



**THE DATASHEET OF  
ASFLM1-40.000MHZ-T**



### Description

The Abracon ASFLM series is a programmable MEMS oscillator, offered in various supply voltages. This series features low power consumption, a wide frequency range, excellent phase noise, tight stabilities, and short lead times for industrial, consumer, and other applications. The ASFLM series comes in a 5.0 x 3.2 mm compact package with a CMOS output.



### Features

- Low Power Consumption
- Exceptional Stability Over Temp. at -40 to +85°C
- Low Cost-Compact QFN Plastic Packaging
- Supply Voltage options: 1.8V, 2.5V, 2.8V, 3.0V, 3.3V
- Stand-by function
- [REACH/RoHS II Compliant | MSL Level 1](#)

### Typical Applications

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Computers and Peripherals
- Portable Electronics
- Consumer Electronics
- Vibrant, Shock-Prone & Humid Environments for Industrial Equipment

### Key Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency Range:	1.0		150	MHz	
Operating Temperature:	0		+70	°C	See options
Storage Temperature:	-55		+150	°C	
Overall Frequency Stability <sup>[Note 1]</sup>	-50		+50	ppm	See options
Supply Voltage (Vdd)	+1.8V, 2.5V, 2.8V, 3.0V, or 3.3V			V	See options
Supply Current (no load):	1.0 to 39.9999MHz		7	mA	Vdd=3.3V No load RL=∞ T=25°C
	40.0 to 79.9999MHz		8		
	80.0 to 124.9999MHz		9		
	125.0 to 150MHz		10		
Output Voltage	V <sub>OH</sub>	0.8*V <sub>dd</sub>		V	15pF
	V <sub>OL</sub>		0.2*V <sub>dd</sub>		
Rise Time:	Tr	1.3	3.0	ns	15pF; T=25°C 20%/80%*VDD
Fall Time:	Tf	1.3	3.0		
Output Load:	15pF max / 10kΩ min.			pF	
Symmetry:	45		55	%	@1/2Vdd
Startup Time :		1.5	3.0	ms	

### Key Electrical Specifications

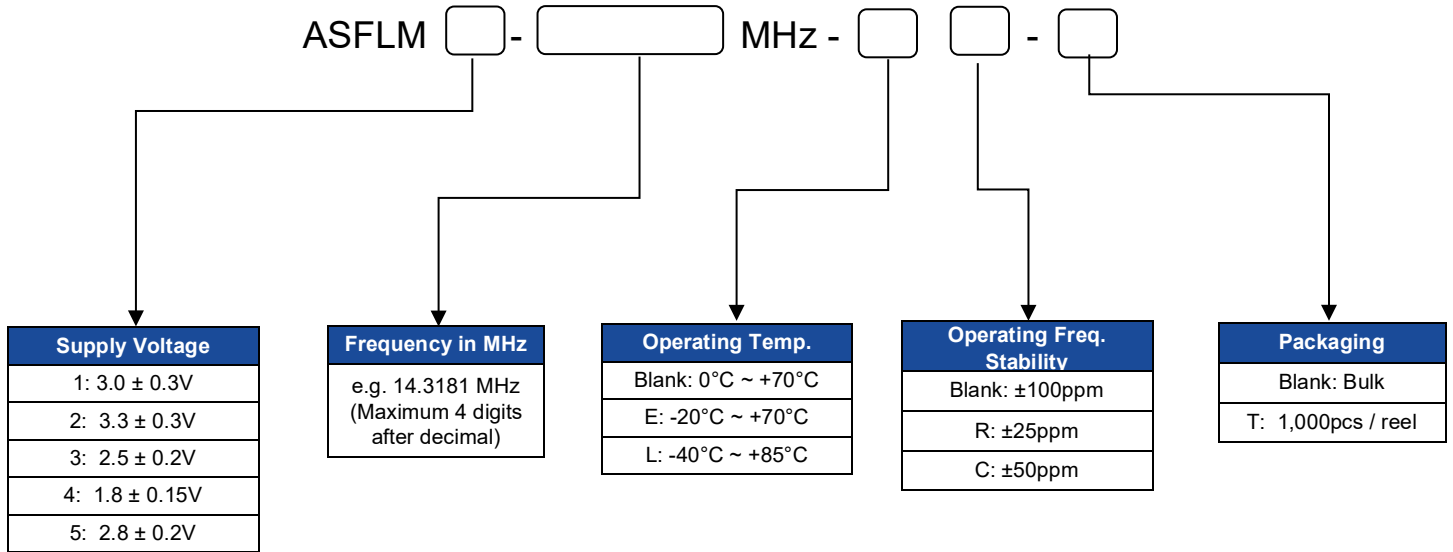
Parameters	Min.	Typ.	Max.	Units	Notes
Disable Time:		20	100	ns	
Disable Stand-by Current:			15	uA	
Tri-state Function (Stand-by) :	"1" ( $V_{IH} \geq 0.75 \cdot V_{dd}$ ) or Open: Oscillation			V	
	"0" ( $V_{IL} < 0.25 \cdot V_{dd}$ ) : Hi Z				
Cycle to cycle jitter:		60		ps	F=100MHz
Aging:	-5.0		+5.0	ppm	First year @25°C

