

Helping Customers Innovate, Improve & Grow

Features

- Any frequency between 1 MHz and 80 MHz with 6 decimal places of accuracy
- CMOS compatible output
- Industrial and extended commercial temperature ranges
- Industry-standard packages: 3.2 mm x 2.5 mm (4-pin), 5.0 mm x 3.2 mm (6-pin), 7.0 mm x 5.0 mm (6-pin)

Applications

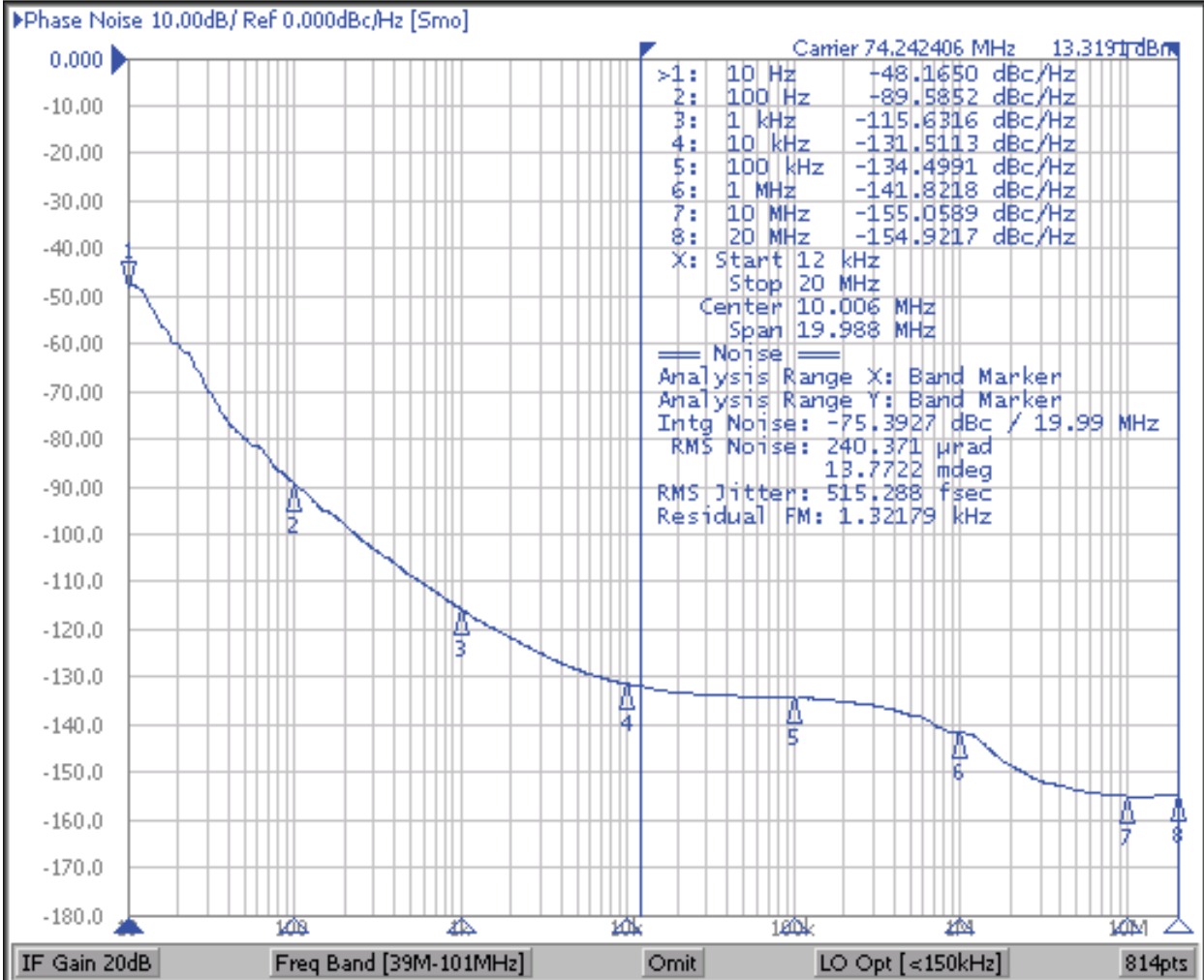
- Ideal for telecom clock synchronization, low bandwidth analog PLL, jitter cleaning, clock recovery, audio, video, FPGA, broadband and networking

