

Attracting Tomorrow



# CeraCharge™

Backup battery  
for real time clock



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# CeraCharge™ as backup battery for real time clock (RTC)

- RTCs have to continue counting the time during **energy interruption** and for that need a back up source of energy
- **CeraCharge™** is the ideal back up energy solution for RTC, offering many opportunities of process/product optimizations to designers

## Advantages of CeraCharge™

- **Longer life time** (>15 years)
- **Miniaturized** (SMD EIA1812) and maintenance free battery
- Wide temperature range (no leak, no burn and **no explode**)
- Replaces Coin and Li batteries and super cap (electrolytic / ADLC)
- 100% **lead free** = **RoHs**-conform

## Key questions

- RTC type?
- Backup period? <35 days
- Voltage threshold? <1.4 V
- Standby current? <1  $\mu$ A
- No. of cycles? <1000

## Specifications

Nominal voltage	1.5 V
Operating voltage	0 to 1.6 V <sub>op</sub>
Nominal capacity	100 $\mu$ Ah
Nominal discharge current	20 $\mu$ A
Operating temperature	-20 to +80 °C



Application note

Teaser

Development kit



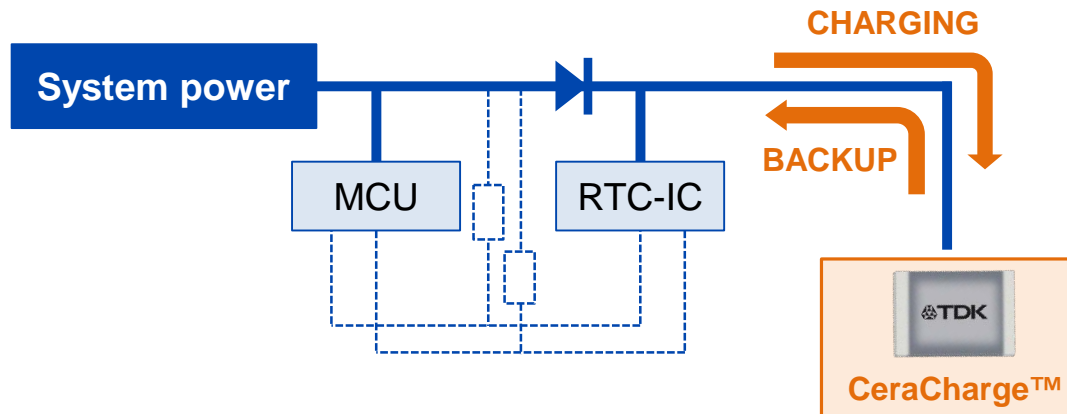
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## Charging circuit suggestion

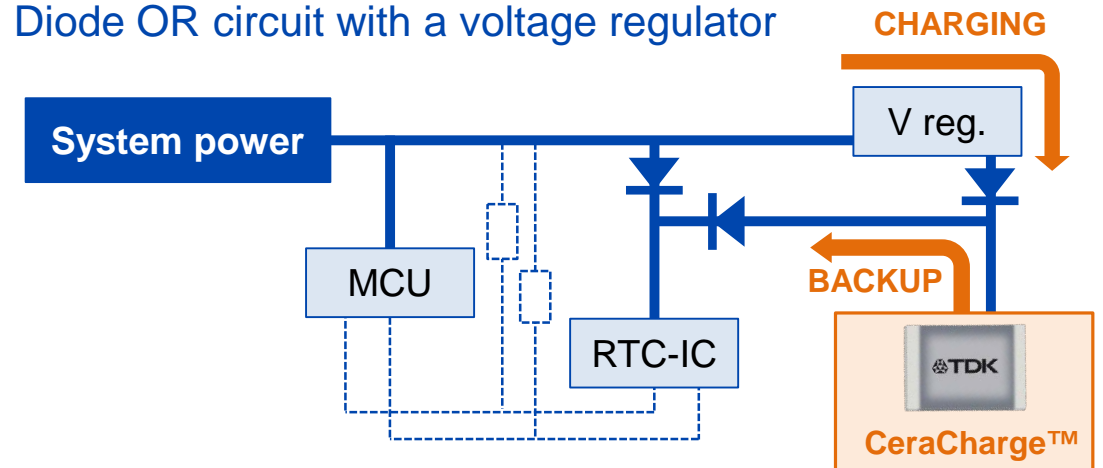
### 1. Power line voltage is compatible with CeraCharge™ specifications

