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L9961

5-Channel Battery Management IC

Targeted Applications

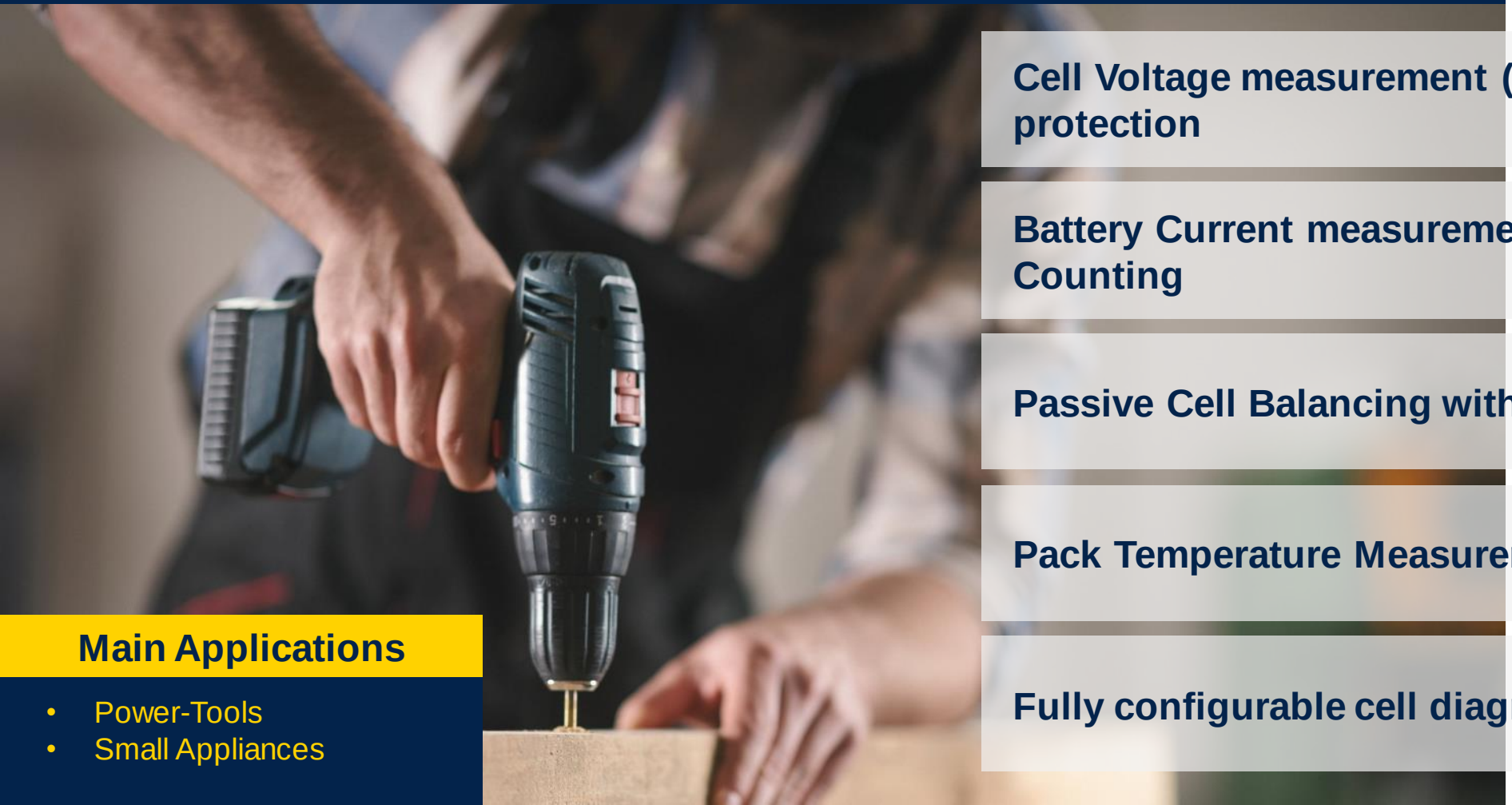
POWER TOOLS

GARDENING TOOLS

DRONES AND HOME APPLIANCES

L9961 | 3-5 Channel Battery Monitoring/Balancing IC

Accurate, real-time measurement of battery cell voltage, temperature and current



QFPN 32 5X5X1

LONGEVITY 10 YEARS COMMITMENT

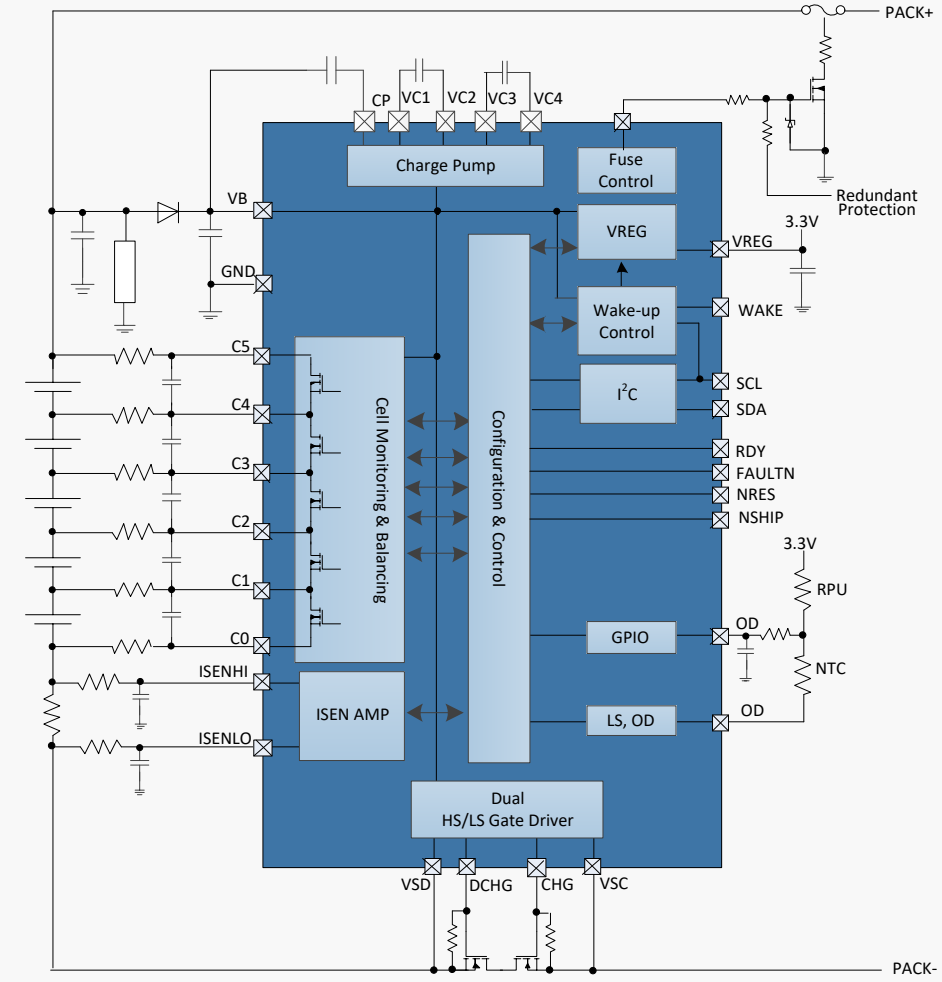
- Cell Voltage measurement (3 to 5 cells) and protection
- Battery Current measurement with Coulomb Counting
- Passive Cell Balancing with Internal MOSFET
- Pack Temperature Measurement using NTC
- Fully configurable cell diagnostics (via I2C)

Main Applications

- Power-Tools
- Small Appliances

L9961 | Product Overview

3-5 Cell Battery monitor and balancer with integrated protections



QFPN 32 5X5X1

Electrical parameters

- Cell voltage measurement from 3 to 5 cells
- 12-bit ADC for cell voltage measurement with maximum error of ±15 mV
- 16-bit ADC for battery pack current measurement with maximum error of 0.1% full scale
- Cell balancing, 70mA/cell
- Stack voltage measurement
- Integrated VREG system regulator 3.3V±3% @ 30mA
- 2uA SHIP mode and 5uA STANDBY mode current consumption

