# Product Change Notification

(Notification - P1903015-DIGI)

(MCP-AC-19-0012 / DPE005 / MCP-AB-19-0006 / 3)

March 18, 2019

**To:** *Our Valued Digi-Key Electronics Customer*

**Overview:** The purpose of this notification is to communicate a product change of select Renesas Electronics America, Inc. (REA) devices.

This notification announces various changes to changes select RL78 G13 devices. See Appendix 1 for a list of affected part numbers and changes. Appendix 2 provides additional change details.

There is a part number change. There is no change in product specifications and/or characteristics. There is no impact to quality and/or reliability.

**Affected Products:** A review of our records indicates the list of products in Appendix 1 may affect your company.

Part numbers given in this list are for active part numbers in REA database at the time of this notification.

**Key Dates:**

| | |
|---|---|
| Shipments from REA of replacement products begins. | **Aug. 1st, 2019** |

**Response:** No response is required. REA will consider this notification approved 30 days after its issue. If you anticipate volumes beyond your regular rate prior to the transition date, please contact your REA sales representative with a forecast of your requirements.

You are encouraged to sample the suggested replacement device and begin qualification as soon as possible. Please contact you REA sales representative to obtain samples.

If the customer provides a timely acknowledgement, the customer shall have 90 days (an additional 60 days) from the date of receipt of this notification in which to make any objections to the notification. If the customer does not make any objections to this notification within 90 days of the receipt of the notification, then Renesas will consider the notification as approved. If customer cannot accept the notification, then the customer must provide Renesas with a last time buy demand and purchase order.

Please contact your REA sales representative for any questions or comments.

Thank you for your attention.

Sincerely,

Renesas Electronics America, Inc.

## Appendix 1: Digi-Key Affected Part Number List

| Booking PN | Replacement PN | Change |
|---|---|---|
| R5F100FKAFP#V0 | R5F100FKAFP#30 | 1. Die Mount Material Change<br>2. Mold Resin Material Change<br>3. Bonding Wire Change from Au to Cu<br>4. Addition of ASEKH as Assembly Site<br>5. Addition of RSB & KYEC as FT Sites<br>6. Package Dimension Change<br>7. Leadframe Material Change<br>8. Top Mark Change<br>9. Packing Desiccant Change |
| R5F100FKAFP#X0 | R5F100FKAFP#50 | |
| R5F100FKDFP#V0 | R5F100FKDFP#30 | |
| R5F100FKDFP#X0 | R5F100FKDFP#50 | |
| R5F100FLAFP#V0 | R5F100FLAFP#30 | |
| R5F100FLAFP#X0 | R5F100FLAFP#50 | |
| R5F100FLDFP#V0 | R5F100FLDFP#30 | |
| R5F100FLDFP#X0 | R5F100FLDFP#50 | |
| R5F101FKAFP#V0 | R5F101FKAFP#30 | |
| R5F101FKAFP#X0 | R5F101FKAFP#50 | |
| R5F101FKDFP#V0 | R5F101FKDFP#30 | |
| R5F101FKDFP#X0 | R5F101FKDFP#50 | |
| R5F101FLAFP#V0 | R5F101FLAFP#30 | |
| R5F101FLAFP#X0 | R5F101FLAFP#50 | |
| R5F101FLDFP#V0 | R5F101FLDFP#30 | |
| R5F101FLDFP#X0 | R5F101FLDFP#50 | |

## Appendix 2: Change Details

## Appendix 2: Change Details (cont.)

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12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.
(Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics

(Rev.4.0-2 November 2017)




# Outline

- Addition of assembly factory:
  Current factory: Renesas Semiconductor KL Sdn. Bhd., (RSKL)
  Additional factory: ADVANCED SEMICONDUCTOR ENGINEERING, INC. (ASEKH)
- Addition of sorting factory:
  Current factory: Renesas Semiconductor KL Sdn. Bhd., (RSKL)
  Additional factory: Renesas Semiconductor (Beijing) Co., Ltd. (RSB)
  King Yuan Electronics Co., Ltd. (KYEC)
- Change of material: 1) Bonding wire, 2)Resin, 3)Lead frame, 4)Die mount
- Addition of package outline:
  Assembly factory is added, and the package outline form is also added.
- Change of ordering Part Number:
  The products which are changed the bonding wire from Gold (Au) to Copper (Cu) are changed the ordering Part Number as follows.
  Current part number: R5F1*******#V0, R5F1*******#X0
  New part number: R5F1*******#30, R5F1*******#50
- Change of marking: Changes at assembly factory
- Packing specification: A part of Packing material is changed
- Storage conditions after opening the moistureproof packaging of ASEKH products:
  Current: 30°C/70%RH/168hr
  New:30°C/60%RH/168hr (Confirming to the JEDEC standard)
- Specification and characteristics of product：No change
- Quality and reliability：No change

