

RA6M3 Group

Evaluation Kit for RA6M3 Microcontroller Group
EK-RA6M3 v1
Errata

Renesas RA Family
RA6 Series

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
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Precautions

This Evaluation Kit is only intended for use in a laboratory environment under ambient temperature and humidity conditions. A safe separation distance should be used between this and any sensitive equipment. Its use outside the laboratory, classroom, study area, or similar such area invalidates conformity with the protection requirements of the Electromagnetic Compatibility Directive and could lead to prosecution.

The product generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off or on, you are encouraged to try to correct the interference by one or more of the following measures:

- Ensure attached cables do not lie across the equipment.
- Reorient the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Power down the equipment when not in use.
- Consult the dealer or an experienced radio/TV technician for help.

Note: It is recommended that wherever possible shielded interface cables are used.

The product is potentially susceptible to certain EMC phenomena. To mitigate against them it is recommended that the following measures be undertaken:

- The user is advised that mobile phones should not be used within 10 m of the product when in use.
- The user is advised to take ESD precautions when handling the equipment.

The Evaluation Kit does not represent an ideal reference design for an end product and does not fulfill the regulatory standards for an end product.

Renesas RA Family

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1. Introduction

This Errata describes the known issues and exceptions to the functional specifications for the EK-RA6M3 v1, Evaluation Kit for the RA6M3 MCU Group. For additional information on the kit, see the EK-RA6M3 v1 user's manual.

2. Known Issues and Exceptions

2.1 USB High Speed Performance

Description

The USB High Speed (USB HS) port may exhibit connection problems or performance degradation when operating the USB HS port at the highest specified speed.

Corrective Action

To improve the function of the USB HS port, remove capacitors C28 and C29.

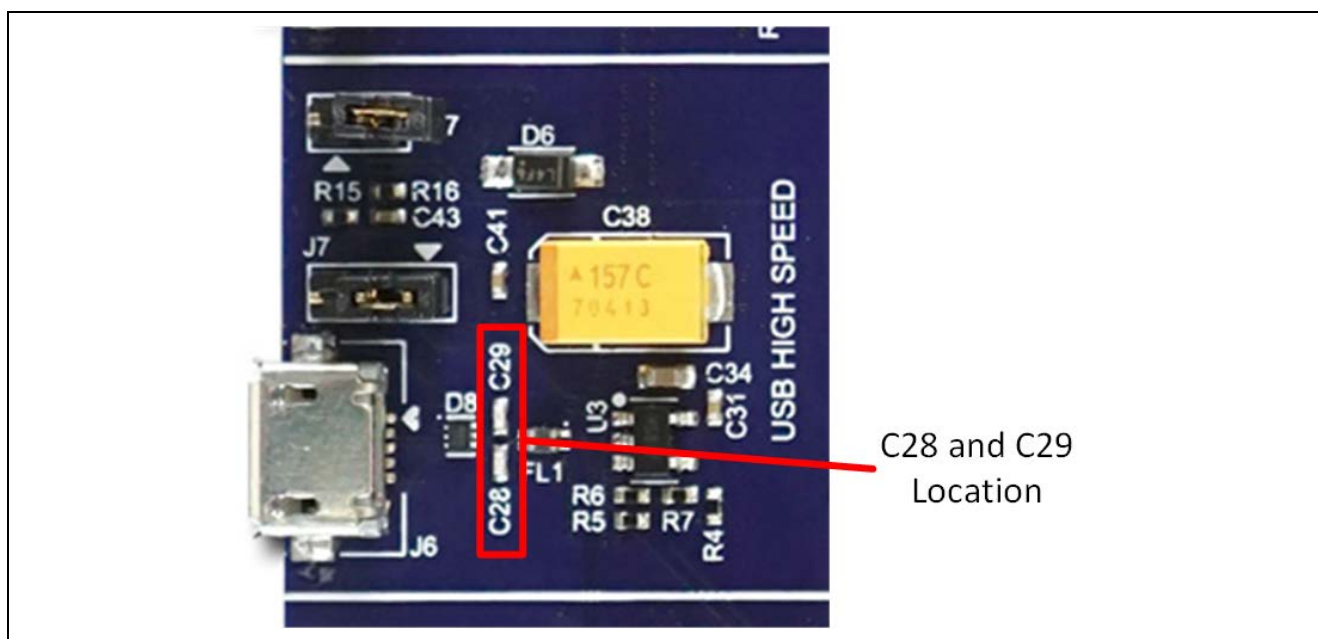


Figure 1. C28 and C29 Location

Kits Affected

Version : 1
Serial number : 001 to 720
Manufacturing date code : 1934 or 1938

See the Appendix – Kit Identification section for information on locating the kit version, serial number and manufacturing date code.

