

Product Change Notice (PCN)

Subject: Add Back-End factories and materials for RX LFQFP package products

Publication Date: 8/4/2023

Effective Date: 12/18/2023

Revision Description:

Initial release.

Description of Change:

1)Add Back-End factories

1.1 Add the assembly factory

Current: Renesas Semiconductor (Beijing) Co., Ltd (RSB)

Addition: Greatek Electronics Inc., (Greatek)

1.2 Add the final test factory

Current: Renesas Semiconductor (Beijing) Co., Ltd (RSB)

Addition: King Yuan Electronics Co., Ltd. (KYTEC)

2)Add materials

When comparing with RSB products, there are some changes as described below because of using the standard material and manufacturing equipment which are currently using in the Greatek factory.

2.1 Material:

Lead frame, die mount, mold resin

RX651 group's chip thickness has been changed to meet the Greatek standard mass production specification.

*These changes are to meet the Greatek standard mass production specification.

We confirmed that there is no impact on reliability and mass production results.

2.2 Package outline and marking on package:

Some differences for external dimensions. *There is no change in footprint for Greatek products.

Marking font.

2.3 Packing material:

Tray, Desiccant and bundling band color (Black)

*These packing material changes has been conducted as the same as other RX products which have already launched mass production at the Greatek and KYEC factories.

3) Storage condition after opening

The storage conditions after opening the moisture proof bag of the Greatek product comply with JEDEC standards.

Current : 30° C /70%RH/within 168hr

Change : 30° C /60%RH/within 168hr(JEDEC compliant)

*This change has been applied for some products, please refer to the Part number list.

Affected Product List :

RX LFQFP package products. For the Part number details, please refer to page 3.

Reason for Change:

For Stable supply, we add Back-End factories.

Impact on Fit, Form, Function, Quality & Reliability:

Fit, Form: There are some changes in dimensions, so please check them.

Function, Quality and reliability: There are no impact.

Product Identification:

Possible to confirm the production history data from the packing label or trace code.

Qualification Status: Completed. Please contact Renesas sales, distributor, or agency.

Sample Availability Date: 12/18/2023

Device Material Declaration: Contact Renesas sales, distributor, or agency.

- Note:
1. Acknowledgement must be received by Renesas within 30 days or Renesas will consider the change as approved.
 2. If timely acknowledgement is provided by Customer, then Customer shall have 90 days from the date of receipt of this PCN to make any objections to this PCN. If Customer fails to make objections to this PCN within 90 days of the receipt of the PCN then Renesas will consider the PCN changes as approved.
 3. If customer cannot accept the PCN then customer must provide Renesas with a last time buy demand and purchase order.

For additional information regarding this notice, please contact your Renesas sales representative.

Part number list

Group	Affected Part number list	Package	Storage condition after opening
RX13T	R5F513T3ADFL#10	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX13T	R5F513T3ADFL#50	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX13T	R5F513T5ADFL#10	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX13T	R5F513T5ADFL#50	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX13T	R5F513T3AGFL#10	7mm x 7mm 48pin	Affected
RX13T	R5F513T3AGFL#50	7mm x 7mm 48pin	Affected
RX13T	R5F513T5AGFL#10	7mm x 7mm 48pin	Affected
RX13T	R5F513T5AGFL#50	7mm x 7mm 48pin	Affected
RX23T	R5F523T3ADFL#10	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX23T	R5F523T3ADFL#50	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX23T	R5F523T5ADFL#10	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX23T	R5F523T5ADFL#50	7mm x 7mm 48pin	Not affected (JEDEC compliant)
RX651	R5F5651CDDFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651CHDFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651EDDFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651EHDFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651CDGFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651CHGFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651EDGFP#10	14mm x 14mm 100pin	Affected
RX651	R5F5651EHGFP#10	14mm x 14mm 100pin	Affected

ADD BACK-END FACTORIES AND MATERIALS FOR RX LFQFP PRODUCTS DIFFERENCE DOCUMENT

Greatek Electronics Inc.,
King Yuan Electronics Co., Ltd

AUGUST 4, 2023

IOT PLATFORM BUSINESS DIVISION
EMBEDDED PROCESSING, DIGITAL POWER & SIGNAL
CHAIN SOLUTIONS GROUP
RENESAS ELECTRONICS CORPORATION