**Appendix 2: Change Details (cont.)**

## Difference of specification (Wire material change)

| Item | | Current | New |
|---|---|---|---|
| Assembly factory | | RSKL | ASEKH |
| Sorting factory | | RSKL | RSB / KYEC |
| Package | Outline | No change | Change (Refer to pages 6 to 15) |
| Lead frame | Material | No change | |
| | Inner pattern | No change | Change (Refer to page 16) |
| Die mount | Material | No change (Ag epoxy paste) | Change (Ag epoxy paste) |
| Bonding wire | Material | No change (Au) | Change Cu (Pd coating) |
| Resin | Material | No change (halogen-free ) | Change (halogen-free ) |
| Plating | Material | No change | |
| Marking | Font | No change | Change (Refer to page 17) |
| | Digit number | No change | Change (Refer to pages 18,19) |
| Packing | Tray/ Emboss tape | No change | Change (Refer to page 20) |

※ There is no impact on reliability and specification by material change.



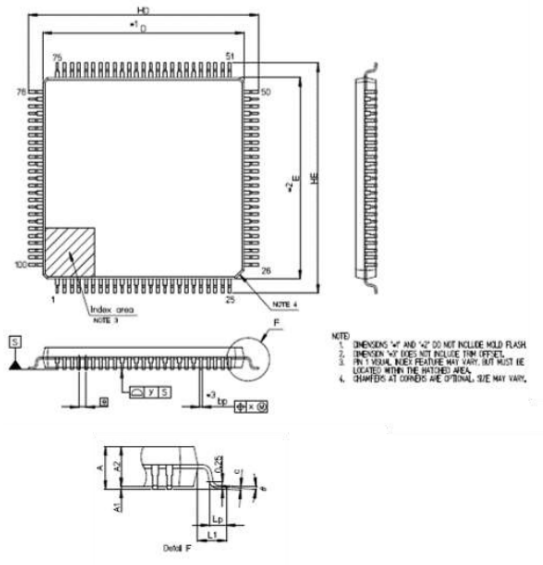

## Difference of specification (No wire material change)

| Item | | Current | New |
|---|---|---|---|
| Assembly factory | | RSKL | ASEKH |
| Sorting factory | | RSKL | RSB / KYEC |
| Package | Outline | No change | Change (Refer to pages 6 to 15) |
| Lead frame | Material | No change | |
| | Inner pattern | No change | Change (Refer to page 16) |
| Die mount | Material | No change (Ag epoxy paste) | Change (Ag epoxy paste) |
| Bonding wire | Material | No change | |
| Resin | Material | No change (halogen-free ) | Change (halogen-free ) |
| Plating | Material | No change | |
| Marking | Font | No change | Change (Refer to page 17) |
| | Digit number | No change | Change (Refer to pages 18,19) |
| Packing | Tray/ Emboss tape | No change | Change (Refer to page 20) |

※ There is no impact on reliability and specification by material change.

