

#### **Product Change Notification / SYST-23RFLB733**

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24-Mar-2022

#### **Product Category:**

8-bit Microcontrollers

### **PCN Type:**

Manufacturing Change

## **Notification Subject:**

ERRATA - ATtiny24A/44A/84A Silicon Errata and Data Sheet Clarification Revision

#### **Affected CPNs:**

SYST-23RFLB733\_Affected\_CPN\_03242022.pdf SYST-23RFLB733\_Affected\_CPN\_03242022.csv

#### **Notification Text:**

SYST-23RFLB733

Microchip has released a new Product Documents for the ATtiny24A/44A/84A Silicon Errata and Data Sheet Clarification of devices. If you are using one of these devices please read the document located at ATtiny24A/44A/84A Silicon Errata and Data Sheet Clarification.

Notification Status: Final

Description of Change: Data sheet clarification added.

• 3.1. Appendix B - ATtiny24A/44A/84A Specification at 125°C

Impacts to Data Sheet: None

Reason for Change: To Improve Productivity

Change Implementation Status: Complete

Date Document Changes Effective: 24 March 2022

NOTE: Please be advised that this is a change to the document only the product has not been changed. Markings to Distinguish Revised from Unrevised Devices: N/A Attachments: ATtiny24A/44A/84A Silicon Errata and Data Sheet Clarification Please contact your local Microchip sales office with questions or concerns regarding this notification. **Terms and Conditions:** If you wish to receive Microchip PCNs via email please register for our PCN email service at our PCN home page select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the PCN FAQ section. If you wish to change your PCN profile, including opt out, please go to the PCN home page select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

#### Affected Catalog Part Numbers (CPN)

ATTINY44A-SSF

ATTINY44A-MF

ATTINY44A-CCU

ATTINY44A-PU

ATTINY44A-SSU

ATTINY44A-MMH

ATTINY44A-MU

ATTINY44A-SSN

ATTINY44A-SSNR

ATTINY44A-CCUR

ATTINY44A-SSUR

ATTINY44A-SSURB09

ATTINY44A-SSURA0

ATTINY44A-MMHR

ATTINY44A-MUR

ATTINY44A-MUR861

ATTINY44A-SSFRP01

ATTINY44A-SSFR

ATTINY44A-MFR

ATTINY44A-MFRA0

ATTINY24A-SSF

ATTINY24A-MM8

ATTINY24A-MF

ATTINY24A-CCU

ATTINY24A-PU

ATTINY24A-SSU

ATTINY24A-MMH

ATTINY24A-MU

ATTINY24A-SSN

ATTINY24A-SSNR

ATTINY24A-CCUR

ATTINY24A-SSUR

ATTINY24A-SSUR880

ATTINY24A-SSURA0

ATTINY24A-MMHR ATTINY24A-MUR

TITINI 2-11 MICK

ATTINY24A-MURA0

ATTINY24A-SSFR

ATTINY24A-MM8R

ATTINY24A-MFR

ATTINY84A-W

ATTINY84A-SSF

ATTINY84A-MF

ATTINY84A-CCU

ATTINY84A-PU

ATTINY84A-SSU

Date: Thursday, March 24, 2022

#### $SYST-23RFLB733-ERRATA-ATtiny 24A/44A/84A\ Silicon\ Errata\ and\ Data\ Sheet\ Clarification\ Revision$

ATTINY84A-MMH

ATTINY84A-MU

ATTINY84A-CCUR

ATTINY84A-SSUR

ATTINY84A-MMHR

ATTINY84A-MMHR651

ATTINY84A-MMHR690

ATTINY84A-MMHR989

ATTINY84A-MMHRB81

ATTINY84A-MUR

ATTINY84A-SSFRP01

ATTINY84A-SSFR

ATTINY84A-SSFRA2

ATTINY84A-SSFRA0

ATTINY84A-MFR

Date: Thursday, March 24, 2022



# ATtiny24A/44A/84A

### Silicon Errata and Data Sheet Clarification

### Introduction

The ATtiny24A/44A/84A devices you have received conform functionally to the current device data sheet (www.microchip.com/DS40002269), except for the anomalies described in this document. The errata described in this document will likely be addressed in future revisions of the ATtiny24A/44A/84A devices.

