

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

ASFLMB



Life Size

5.0 x 3.2 x 0.85mm

ASFLMB

Moisture Sensitivity Level – MSL 1 RoHS/RoHS II Compliant

## 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

## 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 V<sub>dd</sub>= 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 <sub>OH</sub>	0.8*V <sub>dd</sub>		V	
	V <sub>OL</sub>		0.2*V <sub>dd</sub>	V	CL=15, 25, 40pF
Rise Time: Fall Time:	T <sub>r</sub>	1.8	3.0	ns	CL=15pF; T=25°C
	T <sub>f</sub>	1.0	3.0	ns	20%/80%*VDD
	T <sub>r</sub>	1.5	3.0	ns	CL=25pF; T=25°C
	T <sub>f</sub>	1.2	3.0	ns	20%/80%*VDD
	T <sub>r</sub>	1.4	3.0	ns	CL=40pF; T=25°C
	T <sub>f</sub>	1.1	3.0	ns	20%/80%*VDD
Cycle to Cycle Jitter:		60		ps	F=100MHz
Period Jitter RMS:		10		ps	F=100MHz

REVISED: 12.6.2017

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## 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	CL=15, 25pF
	$V_{OL}$			$0.2 * V_{dd}$	V	
	$V_{OH}$	$0.9 * V_{dd}$			V	
	$V_{OL}$			$0.1 * V_{dd}$	V	
Rise Time: Fall Time:	$T_r$		1.0	2.0	ns	CL=15pF; T=25°C 20%/80%*VDD
	$T_f$		0.9	2.0	ns	
	$T_r$		1.1	2.0	ns	CL=25pF; T=25°C 20%/80%*VDD
	$T_f$		0.9	2.0	ns	
	$T_r$		1.0	2.0	ns	CL=40pF; T=25°C 20%/80%*VDD
	$T_f$		0.9	2.0	ns	
Cycle to Cycle Jitter:			50		ps	F=100MHz
Period Jitter RMS:			5		ps	F=100MHz

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RoHS/RoHS II 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= $\infty$ 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= $\infty$ 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= $\infty$ 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	
	$V_{OL}$			$0.1*V_{dd}$	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	
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	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		

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

### Programmed Orders (Quantity > 1,000pcs)

ASFLMB - [ ] 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 E: -20°C ~ +70°C L: -40°C ~ +85°C X: -40°C ~ +105°C	C: ±50ppm (STD) Y: ±10ppm R: ±25 ppm	Blank: 15pF 25: 25pF 40: 40pF	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 are available for quick turn engineering requirements. Please call ABRACON for more information.

ASFLMB - BLANK - [ ] - [ ] - [ ] - [ ]

Operating Temp.	Overall Freq. Stability	Output Load	Packaging
Blank: 0°C ~ +70°C E: -20°C ~ +70°C L: -40°C ~ +85°C X: -40°C ~ +105°C	C: ±50ppm (STD) Y: ±10ppm R: ±25 ppm	Blank: 15pF 25: 25pF 40: 40pF	Blank: 72pcs / Tube T: 1,000pcs / reel T3: 3,000pcs / reel

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

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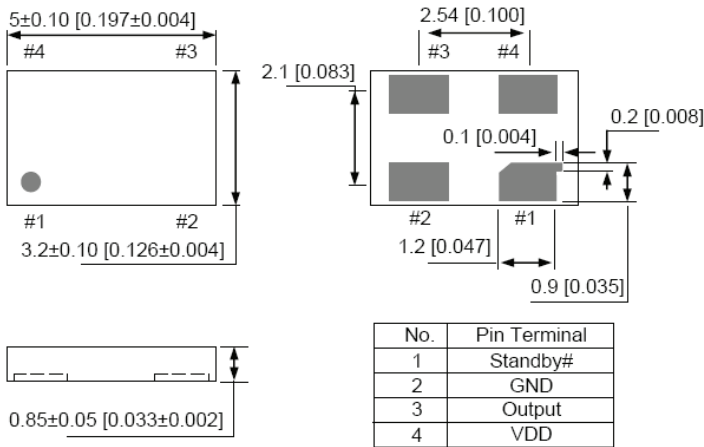
Life Size

