PCN#: [EP2O-AC-24-0002]

Product Change Notice (PCN)

Subject: Addition of production site for RL78/L12, L13.

Publication Date: 2/9/2024
Effective Date: 10/1/2024
Revision Description: Initial release.

Description of Change:

Change 1. Affected Product: RL78/L12, L13, PKG：7mmx7mm 32pin LQFP, 7mmx7mm 48pin LFQFP, 10mmx10mm 44pin LQFP, 10mmx10mm 64pin LFQFP, 12mmx12mm 80pin LFQFP

1) Addition of Wafer process site: Renesas Semiconductor Manufacturing Co., Ltd. Naka Factory

Change 2. Affected Product: RL78/L13, PKG: 12mmx12mm 80pin LFQFP

1) Additional back-end factory: Renesas Semiconductor KL Sdn. Bhd. (KL)
2) Assembly material
   Use materials certified by additional factory.
3) Package outline
   There is no change in footprint for additional factory products.
4) Marking
   The number of characters in the lot number and the marking font are changed.
5) Storage conditions after opening the moisture proof packaging.
   KL products have the same conditions as Renesas Semiconductor (Beijing) Co., Ltd. (BJ) products.
   “30℃/70%RH/ within 168hr”

Affected Product List:

PKG：12mmx12mm 80pin LFQFP (Changes 1 and 2)

R5F10WMAAFB#10	R5F10WMCAFB#10	R5F10WMDAFB#10	R5F10WMEAFB#10
R5F10WMFAFB#10	R5F10WMGAFB#10	R5F10WMAAFB#50	R5F10WMCAFB#50
R5F10WMDAFB#50	R5F10WMEAFB#50	R5F10WMFAFB#50	R5F10WMGAFB#50
R5F10WMCAA01FB#30			

PKG：7mmx7mm 32pin LQFP, 7mmx7mm 48pin LFQFP, 10mmx10mm 44pin LQFP, 10mmx10mm 64pin LFQFP (Change 1 only)

R5F10RB8AFP#10	R5F10RBAAFP#10	R5F10RBCAFP#10	R5F10RB8AFP#50
R5F10RBAAFP#50	R5F10RBCAFP#50	R5F10RF8AFP#10	R5F10RFAAFP#10
R5F10RFCAFP#10	R5F10RF8AFP#50	R5F10RFAAFP#50	R5F10RFCAFP#50
R5F10RG8AFB#10	R5F10RGAAFB#10	R5F10RGCAFB#10	R5F10RG8AFB#50
R5F10RGAAFB#50	R5F10RGCAFB#50	R5F10RLAAFB#10	R5F10RLCAFB#10
R5F10RLAAFB#50	R5F10RLCAFB#50	R5F10WLAAFB#10	R5F10WLCAFB#10
R5F10WLDAFB#10	R5F10WLEAFB#10	R5F10WLFAFB#10	R5F10WLGAFB#10
R5F10WLAAFB#50	R5F10WLCAFB#50	R5F10WLDAFB#50	R5F10WLEAFB#50
R5F10WLFAFB#50	R5F10WLGAFB#50	R5F10RF8AA00FP#30	R5F10RFCAA01FP#30
R5F10RFCAA03FP#30	R5F10RFCAA05FP#10	R5F10RFCAA05FP#30	R5F10RFCAA08FP#10
R5F10RFCAA10FP#10	R5F10RFCAA10FP#30	R5F10RFCAA14FP#10	R5F10RFCAA14FP#30
R5F10RFCAA15FP#10	R5F10RFCAA15FP#30	R5F10RFCAA18FP#10	R5F10RFCAA18FP#30
R5F10RFCAA19FP#10	R5F10RFCAA19FP#30	R5F10RFCAA20FP#10	R5F10RFCAA20FP#30
R5F10RFCAA21FP#10	R5F10RFCAA21FP#30	R5F10RFCAA23FP#10	R5F10RFCAA23FP#30
R5F10RFCAA24FP#10	R5F10RFCAA24FP#30	R5F10RFCAA25FP#10	R5F10RFCAA25FP#30
R5F10RFCAA26FP#10	R5F10RFCAA26FP#30	R5F10RFCAA27FP#10	R5F10RFCAA27FP#30
R5F10RFCAA29FP#10	R5F10RFCAA29FP#30	R5F10RFCAA30FP#10	R5F10RFCAA30FP#30
R5F10RFCAA31FP#10	R5F10RFCAA31FP#30	R5F10RGAAA07FB#30	R5F10RGAAA08FB#10
R5F10RGAAA08FB#30	R5F10RGAAA09FB#50	R5F10RLAAA01FB#50	R5F10RLCAA00FB#10

