

MCP2003A to MCP2003B Migration

Author: *Fernando González*
Microchip Technology Inc.

INTRODUCTION

The MCP2003B is Microchip Technology Inc. fourth generation Local Interconnect Network (LIN) transceiver. Just like the MCP2003A, the MCP2003B is Q100 qualified, having passed reliability testing that complies with the Automotive Electronics Council (AEC) Q100 industry standard. Various enhancements have been made to the MCP2003B robustness, and to the EMC emissions and immunity of the device. The devices meet global automotive manufacturer requirements for conformance and EMC performance.

The MCP2003B can be used as a drop-in replacement for the MCP2003A. Although there are no functional differences in using the MCP2003B over the MCP2003A, the enhancements described in [Table 1](#) should be considered.

PACKAGE TYPES

[Figure 1](#) shows the packages available for the MCP2003A and the MCP2003B. When choosing one package type over another, consider the printed circuit board footprint differences.

FIGURE 1: PACKAGES OPTIONS

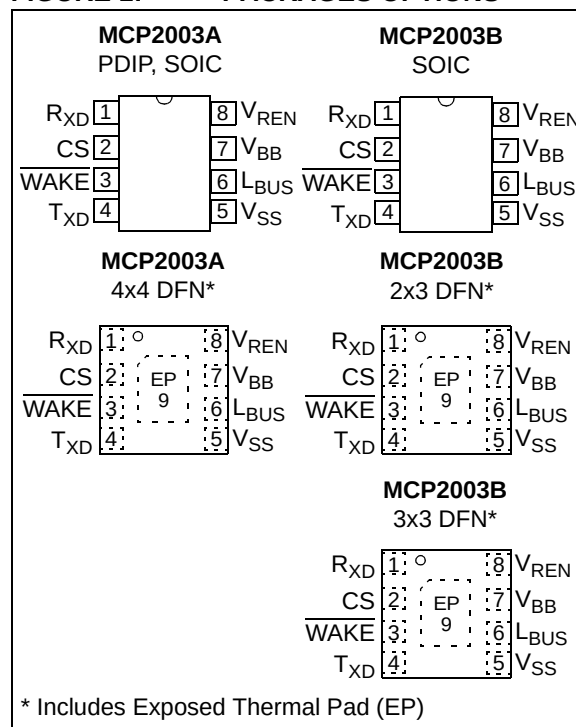


TABLE 1: MIGRATION CONSIDERATIONS

Difference	MCP2003A	MCP2003B	Consideration
Battery Operating Voltage (V_{BB})	6.0V - 30V	5.5V - 30V	No action required.
EMC, ESD, Automotive	SAE J2962-1	SAE J2962-1 without TVS	Enhancements to EMC and ESD in the MCP2003B L_{BUS} ; direct capacitor coupling robustness meets $\pm 85V$ and $\pm 25kV$ for ESD without Transient Voltage Suppressor (TVS). No action required.
ISO 7637 Load Dump (pulse 5b)	43V	60V	Enhancements to EMC in the MCP2003B No action required.
Operating Temperature	-40°C to +125°C	-40°C to +150°C	No action required.
Packages Available	PDIP, SOIC, 4x4 DFN	SOIC, 2x3 DFN, 3x3 DFN	The 2x3 mm DFN option is the smallest package for a LIN transceiver currently available on the market. IC footprint may need to be updated on board layout. No action required for functionality.

TYPICAL APPLICATIONS: MCP2003A VERSUS MCP2003B

Figure 2 and Figure 3 show the typical application schematics. The MCP2003A can be replaced by the MCP2003B without any restrictions on the circuitry or components used.

In fact, some protection components may be eliminated due to the enhanced EMC/ESD robustness of the MCP2003B.

