

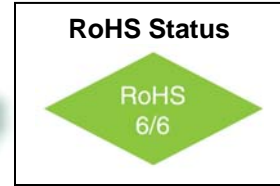
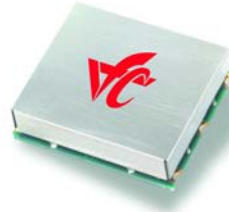
# VFJA402

## Jitter Attenuator with 3 Input Frequency Selections plus Free Run Mode



### Features

- Free Run Mode
- 8KHz to 200MHz Input Frequency Range
- Ultra Low Jitter and Phase Noise: -130dBc/Hz @ 1KHz
- Low Power: < 150mW typical

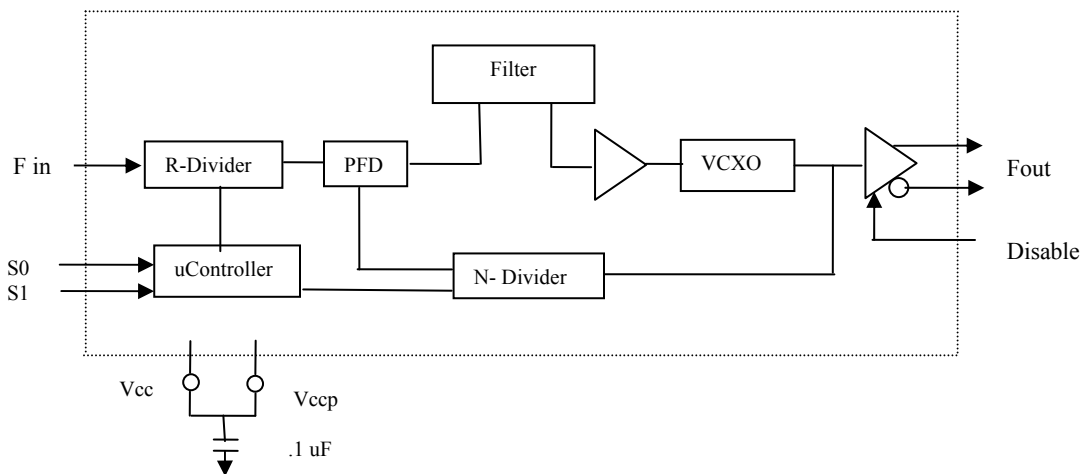


### Applications

- Synchronous Ethernet
- Wireless Infrastructure

### Description

The VFJA402 is a jitter attenuator capable of providing an output frequency up to 200MHz. Two select inputs [S1,S0] allow the user to select 1 of 3 preset input frequencies or the free run mode. In free run mode the device provides the nominal output frequency and is not phase locked to the input frequency. Operating with a +3.3 volt power supply the device typically consumes 150mW. The output is configured as a differential LVPECL signal and requires external termination resistors. The VFJA402 is available in a 19.5mm x 15.5mm surface mount package.



**Block Diagram**

## Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Break Down Voltage	V <sub>cc</sub>		-0.5		5.5	V	
Storage Temperature	T <sub>s</sub>		-55		+105°	°C	

## Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note	
Output Frequency Range	F <sub>out</sub>		10		200	MHz		
Input Frequency Range	F <sub>in</sub>		0.008		200	MHz	See Table 1	
Input Level	V <sub>in</sub>	AC coupled internally	0.4		3.3	V p-p	Note 2	
Output Level Logic "1"	V <sub>oh</sub>	50 Ohm to V <sub>cc</sub> -2V or Thevenin Equivalent	V <sub>cc</sub> -0.96		V <sub>cc</sub> -0.81	V		
Output Level Logic "0"	V <sub>ol</sub>		V <sub>cc</sub> -1.85		V <sub>cc</sub> -1.65	V		
Phase Jitter		12KHz to 20MHz		0.20	0.5	ps(rms)		
SSB Phase Noise	Φ <sub>n</sub>	100Hz 1KHz 10KHz 100KHz		-100 -130 -145 -150		dBc/Hz	@ 155.52MHz	
APR			± 32			ppm		
Modulation BW			10			Hz	Note 1	
Free run Accuracy		-40 °C to +85 °C			+/- 35	ppm		
Duty Cycle		@ 50%	45	50	55	%		
Rise / Fall Time	Tr/Tf	20% to 80%			0.6	ns		
Start up time				3		s		
Supply Voltage	V <sub>cc</sub>		3.15	3.30	3.45	V		
Input Current	I <sub>cc</sub>			45	55	mA		
Operating Temperature Range	T <sub>a</sub>		-40°		+85°	°C		
Enable / Disable Function		Input HIGH (>2.5V): Output Disabled (F <sub>out</sub> ="0"; nF <sub>out</sub> ="1") Input LOW (<0.5V) or floating: Output Enabled						LVC MOS
Enable / Disable Time	Te/Td				100	ns		

