PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

7.0 x 5.0 x 0.85 mm

ASVMB

Pb RoHS/RoHS II Compliant

Moisture Sensitivity Level – MSL 1

FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- 2nd Generation MEMS Technology with reduced jiter by Discera
- Low Power Consumption <10mA
- Exceptional Stability +/- 10ppm Over Temp. at -40 to +105°C, +/- 5ppm over -40 to +85°C
- Available in 30kG Shock Resistance Configuration
- Compact QFN Plastic Packaging

APPLICATIONS:

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Computers and Peripherals
- Lower Cost Crystal Oscillator Replacement
- Portable Electronics (MP3 Players, Games)
- Consumer Electronics such as TV's, DVR's, etc.
- Vibrant, Shock-Prone & Humid Environments for Industrial Equipment
- Demanding Military & Automotive Electronics

MEMS TECHNOLOGY

STANDARD SPECIFICATIONS:

Common Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range:	1.0		150	MHz	
Operating Temperature:	0		+70	°C	See options
Storage Temperature:	-55		+150	°C	
Overall Frequency Stability*:	-50		+50	ppm	See options
Supply Voltage (Vdd):	+1.8 ~ +3.3			V	
Output Load:			15, 25, or 40	pF	See options
	10			kΩ	
Symmetry:	45		55	%	@1/2Vdd
Startup Time:		1.5	3.0	ms	
Disable Time:		20	100	ns	
Disable Stand-by Current:			15	uA	
Tri-state Function (Stand-by) :	"1" (VIH≥0.75*Vdd) or Open: Oscillation "0" (VIL<0.25*Vdd) : Hi Z			V	
Aging:	-5.0		+5.0	ppm	First year

Key Electrical Specifications – V_{dd} = 1.8V

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz		5	15	mA	CL=0p
	40.0 to 79.9999MHz		6	15	mA	RL=∞
	80.0 to 124.9999MHz		7	15	mA	T=25°C
	125.0 to 150MHz		8	15	mA	(Standard CL: 15pF)
	1.0 to 39.9999MHz		6	15	mA	CL=0p
	40.0 to 79.9999MHz		7	15	mA	RL=∞
	80.0 to 124.9999MHz		8	15	mA	T=25°C
	125.0 to 150MHz		9	15	mA	(CL option: 25pF)
	1.0 to 39.9999MHz		7	15	mA	CL=0p
	40.0 to 79.9999MHz		8	15	mA	RL=∞
	80.0 to 124.9999MHz		9	15	mA	T=25°C
	125.0 to 150MHz		10	15	mA	(CL option: 40pF)
Output Voltage:	V_{OH}	0.8*V_{dd}			V	
	V_{OL}			0.2*V_{dd}	V	CL=15, 25, 40pF
Rise Time: Fall Time:	Tr		1.8	3.0	ns	CL=15pF; T=25°C
	Tf		1.0	3.0	ns	20%/80%*VDD
	Tr		1.5	3.0	ns	CL=25pF; T=25°C
	Tf		1.2	3.0	ns	20%/80%*VDD
	Tr		1.4	3.0	ns	CL=40pF; T=25°C
	Tf		1.1	3.0	ns	20%/80%*VDD
Cycle to Cycle Jitter:			60		ps	F=100MHz
Period Jitter RMS:			10		ps	F=100MHz

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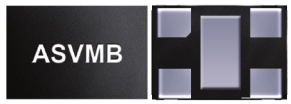

7.0 x 5.0 x 0.85 mm

Pb RoHS/RoHS II Compliant

Key Electrical Specifications – V_{dd} = 2.5V

Parameters			Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz			6	15	mA	CL=0p RL=∞ T=25°C (Standard CL: 15pF)
	40.0 to 79.9999MHz			7	15	mA	
	80.0 to 124.9999MHz			8	15	mA	
	125.0 to 150MHz			9	15	mA	
	1.0 to 39.9999MHz			7	15	mA	CL=0p RL=∞ T=25°C (CL option: 25pF)
	40.0 to 79.9999MHz			8	15	mA	
	80.0 to 124.9999MHz			9	15	mA	
	125.0 to 150MHz			10	15	mA	
	1.0 to 39.9999MHz			8	16	mA	CL=0p RL=∞ T=25°C (CL option: 40pF)
	40.0 to 79.9999MHz			9	16	mA	
	80.0 to 124.9999MHz			10	16	mA	
	125.0 to 150MHz			11	16	mA	
Output Voltage:		V_{OH}	0.8*V_{dd}			V	
		V_{OL}			0.2*V_{dd}	V	CL=15, 25pF
		V_{OH}	0.9*V_{dd}			V	
		V_{OL}			0.1*V_{dd}	V	CL=40pF
Rise Time: Fall Time:		Tr		1.0	2.0	ns	CL=15pF; T=25°C 20%/80%*VDD
		Tf		0.9	2.0	ns	
		Tr		1.1	2.0	ns	CL=25pF; T=25°C 20%/80%*VDD
		Tf		0.9	2.0	ns	
		Tr		1.0	2.0	ns	CL=40pF; T=25°C 20%/80%*VDD
		Tf		0.9	2.0	ns	
Cycle to Cycle Jitter:				50		ps	F=100MHz
Period Jitter RMS:				5		ps	F=100MHz

