

ES_BMI7018

Errata sheet for BMI7018

Rev. 1.0 — 19 September 2024

Errata

Document information

Information	Content
Keywords	BMI7018, problems, deviations, workarounds
Abstract	This errata sheet describes the functional problems and deviations of the BMI7018 from the characteristics known at the release date of this document.



1 Product identification

This errata document applies to the BMI7018.

Table 1. Orderable part number identification

Part number	Data sheet	Package
MBMI7018TA1AE	BMI7018	SOT1510-2
MBMI7018SA1AE		

1.1 Definition of errata severity

[Table 2](#) provides the general definitions of the errata severity in this document.

Table 2. Definition of errata severity

Errata severity level	Description
High	Failure that severely inhibits the use of the device for all or most of the intended applications.
Medium	Failure that might restrict or limit the use of the device for all or most of the intended applications.
Low	Unexpected behavior that does not cause significant problems for the intended applications of the device.
Improvement	Information on improvements made on the device for better performances.

2 Errata overview

This section describes all BMI7018 functional errata. For each erratum, a workaround is suggested to continue developing the application with the current silicon.

Table 3. Functional problem table

Functional problem	Short description	Severity level	Solution	Detailed description
ER1	Cell balancing switch fault monitoring	Medium	—	Section 3.1

3 Functional problem detail

3.1 ER1: Cell balancing switch fault monitoring

3.1.1 Severity level

Medium

3.1.2 Introduction

The balancing of the cells is executed following the odd and even phases. In each phase, the odd or even cells are balanced under the conditions requested by the customer. The cell-balancing switches can be continuously monitored during both phases if requested by the customer.

The balancing switch-fault monitoring registers BAL_SWITCH_MON_CFG0 and BAL_SWITCH_MON_CFG1 enable the CB MOSFET balancing. If a mismatch occurs between the analog state of the CB MOSFET (Vds monitoring) and the logic signal command, the fault event is reflected in the fault registers BAL_SWITCH_FLT_STAT0 and BAL_SWITCH_FLT_STAT1 and the corresponding channels are disabled (BAL_CH_CFGx are reset).

3.1.3 Description of problem

A balancing switch fault may be reported under the condition that the cell balancing stays activated or deactivated with a duration of typically 200 μ s (min 190 μ s, max 200 μ s).

A 200 μ s pulse may be caused by software access when changing configuration ...

- PWM reconfiguration
 - Individual CB channel enabled/disabled
 - Activation of emergency discharge
- ... and under specific IC conditions:
- Cell balancing stopped because of Voltage-control mode: cell voltage-based balancing
 - Cell balancing stopped because of the temperature: temperature-modulated balancing and junction temperature balancing protection
 - Constant current balancing because of PWM reconfiguration
 - Autopause for SYNC/APP and cyclic measurements

The following events will not lead to false-switch fault reported:

- Cell balancing stopped because of global balancing timeout
- Cell balancing stopped because of global cell undervoltage
- Cell balancing stopped because end of individual timer-based balancing

3.1.4 Workaround and diagnostic

Two complementary workarounds are proposed to avoid a false-balancing switch fault monitoring by deactivating the balancing switch-fault monitoring (BAL_SWITCH_MON_CFG0 and BAL_SWITCH_MON_CFG1), or deactivating the cell balancing, prior to any configuration changes or autopause.

If a switch fault is reported, the customer must execute a diagnostic of the CB MOS for confirming the real stuck on or off. If the fault is not confirmed, the balancing will continue as expected.

The proposed workarounds are optional. In the event a switch fault is reported, a CB MOS switch diagnostic is proposed to confirm the CB MOS switch failure.

Note: *In Cyclic mode, the recommendation is to program the event handling to wake up in case of fault.*

3.1.4.1 Workaround 1

Workaround 1: To be applied each time the balancing configuration is changed by software access.

