

VS9M: ANALOG MULTIPLIED LVPECL SERIES: ULTRA HF VCXO, LVPECL, +3.3 VDC

DESCRIPTION: A crystal controlled, high frequency, highly stable oscillator, adhering to Low Voltage Differential Signaling (LVPECL) 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:

- ⌚ **Infiniband; Fiber Channel; SATA; 10GbE; Network Processors; SOHO Routing; Switches;**
- ⌚ **Common Frequencies: 150 MHz; 156.25 MHz; 155.52 MHz; 161.1328 MHz; 212.5MHz; 312.5MHz, 622.080 MHz**
- ⌚ **+3.3 VDC LVPECL**
- ⌚ **Frequency Range from 750KHz to 800MHz**
- ⌚ **Low Phase Noise Analog Multiplication**
- ⌚ **Miniature Ceramic SMD Package Available on Tape and Reel**
- ⌚ **Lead Free and ROHS Compliant**



ABSOLUTE MAXIMUM RATINGS:

PARAMETER	SYMBOL	VALUE	UNIT
Operating temperature range	Ta	-40...+85	°C
Storage temperature range	T(stg)	-55...+90	°C
Supply voltage	Vcc	+4.6	VDC
Maximum Input Voltage	Vi	Vss-0.5...Vcc+0.5	VDC
Maximum Output Voltage	Vo	Vss-0.5...Vcc+0.5	VDC

ELECTRICAL PARAMETERS:

PARAMETER	SYMBOL	TEST CONDITIONS ¹	VALUE	UNIT
Nominal Frequency	f _o		0.75 to 800	MHz
Supply Voltage	Vcc		+3.3 ±5%	VDC
Supply Current	I _s		100.0 MAX	mA
Output Logic Type			LVPECL	
Load		Connected between each output and Vcc – 2.0 VDC	50	Ω
Output Voltage Levels	V _{oh} V _{ol}	min max	Vcc-1.025 Vcc-1.620	VDC VDC
Duty Cycle	DC	Measured at 50% of output voltage swing	40/60 to 60/40 or 45/55 to 55/45	%
Rise / Fall Time	t _r / t _f	Measured at 20/80% and 80/20% output voltage swing	0.7 TYP 1.0 MAX ²	ns
Frequency Stability		Overall conditions	±50 *(note 7)	ppm
Jitter	J	Integrated Phase t _{ji} RMS, F _j = 12 kHz...20 MHz ⁵	0.3 TYP**	ps
		Integrated Phase RMS t _i offset frequency 50KHz to 80MHz ⁵	0.5 TYP**	ps
		Deterministic period Jitter Dj using wavecrest analyzer ⁴	Fo<320MHz. 6 TYP ** Fo>320MHz. 18 TYP **	ps
		Random period Jitter Rj using wavecrest analyzer ⁴	Fo<320MHz. 2.5 TYP ** Fo>320MHz. 2.5 TYP**	ps
		Acumm. Peak to Peak Jitter Tp-p using wavecrest analyzer ⁴	Fo<320MHz. 30 TYP** Fo>320MHz. 43 TYP**	ps
Phase Noise, TYP	£(Δf)	typ. @212.5MHz ⁶	Δf=10 Hz -65 Δf=100 Hz -95 Δf=1 KHz -125 Δf=10 KHz -140 Δf=100 KHz -145 Δf>1M Hz -148	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz
Sub Harmonics, TYP	f _{sub}	Load, nom, Supply nom	Fo<320MHz. -50 Fo>320MHz. -35	dBc
Control Voltage Range	VC	Positive slope; 10% linearity MAX	0 to +3.3	VDC
Settability	V _{fo}		+1.65 ± 0.25	VDC
Absolute Pull Range	APR	Minimum guaranteed freq. pull over Δf/fc, over all conditions	See Part Numbering	ppm
Input Impedance	Z _{in}		10 MIN	KΩ
Modulation Bandwidth	BW	-3 dB	10 MIN	KHz
Enable High Option; Pin 2 Output Enabled Output Disabled	En Dis	High Voltage or No Connect Ground	0.7•Vcc MIN 0.3•Vcc MAX	VDC VDC
Enable Low Option; Pin 2 Output Disabled Output Enabled	Dis En	High Voltage Ground or No Connect	0.7•Vcc MIN 0.3•Vcc MAX	VDC VDC