Key Electrical Specifications – V_{dd} = 3.3V

Parameters			Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz			7	15	mA	CL=0p RL=∞ T=25°C (Standard CL: 15pF)
	40.0 to 79.9999MHz			8	15	mA	
	80.0 to 124.9999MHz			9	15	mA	
	125.0 to 150MHz			10	15	mA	
	1.0 to 39.9999MHz			8	16	mA	CL=0p RL=∞ T=25°C (CL option: 25pF)
	40.0 to 79.9999MHz			9	16	mA	
	80.0 to 124.9999MHz			10	16	mA	
	125.0 to 150MHz			11	16	mA	
	1.0 to 39.9999MHz			8	16	mA	CL=0p RL=∞ T=25°C (CL option: 40pF)
	40.0 to 79.9999MHz			9	16	mA	
	80.0 to 124.9999MHz			10	16	mA	
	125.0 to 150MHz			11	16	mA	
Output Voltage:		V_{OH}	0.8*V_{dd}			V	
		V_{OL}			0.2*V_{dd}	V	CL=15pF
		V_{OH}	0.9*V_{dd}			V	
		V_{OL}			0.1*V_{dd}	V	CL=25, 40pF
Rise Time: Fall Time:		Tr		1.0	2.0	ns	CL=15pF; T=25°C 20%/80%*VDD
		Tf		0.9	2.0	ns	
		Tr		1.0	2.0	ns	CL=25pF; T=25°C 20%/80%*VDD
		Tf		0.9	2.0	ns	
		Tr		0.8	2.0	ns	CL=40pF; T=25°C 20%/80%*VDD
		Tf		0.8	2.0	ns	
Cycle to Cycle Jitter:				50		ps	F=100MHz
Period Jitter RMS:				5		ps	F=100MHz

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Absolute Maximum Ratings

Item	Minimum	Maximum	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	Vdd+0.3	V	
Junction Temp.		+150	°C	
Storage Temp.	-55	+150	°C	
Soldering Temp.		+260	°C	40sec max
ESD HBM MM CDM		 4,000 200 1,500	V	

OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASVMB - ☐ MHz - ☐☐ - ☐ - ☐

Frequency in MHz	Operating Temp.	Overall Freq. Stability	Output Load	Packaging
e.g. 14.3181 MHz (Maximum 4 digits after decimal)	Blank: 0°C ~ +70°C	C: ±50ppm (STD)	Blank: 15pF	Blank*: 50pcs / Tube
	E: -20°C ~ +70°C	Y: ±10ppm	25: 25pF	T: 1,000pcs / reel
	L: -40°C ~ +85°C	R: ±25 ppm	40: 40pF	T3: 3,000pcs / reel
	X: -40°C ~ +105°C			

* For Quick turn-around programmable orders < 1000pcs: Due to the immediate availability of stock and the qty of the order, the parts may be delivered as BULK: Cut Tape, Loose parts in Antistatic Bag or in Tube(s). The MOQ per the series will still apply for Tube packaging.

Un- Programmed Orders

Blank un-programmed oscillators and our low cost portable programmer are available for quick turn engineering requirements. Please call ABRACON or visit MEMSpeed Pro site http://www.abracon.com/memspeedpro/memspeedpro.html for more information.