IMO-AB-23-0064-1

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
 2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
 3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
 4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
 5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
 6. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
 - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
 - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
 7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
 8. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
 9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
 10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
 11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
 12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
 13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
 14. 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. 5.0-1 October 2020)

Content

- Overview
 - 1 . Difference of specification's outline
 - 2 . Difference of specification's detail
 - 3 . 4M changing points

Overview

Thank you for continuously using our products.

For RX microcomputer products, we continuously add manufacturing factories and change assembly materials for stable supply.

For LFQFP package products, manufacturing factories and assembly materials also are added this time.

Therefore, we would like to ask for your kind understanding and cooperation in order to make the procedure smoothly completed.

Yours sincerely,

Change points are reported in the following pages.

1. DIFFERENCE OF SPECIFICATION'S OUTLINE (1)

Item		Current	Addition	Note
Assembly factory		Renesas Semiconductor (Beijing) Co., Ltd	Greatek Electronics Inc.	—
Sorting factory			King Yuan Electronics Co., Ltd	
Parts	Lead frame	—	Change to standard material used in new factory. The structure not changed.	Refer to page 7
	Die mount	—	Change to standard material used in new factory. The structure not changed.	
	Mold resin	—	Change to standard material used in new factory. The structure not changed.	
	Chip thickness (only RX651 group)	280um	305um(12mil)	—
Package	Outline	—	There are changes in some of dimensions	Refer to page 8 to 13
Marking	Font	—	Font changed	Refer to page 14 to 15

※ These changes are to meet the Greatek standard mass production specification.
There is no impact on reliability and specification.

1. DIFFERENCE OF SPECIFICATION'S OUTLINE (2)

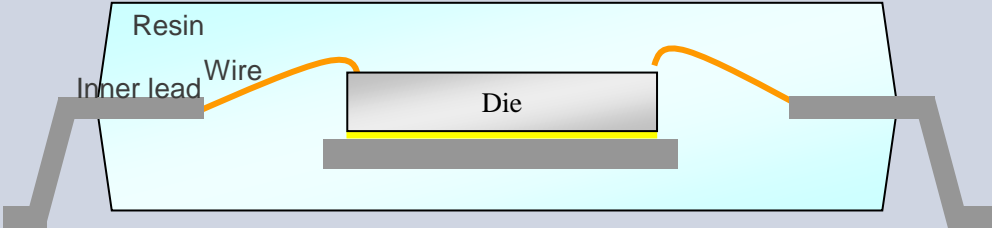

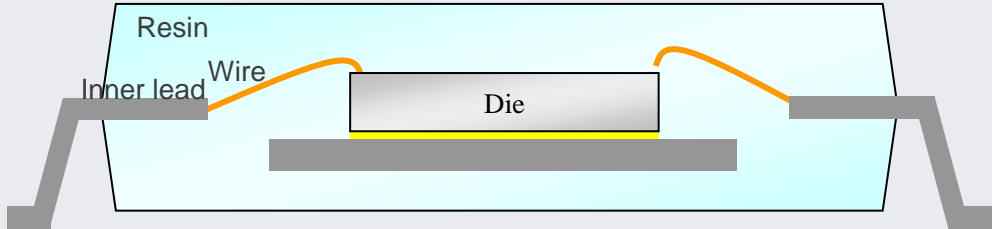
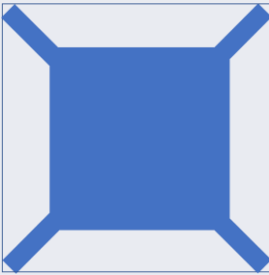
Item		Current	Addition	Note
Packing	Bundling band color	—	Add black	—
	Tray	—	Add types of tray	—
	Outline	—	No difference	—
	Material	—	No difference	—
	Heatproof Temperature	—	No difference	—
	End tab	—	There is difference	Refer to page 16 to 17
	Desiccant	—	Add a type of desiccant	Refer to page 18
Storage condition	After opening	Within 30°C/ 70%RH/ 168h	Within 30°C/ 60%RH/ 168h	Some part number is JEDEC compliant (Not affected to this change)

※ These changes are to meet the Greatek standard mass production specification.
Please check affected part number of changing the storage condition after opening at PCN# : [IMO-AB-23-0062-1].

