Ultra Low Power Management, For Battery-less Sensor Nodes

MB39C811 integrates dual full wave bridge rectifier with low loss high efficiency buck convertor for energy harvesting, and provide complete solution optimized for high output impedance energy sources such as piezoelectric transducers.

MB39C811 has 8 preset output voltage as 1.5V, 1.8V, 2.5V, 3.3V, 3.6V, 4.1V, 4.5V and 5.0V and also covers the continuous output current up to 100mA.

### Feature
- Input Quiescent Current:
  - 1.5uA (Output in Regulation-No Load)
  - 550nA (VIN=2.5V in UVLO)
- Integrated Dual Full Wave Bridge Rectifiers
- Input Voltage Range: 2.6V to 23V
- Preset Output Voltages:
  - 1.5V, 1.8V, 2.5V, 3.3V, 3.6V, 4.1V, 4.5V, 5.0V
- Output Current: Up to 100mA
- Input Protective Shunt:
  - VIN21V, Up to 100mA Pull-Down
- Power good output signal at input and output voltage
- QFN40: 6.0mm x 6.0mm x 0.85mm (Pin pitch 0.5mm)

### Table

<table>
<thead>
<tr>
<th>Item</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>VIN</td>
<td>2.6</td>
<td>–</td>
<td>23</td>
<td>V</td>
</tr>
<tr>
<td>Output Voltage Select</td>
<td>S[2:0]=0h.7h</td>
<td>1.5</td>
<td>–</td>
<td>5.0</td>
<td>V</td>
</tr>
<tr>
<td>Quiescent Current</td>
<td>VIN=2.5V(UVLO)</td>
<td>–</td>
<td>–</td>
<td>5.5</td>
<td>nA</td>
</tr>
<tr>
<td></td>
<td>VIN=4.5V(Sleep mode)</td>
<td>–</td>
<td>–</td>
<td>1.5</td>
<td>uA</td>
</tr>
<tr>
<td></td>
<td>VIN=18V(Sleep mode)</td>
<td>–</td>
<td>–</td>
<td>1.9</td>
<td>uA</td>
</tr>
<tr>
<td>Operating Ambient Temperature</td>
<td>Ta</td>
<td>-40</td>
<td>–</td>
<td>+85</td>
<td>°C</td>
</tr>
</tbody>
</table>

Note: Green IT Award is an Japanese Prize.
Block diagram

Power source: Power generator from vibrations + solar-cells

System diagram

Energy Source

Light Vibration

Power Generation Device

Solar Cells
Piezoelectric
Electromagnetic Induction

PMIC

Sensor
MCU
Memory

RF

ZigBee GP
Bluetooth LE
2.4GHz
920MHz

Power Generation Part
Control & Wireless Part

Application

- Light Energy Harvesting
- Piezoelectric Energy Harvesting
- Electro-Mechanical Energy Harvesting
- Wireless HVAC Sensors
- Standalone Nanopower Buck Regulator

Starter kit

- Sensor
- LCD
- MCU: FM3

Web design simulation service

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URL: http://www.cypress.com/easy-design-sim