

CONTINUOUS VOLTAGE SMD CRYSTAL OSCILLATOR

Description

Abrakon's ASVDVN 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 7.0 mm x 5.0 mm x 1.4 mm package.



Features

- Continuous Vdd operation from 1.6 V ~ 3.63 V
- Optimized for low current consumption
- Output waveform CMOS/HCMOS/LVCMOS compatible
- 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		160	MHz			
Operating Temperature Range		-40		+85	°C	See options		
Storage Temperature Range		-55		+125	°C			
Overall Frequency Stability [Note 2]		-25		+25	ppm	See options		
Supply Voltage (Vdd)		1.6		3.63	V			
Tri-state function		“1” (VIH≥0.7*Vdd) or Open: Oscillation; “0” (VIL<0.3*Vdd): No Oscillation/Hi Z			v			
Output Load				15	pF	CMOS		
Output Voltage	VOH	0.9*Vdd			v			
	VOL			0.1*Vdd				
Aging 1 year @25°C± 3°C		-3.0		+3.0	ppm			
Aging 5 years @25°C± 3°C		-5.0		+5.0	ppm			
Symmetry @ ½ Vdd		45	50	55	%			
Start-up Time				5.0	ms			
Rise and Fall Time (Tr/Tf) @10%Vdd- 90%Vdd, 15pF load	Vdd = 1.8V to 3.63V			8.0	ns	1MHz ≤ F ≤ 19.999MHz		
				6.0		20MHz ≤ F ≤ 39.999MHz		
				5.0		40MHz ≤ F ≤ 69.999MHz		
				5.0		70MHz ≤ F ≤ 99.999MHz		
				4.0		100MHz ≤ F ≤ 129.999MHz		
				3.0		130MHz ≤ F ≤ 160MHz		
	Vdd = 1.6V			10.0		1MHz ≤ F ≤ 19.999MHz		
				8.0		20MHz ≤ F ≤ 39.999MHz		
				6.0		40MHz ≤ F ≤ 69.999MHz		
				6.0		70MHz ≤ F ≤ 99.999MHz		
				5.0		100MHz ≤ F ≤ 129.999MHz		
				5.0		130MHz ≤ F ≤ 160MHz		
		RMS Period Jitter @25°C± 3°C	Vdd = 3.0V to 3.63V			5.0	ps	
			Vdd = 1.6V to 2.5V			7.0		
RMS Phase Jitter @25°C± 3°C (10 - 39MHz: 12kHz to 5MHz) (>39MHz: 12kHz to 20MHz)				1.0	ps			
Disable Current				10.0	uA			

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

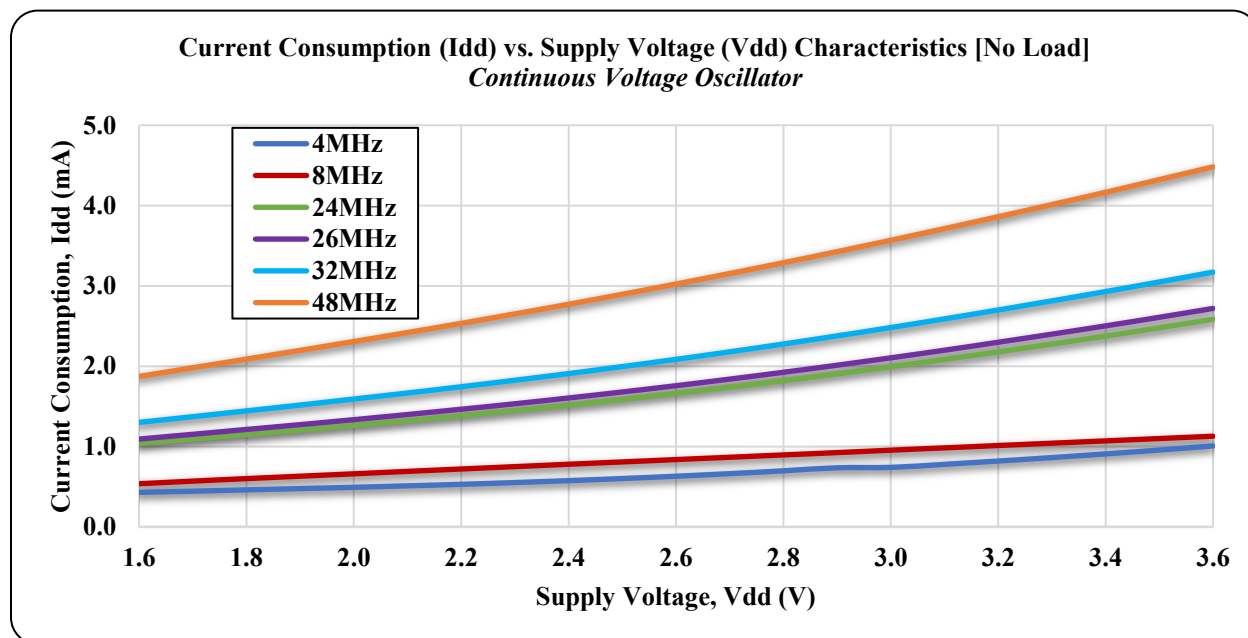
Note 2: Overall frequency stability includes initial frequency tolerance @ $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and stability over the operating temperature range.

