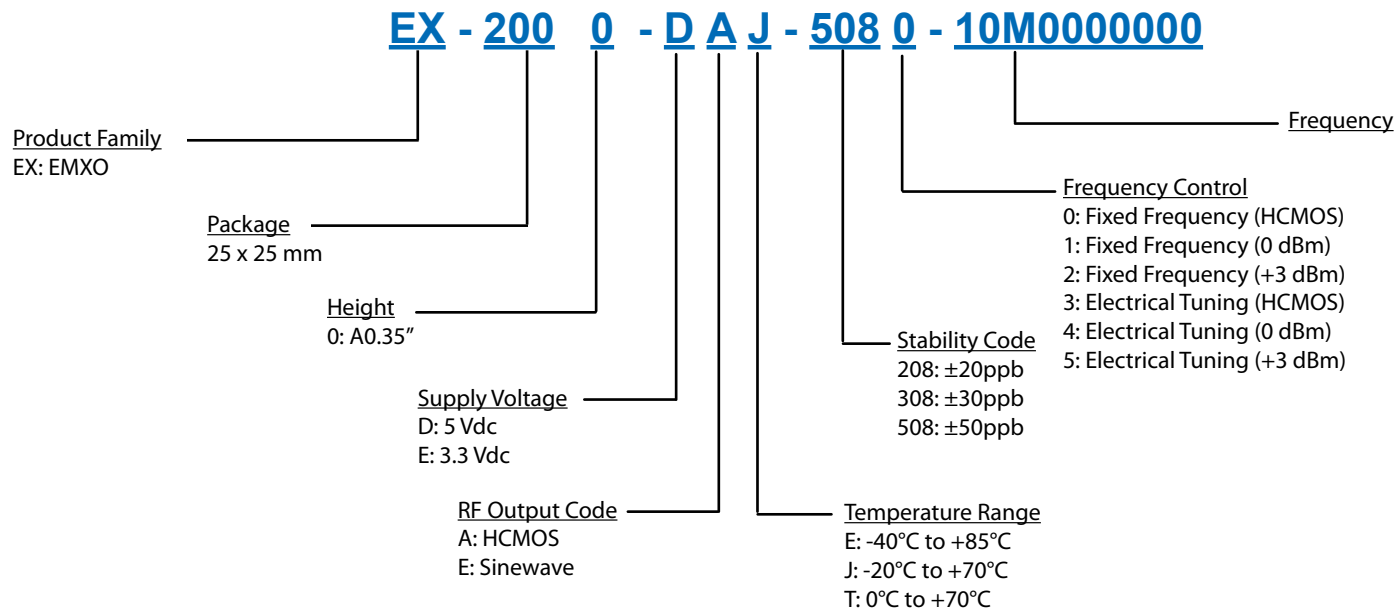


Pin Connections	
1	EFC \ No Connect
2 - 4	No Connect
8	Ground (Case)
9	RF Output
13 - 15	No Connect
16	Supply Voltage Input

## Recommended Reflow Profile



## Ordering Information



**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.

## For Additional Information, Please Contact

**USA:**

Vectron International  
267 Lowell Road, Unit 102  
Hudson, NH 03051  
Tel: 1.888.328.7661  
Fax: 1.888.329.8328

**Europe:**

Vectron International  
Landstrasse, D-74924  
Neckarbischofsheim, Germany  
Tel: +49 (0) 3328.4784.17  
Fax: +49 (0) 3328.4784.30

**Asia:**

Vectron International  
68 Yin Cheng Road(C), 22nd Floor  
One LuJiaZui  
Pudong, Shanghai 200120, China  
Tel: 86.21.6194.6886  
Fax: 86.21.6194.6699

**Disclaimer**

Vectron International reserves the right to make changes to the product(s) and or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.