

# ACCELERATE THE SPEED OF CIRCUIT DESIGN...OSCILLATORS IN SECONDS, NOT DAYS!

*The MEMSpeed Pro oscillators operate down to 4mA with 1uA standby current!*



**Introducing the MEMSpeed Pro, Low Power Oscillator Programmer.** The Oscillator Programming Kit includes all hardware and software necessary for the user to easily program custom oscillator frequencies in the field, or in the lab.

## FEATURES

 MEMS Oscillator Programming Kit featuring Discera Pure Silicon Resonator Technology.

**Field Programmable Output Frequencies**  
User specified from 1 to 150MHz

**Programmable Supply Voltage Range**  
1.8, 2.5, and 3.3v operation

**Standard SMD Package Sizes**  
5.0 x 3.2mm and 3.2 x 2.5mm

**PC/USB Interface**  
Microsoft Windows™ compatible software

**Includes Programmer and All Hardware**  
QuickStart Guide, Socket Adapters, USB Cable, Tweezers, CD-ROM and Blank Oscillators.

## SPECIFICATIONS

Frequency Range	1.0000 to 150.0000MHz
Power Supply	USB Driven
Programmable Operating / Supply Voltage Range	1.8v, 2.5v, and 3.3v
Oscillator Packages	5.0 x 3.2 mm SMD 3.2 x 2.5 mm SMD
Oscillator Blank Part Number	ASFLM-Blank ASEM-Blank ASDM-Blank
Socket Adapters (ZIF)	ASFLM-Adapter ASEM-Adapter ASDM-Adapter
Programming Time	Approx. 1 sec / pc
User Interface	USB (MS Windows XP & Vista) - or - Stand Alone (display menu)
Programmer Size	6" x 3.5" x 1"

**For ordering information contact Abracon or our stocking distributors.**



# MEMSPEED PRO™

Clock Oscillator Programmer

*Looking for the lowest power oscillators?...*

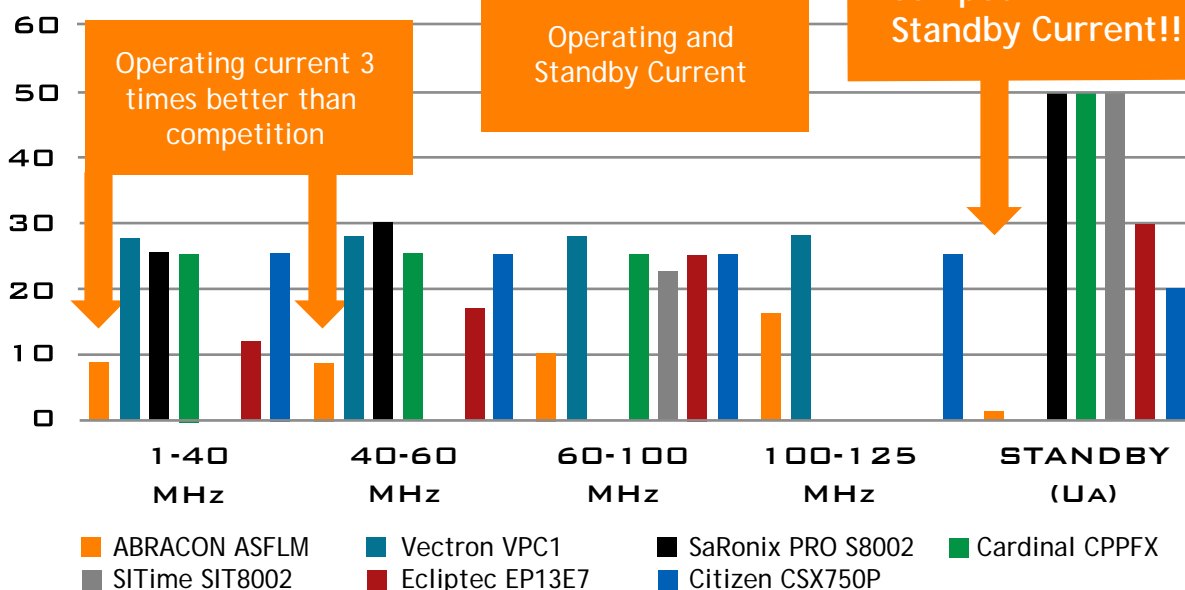
New programming kit allows you to program parts to any frequency between 1 and 150 MHz In 1 second!!!