2. DIFFERENCE OF SPECIFICATION'S DETAIL (1)

PACKAGE STRUCTURE(IMAGE)

※PKG cross section and die pad shape are reference examples

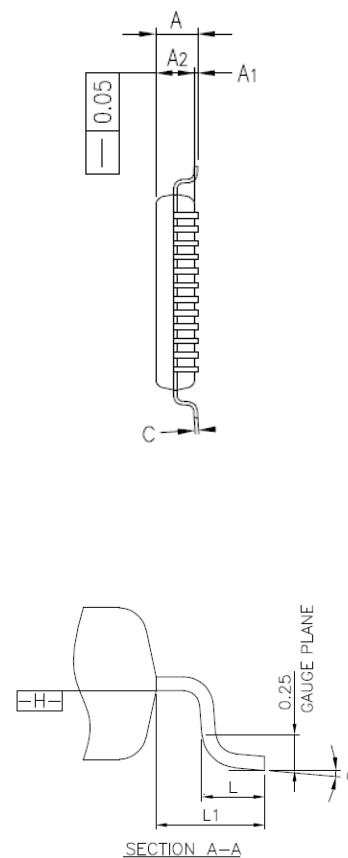
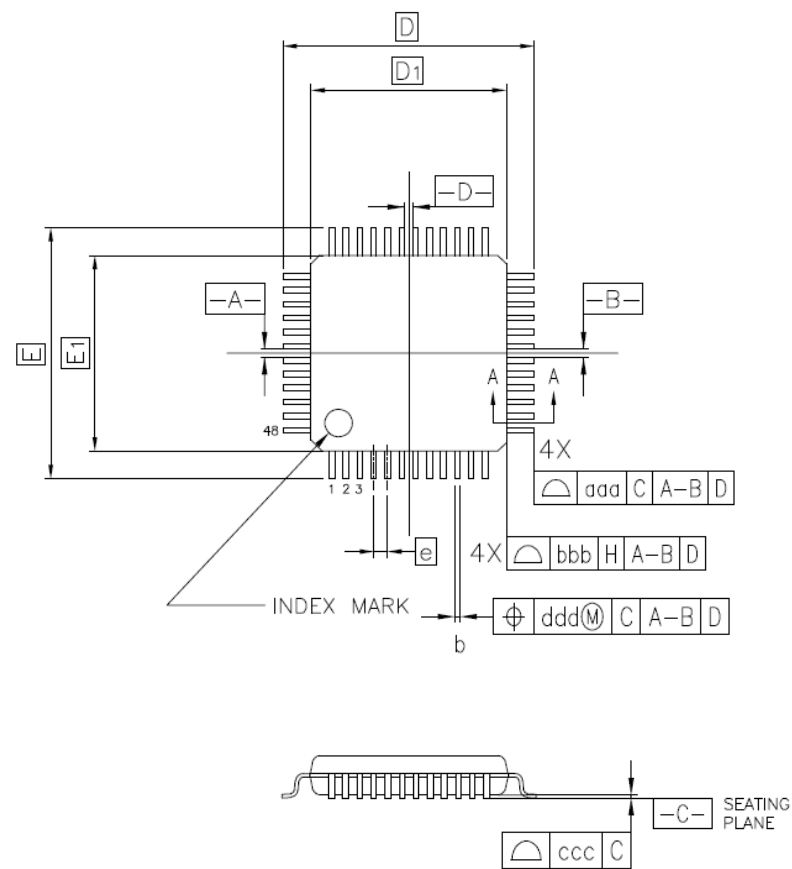
Assembly Line	PKG cross section	Die pad shape
Current		
Addition		

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

2. DIFFERENCE OF SPECIFICATION'S DETAIL (2)

7x7mm 48pin LQFP package drawing (Addition)