Performance Specifications

Parameter and Conditions	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Frequency Range	f	1	–	80	MHz	
Frequency Stability	F_stab	-20	–	+20	PPM	Inclusive of Initial tolerance at 25 °C, and variations over operating temperature, aging, supply voltage and load
		-50	–	+50	PPM	
Aging	F_aging	–	–	±5	PPM	10 years
Operating Temperature Range	T_use	-20	–	+70	°C	Extended Commercial
		-40	–	+85	°C	Industrial
Supply Voltage	Vdd	1.71	1.8	1.89	V	Contact Vectron for any other voltage support between 2.5V and 3.3V
		2.25	2.5	2.75	V	
		2.52	2.8	3.08	V	
		2.97	3.3	3.63	V	
Pull Range	PR	±50, ±80, ±100			PPM	
Upper Control Voltage	VC_U	1.7	–	–	V	Vdd = 1.8 V, Voltage at which maximum deviation is guaranteed.
		2.4	–	–	V	Vdd = 2.5 V, Voltage at which maximum deviation is guaranteed.
		2.7	–	–	V	Vdd = 2.8 V, Voltage at which maximum deviation is guaranteed.
		3.2	–	–	V	Vdd = 3.3 V, 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_vin	100	–	–	kΩ	For the voltage control pin
Linearity	Lin	–	0.1	1	%	
Frequency Change Polarity		Positive slope				
Control Voltage Bandwidth (-3dB)	V_BW	–	8	–	kHz	Contact Vectron for 16 kHz and other high bandwidth options
Current Consumption	Idd	–	31	33	mA	No load condition, f = 20 MHz, Vdd = 2.5 V, 2.8 V or 3.3 V
		–	29	31	mA	No load condition, f = 20 MHz, Vdd = 1.8 V
Standby Current	I_std	–	–	70	µA	All Vdds, ST = GND, output is Weakly Pulled Down
Duty Cycle	DC	45	–	55	%	All Vdds
Rise/Fall Time	Tr, Tf	–	1.5	2	ns	Vdd = 1.8, 2.5, 2.8 or 3.3 V, 10% - 90% Vdd level
Output Voltage High	VOH	90%	–	–	Vdd	OH = -7 mA, IOL = 7 mA, (Vdd = 3.3 V) IOH = -4 mA, IOL = 4 mA, (Vdd = 2.8 V and Vdd = 2.5 V) IOH = -2 mA, IOL = 2 mA, (Vdd = 1.8 V)
Output Voltage Low	VOL	–	–	10%	Vdd	
Input Pull-up Impedance	Z_in	–	100	250	kΩ	For the OE/ST pin if available
Start-up Time	T_start	–	6	10	ms	
OE Enable/Disable Time	T_oe	–	–	150	ns	f=80 MHz, all Vdds. For other freq, T_oe = 100 ns + 3 cycles
Resume Time	T_resume	–	–	10	ms	Measured from the time ST pin crosses 50% threshold
RMS Period Jitter	T_jitt	–	1.5	2	ps	f = 75 MHz, Vdd = 2.5 V, 2.8 V or 3.3 V
		–	2	3	ps	f = 75 MHz, Vdd = 1.8 V
RMS Phase Jitter (random)	T_phj	–	0.6	1	ps	f = 75 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds

Typical Phase Noise

Agilent E5052A Signal Source Analyzer



Phase Noise Start 10 Hz Stop 20 MHz 8/8

Phase Noise: Hold Cor Ctrl 1.65V Pow 3.3V Attn 10dB ExtRef Stop Svc 2012-12-20 11:32

Save/Recall

Save State

Recall State

Recall by
File Name

Save
Data Trace ...

