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ABSTRACT

The BQ34Z100-G1 firmware enables several feature additions and performance improvements to the BQ34Z100 device, and this document describes the BQ34Z100-G1 additions and features.

Table of Contents

1 Trademarks..... 1

2 Introduction..... 1

3 Change Details..... 1

4 Revision History..... 3

1 Trademarks

Impedance Track™ is the trademark of Texas Instruments.

All other trademarks are the property of their respective owners.

2 Introduction

The Texas Instruments BQ34Z100-G1 device is an Impedance Track™ fuel gauge for Li-Ion, PbA, NiMH, and NiCd batteries ranging from 3 V to 65 V.

3 Change Details

Table 3-1. BQ34Z100 to BQ34Z100-G1 v0.14 Changes

Change Number	Change Description	Comments
1	Added SOC Smoothing	The smoothing algorithm injects gradual changes of battery capacity when conditions vary. This results in a gradual change of StateOfCharge() and can provide a better end-user experience for StateOfCharge() reporting.
2	Added lead acid chemistry and NiMH chemistry support	Added four charge efficiency factors to compensate for charge acceptance. Added NiMH charge termination.
3	Added RSOC hold in discharge	RSOC Hold Feature preventing RSOC from increasing during discharge.
4	Added support to Switch between I2C to HDQ and vice versa communication mode	Texas Instruments ships the bq34z100-G1 device in I2C mode (factory default); however, this mode can be changed to HDQ mode if needed
5	Added Command 0x10 to report instantaneous current	See TRM
6	Added commands to report TrueRemCap, TrueFCC, Grid Number	Used for diagnostic purposes
7	Added BQStudio support	https://www.ti.com/tool/BQSTUDIO
8	Updated NiMH charging algorithm	charge compensation for NiMH added
9	Added SCALED bit in Operation Config register for Host	See TRM

Table 3-1. BQ34Z100 to BQ34Z100-G1 v0.14 Changes (continued)

Change Number	Change Description	Comments
10	Changed Lifetime pack voltage unit to 20mV from 1mV	Lifetime Max Pack Voltage
11	Repaired CapM=1 behaviour with negative remcap mode	See TRM
12	Removed direct register reading of Device Name, chemistry and Manufacturer Date	Use Device Name in data memory
13	Removed Internal short protection feature	ISD bit is now reserved
14	Removed Tab disconnect feature	TDD bit is now reserved
15	Removed Fast Qmax Feature	Replaced FastQMAX with SOH_DISP
16	Removed StandBy current and supporting command feature	See StandbyCurrent()
17	Removed MaxLoadCurrent and MaxLoadTimeToEmpty	Commands deprecated
18	Removed AtRate and AtRateTimeToEmpty	Commands deprecated

Table 3-2. BQ34Z100-G1 v0.14 to v0.15

Change Number	Change Description	Comment
1	Added support for bq34z110/bq34z120 hardware	

Table 3-3. BQ34Z100-G1 v0.15 to v0.16

Change Number	Change Description	Comment
1	Qmax is not allowed to update after charge in relax mode for NiMH, it's updated only after discharge in relax mode	
2	Fixed Relax Smooth Ok option bug	remcap/fcc would be smooth in relax when RelaxSmoothOk is enabled along with smoothing
3	Fixed changing temperature affecting SOH calculation	
4	Fixed terminate charge for NiMH immediately for DELTA_V option	once pack voltage > Qual Voltage and delta time/delta voltage are set to 0
5	Increased the lower range of Cell Term Min Value DF parameter setting	Parameter: Cell Terminate Voltage
6	Add separate DF parameter for NiMH/LeadAcid 1st Qmax update, default is set to 50%	parameter: Min PassedChg NiMH-LA 1st Qmax
7	Fixed VOK not being set for dod valid for qmax condition	VOK used in learning cycle

4 Revision History

DATE	REVISION	NOTES
April 2021	*	Initial Release

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