Fujitsu Microelectronics Europe
Application Note

MCU-AN-390076-E-V10

F²MC-16LX FAMILY

16-BIT MICROCONTROLLER

ALL SERIES WITH CAN

DISTINCTION OF CAN-TYPES

APPLICATION NOTE

Revision History

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Contents

1 CAN-Types

Fujitsu provides many MCU-series with on-chip CAN-controller. However, there are different types. This application note helps to distinguish them.

There are the following types: the G-CAN and Non-G-CAN. The G-CAN is more flexible. It is the current version, whereas Non-G-CAN is the previous one.

They are almost identical. The programming model is the same. However, the G-CAN version allows more bit time settings.

- G-CAN allows setting the Time Segment 2 to the same length as the Re-Synchronisation Jump Width.
- Non-G-CAN needs a Time Segment 2, which is at least two TQ longer than the Re-Synchronisation Jump Width.

For explanation of above expressions, please refer to manual.

2 Identifying CAN-Type

There is the possibility to identify the type by the name of the device. However, there are exceptions. Therefore, only checking the hardware manual is reliable.

2.1 Identifying by Manual

Check the hardware manual (not the data sheet) and addendum of the series of interest:

Chapter: **"CAN CONTROLLER"**

Section: **"Classifying CAN-Controller Registers"**

Sub-section: **"Bit Time Register (BTR)"**

Last paragraphs of that sub-section show a couple of lines with formulas. You may also search for the term "RSJW" and you should find following set-up formulas.

For 1 ≤ PSC ≤ 63:	TSEG1 ≥ 2TQ
	TSEG1 ≥ RSJW
	TSEG2 ≥ 2TQ
	TSEG2 ≥ RSJW
For PSC = 0:	
	TSEG1 ≥ 5 TQ
	TSEG2 ≥ 2 TQ
	TSEG2 ≥ RSJW

G-CAN Rules in Manual

For 1 ≤ PSC ≤ 63:	TSEG1 ≥ RSJW
	TSEG2 ≥ RSJW + 2 TQ
For PSC = 0:	
	TSEG1 ≥ 5 TQ
	TSEG2 ≥ RSJW + 2 TQ

Non-G-CAN Rules in Manual

Note, the underlined sum is the important difference.

- If **either** the left **or** the right rule set is listed in the manual, the device is either G-CAN or a Non-G-CAN.
- If **both** rule sets are listed, the MCU series has derivatives of both types. In this case, please refer to the suffix, which is given with the rules. The members of the family are distinguished by name then.

2.2 Identifying by Name

The general rule is…

- If MCU-series has derivatives of both types, a "G"-suffix in the device name indicates the G-CAN feature.
- If all the derivatives of the series are of same type, there will be no suffix.

"Different derivative" means a different memory configuration or revisions of same memory configuration.

E.g. MB90595 series has both types of CAN:

- Derivative MB90F598 is of NON-G-CAN type.
- Derivative MB90F598G is of G-CAN type.

But... MB90385 series has only derivatives of the newer G-CAN types:

- Derivative MB90F387 is of G-CAN type, although there is no suffix.

The problem here is that missing suffix could mean that device has G-CAN extension because all members of that series have it. However, it could also mean that just this derivative does not have the extension and other derivatives of the same series have it.