

Product Change Notice (PCN)

Subject: Assembly factory addition and assembly materials change for RL78/L1A, L1C LQFP package products

Publication Date: 1/21/2022

Effective Date: 4/1/2022

Revision Description:

Initial release.

Description of Change:

PKG type		Products Group	
		L1A	L1C
LFQFP	14x14mm 100pin	√	√

Greatek Electronics Inc., (Greatek), King Yuan ELECTRONICS CO., LTD (KYEC) addition and T&R consolidation.

Renesas Semiconductor (Beijing) Co.,Ltd (RSB) lead frame and T&R consolidation.

“Note: Greatek/KYEC products are only full carton products and T&R products.”

“Refer to the difference specification for details.”

MCP-AB-22-0014_RL78_L1AL1C_LQFP_Difference specification1

MCP-AB-22-0015_RL78_L1AL1C_LQFP_Difference specification2_LF

MCP-AB-21-0086_RL78_L1AL1C_LQFP_Difference specification3_TR

Description of change point case

Before change			After change		
WP&WT	ASSY	FT	WP&WT	ASSY	FT
Kawashiri	RSB	RSB	Kawashiri	RSB** Greatek*	RSB** KYEC*

Note: Description for change point.

“Bold: Factory addition”

*: Some products add Greatek/KYEC and some do not.

** : Consolidate the lead frame and T&R.

Affected Product List:

Refer to attached file “PN_list_RL78 _L1AL1C_LQFP”.

Reason for Change:

Stable supply for RL78 series LQFP products.

Impact on specifications, characteristics, quality & reliability:

No impact.

Product Identification:

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

Qualification Status: We will prepare by 2/28/2022.

Sample Availability Date: 4/1/2022

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

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Difference of specification 1 (RL78 family LQFP products) 14x14mm 0.5mm pitch 100pin

Target products: RL78/L1A, RL78/L1C

January 11, 2022

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(Rev. 5.0-1 October 2020)

DIFFERENCE OUTLINE

1. Targets:

Products : RL78/L1A, RL78/L1C
Assembly factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
Sorting factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
Package : 14x14mm 0.5mm pitch 100pin LFQFP

2. Additional assembly and sorting factory

Assembly factory : Greatek Electronics Inc. (Greatek)
Sorting factory : King Yuan ELECTRONICS CO., LTD (KYEC)

3. Assembly material:

Lead frame, Die mount paste and Mold resin are used certificated materials.

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.

DIFFERENCE OUTLINE

5. Storage conditions after opening the moisture proof packaging:

The storage conditions for Greatek products after opening the moisture-proof bag comply with JEDEC standards.

Existing products(RSB) : 30°C/70%RH/ within 168hr

Additional products(Greatek/KYEC) : 30°C/60%RH/ within 168hr (Confirming to the JEDEC standard)

■ Specification and characteristics of product:

No change

■ Quality and reliability:

No change

Difference of specification

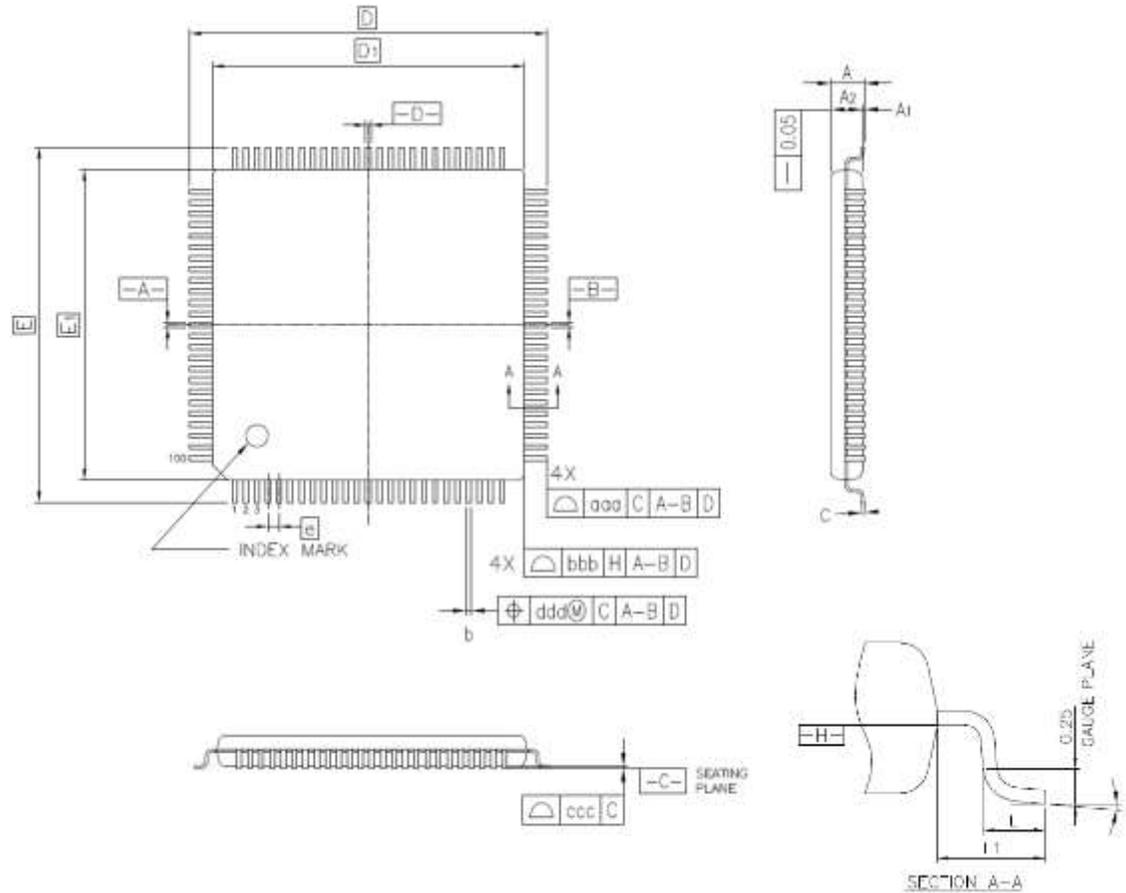
Item		Additional factory	Existing factory
Assembly factory		Greatek	RSB
Sorting factory		KYEC	RSB
Package	Outline	There are differences(Refer to pages 6 to 8)	
Lead frame	Material	No difference	
	Inner pattern	There are differences(Refer to page 9)	
Die mount	Material	Ag epoxy paste D *	Ag epoxy paste A *
Bonding wire	Material	No difference; Cu (Pd coating)	
Resin	Material	Epoxy resin D * (halogen-free)	Epoxy resin A * (halogen-free)
Plating	Material	No difference	
Marking	Font	There are differences(Refer to page 10)	
	Digit number	No difference	
Packing	Tray/ Emboss tape	No difference	
Storage conditions	after opening	30°C/60%RH/ within168hr	30°C/70%RH/ within 168hr

* Factory certified materials.

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

14mm x 14mm 0.5mm pitch 100pin LFQFP Package outline (Greatek)

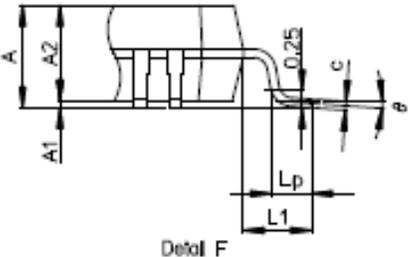
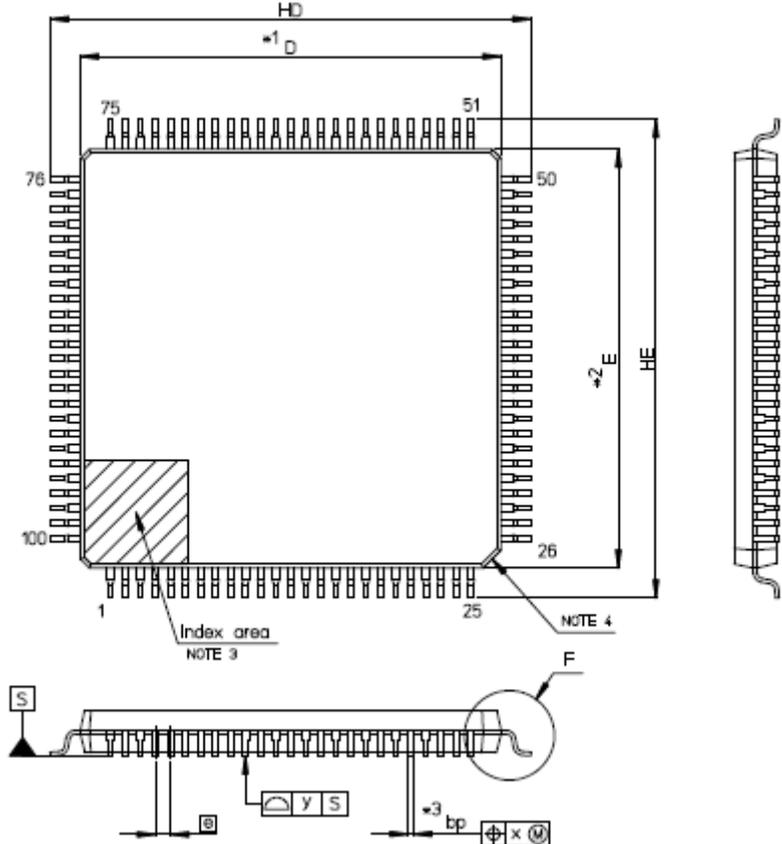
RENESAS Code : PLQP0100KP-A