### Notes:

1. Consult factory for Bandwidth options
2. For F<sub>in</sub> < 20 MHz , ensure SR > 50 V/μs
3. For best noise immunity use [S1, S0] = [0, 0]

How to Order

VFJA402 —

Suffix
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(See Table 1)

Standard Frequencies **Table 1**

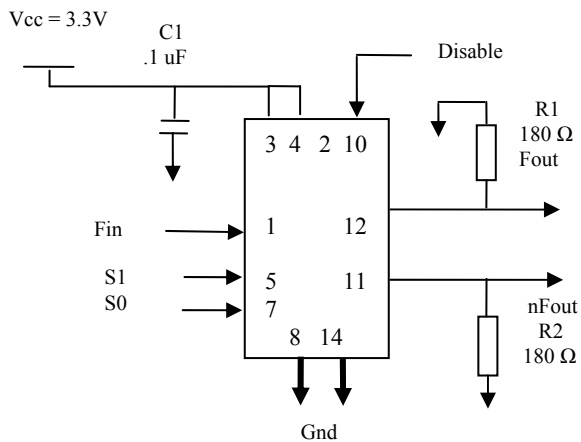
P/N suffix	S1:S0	Input Frequency (MHz)	Output Frequency (MHz)	P/N suffix	S1:S0	Input Frequency (MHz)	Output Frequency (MHz)
<b>-001</b>	00	Free Run Mode	156.25	<b>-002</b>	00	Free Run Mode	155.52
	01	0.008	156.25		01	0.008	155.52
	10	19.44	156.25		10	19.44	155.52
	11	161.1328125	156.25		11	155.52	155.52
<b>-003</b>	00	Free Run Mode	156.25	<b>-004</b> Note 3	00	25	155.52
	01	161.1328125	156.25		01	25	155.52
	10	19.44	156.25		10	25	155.52
	11	125	156.25		11	25	155.52
<b>-005</b>	00	Free Run Mode	155.52	<b>-006</b>	00	Free Run Mode	156.25
	01	25	155.52		01	25	156.25
	10	100	155.52		10	125	156.25
	11	100	155.52		11	156.25	156.25
<b>-007</b>	00	Free Run Mode	125.00	<b>-008</b>	00	Free Run Mode	153.60
	01	161.1328125	125.00		01	19.20	153.60
	10	19.44	125.00		10	19.20	153.60
	11	125	125.00		11	19.20	153.60

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

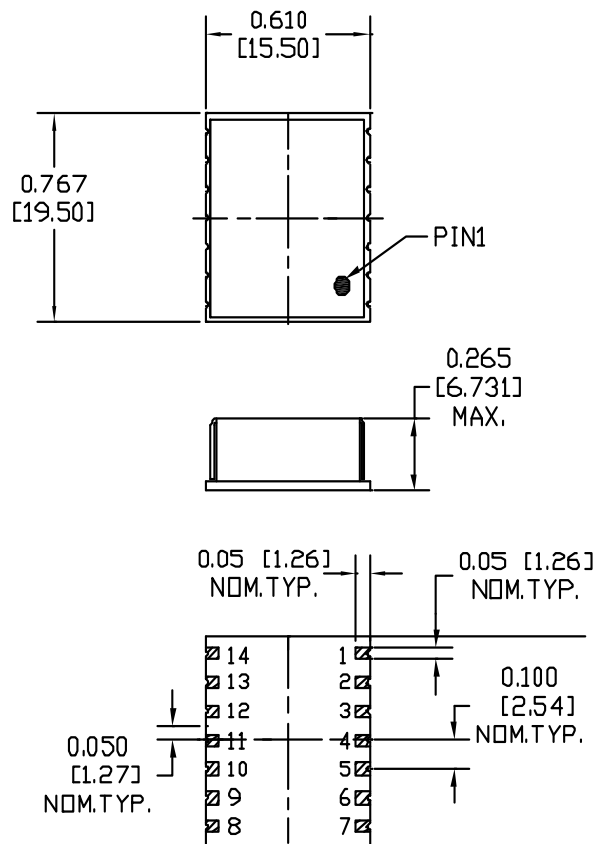
**Environmental and Mechanical**

Parameter	Specification
<b>Mechanical Shock</b>	Per MIL-STD-202, Method 213, Condition E
<b>Thermal Shock</b>	Per MIL-STD-883, Method 1011, Condition A
<b>Vibration</b>	Per MIL-STD-883, Method 2007, Condition A
<b>Soldering Conditions</b>	260°C for 10s max
<b>Hermetic Seal</b>	Leak rate less than $5 \times 10^{-8}$ atm.cc/s of helium (crystal only)

**Connection Diagram**



**Mechanical Outline**



Pin #	Description
1	Fin
2	DNC
3	Vccp
4	Vcc
5	S1
6	DNC
7	S0
8	Gnd
9	N/C
10	Disable
11	nFout
12	Fout
13	N/C
14	Gnd

\* Connect pin #3 to pin #4 and add .1 uF

### Recommended Pad Layout

