

Product Change Notice

(PCN tracking number : CST-R2-AD121 Rev.1.0)

February 17, 2017

To: Valued RENESAS Customer,

Renesas Product Summary: Standard SRAM (TSOP, FBGA, μ TSOP and SOJ) products.

Change Description: **Applicable products**

- Part of 32Mb/64Mb LPSRAM products
- Part of 4Mb asynchronous fast SRAM products (= SOJ products)

Items of change (They are different for each product. Please see page 3 to 8.)

- Site change of Final-test process
- Site change of assembly process and the change of assembly materials
- Product integration from lower-grade “-5SR, -7SI, -7SR” products to upper-compatible “-5SI” products
- Packing specification

Reason for Change: Site change due to obsolescence of manufacturing equipment, and for long-time, stable supply by improvement of mass production efficiency through part name unification.

Identification: Identifiable by RENESAS internal code, printed on the shipping label, and also identifiable by the laser-marking on the package’s surface for the products of part name unification.

Anticipated Impact:

- Packing specification is changed accompanied with the site change of Final-test process for all of the products included in this notification.
- Only regarding the 32Mb 48pin-TSOP(I) product (R1LV3216RSA), Moisture Sensitivity Level is changed from MSL2 to MSL3 accompanied with a change of lead-frame material (42-Alloy to Cu).
- Electrical characteristics of “-5SI” product is completely upper-compatible with “-5SR, -7SI, -7SR” products.

Date of Change: From July 2017, onward

Schedule:

- Regarding the EOL of 32Mb/64Mb “-5SR, -7SI, -7SR” products,
EOL Announcement: June, 2017
Commercial samples of unified “-5SI” product: From March, 2017.
- Regarding the site change of Back-end process (excluding EOL products),
Mass production of the post-change products from July 2017, in order of preparations.

Supplemental Information: Please see the page 3 to 8 and the attachments (Appendix for CST-R2-AD121).

Contact: General Purpose Analog and Power Solution Department 3,
General Purpose Analog and Power Business Division,
2nd Solution Business Unit

Internal Reference:

Attachments: Appendix for CST-R2-AD121

In case of any questions, please contact your Renesas sales representative.

Customer Response (to be returned by email or mail)

- Acknowledge
- Acceptable
- Unacceptable (pls. comment)
- Not applicable

Company: _____
Name & Position: _____
Email: _____
Phone: _____

Note: Acknowledgement must be received by Renesas within 30 days of delivery of the PCN 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 then customer must provide Renesas with a last time buy demand and purchase order.

Comments

Signature of customer

1. Background of Change

Renesas announces 2 types of Product Changes on Standard SRAM (TSOP, FBGA, μ TSOP and SOJ) products.

One is applied to 32Mb/64Mb LPSRAM which include a site change of Back-end process (assembly and/or final-test) and product integration by EOL of “-5SR, -7SI, -7SR” products and by part name unification to the upper compatible “-5SI” products. The site change is due to obsolescence of current manufacturing equipment and the unification is for the purpose of long-time, stable supply by improvement of mass production efficiency.

The other is applied to 4Mb asynchronous fast SRAM which includes a site change of Final-test process for SOJ product. This is also due to obsolescence of current manufacturing equipment.

We greatly appreciate your kind understanding and early approval for this notification.

2. Details of Change

- Regarding the applicable part names of this PCN, please refer to “7. Product list” on page 8. The details of change are categorized into three as shown below in (1), (2), (3).

(1) Orderable Part Name: R1LV3216RSA-5SR, -7SI, -7SR#B0/#S0

- (a) “Access and Temperature grades” of “-5SR, -7SI, -7SR” in 32Mb 48pin-TSOP(I) products are put to EOL, and part names of the products are unified to “-5SI”.
- (b) In accordance with product integration by EOL of “-5SR, -7SI, -7SR” products and part name unification to “-5SI” products, there are changes in Back-end process as shown in the table below.

