

Renesas mixers have excellent out-of-band spur performance which eases pre-filtering requirements. RF and LO baluns are internal allowing for simple 50 ohm interfaces. The IF ports are configured as differential 200 ohms to drive pre-ADC filters with low even-order distortion.

In-band $2 \times 2$ and $3 \times 3$ spurs cannot be filtered so the mixer must provide all of the rejection for the system. Renesas's family of mixers provide very high rejection ( $>70 \mathrm{~dB}$ ) to these critical spurs.

Robust power down modes in Renesas mixers can be fully turned on and off in $<200$ nsec, and are ideal for modern TDD systems. The LO port impedance is practically unchanged in the off state minimizing the potential for synthesizer pulling.

In addition to multiple modes of operation, all Renesas mixers include external resistor options to further down-scale power consumption vs. linearity. Application notes that describe how to reduce the current even further and still maintain $>32 \mathrm{dBm}$ OIP3 are available at idt.com/RF.

## Advantages

- Gain $=9 \mathrm{~dB}$, P1dB up to +13 dBm
- $\mathrm{NF}<10 \mathrm{~dB}$
- IIP3 up to +35 dBm , OIP3 up to +44 dBm
- 5 V supply
- Power consumption as low as 850 mW dual, 500 mW single
- $50 \Omega$ SE RF \& LO Zin
- $200 \Omega$ balanced IF ZOUT
- Silicon-based semiconductor technology
- Wide IF bandwidths from 50 to 500 MHz
- VersaMixer ${ }^{T M}$ family offers maximum performance and flexibility at minimum power consumption

■ Renesas's FlatNoise ${ }^{\text {TM }}$ technology achieves low noise figure at any gain setting

| Part Number | Description | RF Freq. (GHz) | LO Freq. (GHz) | IF Freq. (GHz) | Gain (dB) | IP1dB (dBm) | OIP3 (dBm) | Voltage (V) | Current (mA) | Package (mm) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| F1100 | RF to IF Dual | $0.698-0.915$ | $0.848-1.365$ | $0.15-0.45$ | 9 | 13.1 | 41 | 5 | 350 | $6 \times 6,36-$ Pin |
| F1102 | RF to IF Dual | $0.4-1$ | $0.5-1.15$ | $0.05-0.3$ | 9.2 | 12.5 | 43 | 5 | 330 | $6 \times 6,36-$ Pin |
| F1130 | RF to IF Dual | $0.4-1.1$ | $0.5-1.13$ | $0.03-0.40$ | 9.0 | 9.0 | 43 | 5 | 360 | $7 \times 7,48-$ Pin |
| F1150 | RF to IF Dual | $1.7-2.2$ | $1.8-2.65$ | $0.05-0.45$ | 8.5 | 13 | 40 | 5 | 335 | $6 \times 6,36-$ Pin |
| F1152 | RF to IF Dual | $1.4-2.2$ | $1.35-2.1$ | $0.05-0.35$ | 8.5 | 13.2 | 43 | 5 | 327 | $6 \times 6,36-$ Pin |
| F1162 | RF to IF Dual | $2.3-2.7$ | $1.8-2.9$ | $0.05-0.5$ | 8.9 | 13 | 43 | 5 | 330 | $6 \times 6,36-$ Pin |
| F1178 | RF to IF Dual | $3.4-3.8$ | $2.9-3.62$ | $0.05-0.5$ | 9 | 11 | 37.5 | 5 | 297 | $6 \times 6,36-$ Pin |
| F1180 | RF to IF Dual | $1.4-2.7$ | $1.35-2.90$ | $0.03-0.55$ | 8.2 | 9 | 38 | 5 | 365 | $7 \times 7,48-$ Pin |
| F1192B | Dual Wideband Gain-Settable | $0.4-3.8$ | $0.4-3.6$ | $0.05-0.6$ | 11.1 | 7 | 35 | 3.3 | 240 | $4 \times 4,24-$ Pin |
| F1701 | RF to IF Single | $0.6-1.06$ | $0.63-1.26$ | $0.07-0.3$ | 11.8 | 10.2 | 43 | 5 | 184 | $5 \times 5,20-$ Pin |
| F1751 | RF to IF Single | $1.4-2.5$ | $1.4-2.5$ | $0.05-0.5$ | 11.8 | 9.7 | 43 | 5 | 190 | $5 \times 5,20-$ Pin |
| F1763 | RF to IF Single | $2-2.9$ | $1.8-3$ | $0.05-0.5$ | 11.7 | 10.2 | 42 | 5 | 200 | $5 \times 5,20-$ Pin |
| F1792 | Single Wideband Gain-Settable | $0.4-3.8$ | $0.4-3.6$ | $0.05-0.6$ | 11.1 | 7 | 35 | 3.3 | 134 | $4 \times 4,24-P i n$ |



Renesas RF Mixer block diagram

To request samples, download documentation or learn more visit: idt.com/rfmixer

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