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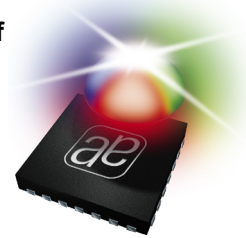
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AS3677

ProductBrief

Triple Channel Lighting Management Unit with DCDC step/up, ALS, 2xDLS(=DBC) and RGB Driver



1 General Description

The AS3677 is a highly-integrated CMOS Power and Lighting Management Unit for mobile telephones, and other Li+ battery powered devices.

The AS3677 incorporates one Step Up DC/DC Converter for white backlight LEDs one Analog-to-Digital Converter, six current sinks, LED in-circuit function test, an I²C serial interface, and control logic all onto a single device. It includes a charge pump to control e.g. an RGB together with an internal pattern generator for smooth blinking effects.

It supports **ambient light sensor** processing and **two Dynamic Luminance Scaling (DLS)** (also called Dynamic Backlight Control - DBC) input.

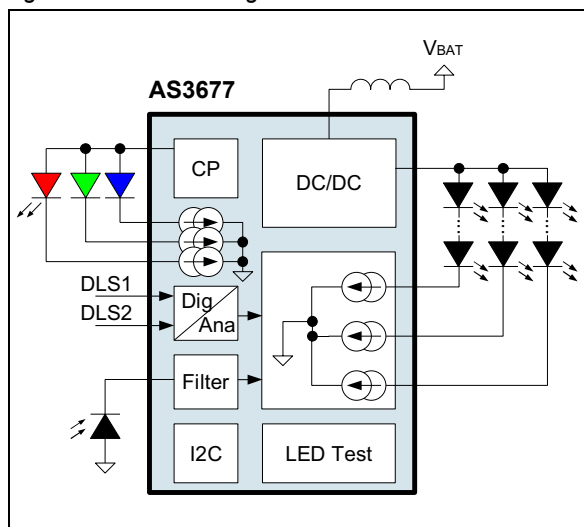
Internally the PWM signal for DLS can be used to change the analog current through the current sources (two channels can be used simultaneously). This avoids noise in the system as the changes of backlight control happen continuously without using the PWM modulation scheme.

Output voltages and output currents are fully programmable.

The AS3677 is part of the austriamicrosystems AS3675, AS3687/87XM, AS3688 and AS3689 lighting management unit family. It is software compatible to AS3675, AS3676, AS3687/87XM, AS3688 and AS3689.

The AS3677 is available in a space-saving WL-CSP package measuring only 2.3x2.3x0.6mm and operates over the -30°C to +85°C temperature range.