R5F10RLCAA00FB#30	R5F10WLEAA03FB#30	R5F10WLEAA04FB#10	R5F10WLEAA04FB#30
R5F10WLEAA08FB#10			

Reason for Change:
Stable supply for RL78/L12, L13 products.

Impact on Fit, Form, Function, Quality & Reliability:
Impact on Fit : No Impact
Form : Please refer to "EP20-AB-24-0010_RL78_LFQFP_KL_Difference specification" for detail.
Function : No Impact
Quality : No Impact
Reliability : No Impact

Product Identification:
Our production history data can be queried by using the trace code of the product.

Qualification Status: Available from 8/1/2024.

Sample Availability Date: 8/1/2024 onward.
PCN sample is a representative ES sample.
the ES sample has the same functionality as the mass-produced product and its sample is the representative (ROM/RAM capacity, Fields of application, Wafer process and Back-end factory).

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.

Appendix

Change 1. Difference of specification

Addition of Wafer process site: Naka
Existing site: Renesas Semiconductor Manufacturing Co., Ltd. Kawashiri, Saijo Factory
Additional site: Renesas Semiconductor Manufacturing Co., Ltd. Naka Factory

Characteristic

Item \ Wafer process site	Additional site	Existing site
	Naka	Kawashiri, Saijo
AC Characteristic	No Change	
DC Characteristic	No Change	

Kawashiri, Saijo and Naka products all make the same inspection for electrical characteristic / functions of User's Manual or DELIVERY SPECIFICATIONS.
So, the electrical characteristics and functions are not changed.

4M changing points (Wafer process site addition)

Process transfer will be performed without change of the basic chip design (chip size, chip patterns).

Item	Check Result	Judgement
Machine	The machines are equivalent to current machines.	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	The same material is used.	No risk

Factory overview

Company Name: Renesas Semiconductor Manufacturing Co., Ltd.
Naka Factory: 751, Horiguchi, Hitachinaka-shi, Ibaraki, 312-8511, Japan
Major Operations: Front-end production of integrated circuits

Change 2. Difference of specification

Additional back-end factory: Renesas Semiconductor KL Sdn. Bhd. (KL)
Please refer to "EP20-AB-24-0010_RL78_LFQFP_KL_Difference specification" for detail.

DIFFERENCE OF SPECIFICATION
12x12mm 0.5mm pitch 80pin LFQFP

Assembly factory: KL Sorting factory: KL

EP2 OPERATIONS STRATEGY DEPARTMENT
EMBEDDED PROCESSING 2ND BUSINESS DIVISION
EMBEDDED PROCESSING PRODUCT GROUP
RENESAS ELECTRONICS CORPORATION.

Ver.1.0

EP2O-AB-24-0010

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(Rev. 5.0-1 October 2020)

DIFFERENCE OUTLINE

■ Target package

12x12mm 0.5mm pitch 80pin LFQFP

■ Difference points

1) Assembly factory

Existing factory: Renesas Semiconductor (Beijing) Co.,Ltd (BJ)

Existing factory: ADVANCED SEMICONDUCTOR ENGINEERING, INC. (ASEKH)

Existing factory: Greatek Electronics Inc.（Greatek）

Additional factory: Renesas Semiconductor KL Sdn. Bhd. (KL)

2) Sorting & Packing factory

Existing factory: Renesas Semiconductor (Beijing) Co.,Ltd (BJ)

Existing factory: King Yuan Electronics Co., Ltd (KYEC)

Additional factory: Renesas Semiconductor KL Sdn. Bhd. (KL)

DIFFERENCE OUTLINE

3) Assembly material

Use materials certified by additional factory.

