

---

## SPC58xCx - cut2.0 changes vs cut1.1

### Introduction

This technical note describes all the changes implemented in the SPC58xCx cut2.0 with respect to the cut1.1.

This document describes the differences between the two devices to help designers to develop an application compatible for migrating from one cut to the other.

## 1 Device codes

Here below a table codes that summarizes the differences between cut1.1 and cut2.0 in terms of major/minor masks and JTAG\_ID codes.

**Table 1. Device codes**

Cut	MIDR1	JTAG_ID
1.1	MAJOR_MASK[3:0]: 4'b0000 MINOR_MASK[3:0]: 4'b0001	0x1014_2041
2.0	MAJOR_MASK[3:0]: 4'b0001 MINOR_MASK[3:0]: 4'b0000	0x0114_2041

## 2 Errata fixes on cut2.0

Here below a list of errata that have been fixed on cut2.0.

Notice that all such fixes do not generate any incompatibility with the software workaround (applied for cut1.1) if maintained.

**Table 2. Errata fixes**

ID	Module	Title	Cut1.1	Cut2.0
PS3022	STANDBY	STANDBY: pad keeper functionality not immediately enabled on low power pads when entering in STANDBY mode	X	Substituted by DAN-0051761 due to pad keeper fix <sup>(1)</sup>
DAN-0051763	STANDBY	[DOC] WKPU: wakeup/interrupt pullup enable register (WIPUER) description		Added due to pad keeper fix <sup>(1)</sup>
DAN-0043003	CMU	CMU: false upper frequency threshold alarm signaled to FCCUn	X	Fixed
DAN-0043294	MCAN	MCAN: Tx FIFO message sequence inversion	X	Fixed
DAN-0043334	MCAN	MCAN: retransmission in DAR mode due to lost arbitration at the first two identifier bits.	X	Fixed
DAN-0047977	MCAN	Unexpected high priority message (HPM) interrupt.	X	Fixed
DAN-0047979	MCAN	Message transmitted with wrong arbitration and control fields	X	Fixed
PS1891	MCAN	Edge filtering causes mis-synchronization	X	Fixed
PS2206	MCAN	Configuration NBTP.NTSEG2 = '0' not allowed	X	Fixed
DAN-0042615	XOSC	XOSC: oscillator 4-40 MHz internal capacitances	X	Fixed <sup>(2)</sup>
DAN-0048760	PMC_Dig	PMC_Dig: HVD134_C (VD6) fake fault exiting STANDBY mode	X	Fixed

1. For more details on pad keeper features, refer to AN5484.

2. For more details on XOSC internal capacitances, refer to TN1391.

### 3 XTAL32 additional feature

On cut2.0, XTAL32 functionality is implemented also on packages eQFP64/100.

**Table 3. XTAL32 implementation over cuts/packages**

Cut	eQFP64	eQFP100	eQFP174	eQFP176	BGA
1.1	N	N	Y	Y	Y
2.0	Y	Y	Y	Y	Y

The following feature is not implemented through a silicon change but only adding a bonding feature. In particular, the following double-bonding to the already assigned pins has been implemented:

- EXTAL32, double-bond to PAD108 (pin25 of QFP64 pin35 on QFP100) instead of PAD78 (available only from QFP144)
- XTAL32, double-bond to PAD59 (pin26 of QFP64 pin36 on QFP100) instead of PAD20 (available only from QFP144)

**Figure 1. EXTAL32/XTAL32 bonding**

Pad	Package Pin Number							PACKAGE	Pad Name
	BGA292	BGA256		QFP176	QFP144	QFP100	QFP64		
3	Export CSV Tables								ESDBTB_S2
4	Y8	R7		58	48	35	25	ESDBTB_S2	
5	W8	M8		59	49			PG[12]	
6	U8	N8		60	50			PE[15]	
7	U8x	P8		60x	50x	35x	25x	PE[14]	
8	T8	R8		61	51			PB[4]	
9	T8x	R8x		61x	51x	36x	26x	EXTAL32	
0	Y9	T8		62	52			XTAL32	
1	T9	T8x		63	53	36	26	PD[11]	
2	U9	M9		64	54	37		PB[3]	

Notice that the XTAL32/EXTAL32 pads are disabled by default, in order to maintain compatibility with the existing cut1.1 product.

