

## H325 Series

Highly-Stable OCXOs

### Key Features

- Standard 10 MHz Frequency
- 25.8 mm x 25.8 mm x 12.8 mm
- +/- 3 ppb over industrial temp
- 3.3V supply
- 2.8V Ref. Voltage Out
- CMOS output



### Common Applications

- SDH/SONET
- Cellular base stations
- Test Instrumentation
- Synthesizers
- SATCOM terminals



### Functional Description

The H325 10MHz OXCO represents an industry-standard frequency reference source with a volume production record of high reliability for a wide range of RF applications. Due to this large-scale production, the H325 presents a cost-effective solution to many customer requirements while providing industry-leading performance.

With temperature stability as good as  $\pm 3$  ppb over the range of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , the H325 outperforms many competitor parts in the same package size. The H325 comes in a 25.8 mm x 25.8 mm x 12.8 mm package, lending itself to applications with tight footprint requirements.

An optional reference voltage output gives the user a stable, ovenized voltage reference to derive their control voltage (EFC) from. This will result in less skew over temperature than using contemporary methods of EFC generation.

**Standard Specifications:**

Parameter	Minimum	Typical	Maximum	Units	Notes
Frequency	10.0			MHz	Other frequencies may be available upon request
Operational Temperature Range					See ordering options.
Frequency vs. Temperature <sup>2</sup>					See ordering options.
Calibration Tolerance <sup>3</sup>	-100		+100	ppb	At time of shipment.
Frequency vs. Supply	-0.5		+0.5	ppb	5% Change
Frequency vs Load	-0.5		+0.5	ppb	5% Change
Warmup Time			10	Minutes	Within $\pm 10$ ppb of 60-minute frequency at 25°C
Aging <sup>4</sup>					See ordering options.
Supply Voltage (VIN)	3.135	3.3	3.465	Volts	"Typical" column refers to nominal.
Power Consumption					
Steady State at 25°C			1.3	Watts	Measured in still air.
Turn-on Power			3.3	Watts	Measured in still air.
Allan Deviation			5.0 E-11		Tau = 1s F = 10 MHz

**Output Characteristics:**

Parameter	Minimum	Typical	Maximum	Units	Notes
CMOS Output Option					Load = 15 pF
Output Voltage High ("1")	2.4			Volts	
Output Voltage Low ("0")			0.4	Volts	
Duty Cycle	45	50	55	%	At center EFC
Rise/Fall Time			6	ns	Measured between 10% and 90%
Spurious			-60	dBc	

**Phase Noise Characteristics:**

Parameter	Minimum	Typical	Maximum	Units
1 Hz Offset		-95	-90	dBc/Hz
10 Hz Offset		-125	-120	dBc/Hz
100 Hz Offset		-140	-135	dBc/Hz
1 KHz Offset		-148	-145	dBc/Hz
10 KHz Offset		-156	-155	dBc/Hz
100 KHz Offset		-158	-155	dBc/Hz

**Electrical Frequency Control:**

Parameter	Minimum	Typical	Maximum	Units	Notes
Tuning Range <sup>6</sup>			-0.5	ppm	EFC @ Min Voltage
	0.5			ppm	EFC @ Max Voltage
Control Voltage (EFC)	0		3.3	V	See ordering options.
	0		2.8	V	See ordering options.
Slope	Positive				
Center Voltage <sup>8</sup>	50% Maximum Control Voltage (EFC)			V	
Linearity	-10		10	%	
Input Impedance	100			K $\Omega$	