Note 1: Includes post reflow frequency accuracy, temperature stability, load pulling and power supply variation.

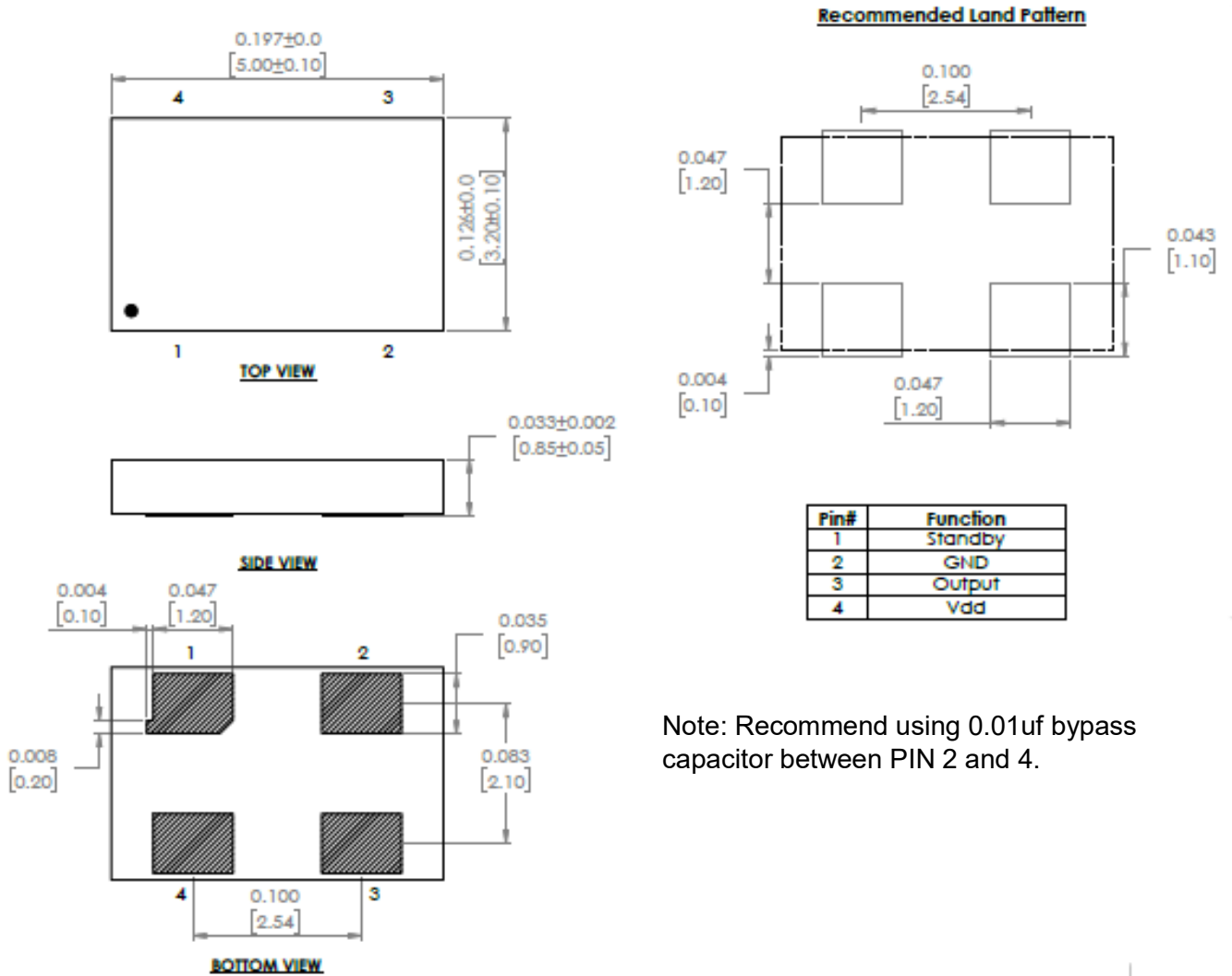
### Absolute Maximum Ratings

Item	Min.	Max.	Units
Supply voltage	-0.3	+4.0	V
Input voltage	-0.3	V <sub>dd</sub> +0.3	V
Junction Temp.		+150	°C
Storage Temp.	-55	+150	°C
Soldering Temp.		+260	°C
ESD			
HBM		2,000	V
MM		200	
CDM		500	

**Options and Part Identification**



Mechanical Dimensions



Dimensions: Inches[mm]

Reflow Profile [JEDEC J-STD-020]

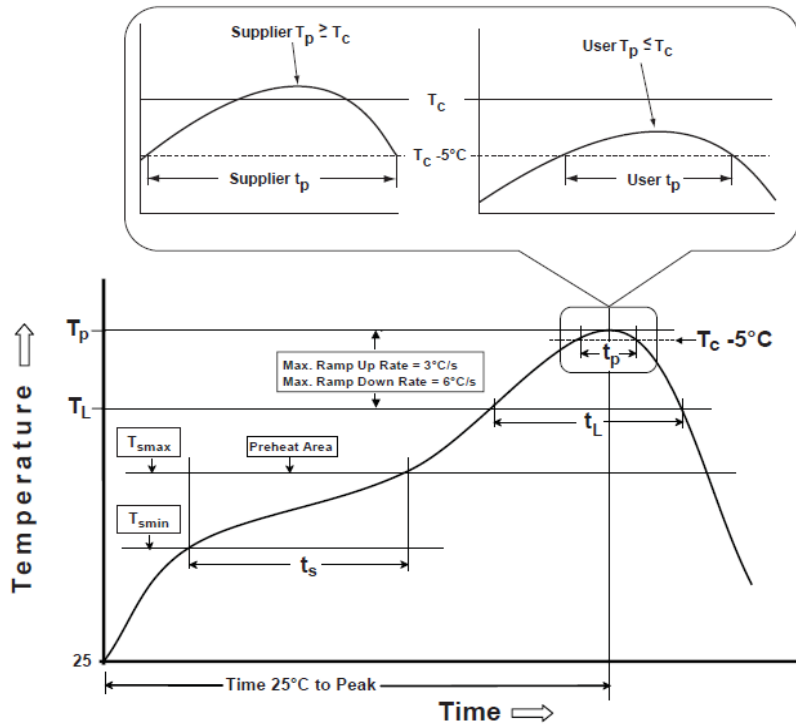


Table 1

SnPb Eutectic Process Classification Temperatures (T <sub>c</sub> )		
