

## AS3604

### AS3603 with Momentary Power Loss Detection, synchronous DCDC and increased driving capability of the LDOs

#### General Description

The AS3604 is based on the architecture of the AS3603. It has additional functions like momentary power loss detection, a synchronous DCDC buck converter, charger resume operation and increased driving capability of the LDOs.

#### Key Features

The AS3604 features all the functions of the AS3603 with the following additions (marked with **boldface italics**):

- **Momentary Power Loss Detection**
  - **Detect a short interruption (<200ms) of the battery supply (e.g. due to a dropped phone)**
- Ten Programmable High Performance LDOs
  - Two Digital Low-Power LDOs (0.75 to 2.5V, 200mA; **250mA up to 1.4V**)
  - Three RF Low-Noise LDOs (1.85 to 3.4V, **200mA**)
  - Two RF Low-Noise LDOs (1.85 to 3.4V, **150mA**)
  - One SIM Low-Power LDO (3.0V, 20mA)
  - One Periphery Low-Noise LDO (2.5 to 3.2V, **200mA**)
  - One Low-Power LDO (2.5V, 10mA)
- Programmable High Efficiency DC/DC Converters
  - Step-down: **0.8V-3.4V, up to 500mA with 2.2MHz operating frequency and small external coil (2.2uH)**
  - Step Up: 15V, 45mA, (for White LEDs)
- Stereo Audio Power Amplifier
  - 0.5W @ 4Ω -Stereo
  - 1W @ 8Ω -Bridged
  - Digital Volume Control, 3dB Steps
  - Click- and Pop-Less Start-Up and Power-Down
- Complete Chemistry-Independent Battery Charger
  - Integrated Fuel Gauge
  - Automatic Trickle Charging
  - Programmable Constant Current Charging

- Programmable Constant Voltage Charging
- Programmable Pulse Charging
- Safety Functions (Low Battery Shutdown)
- Operation without Battery
- No-Battery Detection
- **Can regulate the current through the battery or from the charger**
- **Charger Input Overvoltage protection (6V)**
- **Shutdown even with connected charger**
- **Charger Resume operation**
- Charger Interrupts (Inserted, **Removed, Overvoltage, Resume**)
- Four 8-Bit Programmable Current Sources (0.625mA to 160mA) support:
  - Buzzer
  - Vibrator
  - LEDs
- Wide Battery Supply Range 3.0 to 5.5V
- Four General Purpose Switches (1Ω and 2Ω)
- **Three** Programmable General Purpose I/O Pins
- On-Chip Bandgap Tuning for High Accuracy ( $\pm 1\%$ )
- Integrated Programmable Watchdog (7.5 to 1900ms)
- Programmable Reset (10 to 110ms)
- Shutdown Current typ 7μA (2.5V Always On)
- Overcurrent and Thermal Protection
- 0.35μ CMOS Solution
- 48-Pin, 6x6mm QFN Package (0.4mm pitch)
- 2.1 Watt Power Dissipation @ T<sub>AMBIENT</sub> = 70°C
- **Almost Pin Compatible to AS3603 (only one pin changed)**

#### Application

Multi-standard power management for mobile phones, PDAs, and 1-cell Li+ or 3 to 4-cell Ni-MH powered devices.

