

Features

- Simple integration into existing designs
- IF Frequency up to 100 MHz
- 10 MHz Bandwidth
- 1.8 V to 5 V operation
- Low current consumption 1 mA at 3 V
- Power down mode 1 μ A at 3 V
- Spurious Free Dynamic Range 70 dB
- Low Noise Figure 4 dB

Applications

- Bluetooth
- WLAN 802.11a, 802.11b, 802.11g
- Multi-Mode Radios
- 2.4 and 5 GHz Radios
- Pagers
- Cable Modems

Benefits

The Kaben Wireless Silicon Sampling IF Filter provides low power, low spurs, excellent third order intercept, and the ability to easily integrate into your current design. This receiver cell is a key building block in designing high-performance wireless systems that require high dynamic range and low power.

When integrating the Sampling IF Filter into any system platform, our engineers provide an optimized design for system-level integration and verification, fabrication, and maximum re-use. We make your systems design predictable and efficient across many processes and application areas.

This novel technology combines anti-alias filtering with sub-sampling to provide a low power anti-alias filter, channel selection filter, and sampler in one unit.

The Sampling IF Filter can have an IF frequency up to 100 MHz with up to 10 MHz bandwidth and is optimized for integration into Bluetooth or WLAN 802.11a, 802.11b, and 802.11g.

The IF Sampler cell can be used with the Kaben KR-UM-24 or KR-UM-50 LNA-Mixer cells and the Kaben KR-LO-24 or KR-LO-50 Local Oscillator cells to create a high performance wireless receiver.

The units are designed to have high RF image rejection for low IF receivers without the use of digital correction techniques. For high data rate applications we can replace the IF filter. In multi-mode radios our methods can eliminate one or more off-chip IF filters.

The unit features digital programmability in one or more of the following parameters: Gain, Selectivity, Bandwidth, and IF Frequency.

The spurious free dynamic range of 70 dB makes this product an ideal selection for both narrowband and wideband applications that require high selectivity.

High performance is delivered without sacrificing power consumption. The cell operates using 1 mA from a 3 V supply and powers down to 1 μ A.

For supported semiconductor processes the design can be rapidly customized for your application. Support includes tools for all phases of the life cycle of your SoC.

For system design, we provide a kit that includes high-level models in Matlab/Simulink, Systemview, and Verilog-A. System-level models offer various modes of abstraction for flexibility in simulation speed vs. accuracy. All high-level models are based on measured data.

At the circuit design level, we deliver GDS II files and a Cadence library containing schematics, symbols, and cell layouts. We also provide production test procedures for the cell.

Options

The following parameters can be made Digitally Programmable:

- IF Frequency
- Bandwidth
- Selectivity
- Gain

Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Supply Current	V _{cc} = 3V Temp = 22°C		1		mA
Supply Voltage		1.8		5	Volts
Powerdown Current				1	μA
IF Frequency				100	MHz
Bandwidth				10	MHz
Spurious Free Dynamic Range	Bandwidth = 20kHz			70	dB
Noise Figure			4		dB
Gain	Bandwidth = 20kHz			60	dB
	Bandwidth = 2MHz			40	
Operating Temperature		-40		85	°C