

Boosted Digital Speaker Amplifier for Piezo Speakers

Features

- High Efficiency Boost Converter
 - High efficiency 20 V output voltage for 40 V_{PP} piezo drive
 - Multi-step class-H control by digital feed-forward processing
 - Active anti-windup scheme for boost converter loop compensation
- High Performance Digital Piezo Speaker Amplifier
 - Full digital class-D audio amplifier : Max. 40 V_{PP} output
 - Large capacitive load drive : Max. 5 μF load drive
 - Low output noise : < 60 μVrms (A-weighted)
 - High audio performance : SNR 105 dB
 - I²S / TDM digital audio input interface : 8 kHz to 192 kHz
 - I²C address selection input for stereo speakers
 - SDO output high impedance control for stereo speakers
- Digital Signal Processing for Sound Tuning
 - DSP for no-series-resistance piezo drive
 - Soft volume and soft mute
 - Five band 32-bit parametric equalizers for receiver or speaker sound tuning
 - Dynamic range compressor
 - Digital audio feedback signal for echo cancellation
 - Fine volume (+3 dB to -3 dB / 0.125 dB steps) after DRC
 - Tone generator
- Protections
 - Overcurrent protection
 - Under / overvoltage protection for boost converter
 - Over current limit for boost converter
 - Active anti-windup scheme for boost converter loop compensation

- Thermal management / shutdown circuit
- 7-step brownout protection / input voltage monitoring
- Others
 - Fault diagnostics by I²C interface
 - System clock source selection control
 - Input clock monitoring circuit with internal oscillator
 - Internal fractional-N PLL

Applications

- Mobile Phones
- Laptops
- LCD, OLED TVs
- Wireless Mobile Speakers

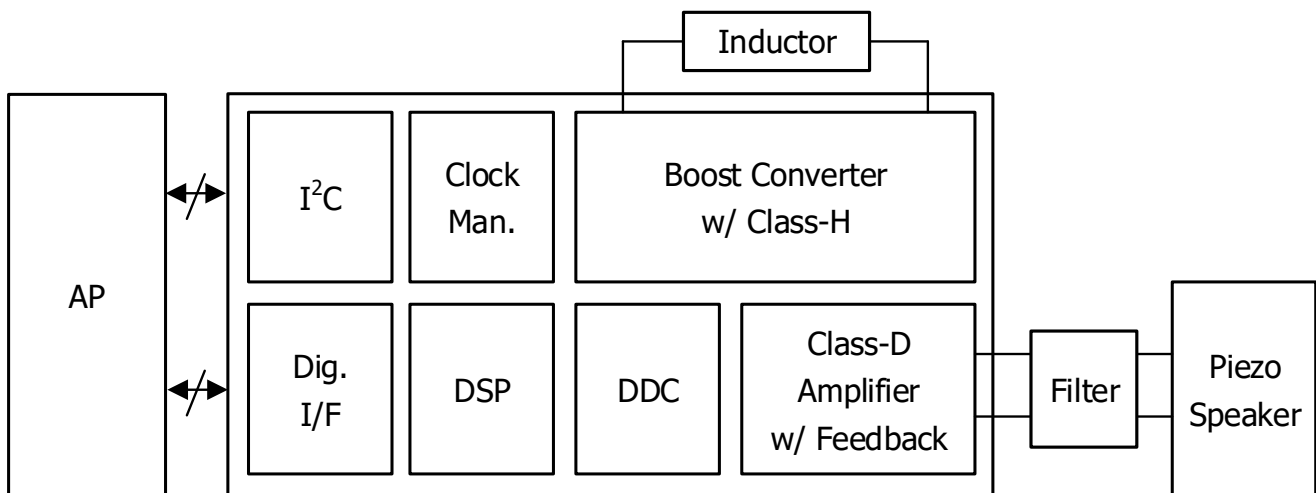
Description

This document contains the detailed specifications of the SMA6101 digital class-D audio amplifier with an integrated boost converter. From input voltage or a single cell Li-ion battery power supply, the boost converter converts boosted output voltage into a full digital amplifier to make the large signal of outputs stable for the piezo speaker drive. Maximum output voltage level is 40 V_{PP}.

Device Information

Part Number	Package	Body Size
SMA6101-W	6 x 5 - WLCSP	2.48 mm x 2.41 mm

Simplified Block Diagram



SMA6101

Simplified Block Diagram