MCP795WXX

MCP795WXX Family Silicon Errata

The MCP795WXX family devices that you have received conform functionally to the current Device Data Sheet (DS20002280**D**), except for the anomalies described in this document.

The silicon issues discussed in the following pages are for devices listed in Table 1. The silicon issues are summarized in Table 2.

The errata described in this document will be addressed in future revisions of the MCP795WXX silicon.

Note: This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated in the last column of Table 2 apply to the current silicon revision.

Note: For more information on identifying the product date code, refer to Packaging Information section of the product Data Sheet or contact your local Microchip sales office.

TABLE 1: AFFECTED PART NUMBERS

Part Number
MCP795W10
MCP795W11
MCP795W12
MCP795W20
MCP795W21
MCP795W22

TABLE 2: SILICON ISSUE SUMMARY

Issue Number	Issue Summary	Affected Date Codes(1, 2)
		All
1	Time running fast when V_{CC} > 3.6V.	X
2	Incorrect square wave clock output frequency when V_{CC} > 3.6V.	X
3	Incorrect EVLS debounce period when V_{CC} > 3.6V.	X
4	Incorrect WDT time-out period and pulse width when V_{CC} > 3.6V.	X
5	Incorrect alarm interrupt output pulse width when using the $\overline{WDO}$ pin and V_{CC} > 3.6V.	X
6	Date incrementing at noon.	X
7	Month write changing date value.	X
8	Day of week write resetting to 1.	X
9	Hundredth-second out of sync with second.	X
10	Hundredth of Second value not changing.	X

Note 1: Only those issues indicated in the last column apply to the current silicon revision.

2: The date codes are presented in YYWW format.

Silicon Errata Issues

Note:	This document summarizes all silicon errata issues from all revisions of silicon, previous as well as current. Only the issues indicated by the shaded column in the following tables apply to the current silicon revision.

1. Issue: Time Running Fast

When VCC is greater than 3.6V, the internal time keeping registers do not count correctly, resulting in fast operation.

Work around

Operate the device at or below 3.6V.

Affected Silicon Revisions

All
X

2. Issue: Incorrect Clock Output Frequency

When Vcc is greater than 3.6V, selecting a square wave frequency for the CLKOUT pin other than 32.768 kHz will result in the incorrect frequency being outputted.

Work around

Operate the device at or below 3.6V or select 32.768 kHz output.

Affected Silicon Revisions

All
X

3. Issue: Incorrect EVLS Debounce Timing

When VCC is greater than 3.6V, the low-speed event detect debounce period will not match the data sheet-specified values.

Work around

Operate the device at or below 3.6V.

Affected Silicon Revisions

All
X

4. Issue: Incorrect WDT Timings

When VCC is greater than 3.6V, the Watchdog Timer time-out period and output pulse width will not match the data sheet-specified values.

Work around

Operate the device at or below 3.6V.

Affected Silicon Revisions

All
X

5. Issue: Incorrect Alarm Output Pulse Width

When VCC is greater than 3.6V, if the $\overline{WDO}$ pin is selected as the alarm interrupt output pin, the output pulse width will not match the data sheet-specified value.

Work around

Operate the device at or below 3.6V.

Affected Silicon Revisions

All
X

6. Issue: Date Increment

When operating in 12-hour mode (RTCHOUR<6> is set), if the application loads an hour value before 12:00 PM while the oscillator is running, then the date and day of week may increment at 12:00 PM. When this occurs, the month and year will also increment according to the normal rollover rules. The date will increment again at 12:00 AM.

Work around

Disable the oscillator by ensuring both the ST and EXTOSC bits are cleared and wait for the OSCON bit to clear before loading the new hour value.

Affected Silicon Revisions

All
X

7. Issue: Date Reset after Month Write

If the application writes a new month value to the timekeeping registers, some combinations of date and month values may result in the date being reset to 1 or 21, even if the date is also written with the month.

Work around

Disable the oscillator by clearing the ST bit, and wait for the OSCON bit to clear. Write new Month value as a separate Write command. Then, write the new valid Date value as a separate Write command. Write the Month value again. Then, restart the oscillator and wait until the clock starts or monitor the OSCON bit until it is set. For the special case of February 29, first ensure that the year is a leap year and that the LY bit is set.

Affected Silicon Revisions

All
X

8. Issue: Day of Week Reset after Day of Week Write

If the day of week (RTCWKDAY<2:0>) is equal to the value of 7 and the application writes a new day of week value to the timekeeping registers while the oscillator is not running, then when the oscillator is enabled, the day of week may reset the value to 1.

Work around

Update the day of week while the oscillator is enabled. Or, change the day of week value to another value besides 7 before disabling the oscillator, then set to the correct day while the oscillator is disabled, before re-enabling the oscillator.

Affected Silicon Revisions

All
X

9. Issue: HSEC Value Not Synchronized with Second Value

When reading the HSEC register and Second register shortly after the time values are set, the two registers may not roll over at the same moment.

Work around

The HSEC register does not cause the Second value to change, but instead the values are clocked off an internal clock divisor independently. The HSEC value is automatically synchronized with the Second value at the beginning of the minute, when the second rolls over from 59 to 00. Following that first minute change, the HSEC and Second registers will be in sync.

Affected Silicon Revisions

All
X

10. Issue: HSEC Value Not Changing

The HSEC register may appear stuck at the same value for two or more successive reads, even though more than 10 ms have passed. If the oscillator is running, then the internal value is still counting, but the value may not be updated every time it is read.

Work around

Read the HSEC value, then read it again 120 µs later to ensure an unstuck value. Alternatively, read the HSEC register and compare the present value with the previous value, and if the same, re-read the HSEC register until it is different.

APPENDIX A: DOCUMENT REVISION HISTORY

Rev A Document (03/2012)

Initial release of this document.

Rev B Document (12/2015)

Adopted new document format. Added silicon issues 6 (date incrementing at noon) and 7 (month write resetting date to 1). Removed MCP795BXX part numbers.

Rev C Document (12/2016)

Added Issue 8: Day of Week Reset after Day of Week Write.

Rev D Document (06/2017)

Edited Issue 7; Added Issues 9 and 10.

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ISBN: 978-1-5224-1795-8

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