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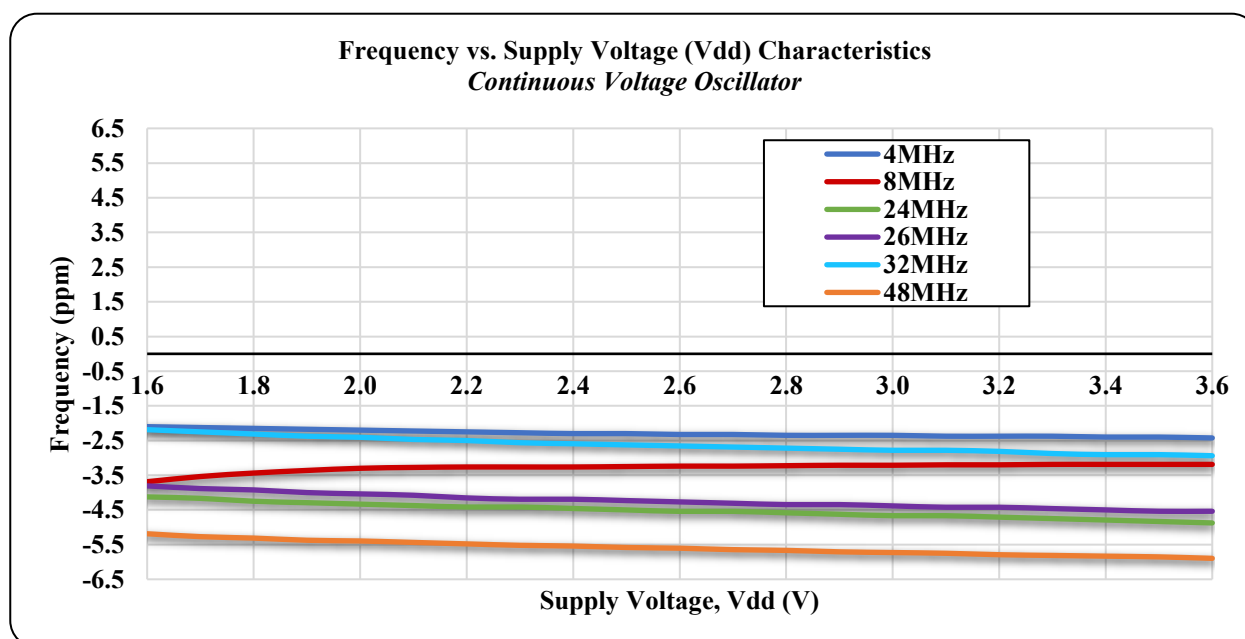
Parameters	Min.	Typ.	Max.	Units	Notes
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =3.3V			2.0	mA	1MHz ≤ F ≤ 5.999MHz
			2.0		6MHz ≤ F ≤ 9.999MHz
			3.0		10MHz ≤ F ≤ 19.999MHz
			4.0		20MHz ≤ F ≤ 29.999MHz
			5.0		30MHz ≤ F ≤ 39.999MHz
			5.0		40MHz ≤ F ≤ 45.999MHz
			5.0		46MHz ≤ F ≤ 48.999MHz
			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 ≤ 105.999MHz
			15.5		106MHz ≤ F ≤ 119.999MHz
			15.5		120MHz ≤ F ≤ 130.999MHz
			18.0		131MHz ≤ F ≤ 139.999MHz
			18.0		140MHz ≤ F ≤ 149.999MHz
			18.0		150MHz ≤ F ≤ 156.999MHz
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =2.5V			1.3	mA	157MHz ≤ F ≤ 160MHz
			1.3		1MHz ≤ F ≤ 5.999MHz
			2.0		6MHz ≤ F ≤ 9.999MHz
			3.0		10MHz ≤ F ≤ 19.999MHz
			3.5		20MHz ≤ F ≤ 29.999MHz
			4.5		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 ≤ 105.999MHz
			12.5		106MHz ≤ F ≤ 119.999MHz
			12.5		120MHz ≤ F ≤ 130.999MHz
			14.0		131MHz ≤ F ≤ 139.999MHz
			14.0		140MHz ≤ F ≤ 149.999MHz
Supply Current (I _{dd}) @25°C± 3°C, no load @ V _{dd} =1.8V			1.0	mA	150MHz ≤ F ≤ 156.999MHz
			1.0		157MHz ≤ F ≤ 160MHz
			1.6		1MHz ≤ F ≤ 5.999MHz
			2.2		6MHz ≤ F ≤ 9.999MHz
			2.5		10MHz ≤ F ≤ 19.999MHz
			3.0		20MHz ≤ F ≤ 29.999MHz
			3.5		30MHz ≤ F ≤ 39.999MHz
			3.5		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 ≤ 105.999MHz
			10.0		106MHz ≤ F ≤ 119.999MHz
			10.5		120MHz ≤ F ≤ 130.999MHz
			10.5		131MHz ≤ F ≤ 139.999MHz
			11.5		140MHz ≤ F ≤ 149.999MHz
			11.5		150MHz ≤ F ≤ 156.999MHz
			11.5		157MHz ≤ F ≤ 160MHz

