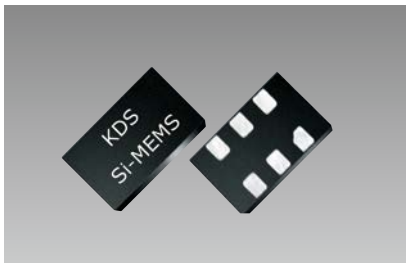
Voltage Controlled MEMS Oscillators (VCMO) - Super Low Jitter

MO3372/MO3373



■Features

- Industry-Standard packages: 3.2×2.5 mm, 5.0×3.2 mm, 7.0×5.0 mm
- Widest pull range options: ±25, ±50, ±80, ±100, ±150, ±200, ±400, ±800, ±1600, ±3200×10^{-6}
- 0.23 ps RMS phase jitter (Typ.)

Pb-Free

RoHS Compliant

■ Applications

- Telecom clock synchronization, instrumentation
- Low bandwidth analog PLL, jitter cleaner, clock recovery, audio
- Video, 3G/HD-SDI, FPGA, broadband and networking

Model	Output Frequency (MHz)	Frequency Tolerance (×10^{-6})	Supply Voltage (V)	Current Consumption (mA Typ.)	Size (mm)	Output
MO3372	1 to 220	±15, ±25, ±35, ±50	+2.25 to 3.63	+76 to +84	3.2×2.5×0.8, 5.0×3.2×0.8, 7.0×5.0×1.0 (QFN)	LVPECL LVDS HCSL
MO3373	220 to 725					

■ Standard Specification (MO3372)

Item	Legend	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	-	220	MHz	Accurate to 6 decimal places
Supply Voltage	Vdd	+2.97	+3.3	+3.63	V	
		+2.7	+3.0	+3.3		
		+2.52	+2.8	+3.08		
		+2.25	+2.5	+2.75		
Operating Temperature Range	T_use	-20	-	+70	℃	Extended Commercial
		-40	-	+85		Industrial
		-40	-	+95		
		-40	-	+105		Extended Industrial
Frequency Stability	F_stab	-15	-	+15	×10^{-6}	Inclusive of initial tolerance, operating temperature, rated power supply voltage, load variations, and first year aging at +25° C condition
		-25	-	+25		
		-35	-	+35		
		-50	-	+50		
Duty Cycle	DC	45	-	55	%	
Input Low Voltage	V_{IL}	-	-	Vdd×0.3	V	Pin 2, OE
Input High Voltage	V_{IH}	Vdd×0.7	-	-	V	Pin 2, OE
Start-up Time	T_start	-	-	3.0	ms	Measured from the time Vdd reaches its rated minimum value.
Enable and Disable Time	T_oe	-	-	3.8	μs	f = 156.25 MHz
Pull Range	PR	±25, ±50, ±80, ±100, ±150, ±200, ±400, ±800, ±1600, ±3200			×10^{-6}	
Output Disable Leakage Current	I_leak	-	+0.15	-	μA	OE = Low
Lower Control Voltage	VC_L	-	-	Vdd×0.1	V	Voltage at which minimum frequency deviation is guaranteed
Upper Control Voltage	VC_U	Vdd×0.9	-	-	V	Voltage at which maximum frequency deviation is guaranteed
Control Voltage Input Impedance	VC_z	-	10	-	MΩ	
Control Voltage Input Bandwidth	V_c	-	10	-	kHz	
Pull Range Linearity	Lin	-	-	1	%	
Frequency Change Polarity	-	Positive Slope			-	
RMS Period Jitter [1]	T_jitt	-	1.0	1.6	ps	f = 156.25 MHz, Vdd = +3.3V or +2.5V
LVPECL Specific						
Current Consumption	Idd	-	-	+92	mA	Excluding Load Termination Current, Vdd = +3.3V or +2.5V
OE Disable Supply Current	I_oe	-	-	+61	mA	OE = Low
Maximum Output Current	I_driver	-	-	+30	mA	Maximum average current drawn from OUT+ or OUT-
Output Low Voltage	V_{OL}	Vdd - 2.0	-	Vdd - 1.5	V	
Output High Voltage	V_{OH}	Vdd - 1.15	-	Vdd - 0.7	V	
Output Differential Voltage Swing	V_Swing	+1.2	+1.6	+2.0	V	
Rise and Fall Time	Tr, Tf	-	225	290	ps	20% to 80%
RMS Phase Jitter (random)	T_phj	-	0.225	0.275	ps	Note [2]
LVDS Specific						
Current Consumption	Idd	-	-	+84	mA	Excluding Load Termination Current, Vdd = +3.3V or +2.5V
OE Disable Supply Current	I_oe	-	-	+62	mA	OE = Low
Rise and Fall Time	Tr,Tf	-	400	470	ps	Measured with 2pF capacitive loading to GND, 20% to 80%
Differential Output Voltage	V_{OD}	+250	-	+450	mV	
V_{OD} Magnitude Change	ΔV_{OD}	-	-	+50	mV	
Offset Voltage	V_{OS}	+1.125	-	+1.375	V	
V_{OS} Magnitude Change	ΔV_{OS}	-	-	+50	mV	
RMS Phase Jitter (random)	T_phj	-	0.235	0.275	ps	Note [2]
HCSL Specific						
Current Consumption	Idd	-	-	+97	mA	Excluding Load Termination Current, Vdd = +3.3V or +2.5V
OE Disable Supply Current	I_oe	-	-	+62	mA	OE = Low
Rise and Fall Time	Tr, Tf	-	360	495	ps	Measured with 2pF capacitive loading to GND, 20% to 80%
Output Low Voltage	V_{OL}	-0.05	-	+0.05	V	
Output High Voltage	V_{OH}	+0.6	-	+0.9	V	
Output Differential Voltage Swing	V_Swing	+1.2	+1.4	+1.8	V	
RMS Phase Jitter (random)	T_phj	-	0.23	0.275	ps	Note [2]
Packing Unit	1000pcs./reel (φ180) or 3000pcs./reel (φ180: 3225 package)					

[1]. Measured according to JESD65B
[2]. 5.0×3.2 and 3.2×2.5 mm package, f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdd levels, includes spurs. Temperature ranges -20 to +70°C and -40 to +85°C