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FUJITSU SEMICONDUCTOR
CUSTOMER INFORMATION

CI704-00007-2v0-E

8/16/32-BIT MICROCONTROLLER
GDC FAMILY
F2MC-8FX/F^{2}MC-16LX/F^{2}MC-16FX/FR/
GDC
ALL SERIES

CHIP ERRATA

FUNCTIONAL LIMITATION OF LIN-USART HIGH-PULSE OUTPUT ON SCK AFTER SOFTWARE RESET

Notes

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Revision History

Date	Issue
2010-12-16	V1.0, Initial Version
2010-12-21	V2.0, Added MB88F333

This document contains 13 pages.

Abbreviations:

FSL	Fujitsu Semiconductor Limited
MCU	Microcontroller

FUJITSU

Contents

Fujitsu does not bear any warranty in the case this handling note is not fully observed.

1 Problem Description

High-pulse will be output on SCK of LIN-USART after software reset in synchronous master mode. To avoid such extra pulse on SCK, special care has to be taken when LIN-USART is used in synchronous master mode and the SCK mark level are '0'.

2 Affected Devices

The following devices are affected:

F^2MC-8FX Family

Series	Product Name
MB95100 series	MB95107, MB95107A, MB95107R, MB95108AH, MB95108H, MB95D108AS, MB95D108AW, MB95F108, MB95F108A, MB95F108AHS, MB95F108AHW, MB95F108AJS, MB95F108AJW, MB95F108AKS, MB95F108AKW, MB95F108AMS, MB95F108AMW, MB95F108AS, MB95F108ATS, MB95F108ATW, MB95F108AW, MB95F108H, MB95F108HS, MB95F108HW, MB95F108R, MB95F108RW, MB95F108S, MB95F108W
MB95110 series	MB95116, MB95116A, MB95117H, MB95F116MA, MB95F118, MB95F118A, MB95F118AS, MB95F118AW, MB95F118HS, MB95F118HW, MB95F118JW, MB95F118KW, MB95F118MS, MB95F118MW, MB95F118NS, MB95F118NW, MB95F118S, MB95F118TS, MB95F118TW, MB95F118W
MB95120 series	MB95128MB, MB95F128D, MB95F128E, MB95F128H, MB95F128HA, MB95F128HB, MB95F128J, MB95F128JA, MB95F128JB, MB95F128KA, MB95F128MB, MB95F128NB
MB95130 series	MB95136H, MB95F136HS, MB95F136HW, MB95F136J, MB95F136JB, MB95F136JBS, MB95F136JBW, MB95F136K, MB95F136M, MB95F136MB, MB95F136MBS, MB95F136MBW, MB95F136N
MB95140 series	MB95F146W
MB95150 series	MB95156M, MB95F156H, MB95F156J, MB95F156M, MB95F156N
MB95160 series	MB95166D, MB95168MA, MB95188M, MB95F166E, MB95F168H, MB95F168J, MB95F168M, MB95F168N
MB95200 series	MB95F202H, MB95F202K, MB95F203H, MB95F203K, MB95F204H, MB95F204K
MB95210 series	MB95F212H, MB95F212K, MB95F213H, MB95F213K, MB95F214H, MB95F214K
MB95220 series	MB95F222H, MB95F222K, MB95F223H, MB95F223K, MB95F234H
MB95260 series	MB95F262H, MB95F262HA, MB95F262K, MB95F262KA, MB95F263H, MB95F263HA, MB95F263K, MB95F263KA, MB95F264H, MB95F264HA, MB95F264K, MB95F264KA
MB95270 series	MB95F272H, MB95F272HA, MB95F272K, MB95F272KA, MB95F273H, MB95F273HA, MB95F273K, MB95F273KA, MB95F274H, MB95F274HA, MB95F274K, MB95F274KA
MB95280	MB95F282H, MB95F282HA, MB95F282K, MB95F282KA,

series	MB95F283H, MB95F283HA, MB95F283K, MB95F283KA, MB95F284H, MB95F284HA, MB95F284K, MB95F284KA
MB95330 series	MB95F332H, MB95F332K, MB95F333H, MB95F333K, MB95F334H, MB95F334K
MB95350 series	MB95F352E, MB95F352L, MB95F353E, MB95F353L, MB95F354E, MB95F354L
MB95390 series	MB95F394H, MB95F394K, MB95F396H, MB95F396K, MB95F398H, MB95F398K
MB95560 series	MB95F562H, MB95F562K, MB95F563H, MB95F563K, MB95F564H, MB95F564K
MB95570 series	MB95F572H, MB95F572K, MB95F573H, MB95F573K, MB95F574H, MB95F574K
EVA chip	MB95FV100, MB95FV100A, MB95FV100B, MB95FV100C, MB95FV100D, MB95RV100

