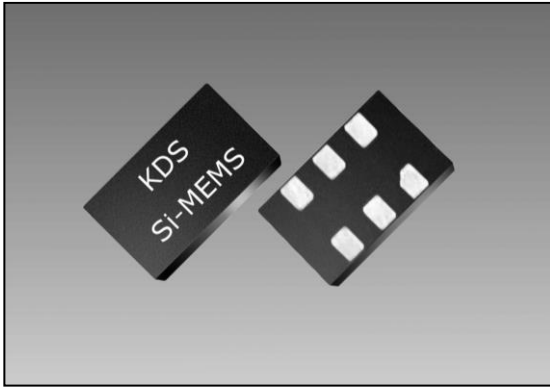


Voltage Controlled MEMS Oscillator

MO3821



■ Features

- Any frequency between 1MHz and 220MHz with 6 decimal places
- Industry-standard packages: 3.2 x 2.5, 5.0 x 3.2, and 7.0 x 5.0 mm
- Widest pull range options from ± 25 to $\pm 1600 \times 10^{-6}$
- 0.6ps RMS Phase jitter (random) over 12 kHz to 20 MHz bandwidth
- For frequencies higher than 220MHz, refer to MO3822 datasheet

■ Applications

- Ideal for SONET, Video, Instrumentation, Satellite applications
- Telecom, networking, broadband



■ Standard Specification

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	220	MHz	
Supply Voltage	Vdd	+2.25 +2.97	+2.5 +3.3	+2.75 +3.63	V	
Operating Temperature Range	T _{use}	-20 -40	– –	+70 +85	°C	Extended Commercial Industrial
Frequency Stability	F _{stab}	-10 -25 -50	– – –	+10 +25 +50	x10 ⁻⁶	Inclusive of Initial tolerance, operating temperature, rated power, supply voltage and load change
First Year Aging	F _{aging1}	-2.0	–	+2.0	x10 ⁻⁶	T _A = +25°C
10-year Aging	F _{aging10}	-5.0	–	+5.0	x10 ⁻⁶	T _A = +25°C
Startup Time	T _{start}	–	–	10	ms	
Duty Cycle	DC	45	–	55	%	
Pull Range	PR	$\pm 25, \pm 50, \pm 100, \pm 150, \pm 200, \pm 400, \pm 800, \pm 1600,$			x10 ⁻⁶	See the Absolute Pull Range and APR table of datasheet
Upper Control Voltage	VC _U	+2.4 +3.2	– –	– –	V	Vdd = +2.5V, Voltage at which maximum deviation is guaranteed. Vdd = +3.3V, Voltage at which maximum deviation is guaranteed.
Lower Control Voltage	VC _L	–	–	+0.1	V	Voltage at which minimum deviation is guaranteed.
Linearity	L _{in}	–	–	1.0	%	
Frequency Change Polarity	–	Positive slope			–	
LVPECL, DC and AC Characteristics						
Current Consumption	I _{dd}	–	+61	+69	mA	Excluding Load Termination Current, Vdd = +3.3V or +2.5V
OE Disable Supply Current	I _{oe}	–	–	+35	mA	OE = Low
Output Low Voltage	V _{OL}	Vdd - 1.9	–	Vdd - 1.5	V	
Output High Voltage	V _{OH}	Vdd - 1.1	–	Vdd - 0.7	V	
Output Differential Voltage Swing	V _{Swing}	+1.2	+1.6	+2.0	V	
Rise/Fall Time	Tr, Tf	–	300	500	ps	20% to 80%
OE Enable/Disable Time	T _{oe}	–	–	115	ns	f = 220 MHz - For other frequencies, T _{oe} = 100ns + 3 period
RMS Period Jitter	T _{jitt}	–	1.2	1.7	ps	f = 100 MHz, Vdd = +3.3V or +2.5V
		–	1.2	1.7		f = 156.25 MHz, Vdd = +3.3V or +2.5V
		–	1.2	1.7		f = 212.5 MHz, Vdd = +3.3V or +2.5V
RMS Phase Jitter (random)	T _{phj}	–	0.5	0.75	ps	f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds
LVDS, DC and AC Characteristics						
Current Consumption	I _{dd}	–	+47	+55	mA	Excluding Load Termination Current, Vdd = +3.3V or +2.5V
OE Disable Current	I _{oe}	–	–	+35	mA	OE = Low
Differential Output Voltage	V _{OD}	+200	+350	+500	mV	
V _{OD} Magnitude Change	ΔV_{OD}	–	–	+50	mV	
Offset Voltage	V _{OS}	+1.125	+1.2	+1.375	V	
V _{OS} Magnitude Change	ΔV_{OS}	–	–	+50	mV	
Rise/Fall Time	Tr, Tf	–	495	600	ps	20% to 80%
OE Enable/Disable Time	T _{oe}	–	–	115	ns	f = 220MHz - For other frequencies, T _{oe} = 100ns + 3 period
RMS Period Jitter	T _{jitt}	–	1.2	1.7	ps	f = 100 MHz, Vdd = +3.3V or +2.5V
		–	1.2	1.7		f = 156.25 MHz, Vdd = +3.3V or +2.5V
		–	1.2	1.7		f = 212.5 MHz, Vdd = +3.3V or +2.5V
RMS Phase Jitter (random)	T _{phj}	–	0.6	0.85	ps	f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds

Consult our sales representative for other specifications.

MO3821

■ Dimensions and Patterns

Package Size – Dimensions (Unit: mm) ^[1]	Recommended Land Pattern (Unit: mm) ^[2]														
<p>3.2 x 2.5x 0.75 mm</p> <p>YXXXX</p> <table border="1"> <caption>Pin Connections</caption> <thead> <tr> <th>Pin No.</th> <th>Connection</th> </tr> </thead> <tbody> <tr><td>#1</td><td>Vin</td></tr> <tr><td>#2</td><td>NC/OE</td></tr> <tr><td>#3</td><td>GND</td></tr> <tr><td>#4</td><td>Output+</td></tr> <tr><td>#5</td><td>Output-</td></tr> <tr><td>#6</td><td>Vdd</td></tr> </tbody> </table>	Pin No.	Connection	#1	Vin	#2	NC/OE	#3	GND	#4	Output+	#5	Output-	#6	Vdd	
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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 μ F between Vdd and GND is recommended.