**Appendix 2: Change Details (cont.)**

## Difference of Outline Dimension_14mm×14mm 100pin



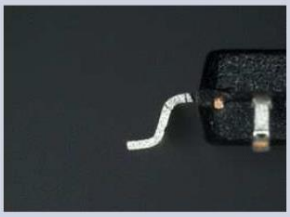
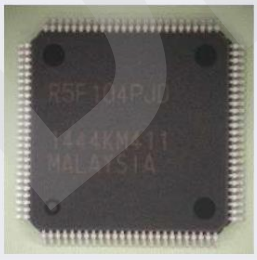
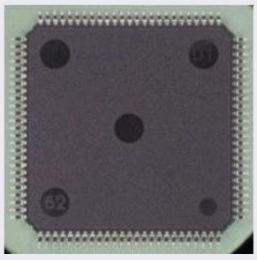
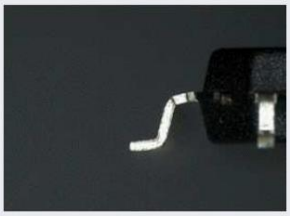
| Symbol | Terminology | New | Current |
|---|---|---|---|
| D | Package length | 14.0±0.1 | 14.00±0.20 |
| E | Package width | 14.0±0.1 | 14.00±0.20 |
| A2 | Package height | 1.4 | 1.40±0.05 |
| HD | Overall length | 16.0±0.2 | 16.00±0.20 |
| HE | Overall width | 16.0±0.2 | 16.00±0.20 |
| A | Seated height | 1.70max | 1.60max |
| A1 | 1st standoff height | 0.05 to 0.15 | 0.10±0.05 |
| bp | Terminal width | 0.20 +0.07/-0.05 | 0.22±0.05 |
| c | Terminal thickness | 0.09 to 0.20 | 0.145 +0.055/-0.045 |
| θ | Angle of terminal flat portions | 3.5° +4.5°/-3.5° | 3° +5°/-3° |
| e | Terminal pitch | 0.5 | 0.50 |
| x | Tolerance value of terminal center position | 0.08max | 0.08max |
| y | Coplanarity | 0.08max | 0.08max |
| Lp | Length of soldered part | 0.60±0.15 | 0.60±0.15 |
| L1 | Terminal length | 1.0 | 1.00±0.20 |





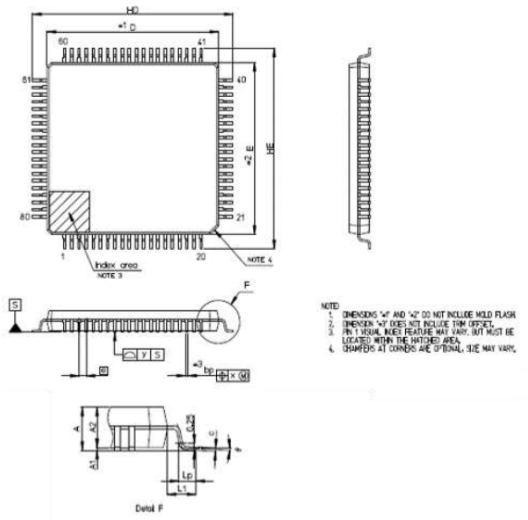
## Difference of Appearance_14mm×14mm 100pin

※Character is reference example

| | Package surface | Package back | Lead bending shape |
|---|---|---|---|
| New |  |  |  |
| Current |  |  |  |

**Appendix 2: Change Details (cont.)**

## Difference of Outline Dimension_12mm×12mm 80pin

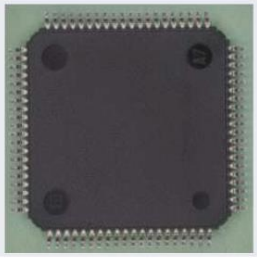
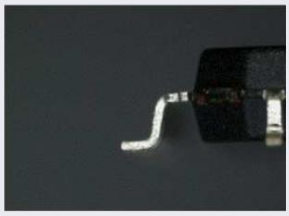


| Symbol | Terminology | New | Current |
|---|---|---|---|
| D | Package length | 12.0±0.1 | 12.00±0.20 |
| E | Package width | 12.0±0.1 | 12.00±0.20 |
| A2 | Package height | 1.4 | 1.40±0.05 |
| HD | Overall length | 14.0±0.2 | 14.00±0.20 |
| HE | Overall width | 14.0±0.2 | 14.00±0.20 |
| A | Seated height | 1.70max | 1.60max |
| A1 | 1st standoff height | 0.05 to 0.15 | 0.10±0.05 |
| bp | Terminal width | 0.20 +0.07/-0.05 | 0.22±0.05 |
| c | Terminal thickness | 0.09 to 0.20 | 0.145 +0.055/-0.045 |
| θ | Angle of terminal flat portions | 3.5° +4.5°/-3.5° | 3° +5°/-3° |
| e | Terminal pitch | 0.5 | 0.50 |
| x | Tolerance value of terminal center position | 0.08max | 0.08max |
| y | Coplanarity | 0.08max | 0.08max |
| Lp | Length of soldered part | 0.60±0.15 | 0.60±0.15 |
| L1 | Terminal length | 1.0 | 1.00±0.20 |



