

Product Change Notice

(PCN Tracking Number: EE-QR-230525-01)

Version: 1

Customer:	ALL Customers		
Renesas Product Type:	RL78 series, HWQFN 40/48 pin products (refer to pages 12-13 for complete product list)		
Description of Change:	Addition of wafer-fabrication and chip-assembly factories		
Reason for Change:	To ensure stable production supply		
Identification:	Identifiable via production history data from the packing label or trace code		
Schedules:	Sample order deadline:	Jul. 2023	
	Sample availability:	Aug.2023 (upon request)	
	Reliability report:	Sep.2023 (upon request)	
	Requested approval:	Sep.2023	
	Change Implementation:	Oct. 2023 onwards	
Anticipated Impact:	Fit & Function:	None	
	Form:	Minor deviations (please refer to pages 3-6)	
	Quality & Reliability:	None	
	Spec. & Characteristic:	None	
Doc. No.:	EE-QC-PCN-CR-23-0043		
Internal Reference:	MCO-AC-23-0012		

In case of any question, please contact:

INITIATOR	TITLE	E-mail	PHONE No.
Farhad Banihashemi	Staff Engineer	farhad.banihashemi@renesas.com	+49-211-6503-1844

Düsseldorf, 26.05.2023

Customer Response:

(please fill in and return by e-mail, fax or mail)

<input type="checkbox"/> acknowledge	Company: _____
<input type="checkbox"/> acceptable	
<input type="checkbox"/> unacceptable (pls. comment)	Name & Position: _____
<input type="checkbox"/> not applicable	Phone / Fax No.: _____

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.

Comments:

_____ (Signature)

Details of Change:

Before change			After change			
Wafer	ASSY	Sorting/packing	Wafer	ASSY	Sorting/packing	Remarks
Kawashiri	Greatek	KYEC	Kawashiri	Greatek	KYEC	Existing
				UTAC	UTAC	Addition 1
			Kawashiri/Saijo	UTAC	UTAC	Addition 2

Note: "**Bold**: factory addition"

- 1) Additional back-end factory: UTAC Thai Limited (Assembly, sorting and packing)
- 2) Additional wafer process: Renesas Semiconductor Manufacturing Saijo

There is a combination of products that add only back-end factory or products that add wafer process and back-end factory.

- 3) Assembly material
Used materials certified by additional factory.
- 4) Package outline
There is no change in foot pattern for additional factory products.
- 5) Marking
Change the marking font.
- 6) Packing
Used packing materials certified by additional factory.
*A new packing form will be added.
This means that the new packing form and the existing packing form may be delivered in parallel.

Change Overview:

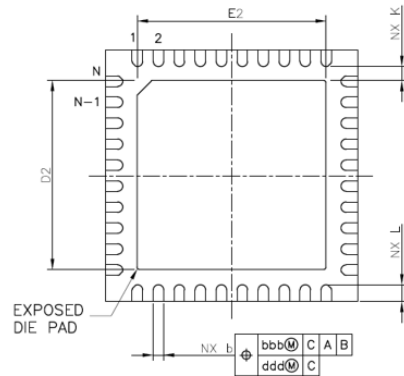
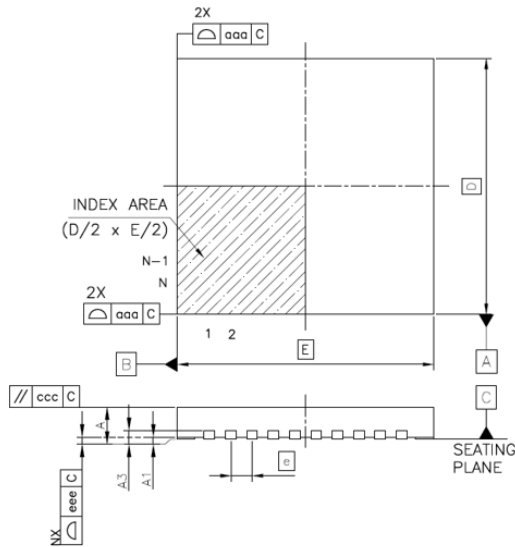
Difference of specification

Item		Additional factory	Existing factory
Wafer process		<u>Saijo</u>	<u>Kawashiri</u>
Assembly factory		UTAC	<u>Greatek</u>
Sorting factory		UTAC	KYEC
Package	Outline	There are differences (Refer to pages 3 to 6)	
Lead frame	Material	Cu	
	Inner pattern	Refer to outline drawing (pages 3 to 6)	
Die mount	Material	Ag epoxy paste B	Ag epoxy paste A
Bonding wire	Material	Cu (Pd coating)	
Resin	Material	Epoxy resin B (halogen-free)	Epoxy resin A (halogen-free)
Plating	Material	Pure Sn	
Marking	Font	There are differences (Refer to page 7)	
Packing		There are additions (Refer to pages 8 to 10)	
Storage conditions	after opening	Within 30°C/ 60%RH/ 168h (JEDEC compliant)	

