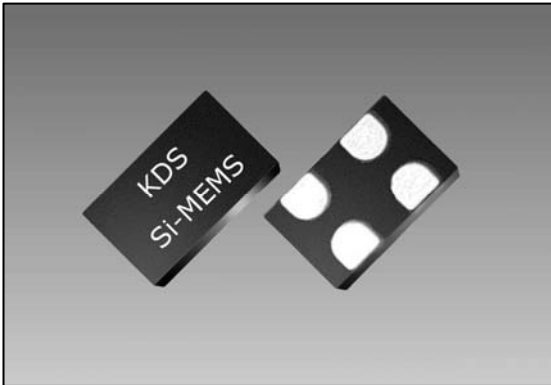


# Low Phase Jitter MEMS Oscillator

## MO8208

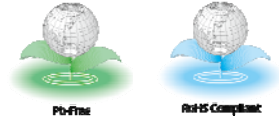


### ■ Features

- Any frequency between 1 and 80 MHz accurate 6 decimal places
- Standard 4-pin packages: 2.7 x 2.4 (compatible with 2.5 x 2.0 footprint), 3.2 x 2.5, 5.0 x 3.2, 7.0 x 5.0 mm
- Frequency stability as low as  $\pm 10 \times 10^{-6}$
- Ultra-Low phase Jitter: 0.5 ps (12 kHz to 20 MHz)
- Outstanding silicon reliability of 2 FIT or 500 million hour MTBF

### ■ Applications

- Computing, storage, networking, telecom, industrial control
- SATA, SAS, Ethernet, PCI Express, video, WiFi



### ■ Standard Specification

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	80	MHz	
Supply Voltage	V <sub>dd</sub>	+1.71	+1.8	+1.89	V	Supply voltages between +2.5V and +3.3V can be supported.
		+2.25	+2.5	+2.75		
		+2.52	+2.8	+3.08		
		+2.97	+3.3	+3.63		
Operating Temperature Range	T <sub>use</sub>	-20	–	+70	°C	Extended Commercial
		-40	–	+85		Industrial
Frequency Stability	F <sub>stab</sub>	-10	–	+10	x10 <sup>-6</sup>	Inclusive of initial tolerance at +25°C, and variations over operating temperature, rated power supply voltage and load.
		-20	–	+20		
		-25	–	+25		
		-50	–	+50		
1st year Aging	F <sub>aging</sub>	-1.5	–	+1.5	x10 <sup>-6</sup>	T <sub>A</sub> = +25°C
10-year Aging		-5.0	–	+5.0		T <sub>A</sub> = +25°C
Current Consumption	I <sub>dd</sub>	–	+31	+33	mA	No load condition, f = 20 MHz, V <sub>dd</sub> = +2.5V, +2.8V or +3.3V
		–	+29	+31		No load condition, f = 20 MHz, V <sub>dd</sub> = +1.8V
OE Disable Current	I <sub>od</sub>	–	–	+31	mA	V <sub>dd</sub> = +2.5V, +2.8V or +3.3V, OE = GND, output is Weakly Pulled Down
		–	–	+30		V <sub>dd</sub> = +1.8 V, OE = GND, output is Weakly Pulled Down
Standby Current	I <sub>std</sub>	–	–	+70	µA	V <sub>dd</sub> = +2.5V, +2.8V or +3.3V, $\overline{ST}$ = GND, output is Weakly Pulled Down
		–	–	+10		V <sub>dd</sub> = +1.8 V, $\overline{ST}$ = GND, output is Weakly Pulled Down
Duty Cycle	DC	45	–	55	%	
Output Low Voltage	V <sub>OL</sub>	–	–	V <sub>dd</sub> x 0.1	V	I <sub>OH</sub> = -6.0 mA, I <sub>OL</sub> = +6.0 mA, (V <sub>dd</sub> = +3.3V, +2.8V, +2.5V)
Output High Voltage	V <sub>OH</sub>	V <sub>dd</sub> x 0.9	–	–	V	I <sub>OH</sub> = -3.0 mA, I <sub>OL</sub> = +3.0 mA, (V <sub>dd</sub> = +1.8V)
Rise/Fall Time	t <sub>r,tf</sub>	–	1.2	2.0	ns	15 pF load, 10% - 90% V <sub>dd</sub>
Input Low Voltage	V <sub>IL</sub>	–	–	V <sub>dd</sub> x 0.3	V	Pin 1, OE or $\overline{ST}$
Input High Voltage	V <sub>IH</sub>	V <sub>dd</sub> x 0.7	–	–	V	Pin 1, OE or $\overline{ST}$
Startup Time	T <sub>start</sub>	–	7.0	10	ms	Measured from the time V <sub>dd</sub> reaches its rated minimum value
Enable/Disable Time	T <sub>oe</sub>	–	–	150	ns	f = 80 MHz, For other frequencies, T <sub>oe</sub> = 100 ns + 3 cycles
Resume Time	T <sub>resume</sub>	–	6.0	10	ms	In standby mode, measured from the time $\overline{ST}$ pin crosses 50% threshold.
RMS Period Jitter	T <sub>jitt</sub>	–	1.5	2.0	ps	f = 75 MHz, V <sub>dd</sub> = +1.8V
		–	2.0	3.0		
RMS Phase Jitter (random)	T <sub>phj</sub>	–	0.5	1.0	ps	f = 10 MHz, Integration bandwidth = 12 kHz to 20 MHz

