



OPTIMAL POWER BACKUP FOOTPRINT

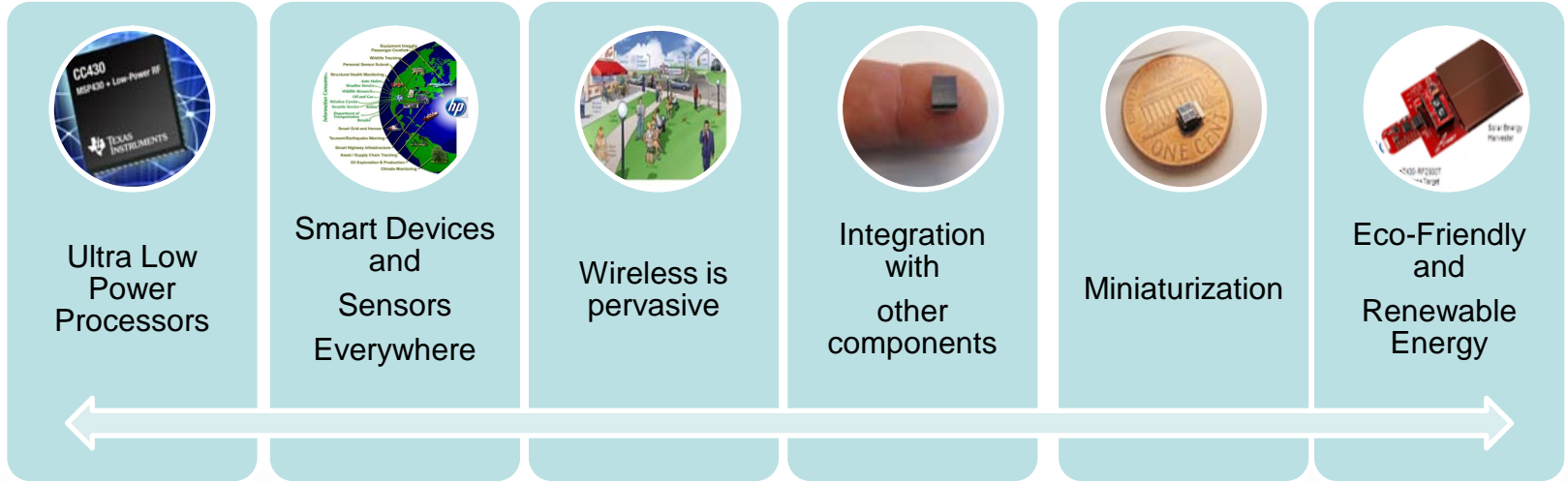
Save Space with Solid State Batteries

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Industry Trends and Storage Solutions Misaligned

TRENDS



CURRENT SOLUTIONS



- Bulky Size/Metal "coin" package
- Cannot be integrated with other electronics
- Low energy for Space used
- Not Eco-Friendly - Toxic Chemicals
- Transportation Safety Issues