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Typical Current Consumption (I_{dd}) vs. Supply Voltage (V_{dd}) Characteristics @25°C± 3°C

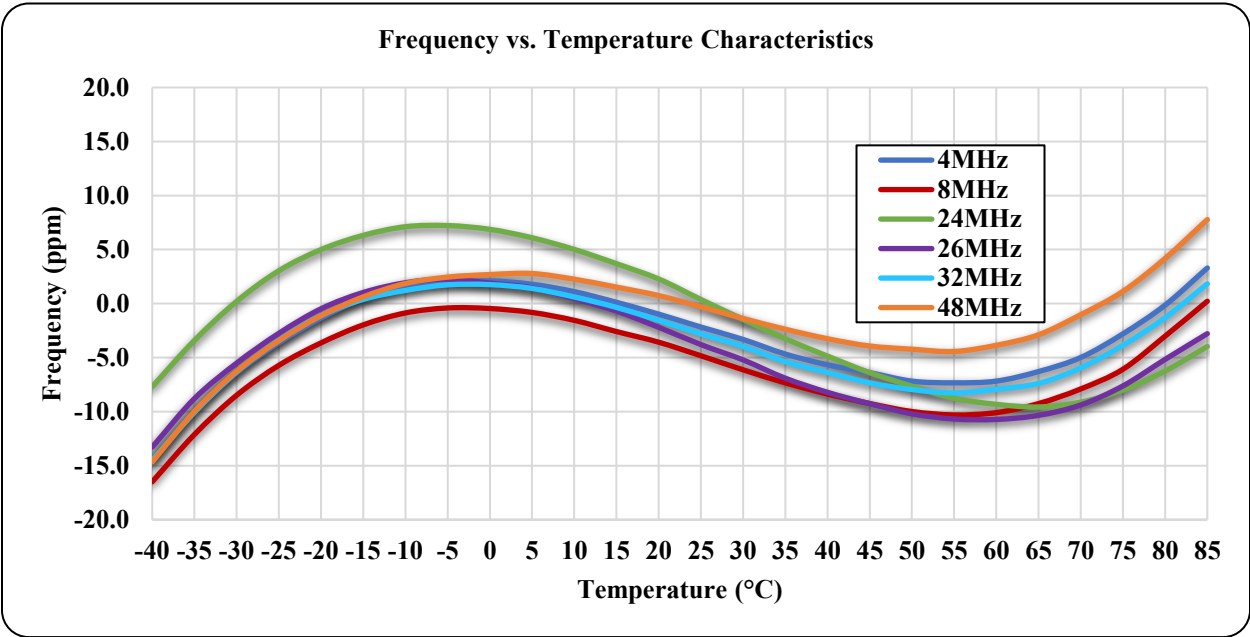


Typical Frequency vs. Supply Voltage (V_{dd}) Characteristics @25°C± 3°C, Offset from Nominal Frequency

