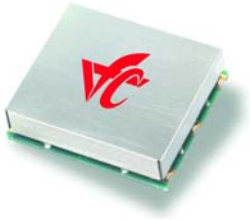
VFFT401
Quad Output
Frequency Translator

Valpey Fisher Corporation
High Frequency, Low Phase Noise Timing Solutions

Features

- **1.5 GHz Output** Frequency Range
- 4 Selectable Output Frequencies
- Low Power: <220mW typical
- Low Profile SMD package



RoHS Status

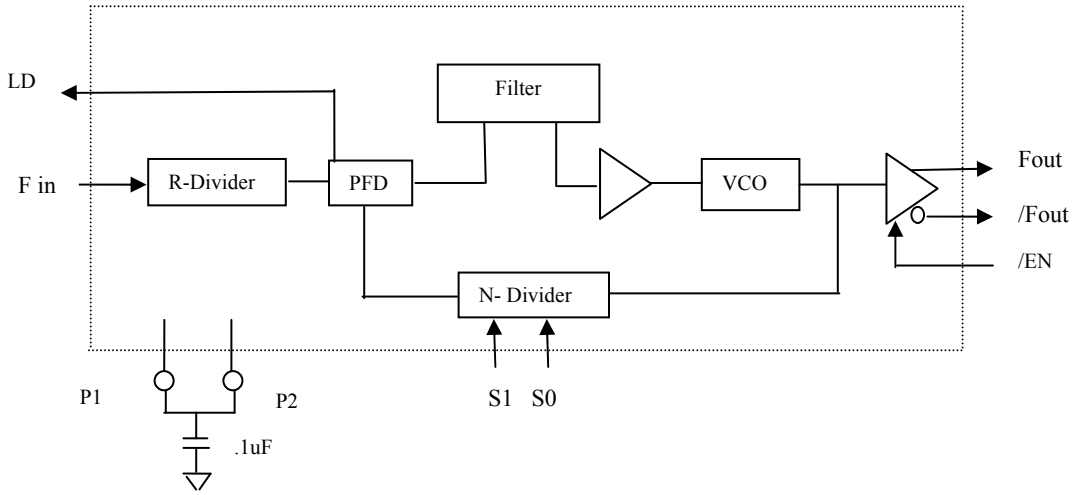
RoHS 6/6

Applications

- Optical Networking, Sonet / SDH / ATM
- 10 Gigabit Ethernet
- Forward Error Correction (FEC)

Description

The VFFT401 is a Frequency Translator which accepts an input frequency from 100 to 800MHz and provides an output frequency from 400 to 1.5GHz. Up to four input and output combinations are possible. Each I/O is preset and determined by the frequency select inputs [S1:S0]. A Lock Detect output signal indicates an "out of lock" condition. The device is implemented with a Phase Locked Loop where all Loop Filter components are integrated into the module. The VFFT401 is offered in a 19.5mm x17mm surface mount package. Consult factory for frequency selections.



Block Diagram

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Absolute Maximum Ratings

Parameter	Min	Max	Units
Power Supply Voltage	-.50	+4.0	Volts
Storage Temperature	-45	+90	º C

Operating Specification

Parameter	Specification	Notes
Supply Voltage	3.3 Volts +/- 5%	
Supply Current	80mA (max)	
Output Frequencies (F0) – F0(3)	400 to 1500 MHz	See Table 2
Output Frequency Range	100MHz (max)	F_{OUT} Min to F_{OUT} Max
Output Configuration	Differential LVPECL	Unterminated
Jitter RMS	0.250ps (typ)	50 KHz to 80 MHz
Input frequency Fin(0) – Fin (3)	100 to 800 MHz	See Table 2
Input configuration	Single-ended, AC coupled	
Input Level	150 mVp-p(min) / 900mV (max)	Fin > 200 MHz
Input Level	400 mVp-p (min) / 3 .3V (max)	
Modulation Bandwidth	1 K Hz	Consult Factory for options
Start up Time	300 mS (max)	
I/O Select Inputs	S1: S0	LVCMOS See Note 1
Lock Detect Output (LD)	Logic “1” : In lock Logic “0” : Out of lock	LVCMOS
Lock / Capture Range	1% (min)	
Operating Temperature Range	-40 ºC to +85 ºC	