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures (T <sub>c</sub> )			
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

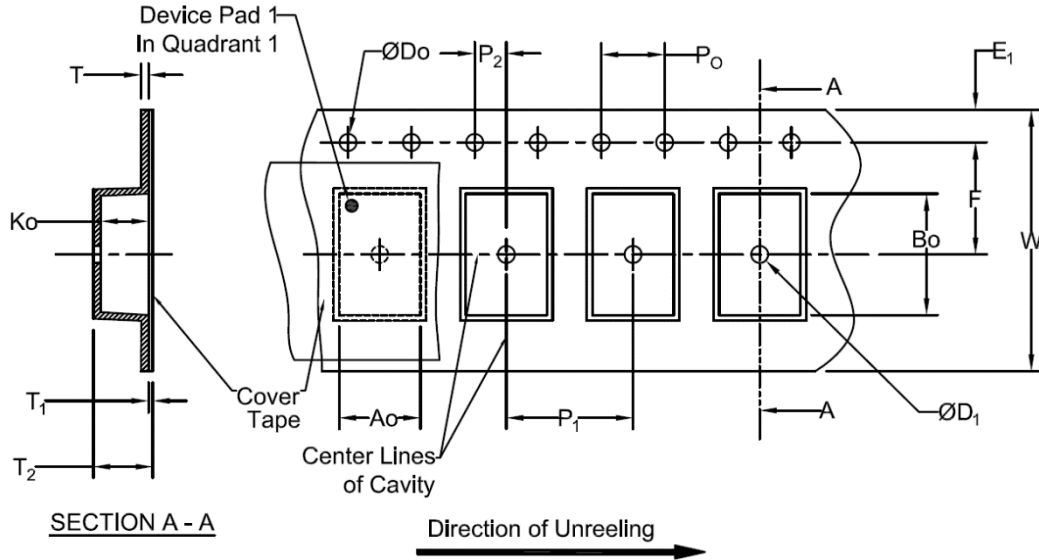
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T <sub>smin</sub> )	100°C	150°C
Temperature maximum (T <sub>smax</sub> )	150°C	200°C
Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/sec. max	3°C/sec. max
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T <sub>p</sub> )*	see Table 1	see Table 2
Time (t <sub>p</sub> )** within 5°C of the specified classification temperature (T <sub>c</sub> )	20 sec.	30 sec.
Ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

