



V8F / V8M

DESCRIPTION

- *LVPECL Voltage controlled crystal oscillator*
- *Supply voltage :3.3 V ±5%*
- *Frequency range 50 to 800MHz*
- *Frequency pulling up to ± 150 ppm*

APPLICATIONS

- *SONET / SDH*
- *Fiber Channel*
- *Ethernet*
- *VCXO for PLL Application*
- *Test and Measurement*
- *Networking*

FEATURES

- *Fundamental mode oscillation (50 MHz to 250MHz)*
- *Analog frequency multiplication (100MHz to 800MHz)*
- *Low phase noise and jitter characteristics*
- *High performance and reliability (over 20 years aging)*
- *High frequency fundamental crystal (including inverted-mesa technology)*

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	SERIES						UNIT
			V8F			V8M			
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency range	F ₀	3.3 volts ±5%	50		250	100		800	MHz
Supply Voltage	V _{CC}	±5%, 25°C		3.3			3.3		V
Sub-Harmonics	sH	Delta Ref. to carrier	-	-	-	-70	-60	-40	dBm
Spurs	sp	Delta Ref. to carrier	-85		-75	-75		-60	dBm
Duty Cycle	DC	Output termination 50Ω / V _{CC} -2.0V	40 to 60						%
RMS Phase Jitter	J	12 kHz – 20 MHz Bandwidth		0.4	0.7		0.6	1.0	ps
Frequency Stability	st	-40°C to +85°C, ref. to 25°C	±30						ppm
Voltage Control Input Range	V _c		0 to 3.3						V
Modulation Bandwidth	Bw	-3db		25			20		KHz
VC Input Impedance, min.	Z _{in}	V _{CC} = 3.3, 0 ≤ V _c ≤ V _{CC}	100						kΩ
Pull Range ¹	Pr	0 ≤ V _c ≤ V _{CC}	100		150	40		150	ppm
VC Transfer Function	K _{VCO}		30.3		60.6	12.1		45.5	ppm/V
VC Linearity	L _{in}	Positive slope	10						%
Voltage Control Center	V _c	Freq. tolerance ±10ppm max.	1.65						V
Start-Up Time	t _{start}	T _a =25°C	10						ms
Aging	F-ag	Over 20 years life time	15						ppm
Operating Temperature	T _a		-40 to +85						°C
Storage Temperature	T _(stg)	Absolute max	-65 to +150						°C
Maximum Voltage	V _{CC(abs)}		4.6						V
Moisture Sensitivity Level	MSL	JEDEC J-STD-2	1						
Termination Finish			Au, FR5, Ni						
ESD Sensitivity	HBM	Human body model JESD22-A114	3						kV

Note:
1.0-100 ppm pull range is not available for all frequencies in the V8M Series

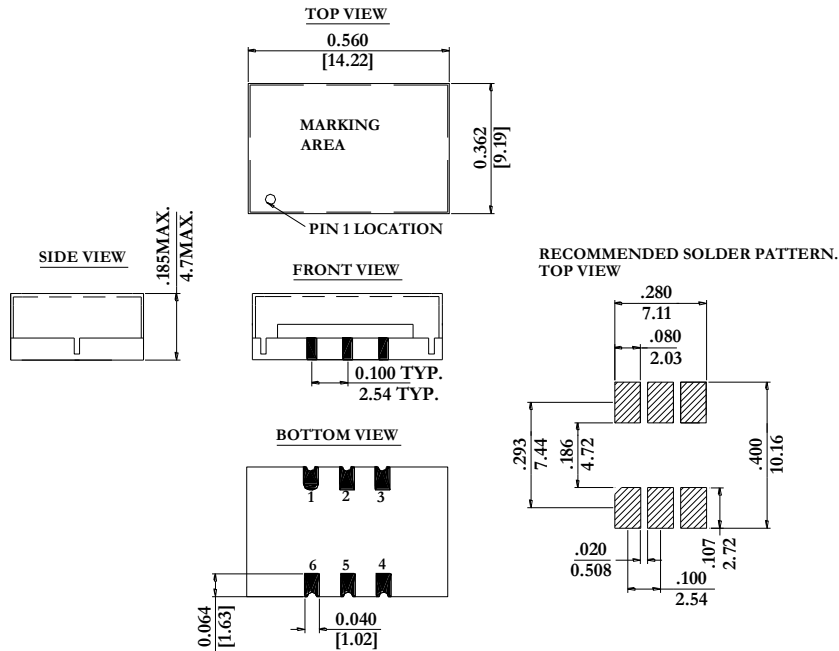
OUTPUT CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
				Min	Typ.	Max	
LVPECL	Output Levels	V_{OH}	Load 50Ω to $V_{cc}-2V$	$V_{cc}-1.35$	$V_{cc}-1.01$	$V_{cc}-0.8$	V
		V_{OL}		$V_{cc}-2.00$	$V_{cc}-1.78$	$V_{cc}-1.6$	V
	Rise/Fall Time	T_r/T_f	frequency-dependent	0.3	0.5	1.2	ns
	Output Voltage Swing	V_{p-p}	Output termination 50Ω / $V_{cc}-2.0V$	0.65	0.77	0.95	V
	Supply Current	I_s	3.3V ±5%			65	mA
	Output Load	O_{CL}	Output termination 50Ω / $V_{cc}-2.0V$			50	Ω

