

2.1 W Boosted Digital Speaker Amplifier with Feedback-Loop

Features

- High Efficiency Boost Converter
 - Typical output voltage 5.6 V
 - Class-G control by digital feed-forward processing
 - Active anti-windup scheme for loop compensation
- High Performance Digital Speaker Amplifier
 - Full digital class-D audio amplifier
 - Max. 1.6 W at 8 Ω, THD+N < 1%, 1 kHz
 - Max. 2.1 W at 6 Ω, THD+N < 1%, 1 kHz
 - High audio performance: SNR 104 dB, THD+N 0.008 %
 - Digital audio input interface
 - I²C address selection input for stereo speakers
 - SDO output high impedance control for stereo speakers
- Digital Signal Processing for Sound Tuning
 - Soft volume and soft mute
 - Five band 32-bit parametric equalizers for speaker sound tuning
 - Dynamic range compressor
 - Digital audio feedback signal for echo cancellation
- Protections
 - Overcurrent protection
 - Under / overvoltage protection for boost converter
 - Over current limit for boost converter
 - Thermal management / shutdown circuit
- 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
- Tablets
- Wireless Mobile Speakers

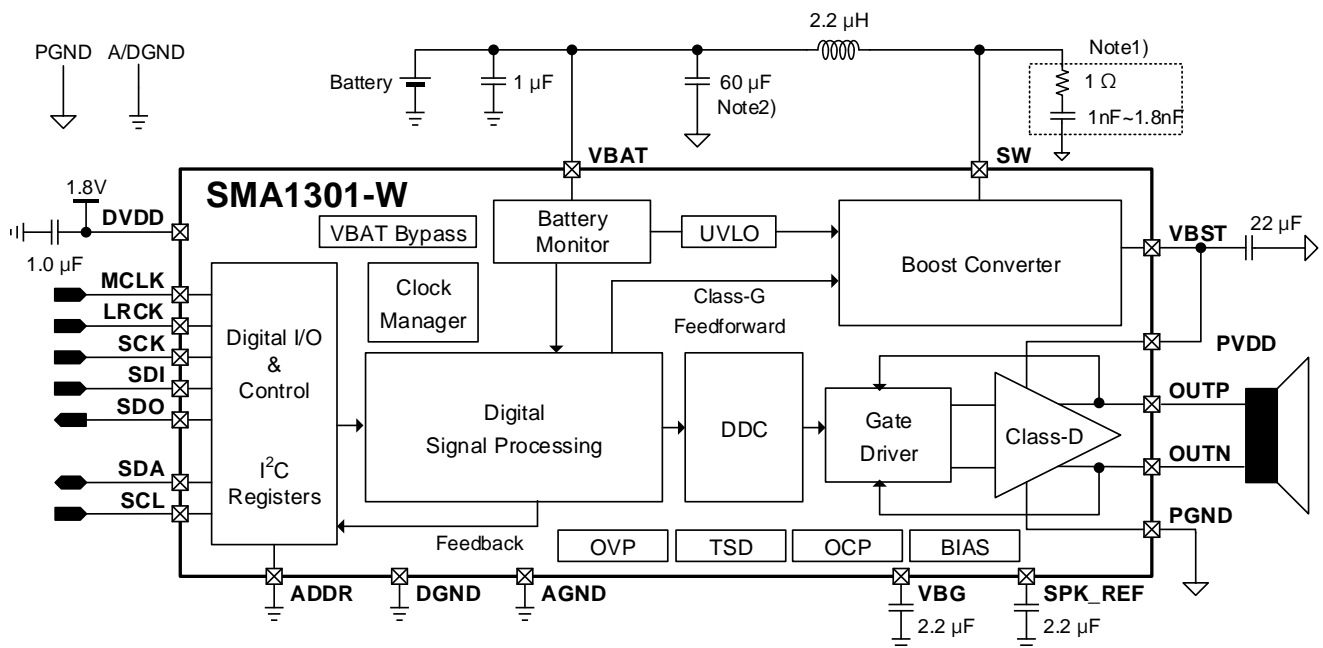
Description

This document contains the detailed specifications of the SMA1301 digital class-D audio amplifier with an integrated boost converter. From a single cell Li-ion battery power supply, the boost converter converts boosted output voltage into full digital amplifier to make stable large sound pressure levels.