5.0 x 3.2 x 0.85mm

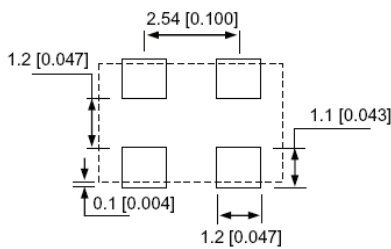
ASFLMB

**Pb** RoHS/RoHS II Compliant

## OUTLINE DIMENSIONS:



### Recommended Land Pattern



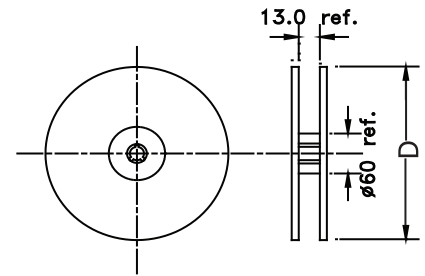
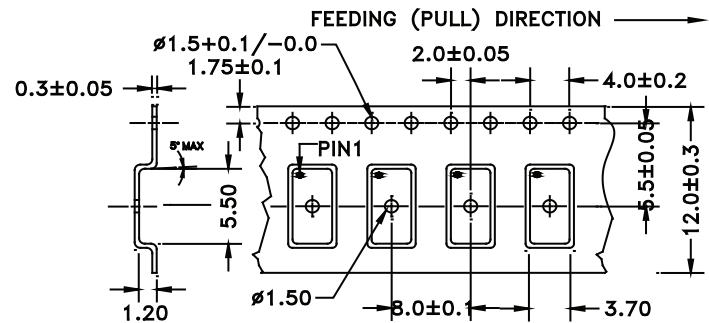
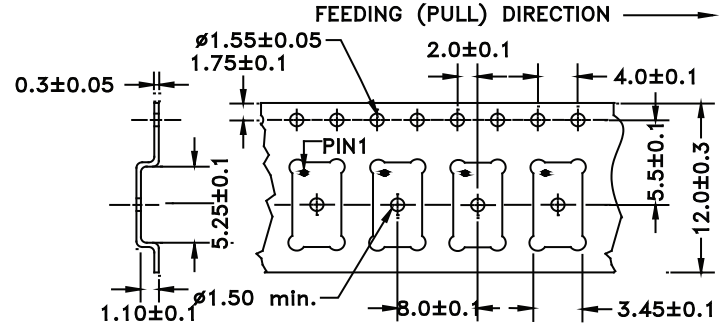
Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

Dimensions: mm (inches)

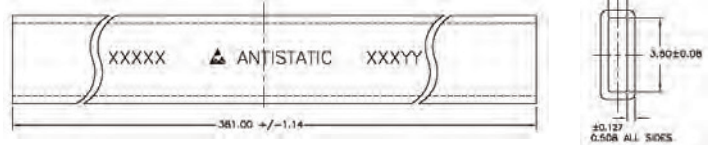
## TAPE AND REEL:

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

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



Tube: 72 pcs/tube

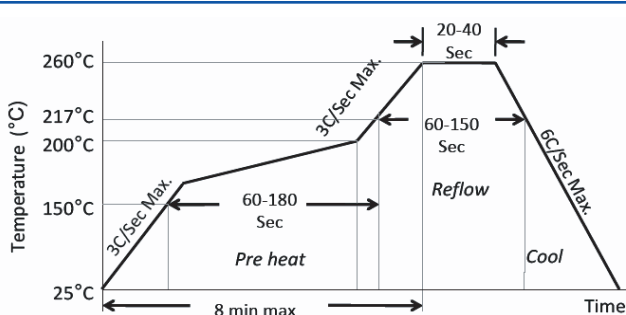


Unit orientation in tube:



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.



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

ATTENTION: Abracon LLC 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 dependent 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 LLC is required. Please contact Abracon LLC for more information.