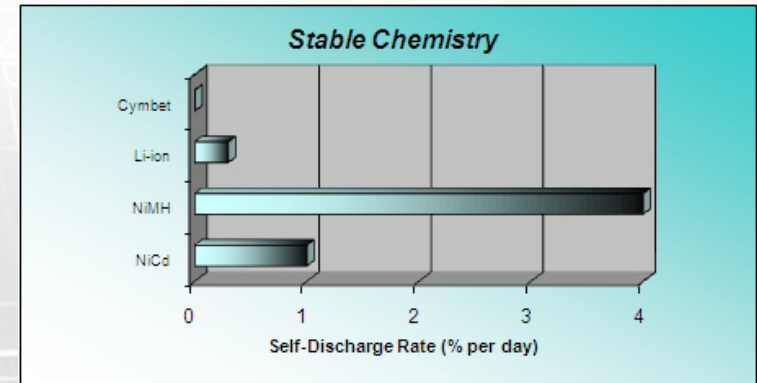
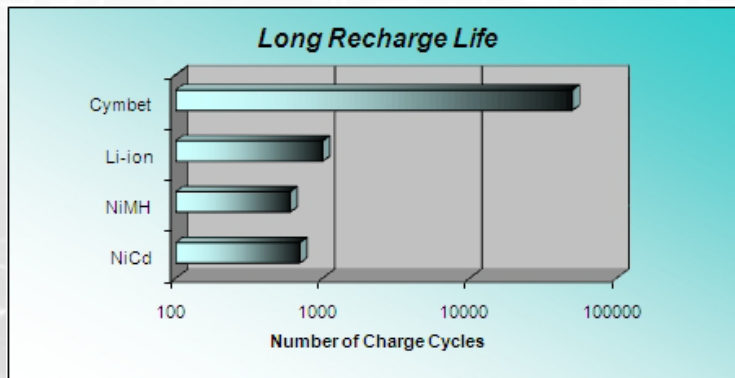
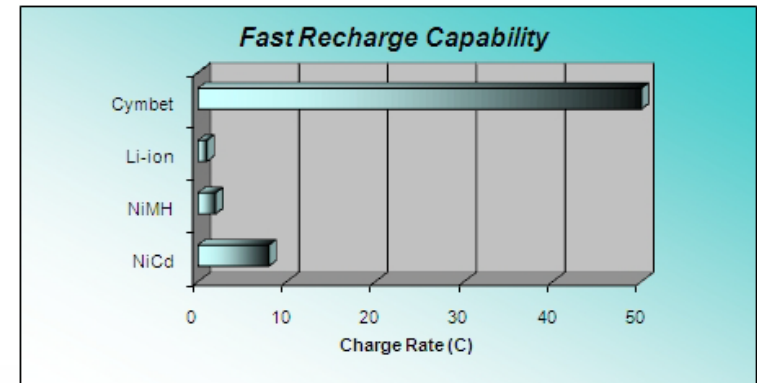
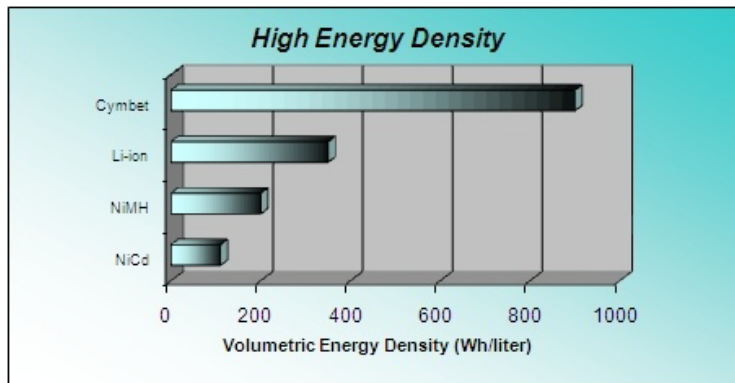


Energy Storage Requirements for New Products

- » High Energy Density
- » Small Footprint and ultra-thin profile
- » 1000s of times rechargeable
- » Permanent for the life of product
- » Safe and Reliable
- » Eco-friendly throughout lifecycle
- » Surface Mount Assembly and reflow solder
- » Package compatible with other ICs
- » Cost effective



Key Battery Characteristics to Consider



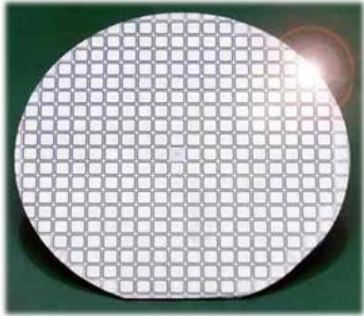
EnerChip Solid State Batteries

- » Legacy batteries and capacitors do not have the characteristics required.
- » A completely new type of energy storage device is needed that eliminates pastes, binders, additives and bulky packaging to reduce size and improve electrochemical efficiency
- » The solution is solid state rechargeable thin film batteries that are component class, highly rechargeable, low profile, constructed with minimal raw materials and handled like an integrated circuit device.