Consult our sales representative for other specifications.

# Low Phase Jitter MEMS Oscillator

## MO8208

### ■ Dimensions and Patterns

Package Size – Dimensions (Unit: mm) <sup>[1]</sup>	Recommended Land Pattern (Unit: mm) <sup>[2]</sup>
<p><b>2.7 x 2.4 x 0.75 mm (100% compatible with 2.5 x 2.0 mm footprint)</b></p> <p>Top view dimensions: 2.7 ± 0.05 mm (width), 2.4 ± 0.05 mm (height). Pin locations: #1, #2, #3, #4. Marking: YXXXX.</p> <p>Side view dimension: 0.75 ± 0.05 mm (height).</p> <p>Bottom view dimensions: 1.25 mm (width), 0.85 mm (width), 1.00 mm (width), 0.5 mm (width).</p>	<p>Land pattern dimensions: 1.9 mm (width), 1.5 mm (height), 1.1 mm (width), 1.0 mm (height).</p>
<p><b>3.2 x 2.5 x 0.75 mm</b></p> <p>Top view dimensions: 3.2 ± 0.05 mm (width), 2.5 ± 0.05 mm (height). Pin locations: #1, #2, #3, #4. Marking: YXXXX.</p> <p>Side view dimension: 0.75 ± 0.05 mm (height).</p> <p>Bottom view dimensions: 2.1 mm (width), 0.9 mm (width), 0.9 mm (width), 0.7 mm (width).</p>	<p>Land pattern dimensions: 2.2 mm (width), 1.9 mm (height), 1.4 mm (width), 1.2 mm (height).</p>
<p><b>5.0 x 3.2 x 0.75 mm</b></p> <p>Top view dimensions: 5.0 ± 0.05 mm (width), 3.2 ± 0.05 mm (height). Pin locations: #1, #2, #3, #4. Marking: YXXXX.</p> <p>Side view dimension: 0.75 ± 0.05 mm (height).</p> <p>Bottom view dimensions: 2.39 mm (width), 1.1 mm (width), 1.15 mm (width).</p>	<p>Land pattern dimensions: 2.54 mm (width), 2.2 mm (height), 1.6 mm (height), 1.5 mm (width).</p>
<p><b>7.0 x 5.0 x 0.90 mm</b></p> <p>Top view dimensions: 7.0 ± 0.05 mm (width), 5.0 ± 0.05 mm (height). Pin locations: #1, #2, #3, #4. Marking: YXXXX.</p> <p>Side view dimension: 0.90 ± 0.10 mm (height).</p> <p>Bottom view dimensions: 5.08 mm (width), 1.4 mm (width), 1.1 mm (width).</p>	<p>Land pattern dimensions: 5.08 mm (width), 3.81 mm (height), 2.0 mm (height), 2.2 mm (width).</p>

#### Notes:

1. Top marking: Y denotes manufacturing origin and XXXX denotes manufacturing lot number. The value of "Y" will depend on the assembly location of the device.
2. A capacitor of value 0.1 μF between Vdd and GND is required.