2.2 Package Type on the Board Silk Screen for RA6M3 MCU

Description

The silk screen on the EK-RA6M3 board shows an incorrect package type for the RA6M3 MCU. The incorrect silk screen identifies the package type as LQFP144. The actual package type is LQFP176.

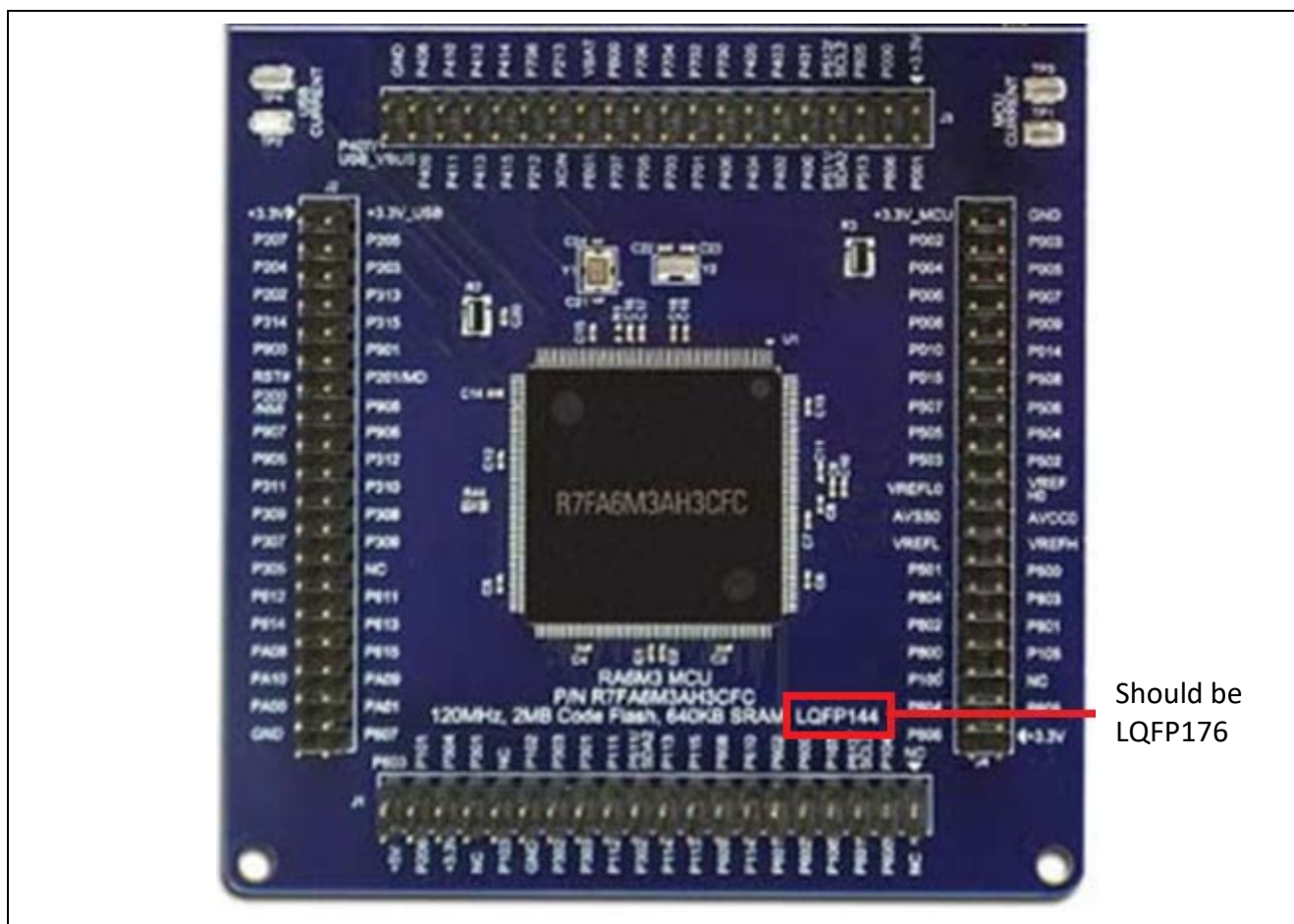


Figure 2. Package Type on Silk Screen

Corrective Action

No corrective action is needed. The silk screen is correct on later builds of the board.