## \$499 MEMSpeed Pro™ Deluxe Kit includes:

- MEMSpeed Pro
- Two Socket Adapters (5.0 x 3.2 and 3.2 x 2.5mm)
- USB Cable
- Tweezers
- Quickstart Guide and CD-ROM for PC Installation
- 200 unprogrammed blank oscillators - \$500 value! (100 ASFLM-5032 **and** 100 ASEM-3225 )

## \$319 MEMSpeed Pro™ Standard Kit includes:

- MEMSpeed Pro
- One Socket Adapter (5.0 x 3.2 or 3.2 x 2.5mm)
- USB Cable
- Tweezers
- Quickstart Guide and CD-ROM for PC Installation
- 50 unprogrammed blank oscillators - \$125 value! (50 ASFLM-5032 **or** 50 ASEM-3225)



\* Information provided is based on published specification data and is provided for reference only. No warranty is implied.

REVISION: 02/04/09

30332 Esperanza, Rancho Santa Margarita, California 92688  
tel 949-546-8000 | fax 949-546-8001 | www.abracon.com



# ULTRA MINIATURE PLASTIC PACKAGE PURE SILICON™ CLOCK OSCILLATOR

ASEM



Life Size

3.2 x 2.5 x 0.85mm

ASEM



RoHS  
Compliant

## FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- MEMS Technology by Discera
- Low Power Consumption <10mA
- Exceptional Stability Over Temp. at -40 to +85°C.
- Available over Extended Operating Temperature
- Available in 30kG Shock Resistance Configuration
- Low Cost-Compact QFN Plastic Packaging
- Compact Package design

## APPLICATIONS:

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Lower Cost Crystal Oscillator Replacement
- Computers and Peripherals
- 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

**MEMSPEED PRO™**  
Clock Oscillator Programmer  
AVAILABLE NOW!

## STANDARD SPECIFICATIONS:

### PARAMETERS

ABRACON P/N:	ASEM Series
Frequency range:	1.000 MHz - 150 MHz
Operating temperature:	0°C to + 70°C (see options)
Storage temperature:	-40°C to +155°C
Overall Frequency Stability:	± 100 ppm max. (see options)
Supply Voltage (Vdd):	3.3 V ± 0.3 V (see options)
Supply Current (No Load)	6.0mA max (1.0 to 39.9999MHz) 7.0mA max (40.0 to 79.9999MHz) 9.0mA max (80.0 to 125MHz) (T=-40 to +85°C, Vdd=3.3 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.15V )
Supply Current: (Full Load)	9.0mA max (1.0 to 39.9999MHz) 10.0mA max (40.0 to 79.9999MHz) 16.0mA max (80.0 to 125MHz) (T=-40 to +85°C, Vdd=3.3 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.15V CL=15pF, RL=10kΩ)
Symmetry	45/55 % max. @ 1/2Vdd
Rise and fall time (Tr/Tf)	5ns max. (+25°C, 15pF output load, 10/90% Vdd.)
Output load	15 pF max., 10k ohms min.
Output voltage	VOH = 0.9* Vdd min. ; VOL = 0.1* Vdd max.
Input voltage	VIH = 0.9* Vdd min. ; VIL = 0.1* Vdd max.
Start-up time	10ms max.
Enable time	10ms max.
Disable time	100ns max.
Tri-State function (Stand-by)	"1" or open: Oscillation; "0" : No oscillation/Hi Z
Stand-by Current	1uA max. (T= +25°C, Vdd=3.0 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.2V)
Aging at +25°C/year	± 5ppm max.
Jitter (reference only)	1MHz: 176ps typ.(RMS Jitter); 1.7ns typ.(Pk-Pk Jitter) 26MHz: 19ps typ.(RMS Jitter); 147ps typ.(Pk-Pk Jitter) 100MHz: 8ps typ.(RMS Jitter); 77ps typ.(Pk-Pk Jitter) 150MHz: 10ps typ.(RMS Jitter); 82ps typ.(Pk-Pk Jitter)

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3.2 x 2.5 x 0.85mm

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RoHS  
Compliant

## OPTIONS AND PART IDENTIFICATION:

ASEM□□ - Frequency - □ - □ - □

Programmable		Supply Voltage		Frequency	Operating Temp.		Freq. Stability		Packaging	
B**	Blank Unprogrammed	1	3.3 ± 0.3V (std)	XXX.XXX MH	Blank	0°C to +70°C	Blank	± 100 ppm	Blank	Tube (114pcs/tube)
		3	2.5 ± 0.2V		M	-20°C to +85°C	C	± 50 ppm	T	Tape and Reel (1000pcs/reel)
		4	1.8 ± 0.15V		L*	-40°C to +85°C				

\* Please contact Abracon for Temperature Option Availability.

