VFVX301
VCXO Low Jitter 2.5V, 3.3V
5x7mm SMD, LVPECL / LVDS

CTS ELECTRONIC COMPONENTS

Features
- 38MHz to 800MHz frequency range
- Ultra low phase noise
- <0.5 ps RMS jitter over 12kHz - 20MHz
- APR to ± 150 ppm

RoHS Status

RoHS 6/6

Applications
- Optical Networking, SONET / SDH
- 10 Gigabit Ethernet
- Broadband Access

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		38 38		800 640	MHz	3..3V 2.5V
Frequency Stability	ΔF/F	Vs. Operating Temperature			± 50 ± 25 ± 20	ppm	*Order Code B* *Order Code C* *Order Code D*
		Vs. Supply Voltage		± 1.5	± 3	ppm/V	
		Vs. Aging / Year		± 3 ±1		ppm ppm/y	First Year After first year
Operating Temperature	T		0° -40°		+70° +85°	°C	*Order Code B* *Order Code G*
Output		LVPECL LVDS	Available up to 800MHz Available up to 640MHz				*Order Code L* *Order Code D*
Supply Voltage	V_{CC}		3.15 2.375	3.3 2.5	3.45 2.625	V	*Order Code E* *Order Code G*
Voltage Control	V_C		0 0		3.3 2.5	V	*0.3 – 3.0 available*
APR			100	150		ppm	
Period RMS Jitter		77.76MHz 155.52MHz 311.08MHz 622.08MHz		2.5 3 3 6	4 4 5 8	ps	
Integrated RMS Jitter 12kHz to 20MHz		155.52MHz 311.04MHz 622.08MHz		0.4 0.4 0.4	0.5 0.5 0.5	ps	
Period Jitter Peak-to-Peak		77.76MHz 155.52MHz 311.08MHz 622.08MHz		18 20 25 42	30 30 30 55	ps	
VCON Modulation Bandwidth	BW	0V< VCON <3.3V	25			kHz	

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Symmetry		(V_{DD}-1.3) V_{DC} 1.25V_{DC}	45 45		55 55	%	PECL LVDS
Phase Noise		10Hz 100Hz 1kHz 10kHz 100kHz 1MHz		-66 -96 -124 -136 -132 -145		dBc/Hz	@77.76MHz
		10Hz 100Hz 1kHz 10kHz 100kHz 1MHz		-62 -92 -120 -132 -128 -144		dBc/Hz	@155.52MHz
		10Hz 100Hz 1kHz 10kHz 100kHz 1MHz		-59 -86 -116 -129 -124 -140		dBc/Hz	@311.04MHz
		10Hz 100Hz 1kHz 10kHz 100kHz 1MHz		-48 -80 -108 -118 -114 -131		dBc/Hz	@622.08MHz
Supply Current	I_{CC}	38 – 100MHz 100 – 300MHz 300 – 800MHz			65 80 90	mA	PECL
		38 – 100MHz 100 – 320MHz 320 – 640MHz			45 60 70	mA	LVDS
Load	50 Ohms to V_{DD}-2V (PECL) 100 Ohms (LVDS)						
Output High Voltage	V_{OH}		V_{DD}-1.025 1.4		 1.6	V	PECL LVDS
Output Low Voltage	V_{OL}		 0.9	 1.1	V_{DD}-1.620	V	PECL LVDS
Output Differential Voltage	V_{OD}		247	355	454	mV	LVDS
Offset Voltage	V_{OS}		1.125	1.2	1.375	V	LVDS
Rise / Fall Time	T_R/T_F	20% to 80%		0.6 0.7	1.5 1.0	ns	PECL LVDS
Tristate	"1": Output Enable – Pin 2 may float or 2.8V min (3.3V V_{DD}) or 2.25V min (2.5V V_{DD}) "0": Tristate – Pin 2 requires 0.4V max (3.3V or 2.5V V_{DD})						

Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Lead Temperature		Soldering, 10s max			260	°C	
Storage Temperature	T_S		-55		+125°	°C	
Junction Temperature	T_J				+125°	°C	
Supply Voltage	V_C		-1		4.6	V	
ESD Protection		Human Body Model			2	kV	