4) Package outline

There is no change in footprint for additional factory products.

Please refer to the package outline drawing and dimension comparison for the external dimensions.

5) Marking

The number of characters in the lot number and the marking font are changed.

6) Storage conditions after opening the moisture proof packaging.

KL products have the same conditions as BJ products.

30°C/70%RH/ within 168hr

DIFFERENCE OUTLINE

7) Specification and characteristics of product:

No impact

8) Quality and reliability:

No impact

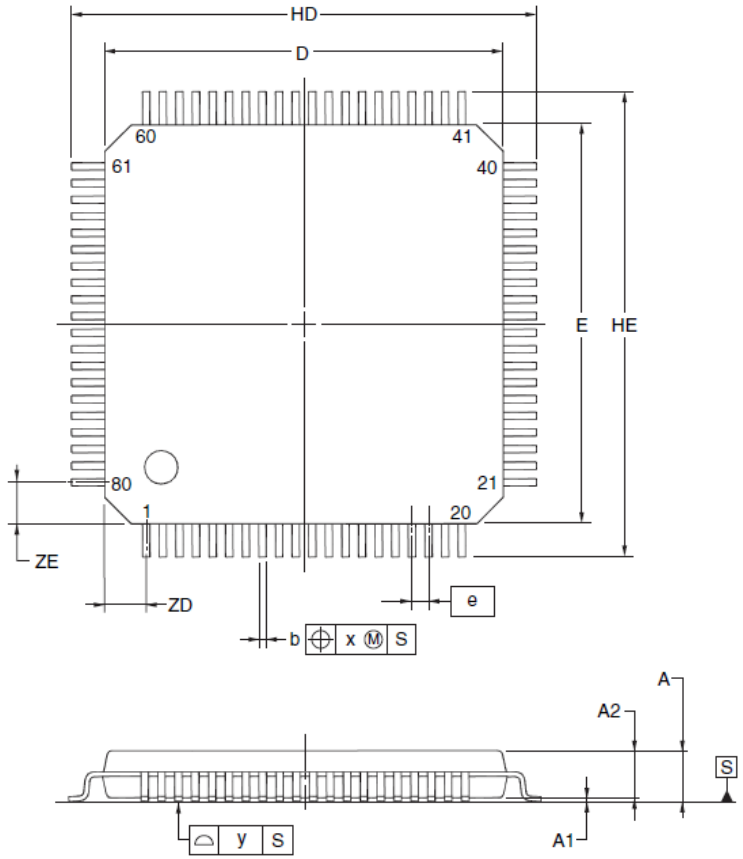
DIFFERENCE OF SPECIFICATION

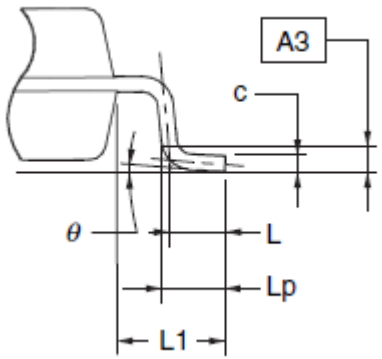
Item		Additional factory	Existing factory	Existing factory	Existing factory
Assembly factory		KL	BJ	Greatek	ASEKH
Sorting factory		KL	BJ	KYEC	BJ or KYEC
Package	Outline	There are differences (Refer to pages 7 to 10)			
Lead frame	Material	No change			
	Inner pattern	Refer to outline drawing (pages 11)			
Die mount	Material	Ag epoxy paste D *	Ag epoxy paste A *	Ag epoxy paste B *	Ag epoxy paste C *
Bonding wire	Material	No change: Cu (Pd coating)			
Resin	Material	Epoxy resin D * (halogen-free)	Epoxy resin A * (halogen-free)	Epoxy resin B * (halogen-free)	Epoxy resin C * (halogen-free)
Plating	Material	No change			
Marking		There are differences (Refer to pages 12 to 13)			
Packing	Tray/ Emboss tape	No change			
Storage conditions	after opening	30°C/70%RH/ within 168hr		30°C/60%RH/ within 168hr (JEDEC standard)	