FIGURE 2: MCP2003A TYPICAL APPLICATION

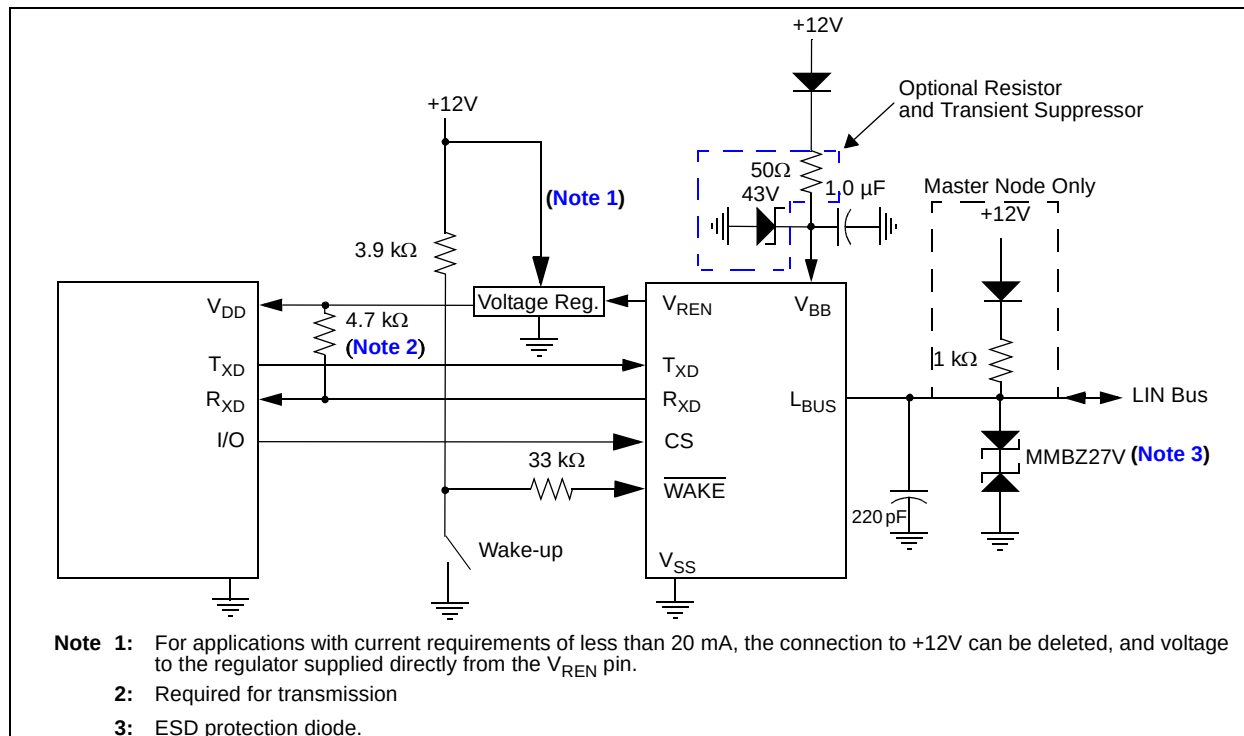
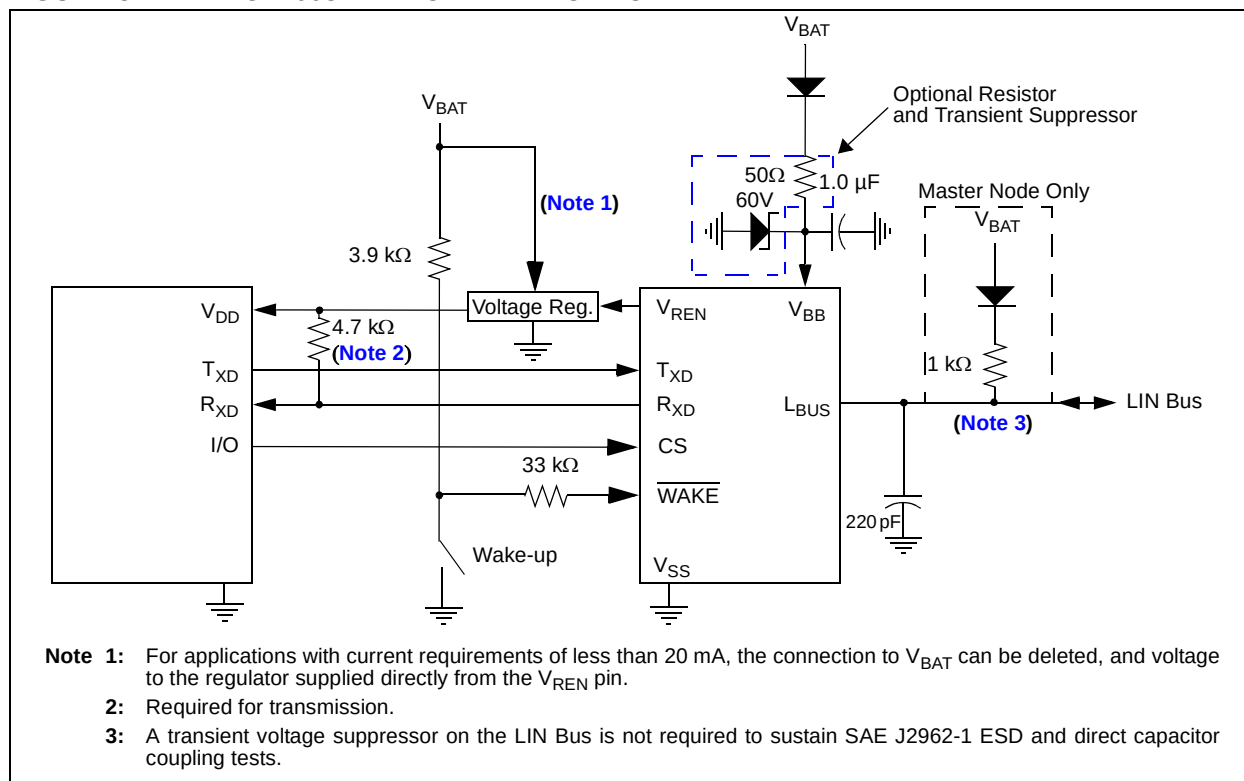