Environmental and Mechanical Conditions

Parameter	Conditions
Shock	1000 Gs, 0.35ms, ½ sine wave, 3 shocks in each plane
Humidity	Resistant to 85 ºR.H. at 85 ºC
Vibration	10-2000 Hz of 0.06" d.a. or 20 Gs, whichever is less
Leak	Leak rate less than $5x10^{-8}$ atm.cc/s of helium (crystal only)
Case	Ceramic with hermetic resistance-welded metal lid
Pads	Solderable gold over nickel
Marking	Epoxy ink or laser engraved
Resistance to Solvents	MIL STD 202, Method 215

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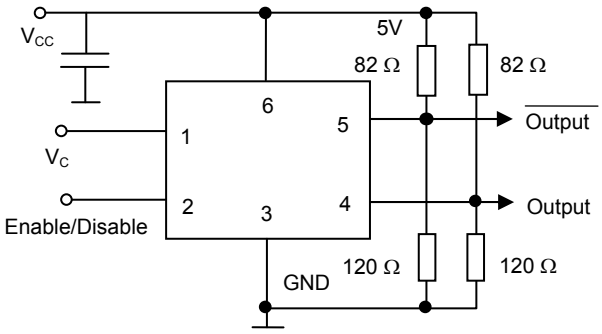
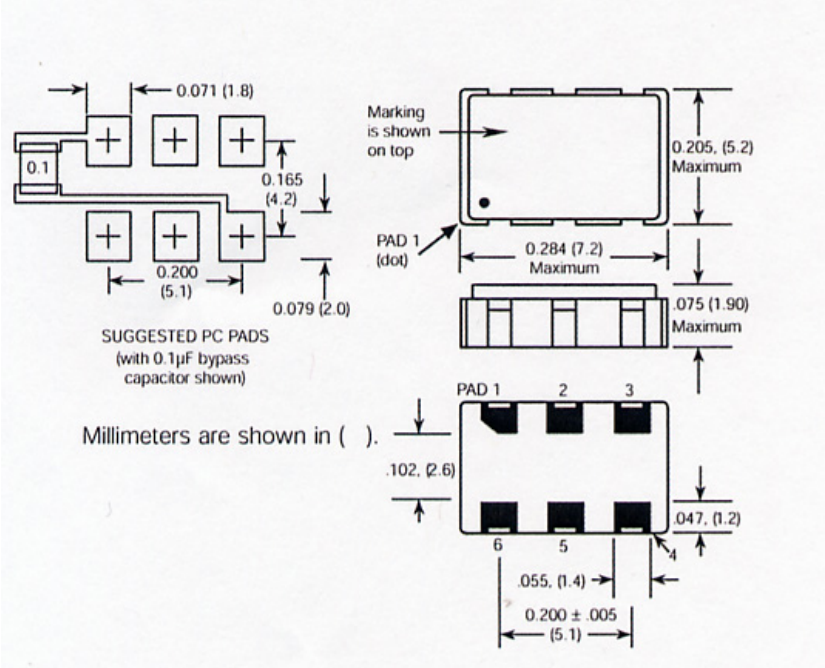
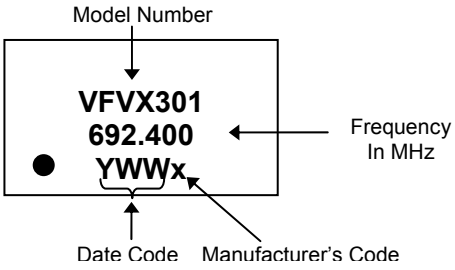




Pin Assignments

Pin #	Connection
1	V_C
2	Tristate
3	Case, GND
4	Output
5	$\overline{\text{Output}}$
6	Supply Voltage

Marking Specification



How to Order

VFVX301 — ☐☐☐☐ — FREQUENCY, MHz

Stability

Code	Specification
B	50 ppm
C	25 ppm
D	20 ppm

Temperature Range

Code	Specification
B	0°C to 70°C
G	-40°C to 85°C

Supply Voltage

Code	Specification
E	3.3V
G	2.5V

Output

Code	Output
L	LVPECL
D	LVDS