PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASDMB

Moisture Sensitivity Level – MSL 1

Pb ~~Pb~~

RoHS Compliant

ASDMB

Life Size ■▮■▮

2.5 x 2.0 x 0.85 mm

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:

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	CL=15, 25, 40pF
	V_{OL}	-----	-----	0.2*V_{dd}	V	
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

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Life Size
2.5 x 2.0 x 0.85 mm

Pb RoHS Compliant

Key Electrical Specifications – V_{dd} = 1.8V

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

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
	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	(Standard CL: 15pF)
	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: 25pF)
	1.0 to 39.9999MHz	-----	8	16	mA	CL=0p
	40.0 to 79.9999MHz	-----	9	16	mA	RL=∞
	80.0 to 124.9999MHz	-----	10	16	mA	T=25°C
	125.0 to 150MHz	-----	11	16	mA	(CL option: 40pF)
Output Voltage:	V_{OH}	0.8*V_{dd}	-----	-----	V	CL=15, 25pF
	V_{OL}	-----	-----	0.2*V_{dd}	V	
	V_{OH}	0.9*V_{dd}	-----	-----	V	CL=40pF
	V_{OL}	-----	-----	0.1*V_{dd}	V	
Rise Time: Fall Time:	Tr	-----	1.0	2.0	ns	CL=15pF; T=25°C
	Tf	-----	0.9	2.0	ns	20%/80%*VDD
	Tr	-----	1.1	2.0	ns	CL=25pF; T=25°C
	Tf	-----	0.9	2.0	ns	20%/80%*VDD
	Tr	-----	1.0	2.0	ns	CL=40pF; T=25°C
	Tf	-----	0.9	2.0	ns	20%/80%*VDD
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

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Life Size

2.5 x 2.0 x 0.85 mm

Pb   RoHS
Compliant

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	CL=15pF
	V_{OL}	-----	-----	$0.2*V_{dd}$	V	
	V_{OH}	$0.9*V_{dd}$	-----	-----	V	CL=25, 40pF
	V_{OL}	-----	-----	$0.1*V_{dd}$	V	
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	-----		F=100MHz CL=15pF
		-----	5	-----	ps	F=100MHz CL=25pF
		-----	5	-----		F=100MHz CL=40pF
Cycle to Cycle Jitter:		-----	80	-----		F=100MHz CL=15pF
		-----	40	-----	ps	F=100MHz CL=25pF
		-----	40	-----		F=100MHz CL=40pF

ABRACON IS ISO9001:2008 CERTIFIED

ABRACON CORPORATION

Visit **www.abracon.com** for Terms & Conditions of Sale **Revised: 02.22.12**
30332 Esperanza, Rancho Santa Margarita, California 92688
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Life Size

2.5 x 2.0 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			V	
HBM		4,000		
MM		200		
CDM		1,500		

▷ OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASDMB - ☐ 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
C: ±50ppm (STD)
R5*: ±5 ppm
Y: ±10ppm
R: ±25 ppm

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

Packaging
Blank: 140pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel
T5: 5,000pcs / reel
T10: 10,000pcs / reel

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

.0.2   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.

ASDMB - 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
C: ±50ppm (STD)
Y: ±10ppm
R: ±25 ppm

Packaging
Blank: 140pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel
T5: 5,000pcs / reel
T10: 10,000pcs / reel

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

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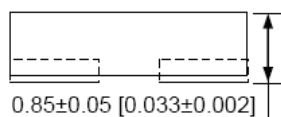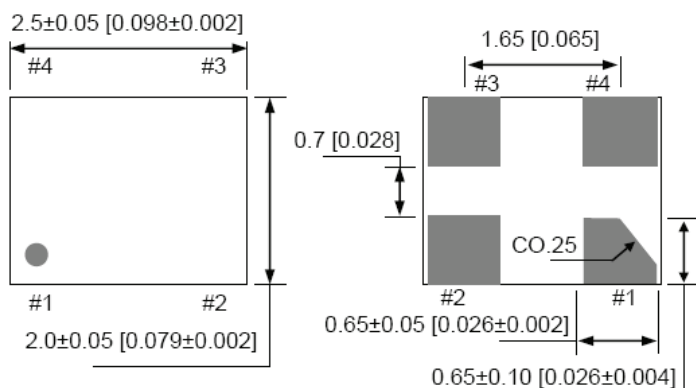# PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR
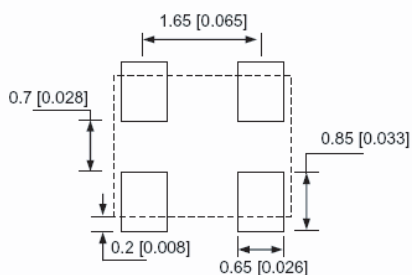
ASDMB

