

Highly Versatile Buck-Boost Ambient Energy Manager Battery Charger with Source Voltage Level Configuration

Feature

Ultra-low power start-up

- Cold start from 275 mV input voltage and 3 μ W input power (typical)

Constant input voltage regulation

- Optimized for intermittent and pulse power
- Selectable operating input voltage from 140 mV to 4.5 V

Adaptive and smart energy management

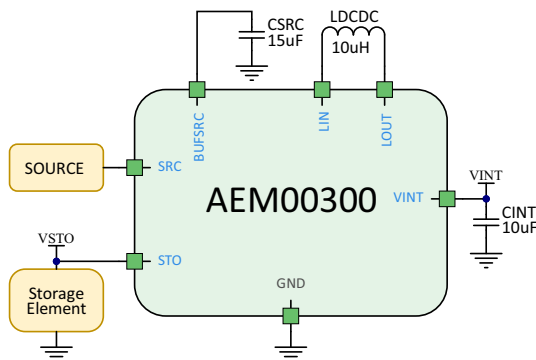
- Switches automatically between boost, buck-boost and buck operation, to maximize energy transfer from its input to the output

Battery protection features

- Selectable over-charge and over-discharge protection for any type of rechargeable battery or (super-)capacitor
- Fast super-capacitor charging
- Dual cell super-capacitor balancing circuit

Smallest footprint, smallest BOM

- Only three external components are required
- One 10 μ H inductor
- Two capacitors: one 10 μ F, one 15 μ F



Description

The AEM00300 is an integrated energy management circuit that extracts DC power from an ambient energy harvesting source to store energy in a storage element. The AEM00300 allows to extend battery lifetime and ultimately eliminates the primary energy storage element in a large range of applications.

Thanks to its selectable operating input voltage, it is possible to set a voltage at which the AEM00300 operates. This voltage is between 140 mV and 4.5 V.

With its unique cold start circuit, the AEM00300 can start harvesting with an input voltage as low as 275 mV and from an input power of 3 μ W. The preset protection levels determine the storage element voltages protection thresholds to avoid over-charging and over-discharging the storage element and thus avoiding damaging it. Those are set through configuration pins. Moreover, special modes can be obtained at the expense of a few configuration resistors.

Applications

- Door access systems
- Smart wearable sensors
- Smart switches home/building
- Point-of-sales (POS)

Device Information

Part Number	Package	Body size [mm]
10AEM00300C0000	QFN 28-pin	4x4mm

Evaluation Board

Part Number
2AAEM00300C001

1. Functional Block Diagram

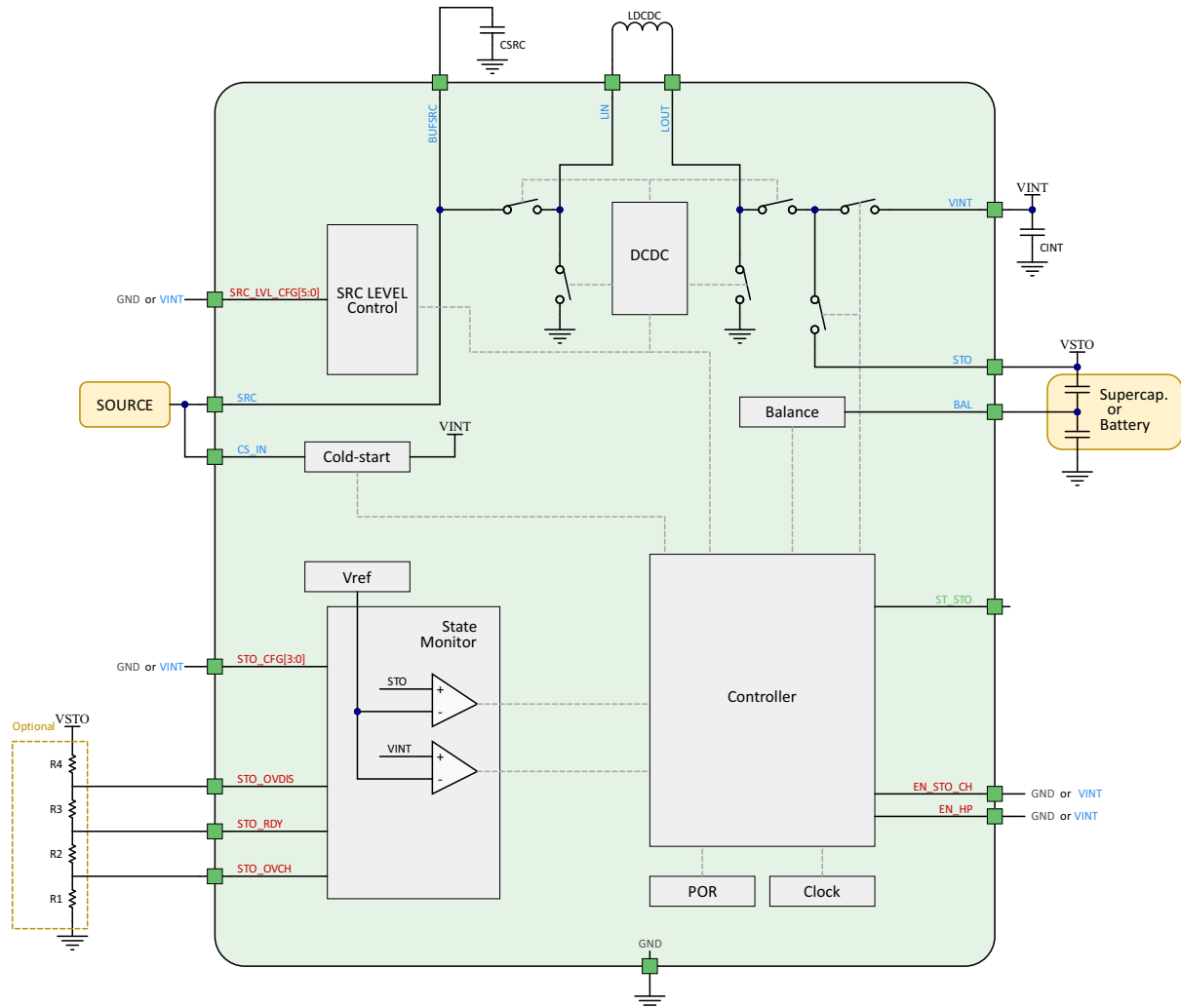


Figure 1: Functional Block Diagram