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.

**FEATURES**

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

**Cold start** (typical)
- 3 \(\mu\)W @380 mV
- 150 \(\mu\)W @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