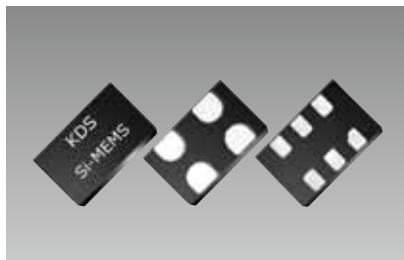


MEMS Oscillators with Spread Spectrum Function (SSCG)

MO9002/MO9003/MO9005



■ Features

- Spread options
Center Spread: $\pm 0.5\%$, $\pm 0.25\%$
Down Spread: -1% , -0.5%
- Standby, output enable or spread disable mode
- <30 ps cycle-to-cycle jitter

■ Applications

- Printers
- Flat panel drivers
- PCI
- Microprocessors



Model	Output Frequency (MHz)	Frequency Tolerance ($\times 10^{-6}$)	Supply Voltage (V)	Current Consumption (mA Typ.)	Size (mm)	Output
MO9002	1 to 220	± 25 , ± 50	+1.71 to +1.89, +2.25 to +3.63	+48 to +75	5.0 \times 3.2 \times 0.8, 7.0 \times 5.0 \times 1.0 (QFN)	LVPECL CML LVDS HCSSL
MO9003	1 to 110	± 50 , ± 100		+3.2 to +4.1 (+0.4 to +4.3 μ A stby)	2.5 \times 2.0 \times 0.8, 3.2 \times 2.5 \times 0.8, 5.0 \times 3.2 \times 0.8, 7.0 \times 5.0 \times 1.0 (QFN)	LVCMOS
MO9005	1 to 141	± 20 , ± 25 , ± 50	+1.62 to +1.98, +2.25 to +3.63	5.0 to 6.5 (0.4 to 4.3 μ A stby)	2.0 \times 1.6 \times 0.8, 2.5 \times 2.0 \times 0.8, 3.2 \times 2.5 \times 0.8 (QFN)	

■ Standard Specification (MO9003)

Item	Legend	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	-	110	MHz	
Supply Voltage	V _{dd}	+1.71	+1.8	+1.89	V	
		+2.25	+2.5	+2.75		
		+2.52	+2.8	+3.08		
		+2.7	+3.0	+3.3		
		+2.97	+3.3	+3.63		
Operating Temperature Range	T _{use}	-20	-	+70	°C	Extended Commercial
		-40	-	+85		Industrial
Frequency Tolerance	F _{tol}	-50	-	+50	$\times 10^{-6}$	Inclusive of: Initial stability, operating temperature, rated power, supply voltage change, load change, shock and vibration, Spread Off
		-100	-	+100		
Current Consumption	I _{dd}	-	+3.7	+4.1	mA	No load condition, f = 20 MHz, V _{dd} = +2.5V, +2.8V or +3.3V
		-	+3.2	+3.5		No load condition, f = 20 MHz, V _{dd} = +1.8V
Standby Current	I _{std}	-	+2.4	+4.3	μ A	\overline{ST} = GND, V _{dd} = +3.3V, Output is Weakly Pulled Down
		-	+1.2	+2.2		\overline{ST} = GND, V _{dd} = +2.5 or +2.8V, Output is Weakly Pulled Down
		-	+0.4	+0.8		\overline{ST} = GND, V _{dd} = +1.8V, Output is Weakly Pulled Down
Spread Spectrum	-	$\pm 0.25 / \pm 0.5$			%	Center Spread:
		-0.5 / -1.0				Down Spread:
Duty Cycle	DC	45	-	55	%	All V _{dds} , f \leq 70 MHz
		40	-	60		All V _{dds} , f > 70 MHz
Output Low Voltage	V _{OL}	-	-	V _{dd} \times 0.1	V	I _{OL} = +4.0 mA (V _{dd} = +3.3V) I _{OL} = +3.0 mA (V _{dd} = +2.8V and +2.5V) I _{OL} = +2.0 mA (V _{dd} = +1.8V)
Output High Voltage	V _{OH}	V _{dd} \times 0.9	-	-	V	I _{OH} = -4.0 mA (V _{dd} = +3.3V) I _{OH} = -3.0 mA (V _{dd} = +2.8V and +2.5V) I _{OH} = -2.0 mA (V _{dd} = +1.8V)
Rise and Fall Time	Tr, Tf	-	1.0	2.0	ns	20% to 80% V _{dd} = +2.5V, +2.8V or +3.3V, 15 pF load
		-	1.3	2.5		20% to 80% V _{dd} = +1.8V, 15 pF load
Input Low Voltage	V _{IL}	-	-	V _{dd} \times 0.3	V	Pin 1, OE or \overline{ST} or SD
Input High Voltage	V _{IH}	V _{dd} \times 0.7	-	-	V	Pin 1, OE or \overline{ST} or SD
Output Load	L _d	-	-	15	pF	At maximum frequency and supply voltage.
Cycle-to-Cycle Jitter	T _{cyc}	-	-	26	ps	f = 50 MHz, Spread = ON
		-	-	26		f = 50 MHz, Spread = OFF
Packing Unit	1000pcs./reel (ϕ 180)					