#### Note:

· This document summarizes all the silicon errata issues from all revisions of silicon, previous and current.

## 1. Silicon Issue Summary

#### Legend

- Erratum is not applicable.
- **X** Erratum is applicable.

|            |                   | Valid for Silicon Revision |                       |                    |                       |  |
|------------|-------------------|----------------------------|-----------------------|--------------------|-----------------------|--|
| Peripheral | Short Description | ATtiny24A                  | ATtiny                | ATtiny44A ATtiny84 |                       |  |
|            |                   | Rev. H <sup>(1)</sup>      | Rev. F <sup>(1)</sup> | Rev. G             | Rev. C <sup>(1)</sup> |  |
| Device     | No known errata   |                            |                       |                    |                       |  |

#### Note:

1. This revision is the initial release of the silicon.

### 2. Silicon Errata Issues

#### 2.1 Errata Details

- Erratum is not applicable.
- **X** Erratum is applicable.

#### 2.2 None

There are no known errata as of this publication date.

#### 3. **Data Sheet Clarifications**

Note the following typographic corrections and clarifications for the latest version of the device data sheet (www.microchip.com/DS40002269).

Note: Corrections are shown in bold. Where possible, the original bold text formatting has been removed for clarity.

#### 3.1 Appendix B – ATtiny24A/44A/84A Specification at 125°C

A clarification for the Supply Current Power-Down Mode maximum limits in Appendix B - ATtiny24A/44A/84A Specification at 125°C (https://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-8183-AVR-8-bit-Microcontroller-ATtiny24A-ATtiny44A-ATtiny84A-Appendix-B-125C\_Datasheet.pdf) has been made.

Table 3-1. Table 2-1. DC Characteristics.  $T_A = -40$ °C to +125°C

| Symbol           | Parameter  | Condition  | Min.                               | Typ. <u>(1)</u> | Max.                              | Units |
|------------------|--|--|------------------------------------|-----------------|-----------------------------------|-------|
|                  | Input low voltage  | V <sub>CC</sub> = 1.8-2.4V                           | -0.5                               |                 | 0.2V <sub>CC</sub> <sup>(3)</sup> | V     |
|                  | input low voitage  | $V_{CC} = 2.4-5.5V$                                  | -0.5                               |                 | 0.3V <sub>CC</sub> <sup>(3)</sup> | V     |
| V <sub>IL</sub>  | Input high voltage<br>RESET pin as<br>Reset <sup>(4)</sup> | V <sub>CC</sub> = 1.8-5.5                            | -0.5                               |                 | 0.2V <sub>CC</sub> <sup>(3)</sup> |       |
|                  | Input high voltage   | V <sub>CC</sub> = 1.8-2.4V                           | 0.7 V <sub>CC</sub> <sup>(2)</sup> |                 | V <sub>CC</sub> +0.5              | V     |
| .,               | RESET pin as Reset   | V <sub>CC</sub> = 2.4-5.5V                           | 0.6 V <sub>CC</sub> <sup>(2)</sup> |                 | V <sub>CC</sub> +0.5              | V     |
| V <sub>IH</sub>  | Input high voltage<br>RESET pin as<br>Reset <sup>(4)</sup> | V <sub>CC</sub> = 1.8-5.5V                           | 0.9 V <sub>CC</sub> <sup>(2)</sup> |                 | V <sub>CC</sub> +0.5              | V     |
| .,               | Output low voltage   | I <sub>OL</sub> = 10 mA, V <sub>CC</sub> = 5V        |                                    |                 | 0.6                               | V     |
| V <sub>OL</sub>  | (5) except RESET pin(7)                                    | $I_{OL}$ = 5 mA, $V_{CC}$ = 3V                       |                                    |                 | 0.5                               | V     |
| .,               | Output high voltage  | $I_{OH}$ = -10 mA, $V_{CC}$ = 5V                     | 4.3                                |                 |                                   | V     |
| V <sub>OH</sub>  | (6) except RESET pin(7)                                    | $I_{OH}$ = -5 mA, $V_{CC}$ = 3V                      | 2.5                                |                 |                                   | V     |
| I <sub>LIL</sub> | Input leakage<br>current I/O pin                           | V <sub>CC</sub> = 5.5V, pin low (absolute value)     |                                    | < 0.05          | 1 <sup>(8)</sup>                  | μA    |
| I <sub>LIH</sub> | Input leakage current I/O pin                              | V <sub>CC</sub> = 5.5V, pin high<br>(absolute value) |                                    | < 0.05          | 1 <sup>(8)</sup>                  | μΑ    |
| Б                | Pull-up resistor, I/O pin                                  | $V_{CC}$ = 5.5V, input low                           | 20                                 |                 | 50                                | kΩ    |
| R <sub>PU</sub>  | Pull-up resistor,<br>Reset pin                             | V <sub>CC</sub> = 5.5V, input low                    | 30                                 |                 | 60                                | kΩ    |