Device Information

Part Number	Package	Body Size
SMA1301-W	4 x 5 - WLCSP	1.75 mm x 2.3 mm
SMA1301-F	24 - QFN	4.0 mm x 4.0 mm

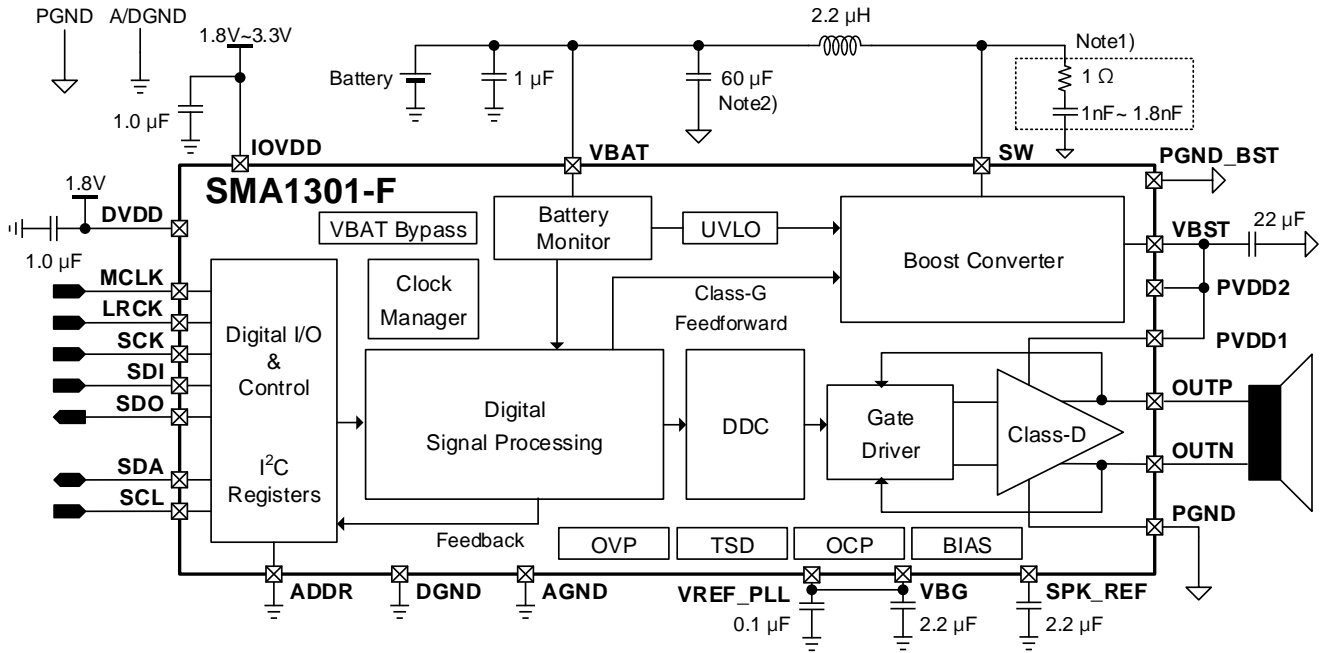
Simplified Block Diagram



SMA1301-W Application Information

*Technology by
Iron Device Corporation

SMA1301



SMA1301-F Application Information

Notes

- 1) The snubber circuit of SW pin can be changed depending on the PCB condition. The typical value is 1 Ω and 1 nF ~ 1.8 nF.
- 2) The typical value is 22uF if battery is connected. If there is no battery at boost convertor input, the total capacitance should be over 60uF.