- *1 Test Conditions Unless Stated Otherwise: Nominal Vcc, Nominal Load, +25 ±3°C
- *2 Frequency Dependent
- *3 May not be Available With All Temperature Ranges or Frequencies — Please Consult Factory
- *4 Measured with Wavecrest SIA-3000A 10,000, Cycles no filtering
- *5 Calculated from Agilent 5500 phase noise measurements
- *6 Measured with Agilent 5500
- *7 Tighter stabilities maybe available upon request – please consult factory

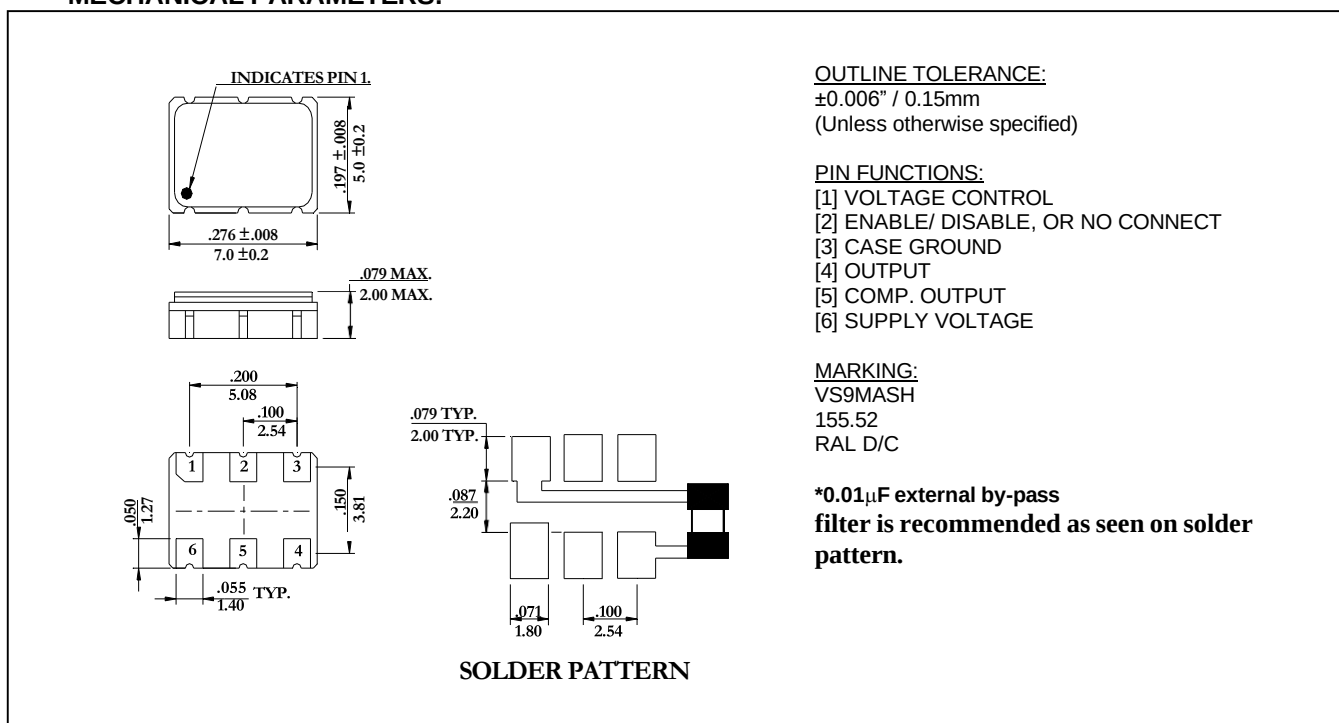
PART NUMBERING SYSTEM:

SERIES	SYMMETRY	TEMPERATURE RANGE (°C)	ABSOLUTE PULL RANGE	FREQUENCY (MHz)	Enable/Disable
VS9M: UHF +3.3Vdc VCXO with LVPECL Comp. 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	K: ±20 ppm L: ±25 ppm F: ±32 ppm H: ±50 ppm G: ±80 ppm J: ±100 ppm*(note 3)	0.75...800.000	Enable High – standard (Omit Suffix) EL; Enable Low