**Errata** 

| continued       |  |                                    |      |                 |      |       |
|-----------------|--|------------------------------------|------|-----------------|------|-------|
| Symbol          | Parameter                                  | Condition                          | Min. | Typ. <u>(1)</u> | Max. | Units |
|                 |  | f = 1 MHz, V <sub>CC</sub> = 2V    |      | 0.25            | 0.5  | mA    |
|                 | Supply current, Active mode <sup>(9)</sup> | f = 4 MHz, V <sub>CC</sub> = 3V    |      | 1.2             | 2    | mA    |
|                 |  | f = 8 MHz, V <sub>CC</sub> = 5V    |      | 4.4             | 7    | mA    |
|                 | Supply current, Idle mode <sup>(9)</sup>   | f = 1 MHz, V <sub>CC</sub> = 2V    |      | 0.04            | 0.2  | mA    |
| I <sub>CC</sub> |  | f = 4 MHz, V <sub>CC</sub> = 3V    |      | 0.25            | 0.6  | mA    |
|                 |  | f = 8 MHz, V <sub>CC</sub> = 5V    |      | 1.3             | 2    | mA    |
|                 | Supply current,                            | WDT enabled, V <sub>CC</sub> = 3V  |      | 4               | 30   | μΑ    |
|                 | Power-Down mode <sup>(10)</sup>            | WDT disabled, V <sub>CC</sub> = 3V |      | 0.2             | 20   | μΑ    |

#### Notes:

- 1. Typical values at 25°C.
- 2. "Min" means the lowest value where the pin is guaranteed to be read as high.
- 3. "Max" means the highest value where the pin is guaranteed to be read as low.
- 4. Not tested in production.
- 5. Although each I/O port can sink more than the test conditions (10 mA at  $V_{CC}$  = 5V, 5 mA at VCC = 3V) under steady-state conditions (non-transient), the sum of all  $I_{OL}$  (for all ports) should not exceed 60 mA. If  $I_{OL}$  exceeds the test conditions,  $V_{OL}$  may exceed the related specification. Pins are not guaranteed to sink current higher than the listed test condition.
- 6. Although each I/O port can source more than the test conditions (10 mA at V<sub>CC</sub> = 5V, 5 mA at V<sub>CC</sub> = 3V) under steady-state conditions (non-transient), the sum of all I<sub>OH</sub> (for all ports) should not exceed 60 mA. If I<sub>OH</sub> exceeds the test condition, V<sub>OH</sub> may exceed the related specification. Pins are not guaranteed to source current higher than the listed test condition.
- 7. The RESET pin must tolerate high voltages when entering and operating in programming modes and, as a consequence, has a weak drive strength as compared to regular I/O pins. See the figures for ATtiny24A: From Figure 3-22 on page 21 to Figure 3-25 on page 23. The figures for ATtiny44A: From Figure 3-67 on page 44 to Figure 3-70 on page 45.
- 8. These are test limits, accounting for leakage currents of the test environment. Actual device leakage currents are lower.
- 9. Values are with an external clock using methods described in "Minimizing Power Consumption". Power reduction is enabled (PRR = 0xFF), and there is no I/O drive.
- 10. BOD disabled.

## 4. Document Revision History

**Note:** The document revision is independent of the silicon revision.

### 4.1 Revision History

| Doc Rev. | Date    | Comments   |
|----------|---------|--|
| В        | 03/2022 | Data sheet clarification added.  • 3.1. Appendix B – ATtiny24A/44A/84A Specification at 125°C  |
| A        | 10/2020 | Initial release of this document.     Content moved from the data sheet and restructured to the new document template     Updated the die revision list to reflect die revisions in production |

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