## 4 Pad keeper fix

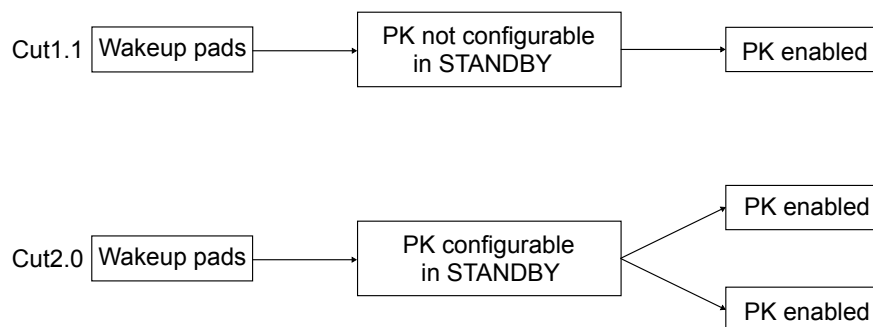
### 4.1 PK description

As PK (pad keeper), applying an internal pull (up/down), modifies the impedance of the input, some application signals need extra external components to cope with the PK.

For such reason, PK feature has been made configurable by software on cut2.0 for all WKUP pads.

For the non-WKUP pads (OPCs/PDCs/TDO), PK feature cannot be configured and it will be enabled immediately at STANDBY mode entry.

Figure 2. Pad keeper configuration



### 4.2 PK configuration

On cut2.0, PK configuration is done through the WKPU.WIPUER register:

the pad pull control via WIPUER is lost. Only the SIUL one can be used. In such case:

- WIPUER[X] = 0 (default) → PK enabled
- WIPUER[X] = 1 → PK disabled, pad in HiZ during STANDBY

Table 4. WIPUER setup vs PAD value

PAD[x]WIPUER[x]	PAD value	I/O internal doc
1	Z	Pad keeper disabled
0	X	Pad keeper enabled (default)

### 4.3 PK errata

As reported in the [Table 2. Errata fixes](#), two errata are related to the pad keeper fix:

- DAN-0051761 that substitutes the PS3022 related to the cut1.1
- DAN-0051763 document erratum related to the changed WIPUER register description

**Table 5. PK errata versions**

ID	Title	Description	Errata workaround
DAN-0051761	STANDBY: pad keeper functionality not immediately enabled on low power pads when entering in STANDBY mode.	<p>In case of pad keeper enabled, this feature of LP pads is not immediately activated during stand-by mode entry.</p> <p>In time-frame before the activation of the pad-keeper, the LP INTx pads configured to wakeup from STANDBY mode (both on rising and falling edge) could get discharged and STANDBY mode can be immediately exited.</p> <p>During this time-frame the status of LP INTx pins is in high-Z therefore depending on the external pull.</p> <p>Please contact ST representative for details.</p>	In case that leakage on the LP pad is such that the wake up by STANDBY mode can happen, an external pull must be added on pad
DAN-0051763	[DOC] WKPU: wakeup/interrupt pullup enable register (WIPUER) description	<p>Replace the text below:</p> <p>"This register is used to enable a pullup on the corresponding interrupt pads to pull an unconnected wakeup/interrupt input to a value of '1'".</p> <p>With the following one:</p> <p>"this register is used to disable pad keeper feature"</p> <p>In addition, for the table "WIPUER field descriptions", the right bit description is:</p> <p>PKDx: pad keeper disable</p> <p>1 pad keeper is disabled</p> <p>0 pad keeper is enabled.</p>	

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
30-Aug-2021	1	First release.
01-Dec-2021	2	Updated Table 2. Errata fixes.
20-Dec-2021	3	Added note in <a href="#">Table 2. Errata fixes</a> .

---

## Contents

<b>1</b>	<b>Device codes</b> .....	<b>2</b>
<b>2</b>	<b>Errata fixes on cut2.0</b> .....	<b>3</b>
<b>3</b>	<b>XTAL32 additional feature.</b> .....	<b>4</b>
<b>4</b>	<b>Pad keeper fix</b> .....	<b>5</b>
<b>4.1</b>	<b>PK description</b> .....	<b>5</b>
<b>4.2</b>	<b>PK configuration</b> .....	<b>5</b>
<b>4.3</b>	<b>PK errata</b> .....	<b>6</b>
	<b>Revision history</b> .....	<b>7</b>



**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to [www.st.com/trademarks](http://www.st.com/trademarks). All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2021 STMicroelectronics – All rights reserved