REV D.

VS4 SERIES: VCXO OSCILLATOR, HCMOS, +3.3 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; 77.76 MHz**
- ⏱ **+3.3 VDC HCMOS**
- ⏱ **Frequency Range from 1 to 125.000 MHz**
- ⏱ **Miniature Ceramic SMD Package Available on Tape and Reel**
- ⏱ **Lead Free and ROHS Compliant**

ELECTRICAL PARAMETERS:

PARAMETER	SYMBOL	TEST CONDITIONS[*1]	VALUE	UNIT
Nominal Frequency	fo		1.000 ~ 125.000	MHz
Supply Voltage	Vcc		+3.3 ±10%	VDC
Supply Current MAX	Is		35.0 [*5]	mA
Output Logic Type			HCMOS	
Load		Connected from output to ground	15	pF
Output Voltage Levels	Voh / Vol		0.9•Vcc MIN / 0.1•Vcc MAX	VDC / VDC
Duty Cycle	DC	Measured at 50% of Vcc	40/60 to 60/40 or 45/55 to 55/45	%
Rise / Fall Time	tr / tf	Measured at 20/80% and 80/20% Vcc Levels	6.0 MAX [*2]	ns
Jitter	J	RMS, Fj = 12 kHz…20 MHz / Peak-to-peak	1 TYP / 6.5 TYP	ps / ps
Overall Frequency Stability	$\Delta f/fc$	Op. Temp., Aging, Load, Supply and Cal. Variations	±50[*4]	ppm
Control Voltage Range	VC	Positive slope; 10% linearity MAX	0 to +3.3	VDC
Settability	Vfo		+1.65 ± 0.25	VDC
Absolute Pull Range	APR	Minimum guaranteed freq. pull over $\Delta f/fc$	See Part Numbering [*3]	ppm
Input Impedance	Zin		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•Vcc MIN / 0.3•Vcc MAX	VDC / VDC
Absolute voltage range	Vcc(abs)	Non-Destructive	-0.5…+7.0	VDC

*1 Test Conditions Unless Stated Otherwise: Nominal Vcc, 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
*5 Lower current consumption (<10mA) available at certain frequency ranges—Consult Factory For Availability

ENVIRONMENTAL PARAMETERS:

PARAMETER	SYMBOL	TESTCONDITIONS[*1]	VALUE	UNIT
Operating temperature range	Ta		SEE PART NUMBER TABLE	°C
Storage temperature range	T(stg)		-55…+90	°C

PART NUMBERING SYSTEM:

SERIES	SYMMETRY	TEMPERATURE RANGE (°C)	APR (ppm)	FREQUENCY (MHz)
VS4: 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…125.000

EXAMPLE: VS4ASH-38.880

REV D.

VCXO Oscillator, 7x5mm Package, +3.3 VDC Supply Voltage, HCMOS Output, 40/60% Symmetry, 0…+70°C Operating Temperature Range, ±50 ppm APR, 38.880 MHz, Enable High on Pin 2 (standard)
Consult the factory for any custom requirements.

