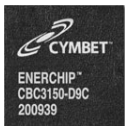




Overview

Cymbet is the leader in solid state battery technology and energy harvesting solutions. The EnerChip™ rechargeable solid state battery is the world’s first component-class battery available in a surface-mount technology (SMT) package that can be used like any SMT device with lead-free reflow tolerance and automated pick-and-place compatibility. The EnerChip CC and the EnerChip EP Energy Processor enable various energy harvesting transducers to be used to power microelectronic systems. With the environmentally friendly EnerChip, you get a reliable, low-profile, cost-effective battery that provides power when you need it, where you want it.

Zero Power Wireless Sensors are enabled by Cymbet EnerChips coupled with advanced energy harvesting circuitry. Energy conversion, energy storage and energy delivery are handled by EnerChip CC and the EnerChip EH module.



CBC3150-D9C

EnerChip CC 50µAh with Integrated Battery Management

The EnerChip CC is the world’s first Intelligent Thin Film Battery. It is an integrated solution that provides battery backup and power management in systems requiring power bridging and/or secondary power. A single EnerChip CC can charge up to 10 EnerChips connected in parallel. The EnerChip CC CBC3150 is a 20-pin 9 x 9 mm DFN package for SMT and is reflow tolerant.

TECH SPECS

Output Voltage	3.3V
Capacity	50µAh
Recharge Time	30min
Charge Cycles	>5000



CBC915-ACA

EnerChip EP Energy Processor

The EnerChip EP CBC915 uses an advanced patent-pending Maximum Peak Power Tracking algorithm that constantly matches the EH transducer output impedance. The EnerChip EP operates with many energy harvesting modes including Light, Thermal, Motion, Flow, Electromagnetic and RF. The EnerChip EP is intelligent and provides system-wide energy aware features.

TECH SPECS

EH Input Voltages	0.2 to 20V
VDD Input	3.5V
Operating Modes	4
Status Indicators	3



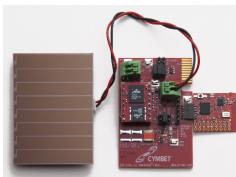
CBC-EVAL-09

EnerChip EP Universal Energy Harvesting Evaluation Kit

The CBC-EVAL-09 accepts inputs from solar, piezoelectric, thermoelectric, and electromagnetic Energy Harvesting transducers. This kit features the CBC915 Energy Processor and EnerChip Solid State Batteries. There are connections for output power and intelligent wireless end devices.

TECH SPECS

Input Voltages	0.2 to 20V
EnerChip Capacity	100µAh
Recharge,cycles	30min , >5000
Output Voltage	3.6V



CBC-EVAL-10

EnerChip EH Solar Energy Harvesting Evaluation Kit

The EVAL-10 is an evaluation kit combining a solar panel energy transducer with the EnerChip CC CBC3150 based module that has a CBC050 50µAh EnerChip battery. The EnerChips provide storage and starting power for the energy harvesting module. The purpose of this demonstration platform is to enable designers to quickly develop solar energy harvesting applications.

TECH SPECS

Output Voltage	3.5V
Capacity	100µAh
Light Minimum	200 Lux
Charge Cycles	>5000



CBC-EVAL-11

EnerChip CC RF Induction Charging Evaluation Kit

The EVAL-11 utilizes near field RF coupled between two antennas to charge a CBC3150 energy storage device. Perfect for active RFID tags, medical applications, data loggers and any other “reusable” sensor.

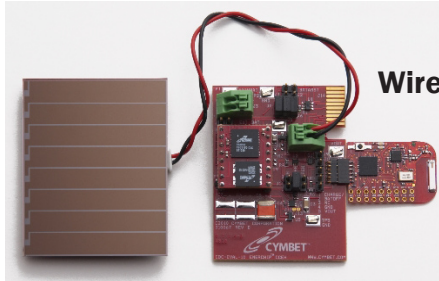
TECH SPECS

Output Voltage	3.5V
Capacity	50µAh
USB Input	5.0V
Charge Cycles	>5000

Solar Energy Harvesting Wireless Sensor Configuration

**Cymbet EVAL-10 Solar EH Kit
with TI eZ430-RF2500 Kit**

**Wireless Signal with “Energy
Aware” Optimized Protocols**



Wireless End Device



**Wireless
Access
Point
USB**

- **Solar Energy Harvesting Module** use CBC-EVAL-010 Kit using EnerChip CC CBC3150
- **Wireless End Device** use the 802.15.4/SimpliciTI kit or other low power wireless devices
- **Wireless Access Point with USB Interface** - connected to PC as collection node for End Points
- **Graphical User Interface** shows the status of the Access Point and all Wireless End Points
- **Available Now** - Cymbet and TI kits can be purchased through Avnet, Digi-Key and Mouser



**PC with
Graphical
User
Interface**

Energy Harvesting Transducer Types

Energy Transducer	Key Issues	Estimated Power Output
Light - Photo Voltaic Cells	Conform to small surface area Wide input voltage range	10μW-15mW (Outdoors: 0.15mW-15mW) (Indoors<10μW)
Vibration - Piezoelectric	Variability of Vibration	1μW-200μW (electrostatic: 50μW-100μW) (Electromagnetic: <1μW)
Thermal- Peltier	Small thermal gradients	15μW (10° C gradient)
Motion/Pressure - Piezoelectric	Capturing Pressure or Motion	~200μW
RF Induction - Near Field or Far Field Sources	RF Coupling and rectification	Various μW

Creating high-efficiency Energy Harvesting systems is a challenging design task. There are many variables: device operating environment, energy transducer type, system energy requirements, sensor type, wireless protocol used, etc. The Cymbet Applications Engineering Team has unique expertise to assist with your transducer implementation. Contact Cymbet or your local Sales Representative to schedule a customized product design consultation.

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All specifications subject to change without notice