* Factory certified materials.
There are differences in materials, but there is no change in reliability or characteristics.

12mm×12mm 0.5mm pitch 80pin LFQFP Package outline (KL)

RENESAS Code : PLQP0080KE-A



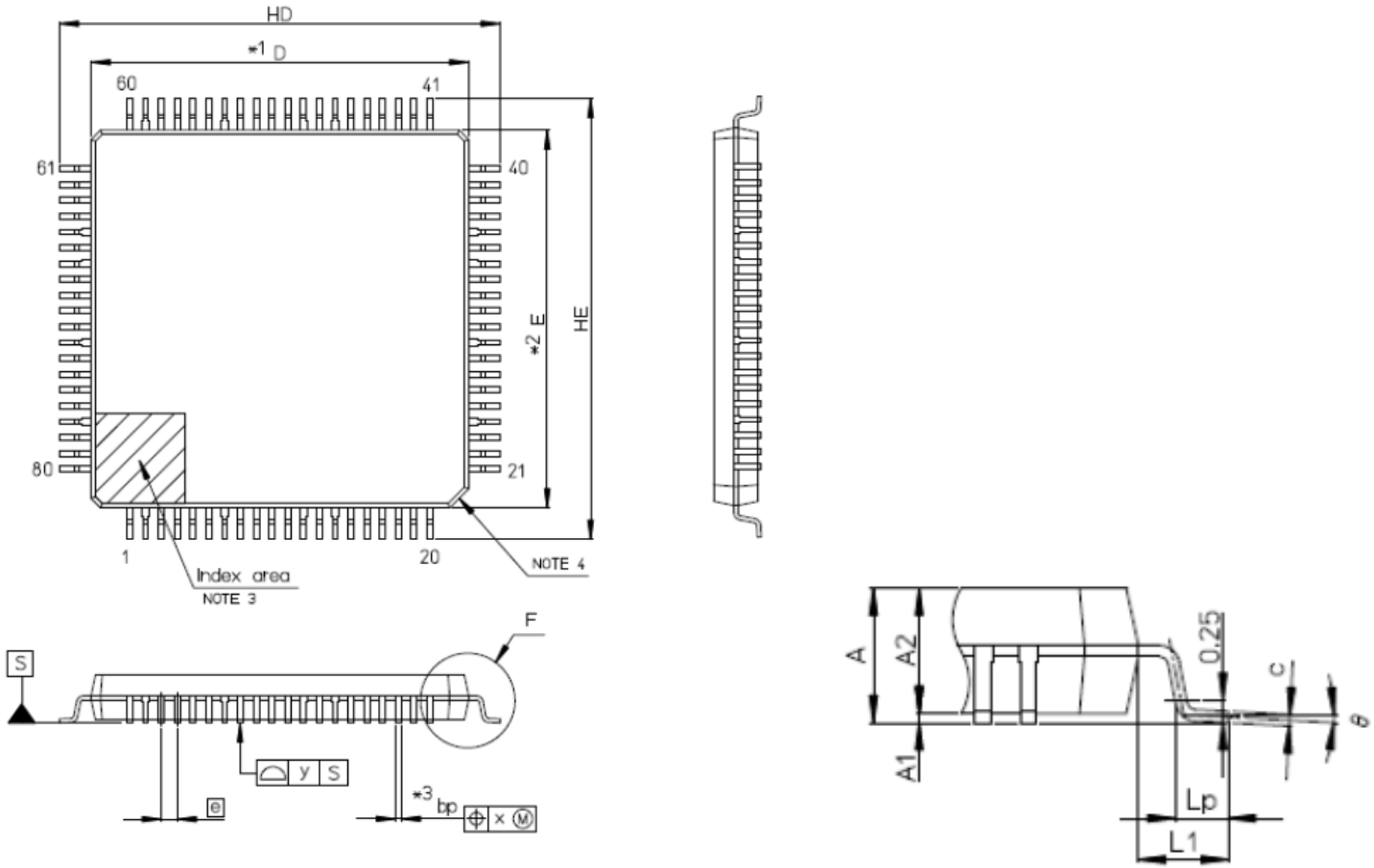


(UNIT:mm)

ITEM	DIMENSIONS
D	12.00±0.20
E	12.00±0.20
HD	14.00±0.20
HE	14.00±0.20
A	1.60 MAX.
A1	0.10±0.05
A2	1.40±0.05
A3	0.25
b	0.22±0.05
c	$0.145^{+0.055}_{-0.045}$
L	0.50
Lp	0.60±0.15
L1	1.00±0.20
θ	$3^{\circ}{}^{+5^{\circ}}_{-3^{\circ}}$
e	0.50
x	0.08
y	0.08
ZD	1.25
ZE	1.25

12mm×12mm 0.5mm pitch 80pin LFQFP Package outline (BJ/ASEKH)