·   **MECHANICAL PARAMETERS:**
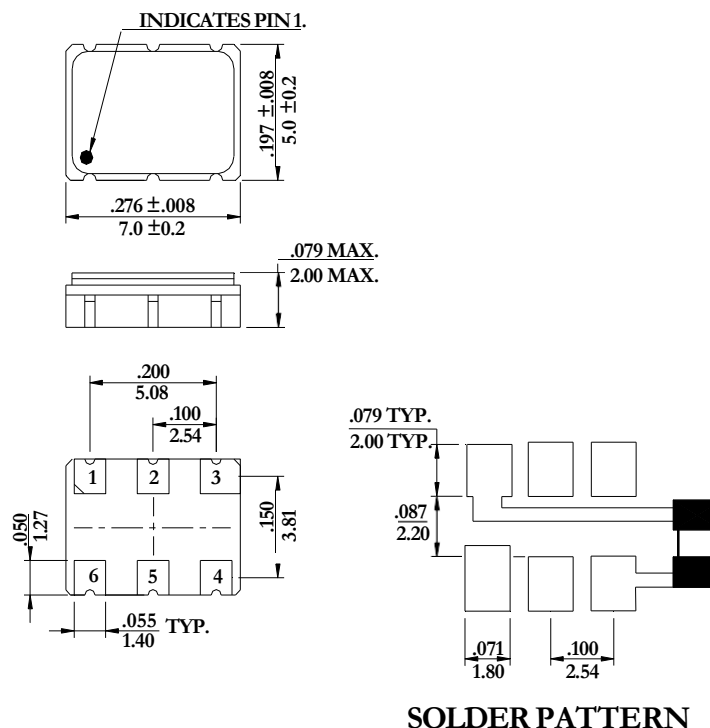
SOLDER PATTERN

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

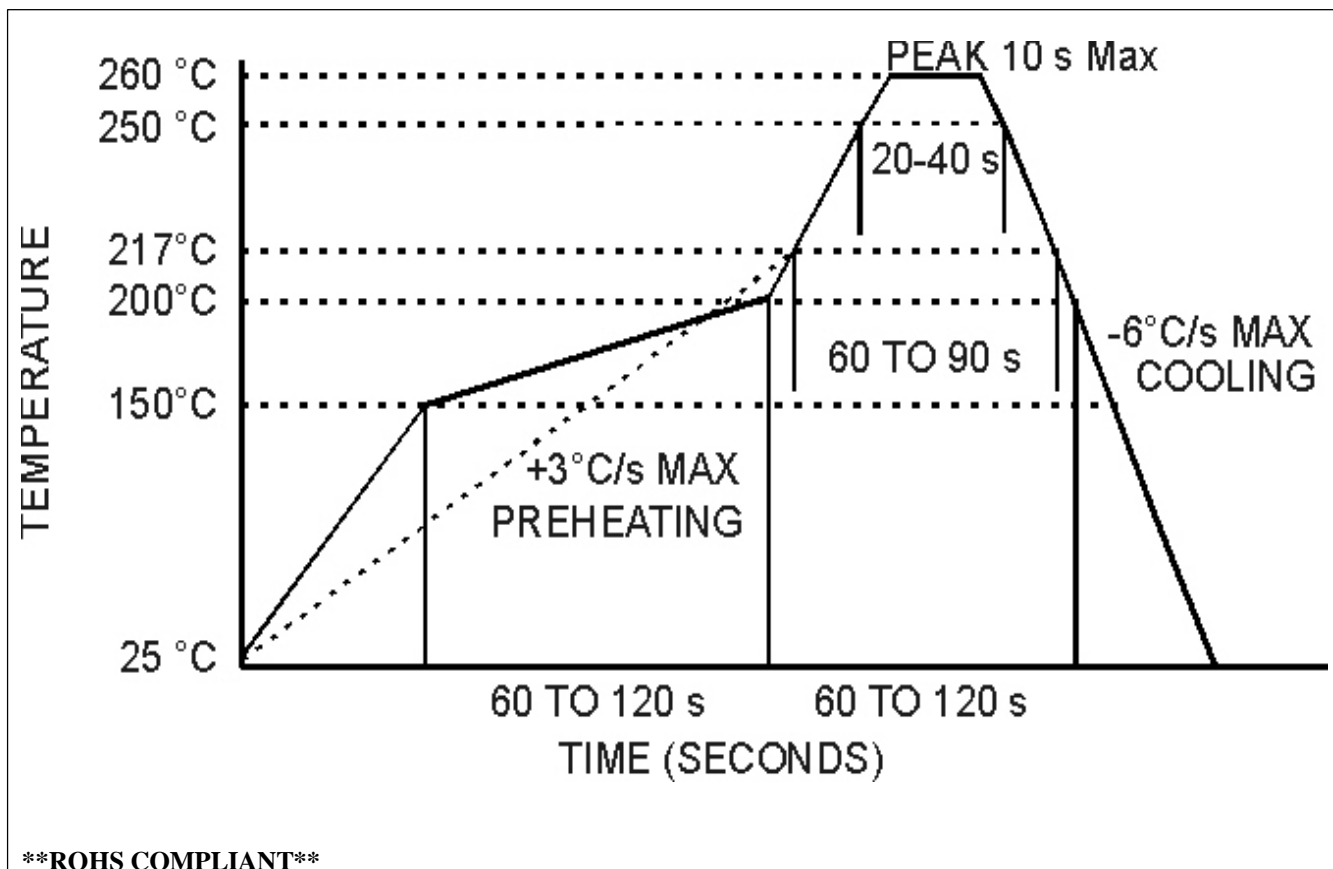OUTLINE TOLERANCE:
±0.006" / 0.15mm
(Unless otherwise specified)

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

TYP. MARKING:
VS4ASH
38.88
RAL D/C

REV D.

ROHS COMPLIANT