Save
Memory Trace ...

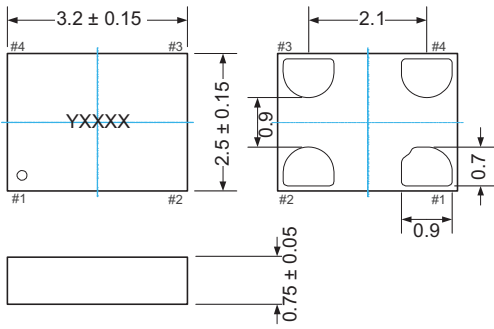
Explorer

Return

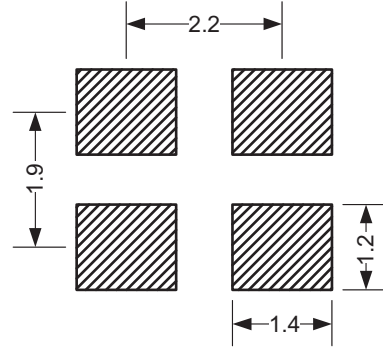
Packaging and Pinout

Package Outline & Dimensions (Unit: mm)

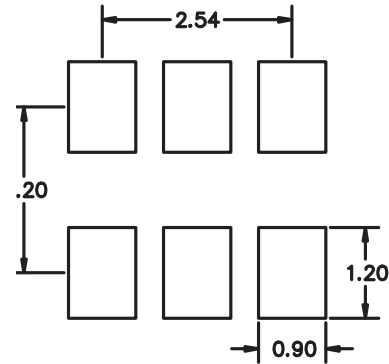
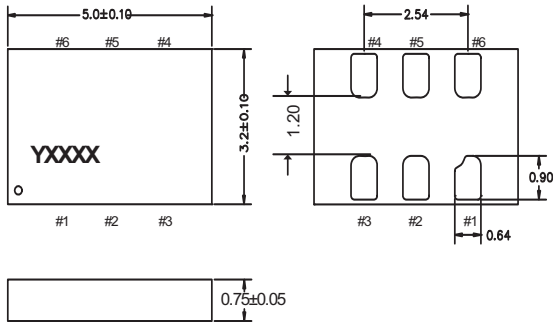
3.2 x 2.5 x 0.75 mm



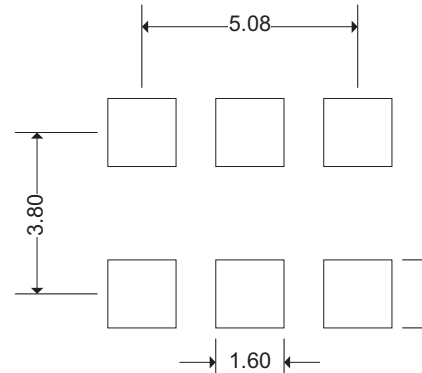
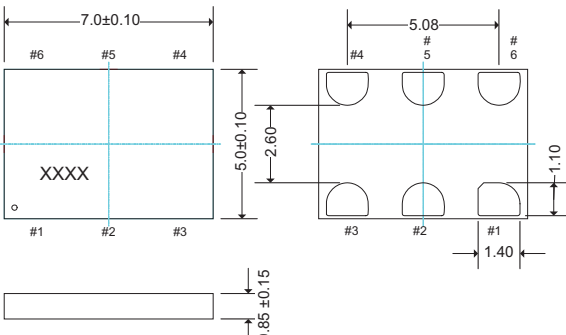
Recommended Land Pattern (Unit: mm)



5.0 x 3.2 x 0.75 mm



7.0 x 5.0 x 0.90 mm



4 pin package: Pin Connections

Pin	Symbol	Functionality
1	VIN	0-Vdd: Produces voltage dependent frequency change
2	GND	VDD Power Supply Ground
3	CLK	Oscillator output
4	Vdd	Power supply voltage