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

6x6mm 40pin 0.5mm pitch HWQFN package outline (UTAC)

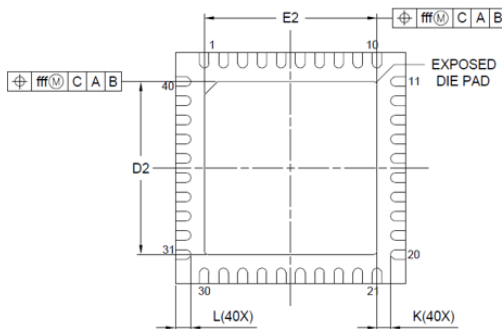
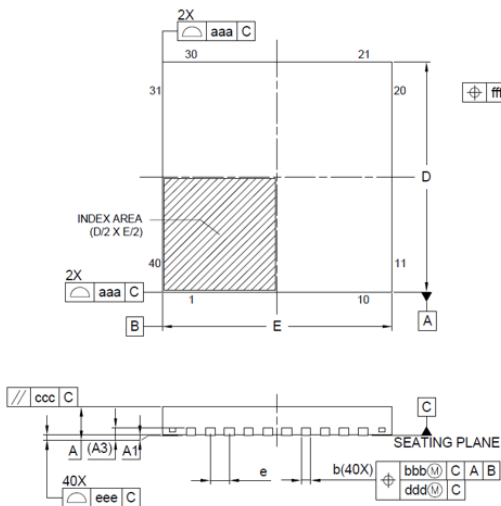
RENESAS Code : PWQN0040KE-A



Reference Symbol	Dimension in Millimeters		
	Min.	Nom.	Max.
A	—	—	0.80
A ₁	0.00	—	0.05
A ₃	0.20 REF.		
b	0.20	0.25	0.30
D	—	6.00	—
E	—	6.00	—
e	—	0.50	—
N	40		
L	0.30	0.40	0.50
K	0.20	—	—
D ₂	4.40	4.50	4.60
E ₂	4.40	4.50	4.60
aaa	—	—	0.15
bbb	—	—	0.10
ccc	—	—	0.10
ddd	—	—	0.05
eee	—	—	0.08

6x6mm 40pin 0.5mm pitch HWQFN package outline (Greatek)

RENESAS Code : PWQN0040KD-A



Reference Symbol	Dimension in Millimeters		
	Min.	Nom.	Max.
A	—	—	0.80
A ₁	0.00	0.02	0.05
A ₃	0.203 REF.		
b	0.18	0.25	0.30
D	6.00 BSC		
E	6.00 BSC		
e	0.50 BSC		
L	0.30	0.40	0.50
K	0.20	—	—
D ₂	4.45	4.50	4.55
E ₂	4.45	4.50	4.55
aaa	0.15		
bbb	0.10		
ccc	0.10		
ddd	0.05		
eee	0.08		
fff	0.10		

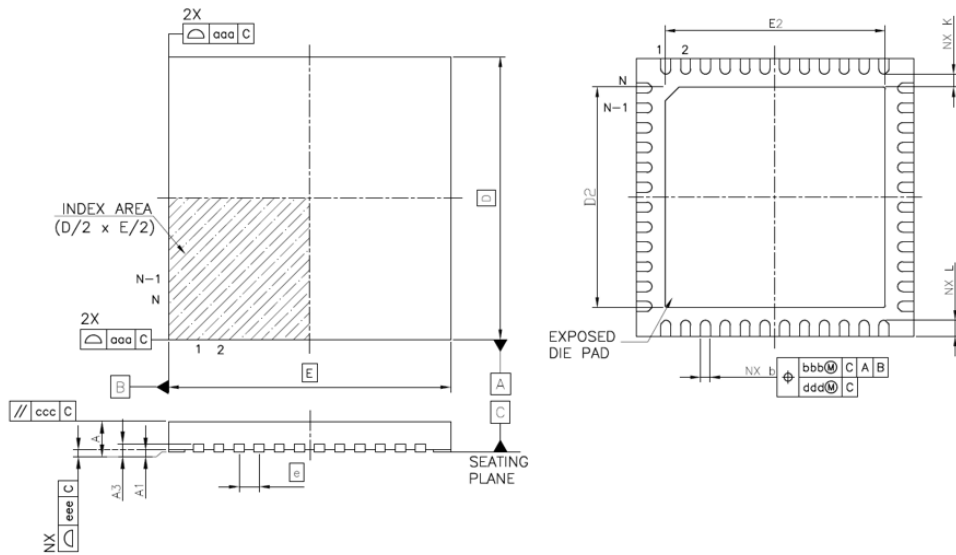
Dimension comparison: 6x6mm 0.5mm pitch 40pin HWQFN

Symbols complied
JEDEC standard.