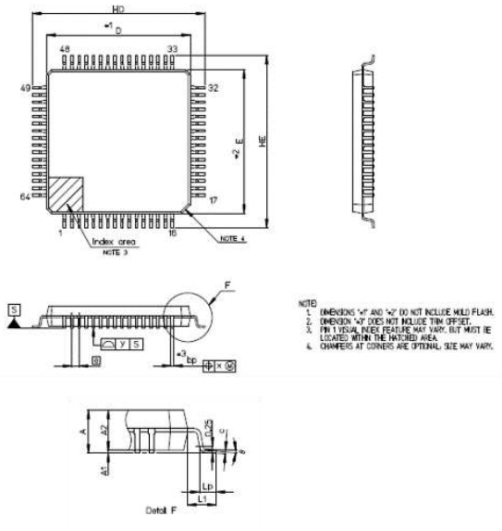

## Difference of Appearance_12mm×12mm 80pin

※Character is reference example

| | Package surface | Package back | Lead bending shape |
|---|---|---|---|
| New |  |  |  |
| Current |  |  |  |

**Appendix 2: Change Details (cont.)**

## Difference of Outline Dimension_10mm×10mm 64pin

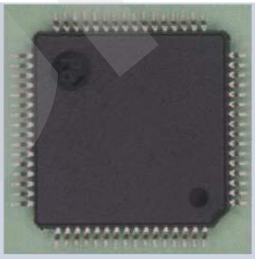
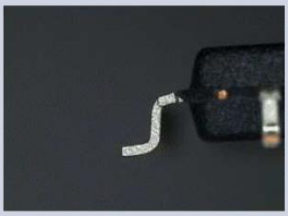
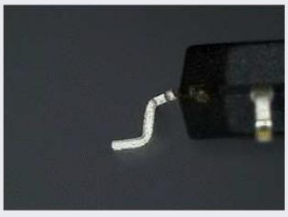


| Symbol | Terminology | New | Current |
|---|---|---|---|
| D | Package length | 10.0±0.1 | 10.00±0.20 |
| E | Package width | 10.0±0.1 | 10.00±0.20 |
| A2 | Package height | 1.4 | 1.40±0.05 |
| HD | Overall length | 12.0±0.2 | 12.00±0.20 |
| HE | Overall width | 12.0±0.2 | 12.00±0.20 |
| A | Seated height | 1.70max | 1.60max |
| A1 | 1st standoff height | 0.05 to 0.15 | 0.10±0.05 |
| bp | Terminal width | 0.20 +0.07/-0.05 | 0.22±0.05 |
| c | Terminal thickness | 0.09 to 0.20 | 0.145 +0.055/-0.045 |
| θ | Angle of terminal flat portions | 3.5° +4.5°/-3.5° | 3° +5°/-3° |
| e | Terminal pitch | 0.5 | 0.50 |
| x | Tolerance value of terminal center position | 0.08max | 0.08max |
| y | Coplanarity | 0.08max | 0.08max |
| Lp | Length of soldered part | 0.60±0.15 | 0.60±0.15 |
| L1 | Terminal length | 1.0 | 1.00±0.20 |



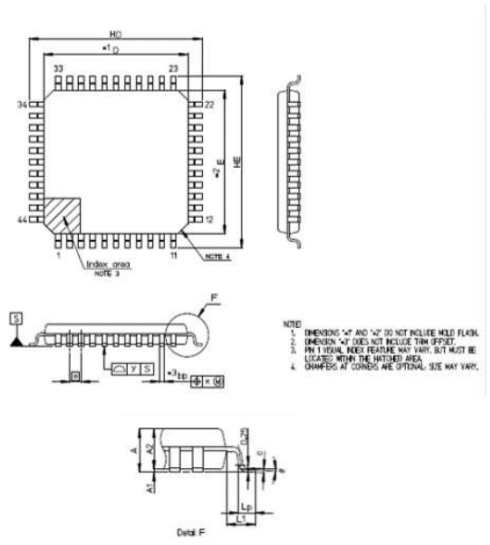

## Difference of Appearance_10mm×10mm 64pin

※Character is reference example

| | Package surface | Package back | Lead bending shape |
|---|---|---|---|
| New |  |  |  |
| Current |  |  |  |

