Customer Information Notification

201709035I

Issue Date: 18-Oct-2017
Effective Date: 19-Oct-2017

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Management Summary

Data Sheet and Safety Manual updates for the MC33HB2000 and MC33HB2001 to relay clearly the importance of proper device setup, along with additional data sheet updates.

Change Category

[ ] Wafer Fab Process	[ ] Assembly Process	[ ] Product Marking	[ ] Test Location	[ ] Design
[ ] Wafer Fab Materials	[ ] Assembly Materials	[ ] Mechanical Specification	[ ]Test Process	[ ] Errata
[ ] Wafer Fab Location	[ ] Assembly Location	[ ] Packing/Shipping/Labeling	[ ] Test Equipment	[X] Electrical spec./Test coverage

Software Implementation Reminder for MC33HB2000 and MC33HB2001 With Data Sheet Updates

Information Notification

NXP Semiconductors has identified very specific combined conditions that could lead to a potential risk of unintended activation of the outputs in MC33HB2000 and MC33HB2001 in forward direction. Accidental short of MOSI pin to power or VDD rail followed by a read/write operation with outputs enabled in the device in normal mode can turn the outputs on with 100% duty cycle in forward direction. NXP suggests the following best practices be implemented in customer applications:

Recommendation 1 (Data Sheet) :
Use good programing practices incorporating writes to SPI registers, immediately verified by reads to the registers.

Rationale :
MOSI shorted to power or VDD rail is detectable by reading the status of any SPI register. The read

operation will take at least 34 SPI clock cycles. Considering a slow SPI clock of 10kHz (although the maximum clock is 10 MHz) the time elapsed is 3.4ms, which is well within the system Fault Tolerant Time Interval (FTTI) of 10ms as defined in safety manual.

Recommendation 2 (Safety Manual) :
Ensure forward direction on H-Bridge with 100% duty cycle is fail safe for the valve in the specific application.

Rationale :
Identify fail safe position for the application and ensure that even with accidental turn on of the outputs due to MOSI shorted to power or VDD rail does not pose any risks at system level.

Data sheet and Safety Manual updates will occur to reinforce the above recommendations.

In addition, data sheet updates incorporate added thermal resistance data, new 28-pin HVQFN option package drawing and other items. The revision history included in the updated documents provides a detailed description of the changes.

The MC33HB2000 data sheet revision 4.0 is attached to this notice, and can be found at:
https://www.nxp.com/docs/en/data-sheet/MC33HB2000.pdf
The MC33HB2001 data sheet revision 7.0 is attached to this notice, and can be found at:
https://www.nxp.com/docs/en/data-sheet/MC33HB2001.pdf

Corresponding ZVEI Delta Qualification Matrix ID: SEM-DS-02
Why do we issue this Information Notification
Notification is issued to remind customers of software implementation recommendations and new data sheet additions.
Identification of Affected Products
Product identification does not change

Impact

Customer applications should take into account these recommendations.
In case it is not possible, some work around can be proposed; to be discussed with local field application engineer.
Data Sheet Revision
A new datasheet will be issued

Contact and Support

For all inquiries regarding the ePCN tool application or access issues, please contact NXP "Global Quality Support Team".

For all Quality Notification content inquiries, please contact your local NXP Sales Support team.

For specific questions on this notice or the products affected please contact our specialist directly:

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Affected Part Numbers

MC33HB2001FK

MC33HB2001EK