\*Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as supplier minimum and a user maximum.

Packaging

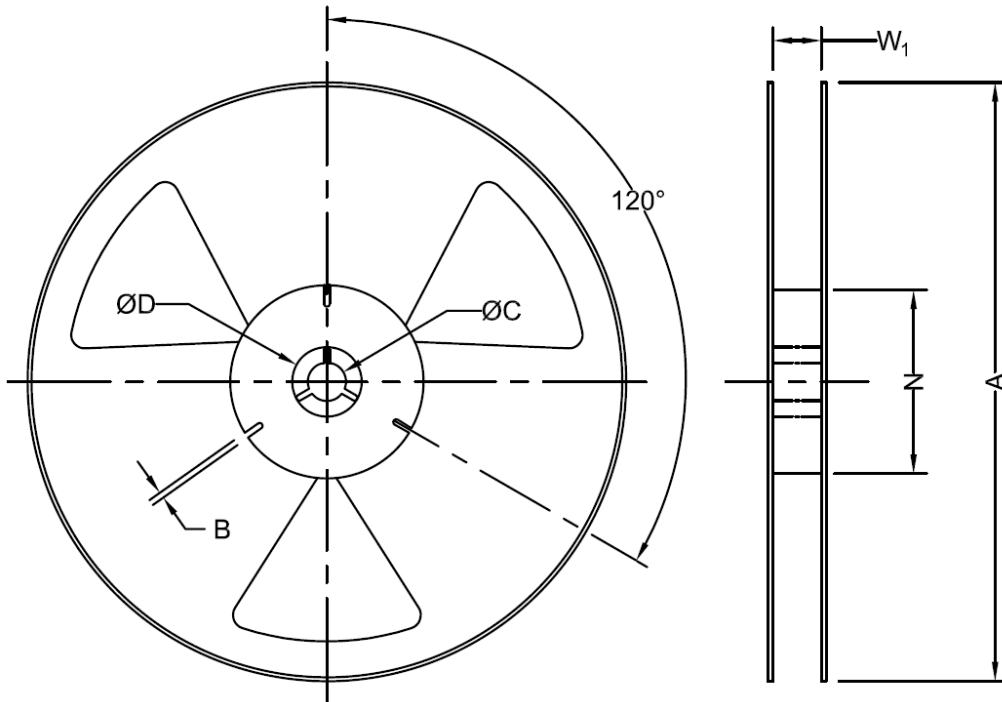
T= 1,000pcs/reel (D=180mm)



Tape Specifications (mm)							
Width	Ao	Bo	Do	D <sub>1</sub> (Min)	E <sub>1</sub>	F	Ko
12mm	*	*	1.5+0.1/-0.0	1.0	1.75±0.1	5.5±0.05	*
Width	P1	P2	P0	T (Max)	T1 (Max)	T2 (Max)	W (Max)
12mm	8.0±0.1	2.0±0.05	4.0±0.1	0.6	0.1	6.5	12.3

\*Note: Compliant to EIA-481

Dimensions: mm



Reel Specifications (mm)							
Width	Qty/Reel	A (Nom)	B (Min)	C (Min)	D (Min)	N (Min)	*W <sub>1</sub>
12mm	1000	178	1.5	13.0+0.5/-0.2	20.2	50	12.4+2.0/-0.0

**\*Note: Measured at Hub**

Dimensions: mm

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-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management