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RoHS Compliant

Life Size

2.5 x 2.0 x 0.85 mm

OUTLINE DIMENSIONS:

2.5±0.05 [0.098±0.002]

#4   #3

#1   #2

2.0±0.05 [0.079±0.002]

1.65 [0.065]

#3   #4

#2   #1

0.7 [0.028]

CO.25

0.65±0.05 [0.026±0.002]

0.65±0.10 [0.026±0.004]

0.85±0.05 [0.033±0.002]

No	Pin Terminal
1	Standby
2	GND
3	Output
4	VDD

Recommended Land Pattern

1.65 [0.065]

0.7 [0.028]

0.85 [0.033]

0.2 [0.008]

0.65 [0.026]

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=180mm)
T5= 5,000pcs/reel (D=330mm)
T10= 10,000pcs/reel (D=330mm)

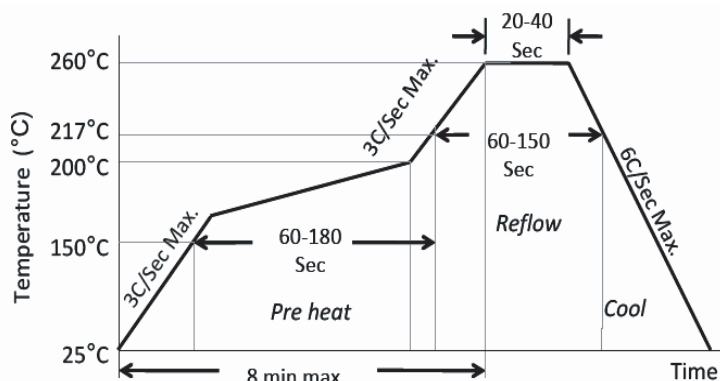FEEDING (PULL) DIRECTION

0.30±0.05
1.75±0.1
ø1.55±0.05
2.0±0.1
4.0±0.1
PIN1
2.85 max.
3.5±0.05
8.0+0.3/−0.1
ø1.0 min.
1.20 max.
2.25±0.05

9.0 ref.

60 ref.

180 ref.

Tube: 140 pcs/tube

XXXXX ANTISTATIC XXXYY

381.00 +/−1.14

±0.08
1.270
2.50±0.20
±0.127
0.508 ALL SIDES
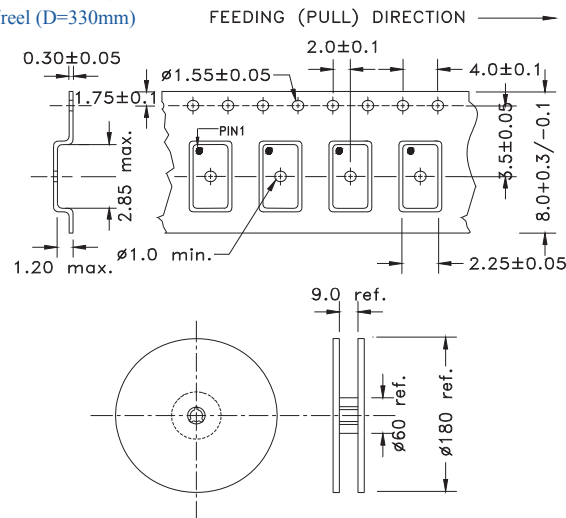
Unit orientation in tube:

Dimensions: mm

REFLOW PROFILE:

260°C
217°C
200°C
150°C
25°C

20-40 Sec

3C/Sec Max.

60-150 Sec

6C/Sec Max.

Reflow

60-180 Sec

3C/Sec Max.

Pre heat

Cool

8 min max

Time

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.

Need a test socket for the ASDMB Series? To view compatible **PRECISION TEST SOCKETS** for these parts, **click here.**

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