6 pin package: Pin Connections

Pin	Symbol	Functionality
1	VIN	0-Vdd: Produces voltage dependent frequency change
2 (options)	NC	H or L or Open: No effect on output frequency or other device functions
	OE	H or Open: specified frequency output, L: output is high impedance
	ST	H or Open: specified frequency output, L: output is low level (weak pull down). Oscillation stops
3	GND	VDD Power Supply Ground
4	CLK	Oscillator output
5	NC	Do Not Connect; Leave it floating
6	Vdd	Power supply voltage

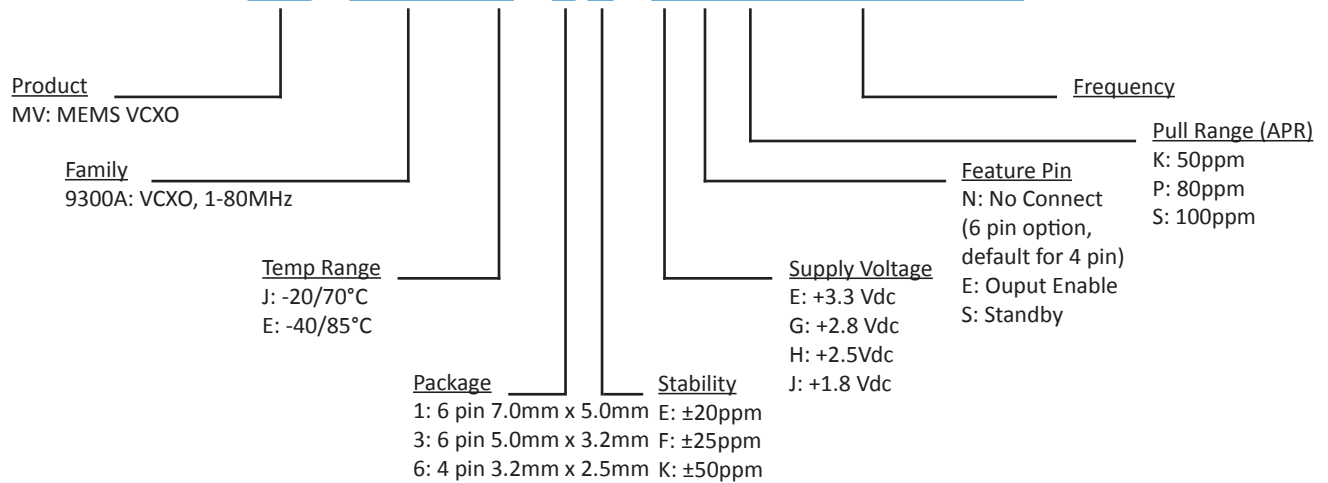
Absolute Maximum Ratings and Test Compliance

Maximum Ratings			
Parameter	Min.	Max.	Unit
Storage Temperature	-65	150	°C
VDD	-0.5	4	V
Electrostatic Discharge	–	6000	V
Soldering Temperature (follow standard Pb free soldering guidelines)	–	260	°C
Program Retention over -40 to 125°C, Process, Vdd (0 to 3.65 V)	1,000+	-	Years

Environmental Compliance	
Parameter	Condition/Test Method
Mechanical Shock	MIL-STD-883F, Method 2002
Mechanical Vibration	MIL-STD-883F, Method 2007
Temperature Cycle	JESD22, Method A104
Solderability	MIL-STD-883F, Method 2003
Moisture Sensitivity Level	MSL1 @ 260°C

Ordering Information

MV - 9300A E - 1 F - E E K 25M000000



Notes:

- Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
- Subject to technical modification.
- Contact factory for availability.

Revision History

Revision	Change Summary	Date
1.0	Product Release	June 2013
1.1	Knowles logo and address change	Feb 2014
1.2	Add ± 20 ppm temperature stability	Aug 2014

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