Multi-Standard Power Management Unit
AS3601

FACT SHEET

General Description

The AS3601 / AS3602 is a highly integrated CMOS Power Management Unit to supply any portable devices, such as Cellular Phones, PDAs, CD-Players, Digital Cameras and other 1 Cell Li+ or 3 Cell NiMH powered devices.
It can be used for any cellular handsets standard such as CDMA, WCDMA, GSM, GPRS, EDGE, UMTS and other Japanese or American Standards.

The device incorporates low dropout regulators, DC/DC converters, a complete charger and an audio power amplifier on one die.

The linear analog regulators feature extremely high analog performance regarding
noise (< 30µVrms from 100Hz to 100kHz),
line/load regulation (< 1mV static and < 10mV transient),
and power supply rejection (> 70dB@1kHz).

The integrated step-down DC/DC converter does not require an external schottky diode and provides a very high efficiency (up to 95%) throughout the whole operating range. It can be either used as a stand-alone device or as a pre-regulator for LDOs to increase the overall efficiency.

To supply white LEDs an additional step-up DC/DC converter is included together with programmable current sources to control the brightness.

A low distortion audio power amplifier (1 Watt @ 8Ω) allows hands-free operation and HiFi ringing tones.

The device also features a chemistry independent charger including automatic trickle charge, gas gauge and programmable constant voltage and current charging.

The AS3601 / AS3602 is controlled via a serial interface and integrates all necessary system specific functions such as Reset, Watch Dog and On Detection.

Output voltages and start-up timings can be programmed either on metal-mask level, by register or by an external resistor.

Key Features

10 Programmable High Performance Regulators
- 2 Digital Low Power LDOs (0.75-2.5V, 200mA)
- 3 RF Low Noise LDOs (1.85-3.4V, 150mA)
- 2 RF Low Noise LDOs (1.85-3.4V, 75mA)
- 1 SIM Low Power LDO (1.8-3.0V, 20mA)
- 1 Periphery Low Noise LDO (2.5-3.2V, 150mA)
- 1 Low Power LDO (2.5V, 10mA)

Programmable Highly Efficient DC/DC Converters
- Step-down: 1.0-3.0V, up to 500mA
- Step-up: 15V, 45mA, e.g. 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 Charger
- Integrated Gas Gauge
- Automatic Trickle Charge
- Prog. Constant Current Charging (0.1-1A)
- Prog. Constant Voltage Pulse Charging
- Safety Functions (Low Battery Shutdown)
- Over and Under Temperature Charge Disable

4 Programmable Current Sources
- 8 Bit, (0.625mA to 160mA)
- for Buzzer, Vibrator, LEDs

- Wide Battery Supply Range 3.0V – 5.5V
- Serial Control Interface
- On Detect with Hardware Regulator Program
- 2 General Purpose Switches (2Ohm)
- 4 Programmable General Purpose I/Os
- On-Chip Bandgap Tuning for High Accuracy (+/-1%)
- Integrated Programmable Watchdog (1-1000ms)
- Programmable Reset (10-110ms)
- Shutdown Current <10uA (2.5V always on)
- Overcurrent and Thermal Protection
- 0.35u CMOS Solution
- 48 Pin Micro Lead Frame Package (QFN)
- 40 Pin Micro Lead Frame Package (QFN)
- 2.1 Watt Power Disipation @ TAmbient =70C

Application

- Multi-Standard Power Management for Cellular Phones, PDAs
- 1 Cell Li+ or 3 Cell NiMH powered devices