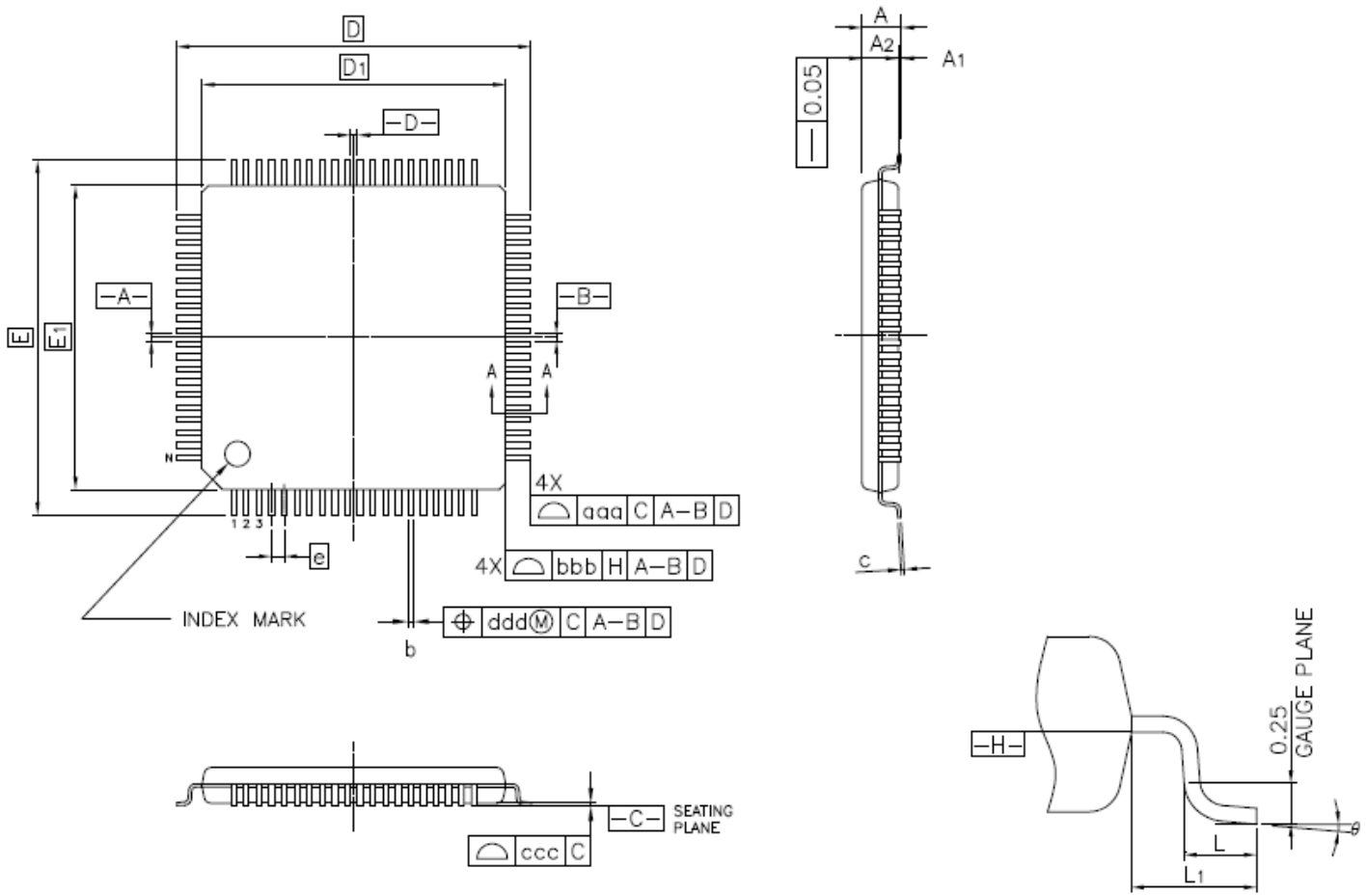
RENESAS Code : PLQP0080KB-B



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	11.9	12.0	12.1
E	11.9	12.0	12.1
A2	—	1.4	—
HD	13.8	14.0	14.2
HE	13.8	14.0	14.2
A	—	—	1.7
A1	0.05	—	0.15
bp	0.15	0.20	0.27
c	0.09	—	0.20
θ	0°	3.5°	8°
e	—	0.5	—
x	—	—	0.08
y	—	—	0.08
Lp	0.45	0.6	0.75
L1	—	1.0	—

12mm×12mm 0.5mm pitch 80pin LFQFP Package outline (Greatek)

RENESAS Code : PLQP0080KJ-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	–	14.00	–
D_1	–	12.00	–
E	–	14.00	–
E_1	–	12.00	–
N	–	80	–
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