ASVMB - BLANK - ☐☐ - ☐ - ☐

Operating Temp.	Overall Freq. Stability	Output Load	Packaging
Blank: 0°C ~ +70°C	C: ±50ppm (STD)	Blank: 15pF	Blank: 50pcs / Tube
E: -20°C ~ +70°C	Y: ±10ppm	25: 25pF	T: 1,000pcs / reel
L: -40°C ~ +85°C	R: ±25 ppm	40: 40pF	T3: 3,000pcs / reel
X: -40°C ~ +105°C			

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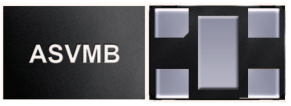
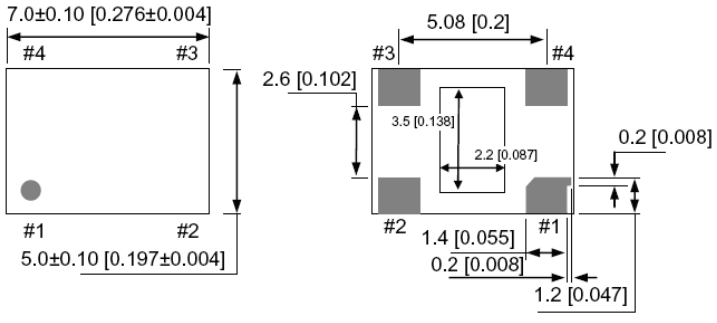


7.0 x 5.0 x 0.85 mm

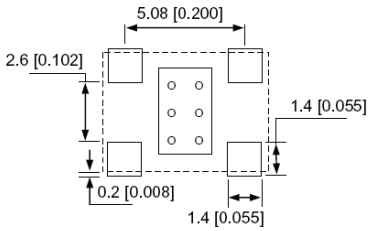
OUTLINE DIMENSIONS:



No.	Pin Terminal
1	Standby
2	GND
3	Output
4	VDD

Center Pad: NC/GND

Recommended Land Pattern

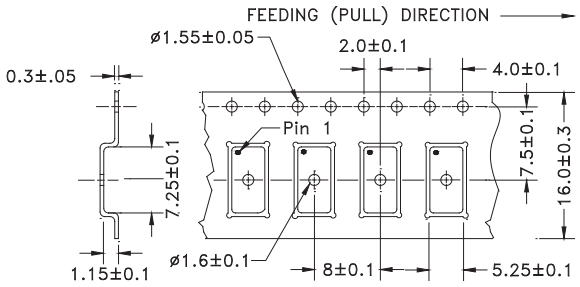


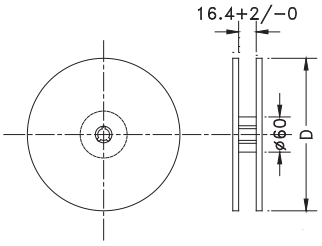
Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

Dimensions: mm (inches)

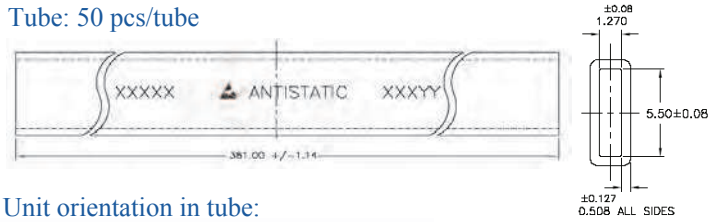
TAPE AND REEL:

T= 1,000pcs/reel (D=180mm)
T3= 3,000pcs/reel (D=330mm)





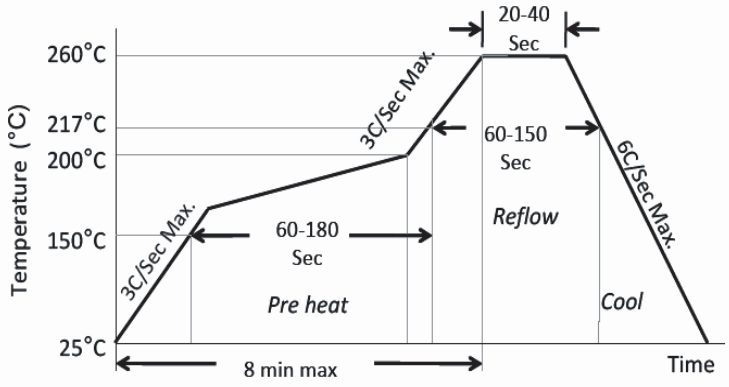
Tube: 50 pcs/tube



Unit orientation in tube:

Dimensions: mm

REFLOW PROFILE:



Ramp-Up Rate (200°C to Peak Temp)	3°C/Sec Max.
Preheat Time 150°C to 200°C	60-180 Sec
Time maintained above 217°C	60-150 Sec
Peak Temperature	255-260°C
Time within 5°C of actual Peak	20-40 Sec
Ramp-Down Rate	6°C/Sec Max.
Time 25°C to Peak Temperature	8 min Max.

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