Item		Before product integration by EOL (R1LV3216RSA-5SR, -7SI, -7SR #B0/#S0)	After part name unification (R1LV3216RSA-5SI #B1/#S1)	
Assembly	Company	Renesas Semiconductor Beijing	Amkor Technology Malaysia	
	Country	China	Malaysia	
	Material	Lead frame	42Alloy	Cu
		Lead plating	Sn-Cu	Sn
	Package marking: Country of origin	CHINA	MALAYSIA	
Moisture Sensitivity Level		MSL 2	MSL 3	
Final-test	Company	Renesas Semiconductor Beijing	Powertech Technology Inc.	
	Country	China	Taiwan	
Packing specification	Tray packing	Current specification	New specification	
		·Tray type name, PKG seat position in tray pocket, Number of trays(Max.), and Inner-box size are changed. For more details, see the appendix.		
	Tape & Reel packing	Current specification	New specification	
		·Type name of Embossed tape and Inner-box size are changed. For more details, see the appendix.		

(c) Regarding these changes,

- Electrical characteristics (DC/AC) of unified “-5SI” product are completely upper-compatible with “-5SR, -7SI, -7SR” products. For more details, please see the comparison tables on the appendix.
- “Access and Temperature grades” which is laser-marked on package’s surface, is changed from “-5SR, -7SI, -7SR” to “-5SI.”
- Although assembly materials are changed, package outline and pin configuration are equivalent to those of pre-change products which keep board-level package reliability.
- There are no changes in the site of Front-end (Wafer) process or revision of photomasks.
- There are no changes in Reliability and quality level.
- The last characters of orderable part name are changed from #B0/#S0 to #B1/#S1, accompanied with the change of assembly site and materials.

- (2) **Orderable Part Name: R1WV6416RSA-5SR, -7SI, -7SR#B0/#S0**
R1WV6416RBG-5SR, -7SI, -7SR#B0/#S0
R1LV3216RSD-5SR, -7SI, -7SR#B0/#S0
R1WV6416RSD-5SR, -7SI, -7SR#B0/#S0

- (a) “Access and Temperature grades” of “-5SR, -7SI, -7SR” in above 32Mb/64Mb LPSRAM products are put to EOL, and part names of the products are unified to “-5SI”.
 (Regarding the part names after unification, please refer to “7. Product list” on page 8.)
- (b) In accordance with product integration by EOL of “-5SR, -7SI, -7SR” products and part name unification to “-5SI” products, there are changes in Final-test site and packing specification as shown in the table below.

Item		Before product integration by EOL (-5SR, -7SI, -7SR#B0/#S0)	After part name unification (-5SI#B0/#S0)
Final-test	Company	Renesas Semiconductor Beijing	Powertech Technology Inc.
	Country	China	Taiwan
Packing specification	Tray packing	Current specification	New specification
		<ul style="list-style-type: none"> •Regarding R1WV6416RSA, Tray type name, PKG seat position in tray pocket, Number of trays(Max.) and Inner-box size are changed. For more details, see the appendix. •Regarding R1WV6416RBG, R1LV3216RSD and R1WV6416RSD, Laying direction of ICs on a tray, Number of trays(Max.) and Inner-box size are changed. For more details, see the appendix. 	
Packing specification	Tape & Reel packing	Current specification	New specification
		<ul style="list-style-type: none"> •Regarding R1WV6416RSA, Type name of Embossed tape and Inner-box size are changed. For more details, see the appendix. •Regarding R1WV6416RBG, R1LV3216RSD and R1WV6416RSD, Inner-box size is changed. For more details, see the appendix. 	

- (c) Regarding these changes,
- Electrical characteristics (DC/AC) of unified “-5SI” product are completely upper-compatible with “-5SR, -7SI, -7SR” products. For more details, please see the comparison tables on the appendix.
 - “Access and Temperature grades” which is laser-marked on package’s surface, is changed from “-5SR, -7SI, -7SR” to “-5SI.”
 - There are no changes in assembly site or assembly materials.
 (The changes in assembly site and assembly materials are only applicable to 32Mb 48pin-TSOP(I) products: R1LV3216RSA on page 4.)
 - There are no changes in the site of Front-end (Wafer) process or revision of photomasks.
 - There are no changes in Reliability and quality level.