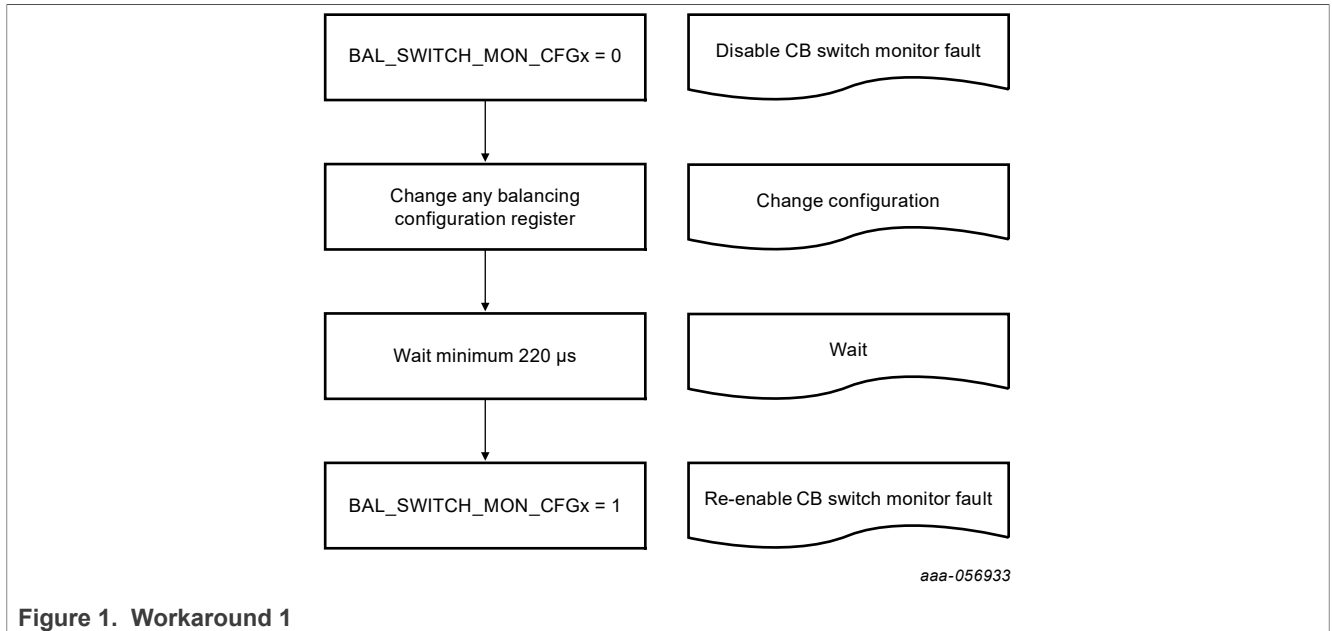


Figure 1. Workaround 1

3.1.4.2 Workaround 2

Workaround 2: To be applied each time the cell balancing is stopped for a new measurement.

Prior to running the application or synchronous measurement, the switch-fault monitor can be disabled.

