KSZ8863

KSZ8863 Silicon Errata and Data Sheet Clarification

This document describes known silicon errata for the KSZ8863 family of devices. The silicon errata discussed in this document are for the silicon revisions listed in Table 1. A summary of KSZ8863 silicon errata is provided in Table 2.

TABLE 1: AFFECTED SILICON REVISIONS

Part Numbers	Silicon Revision
KSZ8863FLL, KSZ8863FLLI, KSZ8863MLL, KSZ8863MLLI, KSZ8863RLL, KSZ8863RLLI	A3

TABLE 2: SILICON ISSUE SUMMARY

Item Number	Silicon Issue Summary	Affected Silicon Revisions
1.	The rate for egress port rate limiting is incorrect when tag insertion is enabled	A3
2.	Switch won't start in I2C Master Mode	A3
3.	SMI management interface does not function if SPISN pin is not pulled high	A3
4.	Receiver error in 100BASE-TX mode following Soft Power Down	A3

KSZ8863

Silicon Errata Issues

Module 1: The rate for egress port rate limiting is incorrect when tag insertion is enabled

DESCRIPTION

When tag insertion is enabled on an egress port and egress port rate limiting is turned on, the egress rate limit will be about twice the programmed value. When tag insertion is disabled, the egress rate limit is as programmed.

END USER IMPLICATIONS

The egress rate may exceed the programmed rate limit if tag insertion is enabled.

Work around

If both features are needed, use an egress rate setting of half the desired rate. However, even with this adjustment, the rate limit control may not be precise.

PLAN

This erratum will not be corrected in a future revision.

Module 2: Switch won't start in I^{2}C Master Mode

DESCRIPTION

In I^{2}C master mode, the switch reads register configurations from an attached EEPROM when exiting reset. In this mode, the Start Switch bit in Register 1 is cleared to '0', which disables the switch.

END USER IMPLICATIONS

After configuration from the external EEPROM, the switch is disabled and cannot be used since I^{2}C master mode implies that there is no other external control of the switch registers.

Work around

When programming the EEPROM, set Register 78 (0x4E) bit 0 = '1'. This corrects the problem.

PLAN

This erratum will not be corrected in a future revision.

Module 3: SMI management interface does not function if SPISN pin is not pulled high

DESCRIPTION

If SPISN (pin 39) is left floating when the MIIM / SMI management mode is selected, the SMI interface will not work. This is due to the internal pull-down resistor on the SPISN pin. The MIIM management mode is unaffected.

END USER IMPLICATIONS

Registers cannot be accessed via SMI management interface if SPISN floats to a low level.

Work around

The problem is solved by pulling SPISN high with an external resistor to VDDIO. Use a resistor value between 1kΩ and 10kΩ.

PLAN

This erratum will not be corrected in a future revision.

Module 4:   Receiver error in 100BASE-TX mode following Soft Power Down

DESCRIPTION

Some KSZ8863 devices may exhibit receiver errors after transitioning from Soft Power Down mode to Normal mode, as controlled by register 195 (0xC3) bits [1:0]. When exiting Soft Power Down mode, the receiver blocks may not start up properly, causing the PHY to miss data and exhibit erratic behavior. The problem may appear on either port 1 or port 2, or both ports. The problem occurs only for 100BASE-TX, not 10BASE-T.

END USER IMPLICATIONS

When the failure occurs, the following symptoms are seen on the affected port(s):

• The port is able to link
• LED0 blinks, even when there is no traffic
• The MIB counters indicate receive errors (Rx Fragments, Rx Symbol Errors, Rx CRC Errors, Rx Alignment Errors)
• Only a small fraction of packets is correctly received and forwarded through the switch. Most packets are dropped due to receive errors.

The failing condition cannot be corrected by the following:

• Removing and reconnecting the cable
• Hardware reset
• Software Reset and PCS Reset bits in register 67 (0x43)

Work around

The problem can be corrected by setting and then clearing the Port Power Down bits (registers 29 (0x1D) and 45 (0x2D), bit 3). This must be done separately for each affected port after returning from Soft Power Down Mode to Normal Mode. The following procedure will ensure no further issues due to this erratum.

To enter Soft Power Down Mode, set register 195 (0xC3), bits [1:0] = 10.

To exit Soft Power Down Mode, follow these steps:

1. Set register 195 (0xC3), bits [1:0] = 00 // Exit soft power down mode
2. Wait 1ms minimum
3. Set register 29 (0x1D), bit [3] = 1 // Enter PHY port 1 power down mode
4. Set register 29 (0x1D), bit [3] = 0 // Exit PHY port 1 power down mode
5. Set register 45 (0x2D), bit [3] = 1 // Enter PHY port 2 power down mode
6. Set register 45 (0x2D), bit [3] = 0 // Exit PHY port 2 power down mode

PLAN

This erratum will not be corrected in a future revision.