Kits Affected

Version : 1
 Serial number : 001 to 720
 Manufacturing date code : 1934 or 1938

See the Appendix – Kit Identification section for information on locating the kit version, serial number and manufacturing date code.

2.3 P105 Not Connected Correctly

Description

P105 is not connected between J4 pin 7 and J25 pin 2. As a result, PMOD 2 may not function correctly.

Corrective Action

A wire may be added between J4 pin 7 and J25 pin 2. This will add the correct functionality to PMOD 2. It is recommended to add rework wire on the bottom side of the board.

This error has been corrected on later builds of the board.

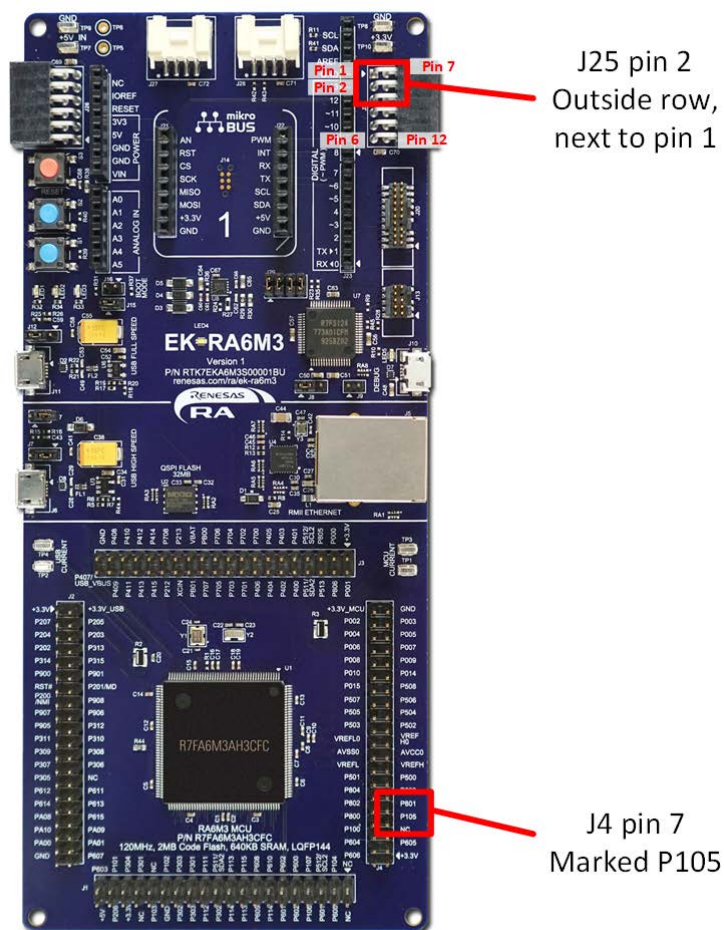


Figure 3. P105 Rework Pin Locations

Kits Affected

Version : 1
 Serial number : 001 to 720
 Manufacturing date code : 1934 or 1938

See the Appendix – Kit Identification section for information on locating the kit version, serial number and manufacturing date code.

2.4 USB Full Speed Device Mode Cable Disconnect Detection

Description

When configured in Device Mode, the USB Full Speed peripheral in the RA6M3 MCU uses the USB_VBUS signal (P407) to detect the presence of a USB cable connected to J11. Due to voltage leakage through the ESD protection circuit D2, the voltage on P407/USB_VBUS may not drop low enough to detect detaching a cable at J11. This may prevent the USB Full Speed port from detecting that cable has been disconnected. The issue occurs when a cable is first connected to the USB port and is properly configured, then the cable is disconnected.

Corrective Action

There are two possible methods to enable correct operation of the USB Full Speed port in self-powered mode. Implementing either method will resolve the issue. It is not necessary to implement both methods.

1. (Recommended) Cut the +5V trace between D2 pin 6 and the rest of the USB Full Speed +5V trace. Cut the trace at the location indicated by the arrow in Figure 4. The trace is located next to the D2 reference designator on the top side of the circuit board.
2. Remove D2. This will eliminate the voltage leakage between the USB Full Speed data lines and the USB +5V. However, this will also remove the ESD protection provided by D2.

