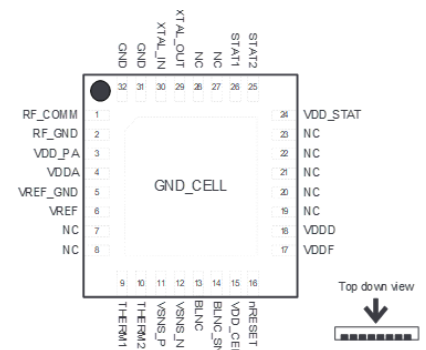


## DKCMS Core Cell Monitor

The DK8102-AQ-25 Cell Monitor is an intelligent sensing, monitoring, and reporting device. The Cell Monitor is connected to each cell in a battery pack and is powered from the cell itself. It operates as an element within the Dukosi Cell Monitoring System (DKCMS) along with Dukosi's DK8202-AR-25 System Hub, proprietary protocol C-SynQ® and the DKCMS Library API.

In addition to continually monitoring voltage and temperature, the DK8102-AQ-25 checks the values against user-configured limits before reporting data to the BMS Host via the Dukosi System Hub. Communication to the System Hub is enabled by Dukosi's proprietary C-SynQ® protocol via a single bus antenna providing a reliable, contactless cell monitoring network.



### Features

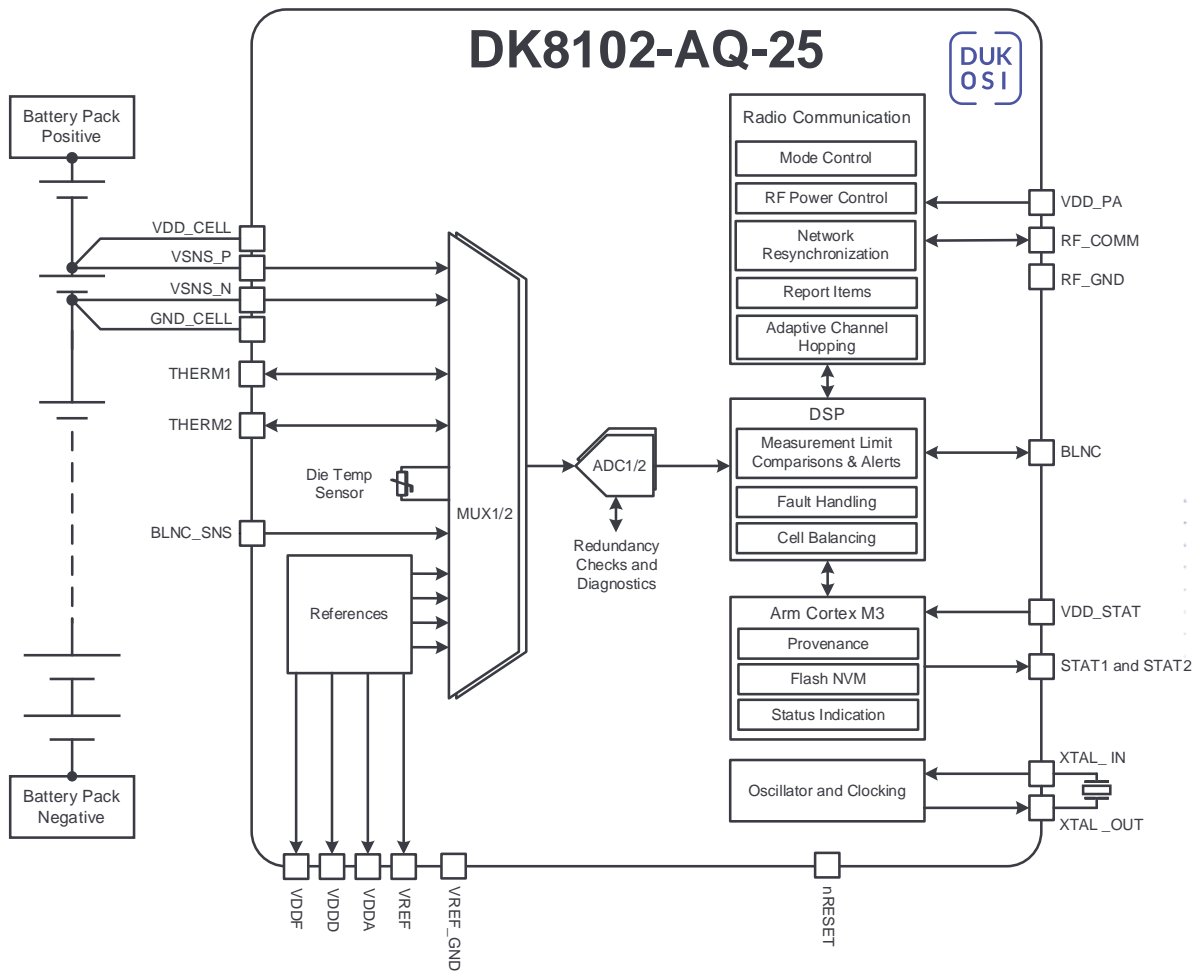
- ◆ High accuracy, per-cell voltage measurement
- ◆ Multiple temperature measurements per cell:
  - ❖ On-chip die temperature sensor
  - ❖ Additional inputs for external thermistors
- ◆ Configurable min/max limits with limit breach reporting
- ◆ Secure, robust, contactless communication to the Host via the Dukosi System Hub
- ◆ Passive cell balancing with configurable stop mechanisms
- ◆ Active, Low Power, and Hibernate modes
- ◆ Fault reporting
- ◆ Cell Passport enabling lifetime on-chip storage of cell provenance data
- ◆ Unique Cell Monitor ID stored on-chip
- ◆ AEC-Q100 qualified
- ◆ Safety collateral available (Safety Manual, FMEDA and FIT rate calculation)