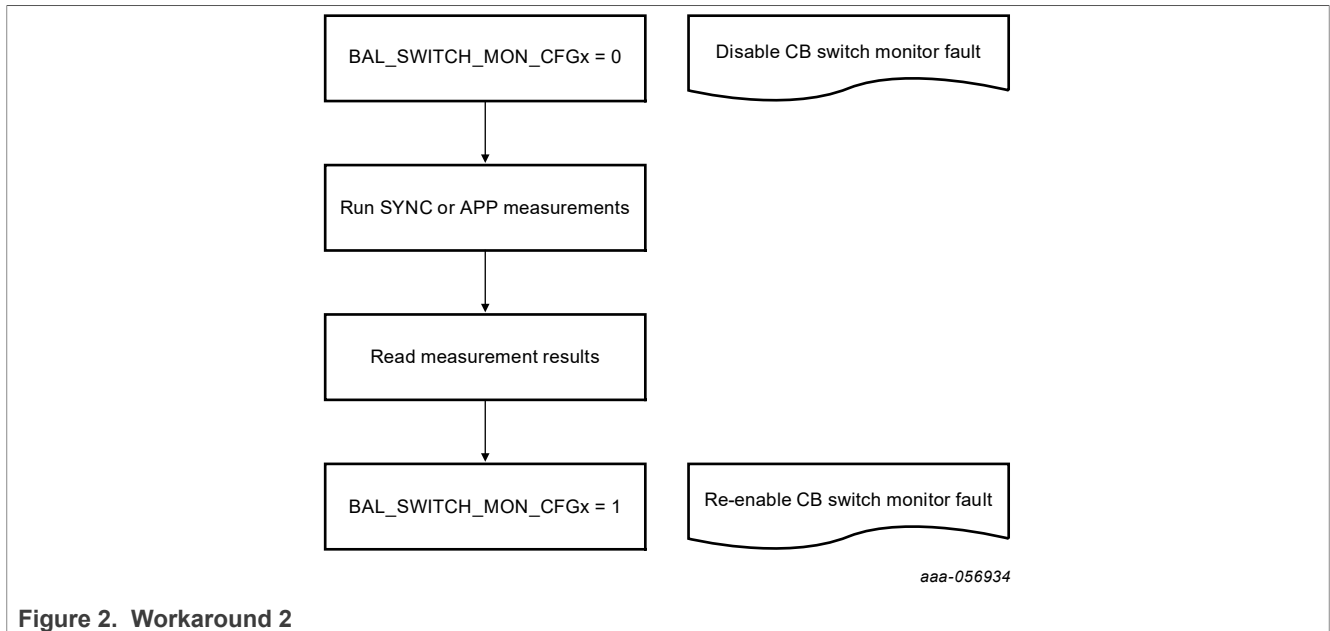


Figure 2. Workaround 2

3.1.4.3 Diagnostic

Diagnostic: CB MOS switch diagnostic

If a fault is reported, the customer must execute the procedure described to confirm the result.

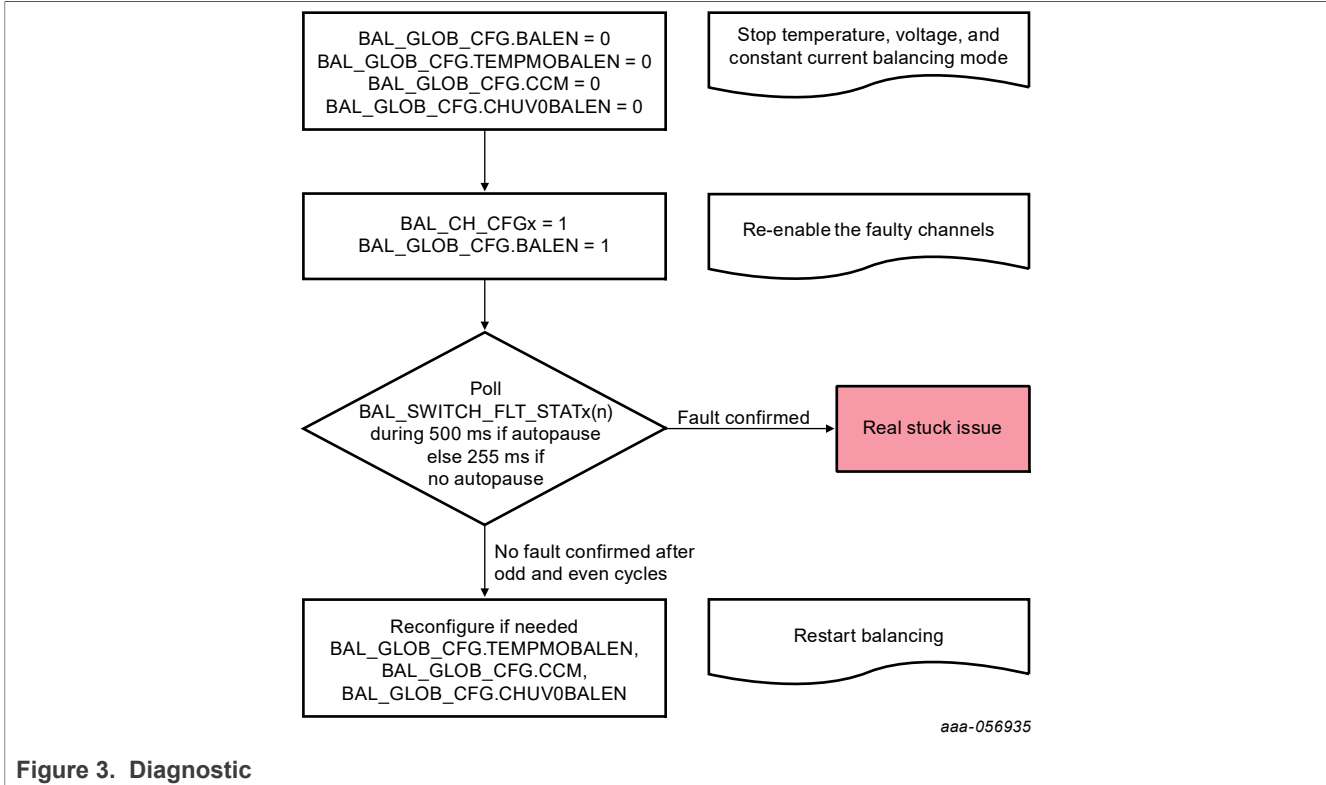


Figure 3. Diagnostic

3.1.4.4 Fix plan

No fix planned.

4 Revision history

Table 4. Revision history

Document ID	Release date	Description
ES_BMI7018 v.1.0	19 September 2024	Initial version

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