

bq34110 Multi-Chemistry CEDV Battery Gas Gauge for Rarely Discharged Applications

1 Features

- Accurate End-Of-Service (EOS) Determination for Batteries in Rarely Discharged Applications
- Compensated End-of-Discharge Voltage (CEDV) Gas Gauge for Single- and Multi-Cell Batteries, Providing
 - State-Of-Charge (SOC)
 - Time-To-Empty (TTE)
 - State-Of-Health (SOH)
 - Watt-Hour–Based Charge Termination
- Supports Voltages up to 65 V, Capacities up to 32 Ah, and Currents up to 32 A—with Options to Extend Beyond These Levels Using Scaling
- Supports Li-Ion, LiFePO₄, Lead-Acid (PbA), NiMH, and NiCd Chemistries
- Dual Configurable Host Interrupt or GPO
- Lifetime Data Logging Options
- Precision Coulomb Counter, Voltage, and Temperature Measurement
- Power Enable Control
- I²C™ Communication with Host
- Accumulated Charge Coulomb Counting with Configurable Interrupt
- SHA-1 Authentication

2 Applications

- UPS Backup Systems
- Telematics Backup Systems
- Emergency Battery Power Modules
- Energy Storage Systems
- Asset Tracking
- Building Security Systems
- Video Surveillance
- Electronic Smart Locks
- Remote and Emergency Lighting
- Server Power Systems
- Robotics
- Toys

3 Description

The bq34110 CEDV Battery Gas Gauge provides CEDV gas gauging and End-Of-Service (EOS) Determination for single- and multi-cell batteries. The device includes enhanced features to support applications where the battery is kept fully charged and is rarely discharged, such as found in a wide variety of backup systems. The bq34110 gas gauge supports multiple battery chemistries, including Li-Ion and LiFePO₄, lead acid (PbA), Nickel Metal Hydride (NiMH), and Nickel Cadmium (NiCd).

The gas gauging function uses voltage, current, and temperature data with Compensated End-of-Discharge Voltage (CEDV) technology to provide State-Of-Charge (SOC) and State-Of-Health (SOH) data. The gas gauge also incorporates an End-Of-Service (EOS) Determination function that alerts when battery capability has degraded and is approaching the conclusion of its usable service.

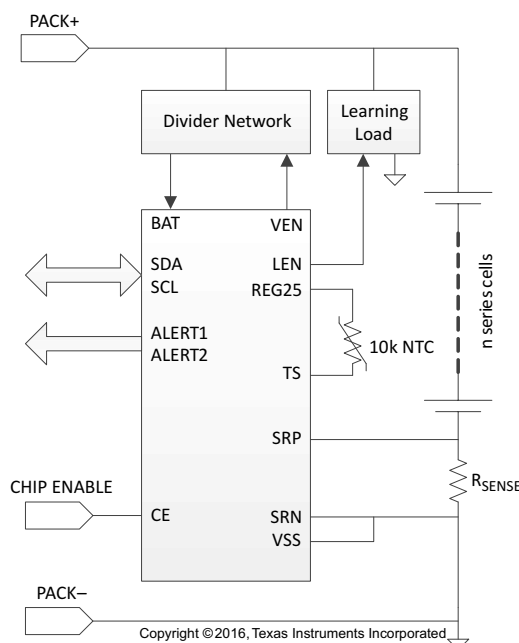
The data available from the gauge can be read by the host through a 400-kHz I²C bus. Two ALERT outputs are also available to interrupt the host or can be used for other functions, based on a variety of configurable options.

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
bq34110	TSSOP (14)	5.00 mm x 4.40 mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Simplified Schematic



4 Device and Documentation Support

4.1 Documentation Support

4.1.1 Related Documentation

- *bq34110 Technical Reference Manual* ([SLUUBF7](#))
- *bq34110 EVM User's Guide* ([SLUUB11](#))
- *Using I²C Communication with the bq275xx Series of Fuel Gauges Application Report* ([SLUA467](#))

4.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. In the upper right corner, click on *Alert me* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

4.3 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

TI E2E™ Online Community *TI's Engineer-to-Engineer (E2E) Community*. Created to foster collaboration among engineers. At e2e.ti.com, you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

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4.4 Trademarks

E2E is a trademark of Texas Instruments.
 I²C is a trademark of NXP B.V. Corporation.
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4.5 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

