



# 148.50 MHz LVPECL Oscillator

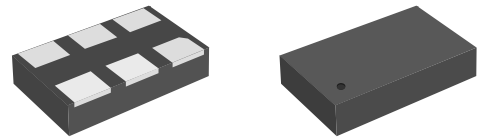
High Performance Differential MEMS Oscillator

4MA148500Z3

## DATASHEET

### Features

- Frequency: 148.50 MHz
- Output Type: LVPECL
- Frequency Stability:  $\pm 50$ ppm
- Supply Voltage: 2.5V & 3.3V
- Standard Packages: 5.0 x 3.2 mm; 7.0 x 5.0 mm
- RMS phase jitter: 0.6ps typical (12k to 20MHz)
- Operating Temperature: -40 to 85 °C

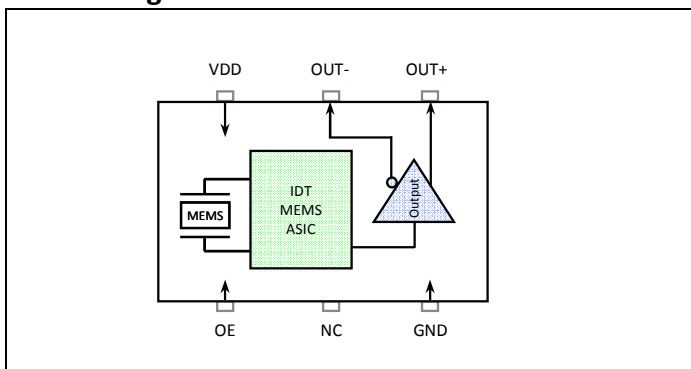


7.0 x 5.0 mm package shown  
(also available in 5.0 x 3.2mm pkg)

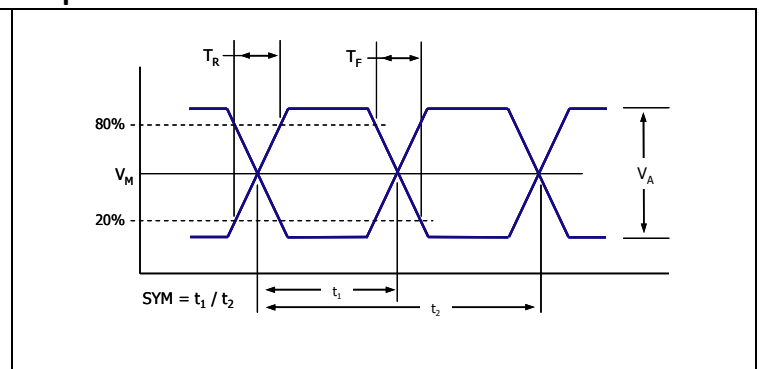
### Specification

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		148.50			148.50		MHz	
Frequency Stability	- 50		+ 50	- 50		+ 50	ppm	Includes supply voltage and temperature variation (-40 to 85°C), reflow drift, and aging.
Supply Current		95			100		mA	No load
Enable/Disable Time			1			1	us	Guaranteed by design
Input LOW level			0.3V <sub>DD</sub>			0.3V <sub>DD</sub>	V	At OE pin
Input HIGH level	0.7V <sub>DD</sub>			0.7V <sub>DD</sub>			V	At OE pin
Output LOW level		0.8	V <sub>DD</sub> -1.8		1.5	V <sub>DD</sub> -1.8	V	
Output HIGH level	V <sub>DD</sub> -1.0	1.6		V <sub>DD</sub> -1.1	2.3		V	
Amplitude ( $V_A$ )		0.75			0.75		V	Single Ended output swing (Pk-Pk)
Mid Level ( $V_M$ )		V <sub>DD</sub> -1.3			V <sub>DD</sub> -1.3		V	
Rise Time ( $T_R$ )		200	260		200	250	ps	Maximum; 20/80% of $V_A$ ; Output load (CL) = 2pF; Guaranteed by Char.
Fall Time ( $T_F$ )		200	260		200	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		0.8			0.6		ps	12k to 20MHz, RMS; Measured Differentially
Period Jitter		2.4			2.2		ps	RMS
Cycle-to-Cycle Jitter		18			16		ps	1,000 cycles, Peak
Start-up Time		10			10		ms	Output valid time after power up, 25°C
Aging		$\pm 5$			$\pm 5$		ppm	25°C, 10 years

### Block Diagram



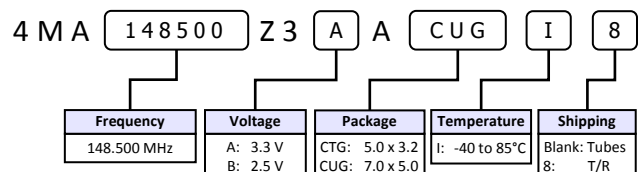
### Output Waveform



### Part Ordering Information

Package Size	Voltage	Ordering Code
7.0 x 5.0 mm	3.3 V	4MA148500Z3AACUGI
	2.5 V	4MA148500Z3BACUGI
5.0 x 3.2 mm	3.3 V	4MA148500Z3AACTGI
	2.5 V	4MA148500Z3BACTGI