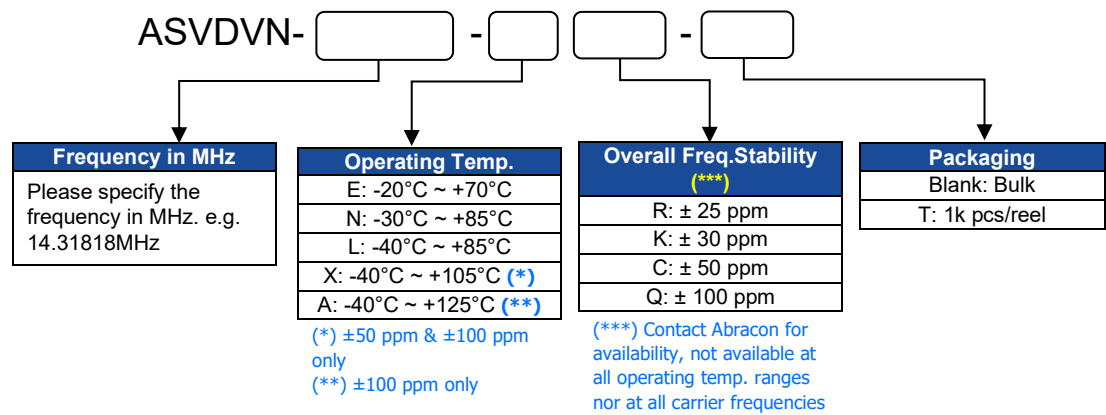


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Typical Frequency vs. Temperature Characteristics (Vdd = 3.3V)