Example **Table 1**

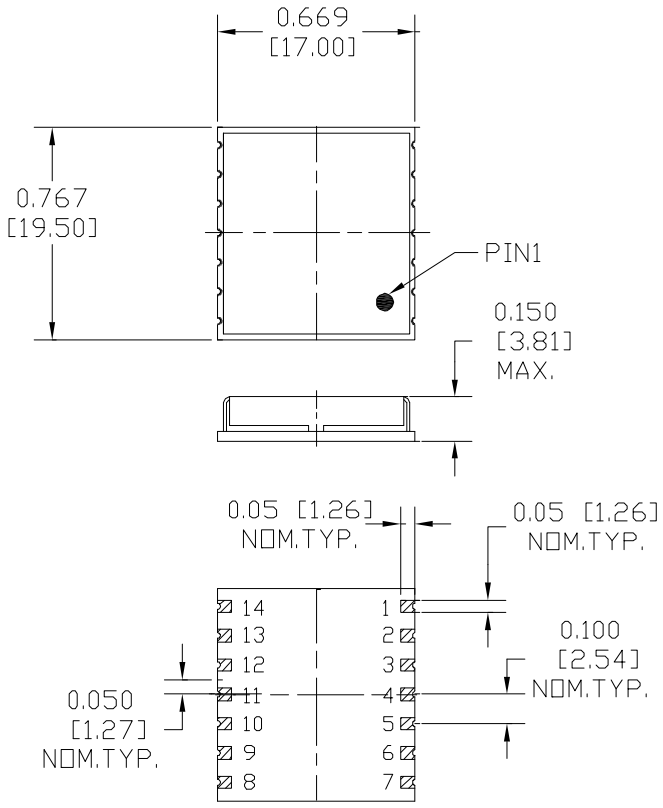
Input Frequency	Output Frequency	I / O Ratio	Select inputs [S1 : S0]
669.32658 MHz	622.080 MHz	85 / 79	0 0
669.32658 MHz	669.32658 MHz	1 / 1	0 1
693.48315 MHz	644.5314 MHz	85 / 79	1 0
704.38 MHz	657.4213 MHz	90 / 84	1 1

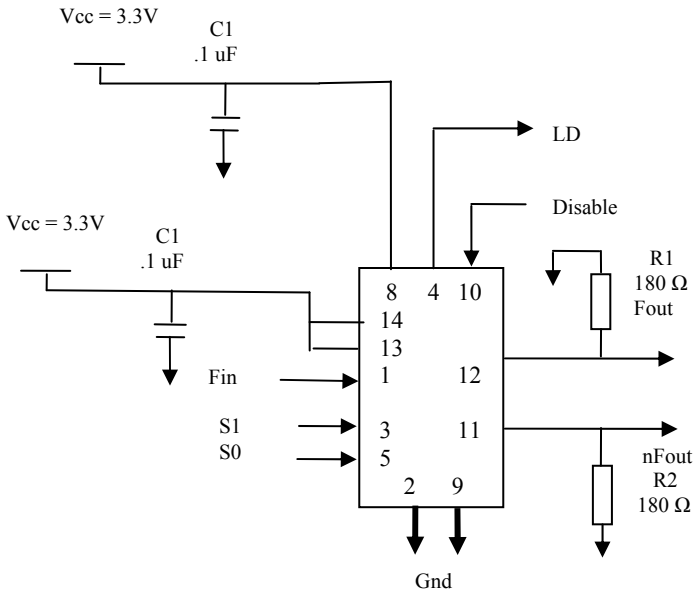
Notes
1. The input frequency must be within 500ppm of final value before asserting the “Select Inputs.”

Pin Assignments

Pin #	Symbol	Description	Notes
1	Fin	Input Frequency	
2	Gnd	Ground	
3	S1	I/O Select (msb)	
4	LD	Lock Detect	
5	S0	I/O Select (lsb)	
6	DNC	Do not connect to this pad	
7	DNC	Do not connect to this pad	
8	Vcc	3.3 Volt Power Supply	
9	Gnd	Ground	
10	/OE	Output Disable	
11	/Fout	Complimentary Output	
12	Fout	Output	
13	P1	Connect to P2 externally	Add .1 uF Capacitor
14	P2	Connect to P1 externally	

Mechanical Outline





Ordering Information:

Once Input and Output frequencies have been submitted and approved, the Factory will assign a part number.

VFFT401 - | suffix |

Sample Frequencies **Table 2**

P/N suffix	S1:S0	Input Frequency (MHz)	Output Frequency (MHz)		P/N suffix	S1:S0	Input Frequency (MHz)	Output Frequency (MHz)
-001	00	622.080	669.32658		-002	00	669.32658	622.080
	01	669.32658	669.32658			01	669.32658	669.32658
	10	644.5314	693.48315			10	693.48315	644.5314
	11	657.4213	704.38			11	704.38	657.4213
-003	00	155.5200	669.32658		-004	00	167.331645	622.080
	01	167.33164	669.32658			01	167.331645	669.32658
	10	161.13285	693.48315			10	173.370787	644.5314
	11	164.355325	704.38			11	176.09500	657.4213