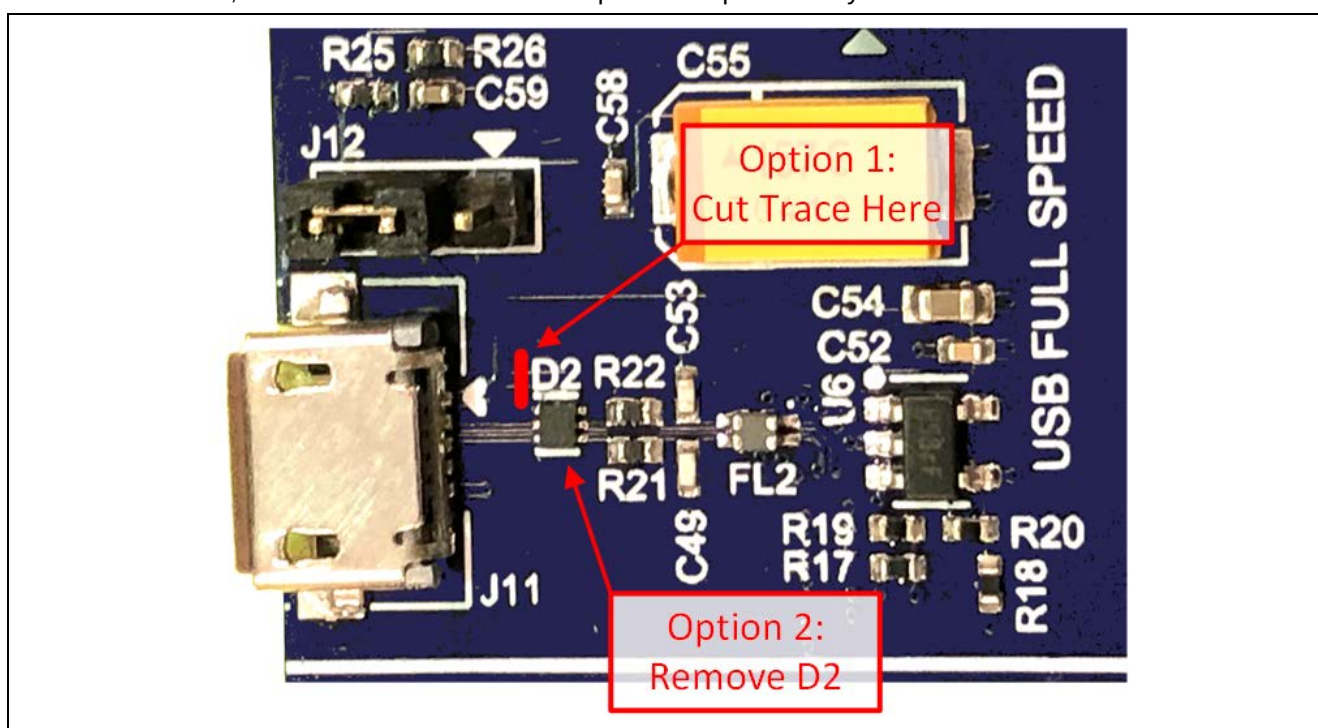


Figure 4. USB Full Speed Rework Locations

Kits Affected

Version : 1
Serial number : 001-720
Manufacturing date code : 1934, 1938, 2002, 2003, or 2024

See the Appendix – Kit Identification section for information on locating the kit version, serial number and manufacturing date code.

2.5 USB High Speed Device Mode Cable Disconnect Detection

Description

When configured in Device mode, the USB High Speed peripheral in the RA6M3 MCU uses the USBHS_VBUS signal (PB01) to detect the presence of a USB cable connected to J6. Due to voltage leakage through the ESD protection circuit D2, the voltage on PB01/USBHS_VBUS may not drop low enough to detect detaching a cable at J6. This may prevent the USB High Speed port from detecting that the cable has been disconnected. The issue occurs when a cable is first connected to the USB port and is properly configured, then the cable is disconnected.

Corrective Action

There are two possible methods to enable correct operation of the USB Full Speed port in self-powered mode. Implementing either method will resolve the issue. It is not necessary to implement both methods.

1. (Recommended) Cut the +5V trace between D8 pin 6 and the rest of the USB High Speed +5V trace. Cut the trace at the location indicated in Figure 5. The trace is located next to the D8 reference designator on the top side of the circuit board.
2. Remove D8. This will eliminate the voltage leakage between the USB High Speed data lines and the USB +5V. However, this will also remove the ESD protection provided by D8.