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	—	16.00	—
D ₁	—	14.00	—
E	—	16.00	—
E ₁	—	14.00	—
N	—	100	—
e	—	0.50	—
b	0.17	0.22	0.27
c	0.09	—	0.20
e	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

14mm x 14mm 0.5mm pitch 100pin LFQFP Package outline (RSB)

RENESAS Code : PLQP0100KB-B



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	13.9	14.0	14.1
E	13.9	14.0	14.1
A2	—	1.4	—
HD	15.8	16.0	16.2
HE	15.8	16.0	16.2
A	—	—	1.7
A1	0.05	—	0.15
bp	0.15	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	—

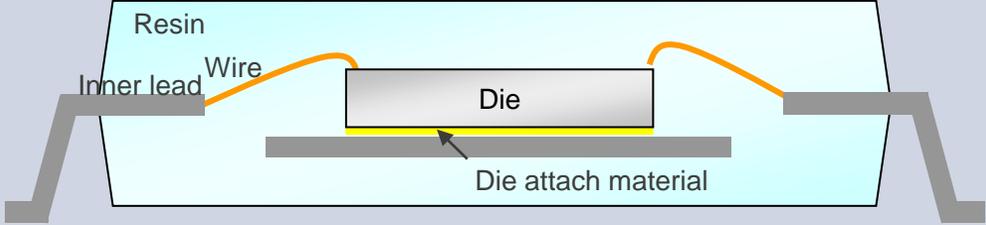
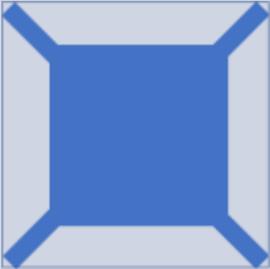
Dimension comparison: 14mm x 14mm 0.5mm pitch 100pin LQFP

Greatek package symbols complied JEDEC standard.

Greatek Symbol	14x14mm 100pin LQFP PLQP0100KP-A			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

Package structure image

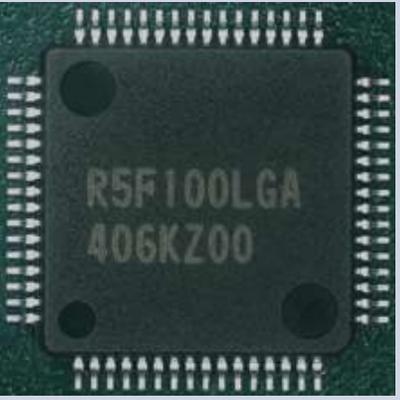
* Package Section and die pad shape is a reference example.