(3) **Orderable Part Name: R1WV6416RSA-5SI#B0/#S0**

R1RP0408DGE-0PI, -0PR, -2LR, -2PI, -2PR#B0

R1RW0408DGE-0PI, -0PR, -2LR, -2PI, -2PR#B0

R1RP0416DGE-0PR, -2LR, -2PI, -2PR, -2SR, -2UR, -2VR#B0

R1RW0416DGE-0PR, -2LR, -2PI, -2PR, -2SR, -2UR#B0

(a) Regarding these products, there are changes in Final-test site and packing specification as shown in the table below.

Item		Pre Change	Post Change
Final-test	Company	Renesas Semiconductor Beijing	Powertech Technology Inc.
	Country	China	Taiwan
Packing specification	Tray packing	Current specification	New specification
		•Tray type name, PKG seat position in tray pocket, Number of trays(Max.) and Inner-box size are changed. For more details, see the appendix.	
	Tape & Reel packing	Current specification	New specification
		•Type name of Embossed tape and Inner-box size are changed. For more details, see the appendix.	
	Magazine packing (Tube packing)	Current specification	New specification
		•Inner-box size is changed. For more details, see the appendix.	

(b) Regarding these changes,

- There are no changes in assembly site or assembly materials.
(The changes in assembly site and assembly materials are only applicable to 32Mb 48pin-TSOP(I) products: R1LV3216RSA on page 4.)
- There are no changes in the site of Front-end (Wafer) process or revision of photomasks.
- There are no changes in Reliability and quality level.
- There are no changes in Electrical characteristics (DC/AC).
- Orderable part names are not changed.

3. Release Support and Milestones

Sample submission	<p>(1) Regarding the site change of final-test process, we are not planning to supply samples.</p> <p>(2) Regarding the EOL of “-5SR, -7SI, -7SR” products, we will supply commercial samples of unified “-5SI” from March, 2017.</p>
Renesas report	<p>(1) Regarding the site change of final-test process, we are not planning to submit the reliability report.</p> <p>(2) Regarding the EOL of “-5SR, -7SI, -7SR” products, we will submit the reliability report of unified “-5SI” from March, 2017.</p>

4. Identification

- (1) Identifiable by RENESAS internal code, printed on the shipping label
- (2) Also, identifiable by the laser-marking on the package’s surface for the products of part name unification.
For more information, please see the attachments (Appendix for CST-R2-AD121).

5. Schedule

- (1) Regarding the EOL of “-5SR, -7SI, -7SR” products,
EOL Announcement: June, 2017
Commercial samples of unified “-5SI” product: From March, 2017
- (2) Regarding the site change of Back-end process (excluding EOL products),
Mass production of the post-change products from July 2017, in order of preparations.

6. Supplemental Information

Please see the attachments (Appendix for CST-R2-AD121).

7. Product list

Package type	Product Type (Memory Cap., Supply Voltage)	Orderable part name	
		Pre Change	Post Change
48pin-TSOP(I)	32Mb 3V	R1LV3216RSA-5SR, -7SI, -7SR#B0	R1LV3216RSA-5SI#B1
		R1LV3216RSA-5SR, -7SI, -7SR#S0	R1LV3216RSA-5SI#S1
	64Mb 3V	R1WV6416RSA-5SI#B0	←
		R1WV6416RSA-5SI#S0	←
		R1WV6416RSA-5SR, -7SI, -7SR#B0	R1WV6416RSA-5SI#B0
		R1WV6416RSA-5SR, -7SI, -7SR#S0	R1WV6416RSA-5SI#S0
48ball-FBGA	64Mb 3V	R1WV6416RBG-5SR, -7SI, -7SR#B0	R1WV6416RBG-5SI#B0
		R1WV6416RBG-5SR, -7SI, -7SR#S0	R1WV6416RBG-5SI#S0
52pin- μ TSOP	32Mb 3V	R1LV3216RSD-5SR, -7SI, -7SR#B0	R1LV3216RSD-5SI#B0
		R1LV3216RSD-5SR, -7SI, -7SR#S0	R1LV3216RSD-5SI#S0
	64Mb 3V	R1WV6416RSD-5SR, -7SI, -7SR#B0	R1WV6416RSD-5SI#B0
		R1WV6416RSD-5SR, -7SI, -7SR#S0	R1WV6416RSD-5SI#S0
36pin-SOJ	4Mb Fast 5V	R1RP0408DGE-0PI, -0PR, -2LR, -2PI, 2PR#B0	←
	4Mb Fast 3V	R1RW0408DGE-0PI, -0PR, -2LR, -2PI, 2PR#B0	←
44pin-SOJ	4Mb Fast 5V	R1RP0416DGE-0PR, -2LR, -2PI, 2PR, -2SR, -2UR, -2VR#B0	←
	4Mb Fast 3V	R1RW0416DGE-0PR, -2LR, -2PI, 2PR, -2SR, -2UR#B0	←

