

VS9L: PLL LVPECL SERIES: ULTRA HF VCXO, LVPECL, +3.3 VDC

DESCRIPTION: A voltage control crystal oscillator, 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
- ⌚ +3.3 VDC LVPECL
- ⌚ Frequency Range from 38MHz to 640MHz
- ⌚ Advanced Low Noise PLL multiplication (F>25MHz)
- ⌚ 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	fo		38 to 640	MHz
Supply Voltage	Vcc		+3.3 ±5%	VDC
Supply Current	Is		100.0 MAX	mA
Output Logic Type			LVPECL	
Load		Connected between each output and Vcc – 2.0 VDC	50	Ω
Output Voltage Levels	Voh Vol	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	tr / tf	Measured at 20/80% and 80/20% output voltage swing	0.3 to 0.5 TYP, 0.5 to 0.7 MAX**	ns
Jitter	J	Integrated Phase tji RMS, Fj = 12 kHz...20 MHz ⁵	Fo=155.52MHz 0.4 TYP	ps
			Fo=622.08MHz 0.4 TYP**	
		Random period Jitter Rj using wavecrest analyzer ⁴	Fo=155.52MHz. 3.5 TYP **	ps
			Fo=622.08MHz 6 TYP **	
Phase Noise	E(Δf)	typ. @155.52MHz ⁶	Fo=155.52MHz. 20 TYP**	ps
			Fo=622.08MHz 40 TYP**	
			Δf=10 Hz -60	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz
			Δf=100 Hz -90	
			Δf=1 KHz -120	
			Δf=10 KHz -130	
			Δf=100 KHz -128	
			Δf=1M Hz -144	
			Δf=10M Hz -150	
			Δf>20M Hz -150	
Overall Frequency Stability typ.	Δf/fc	Op. Temp., Aging, Load, and Supply Variations	<±50*(Note 7)	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 Δf/fc, over all conditions	See Part Numbering	ppm
Input Impedance	Zin		10 MIN	kΩ
Modulation Bandwidth	BW	-3 dB	10 MIN	kHz
Enable High Option;				
Pin 2	Output Enabled	En	High Voltage or No Connect	0.7•Vcc MIN
	Output Disabled	Dis	Ground	0.3•Vcc MAX
Enable Low Option;				
Pin 2	Output Disabled	Dis	High Voltage	0.7•Vcc MIN
	Output Enabled	En	Ground or No Connect	0.3•Vcc MAX

- *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

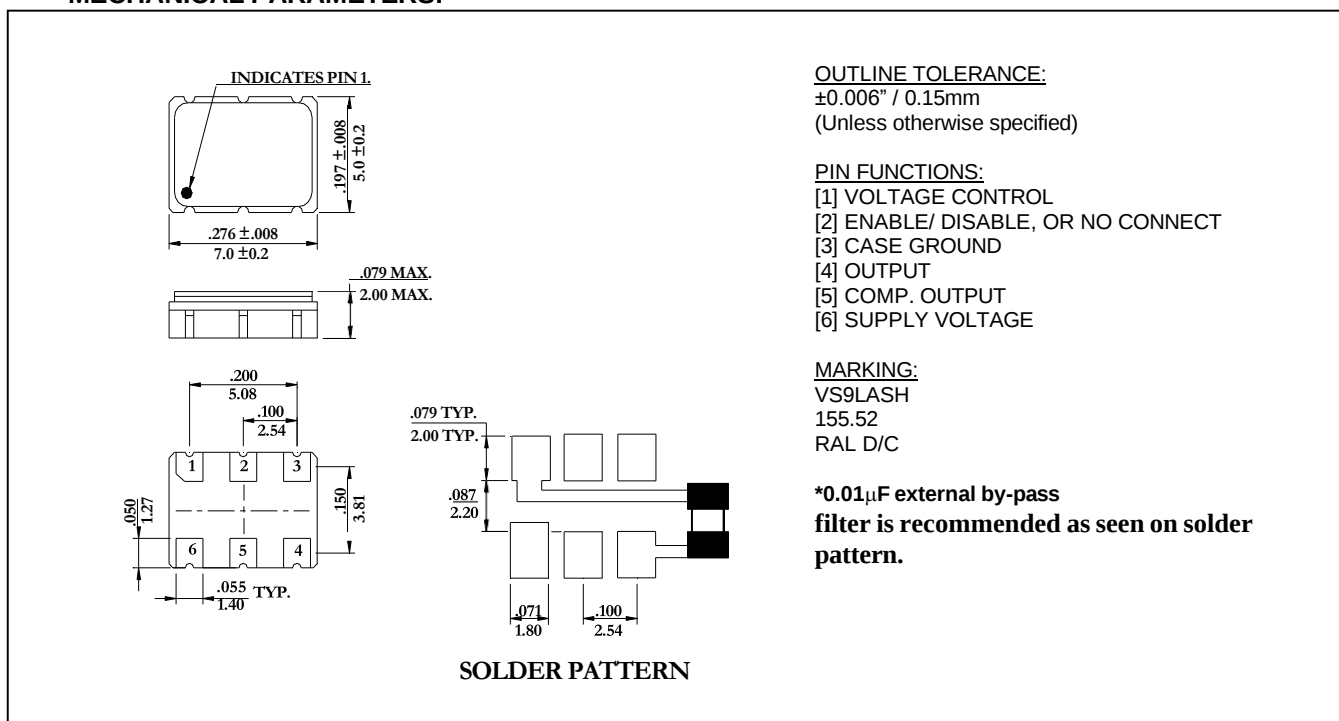
PART NUMBERING SYSTEM:

SERIES	SYMMETRY	TEMPERATURE RANGE (°C)	ABSOLUTE PULL RANGE	FREQUENCY (MHz)	Enable/Disable
VS9L: 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)	38.000...640.000	Enable High – standard (Omit Suffix) EL; Enable Low

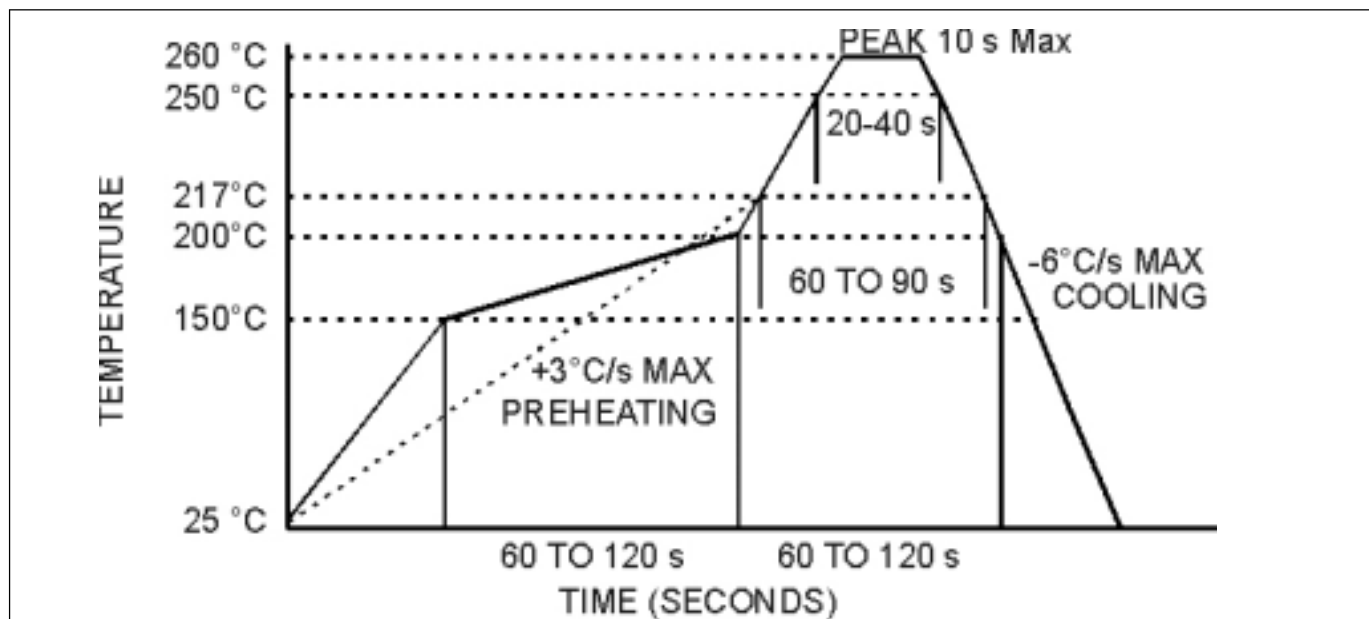
EXAMPLE: VS9LASH-155.520

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

MECHANICAL PARAMETERS:



REFLOW PROFILE:



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