Solid State Batteries – Wafer to PCB

Wafer



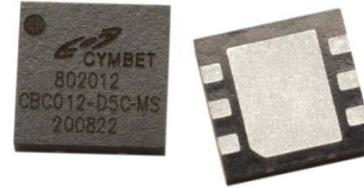
Diced

Bare Die



Packaged

Packaged Part



Tape & Reel

To Surface Mount Machine



To Reflow Solder



Final Assembly



SSB on Board



Power Management Circuit Requirements

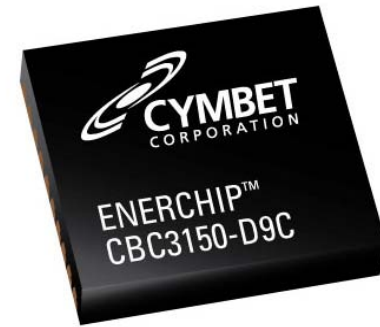
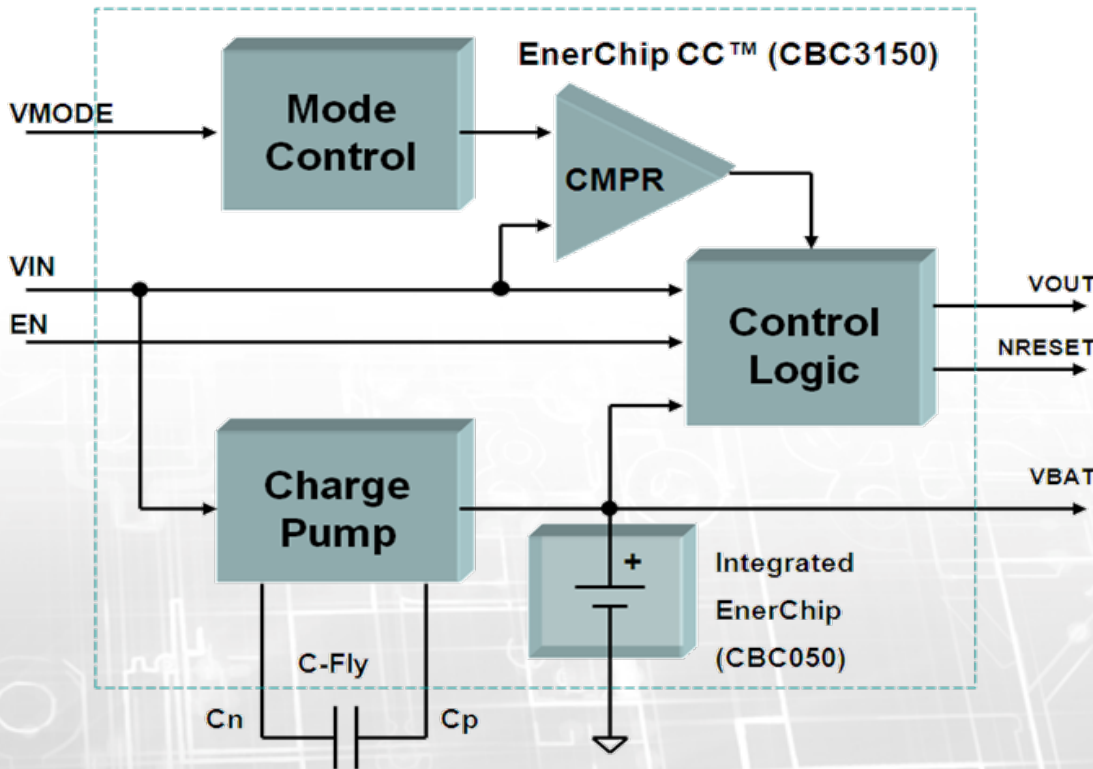
- » Accept wide input voltage range
- » Ultra low power – active and quiescent
- » Manage battery charging and cutoff
- » Regulated output voltage
- » Mode control
- » Status indicators
- » Small ASIC bumpable bare die
- » Ideally a drop-in solution



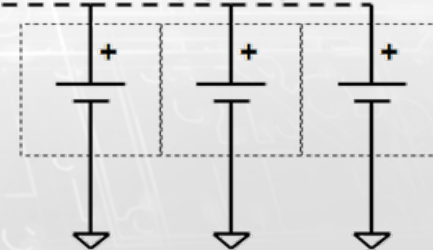
EnerChip Intelligent Solid State Battery

