
DK-NFLNK™ Node

Dukosi's DK-NFLNK™ solution creates a contactless communication channel between the Battery Management System (BMS) Host processor and the Analogue Front End (AFE) in battery designs based on multi-channel AFEs. The DK8503 Node interfaces directly with the AFE battery measurement device as part of the BMS. It transfers data to and from each AFE and the BMS Host processor through the Dukosi DK8203 System Hub. The near field communication implementation minimizes RF power levels simplifying mechanical integration considerations. With inherent electrical isolation through the contactless network, DK8503 delivers wired-like performance in a reliable star-network.



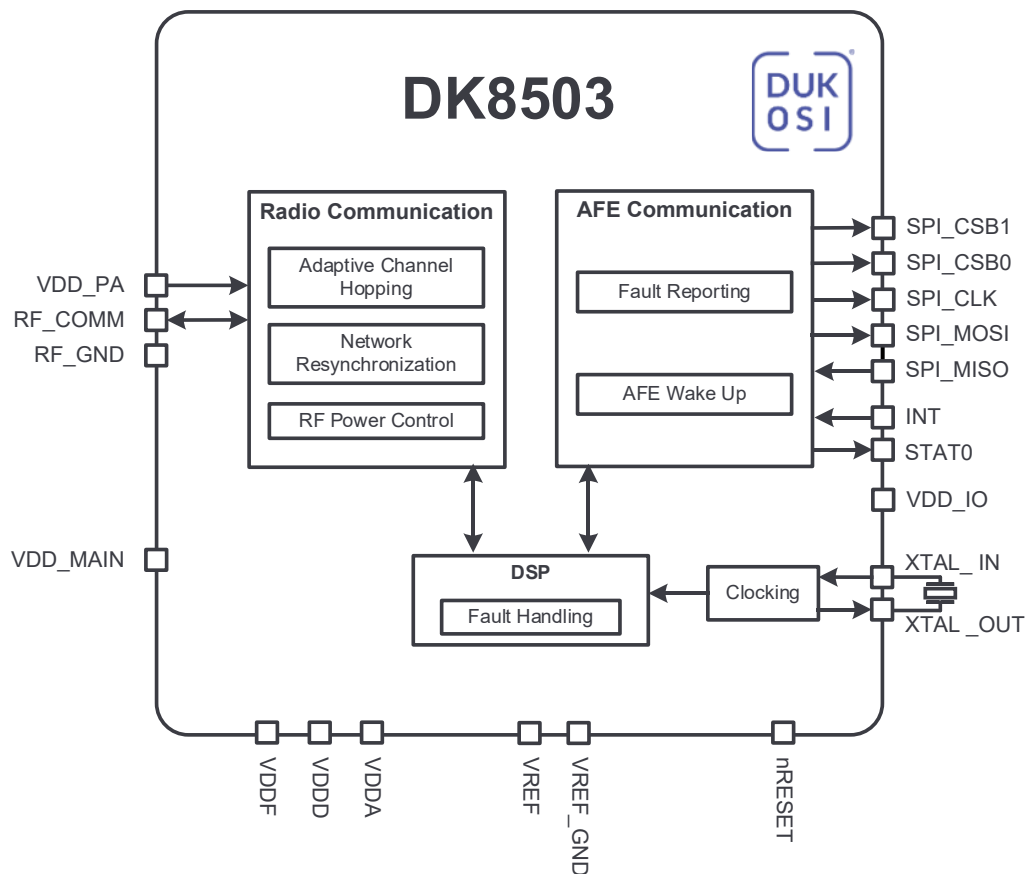
Features

- ◆ AFE agnostic
- ◆ Robust, near field contactless RF communication to the BMS Host controller
- ◆ Active, Low Power, and Hibernate operating modes
- ◆ Fault reporting
- ◆ 20 and 100 ms Data reporting supported
- ◆ Unique Device ID
- ◆ Cell Passport enabling lifetime, on-chip storage of cell data
- ◆ ASIL C Compliant
- ◆ AEC-Q100 qualified

Benefits

- ◆ Near field contactless communication based on Dukosi C-SynQ® protocol and a single bus antenna:
 - ❖ Wired-like performance in a star-network configuration with predictable communication latency
 - ❖ Inherent isolation of the communications from the pack HV simplifying the BMS
- ◆ Optimized BOM, simplified pack design, assembly advantages including increase in automation capability

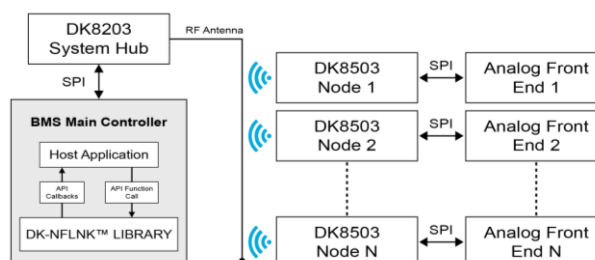
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Block Diagram

DK-NFLNK™ Node

Use Case

The DK8503 Node is directly connected to the AFE through SPI. Data is transferred through the single bus antenna utilizing the C-SynQ protocol to the DK8203 System Hub. Data is transferred to the BMS host through SPI. Each DK8503 Node has direct communication with the DK8203 System Hub configured as a star-network ensuring robust immunity to external interference and electrical isolation through the contactless network.



Applications

- Battery systems based on multi-channel AFEs
 - Automotive
 - Grid scale utility, commercial and industrial, and residential BESS
 - Industrial power systems and robotics
 - Marine and rail
- Compatible with a range of cell chemistries and pack architectures

Key Parameters

Parameter	Typ Value (T _A = 25 °C)	Comments
Cell Voltage	2.20 V to 5.0 V	Supports a wide range of cell chemistries
RF Band	2.402 GHz to 2.480 GHz	Near-field communication, employing adaptive channel hopping for robustness and EMC performance
Data reporting period	20 ms or 100 ms	Time period between each data reporting
Cell Passport Storage	2 KiB	
Operating Temperature Range	-40 °C to +105 °C	

Ordering Table

Part Number	Description	Packaging	MOQ
DK8503-AR/C	DK-NFLNK Node, AEC-Q100 qualified, 40-pin, 6 mm x 6 mm QFN package	Cut Tape	1
DK8503-AR/R		13" Reel	4000

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