

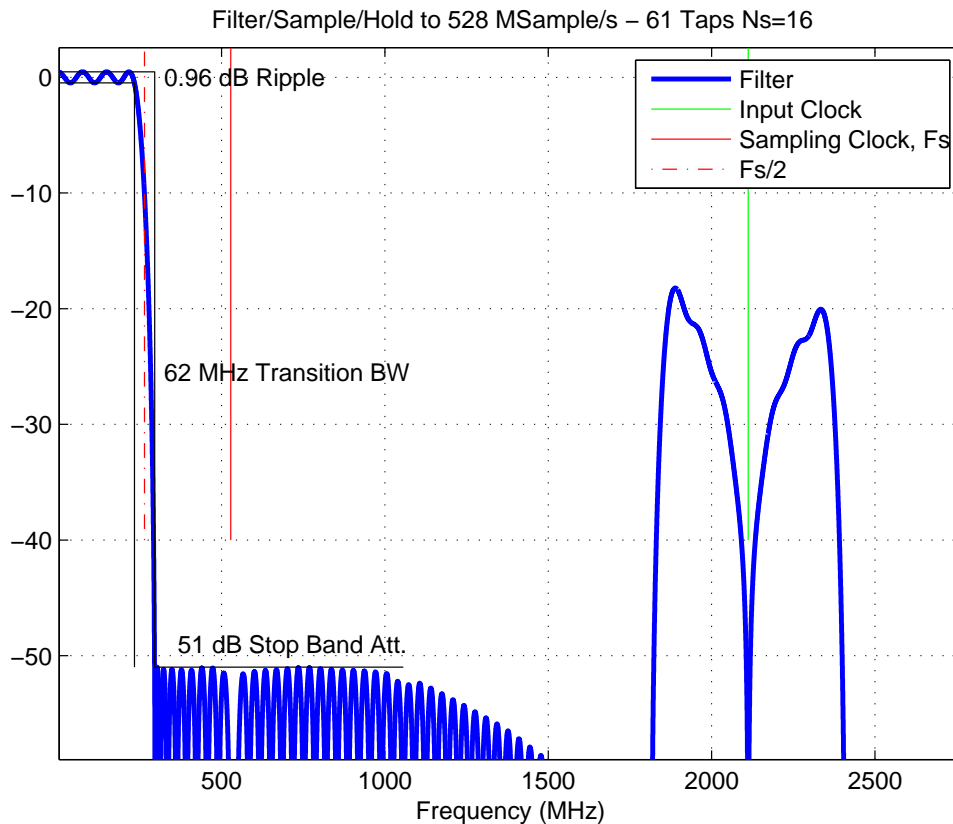
*"The Industry's Most Selective On-chip, Wide band,  
Low Pass Filter for W-USB"*

### Features

- Frequency from DC to 233 MHz
- Passband Ripple 1 dB
- Stopband Attenuation 51 dB
- Transition Bandwidth 62 MHz
- Sampling Rate 528 Msp/s
- 61 Tap Coefficients
- Spurious Free Dynamic Range 60 dB
- Low Noise Figure 6 dB
- No Group Delay Distortion
- Programmable Gain 30 to 44 dB in 2 dB steps
- 1.8 V Operation
- Die Area 1 by 1 mm
- Reduces ADC Sample Rates and Resolution

### Applications

- W-USB



KR-SIF-LP-233-01 W-USB Sampled-IF Filter Transfer Function

# W-USB Sampled-IF Filter

KR-SIF-LP-233-01 Preliminary Data Sheet

## Description

The Kaben KR-SIF-LP-233-01 filter is the industry's first on-chip analog filter for W-USB application. This receiver cell is a key building block for wide bandwidth and no phase dispersion, such as for W-USB.

Kaben's unique filter offers a passband frequency of DC to 233 MHz. The FIR filter gives linear phase and no group delay distortion. The gain can be varied between 30 and 44 dB in 2 dB steps to accommodate a wide range of input signal levels.

The sharp transition bandwidth allows sampling at the minimum rate of 528 Msps without additional digital filtering.

Unlike a traditional digital FIR filter, the KR-SIF-LP-233-01 provides  $\sin x/x$  attenuation (approximately 20 dB) of any signal located at the aliased sidebands about the sampling clock frequency. The Anti-Alias filter also allows for out-of-band signals to be larger than the 60 dB dynamic range.

## Support

For system's 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.

At the circuit design level, we deliver GDS II files and a Cadence library containing schematics, symbols, and cell layouts.

The Filter IP block can be available in most popular technologies.

## Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Passband Frequency		DC		233	MHz
Passband Ripple				1	dB
Stopband Attenuation			50		dB
Transition Bandwidth			62		MHz
Sampling Rate			528		MHz
Spurious Free Dynamic Range				60	dB
Noise Figure			10		dB
Gain	2 dB steps	30		44	dB
Digital Supply Voltage		1.6		1.8	V
Analog Supply Voltage		1.6		1.8	V
Operating Temperature		-40		85	°C