RENESAS Code : PLQP0048KL-A

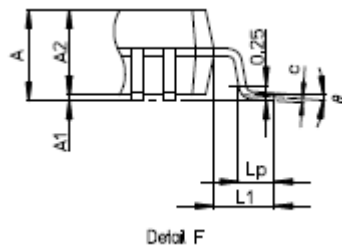
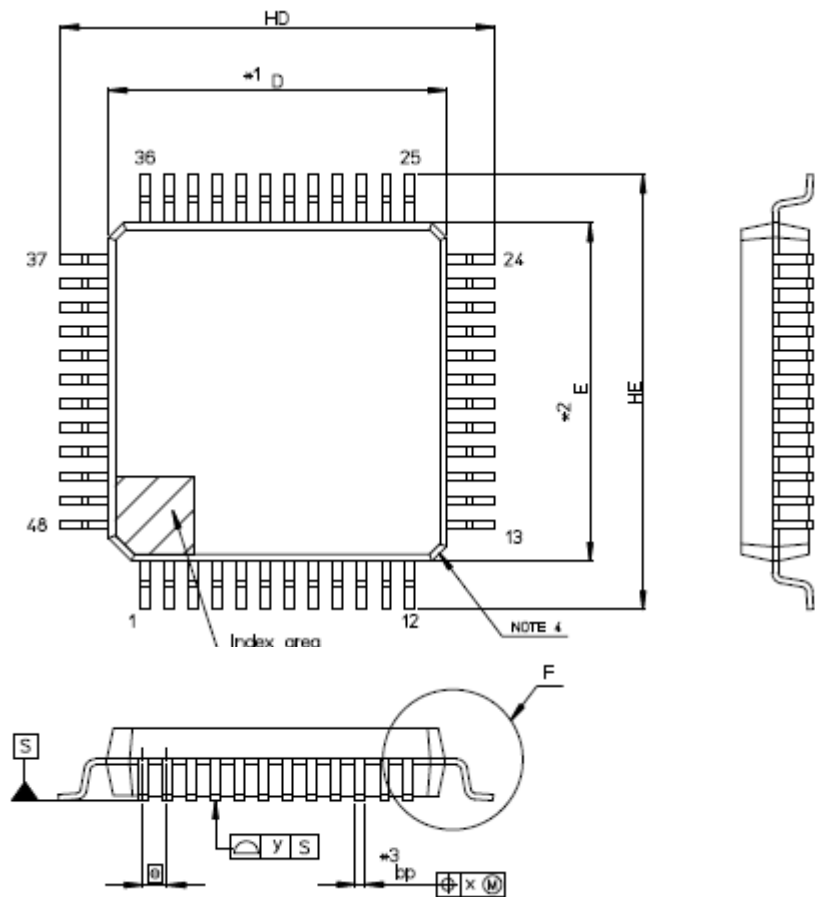


Reference Symbol	Dimension in Millimeters		
	Min.	Nom.	Max.
A	—	—	1.60
A ₁	0.05	—	0.15
A ₂	1.35	1.40	1.45
D	—	9.00	—
D1	—	7.00	—
E	—	9.00	—
E ₁	—	7.00	—
N	—	48	—
e	—	0.50	—
b	0.17	0.22	0.27
c	0.09	—	0.20
θ	0°	3.5°	7°
L	0.45	0.60	0.75
L ₁	—	1.00	—
aaa	—	—	0.20
bbb	—	—	0.20
ccc	—	—	0.08
ddd	—	—	0.08

2. DIFFERENCE OF SPECIFICATION'S DETAIL (3)

7x7mm 48pin LQFP package drawing (Current)

RENESAS Code : PLQP0048KB-B



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	6.9	7.0	7.1
E	6.9	7.0	7.1
A2	—	1.4	—
HD	8.8	9.0	9.2
HE	8.8	9.0	9.2
A	—	—	1.7
A1	0.05	—	0.15
bp	0.17	0.20	0.27
c	0.09	—	0.20
e	0°	3.5°	8°
e	—	0.5	—
x	—	—	0.08
y	—	—	0.08
Lp	0.45	0.6	0.75
L1	—	1.0	—

