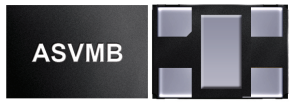
PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASVMB



7.0 x 5.0 x 0.85 mm

Pb RoHS Compliant

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" (VIH<0.25*Vdd) : Hi Z			V	
Aging:	-5.0	-----	+5.0	ppm	First year

Key Electrical Specifications – Vdd = 1.8V

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz	-----	5	15	mA	CL=0pF
	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=0pF
	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=0pF
	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}	$0.8*V_d$	-----	-----	V	
	V_{OL}	-----	-----	$0.2*V_d$	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:		-----	100	-----	ps	F=100MHz CL=15pF
		-----	55	-----		F=100MHz CL=25pF
		-----	55	-----		F=100MHz CL=40pF
Period Jitter RMS:		-----	12	-----	ps	F=100MHz CL=15pF
		-----	10	-----		F=100MHz CL=25pF
		-----	10	-----		F=100MHz CL=40pF

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tel 949-546-8000 | fax 949-546-8001 | www.abracon.com

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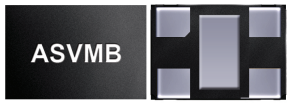

RoHS Compliant

7.0 x 5.0 x 0.85 mm

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=0pF 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=0pF 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=0pF 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	
Period Jitter RMS:			-----	6.5	-----	ps	F=100MHz CL=15pF
			-----	5	-----		F=100MHz CL=25pF
			-----	5	-----		F=100MHz CL=40pF
Cycle to Cycle Jitter:			-----	80	-----	ps	F=100MHz CL=15pF
			-----	40	-----		F=100MHz CL=25pF
			-----	40	-----		F=100MHz CL=40pF

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=0pF 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=0pF 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=0pF 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	
Period Jitter RMS:			-----	6	-----	ps	F=100MHz CL=15pF
			-----	5	-----		F=100MHz CL=25pF
			-----	5	-----		F=100MHz CL=40pF
Cycle to Cycle Jitter:			-----	80	-----	ps	F=100MHz CL=15pF
			-----	40	-----		F=100MHz CL=25pF
			-----	40	-----		F=100MHz CL=40pF

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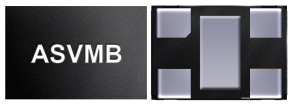

7.0 x 5.0 x 0.85 mm

Pb RoHS Compliant

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
e.g. 14.3181 MHz (Maximum 4 digits after decimal)

Operating Temp.
Blank: 0°C ~ +70°C
E: -20°C ~ +70°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C

Overall Freq. Stability
Blank: ±50ppm
R5*: ±5ppm
Y: ±10ppm
R: ±25 ppm

Output Load
Blank: 15pF
25: 25pF
40: 40pF

Packaging
Blank: 50pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel

***R5: ±5ppm stability is available by request. Please contact Abracon for more information.**

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.
Blank: 0°C ~ +70°C
E: -20°C ~ +70°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C

Overall Freq. Stability
Blank: ±50ppm
Y: ±10ppm
R: ±25 ppm

Packaging
Blank: 50pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel

Note: Available 15pF output load only for ASVMB blank MEMS oscillator

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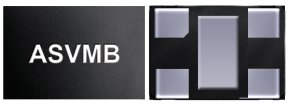
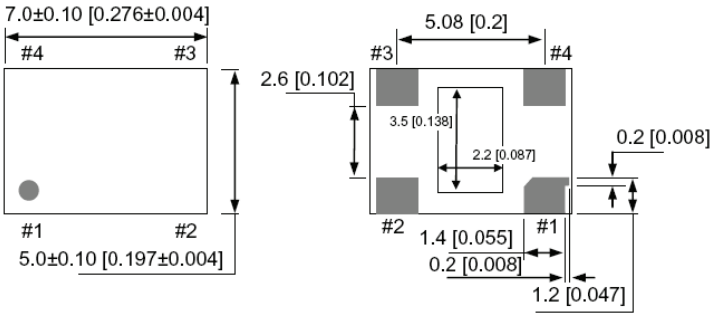


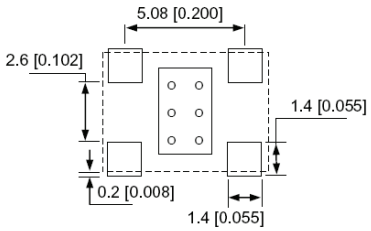
7.0 x 5.0 x 0.85 mm

OUTLINE DIMENSIONS:



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

Recommended Land Pattern

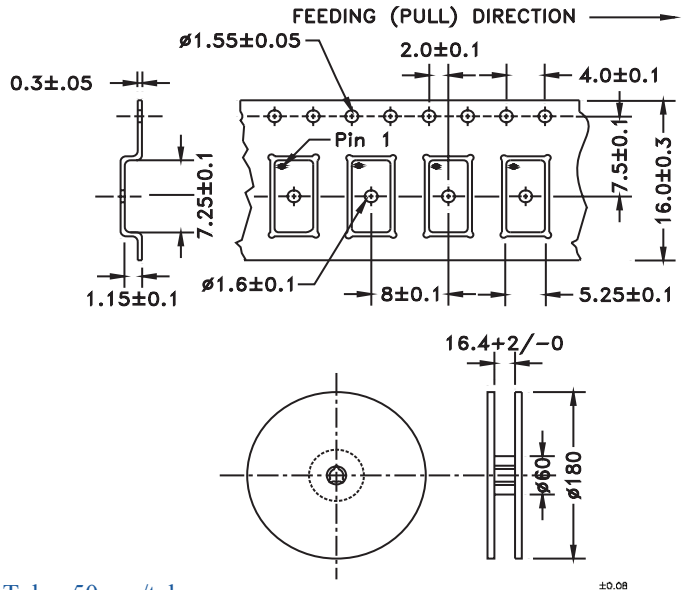


Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

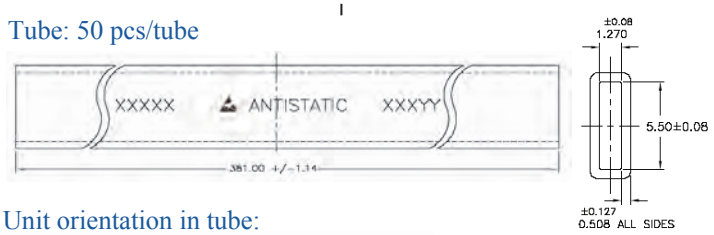
Dimensions: mm (inches)

TAPE AND REEL:

T= Tape and reel (1,000pcs/reel)



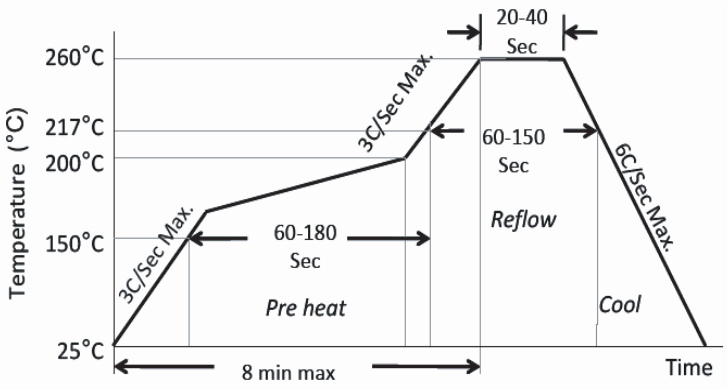
Tube: 50 pcs/tube



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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