UTAC Symbol	6x6mm 40pin HWQFN PWQN0040KE-A			Greatek Symbol	6x6mm 40pin HWQFN PWQN0040KD-A		
	Dimension in Millimeters				Dimension in Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	-	-	0.80	A	-	-	0.80
A1	0.00	-	0.05	A1	0.00	0.02	0.05
A3	0.20 REF.			A3	0.203 REF.		
b	0.20	0.25	0.30	b	0.18	0.25	0.30
D	-	6.00	-	D	6.00 BSC		
E	-	6.00	-	E	6.00 BSC		
e	-	0.50	-	e	0.50 BSC		
N	40			-	-		
L	0.30	0.40	0.50	L	0.30	0.40	0.50
K	0.20	-	-	K	0.20	-	-
D2	4.40	4.50	4.60	D2	4.45	4.50	4.55
E2	4.40	4.50	4.60	E2	4.45	4.50	4.55
<u>aaa</u>			0.15	<u>aaa</u>	0.15		
<u>bbb</u>			0/10	<u>bbb</u>	0.10		
<u>ccc</u>			0.10	<u>ccc</u>	0.10		
<u>ddd</u>			0.05	<u>ddd</u>	0.05		
<u>eee</u>			0.08	<u>eee</u>	0.08		
-	-	-	-	<u>fff</u>	0.10		

7x7mm 48pin 0.5mm pitch HWQFN package outline (UTAC)

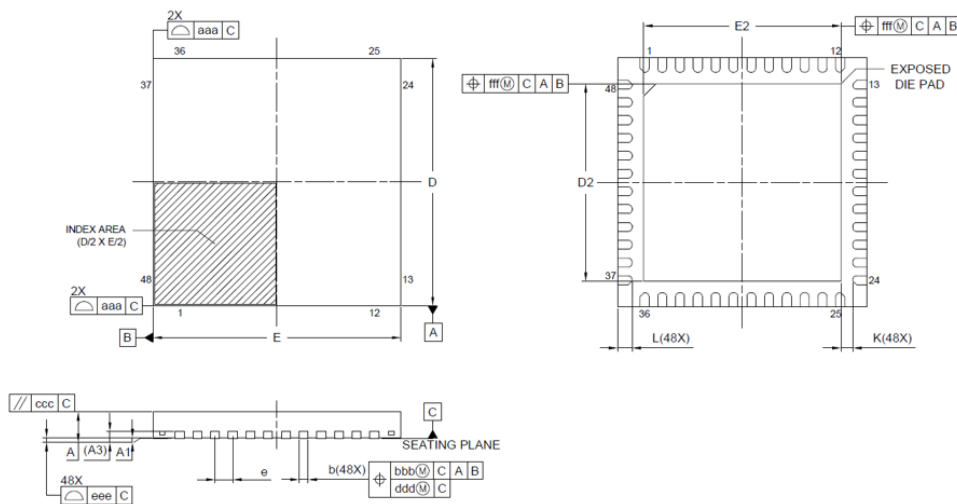
RENESAS Code : PWQN0048KG-A



Reference Symbol	Dimension in Millimeters		
	Min.	Nom.	Max.
A	—	—	0.80
A ₁	0.00	—	0.05
A ₃	0.20 REF.		
b	0.20	0.25	0.30
D	—	7.00	—
E	—	7.00	—
e	—	0.50	—
N	48		
L	0.30	0.40	0.50
K	0.20	—	—
D ₂	5.50	5.55	5.60
E ₂	5.50	5.55	5.60
aaa	—	—	0.15
bbb	—	—	0.10
ccc	—	—	0.10
ddd	—	—	0.05
eee	—	—	0.08

7x7mm 48pin 0.5mm pitch HWQFN package outline (Greatek)