2. DIFFERENCE OF SPECIFICATION'S DETAIL (4)

Dimension comparison: 7x7mm 48pin LQFP package

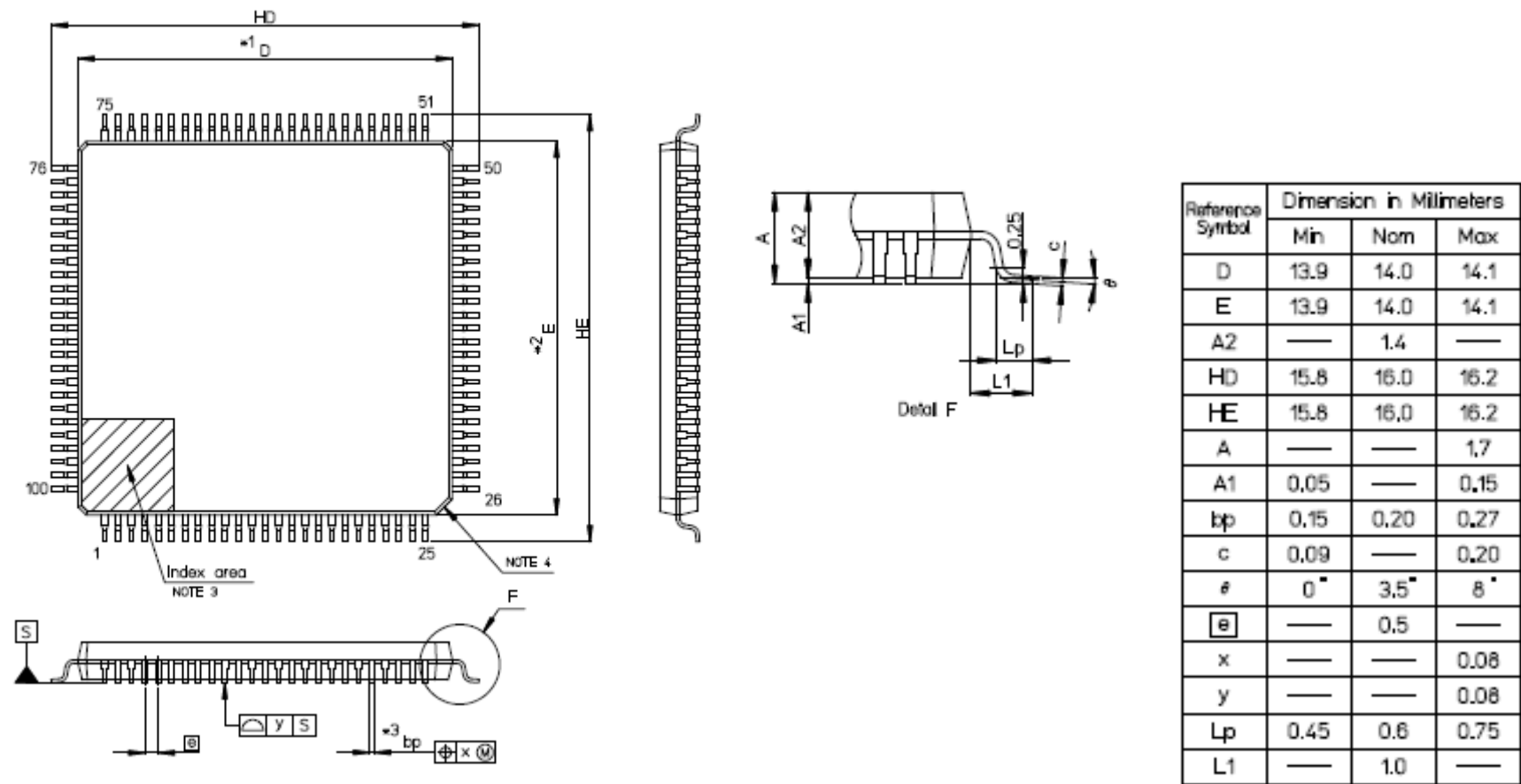
Greatek symbol is the same as the JEDEC standard.