Series	Product Name
MB90340 series	MB90342A, MB90342CA, MB90342E, MB90349A, MB90349CA, MB90349CE, MB90F342, MB90F342A, MB90F342C, MB90F342CA, MB90F342CE, MB90F342E, MB90F345, MB90F345A, MB90F345AS, MB90F345C, MB90F345E, MB90F345S, MB90F347A, MB90F347AS, MB90F347CA, MB90F347CE, MB90F347E, MB90F347UA, MB90F347UAS, MB90F347UE, MB90F349, MB90F349A, MB90F349C, MB90F349CA, MB90F349CAS, MB90F349CES
MB90350 series	MB90351A, MB90351E, MB90351ES, MB90352, MB90352AS, MB90357, MB90357T, MB90357TE, MB90F351, MB90F351E, MB90F351ES, MB90F351TES, MB90F352, MB90F352A, MB90F352AS, MB90F352B, MB90F352BS, MB90F352E, MB90F352ES, MB90F352S, MB90F352TA, MB90F352TAS, MB90F352TE, MB90F352TES, MB90F352U, MB90F352UB, MB90F352US, MB90F357ES, MB90F357TA, MB90F357TAS, MB90F357TE, MB90F357TES
MB90360 series	MB90362ES, MB90362TE, MB90367E, MB90367T, MB90367TE, MB90367TES, MB90F362, MB90F367, MB90F367ES, MB90F367S, MB90F367T, MB90F367TE, MB90F367TES, MB90F367TS, MB90F367TZ, MB90F367Z
MB90370 series	MB90374, MB90374CE, MB90374DA
MB90390 series	MB90394H, MB90394HA, MB90F394, MB90F394H, MB90F394HA, MB90F395H, MB90F395HA, MB90F592J
MB90860 series	MB90867ES, MB90F867, MB90F867A, MB90F867AS, MB90F867ES, MB90F867S, MB90F867UA, MB90F867UAS
MB90910 series	MB90911AS, MB90F912BS
MB90920 series	MB90922, MB90F922, MB90F922JA, MB90F922NAS, MB90F922NBS, MB90F923, MB90F924, MB90F924, MB90F927, MB90F927S
MB90930 series	MB90931
MB90940 series	MB90947A, MB90F946A, MB90F947, MB90F947A, MB90F949, MB90F949A
MB90950 series	MB90F952, MB90F952JS, MB90F952JDS, MB90F952MDS
MB90960 series	MB90F962S, MB90F967, MB90F967S
MB90990 series	MB90F997, MB90F997JBS, MB90F997MBS
Evaluation chip	MB90V340, MB90V340A, MB90V340E, MB90V340S, MB90V390, MB90V390H, MB90V390HA, MB90V390HB, MB90V820, MB90V820B, MB90V920, MB90V925 MB90V930, MB90V950AJS, MB90V950AJ, MB90V950AMS, MB90V950AM, MB90V950JS, MB90V950J, MB90V950MS, MB90V950M