RENESAS Code : PWQN0048KE-A



Reference Symbol	Dimension in Millimeters		
	Min.	Nom.	Max.
A	—	—	0.80
A ₁	0.00	0.02	0.05
A ₃	0.203 REF.		
b	0.20	0.25	0.30
D	7.00 BSC		
E	7.00 BSC		
e	0.50 BSC		
L	0.30	0.40	0.50
K	0.20	—	—
D ₂	5.50	5.55	5.60
E ₂	5.50	5.55	5.60
aaa	0.15		
bbb	0.10		
ccc	0.10		
ddd	0.05		
eee	0.08		
fff	0.10		

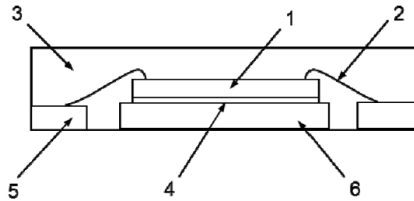
Dimension comparison: 7x7mm 0.5 pitch 48pin HWQFN

Symbols complied JEDEC standard.

UTAC Symbol	7x7mm 48pin HWQFN PWQN0048KG-A			Greatek Symbol	7x7mm 48pin HWQFN PWQN0048KE-A		
	Dimension in Millimeters				Dimension in Millimeters		
	Min	Nom	Max		Min	Nom	Max
A	-	-	0.80	A	-	-	0.80
A1	0.00	-	0.05	A1	0.00	0.02	0.05
A3	0.20 REF.			A3	0.203 REF.		
b	0.20	0.25	0.30	b	0.20	0.25	0.30
D	-	7.00	-	D	7.00 BSC		
E	-	7.00	-	E	7.00 BSC		
e	-	0.50	-	e	0.50 BSC		
N	40			-	-		
L	0.30	0.40	0.50	L	0.30	0.40	0.50
K	0.20	-	-	K	0.20	-	-
D2	5.50	5.55	5.60	D2	5.50	5.55	5.60
E2	5.50	5.55	5.60	E2	5.50	5.55	5.60
<u>aaa</u>			0.15	<u>aaa</u>	0.15		
<u>bbb</u>			0/10	<u>bbb</u>	0.10		
<u>ccc</u>			0.10	<u>ccc</u>	0.10		
<u>ddd</u>			0.05	<u>ddd</u>	0.05		
<u>eee</u>			0.08	<u>eee</u>	0.08		
-	-	-	-	<u>fff</u>	0.10		

Package structure image

Package Section and die pad shape is a reference example.



No.	部材 Part
1	チップ Die
2	ワイヤ Wire
3	封止材 Molding material
4	ダイアタッチ材 Die attach material
5	Cu リード: Ni/Pd/Au めっき Cu lead: Ni/Pd/Au plating
6	ダイパッド Die pad

The materials are different because they use materials certified at the site, but the structure is equivalent.

Laser visibility

Character is reference example

Assembly	UTAC (Additional factory)	Gretek (Existing Factory)
Whole Photo		
Detail Photo		

Actual colors may be different from ones in the photo.

Moisture-proof bag printing / humidity indicator card (Tray / T&R common)

Assembly	Additional packing specification	Existing packing specification
Moisture-proof bag printing	<ul style="list-style-type: none"> Caution label 	<ul style="list-style-type: none"> Printed on a moisture-proof bag <p>1. After opening the moisture-resistant bag, store the devices at a temperature of 5°C to 30°C and a relative humidity (RH) of 70% or below. Ensure that the devices are mounted within the maximum storage life (MSL) period indicated on the label of the inner package. If there is no MSL indication on the label, mount the devices within 168 hours. Notation example 1) MSL3--2:1 year, 2a:4 weeks, 3:168 hours, 4:72 hours, 5:48 hours, 5a:24 hours Notation example 2) MSL12H--H: hour, D: day, W: week, M: month, Y: year</p> <p>2. If a humidity indicator card (HIC) is packed together with the devices and the 30% indication has changed to lavender (pink), or if the devices have been stored longer than the limit specified in item 1 above, perform baking at 125°C for 24 hours. Note that any special instructions on the inner label should be followed.</p> <p>REL standard moisture-proof bag [RBG01AA-2350, RBG05AB-3949] Precautionary statement excerpt</p>
Humidity indicator card	<ul style="list-style-type: none"> 3-point type (5%, 10%, 60%) JEDEC specifications 	<ul style="list-style-type: none"> 4-point type (10%, 20%, 30%, 40%) REL standard specifications