Addition Greatek Symbol	7x7mm 48pin LQFP PLQP0048KL-A			Current RSB Symbol	7x7mm 48pin LQFP PLQP0048KB-B		
	Dimension in Millimeters				Dimension in Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	-	-	1.60	A	-	-	1.70
A1	0.05	-	0.15	A1	0.05	-	0.15
A2	1.35	1.40	1.45	A2	-	1.40	-
D	-	9.00	-	HD	8.80	9.00	9.20
D1	-	7.00	-	D	6.90	7.00	7.10
E	-	9.00	-	HE	8.80	9.00	9.20
E1	-	7.00	-	E	6.90	7.00	7.10
N	-	48	-	-	-	-	-
e	-	0.50	-	e	-	0.50	-
b	0.17	0.22	0.27	bp	0.17	0.20	0.27
c	0.09	-	0.20	c	0.09	-	0.20
θ	0°	3.5°	7°	θ	0°	3.5°	8°
L	0.45	0.60	0.75	Lp	0.45	0.60	0.75
L1	-	1.00	-	L1	-	1.00	-
aaa	-	-	0.20	-	-	-	-
bbb	-	-	0.20	-	-	-	-
ccc	-	-	0.08	y	-	-	0.08
ddd	-	-	0.08	x	-	-	0.08

2. DIFFERENCE OF SPECIFICATION'S DETAIL (6)

14x14mm 100pin LQFP package drawing (Current)

RENESAS Code : PLQP0100KB-B



2. DIFFERENCE OF SPECIFICATION'S DETAIL (7)

Dimension comparison: 14x14mm 100pin LQFP package

Greatek symbol is the same as the JEDEC standard.

Addition Greatek Symbol	14x14mm 100pin LQFP PLQP0100KP-A			Current RSB Symbol	14x14mm 100pin LQFP PLQP0100KB-B		
	Dimension in Millimeters				Dimension in Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	-	-	1.60	A	-	-	1.70
A1	0.05	-	0.15	A1	0.05	-	0.15
A2	1.35	1.40	1.45	A2	-	1.40	-
D	-	16.00	-	HD	15.80	16.00	16.20
D1	-	14.00	-	D	13.90	14.00	14.10
E	-	16.00	-	HE	15.80	16.00	16.20
E1	-	14.00	-	E	13.90	14.00	14.10
N	-	100	-	-	-	-	-
e	-	0.50	-	e	-	0.50	-
b	0.17	0.22	0.27	bp	0.15	0.20	0.27
c	0.09	-	0.20	c	0.09	-	0.20
θ	0°	3.5°	7°	θ	0°	3.5°	8°
L	0.45	0.60	0.75	Lp	0.45	0.60	0.75
L1	-	1.00	-	L1	-	1.000	-
aaa	-	-	0.20	-	-	-	-
bbb	-	-	0.20	-	-	-	-
ccc	-	-	0.08	y	-	-	0.08
ddd	-	-	0.08	x	-	-	0.08

2. DIFFERENCE OF SPECIFICATION'S DETAIL (8)

Appearance: 14x14mm 100pin LQFP package

※Marked character is reference example





	Package surface	Package back	Worked Leads shape
Current			
Addition			

* There is no WS notation in the actual product

2. DIFFERENCE OF SPECIFICATION'S DETAIL (9)

Marking Font

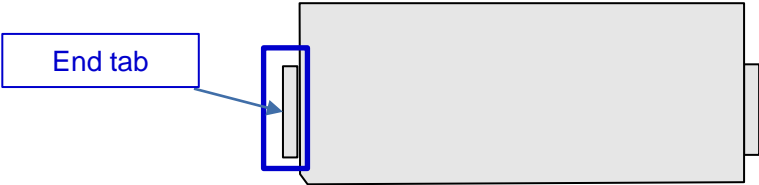
※Marked character is reference example

Assembly Line	Current	Addition
Whole Photo		
Detail Photo		

* There is no WS notation in the actual product

2. DIFFERENCE OF SPECIFICATION'S DETAIL (10)

Tray

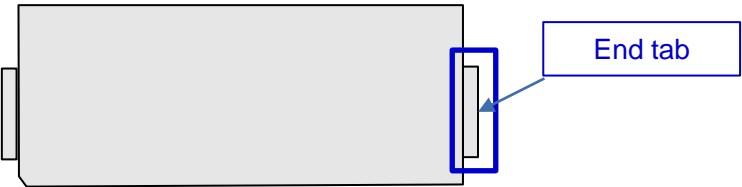


The notation of the end tab is different.