Series	Product Name
MB96310 series	MB96F313YSA, MB96F313YWA, MB96F313RSA, MB96F313RWA, MB96F313YSB, MB96F313YWB, MB96F313RSB, MB96F313RWB, MB96F313ASA, MB96F313AWA, MB96F315ASA, MB96F315AWA, MB96F313ASB, MB96F313AWB, MB96F315ASB, MB96F315AWB, MB96F315YSA, MB96F315YWA, MB96F315RSA, MB96F315RWA, MB96F315YSB, MB96F315YWB, MB96F315RSB, MB96F315RWB
MB96320 series	MB96F326RSA, MB96F326RWA, MB96F326YSA, MB96F326YWA, MB96F326RSB, MB96F326RWB, MB96F326YSB, MB96F326YWB, MB96F326ASA, MB96F326AWA, MB96F326ASB, MB96F326AWB
MB96330 series	MB96F338RWA, MB96F338YWA, MB96F338RSA, MB96F338YSA, MB96F338UWA, MB96F338USA, MB96F336UWA, MB96F336USA
MB96340 series	MB96345YSA, MB96345YWA, MB96345RSA, MB96345RWA, MB96346YSA, MB96346YWA, MB96346RSA, MB96346RWA, MB96F346RSA, MB96F346RWA, MB96F346YSA, MB96F346YWA, MB96F347RSA, MB96F347RWA, MB96F347YSA, MB96F347YWA, MB96F348RSA, MB96F348RWA, MB96F348YSA, MB96F348YWA, MB96F346RSB, MB96F346RWB, MB96F346YSB, MB96F346YWB, MB96F347RSB, MB96F347RWB, MB96F347YSB, MB96F347YWB, MB96F348RSB, MB96F348RWB, MB96F348YSB, MB96F348YWB, MB96F346RSC, MB96F346RWC, MB96F346YSC, MB96F346YWC, MB96F347RSC, MB96F347RWC, MB96F347YSC, MB96F347YWC, MB96F348RSC, MB96F348RWC, MB96F348YSC, MB96F348YWC, MB96F346ASA, MB96F346AWA, MB96F346ASB, MB96F346AWB, MB96F347ASA, MB96F347AWA, MB96F347ASB, MB96F347AWB, MB96F348ASA, MB96F348AWA, MB96F348ASB, MB96F348AWB, MB96F346ASC, MB96F346AWC, MB96F347ASC, MB96F347AWC, MB96F348ASC, MB96F348AWC, MB96F348CSB, MB96F348CWB, MB96F348CSC, MB96F348CWC, MB96F348HSA, MB96F348HWA, MB96F348TSA, MB96F348TWA, MB96F348HSB, MB96F348HWB, MB96F348TSB, MB96F348TWB, MB96F348HSC, MB96F348HWC, MB96F348TSC, MB96F348TWC, MB96F345DSB, MB96F345DWB, MB96F345FSB, MB96F345FWB
MB96350 series	MB96F353YSA, MB96F353YWA, MB96F353RSA, MB96F353RWA, MB96F353YSB, MB96F353YWB, MB96F353RSB, MB96F353RWB, MB96F353ASA, MB96F353AWA, MB96F353ASB, MB96F353AWB, MB96F355YSA, MB96F355YWA, MB96F355RSA, MB96F355RWA, MB96F355YSB, MB96F355YWB, MB96F355RSB, MB96F355RWB, MB96F355ASA, MB96F355AWA, MB96F355ASB, MB96F355AWB, MB96F356RSA, MB96F356RWA, MB96F356YSA, MB96F356YWA, MB96F356RSB, MB96F356RWB, MB96F356YSB, MB96F356YWB, MB96F356ASA, MB96F356AWA, MB96F356ASB, MB96F356AWB
MB96370 series	MB96F378HSA, MB96F378TSA, MB96F378HWA, MB96F378TWA, MB96F379RSA, MB96F379YSA, MB96F379RWA, MB96F379YWA, MB96F378HSB, MB96F378TSB, MB96F378HWB, MB96F378TWB, MB96F379RSB, MB96F379YSB, MB96F379RWB, MB96F379YWB
MB96380 series	MB96384RSA, MB96384YSA, MB96384RWA, MB96384YWA, MB96384RSB, MB96384YSB, MB96384RWB, MB96384YWB, MB96384RSC, MB96384YSC, MB96384RWC, MB96384YWC, MB96385RSA, MB96385YSA, MB96385RWA, MB96385YWA

	MB96385RSB, MB96385YSB, MB96385RWB, MB96385YWB, MB96385RSC, MB96385YSC, MB96385RWC, MB96385YWC, MB96F384YSA, MB96F384YWA, MB96F384RSA, MB96F384RWA, MB96F385YSA, MB96F385YWA, MB96F385RSA, MB96F385RWA, MB96F384YSB, MB96F384YWB, MB96F384RSB, MB96F384RWB, MB96F385YSB, MB96F385YWB, MB96F385RSB, MB96F385RWB, MB96F386RSA, MB96F386RWA, MB96F386YWA, MB96F386YSA, MB96F387RSA, MB96F387RWA, MB96F387YWA, MB96F387YSA, MB96F386RSB, MB96F386RWB, MB96F386YWB, MB96F386YSB, MB96F387RSB, MB96F387RWB, MB96F387YWB, MB96F387YSB, MB96F386RSC, MB96F386RWC, MB96F386YWC, MB96F386YSC, MB96F387RSC, MB96F387RWC, MB96F387YWC, MB96F387YSC, MB96F389RSA, MB96F389YSA, MB96F389RWA, MB96F389YWA, MB96F388HSA, MB96F388TSA, MB96F388HWA, MB96F388TWA, MB96F389RSB, MB96F389YSB, MB96F389RWB, MB96F389YWB, MB96F388HSB, MB96F388TSB, MB96F388HWB, MB96F388TWB
MB96390 series	MB96F395YSA, MB96F395YWA, MB96F395RSA, MB96F395RWA, MB96F395YSB, MB96F395YWB, MB96F395RSB, MB96F395RWB
EVA chip	MB96V300, MB96V300B, MB96V300C

