

# Maxwell Ultracapacitors for RF Applications



Maxwell ultracapacitors can address many of the typical problems that other power sources face:

Typical Power Source Problems	Consequence
Low operating temperatures	Leads to low-voltage output
High internal resistance in batteries	Leads to low output voltage
Over-sizing the power supply to meet current pulses	Increased cost for power source
High current pulses	Primary battery deterioration
Limited to finite recharge cycles	Battery deterioration
Insufficient power during power outage	Loss of critical data

Maxwell ultracapacitors are ideal for helping the power source within the following RF applications: AMR, GSM / GPRS / GPS, WiFi and WiMax

Application	Challenge	Maxwell Solution	Advantages
Automated Meter Reader (AMR)	Low performance in a low-temperature environment	Works in broad temperature range: -40° C to +85° C	Allows proper device functioning
	High peak power requirements for meter data transmission	Provide peak power during data transmission	Reduce the size of the main power supply
	Back-up power during power outage	Guarantee back-up power during power outage to save or transmit latest meter data	No loss of important billing data collected by meter
	High peak currents cause shorter battery life	Coupling Maxwell ultracapacitor with battery (gas & water meters)	Extends battery life
GSM / GPRS / GPS / WiFi / WiMax Transmitters	Typical GSM / GPRS / GPS / WiMax transmitters exceed allowed current draw. As a result of internal resistance of supply lines, low output voltage is created	Add Maxwell ultracapacitor to the power supply line	Allows current pulse necessary for proper performance



**Within all applications, Maxwell ultracapacitors are used to:**

- ❖ Assist the power source to produce high current pulses
- ❖ Extend the lifetime of a battery
- ❖ Provide back-up power in case of a power outage

### Qualifier Questions

- 1 What is the intended application or use?
- 2 What are you currently using as a power source?
- 3 What are power requirements? (Voltage, Current, Power vs. Time)
- 4 What is the expected lifetime of the solution?
- 5 Are there any environmental concerns such as temperature, moisture or vibration?
- 6 What are the physical space restrictions?
- 7 What is the expected annual volume?



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