

TLE9012AQU

Li-Ion Battery Monitoring and Balancing IC



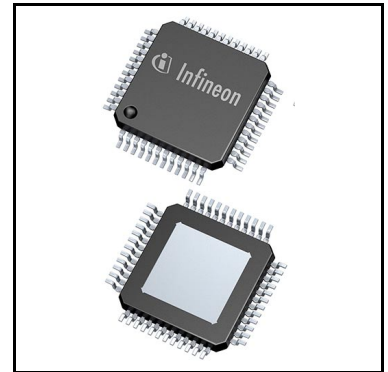
RoHS



ISO26262
ready

Features

- General
 - Monitors up to 12 cells connected in series
 - Supports communication of up to 20 devices
 - Supports hot plugging
- Voltage measurement
 - 16 bit high resolution ADC measurement for each cell
 - High accuracy measurement for SoC (State-of-Charge) and SoH (State-of-Health) calculation
 - Temperature compensated measurements
 - Built-in noise filtering
 - Selectable measurement bit length
- Temperature measurement
 - 5 temperature measurement channels for connection to external NTC
 - Internal temperature measurement
- Balancing
 - Integrated balancing switch allowing up to 150 mA balancing current
- Communication Bus (iso UART)
 - Differential robust serial interface for communication between battery blocks
 - High speed communication with 2 Mbps
 - Power balanced communication scheme
- Additional 4 GPIO pins to e.g. connect an external EEPROM
- Green product (RoHS-compliant)
- ISO-26262 ready, supporting ASIL-C BMS safety applications¹⁾



Safety features

- Two independent internal voltage references
- Block voltage measurement based on different ADCs
- Configurable analog OV/UV comparators
- End-to-end CRC secured communication
- CRC secured configuration registers
- Internal open load detection

1) according to ISO 26262-8 clause 13 first edition

- Emergency mode signaling using iso UART lines

Potential applications

- Multi-cell battery monitoring and balancing system IC designed for Li-Ion battery packs used in hybrid electric vehicles (HEV), plug-in hybrid electric vehicles (PHEV), battery electric vehicles (BEV) as well as in 12 V Lithium-Ion batteries

Product validation

Qualified for automotive applications. Product validation according to AEC-Q100.

Description

The TLE9012AQU provides the main function of monitoring the temperature of the battery and voltage of each cell as well as the communication to the host controller.

