

2 x 50 W Digital & Analog Input Closed-Loop Class-D Audio Amplifier with Audio DSP

Features

- Digital and / or Analog Input Signal
 - Supports I²S, LJ, RJ, TDM, IOM-2 digital audio format inputs
 - Automatic 32 fs / 64 fs detection
 - Hardware sample rate converters (no pop-up noise by input sample rate change)
 - 8 kHz to 192 kHz sample rate support
 - Stereo analog inputs with AFE and 24-bit 8 ADCs
 - Programmable PGA gain setting (0.75dB Step)
 - Noise gate / ALC ADC function / digital volume
 - Stereo ECM / analog - MEMS / digital - MEMS micro phone interface
 - **Fine volume control (0.125 dB steps)**
 - Supports 3.4 MHz I²C interface for quick initial setup
 - **I²C address control**
- Digital Signal Processing
 - Input signal mixer
 - Low power digital signal processing circuits
 - Soft mute / soft digital volume
 - 15 x 2-ch. parametric equalizers
 - Intelligent bass boost
 - Limiter and compressor
 - Multi-band DRC
 - PEQ L/R mixer function
 - Power meter
 - Special audio DSP configuration mode
- Single Chip Power Stages
 - **50 W** x 2-ch. maximum audio output powers
 - Closed-loop class-D amplifier with DSP
 - 2-ch. or paralleled 1-ch. configuration
 - Two-way mono configuration with professional active crossover filters
 - Possible drive for 4 Ω loads
 - Output LC filter-less operation with internal analog feedback loop
 - Smart pulse-by-pulse current regulation to prevent shutdown at low impedance frequency point

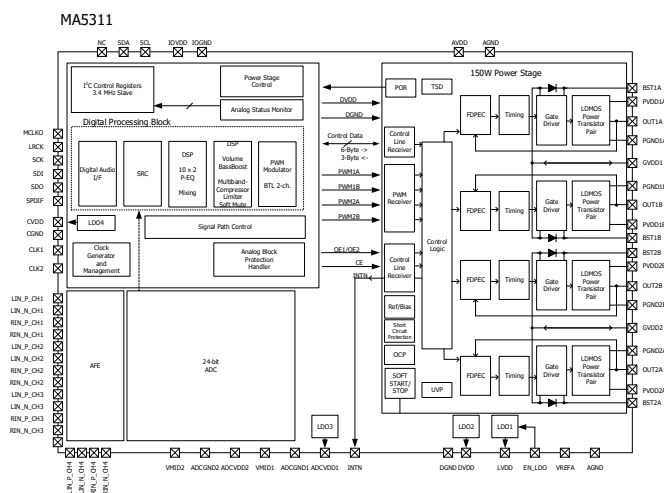
- THD+N < 0.02% at 1 W, 1 kHz
- SNR 102 dB
- N+N power DMOS output stage
- Separated power stage power supplies for less cross-talk (inter-channel)
- Smart Analog Protections
 - Thermal protection and warning state feedback
 - Undervoltage protection (UVP) for all power supplies
 - Over current protection
 - Short circuit protection: output-to-output, output-to-ground, output-to-power
 - **Initial pin to power short circuit protection (IPSC)**
 - Interrupt signal output pin
 - Fault diagnostics by I²C status register reading
- Internal Power Management Circuits
 - Programmable internal LDOs
 - Power down controls for each analog and digital block
 - Boost converter control output pin for **feed-forward processing (optional feature)**
- Clock Management Circuits
 - Internal stand-alone oscillator with self-calibration
 - TCXO clock interface
 - Crystal oscillator circuit
 - High performance clock generator (low jitter fractional-N PLL)

Applications

- BT Speakers, Smart Hubs
- Sound Bars, Digital TVs
- Digital Set Top Boxes
- Car A/V Systems

Device Information

Part Number	Package	Body Size
MA5311-F	88 - QFN	10.0 mm x 10.0 mm



MA5311

Description

This document contains detailed target specifications for a full digital audio amplifier with switching mode four half-bridge power stages. MA5311 is a high performance monolithic full digital amplifier with **both digital and analog** audio input ports. Equipped with a rich set of digital signal processing functions, it can be used for digital signal inputs. The maximum audio output power is 50 W RMS per channel.