

Description

The Abracon ASEM 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 ASEM series comes in a 3.2 x 2.5 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
- Standby-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
Range Frequency:		1.0		150	MHz	
Operating Temperature:		0		+70	°C	See options
Storage Temperature:		-55		+150	°C	
Overall Frequency Stability [Note 1]		-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 39.9999 MHz		7	15	mA	Vdd=3.3V No load RL=∞ T=25°C
	4.0 to 79.9999 MHz		8	15		
	80.0 to 124.9999 MHz		9	15		
	125.0 to 150 MHz		10	15		
Output Voltage:	V _{OH}	0.8*V _d d			V	15pF
	V _{OL}			0.2*V _{dd}		
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

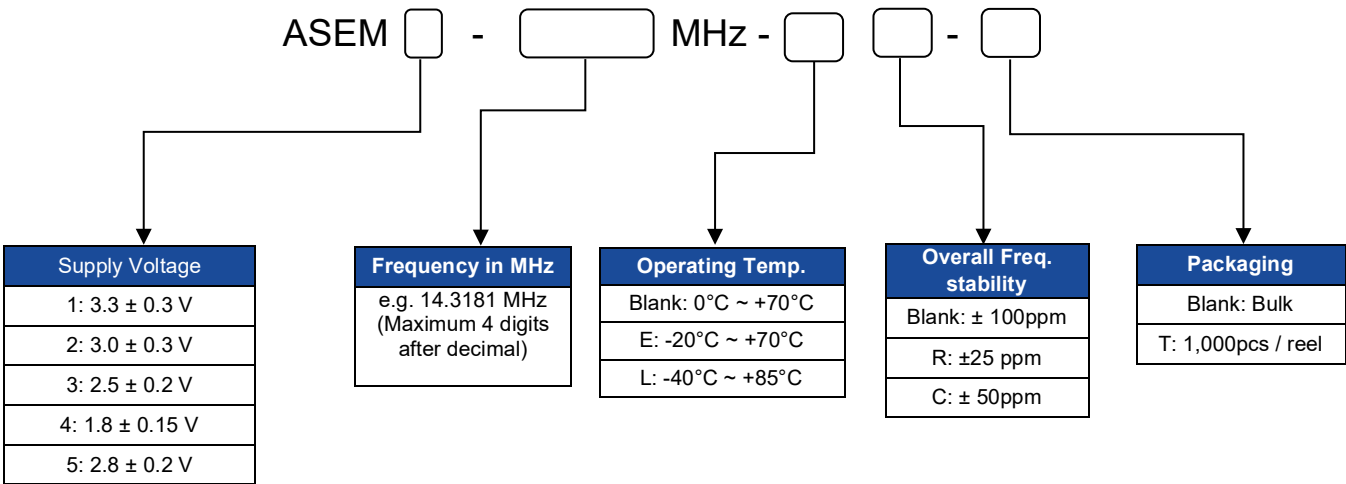
Parameters	Min.	Typ.	Max.	Units	Notes
Disable Time:		20	100	ns	
Disable Stand-by Current:			15	uA	
Tri-state Function (Stand-by) :	"1" (VIH≥0.75*Vdd) or Open: Oscillation			V	
	"0" (VIL<0.25*Vdd) : Hi Z				
Cycle to cycle jitter:		60		ps	F=100MHz
Aging:	-5.0		+5.0	ppm	First year @25°C

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

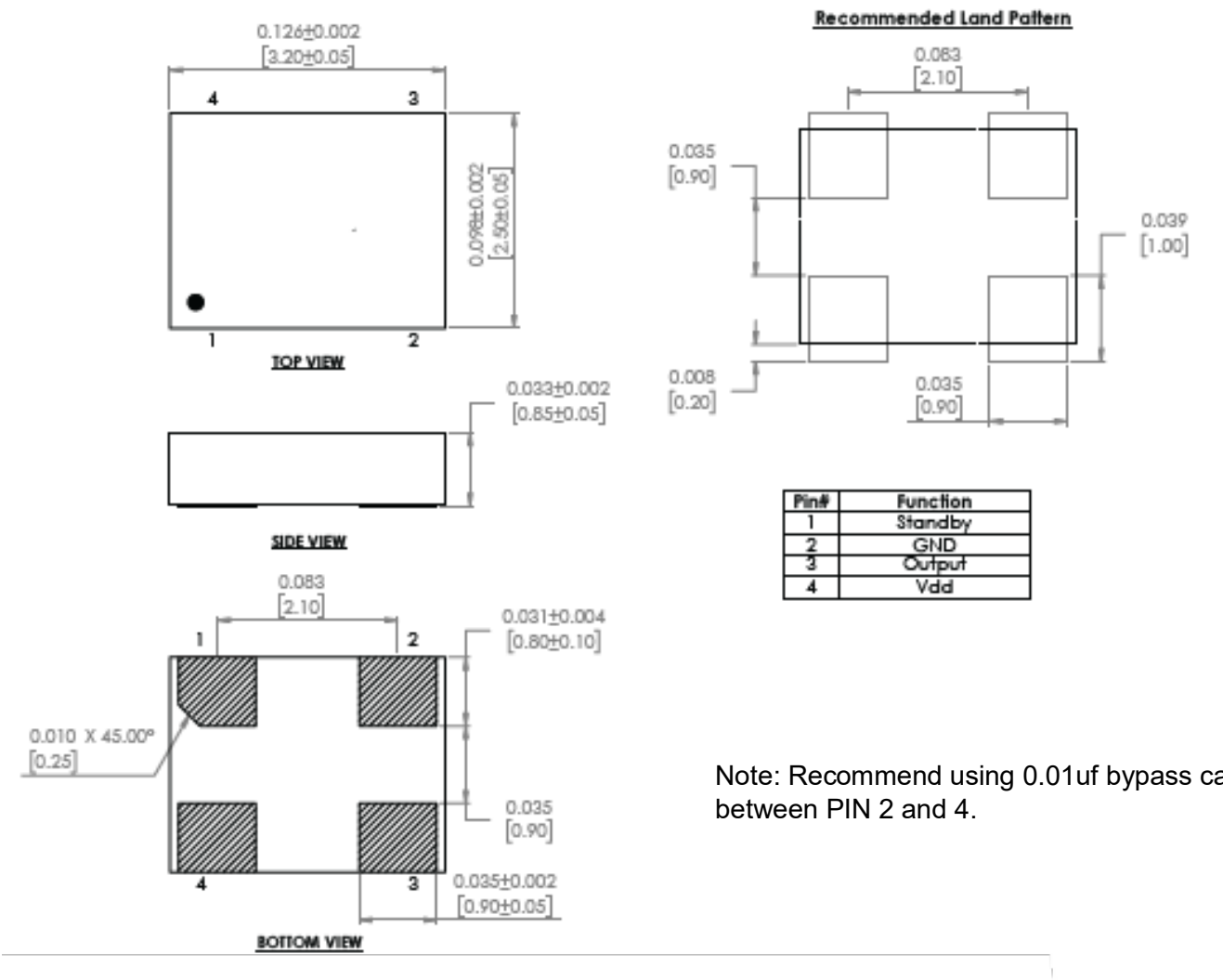
Absolute Maximum Ratings

Item	Min.	Max.	Units
Supply Voltage	-0.3	+4.0	V
Input Voltage	-0.3	$V_{dd} + 0.3$	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



Note: Recommend using 0.01uf bypass capacitor between PIN 2 and 4.

Dimensions: Inches[mm]

Reflow Profile [JEDEC J-STD-020]

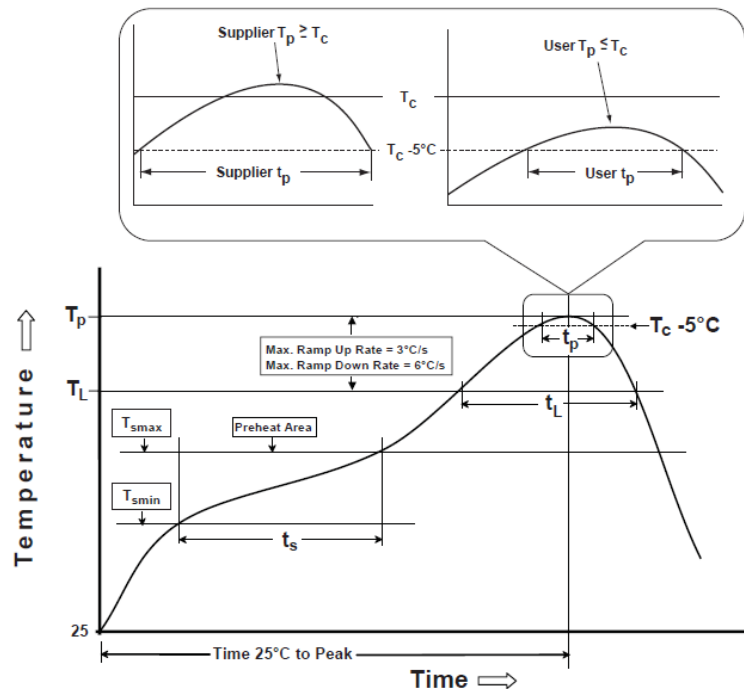


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process
Classification Temperatures (T_c)

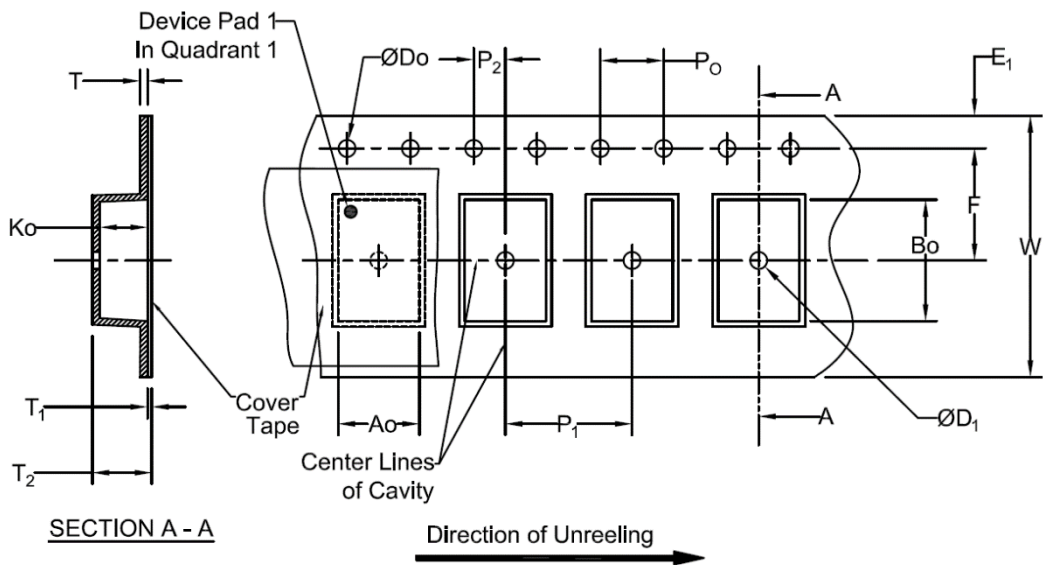
Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T_p)*	see Table 1	see Table 2
Time (t_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	30 sec.
Ramp-down rate (T_p to T_{smax})	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_p) is defined as a supplier minimum and a user maximum.**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.

Packaging

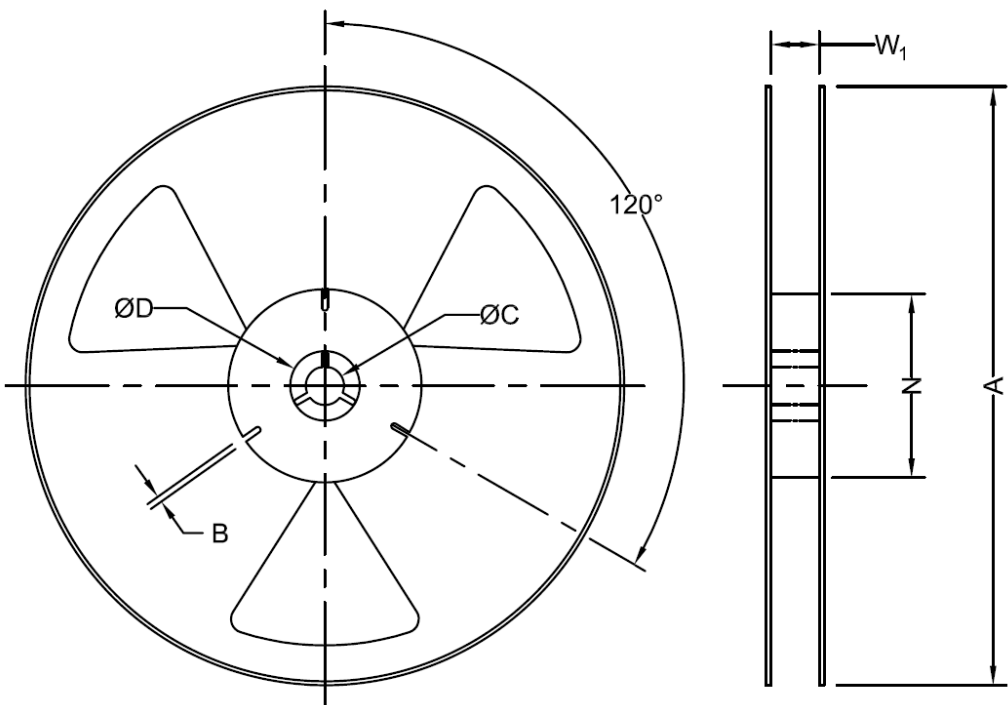
T: 1,000pcs/reel (D=180mm)



Tape Specifications (mm)							
Width	Ao	Bo	Do	D1 (Min)	E1	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	4.0±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 ₁
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