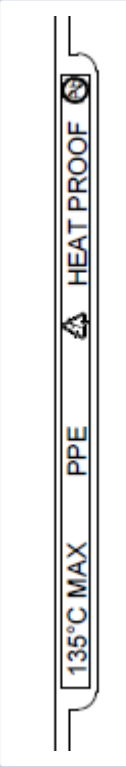
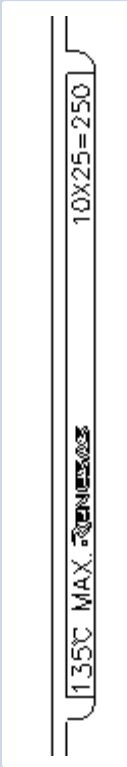
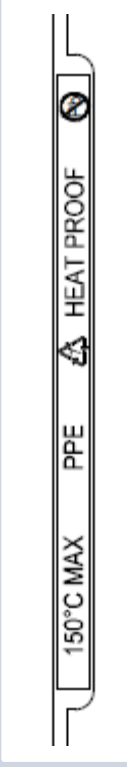
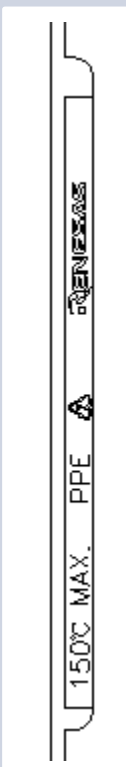
7x7mm		14x14mm	
Addition	Current	Addition	Current

2. DIFFERENCE OF SPECIFICATION'S DETAIL (11)

Tray



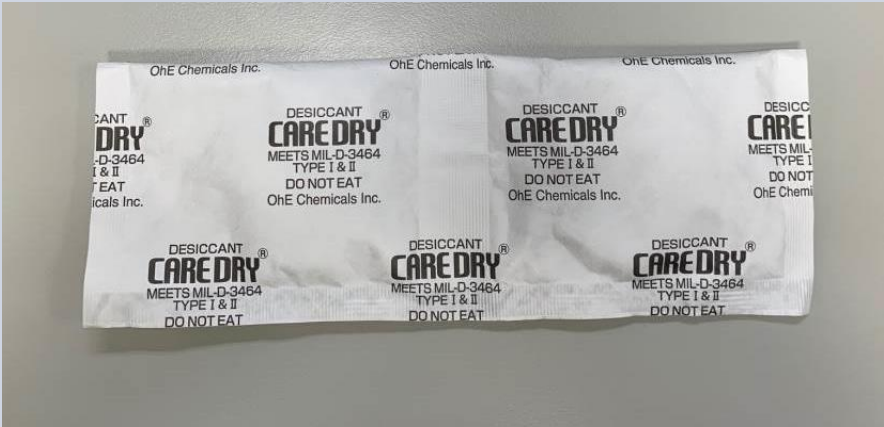

The notation of the end tab is different.

7x7mm		14x14mm	
			
Addition	Current	Addition	Current

2. DIFFERENCE OF SPECIFICATION'S DETAIL (12)

Desiccant

- Add a type of desiccant
There is no change in the storage conditions.

	Addition	Current
Desiccant		

3. 4M changing points (Add the assembly factory and materials)

Item	Check result	Judgement
Machine	Changing at assembly. The machines are equivalent to present machines. 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	Adopt operator certification system. Only certificated operator can work for the production.	No risk
Material	Only use certificated materials. The products has been certificated by reliability test same as present products and have no risk.	No risk

[Renesas.com](https://www.renesas.com)