



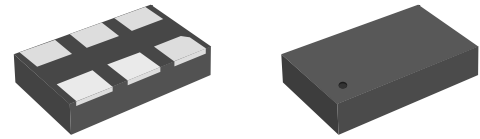
# 125.00 MHz Ultra-Low Jitter Oscillator Plus-PPM Margining MEMS Oscillator (LVPECL)

## 4HF125000Z3

### ADVANCE DATASHEET

#### Features

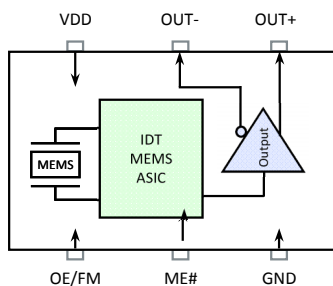
- Nominal Frequency: 125.00 MHz (LVPECL)
- Any Freq Tuning ( $\pm 1000$  ppm): 124.875 to 125.125 MHz
- RMS phase jitter: 0.1 ps typical
- Frequency Stability:  $\pm 25$  /  $\pm 50$  ppm
- Standard Packages: 7050 / 5032 / 3225
- Internal MEMS Resonator No external XTAL or XO required



7.0 x 5.0 mm package shown  
(also available in 5.0 x 3.2 and 3.2 x 2.5 mm)

The **4HF125000Z3** is an ultra-low Phase Jitter (100 fs) oscillator capable of up to  $\pm 1000$  ppm of real time frequency margining in one ppm steps. It is ideal for applications requiring extremely low jitter and/or Plus-PPM clocking. Any frequency from 124.875 to 125.125 MHz can be generated in real time without any external XTAL or XO.

#### Block Diagram

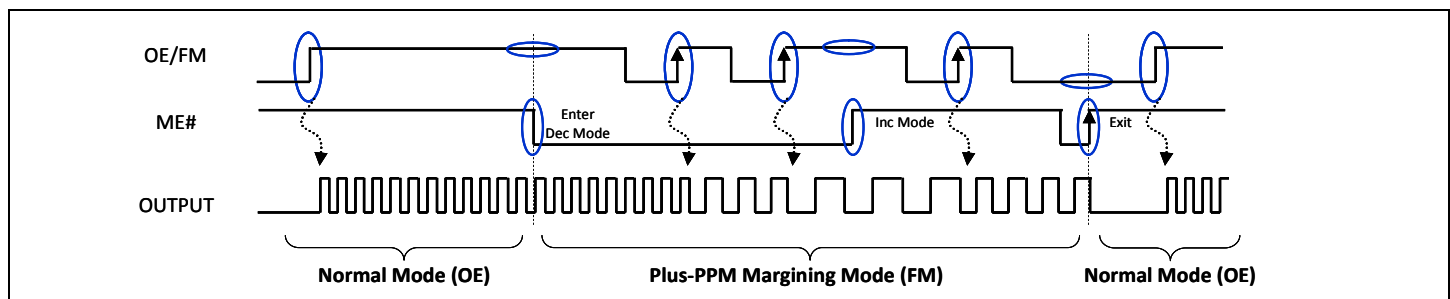


#### Pin Description

Pin #	Name	Description
1*	OE	Output Enable
	FM	Frequency Margining (decrement/increment)
2*	ME#	Margining Enable
3	GND	Ground
4	OUT+	Output
5	OUT-	Output (Complementary)
6	VDD	Power Supply Voltage

\* Pulled high internally

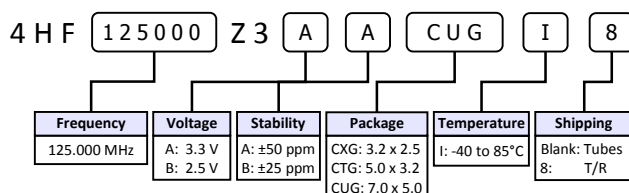
#### Plus-PPM Margining & Real Time Frequency Tuning ( $\pm 1000$ ppm)



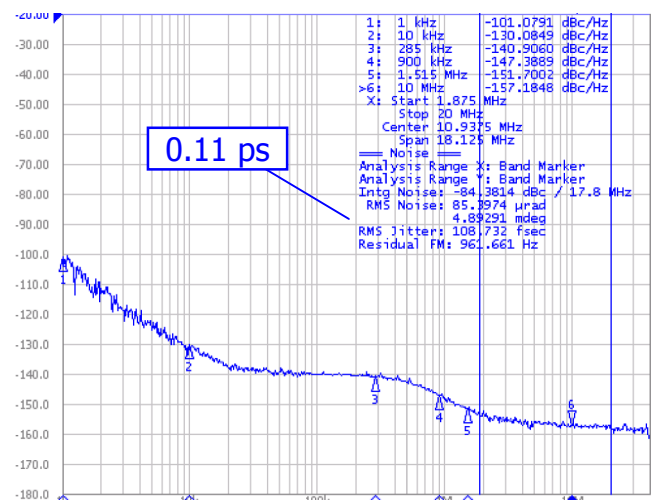
#### Part Ordering Information

Package (mm)	Voltage (V)	Ordering Code	
		$\pm 50$ ppm	$\pm 25$ ppm
7.0 x 5.0	3.3	4HF125000Z3AACUGI	4HF125000Z3ABCUGI
	2.5	4HF125000Z3BACUGI	4HF125000Z3BBCUGI
5.0 x 3.2	3.3	4HF125000Z3AACTGI	4HF125000Z3ABCTGI
	2.5	4HF125000Z3BACTGI	4HF125000Z3BBCTGI
3.2 x 2.5	2.5	4HF125000Z3BACXGI	4HF125000Z3BBCXGI