FIGURE 3: MCP2003B TYPICAL APPLICATION



CONCLUSION

This document describes the considerations to be taken into account before migrating from the MCP2003A to the MCP2003B. The MCP2003B is a direct replacement for the MCP2003A.

The printed circuit board may need to be modified in case the DFN package is implemented due to the smaller physical size of the new packages available.

The MCP2003B has better EMC/ESD performance meeting all automotive (AEC-Q100 Qualified) and industrial conformance, and hardware requirements.

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NOTES:

APPENDIX A: PART NUMBER REFERENCE

TABLE A-1: PART NUMBER ORDERING - ADDITIONAL INFORMATION

MCP2003A Part Number	MCP2003B Part Number Suggested for Replacement	Comments
MCP2003A-E/P		MCP2003B does not support PDIP package
MCP2003A-E/MD		MCP2003B does not support 4x4 DFN package
MCP2003A-E/SN	MCP2003B-E/SN	Direct replacement for 8-LD SOIC package
MCP2003AT-E/MD		MCP2003B does not support 4x4 DFN package
MCP2003AT-E/SN	MCP2003BT-E/SN	Direct replacement for 8-LD SOIC package Tape and Reel
	MCP2003B-E/MC	MCP2003B offers a new 8LD 2x3 DFN package option
	MCP2003B-E/MF	MCP2003B offers a new 8LD 3x3 DFN package option
	MCP2003B-H/MC	MCP2003B offers a new H-Temp. range
	MCP2003B-H/MF	MCP2003B offers a new H-Temp. range
	MCP2003B-H/SN	MCP2003B offers a new H-Temp. range
	MCP2003BT-E/MC	MCP2003B offers a new 8LD 2x3 DFN package option Tape and Reel
	MCP2003BT-E/MF	MCP2003B offers a new 8LD 3x3 DFN package option Tape and Reel
	MCP2003BT-H/MC	MCP2003B offers a new H-Temp. range Tape and Reel
	MCP2003BT-H/MF	MCP2003B offers a new H-Temp. range Tape and Reel
	MCP2003BT-H/SN	MCP2003B offers a new H-Temp. range Tape and Reel

Note: Extended Temperature (E-Temp.) = -40 to +125°C; High Temperature (H-Temp.) = -40 to +150°C

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NOTES:

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