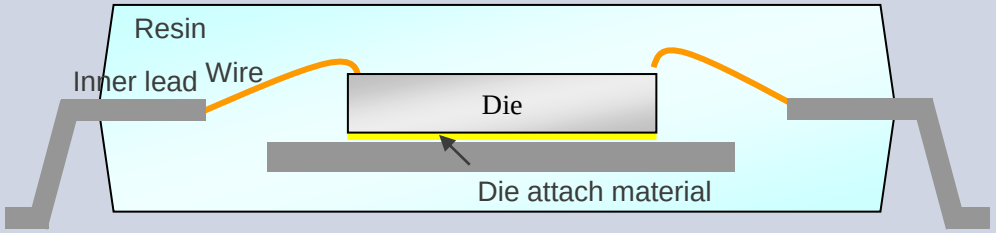
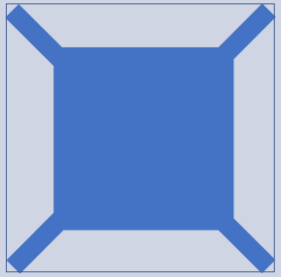
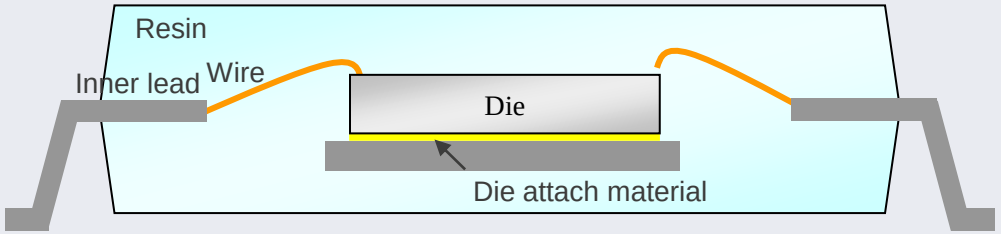
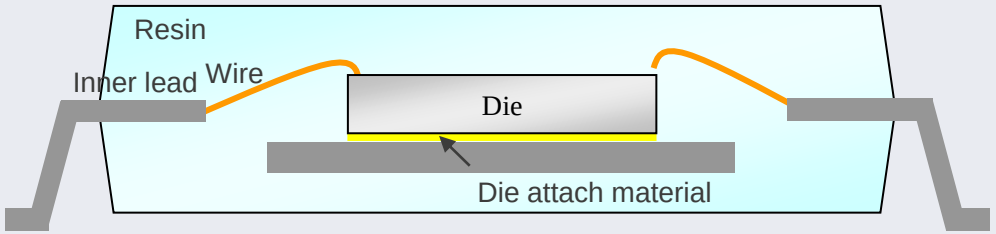
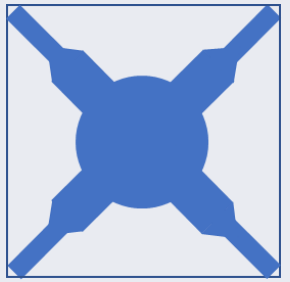
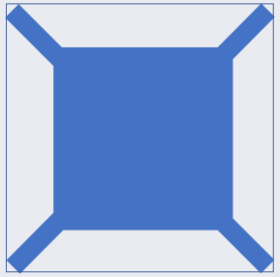
Dimension comparison: 12mm x 12mm 0.5mm pitch 80pin LFQFP

KL,BJ package symbols complied to JEITA standard, and Greatek package symbols complied to JEDEC standard.

KL Symbol	12x12mm 80pin LFQFP PLQP0080KE-A			BJ ASEKH Symbol	12x12mm 80pin LFQFP PLQP0080KB-B			Greatek Symbol	12x12mm 80pin LFQFP PLQP0080KJ-A		
	Dimension in Millimeters				Dimension in Millimeters				Dimension in Millimeters		
	Min	Nom	Max		Min	Nom	Max		Min	Nom	Max
A	-	-	1.60	A	-	-	1.70	A	-	-	1.60