Protections

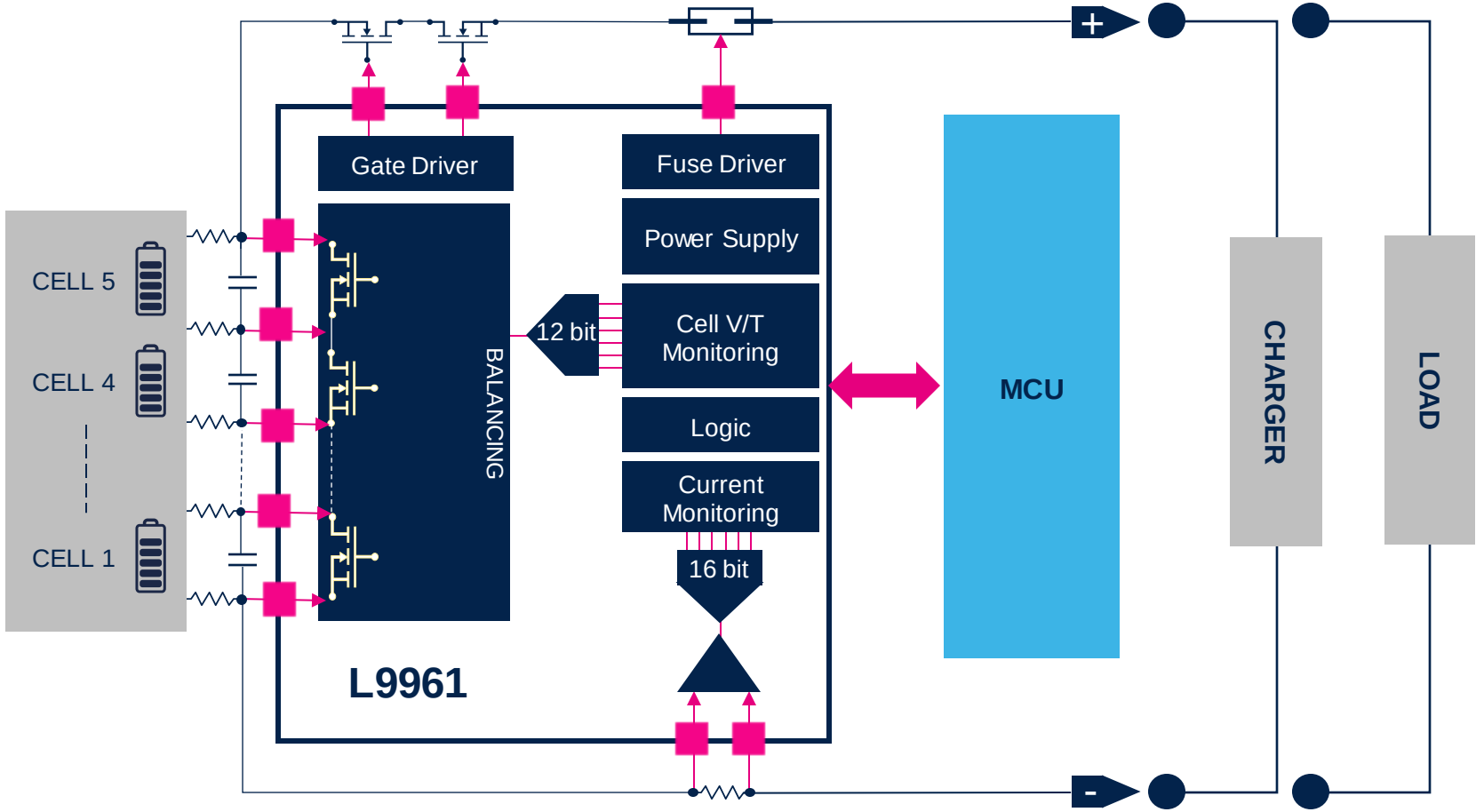
- Cell over/under voltage detection and balance undervoltage protection
- Pack fuse management
- Dual protector HS/LS configurable

Diagnostics

- I2C peripheral for device programming and data transfer
- Battery current measurement with coulomb counting and overcurrent detection
- NTC ratiometric temperature measurement [±0.8% max. gain error]

L9961 | Typical Application Block Diagram

Best in class performance along with a lean external BOM



L9961| Our value proposition for your needs

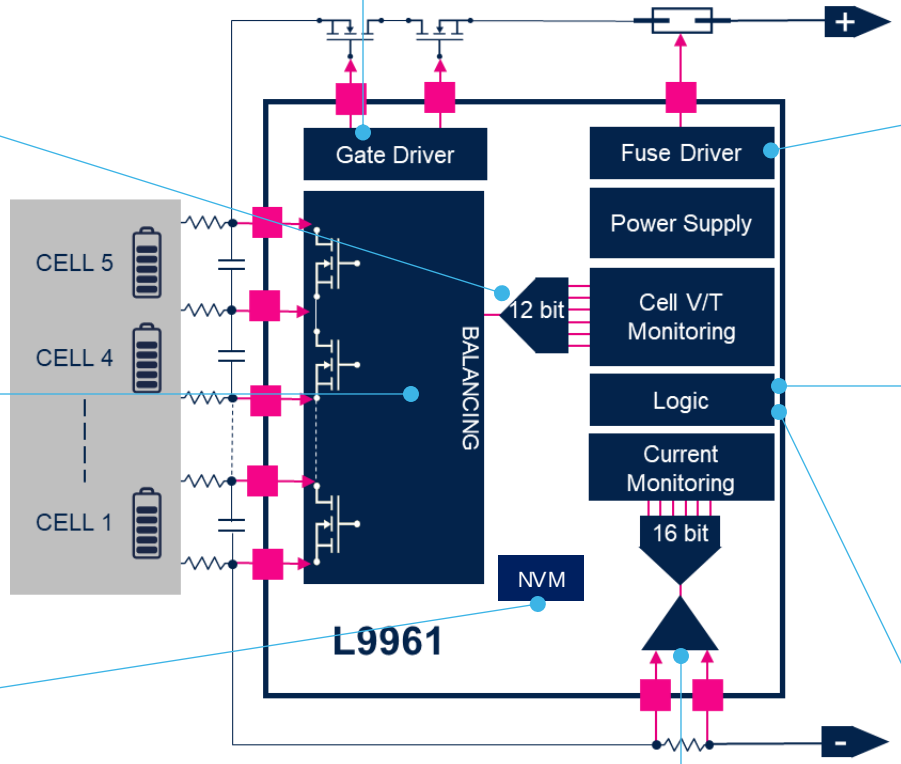
Configurable HS/LS protector → Maximum flexibility and safety

