CYMBET™
CORPORATION

Overview

Cymbet is the leader in thin-film battery technology and energy harvesting solutions. EnerChip™ 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 EnerChip EH module enable various energy harvesting transducers to be used to power end devices. 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

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 additional 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	50min
Charge Cycles	>5000

CBC5300

EnerChip EH Energy Harvesting Module

The EnerChip EH CBC5300 is a self-contained Energy Harvesting power module in a 24-pin DIP configuration with two 50µAh EnerChips. It is designed to accept a range of energy transducer inputs, store the harvested power, and deliver managed power to the target system. The CBC5300 enables system designers to quickly release Energy Harvesting-based products.

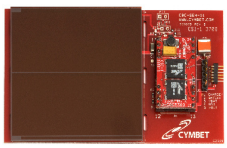
TECH SPECS	
Output Voltage	3.6V
Capacity	100µAh
Recharge Time	50min
Charge Cycles	>5000

CBC-EVAL-07

EnerChip EH Solar Energy Harvesting for ANT Evaluation Kit

The CBC-EVAL-07 is an evaluation kit combining the EVAL-08 kit and an interface module for the ANT Dynastream ANTDKT3 development kit. The EnerChips provide storage and starting power for the energy harvesting module for the ANT Wireless Sensor Demo Kit.

TECH SPECS	
Output Voltage	3.6V
Capacity	50µAh
Recharge Time	50min
Charge Cycles	>5000

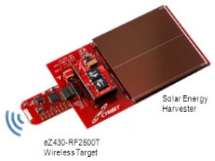


CBC-EVAL-08

EnerChip EH Solar Energy Harvesting Evaluation Kit

The EVAL-08 is an evaluation kit combining a solar panel energy transducer with the EnerChip EH CBC5300 Energy Harvesting module that has two 50µAh EnerChip Batteries. 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 Energy Harvesting applications.

TECH SPECS	
Output Voltage	3.6V
Capacity	100µAh
Light Minimum	200 Lux
Charge Cycles	>5000



EZ430-RF2500-SEH

TI eZ430 Wireless Solar Energy Demo Kit

The eZ420-RF2500-SEH is a TI demo kit combining the EVAL-08 kit and the TI eZ430-RF2500 MSP430 Wireless Demo Kit. The EnerChips provide storage and starting power for the energy harvesting module which powers the TI Wireless Sensor Demo Kit.

TECH SPECS	
Output Voltage	3.6V
Capacity	100µAh
Light Minimum	200 Lux
Charge Cycles	>5000

www.cymbet.com

Cymbet Corporation
18326 Joplin St. NW
Elk River, MN 55330

Ph: +1-763-633-1780

Solar Energy Harvesting Wireless Sensor Configuration

TI eZ430-RF2500-SEH Kit with EnerChip EH Module

Wireless Signal with Energy Optimized Protocols

Wireless End Device

Wireless Access Point USB

- **Solar Energy Harvesting Module** use CBC-EVAL-08 Kit or the TI eZ430-RF2500-SEH Demo Kit
- **Wireless End Device** can be the 802.15.4/SimpliciTI wireless end Device
- **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
- eZ430-RF2500-SEH is available at the TI e-Store

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.