Specify "B" option in part number when ordering blank unprogrammed oscillators e.g., ASEM-B.

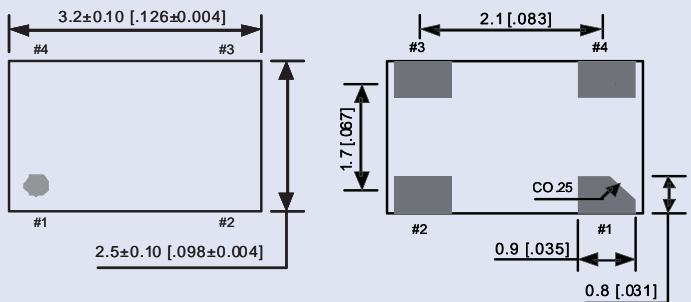
\*\* Blank un-programmed oscillators and our low cost portable programmer is available for quick turn engineering requirements. Please call or visit [www.abracon.com](http://www.abracon.com) for more information. Please contact Abracon for order assistance for high shock application.

## MEMSPEED PRO™ Clock Oscillator Programmer

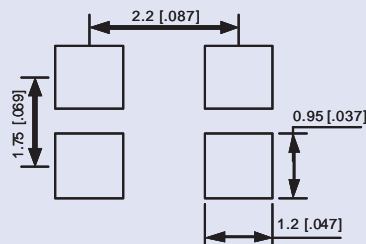
Our new MEMSpeed Pro Clock Oscillator Programmer allows you to program parts yourself to any frequency between 1 and 150 Mhz in 1 second! For ordering information go to [www.abracon.com](http://www.abracon.com), or call 949.546.8000.



## OUTLINE DRAWING:



Recommended Land Pattern

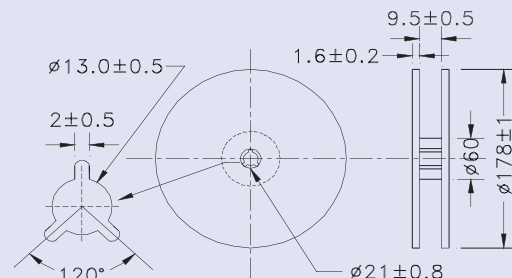
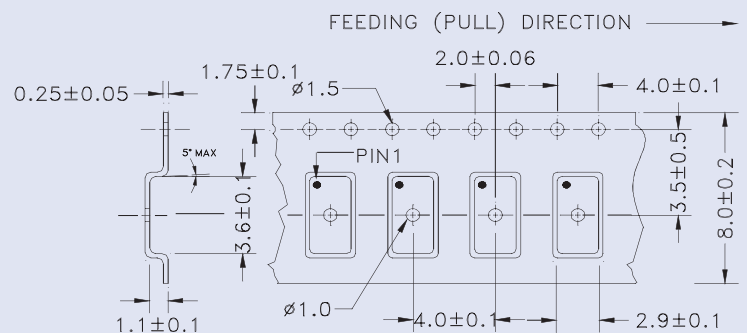


Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

No.	Pin terminal
1	Tri-state
2	Gnd
3	Output
4	V <sub>DD</sub>

Dimensions: Inches (mm)

## TAPE & REEL: Tape and reel 1,000pcs/reel



Dimensions: mm

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ASFLM



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- Low Stand by Current <1uA
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- Vibrant, Shock-Prone & Humid Environments for Industrial Equipment
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AVAILABLE NOW!

