TEXAS INSTRUMENTS **12500 TI Boulevard, MS 8640, Dallas, Texas 75243**

PCN# 20150902006
F28M35x Die Revision Change
Final Change Notification / Sample Request

Date: 9/10/2015
To: MOUSER PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

We request you acknowledge receipt of this notification within **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If you require samples or additional data to support your evaluation, please request within 30 days.

The changes discussed within this PCN will not take effect any earlier than **90** days from the date of this notification, unless customer agreement has been reached on an earlier implementation of the change. This notification period is per TI's standard process.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Manager (PCN_ww_admin_team@list.ti.com).

PCN Team
SC Business Services

20150902006
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
F28M35H22C1RFPT	null
F28M35H52C1RFPS	null
F28M35H52C1RFPT	null

Technical details of this Product Change follow on the next page(s).

PCN Number:	20150902006	**PCN Date:**	09/10/2015
Title:	F28M35x Die Revision Change		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	12/10/2015	**Estimated Sample Availability:**	Date provided at sample request.

Change Type:

☐	Assembly Site	☐	Assembly Process	☐	Assembly Materials
☒	Design	☐	Electrical Specification	☐	Mechanical Specification
☐	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☐	Wafer Fab Site	☐	Wafer Fab Materials	☐	Wafer Fab Process
		☐	Part number change		

PCN Details

Description of Change:

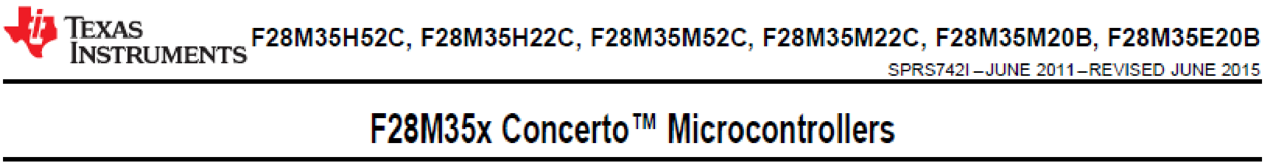
This notification is to announce a die revision and datasheet change to the devices listed in the Product Affected Section of this document. Design changes are summarized below:

Errata Description	Errata on Die Rev B	Errata on Die Rev E
HWBIST: C28x HWBIST Should Not be Used	Yes	No
Crystal: Maximum Equivalent Series Resistance (ESR) Values are Reduced	Yes	No
XRSn may Toggle During Power Up	Yes	No
Cortex-M3 Flash: C28x Reset While C28x Holding Pump Ownership Can Cause Erroneous Cortex-M3 Flash Reads	Yes	No
Flash Pump power down: Software sequence must be followed to power down the Flash Pump	No	Yes

The Die Revision and the datasheet number will be changing:

Current			**New**		
Die Revision	Datasheet Number	Errata	**Die Revision**	**Datasheet Number**	**Errata**
B	SPRS742H	SPRZ357J	**E**	**SPRS742I**	**SPRZ357K**

The product datasheet(s) is updated as seen in the change revision history below:



TEXAS INSTRUMENTS F28M35H52C, F28M35H22C, F28M35M52C, F28M35M22C, F28M35M20B, F28M35E20B

SPRS742I – JUNE 2011 – REVISED JUNE 2015

F28M35x Concerto™ Microcontrollers

Changes from February 28, 2014 to June 8, 2015 (from H Revision (FEBRUARY 2014) to I Revision)	Page
Global: Updated temperature options.	1
Global: The Q temperature range is available **only** on the F28M35H52C device.	1
Global: Changed "CAN 2.0" to "ISO11898-1 (CAN 2.0B)"	1
Global: Restructured document	1
Global: Removed MICROWIRE	1
Global: Replaced " Philips® I^2C-Bus *Specification Version 2.1*" with " NXP® I^2C-*bus specification and user manual* (UM10204)".	1
Section 1.1 (Features): Removed "Cortex-M3 Core Hardware Built-in Self-Test" feature.	1
Section 1.1: Updated "Controller Area Networks (CANs)" feature.	1
Section 1.1: Added "Temperature Options" feature.	1
Table 3-1 (Device Comparison): Updated temperature options.	7
Table 3-1: The Q temperature range is available **only** on the F28M35H52C device.	7
Table 3-1: Updated package availability.	7
Table 3-1: Removed "Product status" row and associated footnote.	7
Table 3-1: Added "FPU" row under "Control Subsystem — C28x"	7
Table 3-1: Added "VCU" row under "Control Subsystem — C28x"	7
Table 3-1: Added footnote about CAN.	9
Table 3-1: Added footnote about EPI.	9
Table 4-1 (Signal Descriptions): Updated DESCRIPTION of PF6_GPIO38, PG6_GPIO46, $\overline{\text{XRS}}$, and $\overline{\text{ARS}}$.	11
Section 5.1 (Absolute Maximum Ratings): Moved Storage temperature (T_{stg}) from Section 5.2 to "Absolute Maximum Ratings" section	31
Section 5.2 (ESD Ratings): Changed section title from "Handling Ratings" to "ESD Ratings"	31
Section 5.2: Updated section	31
Section 5.3 (Recommended Operating Conditions): Moved V_{IL}, V_{IH}, I_{OL}, and I_{OH} to Section 5.4.	32
Section 5.3: Updated temperature ranges.	32
Section 5.3: Added footnote referencing the *Calculating Useful Lifetimes of Embedded Processors Application Report* (SPRABX4).	32
Section 5.4 (Electrical Characteristics): Added V_{IL}, V_{IH}, I_{OL}, and I_{OH}.	33
Section 5.5 (Power Consumption Summary): Changed section title from "Current Consumption" to "Power Consumption Summary".	34
Table 5-1 (Current Consumption at 150-MHz C28x SYSCLKOUT and 75-MHz M3SSCLK): Updated MAX I_{DDIO} values for SLEEP IDLE mode, SLEEP STANDBY mode, and DEEP SLEEP STANDBY mode.	34
Section 5.8 (Timing and Switching Characteristics): Added section	40
Section 5.8.1 (Power Sequencing): Removed "(for analog pins, this value is 0.7 V above V_{DDA})" from "There is no power sequencing requirement needed ..." paragraph.	40
Figure 5-1 (Power-On Reset): Updated $t_{w(RSL1)}$. Added $t_{w(RSL2)}$.	40
Figure 5-1: Updated footnote about $\overline{\text{XRS}}$ pin.	40
Table 5-5 (Reset ($\overline{\text{XRS}}$) Timing Requirements): Updated description of $t_{w(RSL2)}$.	41
Table 5-6 (Reset ($\overline{\text{XRS}}$) Switching Characteristics): t_{OSCST}: Removed MIN value of 1 ms. Changed TYP value from 10 ms to 2 ms.	41
Section 5.8.1.1 (Power Management and Supervisory Circuit Solutions): Removed "Power Management and Supervisory Circuit Solutions" table (Table 6-17 in SPRS742H).	41
Section 5.8.2.1 (Changing the Frequency of the Main PLL): Updated section.	42
Table 5-9 (Crystal Oscillator Electrical Characteristics): Added table.	42
Table 5-14 (PLL Lock Times): Updated footnote.	43
Section 5.8.4 (Flash Timing – Master Subsystem): Removed "Master Subsystem – Flash/OTP Endurance for T Temperature Material" table (Table 6-18 in SPRS742H).	46
Section 5.8.4: Removed "Master Subsystem – Flash/OTP Endurance for S Temperature Material" table (Table 6-19 in SPRS742H).	46
Section 5.8.4: Removed "Master Subsystem – Flash Parameters at 75 MHz" table (Table 6-22 in SPRS742H).	46
Section 5.8.4: Removed "Master Subsystem – Flash Parameters at 100 MHz" table (Table 6-23 in SPRS742H).	46
Table 5-18 (Master Subsystem – Flash/OTP Endurance): Changed title from "Master Subsystem – Flash/OTP Endurance for Q Temperature Material" to "Master Subsystem – Flash/OTP Endurance".	46

