

REV B.

**VS2 SERIES: VCXO OSCILLATOR, HCMOS, +5.0 VDC, 7x5mm Package**

**DESCRIPTION:** A crystal controlled, high frequency, highly stable, voltage controlled oscillator, adhering to HCMOS Standards. The output can be Tri-stated to facilitate testing or combined multiple clocks. The device is contained in a sub-miniature, very low profile, leadless ceramic SMD package with 6 gold contact pads. This miniature oscillator is ideal for today's automated assembly environments.

**APPLICATIONS AND FEATURES:**

- ⌚ **Common Frequencies:** 16.384 MHz; 19.44 MHz; 27 MHz; 38.88 MHz; 51.84 MHz;
- ⌚ **+5.0 VDC HCMOS**
- ⌚ **Frequency Range from 1 to 51.84 MHz**
- ⌚ **Miniature Ceramic SMD Package Available on Tape and Reel**
- ⌚ **Lead Free**

**ELECTRICAL PARAMETERS:**

PARAMETER	SYMBOL	TEST CONDITIONS <sup>*1</sup>	VALUE	UNIT
Nominal Frequency	f <sub>o</sub>		1.000 ~ 51.840	MHz
Supply Voltage	V <sub>cc</sub>		+5.0 ±10%	VDC
Supply Current MAX	I <sub>s</sub>		35.0	mA
Output Logic Type			HCMOS	
Load		Connected from output to ground	15	pF
Output Voltage Levels	V <sub>oh</sub> V <sub>ol</sub>		0.9•V <sub>cc</sub> MIN 0.1•V <sub>cc</sub> MAX	VDC VDC
Duty Cycle	DC	Measured at 50% of V <sub>cc</sub>	40/60 to 60/40 or 45/55 to 55/45	%
Rise / Fall Time	t <sub>r</sub> / t <sub>f</sub>	Measured at 20/80% and 80/20% V <sub>cc</sub> Levels	6.0 MAX <sup>*2</sup>	ns
Jitter	J	RMS, F <sub>j</sub> = 12 kHz...20 MHz	1 TYP	ps
Overall Frequency Stability	Δf/f <sub>c</sub>	Op. Temp., Aging, Load, Supply and Cal. Variations	±50 <sup>*4</sup>	ppm
Control Voltage Range	VC	Positive slope; 10% linearity MAX	0 to +5.0	VDC
Settability	V <sub>fo</sub>		+2.5 ± 0.5	VDC
Absolute Pull Range	APR	Minimum guaranteed freq. pull over Δf/f <sub>c</sub>	See Part Numbering <sup>*3</sup>	ppm
Input Impedance	Z <sub>in</sub>		10 MIN	kΩ
Modulation Bandwidth	BW	-3 dB	10 MIN	kHz
Pin 2    Output Enabled Output Disabled	En Dis	High Voltage or No Connect Ground	0.7•V <sub>cc</sub> MIN 0.3•V <sub>cc</sub> MAX	VDC VDC
Absolute voltage range	V <sub>cc(abs)</sub>	Non-Destructive	-0.5...+7.0	VDC

\*1 Test Conditions Unless Stated Otherwise: Nominal V<sub>cc</sub>, Nominal Load, +25 ±3°C

\*2 Frequency Dependent

\*3 Not All APR's Available With All Temperature Ranges—Consult Factory For Availability

\*4 Tighter stabilities available at narrow temperature ranges—Consult Factory For Availability

**ENVIRONMENTAL PARAMETERS:**

PARAMETER	SYMBOL	TEST CONDITIONS <sup>*1</sup>	VALUE	UNIT
Operating temperature range	T <sub>a</sub>		SEE PART NUMBER TABLE	°C
Storage temperature range	T <sub>(stg)</sub>		-55...+90	°C

**PART NUMBERING SYSTEM:**

SERIES	SYMMETRY	TEMPERATURE RANGE (°C)	APR (ppm)	FREQUENCY (MHz)
VS2: VCXO with HCMOS Output	A: 40/60 to 60/40% T: 45/55 to 55/45%	R: 0...+50 S: 0...+70 U: -20...+70 V: -40...+85	F: ±32 ppm H: ±50 ppm G: ±80 ppm J: ±100 ppm	1.000...51.840

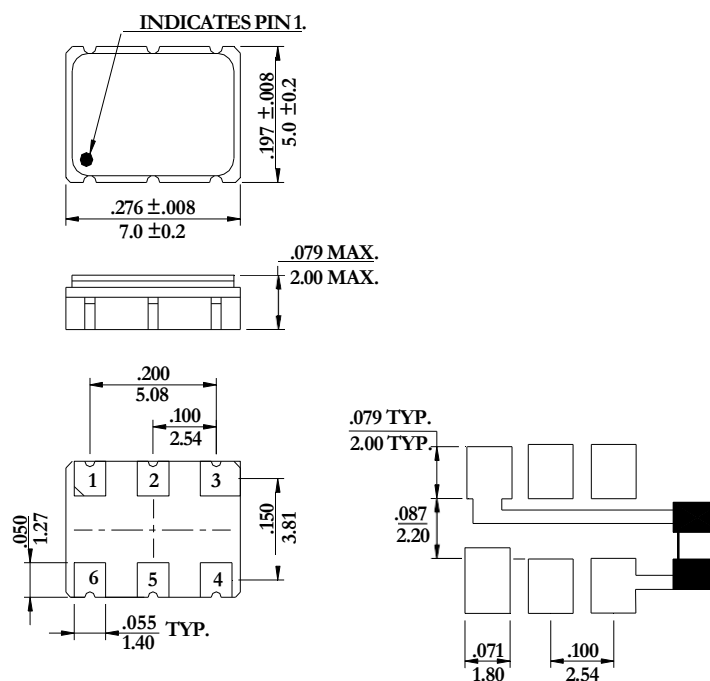
**EXAMPLE: VS2ASH-38.880**

VCXO Oscillator, 7x5mm Package, +5.0 VDC Supply Voltage, HCMOS Output, 40/60% Symmetry, 0...+70°C Operating Temperature Range, ±50 ppm APR, 38.880 MHz

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Consult the factory for any custom requirements.

### MECHANICAL PARAMETERS:



SOLDER PATTERN

**\*0.01μF external by-pass filter is recommended as shown on solder pattern.**

#### OUTLINE TOLERANCE:

±0.006" / 0.15mm  
(Unless otherwise specified)

#### PIN FUNCTIONS:

- [1] VOLTAGE CONTROL
- [2] ENABLE/DISABLE
- [3] CASE GROUND
- [4] OUTPUT
- [5] NO CONNECT
- [6] SUPPLY VOLTAGE

#### TYP. MARKING:

VS2ASH  
38.88  
RAL D/C

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