

Version: 1

In case of any question, please contact:

Düsseldorf, 08.12.2022

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

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PCN EE-QR-221208-01

Details of Change:

	Current fab			Additional fabs (parallel production)		
	Wafer fab	Assembly	Sort	Wafer fab	Assembly	Sort
Case1	Kawashiri	Greatek	KYEC	Kawashiri PSMC	Greatek	KYEC
Case2	Kawashiri	RSB	RSB	Kawashiri PSMC	RSB Greatek	RSB KYEC

[#1] Factory names indicated as **BOLD** letters, will be added on the parallel production path.

1) Case1: QFN package products

Wafer fab: Powerchip Semiconductor Manufacturing Corporation (PSMC) addition

2) Case2: LQFP package products

Wafer fab: Powerchip Semiconductor Manufacturing Corporation (PSMC) addition

Assembly: Greatek Electronics Inc. (Greatek) addition

Sort: King Yuan Electronics Corp. (KYEC) addition

(Remark for Case2: Greatek products to be shipped only via full-carton or T&R.)

1) Wafer-fabrication: Renesas Semiconductor Manufacturing Co., Ltd., Kawashiri factory

Chip-assembly: Renesas Semiconductor (Beijing) Co., Ltd (RSB)

Package types: LQFP 7x7mm 48pin, 10x10mm 64pin

2) Wafer fabrication factory addition: Powerchip Semiconductor Manufacturing Corporation (PSMC)

Assembly factory addition: Greatek Electronics Inc. (Greatek)

3) Specification differences:

Wafer process: sufficiently equivalent process was ported from Kawashiri factory.

Assembly materials: Lead-frame, Die-mount paste, and Mold-resin are certificated at each facility

4) Package outline:

No change on the foot-print geometry. Please refer the package outline drawings and the geometry comparison tables.

5) Marking:

Marking characters appears slightly different in the font type

PKG	size [mm]	pins	Pin-pitch [mm]	thick ness [mm]	Fab addition (this time)			Current fabs		
					WP	Assembly	Sort	WP	Assembly	Sort
LQFP	7x7	48	0.5	1.4	PSMC	Greatek	KYEC	Kawashiri	RSB	RSB
LQFP	10x10	64	0.5	1.4	PSMC	Greatek	KYEC	Kawashiri	RSB	RSB

Kawashiri: Renesas Semiconductor Manufacturing Company Co., Ltd. Kawashiri Factory

PSMC: Powerchip Semiconductor Manufacturing Corporation

RSB: Renesas Semiconductor (Beijing) Co., Ltd

KYEC: King Yuan Electronics Co., Ltd

Greatek: Greatek Electronics Inc.

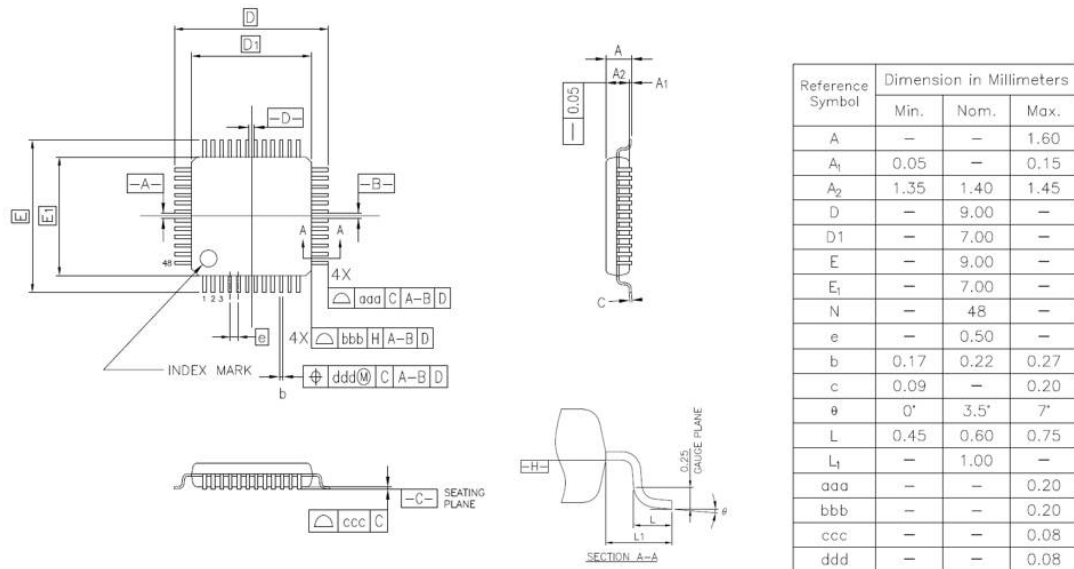
Change Overview:

Items		This time	Current
Wafer process		Kawashiri, PSMC	Kawashiri
Assembly		Greatek	RSB
Sort		KYEC	RSB
Package	Outline	Slight differences (see p.3~p.6)	
Lead frame	Material	No difference	
	Inner lead shape	Shape difference (see p.7)	
Die mount	Material	Ag epoxy paste D *	Ag epoxy paste A *
Bonding wire	Material	No difference: Cu (Pd coating)	
Mold resin	Material	Epoxy resin D * (halogen-free)	Epoxy resin A * (halogen-free)
Plating	Material	No difference	
Marking	Font	Font type difference (see p.7)	
	Digit number	No difference	
Packing	Tray / T&R	No difference	
Storage conditions	after opening	No difference	

* Factory certified materials, there are differences however no impact on reliability or characteristics.

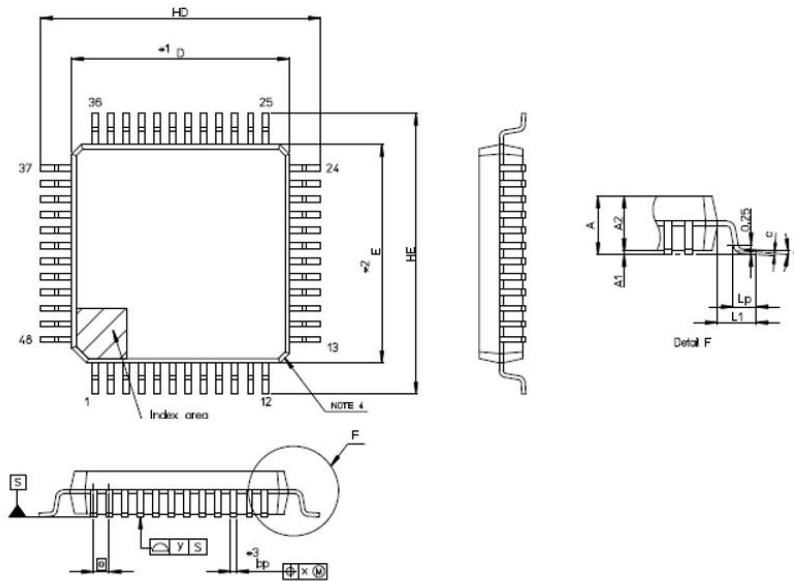
7mm×7mm 0.5mm pitch 48pin LQFP package outline(Greatek)

RENESAS Code : PLQP0048KL-A



7mm×7mm 0.5mm pitch 48pin LFQFP package outline(RSB)

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
θ	0°	3.5°	8°
e	—	0.5	—
x	—	—	0.08
y	—	—	0.08
Lp	0.45	0.6	0.75
L1	—	1.0	—