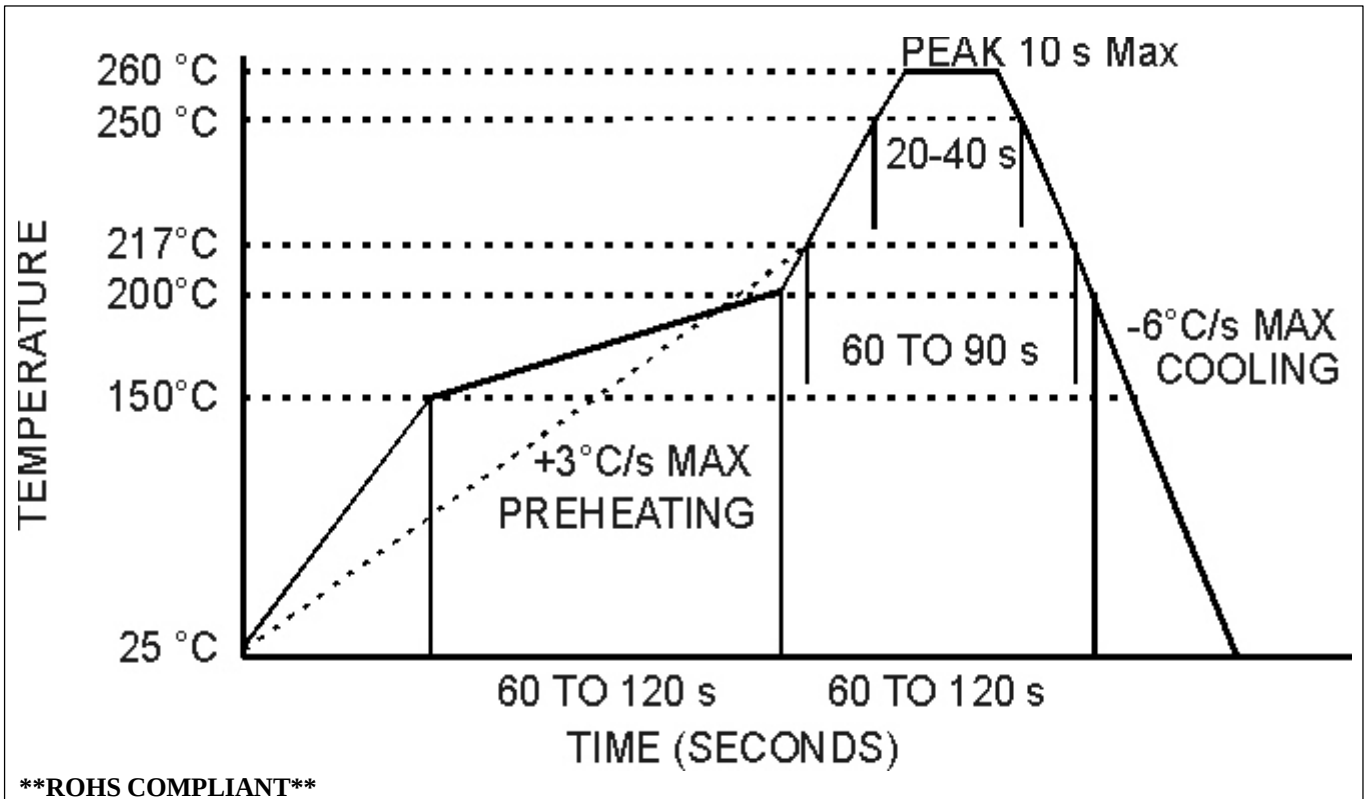
EXAMPLE: VS9MASH -155.520

VCXO, 7x5mm Package, +3.3 VDC Supply Voltage, LVPECL Output, Standard Symmetry, 0...+70°C Operating Temperature Range, ±50 ppm APR, 25 ppm stability, 155.520 MHz

MECHANICAL PARAMETERS:



REFLOW PROFILE:



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