Assembly Line	PKG cross section	Die pad shape
Additional factory	 <p>Resin Wire Inner lead Die Die attach material</p>	 <p>Greatek</p>
Existing factory	 <p>Resin Wire Inner lead Die Die attach material</p>	 <p>RSB</p>

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

Marking visibility

※Character is reference example

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

4M changing points

(Addition of assembly and sorting factory , Change of material)

Item	Check Result	Judgement
Machine	<p>Changing at assembly and sorting. The machines are equivalent to present machines.</p> <p>There are production of similar products and we have already checked the additional products have no risk on the production.</p>	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	<p>Only use certificated materials.</p> <p>The products has been certificated by reliability test same as existing products and have no risk.</p>	No risk

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Difference of specification 2 (RL78 family LQFP products) 14x14mm 0.5mm pitch 100pin

Target products: RL78/L1A, RL78/L1C

January 11, 2022

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(Rev. 5.0-1 October 2020)

Difference outline

1. Targets:

- Products : RL78/L1A, RL78/L1C
- Assembly factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
- Sorting factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
- Package : 14x14mm 0.5mm pitch 100pin LFQFP

2. Difference point

Assembly material consolidation: Lead frame (Stabilize supply through consolidation)

- Specification and characteristics of product:
 - No change
- Quality and reliability
 - No change

Difference of specification

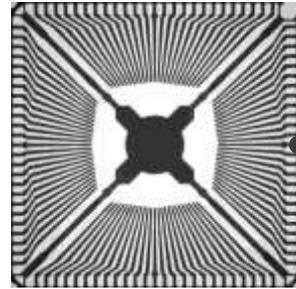
Item		After consolidated	Current
Target assembly factory		RSB	
Target sorting factory		RSB	
Package	Outline	No difference	
Lead frame	Material	No difference	
	Inner pattern	There are differences (Refer to page 5)	
Die mount	Material	No difference	
Bonding wire	Material	No difference	
Resin	Material	No difference	
Plating	Material	No difference	
Marking	Font	No difference	
	Digit number	No difference	

14×14mm 0.5mm pitch 100pin LFQFP lead frame

Consolidate into certified and proven lead frames.

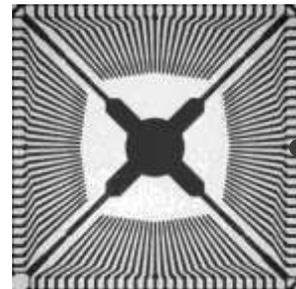
Frame A

RL78/G13
RL78/G14 other than the following
RL78/I1B
RL78/L1A
RL78/L1C



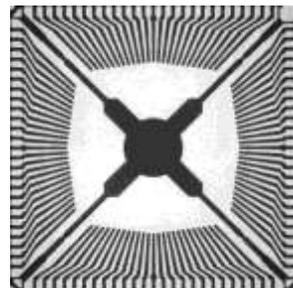
Frame B

RL78/G13A
RL78/G14 :
R5F104PK**FB
R5F104PL**FB
RL78/I1C



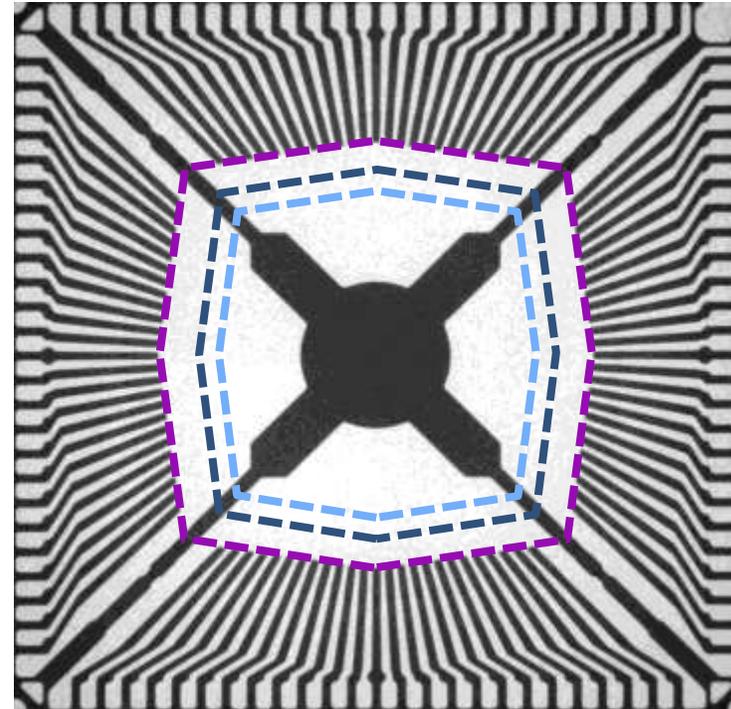
Frame C

Used in other product groups
such as RX family



Consolidated

After consolidated “Frame C”



 : Frame A

 : Frame C

 : Frame B

Efforts for changing lead frames

The change points are verified and there is no problem.