15 mV accuracy → Superior performance in Battery protection

70mA Internal balancing → Battery optimization and extended lifetime

Embedded NVM* → To store customer nformation and configurations

Current sense with Coulomb counter → Battery protection and state estimation



Critical fault quick reaction → Integrated fuse driver

Enhances and simplify system safety management → MCU emergency reset

Enhances MCU Fault management → Easy Fault notification

* Non Volatile Memory

How ST addresses your developers' needs

PC Software

Ready-to-use GUI showing L9961 device performances

Cell monitoring

Coulomb Counter

Switch Control

Diagnostics

Scripting language

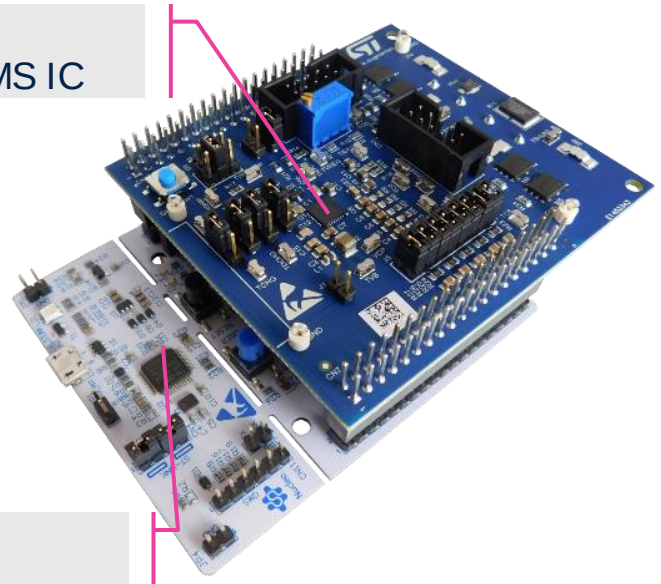
Data logging

STSW-L99615C

Hardware

Complete system for quick evaluation of device features

L9961
5-cell BMS IC



NUCLEO-G071RB

STEVAL-L99615C

Firmware

Package with standalone FW driver and application examples

5-cell voltage, current, temperature and stack voltage monitoring

Coulomb Counting mechanism for SOC estimation

Applications examples

Passive battery cell balancing for cell energy equalization

Extended Kalman Filter implementation for SOC estimation

STSW-L9961BMS

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L9961 | Takeaways

MAXIMIZED BATTERY LIFE

Internal passive cell balancing, Integrated Coulomb counter for accurate State-of-Charge, State-of-Health estimation

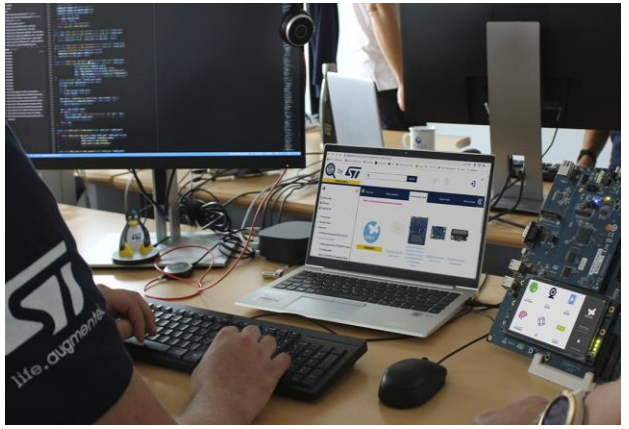
OPTIMIZED BOM

Integrated pre-driver
Fuse drivers
3.3V LDO
and Internal balancing MOSFETs

RICH SET OF PROTECTIONS

Fully configurable diagnostics, Cell OV/UV, Die and Cell Temperature monitoring, protector MOS, fuse driver

DESIGN JOURNEY EASED



Graphic User Interface, Firmware application demos, dedicated software driver for STM32 and X-Nucleo shield Eval Board

Thank you

Find out more at www.st.com

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