## STANDARD SPECIFICATIONS:

### PARAMETERS

ABRACON P/N	ASFLM Series
Frequency range	1.000 MHz - 150 MHz
Operating temperature	0°C to + 70°C (see options)
Storage temperature	-40°C to +155°C
Overall Frequency Stability	± 100 ppm max. (see options)
Supply Voltage (Vdd)	3.0 V ± 0.3 V (see options)
Supply Current (No Load)	6.0mA max (1.0 to 39.9999MHz) 7.0mA max (40.0 to 79.9999MHz) 10.0mA max (80.0 to 125MHz) (T=-40 to +85°C, Vdd=3.3 ± 0.3V, 3.0 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.15V CL=15pF, RL=10kΩ)
Supply Current: (Full Load)	9.0mA max (1.0 to 39.9999MHz) 10.0mA max (40.0 to 79.9999MHz) 16.0mA max (80.0 to 125MHz) (T=-40 to +85°C, Vdd=3.3 ± 0.3V, 3.0 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.15V CL=15pF, RL=10kΩ)
Symmetry	45/55 % max. @ 1/2Vdd
Rise and fall time (Tr/Tf)	5ns max. (+25°C, 15pF output load, 10/90% Vdd.)
Output load	15 pF max., 10k ohms min.
Output voltage:	VOH = 0.9* Vdd min. ; VOL = 0.1* Vdd max.
Input voltage:	VIH = 0.9* Vdd min. ; VIL = 0.1* Vdd max.
Start-up time	10ms max.
Enable time	5ms max.
Disable time	100ns max.
Tri-State function (Stand-by)	"1" or open: Oscillation; "0" : No oscillation/Hi Z
Stand-by Current	1uA max. (T= +25°C, Vdd=3.0 ± 0.3V, 2.5 ± 0.2V, 1.8 ± 0.2V)
Aging at +25°C/year	± 5ppm max.
Jitter	1MHz: 181ps typ.(RSM Jitter); 1.6ns typ.(Pk-Pk Jitter) 26MHz: 17.8ps typ.(RSM Jitter); 138ps typ.(Pk-Pk Jitter) 100MHz: 8.4ps typ.(RSM Jitter); 106ps typ.(Pk-Pk Jitter) 150MHz: 9.9ps typ.(RSM Jitter); 82ps typ.(Pk-Pk Jitter)

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# ULTRA MINIATURE PLASTIC PACKAGE PURE SILICON™ CLOCK OSCILLATOR

ASFLM



Life Size   
5.0 x 3.2 x 0.85mm

ASFLM



## ➤ OPTIONS AND PART IDENTIFICATION:

ASFLM□□ - Frequency - □ - □ - □

Programmable		Supply Voltage		Frequency	Operating Temp.		Freq. Stability		Packaging	
B**	Blank Unprogrammed	1	3.3 ± 0.3V (std)	XXX.XXX MH	Blank	0°C to +70°C	Blank	± 100 ppm	Blank	Tube (114pcs/tube)
		3	2.5 ± 0.2V		M	-20°C to +85°C	C	± 50 ppm		
		4	1.8 ± 0.15V		L*	-40°C to +85°C			T	Tape and Reel (1000pcs/reel)

\* Please contact Abracon for Temperature Option Availability.

Specify "B" option in part number when ordering blank unprogrammed oscillators e.g., ASFLM-B.

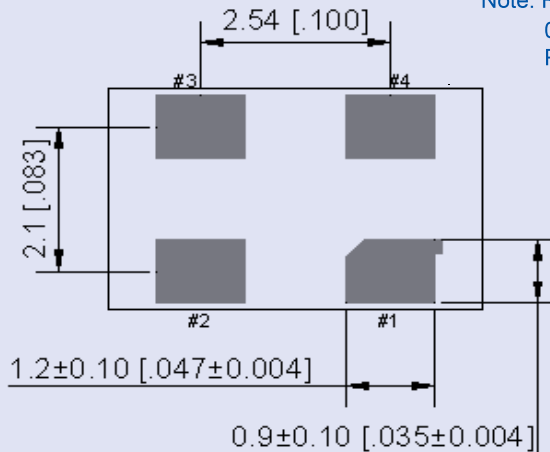
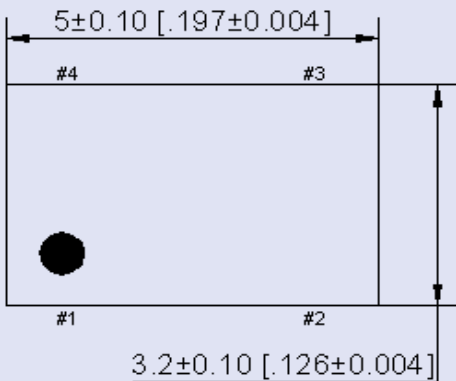
\*\* Blank un-programmed oscillators and our low cost portable programmer is available for quick turn engineering requirements. Please call or visit [www.abracon.com](http://www.abracon.com) for more information. Please contact Abracon for order assistance for high shock application.