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

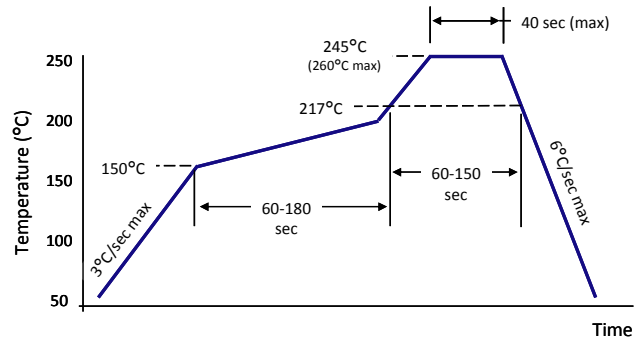


**Pin Description**

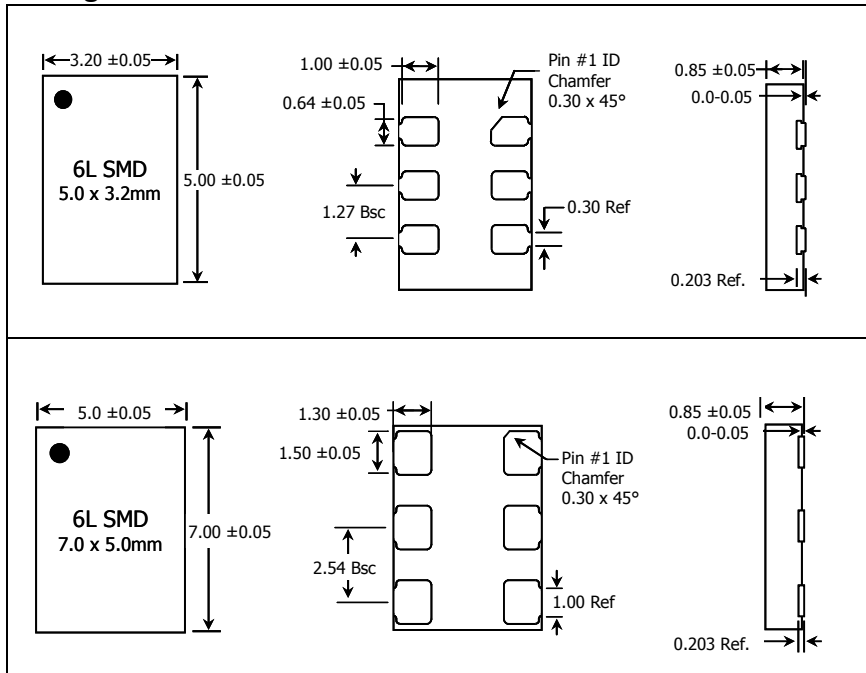
Pin #	Name	Description
1	OE	Output Enable*
2	NC	No Connect
3	GND	Ground
4	OUT+	Output
5	OUT-	Complementary Output
6	VDD	Power Supply Voltage

\* Pulled high internally

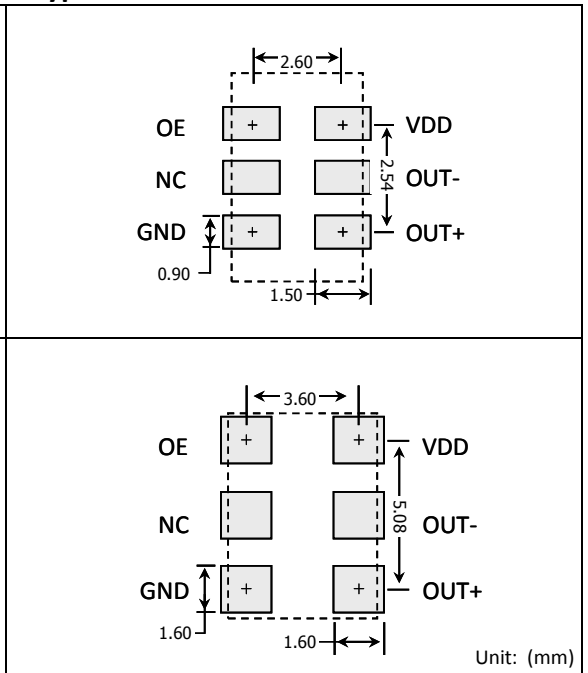
**Solder Reflow Profile**



**Package Outline and Dimensions**



**Typical PCB Land Pattern**



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