- Table 5-18: Removed "ERASE/PROGRAM TEMPERATURE" column. ... 46
- Table 5-18: Removed footnote. ... 46
- Table 5-19 (Master Subsystem – Flash Parameters): Changed title from "Master Subsystem – Flash Parameters at 60 MHz" to "Master Subsystem – Flash Parameters". ... 46
- Table 5-19: Updated table. ... 46
- Table 5-19: Added footnotes about Program time and Erase time. ... 46
- Section 5.8.5 (Flash Timing – Control Subsystem): Removed "Control Subsystem – Flash/OTP Endurance for T Temperature Material" table (Table 6-27 in SPRS742H). ... 48
- Section 5.8.5: Removed "Control Subsystem – Flash/OTP Endurance for S Temperature Material" table (Table 6-28 in SPRS742H). ... 48
- Section 5.8.5: Removed "Control Subsystem – Flash Parameters at 100 MHz" table (Table 6-31 in SPRS742H). ... 48
- Section 5.8.5: Removed "Control Subsystem – Flash Parameters at 150 MHz" table (Table 6-32 in SPRS742H). ... 48
- Table 5-23 (Control Subsystem – Flash/OTP Endurance): Changed title from "Control Subsystem – Flash/OTP Endurance for Q Temperature Material" to "Control Subsystem – Flash/OTP Endurance". ... 48
- Table 5-23: Removed "ERASE/PROGRAM TEMPERATURE" column. ... 48
- Table 5-23: Removed footnote. ... 48
- Table 5-24 (Control Subsystem – Flash Parameters): Changed title from "Control Subsystem – Flash Parameters at 60 MHz" to "Control Subsystem – Flash Parameters". ... 48
- Table 5-24: Updated table. ... 48
- Table 5-24: Added footnotes about Program time and Erase time. ... 48
- Section 5.10.4 (Cortex-M3 Controller Area Network): Added NOTE about CAN and D_CAN. ... 106
- Section 6 (Detailed Description): Changed section title from "Device Overview" to "Detailed Description". ... 150
- Table 6-2 (Control Subsystem Peripheral Frame 0): Changed title from "Control Subsystem Peripheral Frame 0 (Includes Analog)" to "Control Subsystem Peripheral Frame 0". ... 151
- Table 6-2: 0000 1780 – 0000 17FF: Changed register name from "C Hardware Logic BIST Registers" to "Hardware BIST Registers". ... 151
- Table 6-10 (Master Subsystem Peripherals): 400F B000 – 400F B1FF: Changed "PBIST Control Registers" to "Reserved". ... 158
- Table 6-10: 400F BB00 – 400F BBFF: Changed "M HWBIST Registers" to "Reserved". ... 158
- Section 6.2 (Master Subsystem): Removed "Cortex-M3 Core Hardware Built-In Self-Test" section (Section 3.3.2 in SPRS742H). ... 161
- Table 6-13 (Interrupts from NVIC to Cortex-M3): Interrupt Number 91: Changed "PBIST Done" to "Reserved". ... 163
- Section 6.3.2 (C28x Core Hardware Built-In Self-Test): Updated section. ... 169
- Section 6.8.3 (Analog and Digital Subsystems' Power-On-Reset Functionality): Added statement clarifying that POR is always enabled. ... 183
- Figure 6-7 (Connecting Input Clocks to a Concerto Device): Updated figure ... 184
- Section 6.9.3 (External Oscillators (Pins X1 and XCLKIN)): Updated section. ... 185
- Section 6.9.4 (Main PLL): Changed the maximum Main PLL output clock from 550 MHz to 300 MHz. ... 185
- Figure 6-8 (Main PLL): Changed the maximum Main PLL output clock from 550 MHz to 300 MHz. ... 186
- Section 6.11.3 (C28x STANDBY Mode): Changed MTOCIPCINT1 to MTOCIPCINT2 ... 201
- Section 6.15.2 (GPIO_MUX2): Replaced "GPG" with "GPE" (for example, replaced "GPGMUX1" with "GPEMUX1". Replaced "register set G" with "register set E". ... 216
- Figure 6-17 (Pin Muxing on AIO_MUX1, AIO_MUX2, and GPIO_MUX2): Replaced "GPG" with "GPE". ... 217
- Figure 7-1 (Device Nomenclature): Updated TEMPERATURE RANGE. ... 227
- Section 7.2 (Documentation Support): Added reference documents ... 228

These changes may be reviewed at the datasheet links provided:
http://www.ti.com/lit/ds/symlink/f28m35h52c.pdf

Reason for Change:

Improved product performance

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Changes to product identification resulting from this PCN:

Die Rev designator will change as shown in the table and sample label below:

Current	**New**
Die Rev [2P]	**Die Rev [2P]**
B	**E**

Sample product shipping label to indicate die rev location (not actual product label)

TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 2Q:
MSL 2 /260C/1 YEAR SEAL DT
MSL 1 /235C/UNLIM 03/29/04
OPT:
ITEM: 39
LBL: 5A (L)T0:1750
G4
(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T)LOT: 3959047MLA
(4W) TKY(1T) 7523483SI2
(P)
(2P) REV:
(20L) CSO: SHE (V) 0033317
(21L) CCO:USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

F28M35E20B1RFPS	F28M35H22C1RFPT	F28M35M20B1RFPS	F28M35M22C1RFPT
F28M35E20B1RFPT	F28M35H52C1RFPS	F28M35M20B1RFPT	F28M35M52C1RFPS
F28M35H22C1RFPS	F28M35H52C1RFPT	F28M35M22C1RFPS	F28M35M52C1RFPT

Qualification Report

Sonata 144 RFP - Rev E silicon
Approve Date 26-Mar-2015

Product Attributes

Attributes	Qual Device: F28M35H52C1RFPT Rev E silicon
Assembly Site	PHI (TIPI)
Package Family	HTQFP

Qualification Results
Data Displayed as: Number of lots / Total sample size / Total failed

	Type	Test Name / Condition	Duration	Qual Device: F28M35H52C1RFPT Rev E silicon
	CDM	ESD - CDM - Q100	+/-500V/All Other Pins	1/3/0
	CDM	ESD - CDM - Q100	+/-750V/Corner Pins	1/3/0
	HBM	ESD - HBM - Q100	+/-2000V	1/3/0
	LU	Latch-up	+/-100mA/125C	1/6/0

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/
Green/Pb-free Status:
Qualified Pb-Free (SMT) and Green

For questions regarding this notice, e-mails can be sent to the regional contacts shown below, or you can contact your local Field Sales Representative.

Location	**E-Mail**
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com