Change point	Failure mode	Cause	Response at startup	Judgement
Lead frame change	Assembly failure	Positional deviation	Mass productivity has been evaluated for similar products with the same PKG outline.	No problem
	Impact on reliability	Delamination after reflow	Mass productivity has been evaluated for similar products with the same PKG outline.	No problem

4M change points (Assembly material change)

Item	Check Result	Judgement
Machine	The same as existing products.	No risk
Method	The same as existing products.	No risk
Operator	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 existing products and have no risk.	No risk

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Difference of specification 3 (RL78 family LQFP products) 14x14mm 0.5mm pitch 100pin

Target products: RL78/L1A, RL78/L1C

January 11, 2022

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(Rev. 5.0-1 October 2020)

Difference outline

- Target products:
RL78/L1A, RL78/L1C
 - Assembly factory
Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
Greatek Electronics Inc. (Greatek)
 - Sorting factory
Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
King Yuan Electronics Co., Ltd. (KYEC)
 - Target package
14x14mm 0.5mm pitch 100pin LFQFP
 - Difference point
Packing material: We will change the embossed carrier tape width from 32mm width to 24mm width and consolidate it into the 24mm width packaging form.
-
- Specification and characteristics of product:
No change
 - Quality and reliability
No change

Difference outline

1. Targets:

- Products : RL78/L1A, RL78/L1C
- Assembly factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
Greatek Electronics Inc. (Greatek)
- Sorting factory : Renesas Semiconductor (Beijing) Co.,Ltd (RSB)
King Yuan Electronics Co., Ltd. (KYEC)
- Package : 14x14mm 0.5mm pitch 100pin LFQFP

2. Difference point

- Packing material : Change the emboss carrier tape width from 32mm width to 24mm width and consolidate to the 24mm width packing form.

- Specification and characteristics of product:
 - No change
- Quality and reliability
 - No change

