

PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMB



ASFLMB

Moisture Sensitivity Level – MSL 1 RoHS/RoHS II Compliant

Life Size
5.0 x 3.2 x 0.85 mm

FEATURES:

- Pure Silicon™ Clock Oscillator
- 2nd Generation MEMS Technology with reduced jitter by Discera
- Low Power Consumption <10mA
- Exceptional Stability +/- 10ppm Over Temp. at -40 to +105°C
- 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: | 10 | | 15, 25, or 40 | pF | |
| | | | | kΩ | See options |
| 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 **Vdd= 1.8V**

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

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Life Size

5.0 x 3.2 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=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 | |
| | 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 |
| | 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 |
| Cycle to Cycle Jitter: | | | 50 | | ps | F=100MHz |
| Period Jitter RMS: | | | 5 | | ps | F=100MHz |

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Life Size

5.0 x 3.2 x 0.85 mm

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 |
| | Tf | | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | Tr | | 1.0 | 2.0 | ns | CL=25pF; T=25°C |
| | Tf | | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | Tr | | 0.8 | 2.0 | ns | CL=40pF; T=25°C |
| | Tf | | 0.8 | 2.0 | ns | 20%/80%*VDD |
| Cycle to Cycle Jitter: | | | 50 | | ps | F=100MHz |
| Period Jitter RMS: | | | 5 | | ps | F=100MHz |

Absolute Maximum Ratings

| Item | Minimum | Maximum | Unit | Condition |
|-----------------|---------|--------------|------|-----------|
| Supply Voltage | -0.3 | +4.0 | V | |
| Input Voltage | -0.3 | $V_{dd}+0.3$ | 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 | | |

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OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASFLMB - [] 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) |
| Y: ±10ppm |
| R: ±25 ppm |

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

| Packaging |
|----------------------|
| Blank*: 72pcs / Tube |
| T: 1,000pcs / reel |
| T3: 3,000pcs / reel |

* 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.

ASFLMB - 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 |

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

| Packaging |
|---------------------|
| Blank: 72pcs / Tube |
| T: 1,000pcs / reel |
| T3: 3,000pcs / reel |

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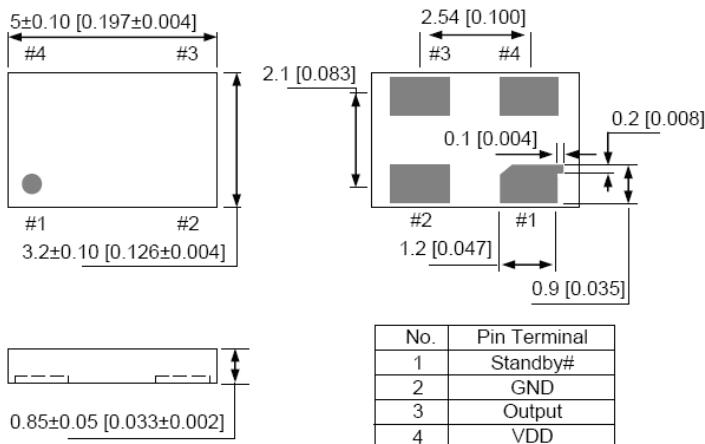


RoHS/RoHS II Compliant

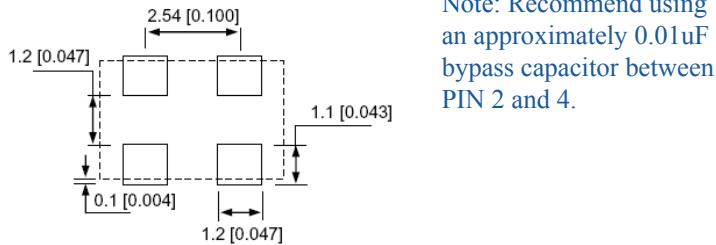
Life Size

5.0 x 3.2 x 0.85 mm

OUTLINE DIMENSIONS:

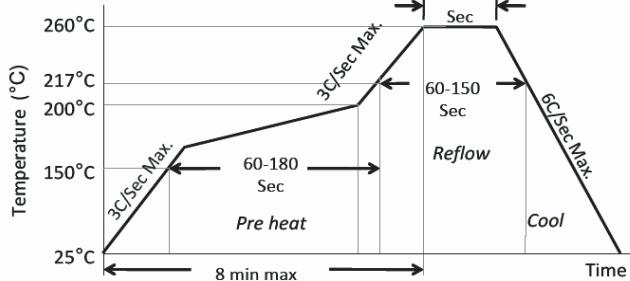


Recommended Land Pattern



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

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. |



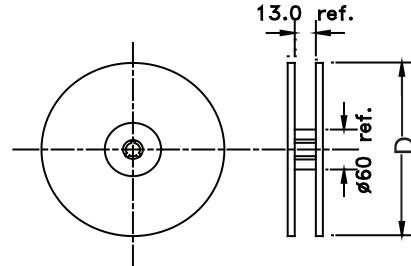
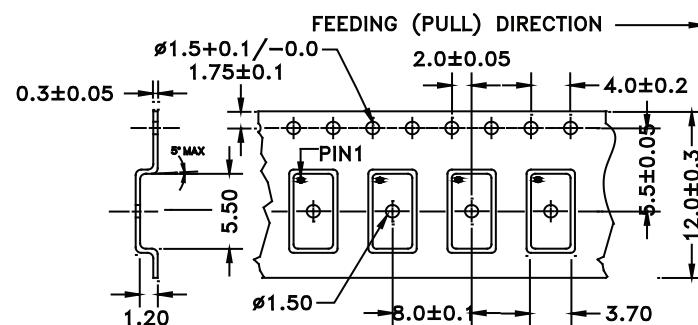
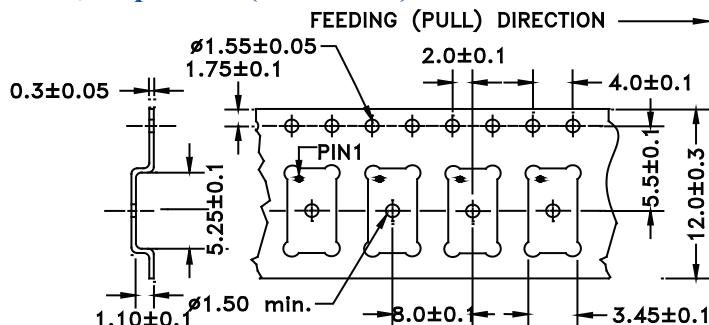
Need a test socket for the ASFLMB Series? To view compatible **PRECISION TEST SOCKETS** for these parts, [click here: PN: AXS-5032-04-07.](#)

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ISO9001:2008
CERTIFIED

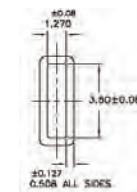
ABRACON
The Power of Linking Together

TAPE AND REEL:

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



Tube: 72 pcs/tube



Unit orientation in tube:



Dimensions: mm

ATTENTION: Abracon Corporation's products are COTS - Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon Corporation is required. Please contact Abracon Corporation for more information.

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