Figure 1. Function Diagram



2 Key Features

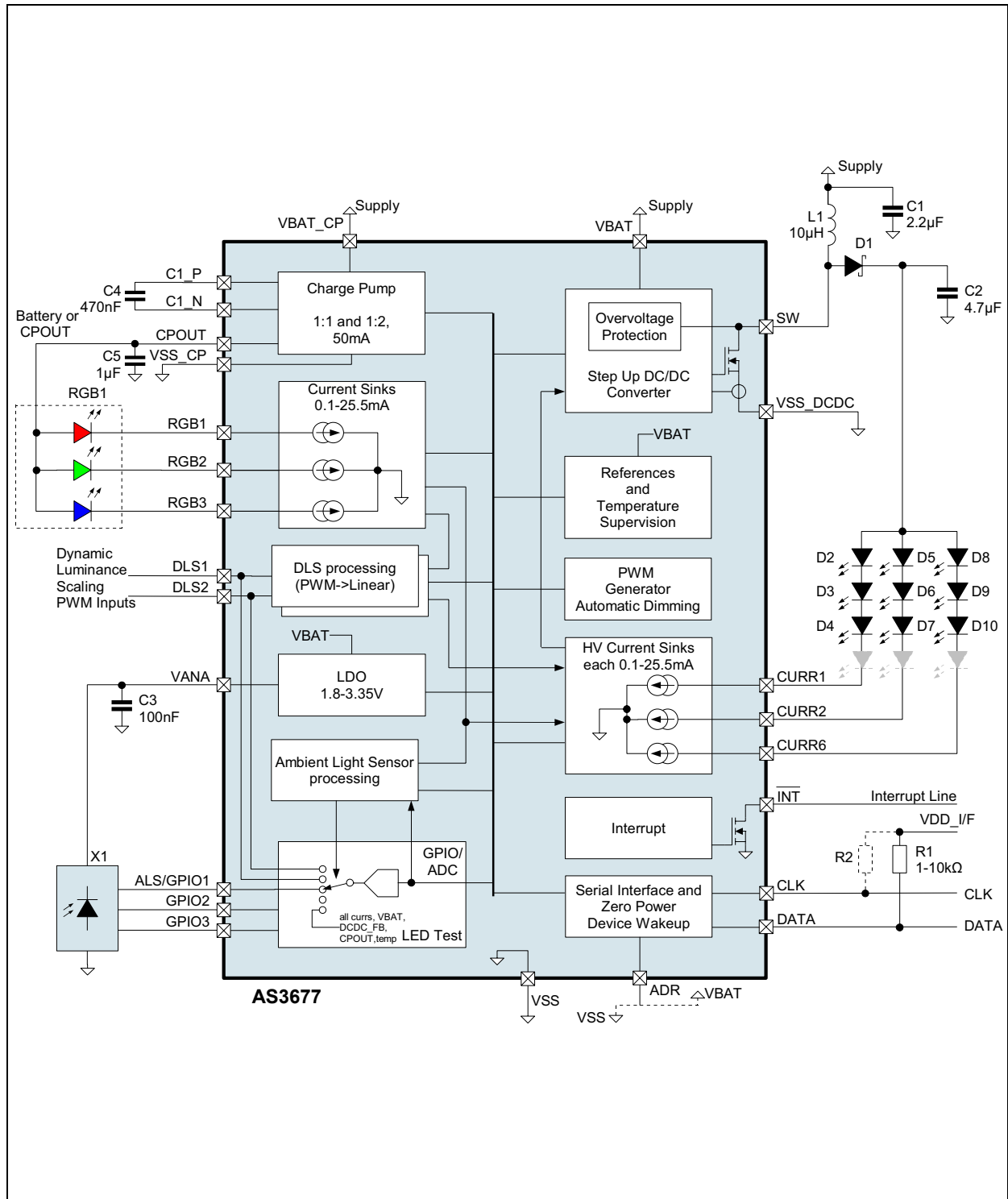
- High-Efficiency Step Up DC/DC Converter
 - Up to 25V, up to 50mA for White LEDs
 - Programmable Over voltage Protection (10V, 16V or 25V)
- 50mA Charge Pump
 - 1:1 and 1:2 Mode with automatic Up Switching
 - Only 2 External Capacitors Required
- 6 Current Sinks
 - Fully Programmable (8-bit) from: 0.1mA to 25.5mA
 - 3xHigh Voltage capable (up to 25V)
 - 3xLow voltage for use with the CP (up to 5.5V)
 - Selectively Enable/Disable Current Sinks
 - Dual Dynamic Luminance Scaling (DLS) support to improve backlight operating time (can adjust any current source)
 - Light Sensor input with internal hardware processing to control backlight according to ambient light using 3 groups
- Internal PWM Generation
 - 8 Bit resolution
 - Autonomous Logarithmic up/down dimming
- Led Pattern Generator
 - Autonomous driving of Fun RGB or indicator LEDs
- 10-bit Successive Approximation ADC
 - 27µs Conversion Time
 - Selectable Inputs: VANA, DLS1, DLS2, ALS/ GPIO1, GPIO2, CURR1, CURR2, CURR6, VBAT, RGB1, RGB2 and RGB3
 - Internal Temp. Measurement
 - Light Sensor input with Java support (JSR-256): read ADC processed value
- Support for automatic LED testing (open and shorted LEDs can be identified)
- Programmable LDO
 - 1.8 to 3.35V, 10mA
 - Programmable via Serial Interface
- Wide Battery Supply Range: 2.7V to 5.5V
- I²C Serial Interface Control with address control pin
- Over current and Thermal Protection
- Package
 - WL-CSP25, 2.3x2.3x0.6mm, 0.4mm pitch

3 Applications

Lighting Management Unit for mobile phones, smart-phones, PMP or PND

The application circuit including all external components is shown in Figure 2:

Figure 2. Application Circuit AS3677



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