**Appendix 2: Change Details (cont.)**

## Difference of Outline Dimension_10mm×10mm 44pin



| Symbol | Terminology | New | Current |
|---|---|---|---|
| D | Package length | 10.0±0.2 | 10.00±0.20 |
| E | Package width | 10.0±0.2 | 10.00±0.20 |
| A2 | Package height | 1.4 | 1.40±0.05 |
| HD | Overall length | 12.0±0.2 | 12.00±0.20 |
| HE | Overall width | 12.0±0.2 | 12.00±0.20 |
| A | Seated height | 1.70max | 1.60max |
| A1 | 1st standoff height | 0.05 to 0.15 | 0.10±0.05 |
| bp | Terminal width | 0.37 +0.08/-0.15 | 0.37 +0.08/-0.07 |
| c | Terminal thickness | 0.09 to 0.20 | 0.145 +0.055/-0.045 |
| θ | Angle of terminal flat portions | 3.5° +4.5°/-3.5° | 3° +5°/-3° |
| e | Terminal pitch | 0.8 | 0.80 |
| x | Tolerance value of terminal center position | 0.20max | 0.20max |
| y | Coplanarity | 0.10max | 0.10max |
| Lp | Length of soldered part | 0.60±0.15 | 0.60±0.15 |
| L1 | Terminal length | 1.0 | 1.00±0.20 |





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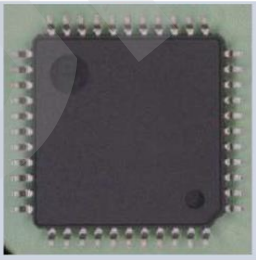
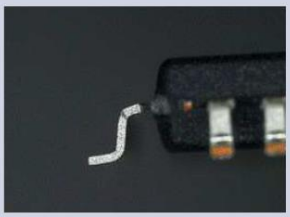
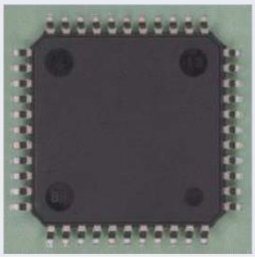
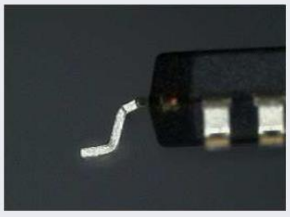
## Difference of Appearance_10mm×10mm 44pin

※Character is reference example

| | Package surface | Package back | Lead bending shape |
|---|---|---|---|
| New |  |  |  |
| Current |  |  |  |





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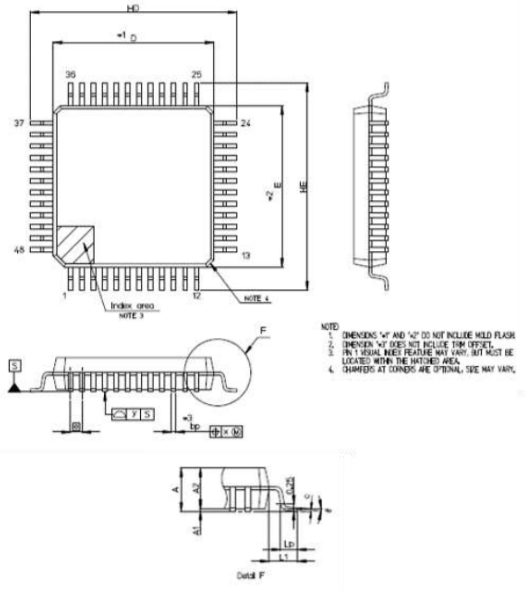
**Appendix 2: Change Details (cont.)**

## Difference of Outline Dimension_7mm×7mm 48pin

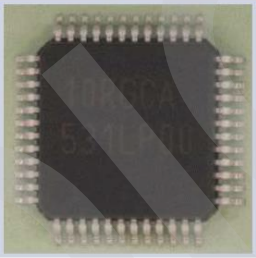
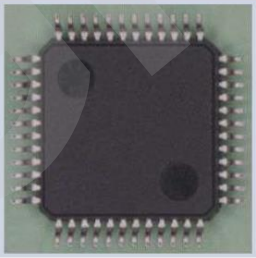
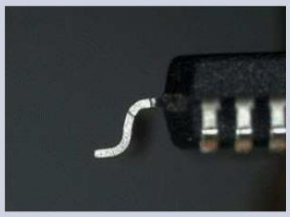
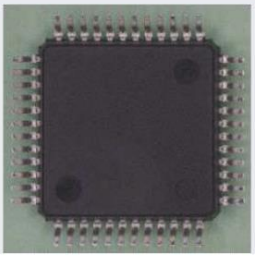
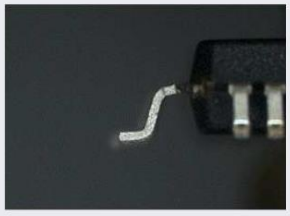


