

MCP7941X Family Silicon Errata

The MCP7941X family devices that you have received conform functionally to the current Device Data Sheet (DS20002266J), 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 MCP7941X silicon.

TABLE 1: AFFECTED PART NUMBERS

Part Number
MCP79410
MCP79411
MCP79412

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 2: SILICON ISSUE SUMMARY

Issue Number	Issue Summary	Affected Date Codes ^(1, 2)		
		≤1109	≤1352	>1352
1	AM/PM bit modified when OSCRUN is cleared.	X		
2	High operating current following Stop condition.	X	X	
3	Date incrementing at noon.	X	X	X
4	Spurious alarm interrupts when matching on minutes.	X	X	X
5	Date value changing on month write.	X	X	X
6	Day of week register value changing after write.	X	X	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: AM/PM Bit

If the oscillator is stopped for longer than a period of T_{OSF} , then the `OSCRUN` bit (`RTCWKDAY<5>`) will be cleared. This may cause the `AM/PM/HRTEN1` bit (`RTCHOUR<5>`) to toggle. This can occur in both 12-hour and 24-hour modes.

The oscillator can stop for any of the following reasons:

- The oscillator stops in the application.
- When using an external crystal, the `ST` bit (`RTCSEC<7>`) is cleared by the user.
- When using an external clock source, the `EXTOSC` bit (`CONTROL<3>`) is cleared by the user.

Work around

If the `OSCRUN` bit is cleared, then the oscillator has stopped and the time and date values may no longer be valid. Therefore, before restarting the oscillator, the application should fetch and load the current time and date.

Affected date codes

≤ 1109	≤ 1352	> 1352
X		

2. Issue: Operating Current

When operating from `VCC`, operating current may slowly increase and can exceed the data sheet limits. The time necessary for the current to increase and stabilize can range from a few seconds to a few minutes. Operation from `VBAT` is not affected.

Work around

The reception of an EEPROM control byte will briefly reset the `VCC` current to below the data sheet limits. A sequence consisting of a Start condition, EEPROM write control byte, and Stop condition can be repeated periodically to reduce current.

Affected date codes

≤ 1109	≤ 1352	> 1352
X	X	

3. 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 `OSCRUN` bit to clear before loading the new hour value.

Affected date codes

≤ 1109	≤ 1352	> 1352
X	X	X

4. Issue: Spurious Minute-Match Alarm Interrupts

When using an alarm to match on minutes (`ALMxMSK<2:0> = 001`) and digital trimming is used to slow down the time (`TRIMVAL<6:0> > 0` and `SIGN = 0`), spurious alarm interrupts may occur at incorrect minutes.

Work around

When an alarm interrupt occurs, read the `RTCMIN` register and confirm the minute matches the desired value for the alarm.

Affected date codes

≤ 1109	≤ 1352	> 1352
X	X	X

5. Issue: Date Value Changing on Month Write

When writing a different value to the month register, `RTCMTH` (0x05), the value of the date register, `RTCDATE` (0x04), may change.

Work around

After writing to the `RTCMTH` register, verify that the `RTCDATE` value is correct or write the correct `RTCDATE` value again.

Affected date codes

≤ 1109	≤ 1352	> 1352
X	X	X

6. Issue: Day of Week Register Value Changing After Write

If the RTCWKDAY register is written while the oscillator is stopped, it is possible that the value will read back as a different value after the oscillator is started.

Work around

After writing to the RTCWKDAY register, read the value back after the oscillator is started to confirm it is correct and, if necessary, rewrite it.

Affected date codes

≤ 1109	≤ 1352	> 1352
X	X	X

APPENDIX A: DOCUMENT REVISION HISTORY

Rev A Document (03/2014)

Initial release of this document.

Rev B Document (12/2015)

Added Silicon Issue 4 (spurious alarm interrupts when matching on minutes).

Rev C Document (02/2018)

Added Silicon Issue 5 (date value changing on month write).

Rev D Document (10/2018)

Added Silicon Issue 6 (day of week register value changing after write).

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