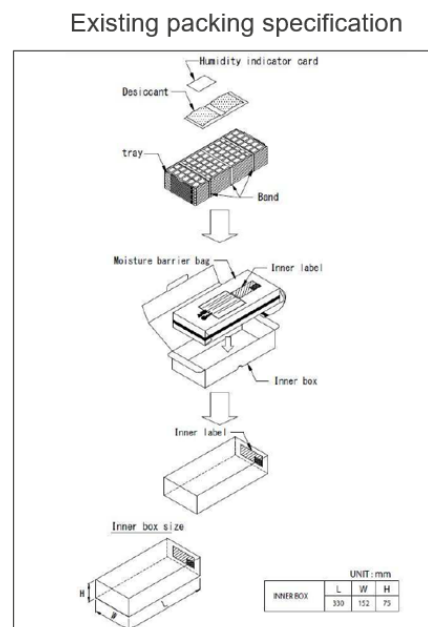
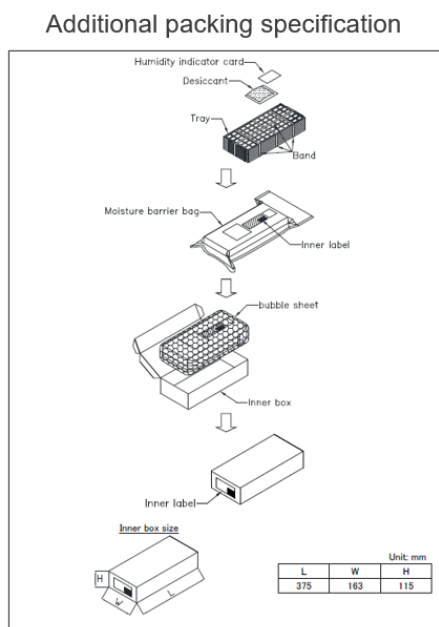
Shipping packing (Tray shipping)

Packing material	Tray packing materials	
	Additional packing specification	Existing packing specification
Number of storages in the inner box	<ul style="list-style-type: none"> Number of storage: 8 trays + 1 cover tray Binding bands: 3 short sides + 1 long side 	<ul style="list-style-type: none"> Number of storage: 8 trays + 1 cover tray Binding bands: 3 short sides
Binding bands		
Desiccant	<ul style="list-style-type: none"> •33g 	<ul style="list-style-type: none"> •25g+25g •33g+33g 

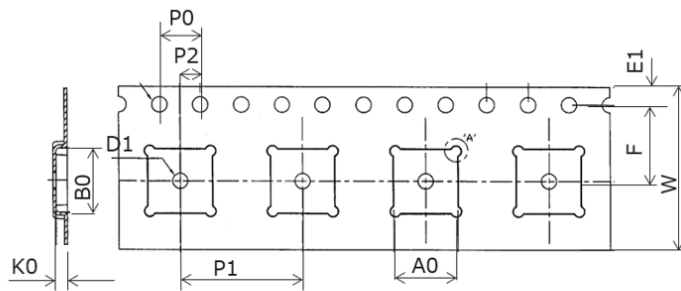
Shipping packing (Tray shipping)

Packing material	Tray packing materials	
	Additional packing specification	Existing packing specification
Moisture-proof bag	<ul style="list-style-type: none"> Moisture-proof bag size: 228.6mmx508mm 	<ul style="list-style-type: none"> Moisture-proof bag size:250x510mm 
Inner box	<ul style="list-style-type: none"> Inner box size: 163x375x115mm 	<ul style="list-style-type: none"> Inner box size: 152x330x75mm 

SHIPPING PACKING DIAGRAM (TRAY SHIPPING)



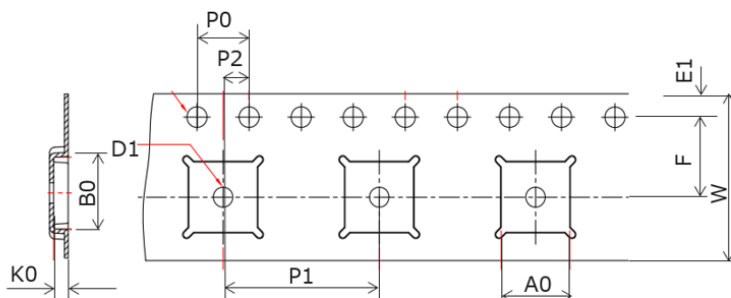
6x6mm 40pin HWQFN Embossed tape comparison



Unit: mm

Symbol	UTC (Additional factory)	KYEC (Existing factory)
A0	7.25	7.25
B0	7.25	7.25
K0	1.10	1.10
P1	12.00	12.00
W	16.00	16.00
E1	1.75	1.75
P0	4.00	4.00
F	7.50	7.50
P2	2.00	2.00
D1	Φ1.50	Φ1.50