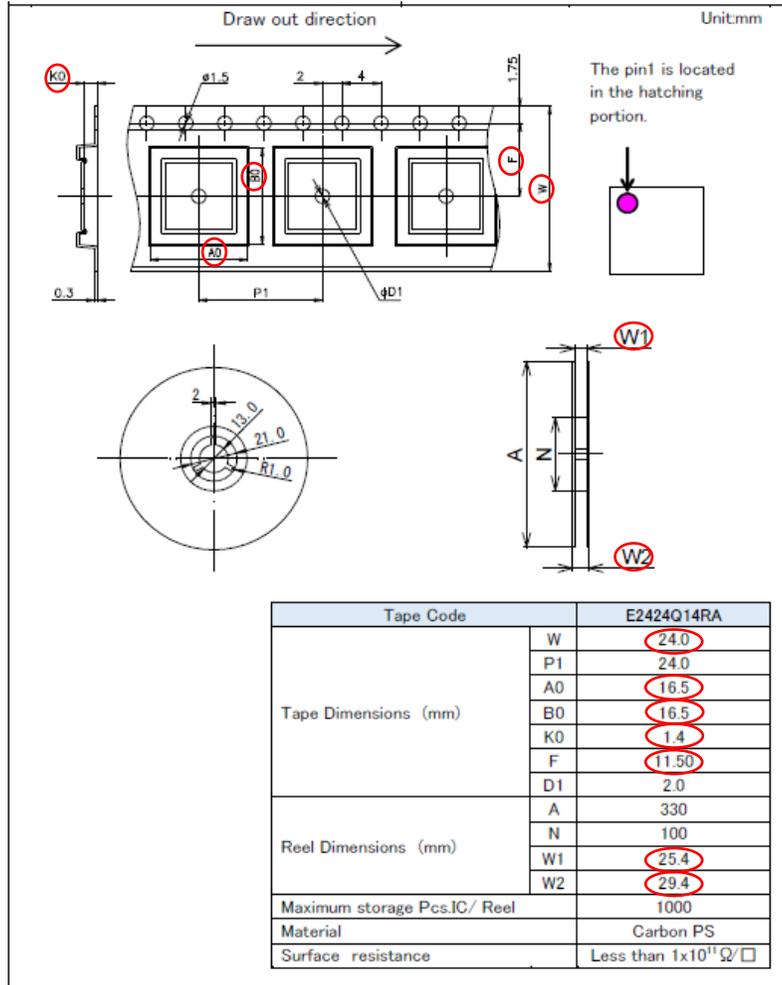
DIFFERENCES IN PACKING SPECIFICATIONS

Material	Item	New	Current
Carrier tape	Tape name	E2424Q14RA	MTE3224H-100P6Q-A
	Feed hole	Single side hole	Both sides hole
	Tape width	24mm	32mm
	Tape thickness	0.3mm	0.3mm
	Pocket size	16.5x16.5	17.3x17.3
	Pitch between pockets	24mm	24mm
	Material	PS	PS
Reel	Reel diameter	330mm	330mm
	Core diameter	100mm	100mm
	Reel width	24mm	32mm
Cover tape	Tape width	21.3mm	25.5mm

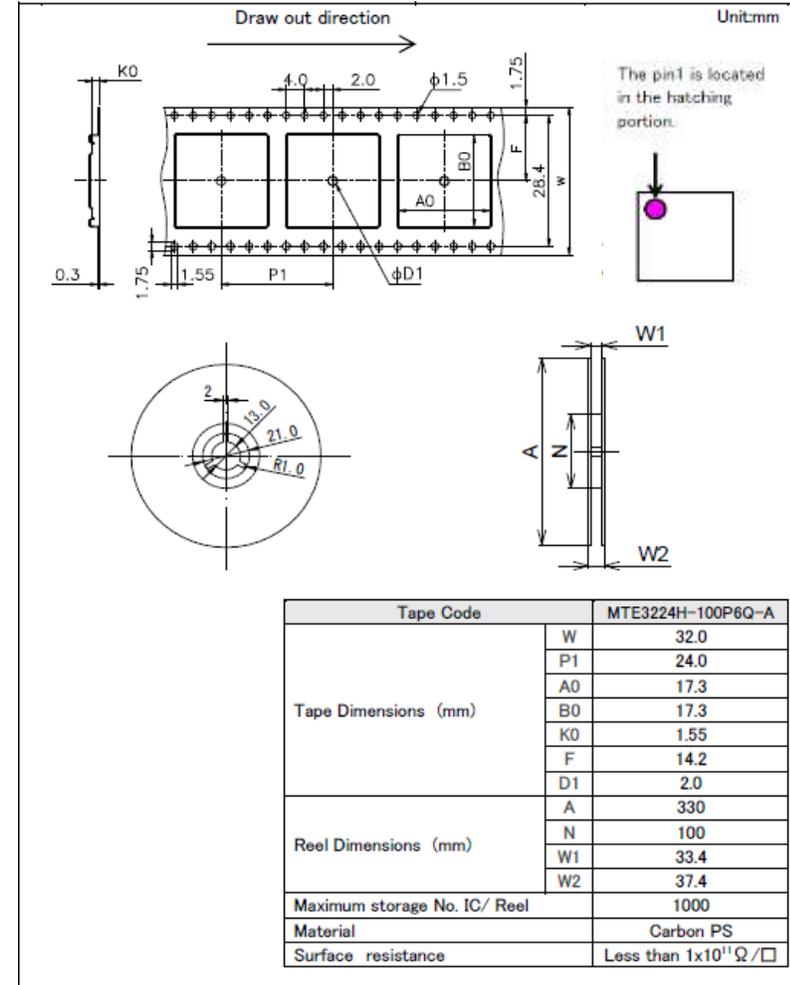
* RL78/L1A and RL78/L1C 14x14mm 100pin products are target products.
Other RL78 14x14mm products are using the carrier tape after consolidation.

14x14mm 0.5mm pitch 100pin LFQFP T&R drawing comparison

New (Width:24mm)



Current (Width:32mm)



4M changing points (Packing material change)

Item	Check Result	Judgement
Machine	The same as existing products.	No risk
Method	The same as existing products.	No risk
Operator	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 existing products and have no risk.	No risk

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