# 1 Block Diagram

Figure 1 – AS3604 block diagram differences to the AS3603 marked with blue

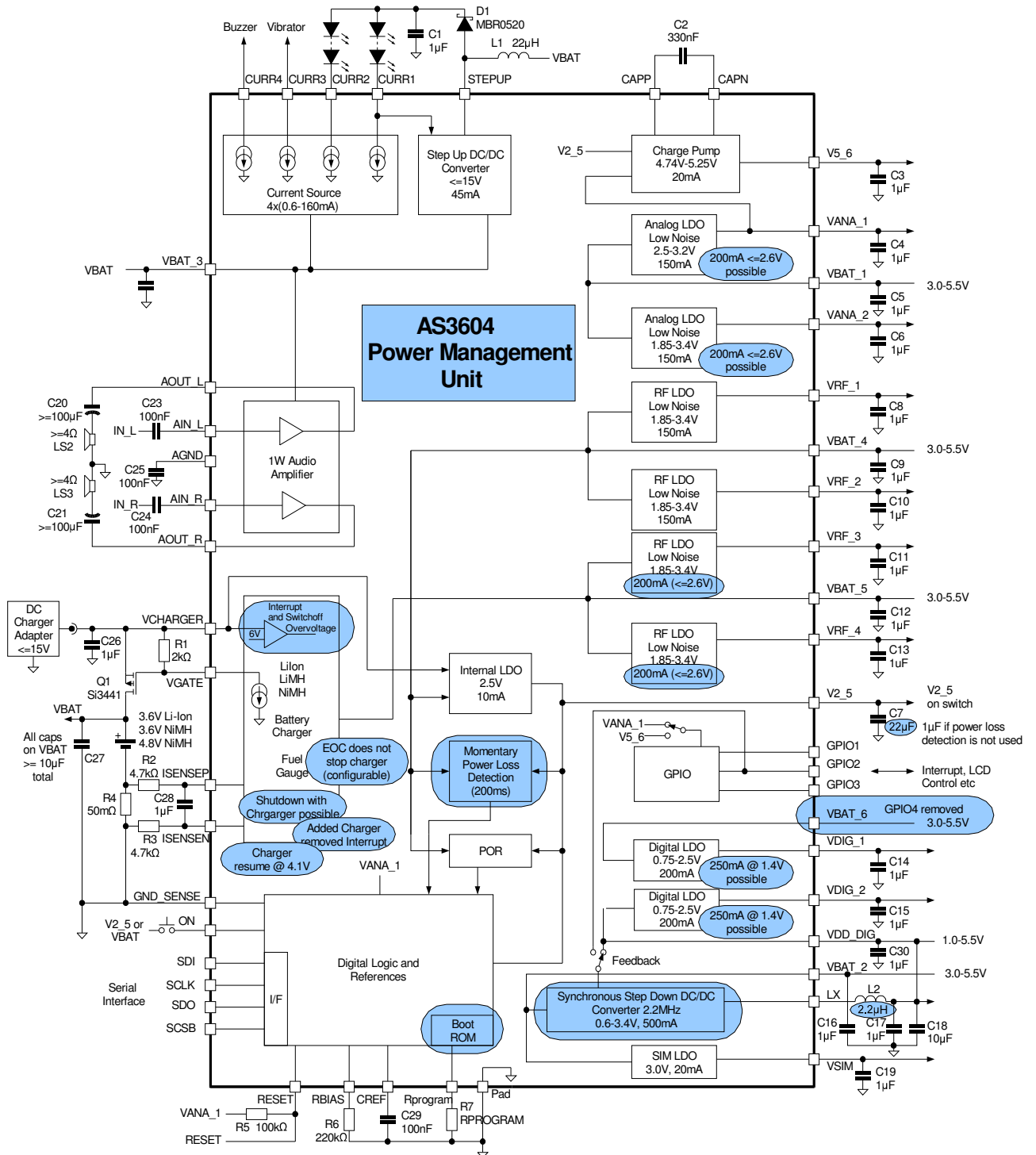
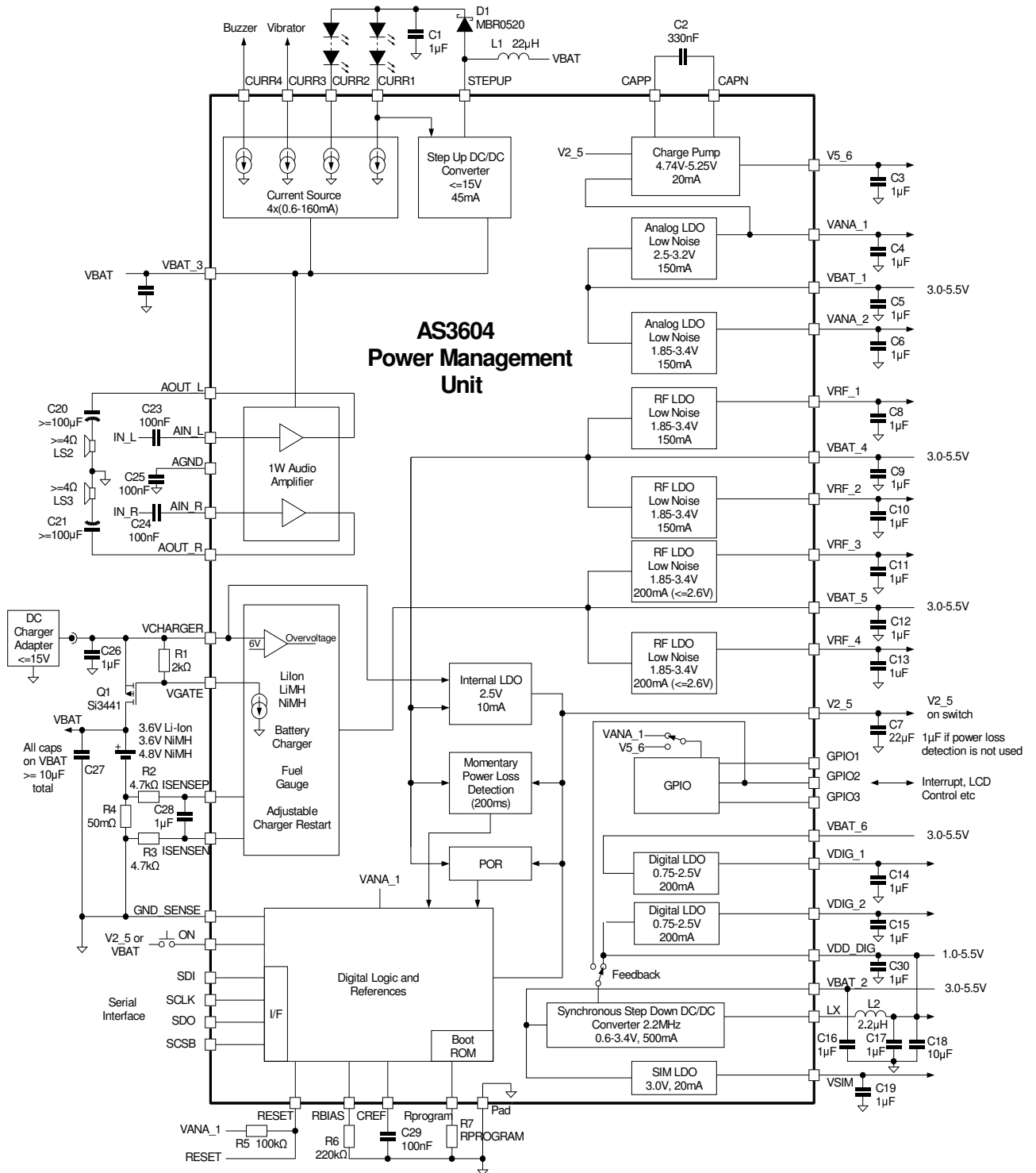


Figure 2 – AS3604 block diagram



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