**Reference Voltage:**

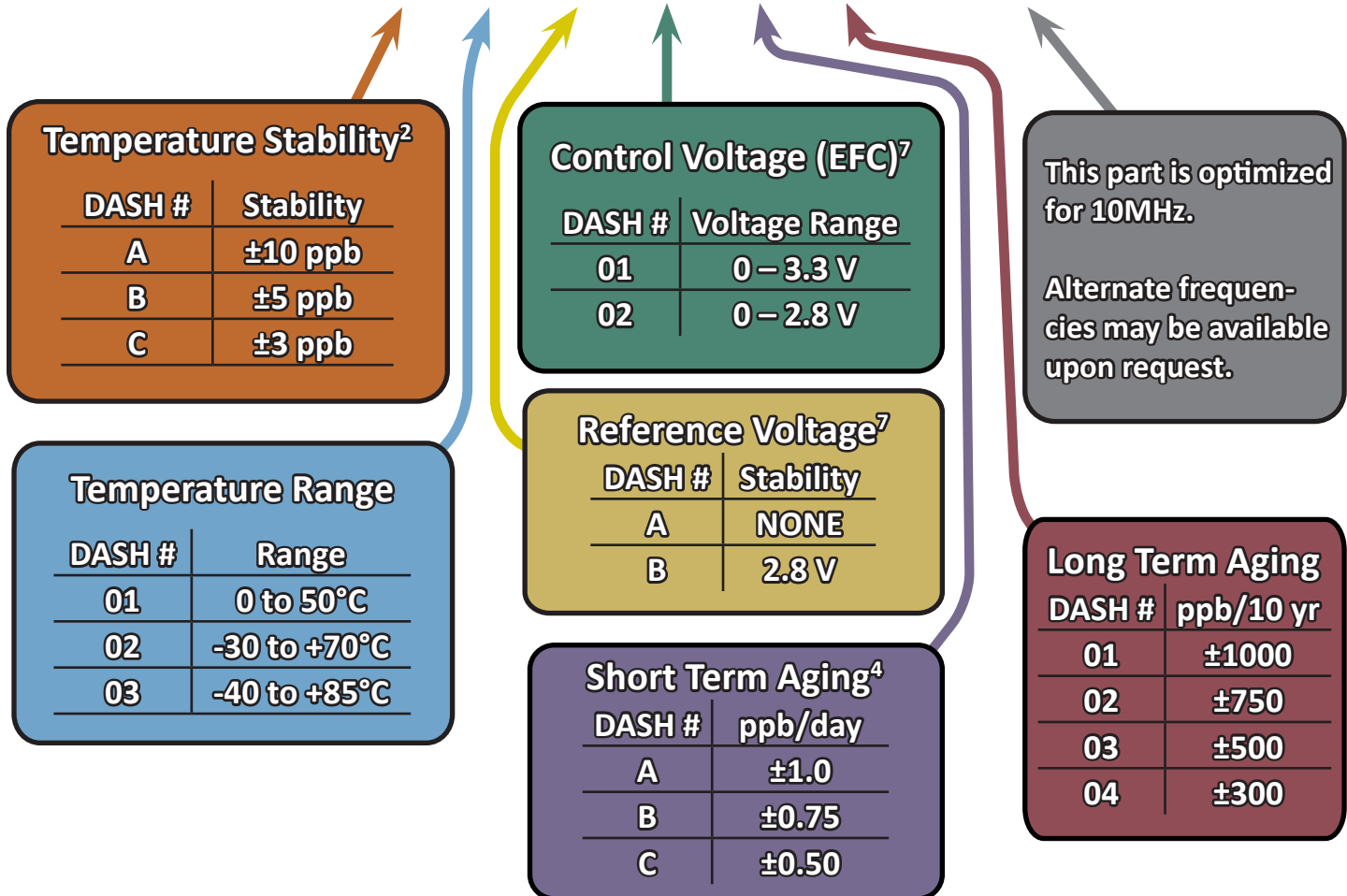
Parameter	Minimum	Typical	Maximum	Units	Notes
Voltage	2.7	2.8	2.9	V	Over selected temp range.
Load	9			K $\Omega$	See ordering options.

**Environmental Characteristics:**

Environmental Phenomenon	Response
Operating Temperature <sup>5</sup>	-40 °C to +85 °C
Storage Temperature	-55 °C to +105 °C
Vibration (non-operating)	MIL-STD-202, Method 201 0.06" Total p-p, 10 to 55 Hz
Shock (non-operating)	MIL STD 202, Method 213, Test Condition J: 30g, 11ms, half sine
Humidity	MIL-STD-202, Method 103 Test Condition A 95% RH @ +40 °C, non-condensing, 240 hours