| Symbol | Terminology | New | Current |
|---|---|---|---|
| D | Package length | 7.0±0.1 | 7.00±0.20 |
| E | Package width | 7.0±0.1 | 7.00±0.20 |
| A2 | Package height | 1.4 | 1.40±0.05 |
| HD | Overall length | 9.0±0.2 | 9.00±0.20 |
| HE | Overall width | 9.0±0.2 | 9.00±0.20 |
| A | Seated height | 1.70max | 1.60max |
| A1 | 1st standoff height | 0.05 to 0.15 | 0.10±0.05 |
| bp | Terminal width | 0.20 +0.07/-0.03 | 0.22±0.05 |
| c | Terminal thickness | 0.09 to 0.20 | 0.145 +0.055/-0.045 |
| θ | Angle of terminal flat portions | 3.5° +4.5°/-3.5° | 3° +5°/-3° |
| e | Terminal pitch | 0.5 | 0.50 |
| x | Tolerance value of terminal center position | 0.08max | 0.08max |
| y | Coplanarity | 0.08max | 0.08max |
| Lp | Length of soldered part | 0.60±0.15 | 0.60±0.15 |
| L1 | Terminal length | 1.0 | 1.00±0.20 |




## Difference of Appearance_7mm×7mm 48pin

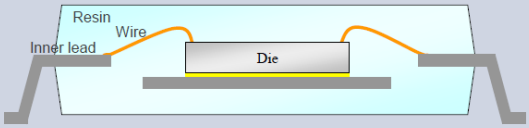
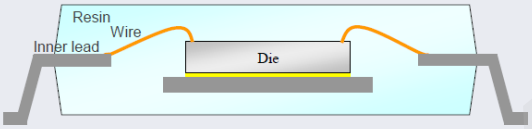
※Character is reference example

| | Package surface | Package back | Lead bending shape |
|---|---|---|---|
| New |  |  |  |
| Current |  |  |  |

**Appendix 2: Change Details (cont.)**

## PKG structure image

※ PKG cross section and die pad shape are reference examples

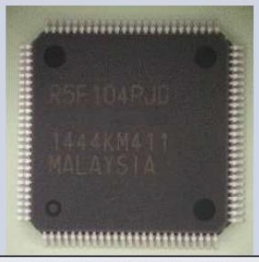
| Assembly Line | PKG cross section | Die pad shape |
|---|---|---|
| New |   |  7mm×7mm～14mm×14mm |
| Current |   |  7mm×7mm～14mm×14mm |

※ There is no impact on the reliability by die pad shape



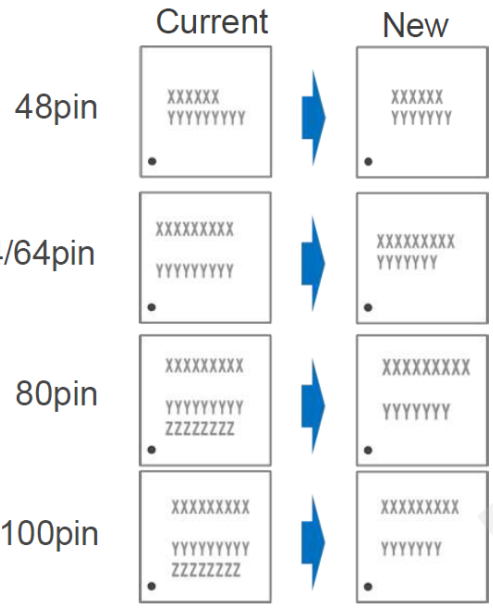

## Difference of Marking Visibility

※Character is reference example

| Assembly Line | New | Current |
|---|---|---|
| Whole Photo |   |   |
| Detail Photo |   |   |

**Appendix 2: Change Details (cont.)**

## Difference of marking




X : Part number : No change (6-digit)
Y : Lot number : Change (9 → 7-digit)