TYPICAL FREQUENCIES

61.440MHz	76.800MHz	77.760MHz	78.6432MHz	81.920MHz
92.160MHz	103.68MHz	104.00MHz	122.880MHz	125.00MHz
153.60MHz	155.52MHz	156.25MHz	207.360MHz	208.00MHz
245.76MHz	307.20MHz	312.50MHz	320.000MHz	327.68MHz
368.64MHz	400.00MHz	491.52MHz	614.400MHz	622.08MHz

MECHANICAL DIMENSIONS AND PIN FUNCTIONING



Dimension: inches/ [mm]
Tolerances: 0.004"/ [0.1mm]

PIN	SYMBOL	FUNCTION
1	V _c	Voltage Control
2	N/C	N/C
3	GND	Case and Electrical Ground
4	Q	Output
5	/Q	Complementary output
6	V _{cc}	Power Supply Voltage

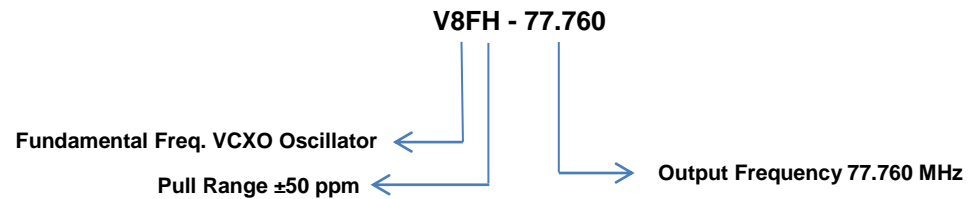
PART NUMBERING

SERIES	Pull Range (ppm)	-	OUTPUT FREQUENCY (MHz)
V8F	H: ± 50 J: ± 100 L: ± 150	-	F ₀
V8M	S: ± 40 J: $\pm 100^1$	-	

Note:

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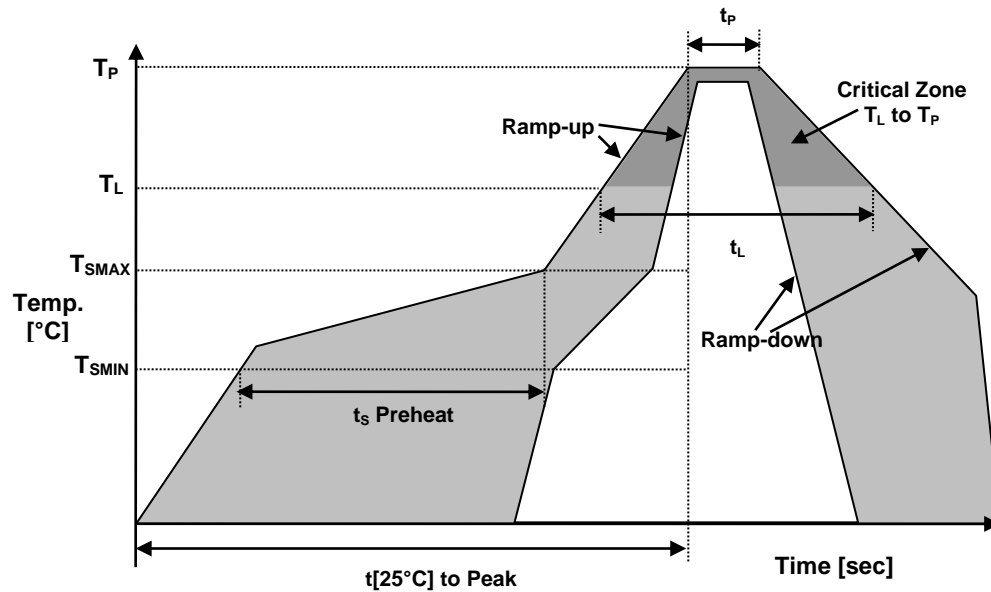
EXAMPLE:



MARKING

- A marking code will be issued by the sales department at order confirmation.

REFLOW PROFILE



Recommended Solder Reflow Profile		
Temperature Min Preheat	T_{SMIN}	150°C
Temperature Max Preheat	T_{SMAX}	175°C
Time (T_{SMIN} to T_{SMAX})	t_s	60-180 sec.
Temperature	T_L	217°C
Peak Temperature	T_P	260°C
Ramp-up rate	R_{UP}	3°C/sec max.
Ramp-down rate	R_{DOWN}	6°C/sec max.
Time within 5°C of Peak Temperature	t_p	10 sec max.
Time $t_{[25^\circ\text{C}]}$ to Peak Temperature	$t_{[25^\circ\text{C}]}$ to Peak	480 sec.
Time	t_L	60-150 sec.