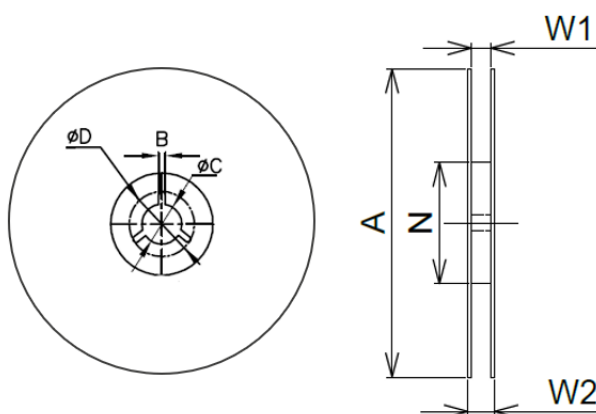
7x7mm 48pin HWQFN Embossed tape comparison



Unit: mm

Symbol	UTAC (Additional)	KYEC (Existing)
A0	7.25	7.25
B0	7.25	7.25
K0	1.10	1.10
P1	12.00	12.00
W	16.00	16.00
E1	1.75	1.75
P0	4.00	4.00
F	7.50	7.50
P2	2.00	2.00
D1	Φ1.50	Φ1.50

Reel comparison (Common to 6x6 40pin and 7x7 48pin HWQFN)



Unit: mm

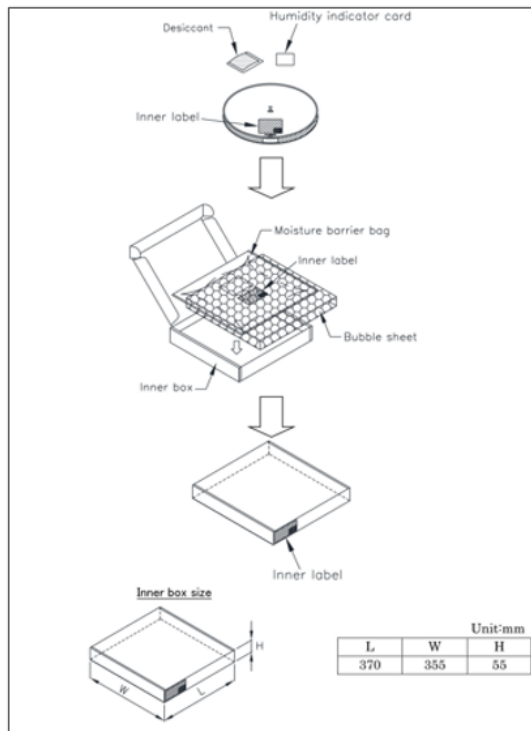
Symbol	UTAC (Additional)	KYEC (Existing)
B	1.5	2.0
ΦC	13.0	13.0
ΦD	20.2	21.0
A	330	330
N	100	102
W1	16.4	16.8
W2	22.4	22.4

Shipping packing (T&R shipping)

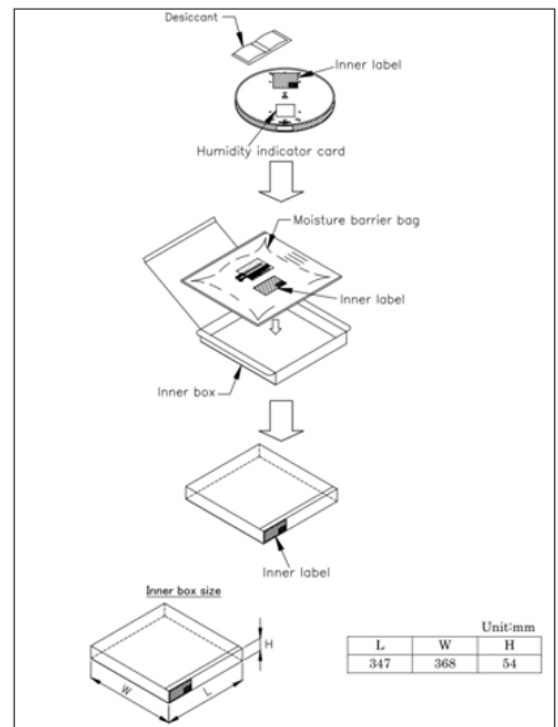
Packing material	T&R packing materials	
	Additional packing specification	Existing packing specification
Moisture-proof bag * Refer to page 15 for printed contents.	<ul style="list-style-type: none"> Moisture-proof bag size: 406.4x457.2mm  <p>Inner label Caution label Bubble sheet</p>	<ul style="list-style-type: none"> Moisture-proof bag size: 415x500mm  <p>Inner label</p>
Inner box	<ul style="list-style-type: none"> Inner box size: 370x355x55mm  <p>Inner Box Inner label</p>	<ul style="list-style-type: none"> Inner box size: 347x368x54mm  <p>Inner Box Inner label</p>
Desiccant	<ul style="list-style-type: none"> •33g 	<ul style="list-style-type: none"> •25g+25g 

SHIPPING PACKING DIAGRAM (T&R SHIPPING)

Additional packing specification



Existing packing specification



4M changing points (Wafer process 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

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

Product List:

Addition 1: "Products that add only a back-end factory."