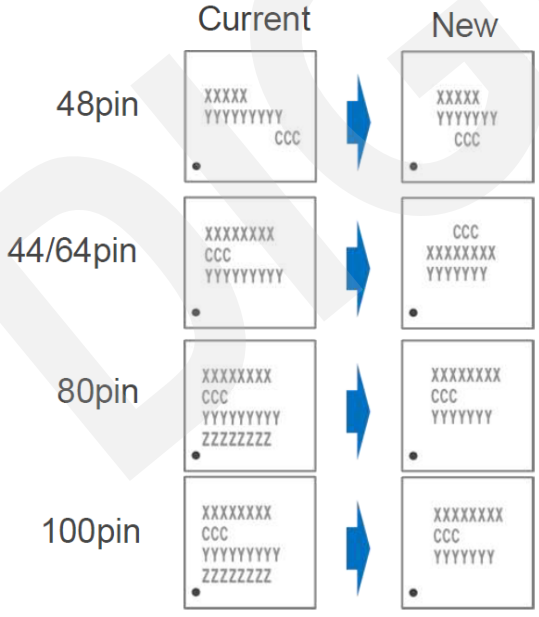
X : Part number : No change (9-digit)
Y : Lot number : Change (9 → 7-digit)

X : Part number : No change (9-digit)
Y : Lot number : Change (9 → 7-digit)
Z : Country of origin : Change (8-digit → Non)

X : Part number : No change (9-digit)
Y : Lot number : Change (9 → 7-digit)
Z : Country of origin : Change (8-digit → Non)




## Difference of marking




X : Part number : No change (5-digit)
Y : Lot number : Change (9 → 7-digit)
C : ROM code : No change (3-digit)

X : Part number : Change (Line change) Digit isn't change
C : ROM code : Change (Line change) Digit isn't change
Y : Lot number : Change (9 → 7-digit)

X : Part number : No change (8-digit)
C : ROM code : No change (3-digit)
Y : Lot number : Change (9 → 7-digit)
Z : Country of origin : Change (8-digit → Non)

X : Part number : No change (8-digit)
C : ROM code : No change (3-digit)
Y : Lot number : Change (9 → 7-digit)
Z : Country of origin : Change (8-digit → Non)

**Appendix 2: Change Details (cont.)**

## PACKING SPECIFICATION (Embossed tape)

Storage number:
Only 10mm x 10mm 64pin LQFP embossed tape will be changed. Other packages are unchanged.

| | RSKL | RSB |
|---|---|---|
| Ordering Part Number | R5F1*RL**FB#X0 | R5F1*RL**FB#50 |
| Embossed tape code | E2416Q10RA | ← |
| Storage number | 1000 pcs/reel | 1500 pcs/reel |

Change of desiccant:
Desiccant of embossed tape packing is different with RSKL and RSB/KYEC.
However, there is no change in the storage term.

| | RSKL | RSB/KYEC |
|---|---|---|
| Desiccant |  |  |




## 4M changing points

(Addition of assembly and sorting factory , Change of material)
(Wire material change; Au->Cu)

| Item | Check Result | judgement |
|---|---|---|
| **Machine** | Changing at assembly and sorting. The machines are equivalent to present machines.<br>Copper wire products are produced by same wire-bonding machine applied gold wire. To prevent copper wire oxidization, inert gas is used to wire-bonding process.<br>There are production of similar copper wire products and we have already checked the additional products have no risk on the production. | **No risk** |
| **Method** | Bonding method (thermosonic bonding) and process flow for the Cu wiring are same as the Au wiring. | **No risk** |
| **Man** | Using operator certification system. Only certificated operator can work for the production. | **No risk** |
| **Material** | Using only certificated copper wire. And furthermore certificated materials for the Cu wiring products are applied.<br>The products has been certificated by reliability test same as gold wire products and have no risk. | **No risk** |

**Appendix 2: Change Details (cont.)**

## 4M changing points

(Addition of assembly and sorting factory , Change of material)
(No wire material change; Cu)

| Item | Check Result | judgement |
|---|---|---|
| **Machine** | Changing at assembly and sorting. The machines are equivalent to present machines.<br>Copper wire products are produced by same wire-bonding machine applied gold wire. To prevent copper wire oxidization, inert gas is used to wire-bonding process.<br>There are production of similar copper wire products and we have already checked the additional products have no risk on the production. | **No risk** |
| **Method** | The same as current products. | **No risk** |
| **Man** | Using operator certification system. Only certificated operator can work for the production. | **No risk** |
| **Material** | Using only certificated copper wire. And furthermore certificated materials for the Cu wiring products are applied.<br>The products has been certificated by reliability test same as gold wire products and have no risk. | **No risk** |

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