### Benefits

- ◆ Optimize battery utilization with high-accuracy voltage and temperature measurements and synchronization of measurements across every cell
- ◆ Enhanced safety with per-cell, 24/7 temperature and voltage monitoring
- ◆ Contactless communication using Dukosi C-SynQ and a single bus antenna enables:
  - ❖ Wired-like, star-network behavior with predictable communication latency
  - ❖ Inherent isolation of the BMS from the pack HV simplifying the BMS design
  - ❖ Reduced BOM, with potential failure modes designed out as complexities associated with wire harnesses and connectors are eliminated
  - ❖ Simplified pack design, manufacturing, and test
- ◆ Enable a circular economy and sustainable battery chain with Cell Passport data stored on-chip and accessible without the need of a BMS

DKCMS Core Cell Monitor

Block Diagram



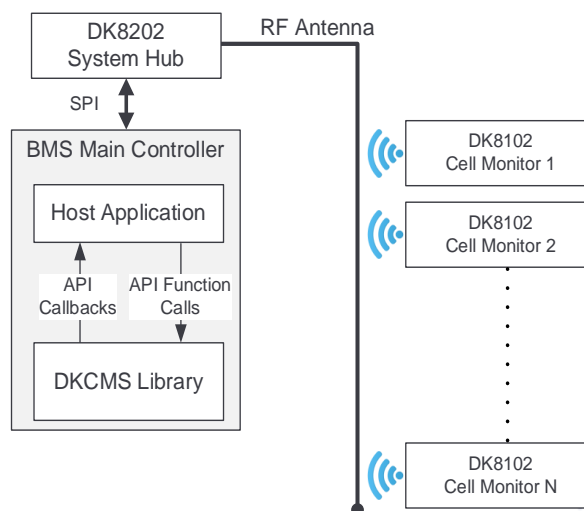
## DKCMS Core Cell Monitor

### Use Case

A DK8102-AQ-25 Cell Monitor is connected to each cell in a battery pack and is powered from the cell itself. Bi-directional communication between the BMS Host and each Cell Monitor is facilitated by a Dukosi DK8202-AR-25 System Hub, using the Dukosi C-SynQ<sup>®</sup> protocol with contactless communication via a single bus antenna.

### Applications

- Multi-cell Li-ion battery systems
- Grid scale utility, commercial and industrial, and residential BESS
- Industrial power systems, and robotics
- Automotive
- Compatible with a range of cell chemistries and pack architectures



### Key Parameters

Parameter	Typical Value (At T <sub>A</sub> = 25 °C)	Comments
Cell Voltage	1.4 V to 5.0 V	Supports a range of cell chemistries <b>Note</b> Full feature set available between 2.19 V and 5 V
Voltage Total Measurement Error (TME)	± 0.6 mV	
Die Temperature Sensor Accuracy	± 2 °C	
THERM1/2 Accuracy	± 0.6 mV	Supports up to two external thermistors
RF Band	2.402 GHz to 2.480 GHz	Near-field communication, employing adaptive channel hopping for robustness and EMC performance
RF Data Rate	2 Mbit/s	
Cell Balancing Current (max)	200 mA	This is based on the internal NFET. Balancing currents >200 mA can be supported through the use of an external FET
Active Mode Rate	10 Hz	Rate is for measurement and reporting
Low Power Mode Rate	0.1 Hz	Rate is for measurement and reporting
Hibernate Mode Rate	0.1 Hz	Rate is for measurement only
Cell Passport Data Storage	2 KiB	
Operating Temperature Range	-40 °C to +105 °C	AEC-Q100 (Grade 2)

## DKCMS Core Cell Monitor

### Ordering Information

Part Number	Description	Packaging	MOQ
DK8102-AQ-25/C	Cell Monitor, AEC-Q100 (Grade 2), packaged in a 5 mm x 5 mm, 32-pin QFN	Cut Tape	1
DK8102-AQ-25/R		13" Reel	5000

#### Disclaimer

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