Product Change Notification: SYST-10UIMV737

Date:

11-Feb-2025

Product Category:

Real-Time Clock/Calendar

Notification Subject:

MCP7940N Family Silicon Errata

Affected CPNs:

SYST-10UIMV737_Affected_CPN_02112025.pdf
SYST-10UIMV737_Affected_CPN_02112025.csv

Notification Text:

SYST-10UIMV737
Microchip has released a new Document for the MCP7940N Family Silicon Errata of devices. If you are using one of these devices please read the document located at **MCP7940N Family Silicon Errata**. **Notification Status:** Final **Description of Change:** Added Silicon Issue 2 (Spurious Minute-Match or Hour-Match Alarm Interrupts). **Impacts to Data Sheet:** None **Reason for Change:** To Improve Productivity **Change Implementation Status:** Complete **Date Document Changes Effective:** 11 Feb 2025 **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:

MCP7940N Family Silicon Errata

Please contact your local **Microchip sales office** with questions or concerns regarding this notification.

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Affected Catalog Part Numbers (CPN)

MCP7940N-E/MS
MCP7940N-E/MSVAO
MCP7940N-E/SN
MCP7940N-E/SNVAO
MCP7940N-I/MS
MCP7940N-I/SN
MCP7940N-I/ST
MCP7940NT-E/MS
MCP7940NT-E/MSVAO
MCP7940NT-E/SN
MCP7940NT-E/SNVAO
MCP7940NT-I/MNY
MCP7940NT-I/MS
MCP7940NT-I/SN
MCP7940NT-I/ST

MCP7940N

MCP7940N Family Silicon Errata

The MCP7940N family devices that you have received conform functionally to the current Device Data Sheet (DS20005010**J**), 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 MCP7940N 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 the Packaging Information section of the product data sheet or contact your local Microchip sales office.

TABLE 1: AFFECTED PART NUMBERS

Part Number
MCP7940N

TABLE 2: SILICON ISSUE SUMMARY

Issue Number	Issue Summary	Affected Date Codes(1, 2)
		All
1	Date incrementing at noon.	X
2	Spurious Minute-Match or Hour-Match Alarm Interrupts.	X
3	Date value changing on month or year write.	X
4	Day of week register value changing after write.	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: 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 Silicon Revisions

All
X

2. Issue: Spurious Minute-Match or Hour-Match Alarm Interrupts

When using an alarm to match on minutes (ALMxMSK<2:0> = 001) or hours (ALMxMSK<2:0> = 010) and digital trimming is being used to slow down the time (TRIMVAL<6:0> > 0 and SIGN = 0), spurious alarm interrupts may occur at incorrect minutes or hours.

Work around

If possible, avoid using digital trimming (TRIMVAL= 0x00). Otherwise, when an alarm interrupt occurs, read the RTCMIN and RTCHOUR registers and confirm that the minutes and hours match the desired values for the alarm.

Affected Silicon Revisions

All
X

3. Issue: Date Value Changing on Month or Year Write

When writing a new value in the Year, Month or Date registers, the Date register value may change unexpectedly.

Work around

If any of the Date, Month or Year values need to be changed, write new Date, Month and Year values in that order (this write can be a continuous or discontinuous operation). Then, write Date value again. The ST bit can remain set during this operation or it can be cleared and set again afterward.

Affected Silicon Revisions

All
X

4. Issue: Day of Week 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 Silicon Revisions

All
X

APPENDIX A: DOCUMENT REVISION HISTORY

Revision F (02/2025)

Added Silicon Issue 2 (Spurious Minute-Match or Hour-Match Alarm Interrupts).

Revision E (06/2022)

Added Silicon Issue 3 (Date Value Changing unexpectedly).

Revision D (10/2018)

Added Silicon Issue 4 (Day of Week Register Value Changing After Write).

Revision C (02/2018)

Added Silicon Issue 3 (Date Value Changing on Month Write).

Revision B (12/2015)

Added Silicon Issue 2 (Spurious Alarm Interrupts When Matching on Minutes).

Revision A (04/2014)

Initial release of this document.

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