FR Family

Series	Product Name
MB91210 series	MB91213, MB91213A, MB91F211A, MB91F211B, MB91F213, MB91F213A, MB91F218S, MB91V210
MB91220 series	MB91F223, MB91F223S, MB91F224, MB91F224S, MB91V220
MB91245 series	MB91247, MB91248, MB91248S, MB91248SZ, MB91248Z, MB91267N, MB91F248, MB91F248S, MB91F248SZ, MB91F248Z, MB91F249, MB91F249S, MB91V245A
MB91270 series	MB91F272, MB91F272S, MB91F273, MB91F273S, MB91V280
MB91360 series	MB91F364G
MB91460 series	MB91F463CA, MB91F463NA, MB91F463NB, MB91F463NC, MB91F464AA, MB91F464AA, MB91F464HB, MB91F465BB, MB91F465CA, MB91F465DA, MB91F465KA, MB91F465KB, MB91F465PA, MB91F465XA, MB91F466HA, MB91F467BA, MB91F467CA, MB91F467CB, MB91F467DA, MB91F467DB, MB91F467EA, MB91F467MA, MB91F467RA, MB91F467RB, MB91F467RC, MB91F467RD, MB91F467SA, MB91F467TA, MB91F469GA, MB91F469GB, MB91F469QA, MB91V460, MB91FV460B, MB91461
MB91570 series	MB91F577
MB91590 series	MB91F599

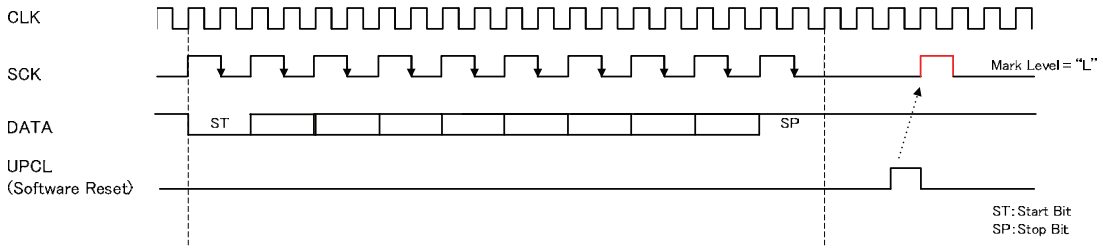
GDC Family

Series	**Product Name**
Indigo	MB88F332, MB88F333

3 Root Cause

3.1 Problem Description

In synchronous master mode (mode 2 with SMR: SCKE=1) and with the SCK mark level set to ‘0’ (ESCR: SCES=’1’), there will be a high-pulse on the SCK line after software reset of LIN-USART (writing ‘1’ to SMR: UPCL).



The connected slave device may consider this pulse on SCK line as a serial clock.

3.2 Cause of the problem

SCK signal in LIN-USART has initial value ‘high’. Therefore, in synchronous master mode and with the SCK mark level are set to ‘0’ there will be a high-pulse on the SCK line with software reset of LIN-USART (SMR: UPCL=1).

4 Workaround

To avoid this problem, please apply either one of following countermeasures.

4.1 Countermeasure of non-using software reset (UPCL)

To avoid this problem, please do not perform software reset of LIN-USART (SMR.UPCL=1) when ESCR.SCES bit is "1"(Serial clock mark level “L”) in synchronous mode (Mode2).

4.2 Countermeasure of using software reset (UPCL)

When performing software reset of LIN-USART (SMR:UPCL=1), extra high-pulse on SCK pin can be suppressed by switching temporarily pin function from SCK to port output as follows.

4.2.1 < F2MC-8FX, F2MC-16LX and F2MC-16FX family case>

Set output data for the port function on the SCK pin to 0 by writing ‘0’ to the related PDR(port data register) bit and enable port output function for SCK pin by writing ‘1’ to the related DDR(Data Direction register) bit.

Disable SCK output by writing ‘0’ to SMR:SCKE bit before performing software reset of LIN-USART by writing ‘1’ to SMR:UPCL. Then enable SCK output again by writing ‘1’ to SMR: SCKE bit.

4.2.2 <FR family case>

Set output data for the port function on the SCK pin to 0 by writing ‘0’ to the related PDR(port data register) bit and enable port output function for SCK pin by writing ‘1’ to the related DDR(Data Direction register) bit.

Disable SCK output by writing ‘0’ to the related PFR(port function register) bit before performing software reset of LIN-USART by writing ‘1’ to SMR:UPCL. Then enable SCK output again by writing ‘1’ to PFR register bit.