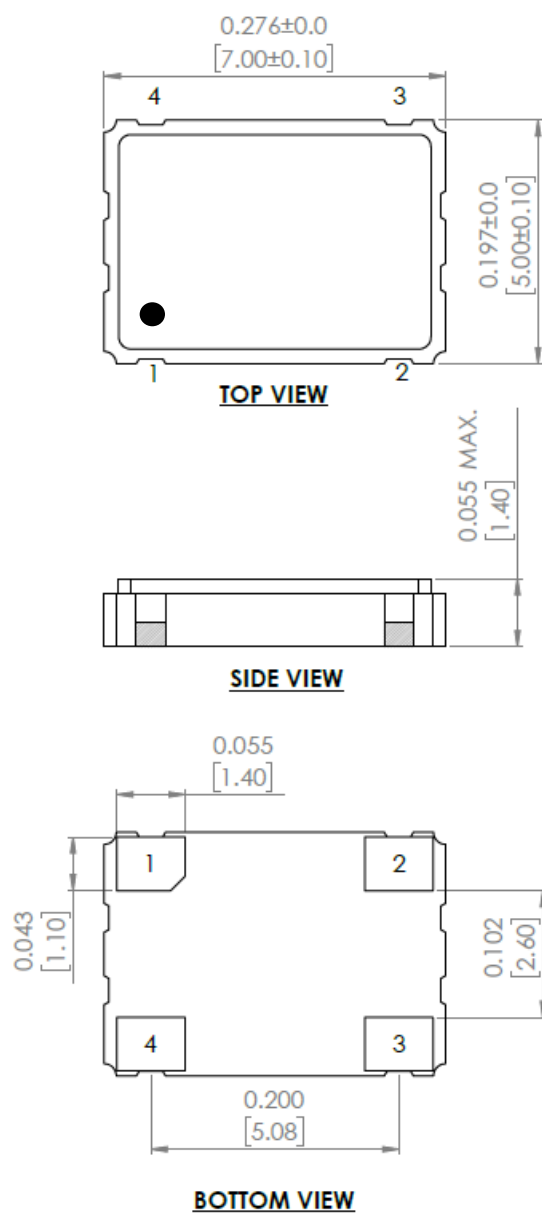


Part Identification

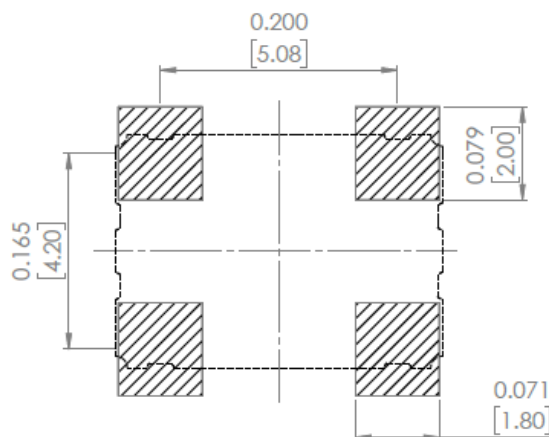


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Mechanical Dimensions



Recommended Land Pattern



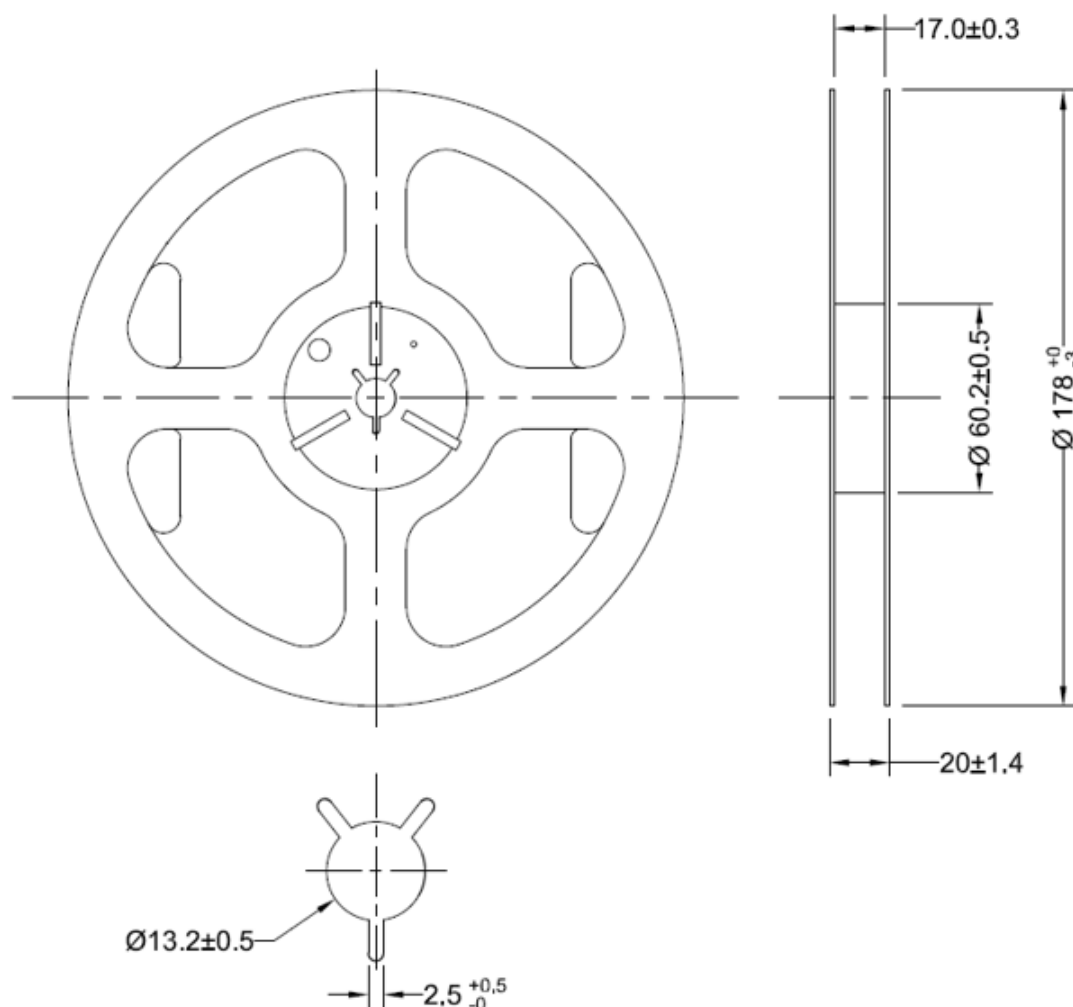
Pin #	Function
1	Tri-State
2	GND
3	Output
4	Vdd

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

Dimensions: Inches [mm]

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Reel



Dimensions: mm

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[SIT8918AA-11-33S-50.000000G](#) [SM4445TX-33.333M-T250](#) [F335-24](#) [F535L-12](#) [F535L-24](#) [SiT8503AI-18-33E-0.200000X](#)
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