

AS3658

Product Brief

Power and Audio Management Unit for Portable Devices

1 General Description

The AS3658 is highly integrated power and audio management unit. The AS3658 is designed to include sophisticated audio features like high performance audio DAC and ADC. It has several analog and digital audio interface which are explained in detail in the following sections. The AS3658 is an integrated solution for power supply generation and monitoring, battery management including charging.

2 Key Features

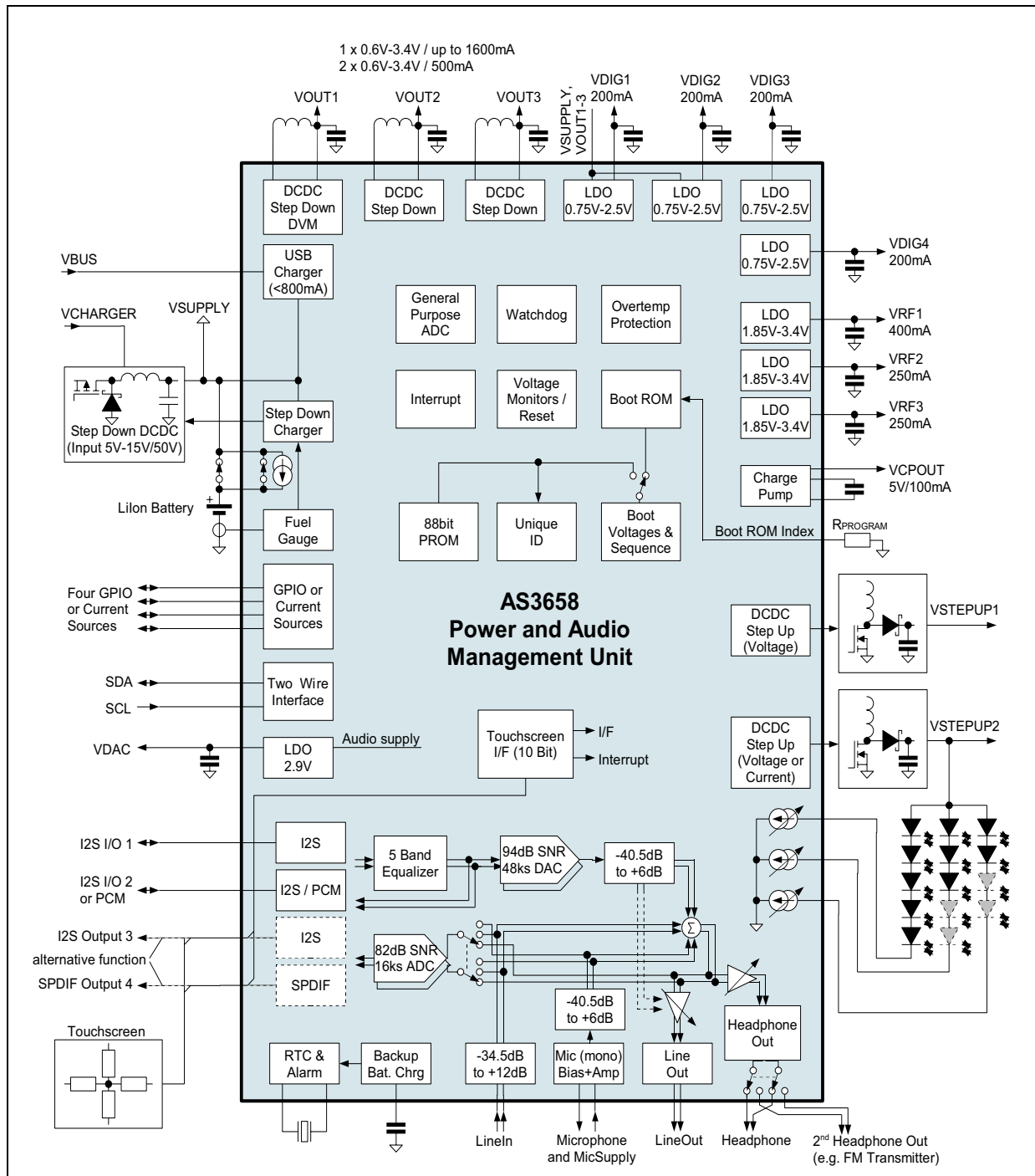
- System Control
 - Serial Control Interface
 - On/Off Control Module with Boot-ROM / GPIO
 - Reset Generation for system controller
 - Programmable Interrupt Controller and Watchdog
 - Low power off mode (9 μ A; 2.5V LDO on)
 - 88 bit unique ID or Boot fuse array
 - Reset with long ON-Keypress (SW-Interruptible)
 - Touchscreen Interface (10 bit, interrupt)
- Supply Voltage Generation
 - 2 RF Programmable Low Noise LDOs (250mA) (1 LDO can be a current controlled switch for hotplug (200mA \pm 40%))
 - 1 RF Programmable Low Noise LDO (400mA)
 - 4 Programmable Dig. Low Power LDOs(200mA)
 - 2 General Purpose PWM DC/DC step up converter with three programmable current sinks (e.g. for white led); for current mode feedback is automatically selected (DCDC_CURR1,2,3)
 - 3 General Purpose high efficiency DC/DC step down converter (DCDC 1 support DVM)
 - 1 Low noise charge pump with 5V output voltage
 - 1 Ultra Low Power 2.5V LDO (always on)
- Current sinks
 - 4 programmable(8-bit) from 0.15mA to 38.25mA (\pm 5%) optional usable as GPIOs
 - 3 programmable high voltage (15V) (8-bit) from 0.15mA to 38.25mA (\pm 5%)
 - internal PWM generator (extended time range) (can control DCDC_CURR1,2,3)
- 10-bit 40 μ s Successive Approximation ADC
 - Two external Inputs (ADC_IN1, ADC_IN2)
- Battery Management
 - Full featured chemistry independent step down charger with Gas Gauge and Current limitation