R5F100EAGNA#00	R5F100GHGNA#40	R5F104EFGNA#20	R5F104GLGNA#00
R5F100EAGNA#20	R5F100GJGNA#00	R5F104EFGNA#40	R5F104GLGNA#20
R5F100EAGNA#40	R5F100GJGNA#20	R5F104EGGNA#00	R5F104GLGNA#40
R5F100ECGNA#00	R5F100GJGNA#40	R5F104EGGNA#20	R5F10EGAANA#00
R5F100ECGNA#20	R5F100GKANA#00	R5F104EGGNA#40	R5F10EGAANA#20
R5F100ECGNA#40	R5F100GKANA#20	R5F104EHGNA#00	R5F10EGAANA#40
R5F100EDGNA#00	R5F100GKANA#40	R5F104EHGNA#20	R5F10EGAGNA#00
R5F100EDGNA#20	R5F100GKDNA#00	R5F104EHGNA#40	R5F10EGAGNA#20
R5F100EDGNA#40	R5F100GKDNA#20	R5F104GAGNA#00	R5F10EGAGNA#40
R5F100EEGNA#00	R5F100GKDNA#40	R5F104GAGNA#20	R5F10EGCANA#00
R5F100EEGNA#20	R5F100GLANA#00	R5F104GAGNA#40	R5F10EGCANA#20
R5F100EEGNA#40	R5F100GLANA#20	R5F104GCGNA#00	R5F10EGCANA#40
R5F100EFGNA#00	R5F100GLANA#40	R5F104GCGNA#20	R5F10EGCGNA#00
R5F100EFGNA#20	R5F100GLDNA#00	R5F104GCGNA#40	R5F10EGCGNA#20
R5F100EFGNA#40	R5F100GLDNA#20	R5F104GDGNA#00	R5F10EGCGNA#40
R5F100EGGNA#00	R5F100GLDNA#40	R5F104GDGNA#20	R5F10EGDANA#00
R5F100EGGNA#20	R5F101GKANA#00	R5F104GDGNA#40	R5F10EGDANA#20
R5F100EGGNA#40	R5F101GKANA#20	R5F104GEGNA#00	R5F10EGDANA#40
R5F100EHGNA#00	R5F101GKANA#40	R5F104GEGNA#20	R5F10EGDGNA#00
R5F100EHGNA#20	R5F101GKDNA#00	R5F104GEGNA#40	R5F10EGDGNA#20
R5F100EHGNA#40	R5F101GKDNA#20	R5F104GFGNA#00	R5F10EGDGNA#40
R5F100GAGNA#00	R5F101GKDNA#40	R5F104GFGNA#20	R5F10EGEANA#00
R5F100GAGNA#20	R5F101GLANA#00	R5F104GFGNA#40	R5F10EGEANA#20
R5F100GAGNA#40	R5F101GLANA#20	R5F104GGGNA#00	R5F10EGEANA#40
R5F100GCGNA#00	R5F101GLANA#40	R5F104GGGNA#20	R5F10EGEGNA#00
R5F100GCGNA#20	R5F101GLDNA#00	R5F104GGGNA#40	R5F10EGEGNA#20
R5F100GCGNA#40	R5F101GLDNA#20	R5F104GHGNA#00	R5F10EGEGNA#40
R5F100GDGNA#00	R5F101GLDNA#40	R5F104GHGNA#20	R5F10JGCANA#00
R5F100GDGNA#20	R5F104EAGNA#00	R5F104GHGNA#40	R5F10JGCANA#20
R5F100GDGNA#40	R5F104EAGNA#20	R5F104GJGNA#00	R5F10JGCANA#40
R5F100GEGNA#00	R5F104EAGNA#40	R5F104GJGNA#20	R5F10JGCGNA#00
R5F100GEGNA#20	R5F104ECGNA#00	R5F104GJGNA#40	R5F10JGCGNA#20
R5F100GEGNA#40	R5F104ECGNA#20	R5F104GKANA#00	R5F10JGCGNA#40
R5F100GFGNA#00	R5F104ECGNA#40	R5F104GKANA#20	R5F10KGCANA#00
R5F100GFGNA#20	R5F104EDGNA#00	R5F104GKANA#40	R5F10KGCANA#20
R5F100GFGNA#40	R5F104EDGNA#20	R5F104GKGNA#00	R5F10KGCANA#40
R5F100GGGNA#00	R5F104EDGNA#40	R5F104GKGNA#20	R5F10KGCANA#00
R5F100GGGNA#20	R5F104EEGNA#00	R5F104GKGNA#40	R5F10KGCANA#20
R5F100GGGNA#40	R5F104EEGNA#20	R5F104GLANA#00	R5F10KGCANA#40
R5F100GHGNA#00	R5F104EEGNA#40	R5F104GLANA#20	
R5F100GHGNA#20	R5F104EFGNA#00	R5F104GLANA#40	