4.6 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

5 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
BQ34110PW	PREVIEW	TSSOP	PW	14	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	BQ34110	
BQ34110PWR	PREVIEW	TSSOP	PW	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	-40 to 85	BQ34110	

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

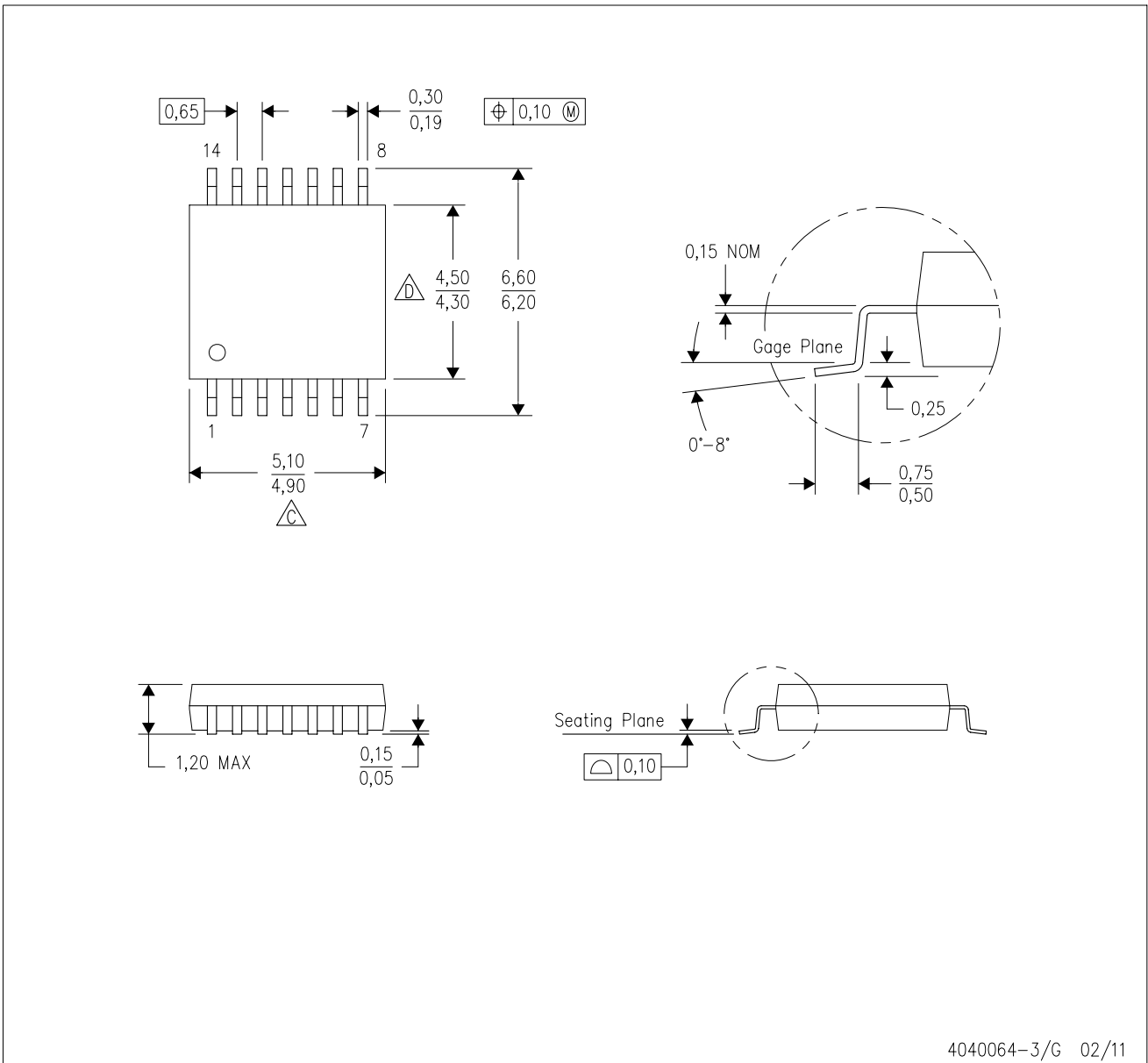
(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



4040064-3/G 02/11

- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
 - E. Falls within JEDEC MO-153

PW (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-7351 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

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