Clock Programmable Mixer for Fuze IF with Filter

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Mixed Signal Integration
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MSMXVHF

- 600 MHz Differential Switching Mixer
  - Simple CMOS Design
  - ~6 dB loss
  - Differential analog input for common mode rejection

- Switched-Capacitor Lowpass/Bandpass Filter
  - Clock programmable
  - Selectable Gain
MSMXVHF
MSMXVHVF Block Diagram

- **FSEL**
- **TYPE**
- **GAIN**
- **FIN**
- **MCLK**
- **AGND**
- **M1**
- **M2**
- **PWR**
- **PDown**
- **FO**
- **MOUT**
- Selectable Gain
- Second Order SCF Section One
- Second Order SCF Section Two
- Second Order SCF Section Three
- Lowpass Buffer
- **FCLK**
- **FOUT**
MSMXVHFMixer Detail

- MCLK
- M1
- M2
- Second Order Filter
- MOUT
MSMXVHF Die Detail
Mixer Noise Data
MSMXVHF Evaluation Board
System Issues

• Clocks must be synchronized.
• Frequency output of mixer < 1MHz.
• Subsequent stages must be in sync.
Technical Issues

- Maximum mixer input 500 MHz
- Filter limit is 1 MHz lowpass or bandpass
- Mixer output is limited to < 1MHz
- Device maximum VDD is 3.3VDC
Summary

The MSMXVHF integrated circuit:

• Mixing up to 500 MHz.
• Filtering to 1 MHz
• Operation at up to 3.3V