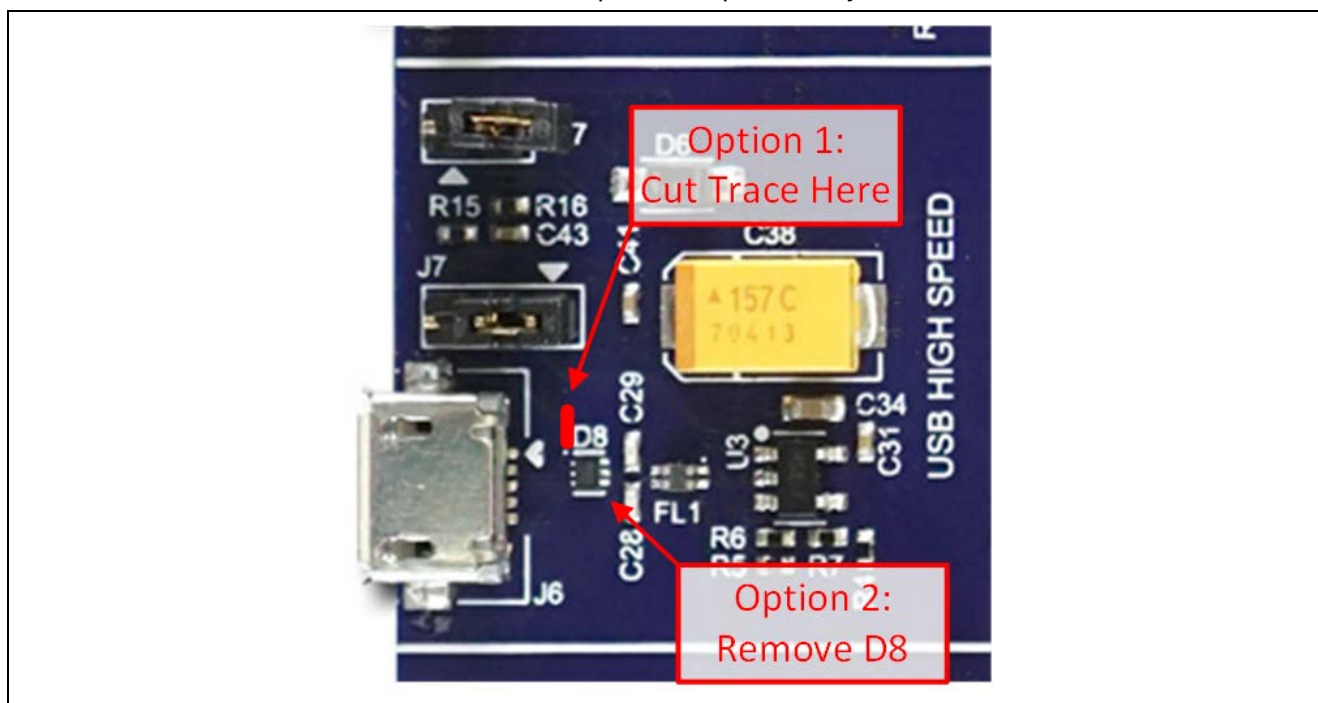


Figure 5. USB High Speed Rework Locations

Kits Affected

Version : 1
Serial number : 001-720
Manufacturing date code : 1934, 1938, 2002, 2003, or 2024

See the Appendix – Kit Identification section for information on locating the kit version, serial number and manufacturing date code.

3. Appendix – Kit Identification

Kit Version

The kit version can be found on the EK-RA6M3 kit packaging and EK-RA6M3 board as described in this section. The kit version is the last digit in the orderable part number as shown in the second box in Figure 7. In the example below, the kit version number is “1” as shown in both Figure 6 and Figure 7.