**MEMSPEED PRO™**  
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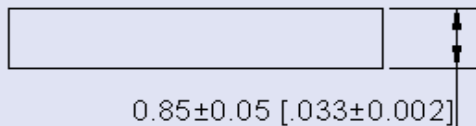
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## ➤ OUTLINE DRAWING:

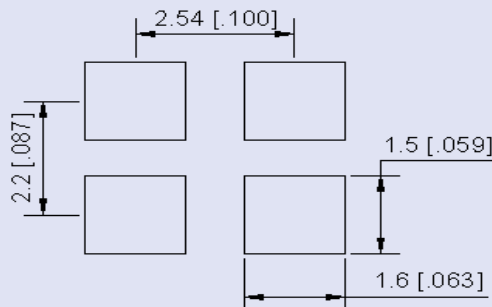


Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.



No.	Pin terminal
1	Tri-state
2	Gnd
3	Output
4	V <sub>DD</sub>

Recommended land pattern



Dimensions: Inches (mm)

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ASFLM



Life Size



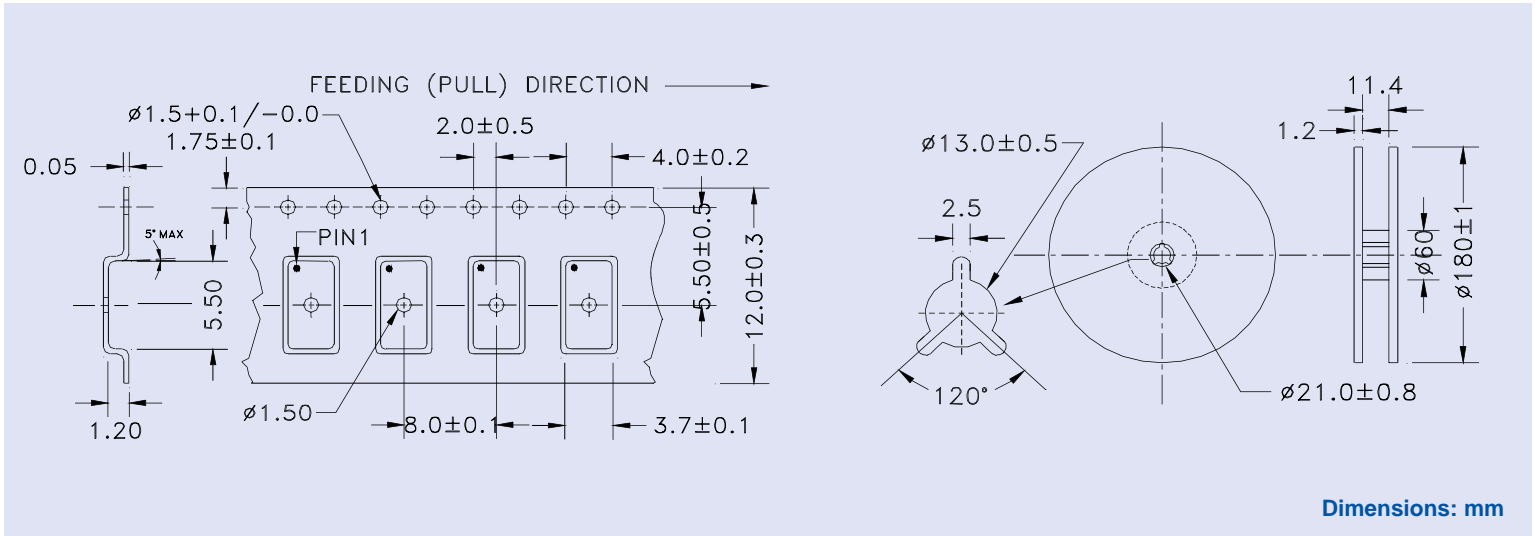
5.0 x 3.2 x 0.85mm

ASFLM



RoHS  
Compliant

## TAPE & REEL: Tape and reel 1,000pcs/reel



## TUBE PACKAGING:

