

CONTINUOUS VOLTAGE SMD CRYSTAL OSCILLATOR

Description

Abrakon's ASADVN series is a crystal oscillator designed to operate with supply voltages between 1.6V and 3.63V. This series features low power consumption, a wide frequency range, excellent rms phase jitter, tight stability options, and short lead times for industrial, consumer, and other applications. This series offers a CMOS output with a frequency stability option of ± 25 ppm over an operating temperature range of -40°C to $+85^{\circ}\text{C}$ from within a miniature 2.0 mm x 1.6 mm x 0.8 mm package.



Features

- Continuous Vdd operation from 1.6 V ~ 3.63 V
- Optimized for low current consumption
- Output waveform CMOS
- Hermetically seam-sealed ceramic package
- REACH/RoHS II Compliant | MSL Level 1

Typical Applications

- Portable & wearable electronics
- Internet of Things (IoT)
- Consumer electronics
- Industrial control & automation
- Mobile communication

Electrical Specifications [Note 1]

Parameters		Min.	Typ.	Max.	Units	Notes
Frequency range		1.25		100	MHz	
Operating Temperature range		-40		+85	$^{\circ}\text{C}$	See options
Storage Temperature range		-55		+125	$^{\circ}\text{C}$	
Overall Frequency stability [Note 2]		-25		+25	ppm	See options
Supply voltage (Vdd)		1.6		3.63	V	
Tri-state function		"1" ($V_{IH} \geq 0.7 \cdot V_{dd}$) or Open: Oscillation; "0" ($V_{IL} < 0.3 \cdot V_{dd}$): No Oscillation/Hi Z			V	
Output Load				15	pF	CMOS
Output Voltage	VOH	$0.9 \cdot V_{dd}$			V	
	VOL			$0.1 \cdot V_{dd}$		
Aging 1 year @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$		-3.0		+3.0	ppm	
Aging 5 years @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$		-5.0		+5.0	ppm	
Symmetry @ $\frac{1}{2} V_{dd}$		45	50	55	%	
Start-up Time				5.0	ms	
Rise and Fall Time (T_r/T_f) @ $10\%V_{dd}$ - $90\%V_{dd}$, 15pF load	Vdd = 1.8V to 3.63V			8.0	ns	$1.25\text{MHz} \leq F \leq 19.999\text{MHz}$
				6.0		$20\text{MHz} \leq F \leq 39.999\text{MHz}$
				5.0		$40\text{MHz} \leq F \leq 69.999\text{MHz}$
				5.0		$70\text{MHz} \leq F \leq 100\text{MHz}$
	Vdd = 1.6V			10.0		$1.25\text{MHz} \leq F \leq 19.999\text{MHz}$
				8.0		$20\text{MHz} \leq F \leq 39.999\text{MHz}$
				6.0		$40\text{MHz} \leq F \leq 69.999\text{MHz}$
				6.0		$70\text{MHz} \leq F \leq 100\text{MHz}$
RMS Period Jitter @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$	Vdd = 3.0V to 3.63V			5.0	ps	
	Vdd = 1.6V to 2.5V			7.0		
RMS Phase Jitter @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ (10 - 39MHz: 12kHz to 5MHz) (>39MHz: 12kHz to 20MHz)				1.0	ps	
Disable Current				10.0	μA	

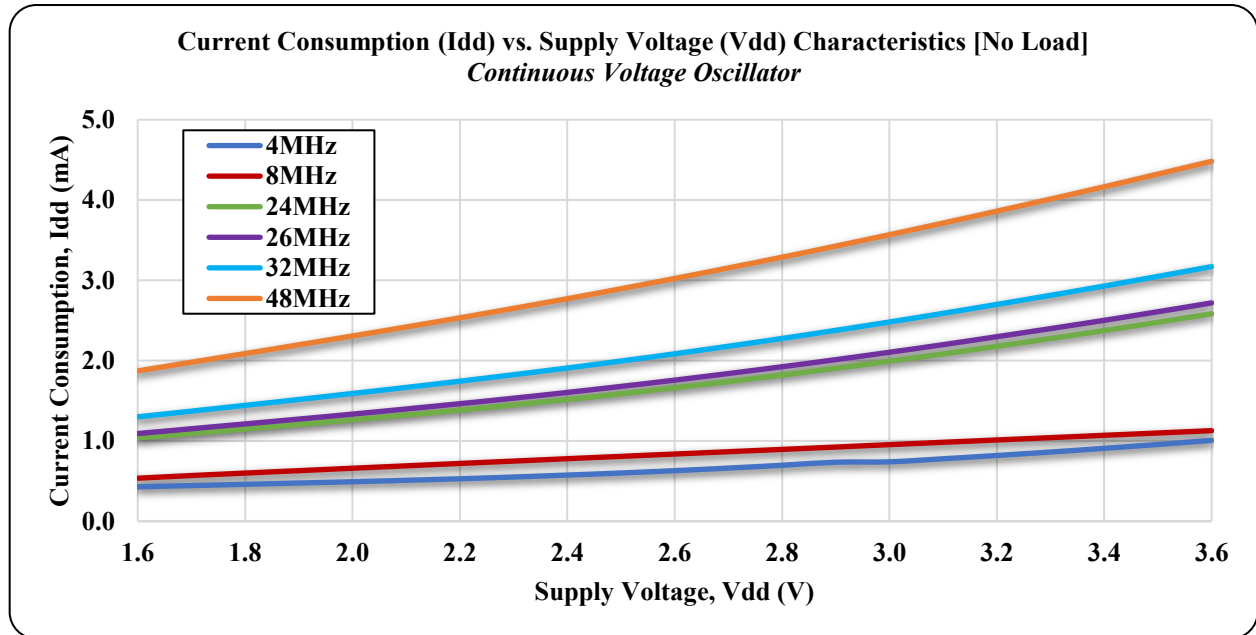
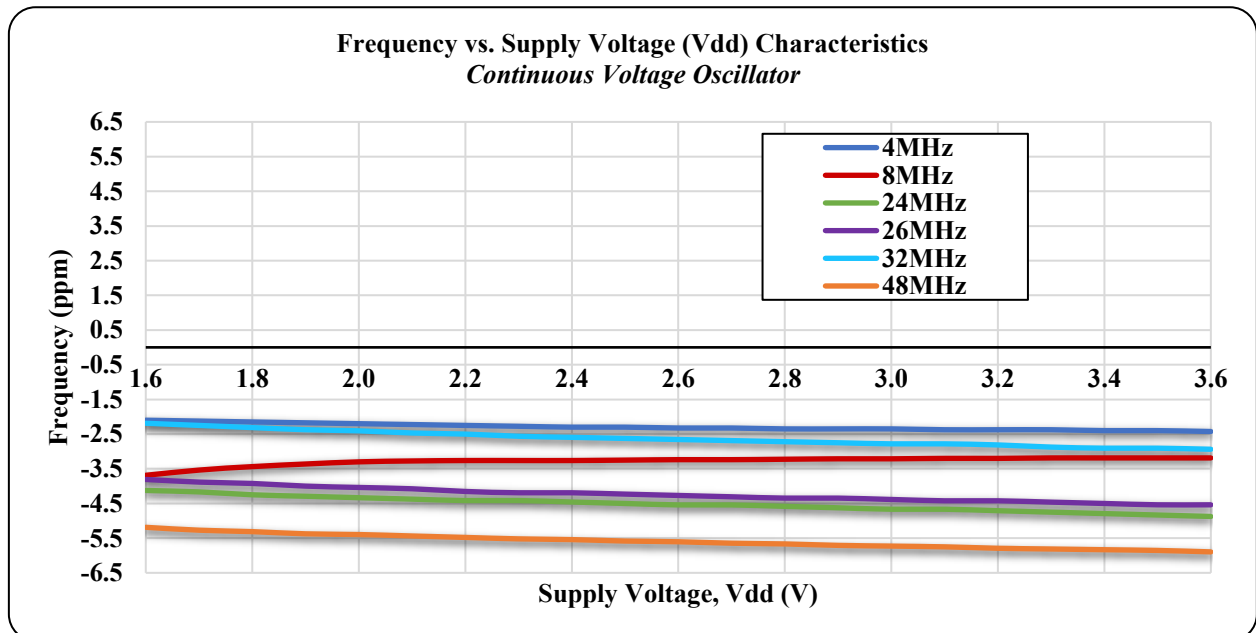
Note 1: All measurements guaranteed at nominal Vdd, nominal load, and at 25°C unless otherwise specified.

Note 2: Overall frequency stability includes initial frequency tolerance @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and stability over the operating temperature range.

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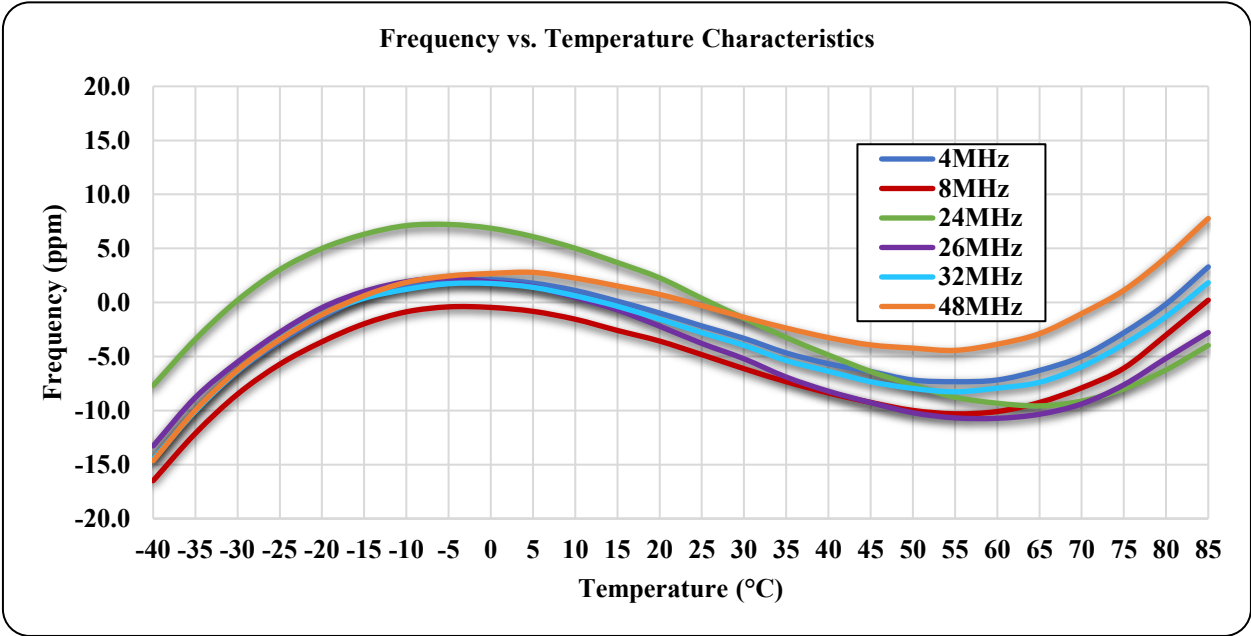
Parameters	Min.	Typ.	Max.	Units	Notes
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =3.3V			2.0	mA	1.25MHz ≤ F ≤ 5.999MHz
			2.0		6MHz ≤ F ≤ 9.999MHz
			3.0		10MHz ≤ F ≤ 19.999MHz
			4.0		20MHz ≤ F ≤ 29.999MHz
			5.0		30MHz ≤ F ≤ 39.999MHz
			5.0		40MHz ≤ F ≤ 45.999MHz
			5.0		46MHz ≤ F ≤ 48.999MHz
			6.0		49MHz ≤ F ≤ 50.999MHz
			8.0		51MHz ≤ F ≤ 54.999MHz
			8.0		55MHz ≤ F ≤ 60.999MHz
			12.5		61MHz ≤ F ≤ 75.999MHz
			14.5		76MHz ≤ F ≤ 80.999MHz
			14.5		81MHz ≤ F ≤ 100MHz
			14.5		81MHz ≤ F ≤ 100MHz
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =2.5V			1.3	mA	1.25MHz ≤ F ≤ 5.999MHz
			1.3		6MHz ≤ F ≤ 9.999MHz
			2.0		10MHz ≤ F ≤ 19.999MHz
			3.0		20MHz ≤ F ≤ 29.999MHz
			3.5		30MHz ≤ F ≤ 39.999MHz
			4.5		40MHz ≤ F ≤ 45.999MHz
			4.5		46MHz ≤ F ≤ 48.999MHz
			5.0		49MHz ≤ F ≤ 50.999MHz
			6.5		51MHz ≤ F ≤ 54.999MHz
			7.0		55MHz ≤ F ≤ 60.999MHz
			10.0		61MHz ≤ F ≤ 75.999MHz
			11.5		76MHz ≤ F ≤ 80.999MHz
			11.5		81MHz ≤ F ≤ 100MHz
			11.5		81MHz ≤ F ≤ 100MHz
			11.5		81MHz ≤ F ≤ 100MHz
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =1.8V			1.0	mA	1.25MHz ≤ F ≤ 5.999MHz
			1.0		6MHz ≤ F ≤ 9.999MHz
			1.6		10MHz ≤ F ≤ 19.999MHz
			2.2		20MHz ≤ F ≤ 29.999MHz
			2.5		30MHz ≤ F ≤ 39.999MHz
			3.0		40MHz ≤ F ≤ 45.999MHz
			3.5		46MHz ≤ F ≤ 48.999MHz
			3.5		49MHz ≤ F ≤ 50.999MHz
			3.5		51MHz ≤ F ≤ 54.999MHz
			4.0		55MHz ≤ F ≤ 60.999MHz
			9.0		61MHz ≤ F ≤ 75.999MHz
			9.0		76MHz ≤ F ≤ 80.999MHz
			10.0		81MHz ≤ F ≤ 100MHz
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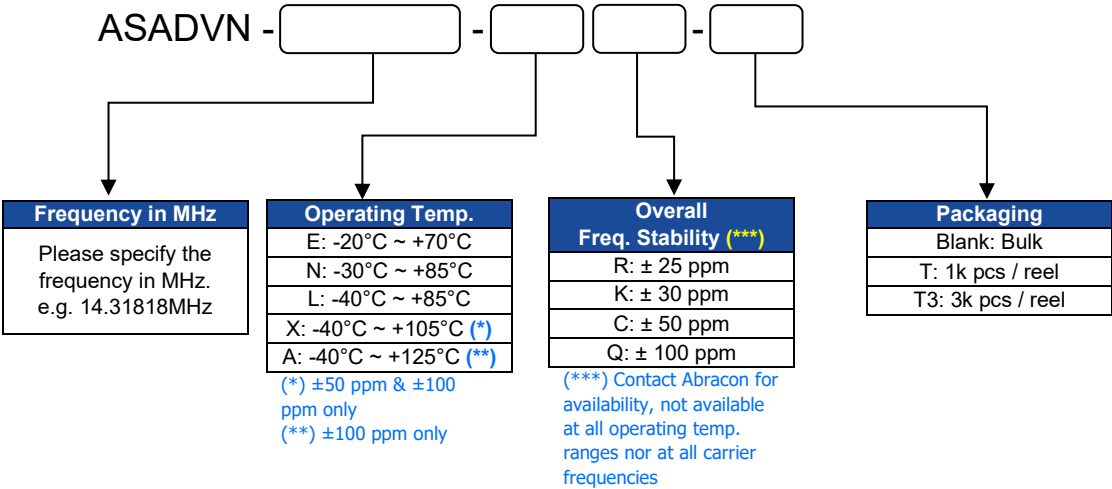
Typical Current Consumption (I_{dd}) vs. Supply Voltage (V_{dd}) Characteristics @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Typical Frequency vs. Supply Voltage (V_{dd}) Characteristics @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$, Offset from Nominal Frequency