 - High Current (1.0A) Linear Charger with external pass transistor (no step down charger)
 - 0.1 Ω Battery switch for start-up and trickle charge
- Integrated USB charger up to 880mA (can be used as wall adapter charger); current accuracy 440-500mA for USB specification, in-circuit trimmable (\pm 1.2% trimsteps)
- Autonomous Battery Temperature Supervision (0 $^{\circ}$ C-45 $^{\circ}$ C or 0 $^{\circ}$ C- 50 $^{\circ}$ C) for 10k and 100k NTC
- Charging Timeout (1h-8h in 30min steps)
- Charging in Standby mode
- Completely Autonomous (no SW)
- Power Management Features
 - Wide Battery Supply Range 3.0...5.5V
 - On-Chip Bandgap Tuning for High Accuracy (\pm 1%)
 - Thermal and Current Protection (int. sensor)
 - Standby Mode exit by interrupt e.g. Onkey/RTC
- Audio
 - 94dB Audio DAC, 16-48kHz sampling rate
 - Two Digital Audio Inputs (2 x I2S interface)
 - 2.9V low Noise LDO for Audio DAC
 - Two Headphone Amplifier Output with GND separation
 - Two I2S Inputs and one I2S Output
 - I2S master mode with programmable sample rate (controlled by internal PLL)
 - GND Buffer for Headphone Amplifier
 - Line/ Headphone outputs with GND separation
 - Audio ADC, 82dB SNR with 16ksps
 - Microphone Bias Supply and Amplifier (mono)
 - 5 Band Adjustable Audio Equalizer (\pm 12dB in 3dB gain steps)
 - SPDIF Output
 - Audio Mixer and Gain Stages
 - PCM Interface
- Real Time Clock (RTC)
 - Alarm and Time function
 - Repeated Wakeup (every second or minute)
 - 32kHz output
 - Backup Battery Charger and Switchover
- Programmable System clock
 - 1.6 MHz to 2.3 MHz with 100 kHz steps
- Package
 - BGA124 8x8mm, 0.5mm pitch (can be assembled without micro via boards)

3 Applications

The AS3658 is ideal for PDA, PMP, GPS-Navigation Systems and 1 Cell Li+ or 3 Cell NiMH powered devices.

4 Application Diagram

Figure 1. Application Diagram AS3658



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