Type	Package	Marking
TLE9012AQU	PG-TQFP-48	TLE9012AQU

Block diagram

1 Block diagram

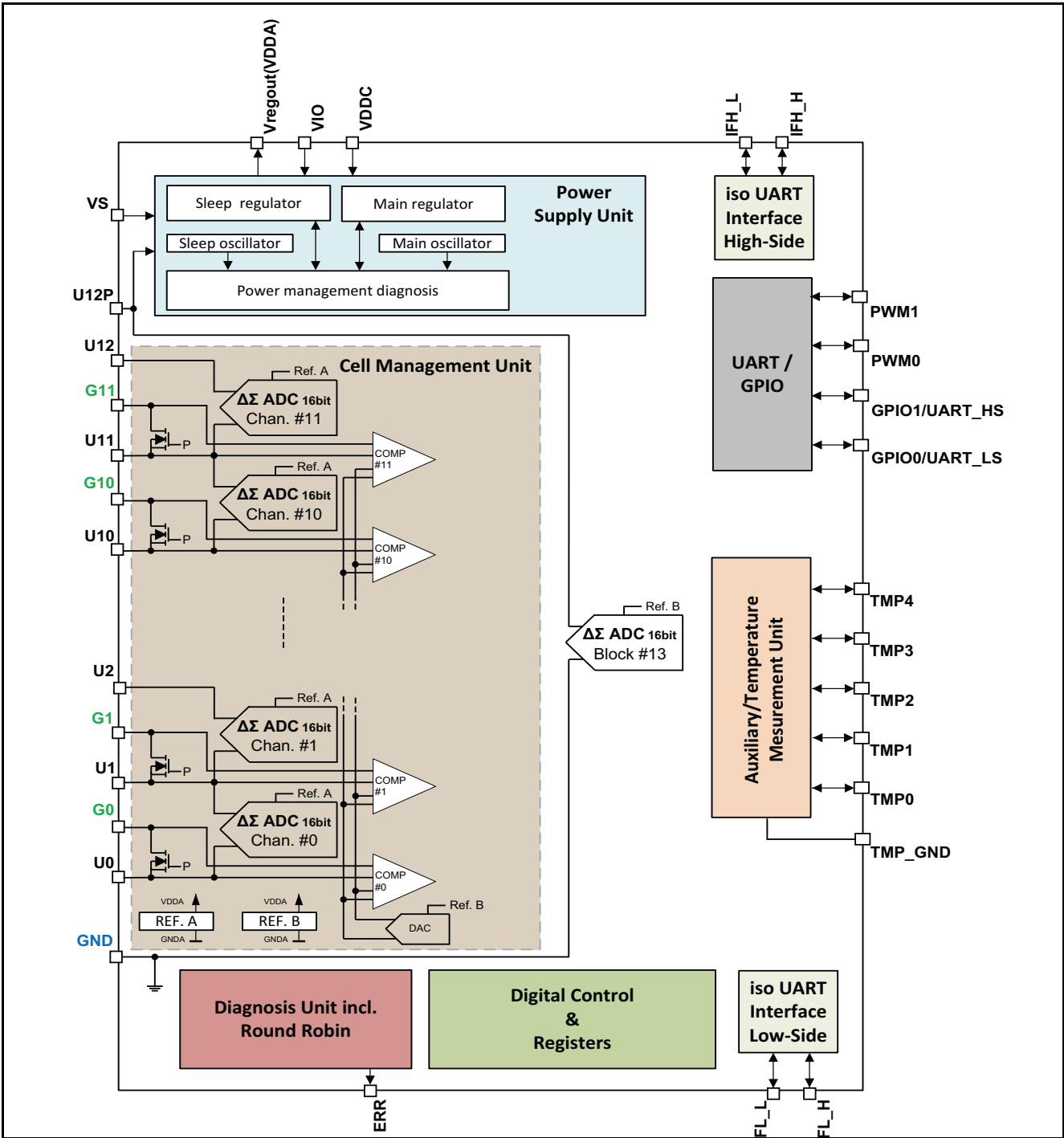


Figure 1 TLE9012AQU block diagram

Pin configuration

2 Pin configuration

2.1 Pin assignment

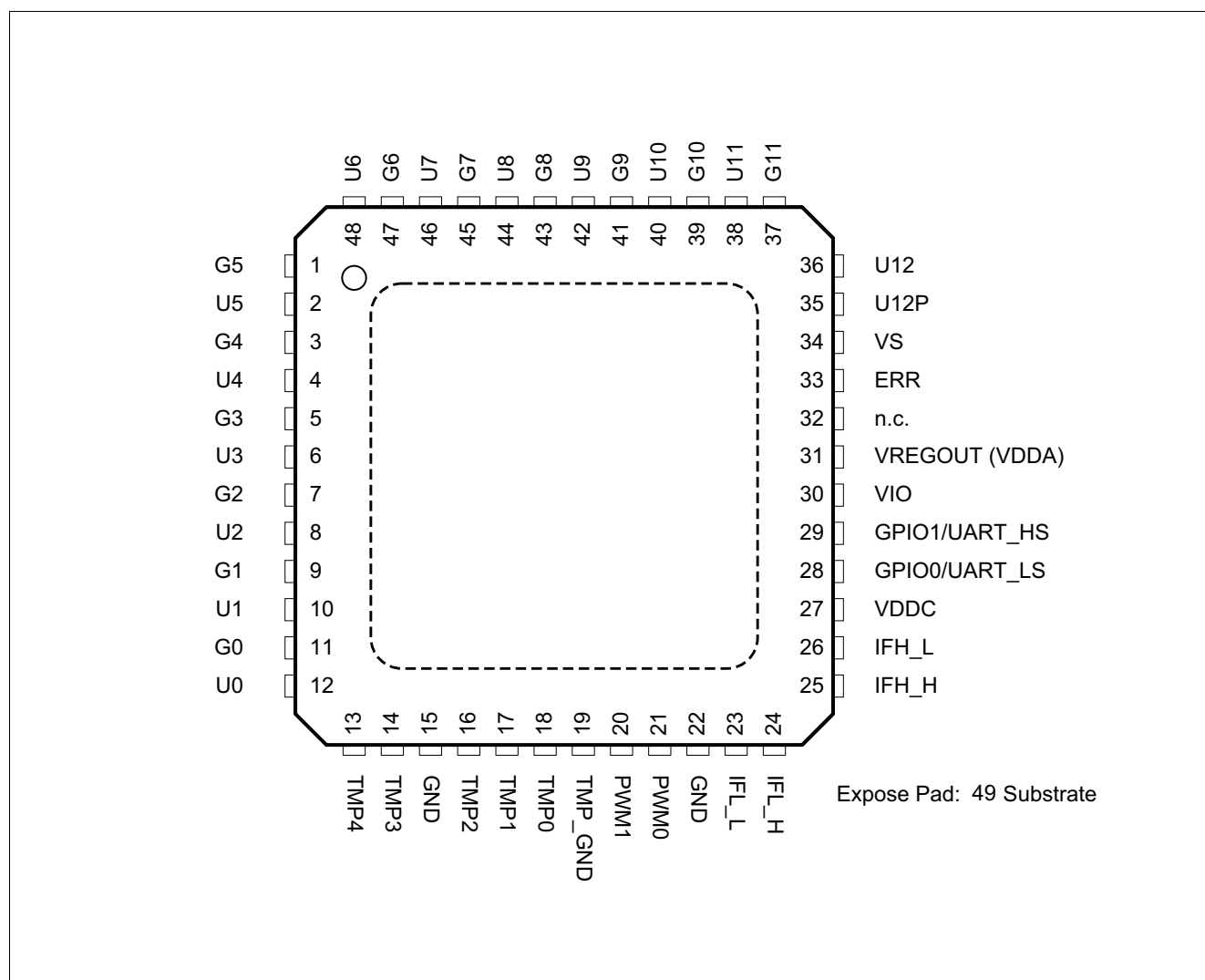


Figure 2 Pin configuration

3 Package outlines

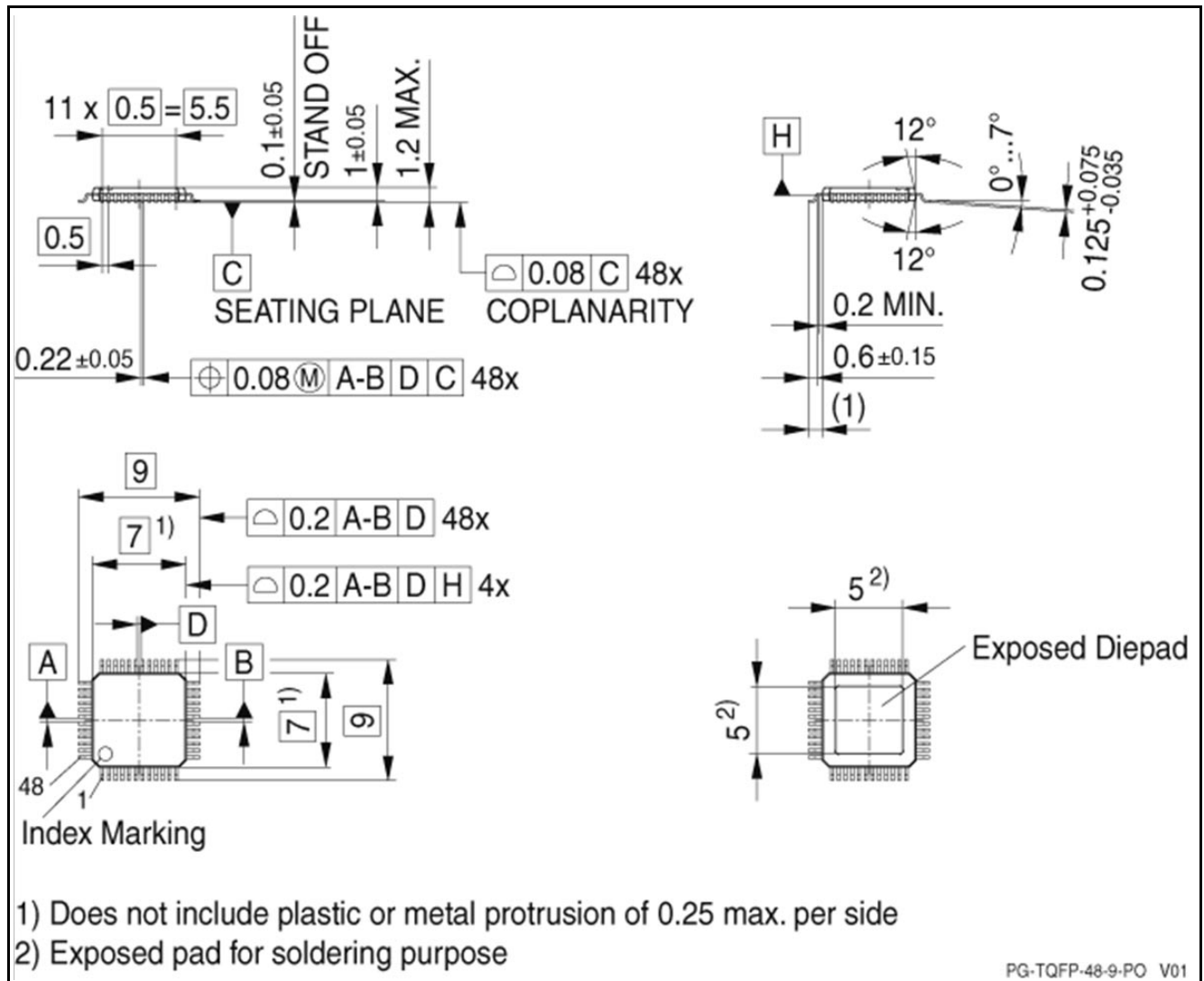


Figure 3 Package outlines and footprint PG-TQFP-48

Green product (RoHS-compliant)

To meet the world-wide customer requirements for environmentally friendly products and to be compliant with government regulations the device is available as a green product. Green products are RoHS-compliant (i.e Pb-free finish on leads and suitable for Pb-free soldering according to IPC/JEDEC J-STD-020).

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Email: erratum@infineon.com

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