

KSZ8851 Silicon Errata and Data Sheet Clarification

This document describes known silicon errata and data sheet clarifications for the KSZ8851 family of devices, which includes the following:

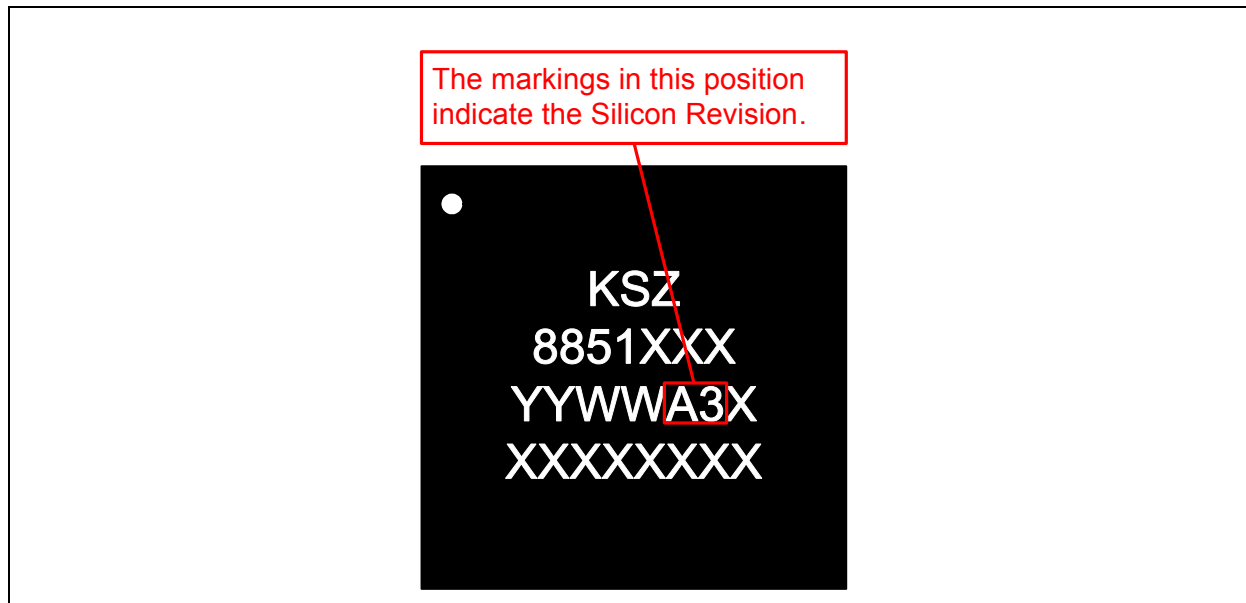
- KSZ8851-16MQL
- KSZ8851-32MQL
- KSZ8851-16MLL
- KSZ8851-16MLLJ
- KSZ8851-SNL

The silicon errata and data sheet clarifications discussed in this document are for silicon revisions as listed in [Table 1](#). The silicon revision can be determined by the device's top marking as indicated in [Figure 1](#). A summary of KSZ8851 silicon errata is provided in [Table 2](#). A summary of KSZ8851 data sheet clarifications is provided in [Table 3](#).

TABLE 1: AFFECTED SILICON REVISIONS

Part Numbers	Silicon Revision
KSZ8851-16MQL, KSZ8851-32MQL, KSZ8851-16MLL, KSZ8851-16MLLJ	A2, A3
KSZ8851SNL	A3

FIGURE 1: TOP MARKING SILICON REVISION INDICATION



Note: The purpose of [Figure 1](#) is to detail the top markings of an example part and highlight the location of the silicon revision. Other top marking values may differ (lot codes, location of manufacture, etc.).

TABLE 2: SILICON ISSUE SUMMARY

Item Number	Silicon Issue Summary	Affected Silicon Revisions
1.	Each transmit operation limited to one frame	A2, A3
2.	Checksum generation failure - MAC address sensitive	A2, A3
3.	Receiver error in 100BASE-TX mode following software power-down	A2, A3
4.	10BASE-T IEEE harmonic test failure	A2, A3

TABLE 3: DATA SHEET CLARIFICATIONS SUMMARY

Item Number	Silicon Issue Summary	Affected Silicon Revisions
1.	The KSZ8851 only supports an EEPROM size of 1Kb	A2, A3

Silicon Errata Issues

Module 1: Each transmit operation limited to one frame

DESCRIPTION

The device feature for transmitting multiple frames in one transmit operation (TCQCR[2] bit 2 = 1) does not reliably function.

