

## BQ27Z561 to BQ27Z561-R1 Change List

Garry Elder

### ABSTRACT

This document describes the changes made from the BQ27Z561 device to the BQ27Z561-R1 device. The *BQ27Z561-R1 Impedance Track™ Battery Gas Gauge Solution for 1-Series Cell Li-ion Battery Packs Data Sheet (SLUSDH5)*, the latest ordering information, and the *BQ27Z561-R1 Technical Reference Manual (SLUUBY5)* are available on [TI.com](http://TI.com).

### 1 Trademarks

Impedance Track™ is the trademark of Texas Instruments.

All other trademarks are the property of their respective owners.

### 2 Introduction

The BQ27Z561-R1 device enables several feature additions and performance improvements to the BQ27Z561 device.

### 3 Change Details

**Table 1. Change Descriptions**

Change Description	BQ27Z561	BQ27Z561-R1	Comments
LiFePO4 chemistry support	Not present	New feature	The LFP_RELAX feature supports slower relaxation at the end of charge. There is a change of OCVFR functionality when LiFePO4 is selected to clear after 48 hours or when cell voltage falls below <b>FlatVoltMin</b> . This new feature enables the option to use DOD data at valid charge termination (VCT) and after relaxation is detected.
<i>ManufacturerInfoB()</i> support	Not present	New feature	An additional block read of scratch pad data flash that can be 4 to 32 bytes long
Time-based lifetime features	Not present	New feature	New time-based lifetime features that include total run time and time spent at different temperature ranges
Fast OCV update option	Not present	New feature	When enabled, voltage data is used after a fixed time for OCV calculation rather than waiting for a $dV/dt$ of 2 $\mu$ s, which is the normal method.
Battery Trip Point (BTP) feature	Not present	New feature	Either the BTP feature or the INT feature can be selected for use with INT, which is also enabled with additional options.
Ability for charging thresholds to be manipulated by <i>RelativeStateOfCharge()</i> (RSOC)	Not present	New feature	Reported charging parameters can be optionally changed based on a level of RSOC() rather than voltage.
Improved state-of-health (SOH) algorithm	Present, but with a less-enhanced algorithm	Enhanced feature	The state-of-health (SOH) algorithm now uses the following: <ul style="list-style-type: none"> <li>• <b>Min Delta Voltage</b>, rather than <b>Delta Voltage</b>, to calculate EDV</li> <li>• The JEITA <b>Rec Temp Charging:Voltage</b>, rather than the present voltage at charge termination</li> <li>• The new data flash <b>SOH Temp A</b> and <b>SOH Temp K</b>, which are generated and used in simulations along with <b>SOH Load Rate</b></li> <li>• The current used at EOC during simulation is <b>Taper Current</b>, rather than the measured current.</li> </ul>
Enhanced <i>ChargingCurrent()</i> and <i>ChargingVoltage()</i> reporting options	Present, but with less-enhanced options	Enhanced feature	<i>ChargingCurrent()</i> and <i>ChargingVoltage()</i> can have separate values for the JEITA ranges of STL and STH, and can be enabled with SLEEPCHG to report non-zero values when charging and when the device is in SLEEP mode.

## IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale ([www.ti.com/legal/termsofsale.html](http://www.ti.com/legal/termsofsale.html)) or other applicable terms available either on [ti.com](http://ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2019, Texas Instruments Incorporated