AS3658

Power and Audio Management Unit for Portable Devices

Product Brief

1 General Description

The AS3658 is highly integrated power and audio management unit. It includes all the features from the AS3654 and adds on top an 16 bit Audio ADC, a second headphone amplifier, a microphone bias with amplifier, a RTC with alarm and time function, an unique ID block and three more LDOs.

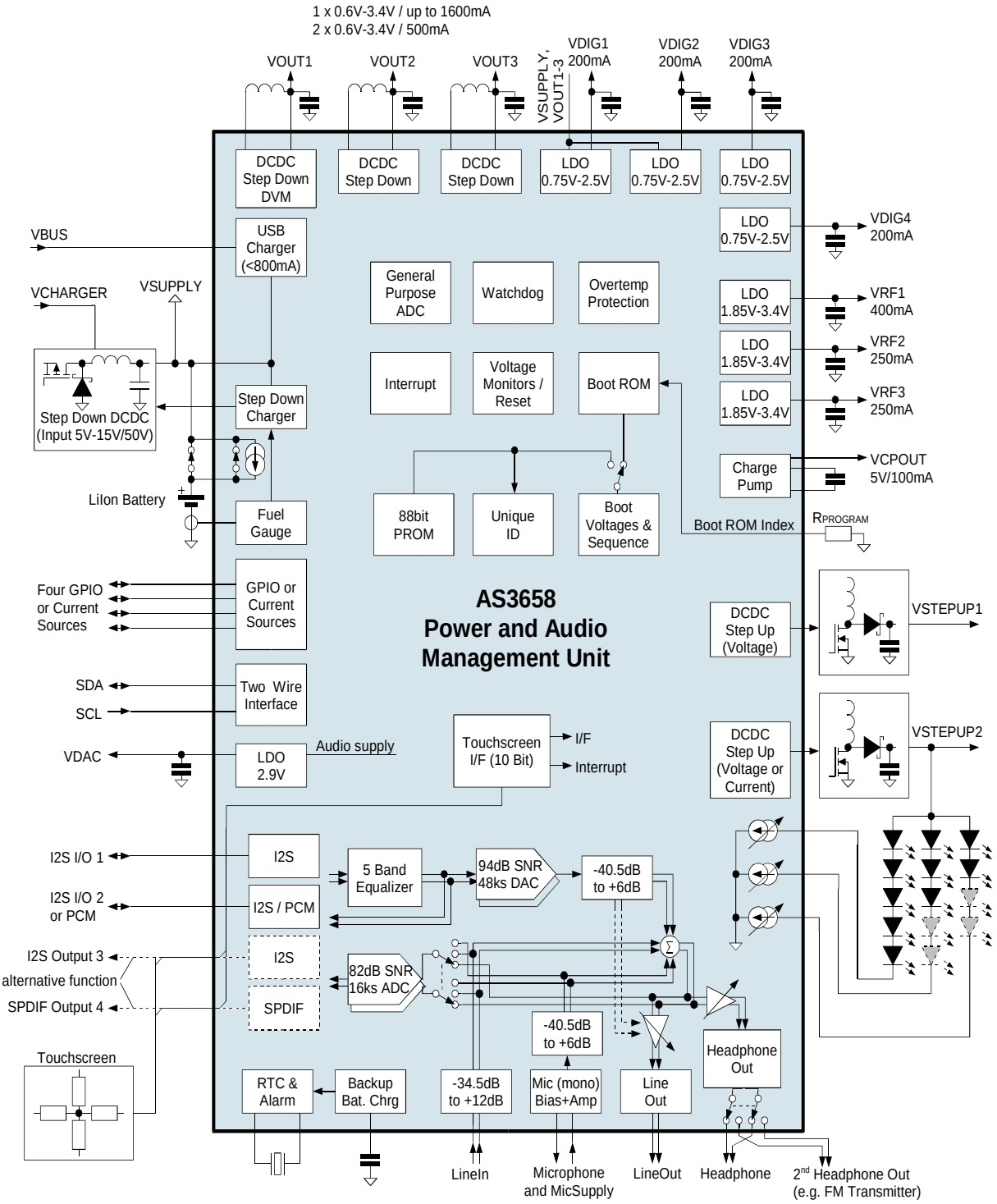
2 Key Features

- 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 (9µA; 2.5V LDO on)
  - 88 bit unique ID or Boot fuse array
  - Reset with long ON-Keypress (5s, SW-Interuptable)
  - 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 +/-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 slected (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 (+/-5%) optional useable as GPIOs
  - 3 programmable high voltage (15V) (8-bit) from 0.15mA to 38.25mA (+/-5%)
  - internal PWM generator (extended time range)
    (can control DCDC_CURR1,2,3)
- 10-bit 40µs 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 SD 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 (+/-1.2% trimsteps)
  - Autonomous Battery Temperature Supervision (0°C-45°C or 0°C- 50°C) for 10k and 100k NTC
  - Charging Timeout (1h-8h in 30min steps)
  - Charging in Stanby mode
  - Completely Autonomous (no SW)
- Power Management Features
  - Wide Battery Supply Range 3.0…5.5V
  - High Accuracy Reference (±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
  - Mono Microphone Supply and Amplifier
  - 5 Band Adjustable Audio Equalizer (+/-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 sec. 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 microvia boards)

3 Application

- PDA, PMP, GPS-Navigation System
- 1 Cell Li+ or 3 Cell NiMH powered devices

Figure 1 – Blockdiagram AS3658



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