KSZ8863

APPENDIX A: DOCUMENT REVISION HISTORY

Revision Level & Date	Section/Figure/Entry	Correction
DS80000829A (04-10-19)	All	Converted to Microchip format.
	Module 4.	Added new erratum: Receiver error in 100BASE-TX mode following Soft Power Down

THE MICROCHIP WEB SITE

Microchip provides online support via our WWW site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

• **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software

• **General Technical Support** – Frequently Asked Questions (FAQ), technical support requests, online discussion groups, Microchip consultant program member listing

• **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

CUSTOMER CHANGE NOTIFICATION SERVICE

Microchip's customer notification service helps keep customers current on Microchip products. Subscribers will receive e-mail notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, access the Microchip web site at www.microchip.com. Under "Support", click on "Customer Change Notification" and follow the registration instructions.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

• Distributor or Representative
• Local Sales Office
• Field Application Engineer (FAE)
• Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: http://www.microchip.com/support

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.

- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.

- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.

- Microchip is willing to work with the customer who is concerned about the integrity of their code.

- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Trademarks

Worldwide Sales and Service

AMERICAS

Corporate Office
2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
http://www.microchip.com/
support
Web Address:
www.microchip.com

Atlanta
Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX
Tel: 512-257-3370

Boston
Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago
Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Dallas
Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit
Novi, MI
Tel: 248-848-4000

Houston, TX
Tel: 281-894-5983

Indianapolis
Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453
Tel: 317-536-2380

Los Angeles
Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608
Tel: 951-273-7800

Raleigh, NC
Tel: 919-844-7510

New York, NY
Tel: 631-435-6000

San Jose, CA
Tel: 408-735-9110
Tel: 408-436-4270

Canada - Toronto
Tel: 905-695-1980
Fax: 905-695-2078

ASIA/PACIFIC

Australia - Sydney
Tel: 61-2-9868-6733

China - Beijing
Tel: 86-10-8569-7000

China - Chengdu
Tel: 86-28-8665-5511

China - Chongqing
Tel: 86-23-8980-9588

China - Dongguan
Tel: 86-769-8702-9880

China - Guangzhou
Tel: 86-20-8755-8029

China - Hangzhou
Tel: 86-571-8792-8115

China - Hong Kong SAR
Tel: 852-2943-5100

China - Nanjing
Tel: 86-25-8473-2460

China - Qingdao
Tel: 86-532-8502-7355

China - Shanghai
Tel: 86-21-3326-8000

China - Shenyang
Tel: 86-24-2334-2829

China - Shenzhen
Tel: 86-755-8864-2200

China - Suzhou
Tel: 86-186-6233-1526

China - Wuhan
Tel: 86-27-5980-5300

China - Xian
Tel: 86-29-8833-7252

China - Xiamen
Tel: 86-592-2388138

China - Zhuhai
Tel: 86-756-3210040

ASIA/PACIFIC

India - Bangalore
Tel: 91-80-3090-4444

India - New Delhi
Tel: 91-11-4160-8631

India - Pune
Tel: 91-20-4121-0141

Japan - Osaka
Tel: 81-6-6152-7160

Japan - Tokyo
Tel: 81-3-6880- 3770

Korea - Daegu
Tel: 82-53-744-4301

Korea - Seoul
Tel: 82-2-554-7200

Malaysia - Kuala Lumpur
Tel: 60-3-7651-7906

Malaysia - Penang
Tel: 60-4-227-8870

Philippines - Manila
Tel: 63-2-634-9065

Singapore
Tel: 65-6334-8870

Taiwan - Hsin Chu
Tel: 886-3-577-8366

Taiwan - Kaohsiung
Tel: 886-7-213-7830

Taiwan - Taipei
Tel: 886-2-2508-8600

Thailand - Bangkok
Tel: 66-2-694-1351

Vietnam - Ho Chi Minh
Tel: 84-28-5448-2100

EUROPE

Austria - Wels
Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen
Tel: 45-4450-2828
Fax: 45-4485-2829

Finland - Espoo
Tel: 358-9-4520-820

France - Paris
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Garching
Tel: 49-8931-9700

Germany - Haan
Tel: 49-2129-3766400

Germany - Heilbronn
Tel: 49-7131-67-3636

Germany - Karlsruhe
Tel: 49-721-625370

Germany - Munich
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Germany - Rosenheim
Tel: 49-8031-354-560

Israel - Ra'anana
Tel: 972-9-744-7705

Italy - Milan
Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Padova
Tel: 39-049-7625286

Netherlands - Drunen
Tel: 31-416-690399
Fax: 31-416-690340

Norway - Trondheim
Tel: 47-7288-4388

Poland - Warsaw
Tel: 48-22-3325737

Romania - Bucharest
Tel: 40-21-407-87-50

Spain - Madrid
Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Gothenberg
Tel: 46-31-704-60-40

Sweden - Stockholm
Tel: 46-8-5090-4654

UK - Wokingham
Tel: 44-118-921-5800
Fax: 44-118-921-5820

08/15/18