

SAM DA1 Family Silicon Errata and Data Sheet Clarification

SAM DA1 Family Errata

The SAM DA1 family of devices that you have received conform functionally to the current Device Data Sheet (DS40001895A), except for the anomalies described in this document.

The silicon issues discussed in the following pages are for silicon revisions with the Device and Revision IDs listed in the table below.

The errata described in this document will be addressed in future revisions of the SAM DA1 family silicon.

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current.

Table 1. SAM DA1 Family Silicon Device Identification

Part Number	Device Identification (DID[31:0])	Revision (DID.REVISION[3:0])					
		A	B	C	D	E	F
ATSAMDA1E14A	0x10011x31	N/A				0x4	N/A
ATSAMDA1E15A	0x10011x30						
ATSAMDA1E16A	0x10011x2F						
ATSAMDA1G14A	0x10011x2D						
ATSAMDA1G15A	0x10011x2D						
ATSAMDA1G16A	0x10011x2C						
ATSAMDA1J14A	0x10011x2B						
ATSAMDA1J15A	0x10011x2A						
ATSAMDA1J16A	0x10011x29						

.....continued

Part Number	Device Identification (DID[31:0])	Revision (DID.REVISION[3:0])					
		A	B	C	D	E	F
ATSAMDA1E14B	0x10011x6C	N/A					0x5
ATSAMDA1E15B	0x10011x6B						
ATSAMDA1E16B	0x10011x6A						
ATSAMDA1G14B	0x10011x69						
ATSAMDA1G15B	0x10011x68						
ATSAMDA1G16B	0x10011x67						
ATSAMDA1J14B	0x10011x66						
ATSAMDA1J15B	0x10011x65						
ATSAMDA1J16B	0x10011x64						

Data Sheet clarifications and corrections (if applicable) are located in the [Data Sheet Clarifications](#) section, and this section follows the discussion of silicon issues.

Note: Refer to the “**Device Service Unit**” chapter in the current Device Data Sheet (DS40001895A) for a detailed information on Device Identification and Revision IDs for your specific device.

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1. **Errata Issues**

Refer to “Chapter 42” in the current device data sheet (DS40001895A) for a detailed information on silicon errata issues.

2. Data Sheet Clarifications

The following typographic corrections and clarifications are to be noted for the latest revision of the device Data Sheet (40001895A). The corrected information is shown in **BOLD** type.

2.1 System Controller - XOSC (Chapter 19 of the Device Data Sheet)

The descriptions of the AMPGC and GAIN[2:0] bit fields in the SYSCTRL.XOSC register are incorrect. The corrected information is shown in **BOLD** type.

Bit 11 - AMPGC Automatic Amplitude Gain Control

The configuration of the oscillator gain is mandatory and should follow the maximum frequency gain recommendations.

Bits 10:8 – GAIN[2:0] Oscillator Gain

These bits select the gain for the oscillator. The listed maximum frequencies are recommendations, and might vary based on capacitive load and crystal characteristics.

2.2 Electrical Characteristics - Crystal Oscillator (XOSC) Characteristics (Chapter 39 of the Device Data Sheet)

The Electrical Characteristics section (Chapters 39) provides an equation for the calculation of external load capacitance used for an external crystal oscillator. The equation as shown in “Crystal Oscillator Characteristics” is in error. The corrected information is shown in **BOLD** type. The correct equation is as follows:

Load Capacitance Equation

$$C_{LOAD} = ([C_{XIN} + C_{LEXT}] * [C_{XOUT} + C_{LEXT}]) / ([C_{XIN} + C_{LEXT} + C_{LEXT} + C_{XOUT}]) + C_{STRAY}$$

Where:

C_{LOAD} = Crystal Mfg. C_{LOAD} specification

C_{XIN} = XOSC XIN pin data sheet specification

C_{XOUT} = XOSC XOUT pin data sheet specification

C_{LEXT} = Required external crystal load capacitor

C_{STRAY} (Osc PCB capacitance) = 1.5 pf per 12.5 mm (0.5 inches) (TRACE W = 0.175 mm, H = 36 μ m, T = 113 μ m)

2.3 Schematic Checklist - Crystal Oscillator (Chapter 41 of the Device Data Sheet)

The load capacitor values shown in figure 41-6 and table 41-5 should not be used. C_{LEXT} should be calculated from the Load Capacitance Equation listed below. The corrected information is shown in **BOLD** type.

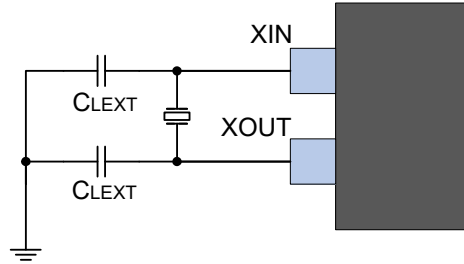


Table 2-1. Crystal Oscillator Checklist

Signal Name	Recommended Pin Connection	Description
XIN	Load capacitor $C_{LEXT}^{(1)(2)}$	External crystal between 0.4 to 30 MHz
XOUT	Load capacitor $C_{LEXT}^{(1)(2)}$	

Load Capacitance Equation

$$C_{LOAD} = ([C_{XIN} + C_{LEXT}] * [C_{XOUT} + C_{LEXT}]) / ([C_{XIN} + C_{LEXT} + C_{LEXT} + C_{XOUT}] + C_{STRAY})$$

Where:

C_{LOAD} = Crystal Mfg. C_{LOAD} specification

C_{XIN} = XOSC XIN pin data sheet specification

C_{XOUT} = XOSC XOUT pin data sheet specification

C_{LEXT} = Required external crystal load capacitor

C_{STRAY} (Osc PCB capacitance) = 1.5 pf per 12.5 mm (0.5 inches) (TRACE W = 0.175 mm, H = 36 μ m, T = 113 μ m)

3. Appendix A: Revision History

Rev. A (04/2019)

This is the initial released version of this document.

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