

QF1Da512 SavFIRE™

Digital filter for Audio Applications

Description

The QF1Da512 SavFIRE™ is a single channel, programmable, digital filter with integrated digital gain and compression designed for near seamless insertion into the serial data path of a digital signal or used as an FIR coprocessor. The device has 512 taps capable of generating audio equalization and crossover filters. It can be configured to filter one or both channels of an I2S data stream. The device can operate over a broad range of data rates - from 10sps up to 500ksps and can support data resolutions ranging from 12 to 24 bits. The QF1Da512 SavFIRE can be programmed using the Quickfilter Pro™ Design Software which supports most FIR digital filter configurations.

Applications

The Q1Da512 SavFIRE is designed for audio applications including MP3-player docking stations, speakers and digital televisions. When used in conjunction with an audio processor, the QF1Da512 SavFIRE enables existing sound enhancement or graphic equalization to be more pronounced. In addition, a distortion-less digital volume control can be implemented by using the built in gain and compression feature.

Features

- Industry's first dedicated FIR filter chip to contain digital gain and compression
 - Provides up to 24dB of digital gain
 - Addresses the issue of dynamic range loss in equalization applications
 - Compression is sample by sample with an instant attack and release
 - Adjustable via Quickfilter Pro™ software
- Provides a I2S "duplicate" function
 - Allows the developer to copy and insert current channel data into opposite channel cycle
 - Eases the design of audio crossovers while minimizing cost – no extra components required
- Performance equivalent to mid-range Digital Signal Processors and exceeds the performance of most audio processors
 - Processes the equivalent of 50 million MAC instructions per second
 - Supports sample rates from 1Hz to 500 KHz
- 511 tap Symmetric Digital FIR (asymmetric supported)
 - 32-bit coefficients
 - 24 bits data (user defined, 12- 24 bits)
 - Provides the user with superior audio quality
- Packaged in a 3x3mm QFN package
- Consumes only 2.8mW (milliwatts) of power

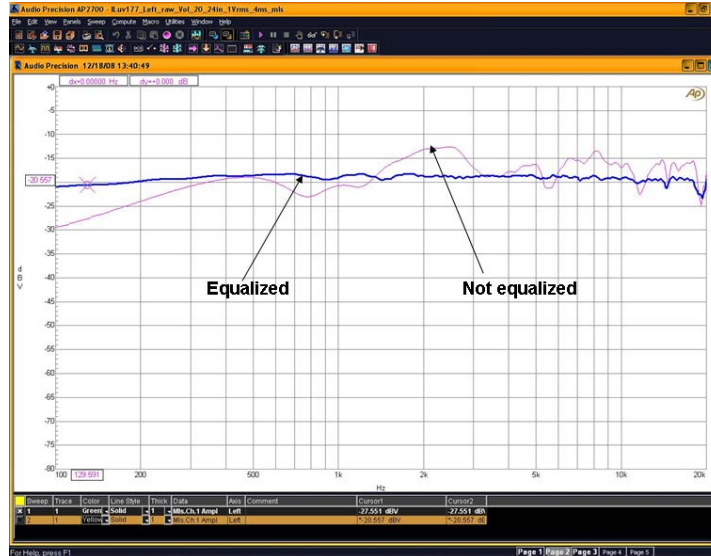


QF1Da512 SavFIRE

Ordering Part Number: QF1Da512-QN

Device Benefits

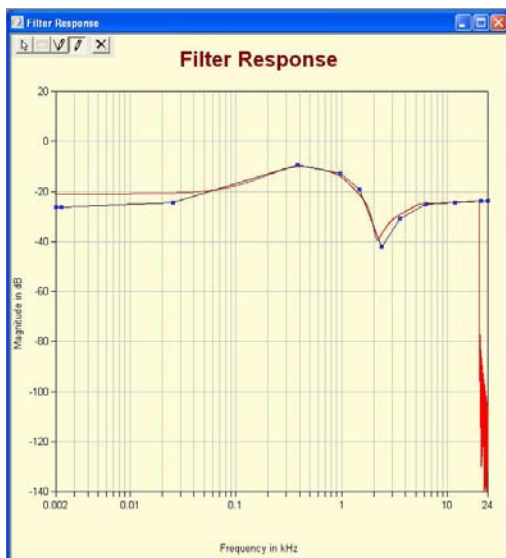
The QF1Da512 SavFIRE corrects speaker response which allows the audio stream to be heard as it was originally recorded and without distortion introduced by the speakers. This enables manufacturers to use lower cost speakers while providing sound quality equivalent to high end speakers. The QF1Da512 SavFIRE provides more accurate control of crossover frequencies, and when used with an audio processor, enables existing sound enhancement or graphic equalization to be more pronounced without any phase delay.



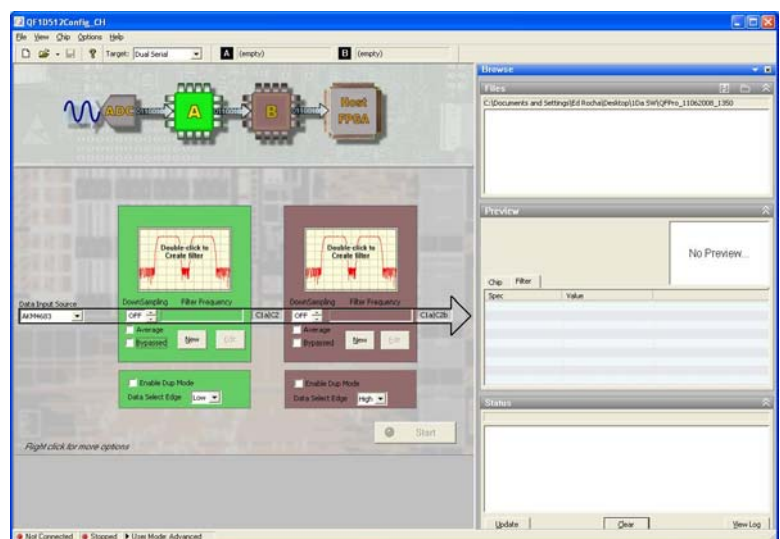
Frequency response of an audio output from an MP-3 docking station with (blue line) and without (purple line) the QF1Da512 SavFIRE

Use with Quickfilter Pro™ Software

The Quickfilter Pro software allows you to design your filter in a matter of minutes. The software has been specifically designed to better suit audio use, including support for digital gain and compression. The software features one-button equalization with equal loudness. The software supports the I2S interface with dual channel filtering supporting single chip stereo equalization and a channel duplication capability for channel specific multi-chip filters. The software includes fully independent data and compression configuration ports. A graphical filter editor is included along with an option to view filter frequency responses on a logarithmic frequency scale.



Quickfilter Pro Graphic Filter Editor



Quickfilter Pro Configuration

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