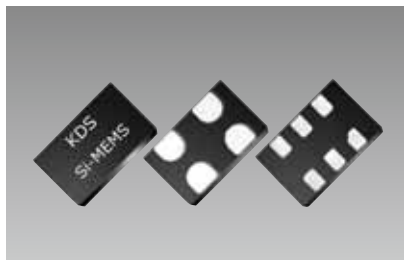


Voltage Controlled MEMS Oscillators (VCMO)

MO3807/MO3808/MO3809



■ Features

- Frequency Tolerance as tight as $\pm 25 \times 10^{-6}$
- Widest pull range options: ± 25 to $\pm 1600 \times 10^{-6}$
- Industry-Standard packages:
2.7×2.4 mm (4-pin, compatible with 2.5×2.0 mm footprint)
3.2×2.5 mm (4-pin), 5.0×3.2 mm (6-pin),
7.0×5.0 mm (6-pin)

■ 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 ($\times 10^{-6}$)	Supply Voltage (V)	Current Consumption (mA Typ.)	Size (mm)	Output
MO3807	30 standard frequencies	$\pm 25, \pm 50$	+1.71 to +1.89, +2.25 to +3.63	+29 to +36 (+10 μ A stby)	2.7×2.4×0.8, 3.2×2.5×0.8, 5.0×3.2×0.8, 7.0×5.0×1.0 (QFN)	LVCMOS
MO3808	1 to 80	$\pm 10, \pm 25, \pm 50$				
MO3809	80 to 220					

■ Standard Specification (MO3808)

Item	Legend	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	-	80	MHz	
Supply Voltage	V _{dd}	+1.71	+1.8	+1.89	V	Additional 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 _{use}	-20	-	+70	°C	Extended Commercial Industrial
		-40	-	+85		
Frequency Stability	F _{stab}	-10	-	+10	$\times 10^{-6}$	Inclusive of Initial tolerance[4] at +25° C and variation over temperature, rated supply voltage and load.
		-25	-	+25		
		-50	-	+50		
10-year Aging	F _{aging10}	-5.0	-	+5.0	$\times 10^{-6}$	10 years, T _A = +25°C
Current Consumption	I _{dd}	-	+31	+33	mA	No load condition, f = 20 MHz, V _{dd} = +2.5V, +2.8V or +3.3V
		-	+29	+31		No load condition, f = 20 MHz, V _{dd} = +1.8V
Standby Current	I _{std}	-	-	+70	μ A	V _{dd} = +2.5V, +2.8V, +3.3V, ST = GND, Output is weakly pulled down
		-	-	+10		V _{dd} = +1.8V, ST = GND, Output is weakly pulled down
Duty Cycle	DC	45	-	55	%	All V _{dds}
Output Low Voltage	V _{OL}	-	-	V _{dd} ×0.1	V	I _{OL} = +7.0 mA (V _{dd} = +3.0V or +3.3V) I _{OL} = +4.0 mA (V _{dd} = +2.8V or +2.5V) I _{OL} = +2.0 mA (V _{dd} = +1.8V)
Output High Voltage	V _{OH}	V _{dd} ×0.9	-	-	V	I _{OH} = -7.0 mA (V _{dd} = +3.0V or +3.3V) I _{OH} = -4.0 mA (V _{dd} = +2.8V or +2.5V) I _{OH} = -2.0 mA (V _{dd} = +1.8V)
Rise and Fall Time	Tr, Tf	-	1.5	2.0	ns	V _{dd} = +1.8V, +2.5V, +2.8V or +3.3V, 10% to 90% V _{dd} level
Pull Range [5,6]	PR	$\pm 25, \pm 50, \pm 100, \pm 150, \pm 200, \pm 400, \pm 800, \pm 1600,$	-	-	$\times 10^{-6}$	See the Absolute Pull Range and APR table of datasheet
Upper Control Voltage	VC _U	+1.7	-	-	V	V _{dd} = +1.8V, Voltage at which maximum deviation is guaranteed.
		+2.4	-	-		V _{dd} = +2.5V, Voltage at which maximum deviation is guaranteed.
		+2.7	-	-		V _{dd} = +2.8V, Voltage at which maximum deviation is guaranteed.
		+3.2	-	-		V _{dd} = +3.3V, Voltage at which maximum deviation is guaranteed.
Lower Control Voltage	VC _L	-	-	+0.1	V	Voltage at which minimum deviation is guaranteed.
Control Voltage Input Impedance	Z _{in}	100	-	-	k Ω	
Control Voltage Input Capacitance	C _{in}	-	5.0	-	pF	
Linearity	Lin	-	0.1	1.0	%	
Frequency Change Polarity	-	Positive slope			-	
Start-up Time	T _{start}	-	-	10	ms	
Enable and Disable Time	T _{oe}	-	-	180	ns	f = 40MHz, all V _{dds} , For other freq., T _{oe} = 100 ns + 3 clock periods
Resume Time	T _{resume}	-	7.0	10	ms	
RMS Period Jitter	T _{jitt}	-	1.5	2.0	ps	f = 20 MHz, V _{dd} = +2.5V, +2.8V or +3.3V
		-	2.0	3.0		f = 20 MHz, V _{dd} = +1.8V
RMS Phase Jitter (random)	T _{phj}	-	0.5	1.0	ps	f = 20 MHz, Integration bandwidth = 12 kHz to 20 MHz, All V _{dds}
Packing Unit	1000pcs./reel (ϕ 180) or 3000pcs./reel (ϕ 180: 2724, 3225 package)					

[1]. All electrical specifications in the above table are specified with 15 pF output load and for all V_{dd}(s) unless otherwise stated.

[2]. The typical value of any parameter in the Electrical Characteristics table is specified for the nominal value of the highest voltage option for that parameter and at +25° C temperature.

[3]. All max and min specifications are guaranteed across rated voltage variations and operating temperature ranges, unless specified otherwise.

[4]. Initial tolerance is measured at V_{in} = V_{dd}/2.

[5]. Absolute Pull Range (APR) is defined as the guaranteed pull range over temperature and voltage.

[6]. APR = pull range (PR) - frequency tolerance (F_{stab}) - Aging (F_{aging})