\* Factory minimum order quantity: 500pcs (T/R)



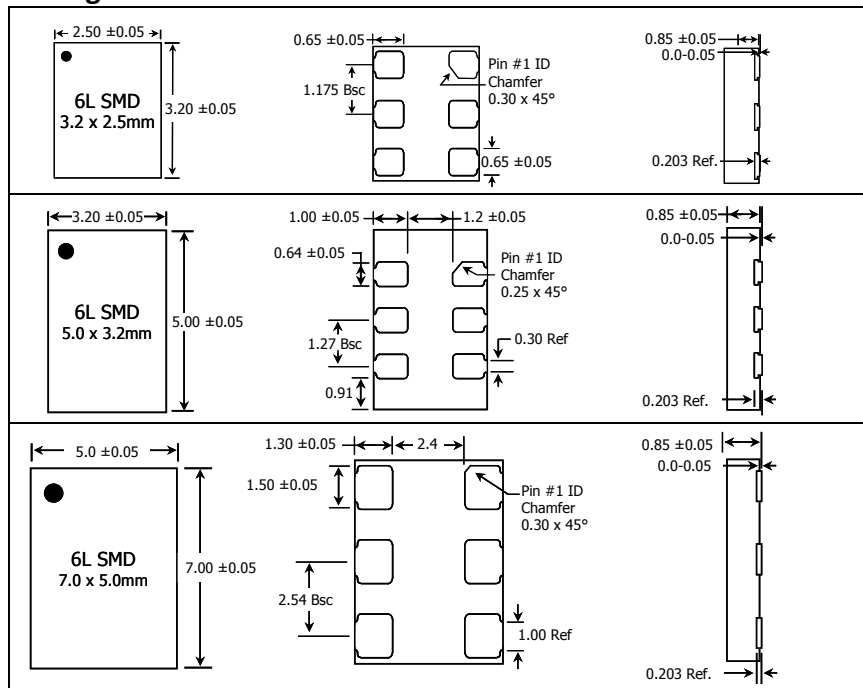
#### Typical Phase Jitter



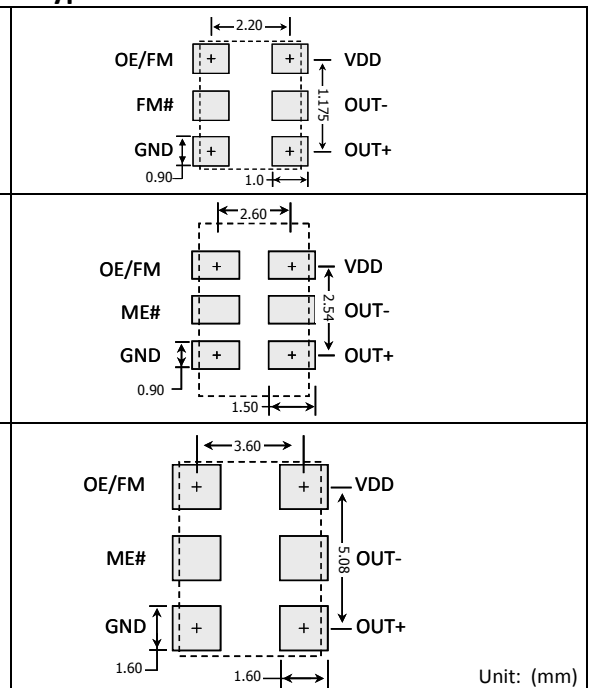
## Specification

Parameter	2.5 V Specifications			3.3 V Specifications			Units	Conditions
	Min	Typ	Max	Min	Typ	Max		
Supply Voltage ( $V_{DD}$ )	2.375	2.50	2.625	2.97	3.30	3.63	V	
Output Frequency		125.00			125.00		MHz	
Frequency Stability	- 50		+ 50	- 50		+ 50	ppm	Includes supply voltage and temperature variation (-40 to 85°C), reflow drift, and aging.
Supply Current		90			95		mA	No load
Enable/Disable Time			1			1	us	Guaranteed by design
Input HIGH/LOW level	0.7 $V_{DD}$		0.3 $V_{DD}$	0.7 $V_{DD}$		0.3 $V_{DD}$	V	At OE pin
Output LOW level		0.8	$V_{DD}-1.8$		1.5	$V_{DD}-1.8$	V	
Output HIGH level	$V_{DD}-1.0$	1.6		$V_{DD}-1.1$	2.3		V	
Amplitude ( $V_A$ )		0.75			0.75		V	Single Ended output swing (Pk-Pk)
Mid Level ( $V_M$ )		$V_{DD}-1.3$			$V_{DD}-1.3$		V	
Rise/Fall Time ( $T_R$ )			300		250		ps	Maximum; 20/80% of $V_A$ ; Output load (CL) = 2pF; Guaranteed by Char.
Symmetry (SYM)	48	50	52	48	50	52	%	Worst case; measured at 50% of waveform
Phase Jitter		0.11			0.11		ps	1.875MHz to 20MHz, RMS; Measured Differentially (IEEE802.3-2005)
		0.25			0.25		ps	12k to 20MHz, RMS; Measured Differentially
Period Jitter		2.5			2.5		ps	RMS
Cycle-to-Cycle Jitter		20			20		ps	1,000 cycles, Peak
Start-up Time		10			10		ms	Output valid time after power up, 25°C
Aging		± 5			± 5		ppm	25°C, 10 years

## Package Outline and Dimensions



## Typical PCB Land Pattern



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San Jose, California 95138

## Sales

800-345-7015 (inside USA)  
+1 408-284-8200 (outside USA)

## Technical Support

MEMS\_Support@idt.com  
www.idt.com/go/MEMS

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