## Ordering Information:<sup>1</sup>

# H325-A-01-A-01-A-01-10M00

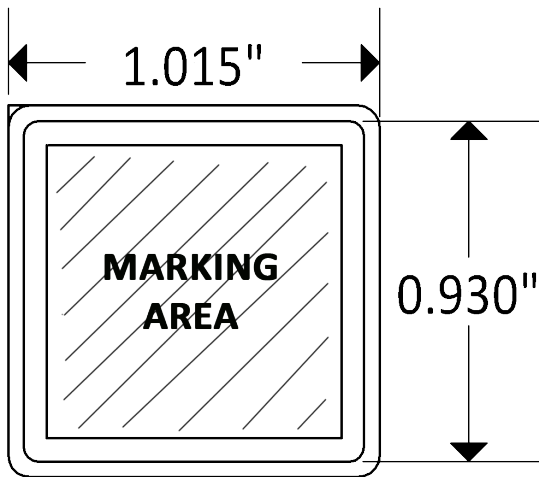


### Notes:

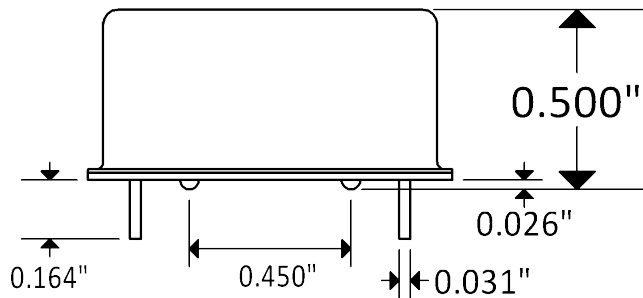
- 1.) Not all combinations of options are available. Consult factory for additional guidance.
- 2.) Temperature stability is referenced to 25°C.
- 3.) At 25±1°C, After 15±1 continuous minutes on power, at center EFC voltage ±1mV.
- 4.) After 30 days.
- 5.) Unit will maintain output over this range. Performance not guaranteed if operating outside range chosen in part number builder.
- 6.) Referenced to frequency at nominal center EFC Voltage
- 7.) If reference voltage option A is selected, option 01 must be selected for control voltage. If reference voltage option B is selected, option 02 must be selected for control voltage.
- 8.) If pin 3 is not connected, EFC is internally held at center voltage.
- 9.) The information contained herein is subject to change at any time without notice.

## Mechanical Specifications:

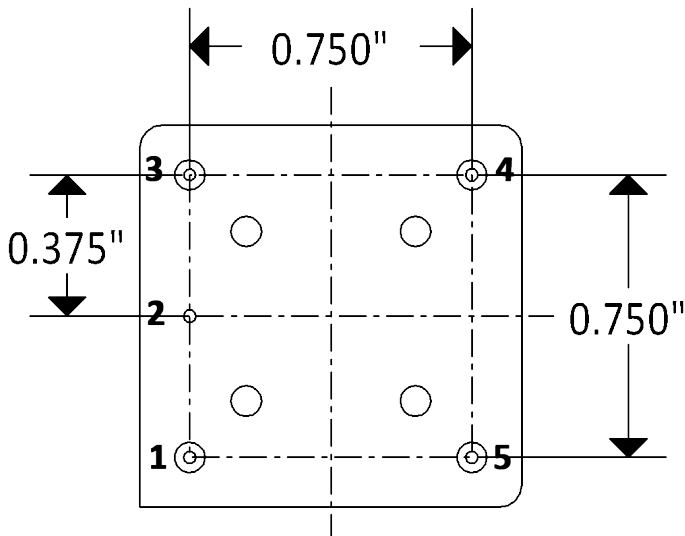
### Top View:



### Side View:



### Bottom View:



### Dimension Notes:

**TOP:** Can inset (930 thou) and (1.015 thou MAX) are square.

**SIDE:** Max seated height (500 thou) includes 4X glass standoffs on bottom of package. They are centered and spaced 450 thou apart.

**TOLERANCES ARE  $\pm 0.010$ "**

### PIN FUNCTIONS

Pin #	Function
1	RF OUT
2	GND
3	EFC / N.C.
4	V <sub>REF</sub> / N.C.
5	Supply Voltage (VIN)

For best signal integrity, do not run traces beneath the part, and ensure the area under the board is ground plane.