A1	0.05	0.10	0.15	A1	0.05	-	0.15	A1	0.05	-	0.15
A2	1.35	1.40	1.45	A2	-	1.40	-	A2	1.35	1.40	1.45
HD	13.80	14.00	14.20	HD	13.80	14.00	14.20	D	-	14.00	-
D	11.80	12.00	12.20	D	11.90	12.00	12.10	D1	-	12.00	-
HE	13.80	14.00	14.20	HE	13.80	14.00	14.20	E	-	14.00	-
E	11.80	12.00	12.20	E	11.90	12.00	12.10	E1	-	12.00	-
-	-	-	-	-	-	-	-	N	-	80	-
e	-	0.50	-	e	-	0.50	-	e	-	0.50	-
b	0.17	0.22	0.27	bp	0.15	0.20	0.27	b	0.17	0.22	0.27
c	0.10	0.145	0.20	c	0.09	-	0.20	c	0.09	-	0.20
θ	0°	3.0°	8°	θ	0°	3.5°	8°	θ	0°	3.5°	7°
Lp	0.45	0.60	0.75	Lp	0.45	0.60	0.75	L	0.45	0.60	0.75
L1	0.80	1.00	1.20	L1	-	1.00	-	L1	-	1.00	-
-	-	-	-	-	-	-	-	aaa	-	-	0.20
-	-	-	-	-	-	-	-	bbb	-	-	0.20
y	-	-	0.08	y	-	-	0.08	ccc	-	-	0.08
x	-	-	0.08	x	-	-	0.08	ddd	-	-	0.08

