

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.

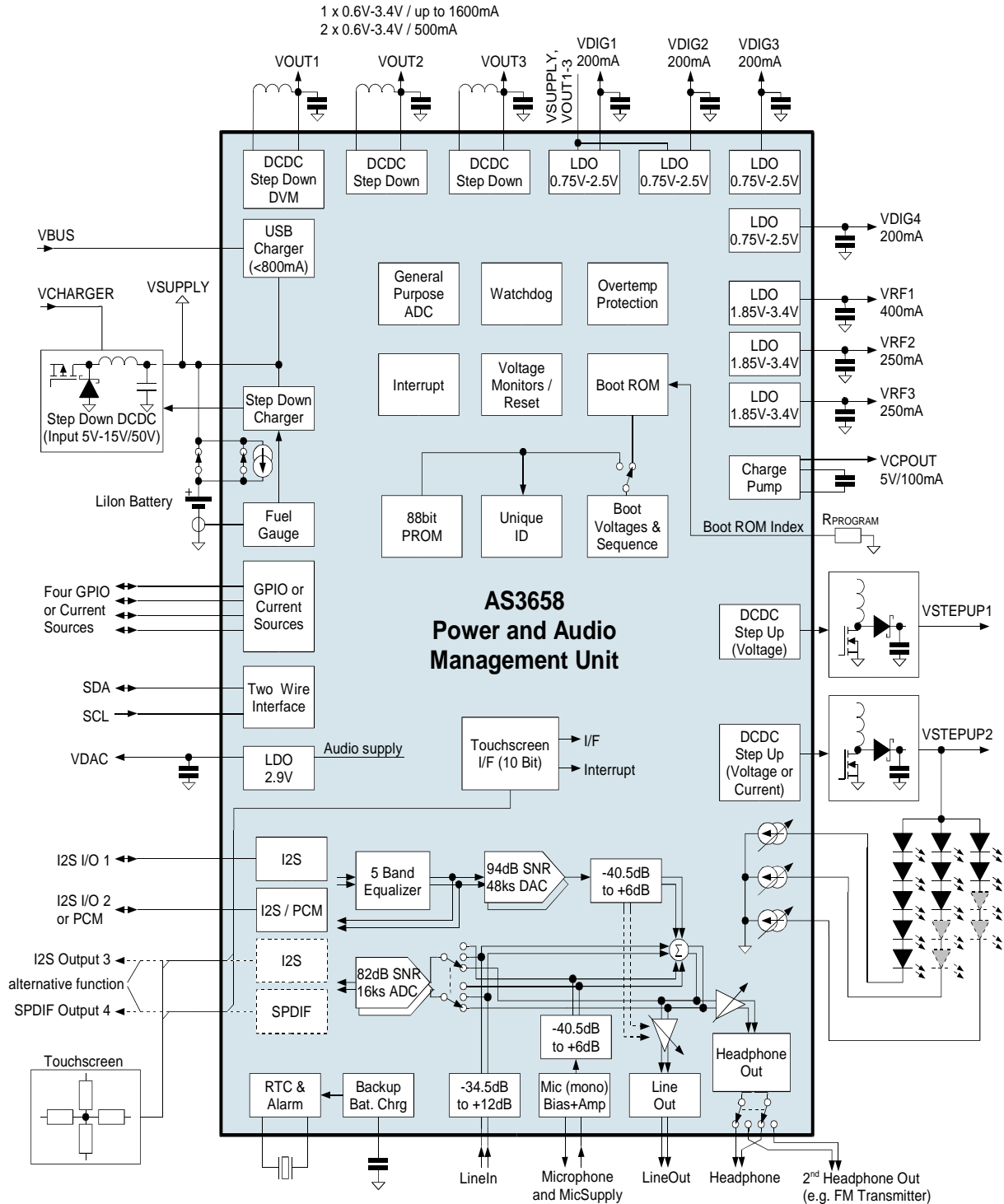
2 Key Features

- 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 (9 μ A; 2.5V LDO on)
 - 88 bit unique ID or Boot fuse array
 - Reset with long ON-Keypress (5s, SW-Interruptable)
 - 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 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 (+/-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 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 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 $^{\circ}$ 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
 - High Accuracy Reference (\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
 - 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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