EnerChip CC Functional Diagram

EnerChip CC 20 Pin DFN Package

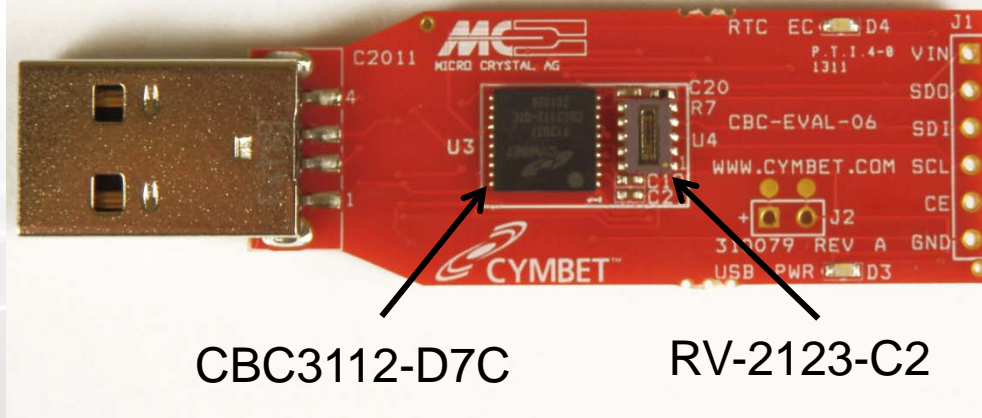


Cascaded EnerChips
(Up to 9)



Worlds Smallest RTC Backup Footprint

- » Cymbet EVAL-06 RTC Backup USB-based kit
- » EnerChip CBC3112 Solid State Battery with integrated power management – 96 hours backup
- » Micro Crystal 2123 RTC with integrated crystal



Real Time Clock Back-up Examples

Manufacturer	Part Number	Description	Iq (nA at 3V)	CBC3105		CBC3112		CBC3150	
				Backup Time (hours)	Package Size (mm x mm)	Backup Time (hours)	Package Size (mm x mm)	Backup Time (hours)	Package Size (mm x mm)
NXP	PCF2123TS/1,118	I2C SPI RTC/CALENDAR	110	45	4x5	109	7x7	455	9x9
Micro Crystal	RV-2123-C2	RTCMODULE WITH SPI BUS	130	38	4x5	92	7x7	385	9x9
Epson	RX-8571	REAL TIME CLOCK I2C	220	23	4x5	55	7x7	227	9x9
Seiko	S-35390A-J8T1G	RTC I2C 2-WIRE	250	20	4x5	48	7x7	200	9x9
Seiko	S-35390A-I8T1G	REAL TIME CLOCK 2WIRE	250	20	4x5	48	7x7	200	9x9
NXP	PCF8563BS/4,118	CMOS RTC/CALENDAR	250	20	4x5	48	7x7	200	9x9
Epson	RX-85764	REAL TIME CLOCK I2C	275	18	4x5	44	7x7	182	9x9
Maxim	DS1341	I2C for HIGH ESR CRYSTALS	280	18	4x5	43	7x7	179	9x9
Maxim	DS1342	I2C for HIGH ESR CRYSTALS	310	16	4x5	39	7x7	161	9x9
Maxim	DS1305EN+T&R	RTC SERIAL ALARM IND	400	13	4x5	30	7x7	125	9x9
Intersil	ISL1208IU8Z	RTC/CALENDAR I2C	400	13	4x5	30	7x7	125	9x9
Maxim	DS1372	RTC I2C BINARY COUNTER CLOCK	400	13	4x5	30	7x7	125	9x9
Epson	RX-8581	REAL TIME CLOCK	450	11	4x5	27	7x7	111	9x9
Maxim	DS13072+T&R	RTC SERIAL 512K	480	10	4x5	25	7x7	104	9x9
Maxim	DS1390U-33+	RTC W/CHARGER+PF DETECT	500	10	4x5	24	7x7	100	9x9

EnerChips are Eco-Friendly



Completely safe to transport via air



WEEE compliant disposal like other Integrated Circuits



RoHS compliant for US and EU



REACH compliant for EU



China RoHS Compliant



Solid State Energy devices contain no toxic heavy metals



CE is not applicable to this product

CE mark does not apply to these devices



Summary

- » New Product Innovation Trends and Drivers are demanding new energy storage and power management solutions
- » Solid state energy storage is co-packaged with ultra-low power electronics
- » These new energy storage solutions are eco-friendly and very cost effective
- » All these EnerChip devices available today – ask your local Avnet team or go to Avnet Express for Evaluation Kits and Samples.