Package structure image

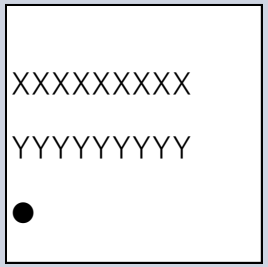
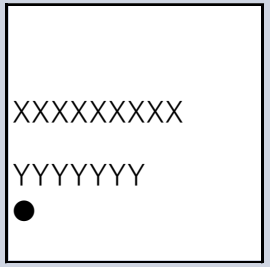
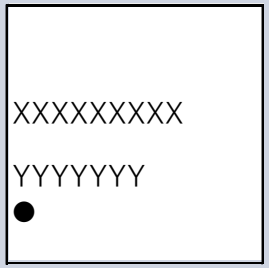
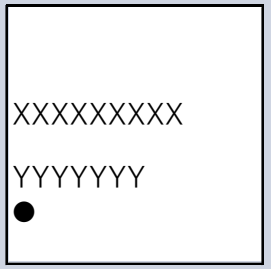
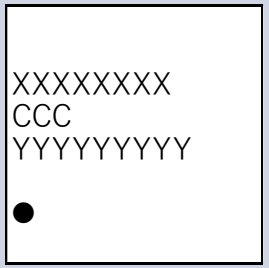
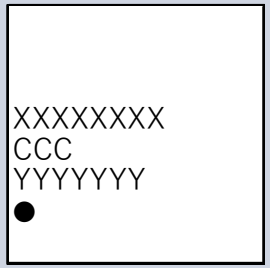
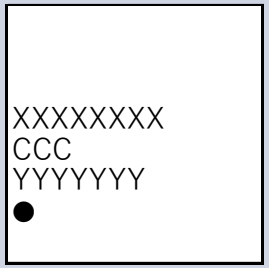
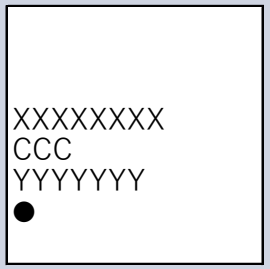
Package Section and die pad shape is a reference example.

Assembly factory	PKG cross section	Die pad shape
Additional factory		 KL
Existing factory	 	 BJ  Greatek / ASEKH

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

12x12mm 0.5mm pitch 80pin LFQFP marking specifications

Marking position is reference example.

Assembly factory	KL (Additional factory)	BJ (Existing factory)	Greatek (Existing factory)	ASEKH (Existing factory)
Blank products				
	1st row 9 characters: product name 2nd row - 3rd row 9 characters: Lot № 4th row -	1st row - 2nd row 9 characters: product name 3rd row - 4th row 7 characters: Lot №	1st row - 2nd row 9 characters: product name 3rd row - 4th row 7 characters: Lot №	1st row - 2nd row 9 characters: product name 3rd row - 4th row 7 characters: Lot №
ROM products				
	1st row 8 characters: product name 2nd row 3 characters: ROM code 3rd row 9 characters: Lot № 4th row -	1st row - 2nd row 8 characters: product name 3rd row 3 characters: ROM code 4th row 7 characters: Lot №	1st row - 2nd row 8 characters: product name 3rd row 3 characters: ROM code 4th row 7 characters: Lot №	1st row - 2nd row 8 characters: product name 3rd row 3 characters: ROM code 4th row 7 characters: Lot №

Marking visibility

Marking position and character is reference example.

Assembly factory	KL (Additional factory)	BJ (Existing factory)	Greatek (Existing factory)	ASEKH (Existing factory)
Overall photo				
Enlarged photo				

Actual colors may be different from ones in the photo.

4M changing points
(Addition of assembly and sorting factory , Change of material)

Item	Check Result	Judgement
Machine	Changing at assembly and sorting. The machines are equivalent to present machines. There are production of similar 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	Only use certificated materials. The products has been certificated by reliability test same as existing products and have no risk.	**No risk**

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