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Typical Frequency vs Temperature Characteristics (Vdd = 3.3V)

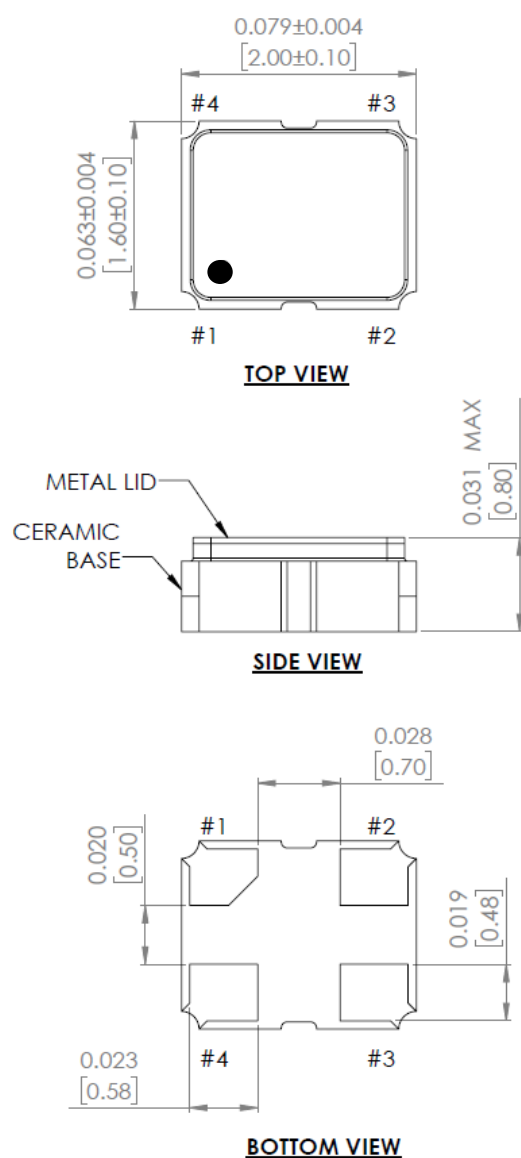


Part Identification

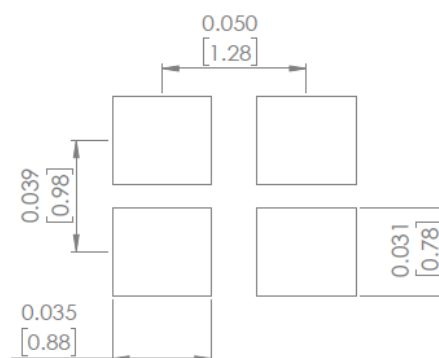


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Mechanical Dimensions



Recommended Land Pattern



Pin #	Function
1	Tri-state
2	GND
3	Output
4	Vdd

Note: Recommended to use approximately 0.01μF bypass capacitor between PIN 2 and PIN 4

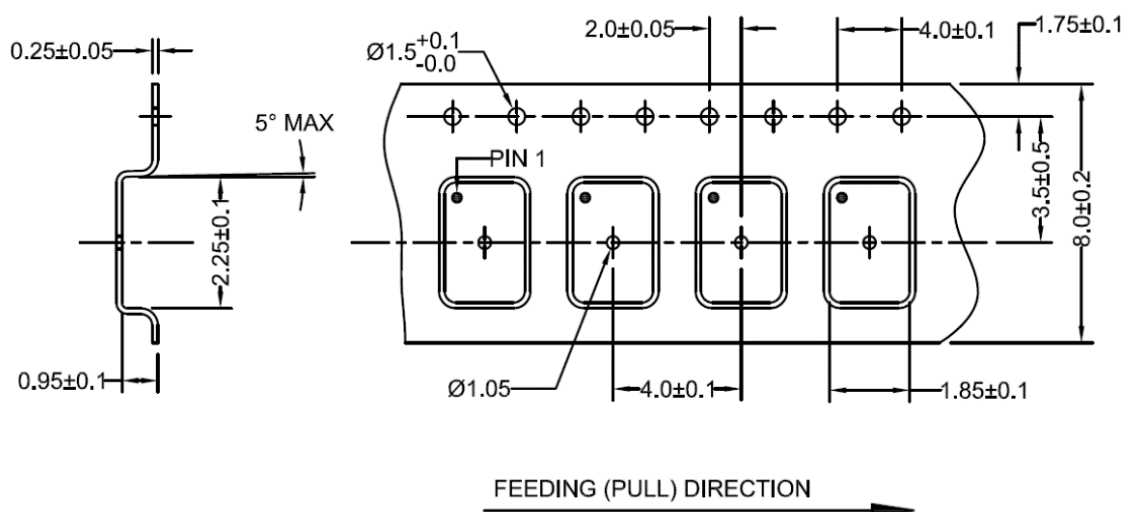
Dimensions: Inches [mm]

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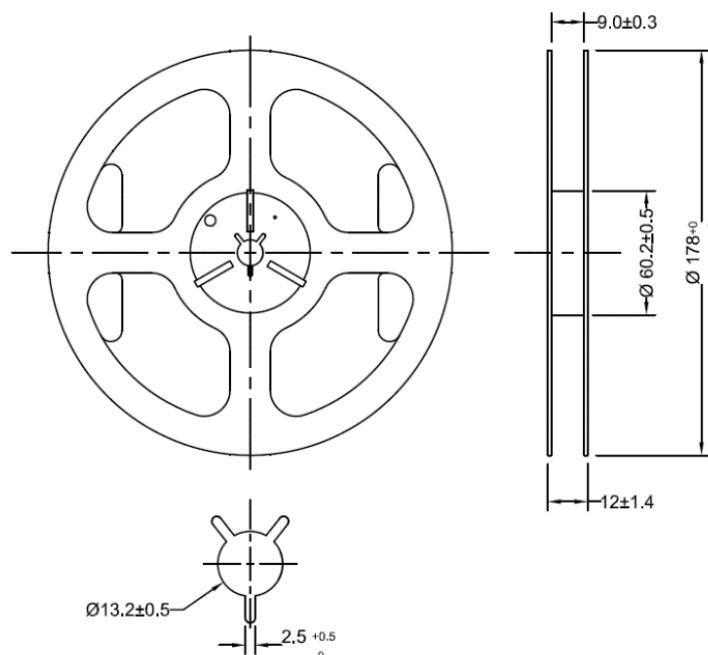
Tape

T: 1,000pcs/reel

T3: 3,000pcs/reel



Reel



Dimensions: Inches [mm]

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