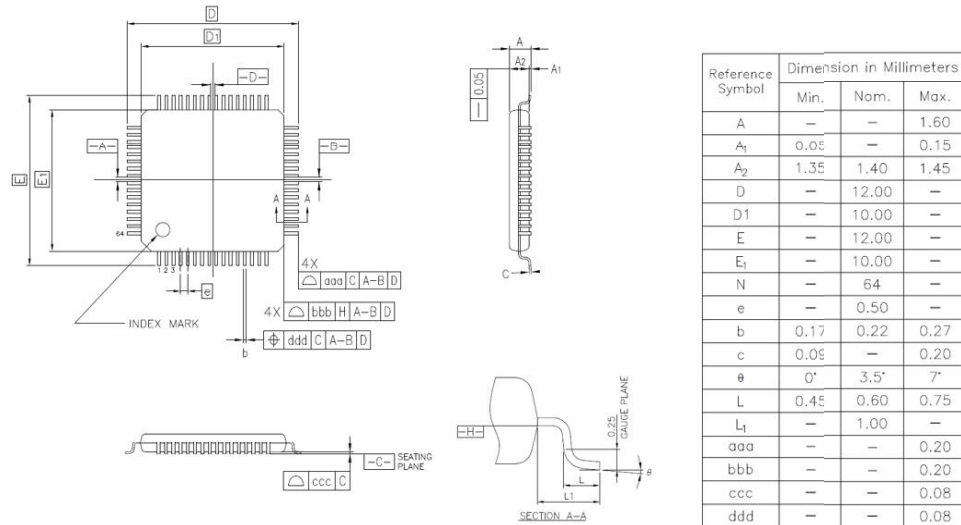
Comparison: 7mm×7mm 0.5mm pitch 48pin LFQFP package

Greatek package symbols comply JEDEC standard.

Greatek Symbol	7x7mm 48pin LQFP PLQP0048KL-A			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

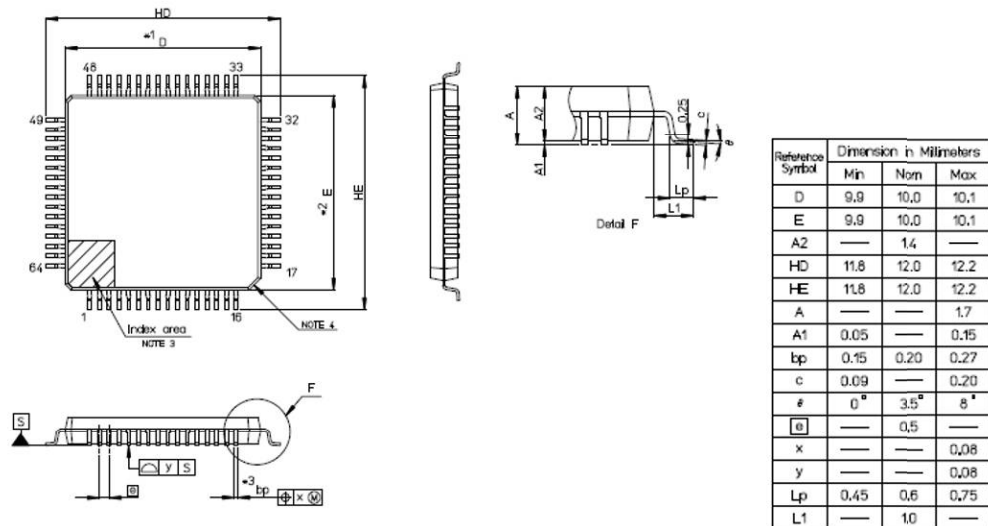
10mm×10mm 0.5mm pitch 64pin LFQFP package outline(Gretek)

RENESAS Code : PLQP0064KL-A



10mm×10mm 0.5mm pitch 64pin LFQFP package outline(RSB)

RENESAS Code : PLQP0064KB-C



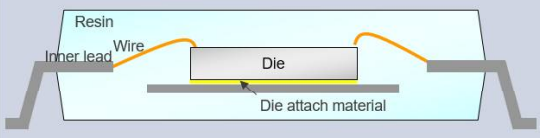
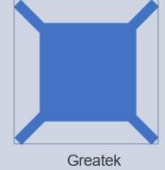
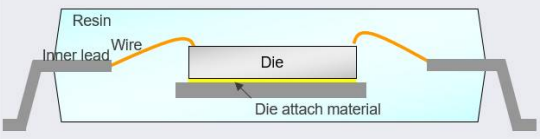
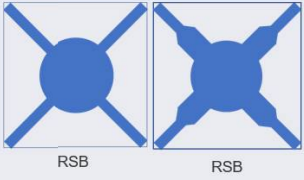
Comparison: 10mm×10mm 0.5mm pitch 64pin LFQFP package

Greatek package symbols comply JEDEC standard.