Connected to a power line in parallel with RTC-IC



### 2. Power line voltage is higher than CeraCharge™ specifications

Diode OR circuit with a voltage regulator



- 1) Voltage regulator: XC6206 (TOREX)
- 2) Schotky barrier diode: RB530SM-30T2R (ROHM)



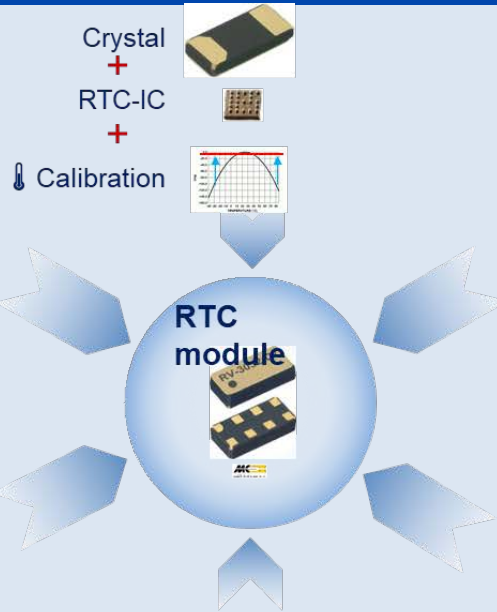
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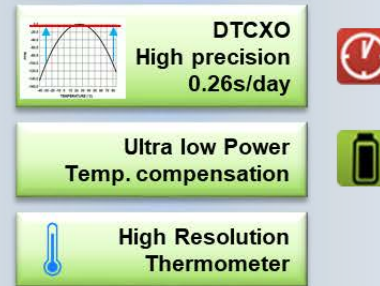
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## Why cooperation with Microcrystal: IC RV-3032-C7

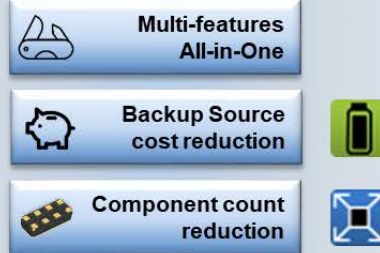
### Tamper protection / Data Security



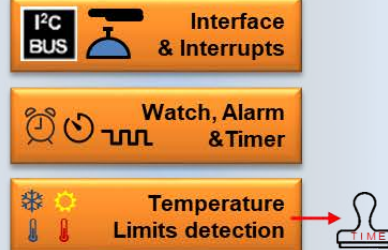
### Performances



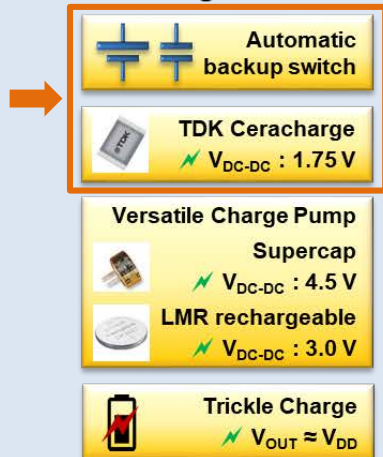
### Cost effectiveness



### Other features



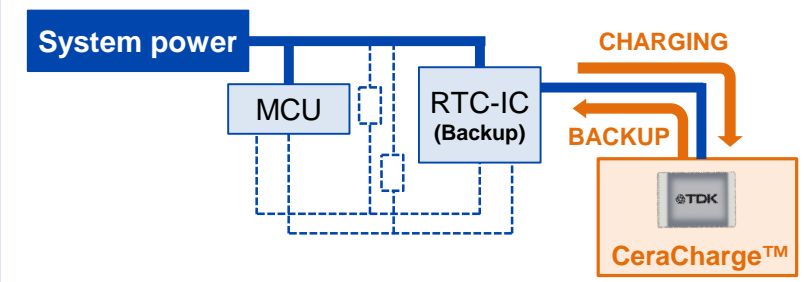
### Power Management



- CeraCharge™ used as *plug & play*
- Suitable for ALL power supplies
- No extra circuit needed
- Automatic backup switch to CeraCharge™ for long life
  - # Module (IC + Crystal + CeraCharge™ + charging control) available
  - # Single IC available

## Power supply 1.5 to 5.0 V

Connected to a battery backup pin of RTC-IC





[www.tdk-electronics.tdk.com](http://www.tdk-electronics.tdk.com)