END USER IMPLICATIONS

The device may fail to transmit frames correctly when this feature is enabled. Each transmit operation is limited to one frame.

Work around

It is recommended that the multiple frames per transmit operation feature always be disabled (TCQCR[2] bit 2 = 0).

PLAN

This erratum will not be corrected in a future revision.

Module 2: Checksum generation failure - MAC address sensitive

DESCRIPTION

There is an error in the transmit packet parsing logic that occurs under specific conditions. When the specific combination of a previously sent packet with a TCP/UDP header checksum value ending with "06" (not IP checksum) and the 11th byte of the current packet equals "06", the checksum will fail to generate. When this combination occurs, the device logic will continuously skip checksum generation until the QMU is re-initialized. The 11th byte of the packet is also the fifth byte of the source MAC address.

END USER IMPLICATIONS

The receive system may drop the TCP, UDP & ICMP packets when the hardware checksum is used with source MAC addresses in the range of "xx:xx:xx:xx:06:xx", where x can be any hexadecimal value.

Work around

Either of the following work arounds may be used:

1. Do not use source MAC addresses in the range of "xx:xx:xx:xx:06:xx". All other MAC addresses are not affected and therefore can be used with the hardware checksum generation enabled.
2. Do not use any hardware checksum generation functions for IP, TCP, UDP & ICMP.

PLAN

This erratum will not be corrected in a future revision.

Module 3: Receiver error in 100BASE-TX mode following software power-down

DESCRIPTION

Receive errors when using the Software Power Down feature.

END USER IMPLICATIONS

When issuing a software power-down (PMECR[1:0] = 10) followed by a power-on (PMECR[1:0] = 00), the receiver circuit can fail to start properly preventing communication. The Transmitter will still send data, but no data will be received.

Work around

It is recommended that the software power-down feature not be used.

PLAN

This erratum will not be corrected in a future revision.

Module 4: 10BASE-T IEEE harmonic test failure

DESCRIPTION

When running the IEEE 10BASE-T electrical tests, the device may fail the harmonic tests at 30MHz. The limits are -27dB from the 10MHz fundamental and the KSZ8851 is between -26dB and -27dB.

END USER IMPLICATIONS

There should be no impact in the functionality of the system. This issue will not affect communication, but may impact the EMI profile of the system. Extra care may need to be taken in the system design to reduce emissions depending on the standards the system is being tested against.

Work around

None.

PLAN

This erratum will not be corrected in a future revision.

KSZ8851

Data sheet Clarifications

Module 1: The KSZ8851 only supports an EEPROM size of 1Kb

DESCRIPTION

On page 40 of the KSZ8851 data sheet, the EEPROM Interface section states “The KSZ8851M can detect if the EEPROM is a 1Kb (93C46) or 4Kb (93C66) EEPROM device...” However, the KSZ8851 only supports an EEPROM size of 1Kb.

END USER IMPLICATIONS

4Kb EEPROM cannot be used with the KSZ8851.

Work around

Use a 1Kb EEPROM in KSZ8851 designs that require an EEPROM.

PLAN

This issue will not be corrected in a future data sheet revision.

APPENDIX A: DOCUMENT REVISION HISTORY

Revision Level & Date	Section/Figure/Entry	Correction
DS80000716D (06-07-17)	Module 4.	Added new erratum “10BASE-T IEEE harmonic test failure.”
DS80000716C (03-01-17)	Table 3, Data sheet Clarifications, Module 1.	Added new data sheet clarifications section with new module.
DS80000716B (01-05-17)	Introduction, Table 1, and Figure 1.	Fixed references to various part numbers in the KSZ8851 family of devices throughout, as well as references to revisions A2 and A3.
DS80000716A (10-06-16)	All	Initial release.

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