Greatek Symbol	10x10mm 64pin LQFP PLQP0064KL-A			RSB Symbol	10x10mm 64pin LQFP PLQP0064KB-C		
	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	-	12.00	-	HD	11.80	12.00	12.20
D1	-	10.00	-	D	9.90	10.00	10.10
E	-	12.00	-	HE	11.80	12.00	12.20
E1	-	10.00	-	E	9.90	10.00	10.10
N	-	64	-	-	-	-	-
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

Package structure image


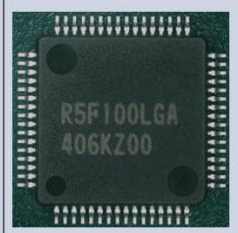


* Package cross-section and die pad shape are reference example

Assembly Line	PKG cross section	Die pad shape
Additional factory		 Greatek
Current factory		 RSB RSB

※ There is no impact on the reliability with these die pad shapes

Marking visibility

※ Characters are reference example

Assembly Line	Greatek (Additional factory)	RSB (Existing factory)
Overall photo		
Enlarged photo		

4M changing points (Wafer process facility addition)

Full chip-design compatible wafer-fabrication-process was ported from Kawashiri factory.

Item	Check Result	Judgement
Machine	Sufficiently compatible to produce the equivalent wafer-level structure and electrical characteristics	No risk
Method	Sufficiently compatible to produce the equivalent wafer-level structure and electrical characteristics	No risk
Man	Using operator certification system. Only certificated operator can work for the production.	No risk
Material	Sufficiently compatible to produce the equivalent wafer-level structure and electrical characteristics	No risk

4M changing points (Additional assembly factory)

Item	Check Result	Judgement
Machine	Despite some differences, the machines are equivalent to current fabrication machines. As well as similar existing products which show sufficient MP records, no problem found for the additional products.	No risk
Method	The same as the existing products.	No risk
Operator	Adopting operator certification system, only certificated operators are allowed for performing the production work.	No risk
Material	Only certificated materials are used. The products were certificated by specific reliability test as well as the existing products, no risk to be seen.	No risk

Affected Products:

Product P/N	Package		Product P/N	Package
R7FA2L1A93CNE#HA0	48pin QFN		R7FA2L1A92DFL#HA0	48pin LQFP
R7FA2L1A93CNE#BA0	48pin QFN		R7FA2L1A92DFL#BA0	48pin LQFP
R7FA2L1A93CNE#AA0	48pin QFN		R7FA2L1AB3CFL#HA0	48pin LQFP
R7FA2L1A92DNE#HA0	48pin QFN		R7FA2L1AB3CFL#BA0	48pin LQFP
R7FA2L1A92DNE#BA0	48pin QFN		R7FA2L1AB2DFL#HA0	48pin LQFP
R7FA2L1A92DNE#AA0	48pin QFN		R7FA2L1AB2DFL#BA0	48pin LQFP
R7FA2L1AB3CNE#HA0	48pin QFN		R7FA2L1A93CFM#HA0	64pin LQFP
R7FA2L1AB3CNE#BA0	48pin QFN		R7FA2L1A93CFM#BA0	64pin LQFP
R7FA2L1AB3CNE#AA0	48pin QFN		R7FA2L1A92DFM#HA0	64pin LQFP
R7FA2L1AB2DNE#HA0	48pin QFN		R7FA2L1A92DFM#BA0	64pin LQFP
R7FA2L1AB2DNE#BA0	48pin QFN		R7FA2L1AB3CFM#HA0	64pin LQFP
R7FA2L1AB2DNE#AA0	48pin QFN		R7FA2L1AB3CFM#BA0	64pin LQFP
R7FA2L1A93CFL#HA0	48pin LQFP		R7FA2L1AB2DFM#HA0	64pin LQFP
R7FA2L1A93CFL#BA0	48pin LQFP		R7FA2L1AB2DFM#BA0	64pin LQFP