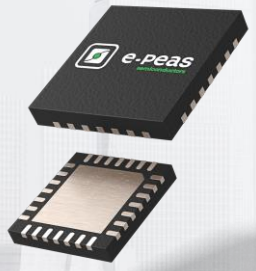
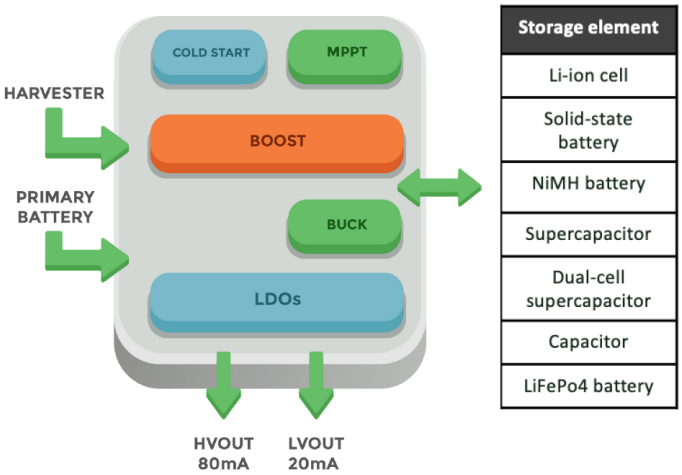


AEM Product Family
Ambient Energy Manager

The AEM is an integrated energy management circuit that extracts DC or AC power from different types of ambient energy harvesters to simultaneously store energy in a rechargeable element and supply your system with two independent regulated voltages.

The **AEM family** **enables you to extend the battery lifetime and ultimately eliminates the primary energy storage element in a large range of wireless applications** such as industrial IoT, retail, smart home, cattle monitoring and wireless sensor nodes.

BLOCK DIAGRAM



FEATURES

Sources
- Solar : AEM10941
- Thermal : AEM20940
- Vibration : AEM30940
- Radio Frequency : AEM30940

Cold start (typical)
- 3 µW @380 mV
- 150 µW @60 mV (AEM20940)
- -19 dBm @868 MHz / 915 MHz
- -12 dBm @WiFi (2.4 – 2.5 GHz)

Footprint
- QFN28 (5x5 mm)
- Down to only 7 passive components

Configurable MPPT

- Configurable MPPT with 2-pin programming
- 70 – 75 – 85 – 90 % for the AEM10941
- 50 – 55 – 75 % for the AEM20940
- 50 – 65 – 80 % for the AEM30940

ZMPPT configuration

- Constant impedance regulation for AEM20940 and AEM30940

Ultra-low-power boost

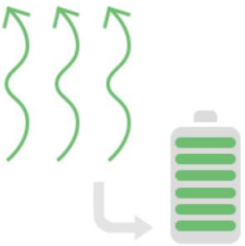
- Input voltage range from 50 mV to 5 V
- Efficiency up to 95 %

Integrated LVOUT LDO regulator

- Fixed voltage at 1.2 V or 1.8 V
- Up to 20 mA
- Power gated dynamically by external control

Integrated HVOUT LDO regulator

- Programmable voltage at 1.8 V, 2.5 V or 3.3 V (pre-defined modes)
- Custom mode allows output within 1.8 V and 4.2 V
- Up to 80 mA load current
- Power gated dynamically by external control



Flexible energy storage management

- Selectable overcharge and overdischarge protection
- For any type of rechargeable battery or (super)capacitor
- Fast supercapacitor charging
- Warns the load when battery is running low
- Warns when output voltage regulators are available
- Warns when the primary battery is used
- Integrated balancing circuit for dual-cell supercapacitor

Leakage current

- 400 nA with LDOs disabled
- 600 nA with LDOs enabled

Primary battery

- Automatically switches to the primary battery when storage element is exhausted

TARGET APPLICATIONS

- Retail
- Smart Agriculture
- Tear monitoring
- Industrial IoT
- Smart watch
- Smart home / building