Addition 2: "Products that add wafer process and back-end factory."

R5F100EAANA#00	R5F100GFANA#20	R5F101GAANA#20	R5F104EEANA#40
R5F100EAANA#20	R5F100GFANA#40	R5F101GAANA#40	R5F104EFANA#00
R5F100EAANA#40	R5F100GGANA#00	R5F101GCANA#00	R5F104EFANA#20
R5F100ECANA#00	R5F100GGANA#20	R5F101GCANA#20	R5F104EFANA#40
R5F100ECANA#20	R5F100GGANA#40	R5F101GCANA#40	R5F104EGANA#00
R5F100ECANA#40	R5F100GHANA#00	R5F101GDANA#00	R5F104EGANA#20
R5F100EDANA#00	R5F100GHANA#20	R5F101GDANA#20	R5F104EGANA#40
R5F100EDANA#20	R5F100GHANA#40	R5F101GDANA#40	R5F104EHANA#00
R5F100EDANA#40	R5F100GJANA#00	R5F101GEANA#00	R5F104EHANA#20
R5F100EEANA#00	R5F100GJANA#20	R5F101GEANA#20	R5F104EHANA#40
R5F100EEANA#20	R5F100GJANA#40	R5F101GEANA#40	R5F104GAANA#00
R5F100EEANA#40	R5F101EAANA#00	R5F101GFANA#00	R5F104GAANA#20
R5F100EFANA#00	R5F101EAANA#20	R5F101GFANA#20	R5F104GAANA#40
R5F100EFANA#20	R5F101EAANA#40	R5F101GFANA#40	R5F104GCANA#00
R5F100EFANA#40	R5F101ECAA02NA#20	R5F101GGANA#00	R5F104GCANA#20
R5F100EGANA#00	R5F101ECANA#00	R5F101GGANA#20	R5F104GCANA#40
R5F100EGANA#20	R5F101ECANA#20	R5F101GGANA#40	R5F104GDANA#00
R5F100EGANA#40	R5F101ECANA#40	R5F101GHANA#00	R5F104GDANA#20
R5F100EHANA#00	R5F101EDANA#00	R5F101GHANA#20	R5F104GDANA#40
R5F100EHANA#20	R5F101EDANA#20	R5F101GHANA#40	R5F104GEANA#00
R5F100EHANA#40	R5F101EDANA#40	R5F101GJANA#00	R5F104GEANA#20
R5F100GAANA#00	R5F101EEANA#00	R5F101GJANA#20	R5F104GEANA#40
R5F100GAANA#20	R5F101EEANA#20	R5F101GJANA#40	R5F104GFANA#00
R5F100GAANA#40	R5F101EEANA#40	R5F104EAANA#00	R5F104GFANA#20
R5F100GCANA#00	R5F101EFANA#00	R5F104EAANA#20	R5F104GFANA#40
R5F100GCANA#20	R5F101EFANA#20	R5F104EAANA#40	R5F104GGANA#00
R5F100GCANA#40	R5F101EFANA#40	R5F104ECANA#00	R5F104GGANA#20
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R5F100GDANA#20	R5F101EGANA#20	R5F104ECANA#40	R5F104GHANA#00
R5F100GDANA#40	R5F101EGANA#40	R5F104EDANA#00	R5F104GHANA#20
R5F100GEANA#00	R5F101EHANA#00	R5F104EDANA#20	R5F104GHANA#40
R5F100GEANA#20	R5F101EHANA#20	R5F104EDANA#40	R5F104GJANA#00
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R5F100GFANA#00	R5F101GAANA#00	R5F104EEANA#20	R5F104GJANA#40