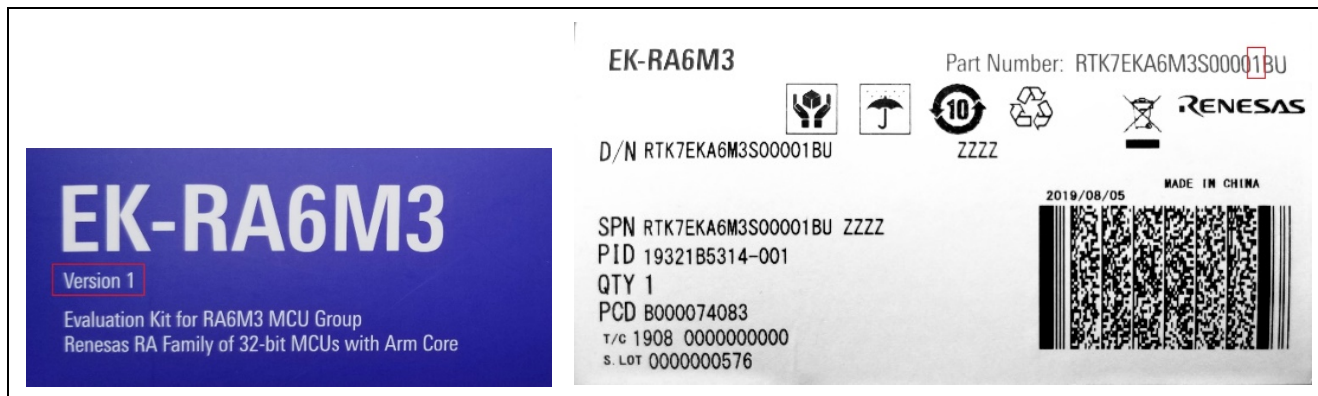


Figure 6. Identification of the Kit Version Number on the EK-RA6M3 Kit Packaging



Figure 7. Identification of the Kit Version Number on the EK-RA6M3 Board

Serial Number and Manufacturing Date Code

In addition to the kit version number, the kit serial number and the manufacturing date code are used to uniquely identify a kit.

The serial number is located on the QR code sticker on the back/bottom side of EK-RA6M3 board and on the bar code sticker of the EK-RA6M3 kit packaging. In the example in Figure 8, the serial number is “576.”

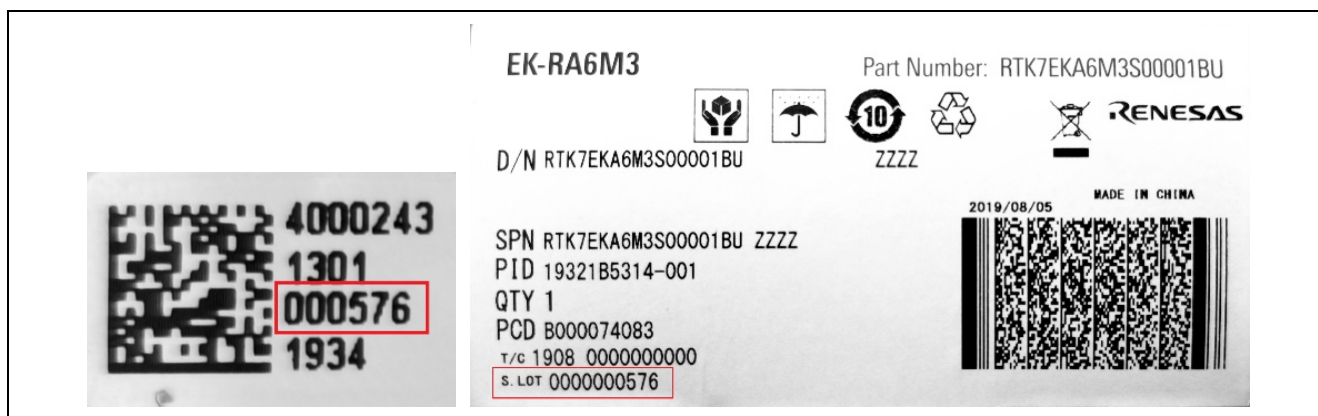


Figure 8. Identification of the Serial Number

The manufacturing date code is located on the QR code sticker on the back/bottom side of EK-RA6M3 board. In the example in Figure 9, the manufacturing date code is “1934.”

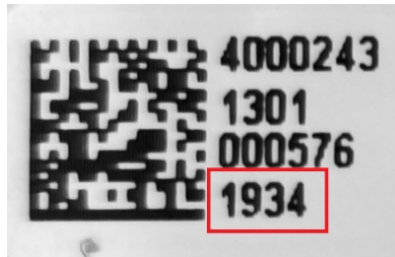


Figure 9. Identification of the Manufacturing Date Code

4. Website and Support

Visit the following URLs to learn about the kit and the RA family of microcontrollers, download tools and documentation, and get support.

EK-RA6M3 Resources	renesas.com/ra/ek-ra6m3
RA Product Information	renesas.com/ra
RA Product Support Forum	renesas.com/ra/forum
Renesas Support	renesas.com/support

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Nov.18.19	—	Initial release
1.01	Apr.17.20	—	Edited for clarity and completeness
1.02	Jul.21.20	—	Added information on USB Full Speed/High Speed Mode cable disconnection detection

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