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bq27520-G1 to bq27520-G2 CHANGE LIST

Battery Management

ABSTRACT

This document describes the change made from bq27520-G1 to bq27520-G2. The latest ordering information and data sheet is available on the TI Web site.

NOTE

bq27520-G1 uses FW version 3.02 and the bq27520-G2 uses FW version 3.11

1. INTRODUCTION

bq27520-G2 firmware version 3.11 has been released to enable several feature additions and performance improvements. The following new orderable part numbers have been released which ship pre-programmed with this new version of firmware:

- bq27520YZFR-G2
- bq27520YZFT-G2

The latest version of the evaluation software is required to be able to read and write all the data flash configuration locations. The necessary evaluation software and the corresponding v3.11 SENC file can be downloaded from the bq27520-G2 product folder on ti.com. Existing bq27520 (including EVMs) can be upgraded to the latest firmware version by following the instructions in application note SLUA453A.

Note: If a golden image created for another version of bq27520 is loaded into an IC running firmware version 3.11, the IC will become non-functional and must be replaced. Ensure all instructions in SLUA453A are followed if upgrading ICs or converting a production line to bq27520-G2. The best practice is to generate a new golden image (DFI file) for bq27520-G2.

2. CHANGE DETAILS

Table 1. Change Details

CHANGE	bq27520-G1	bq27520-G2	Comments
Changed default for **Operation Configuration B** register	Fast Convergence Not Present.	Bit 3, Fast Convergence Enable (FCE), is set to 1 as below)	Enables the function of fast convergence for improved gauging performance.
Add Fast	Fast Convergence Not	Add Fast Convergence feature	This improvement is

Convergence feature to improve gauge algorithm accuracy.	Present.	to algorithm to improve accuracy of the *RemainingCapacity()* calculations during corner cases.	observed for high discharge rates (> C/2) and low temperatures. Also known as "Fast Resistance Scaling".
Simulations run at additional points in time.	Simulation not performed at start/end of discharge.	Perform additional *RemainingCapacity()* calculation at start of charge and end of discharge.	Algorithm Improvement
Change in Delta Voltage Algorithm	Agnostic to load type.	Enhance **Delta Voltage** determination for various system load conditions.	Improve gauging accuracy under spiky load conditions.
Change Temperature Compensation Algorithm	Single exponent fit to resistance coefficients.	Improve low temperature gauging performance by using an additional (hidden)"Rb" thermal correction table for cell modeling. Also known as "Two exponent Rb".	Improve accuracy at low temperatures.
SOC_INT interrupt occurrences.	SOC_INT not asserted when OTC/OTD conditions occur.	Added SOC_INT interrupts for the OTC and OTD over temperature conditions from the *Flags()* register.	Pin Behavior Change
Data Flash Registers and Commands Removed	o Manufacturer Block info was 64 bytes. o DeviceName() and DeviceNameLength() Commands existed.	o Reduced size of **Manufacturer Info Block** from 64 to 32 bytes. o Removed *DeviceName()* and *DeviceNameLength()* extended commands.	Data Flash Change
Calibration Mode Changed.	Calibration algorithm performed by gauge.	Calibration restructured so that bq27520-G2 Evaluation Software now performs most computations for data flash Calibration class parameters. This change was needed in order to free up firmware code space for the other algorithm improvements.	Algorithm Improvement.
Commands Added	Commands did not exist.	• Added the following standard commands: o *CycleCount()*	Commands documented in bq27520-G2

		o *InternalTemperature()* o *OperationConfiguration()*	datasheet.
Added Control Status Command	Command did not exist	Added Control_Status.DF_VERSION command (Code = 0x001F). This provides a more convenient method for customers to perform data flash version control. The associated ***Data Flash Version*** item added to the data flash table. Default value = 0x0000.	Added functionality.
Clock Stretching Behavior.		Changed **Clock Control Register** to decrease clock stretch length in some conditions.	Communication Improvement.

IMPORTANT NOTICE