- Regarding unlisted orderable part names of pre-change products here in 32Mb/64Mb line-up, R1LV3216RSA-5SI#B0/#S0 is already announced in August, 2016 (document No. CST-R2-AJ094), as a site change of Back-end process (assembly and final-test) including a change of assembly materials. RMWV3216AGBG-5S2#AC0/#KC0, R1WV6416RBG-5SI#B0/#S0, R1LV3216RSD-5SI#B0/#S0 and R1WV6416RSD-5SI#B0/#S0 are already announced in August, 2016 (document No. CST-R2-AJ095), as a site change of Final-test process.

To: Valued RENESAS customer,

General Purpose Analog and Power Solution Department 3
General Purpose Analog and Power Business Division
2nd Solution Business Unit
Renesas Electronics Corporation

February 17, 2017

Appendix for CST-R2-AD121

(Standard SRAM (TSOP, FBGA, μ TSOP and SOJ) products)

This appendix states the detailed information of PCN: CST-R2-AD121 (Regarding 32Mb/64Mb LPSRAM, site change of Back-end process (assembly and/or final-test) and product integration by EOL of “-5SR, -7SI, -7SR” products. Regarding 4Mb Asynchronous Fast SRAM, site change of final-test process for SOJ product.).

Contents

1. Product list	pp.2-3
2. Comparison table	pp.4-12
3. Product integration by EOL of “-5SR, -7SI, -7SR” products (for 32Mb / 64Mb Low Power SRAM)	p.13
4. Electrical characteristics (DC/AC) (for 32Mb / 64Mb Low Power SRAM)	pp.14-17
5. Packing specification (tray shipping)	p.18
6. Shipping label	pp.19-20
7. Site information	p.20

1. Product List

(1) 32Mb / 64Mb : 48pin-TSOP(I), 48ball-FBGA, 52pin-μTSOP package

Package Type	Product Type (Memory Cap., Supply Voltage)	Organi- zation (bit)	Orderable Part Name		Packing Type	Page No. of Comparison Table	
			Pre Change	Post Change			
48pin-TSOP(I)	32Mb 3V	x16	R1LV3216RSA-5SR#B0	R1LV3216RSA-5SI#B1	Tray	p.4, p.13, pp.14-15	
			R1LV3216RSA-7SI#B0				
			R1LV3216RSA-7SR#B0				
			R1LV3216RSA-5SR#S0	R1LV3216RSA-5SI#S1			Tape & Reel
	R1LV3216RSA-7SI#S0						
	R1LV3216RSA-7SR#S0						
	R1LV3216RSA-5SR#B0	R1WV6416RSA-5SI#B0	Tray				
	R1WV6416RSA-5SR#B0						
R1WV6416RSA-7SI#B0							
R1WV6416RSA-7SR#B0							
64Mb 3V	x16	R1WV6416RSA-5SI#S0	R1WV6416RSA-5SI#S0	Tape & Reel			
		R1WV6416RSA-5SR#S0					
		R1WV6416RSA-7SI#S0					
		R1WV6416RSA-7SR#S0					
48ball-FBGA	64Mb 3V	x16	R1WV6416RBG-5SR#B0	R1WV6416RBG-5SI#B0	Tray	p.6, p.13, pp.16-17	
			R1WV6416RBG-7SI#B0				
			R1WV6416RBG-7SR#B0				
			R1WV6416RBG-5SR#S0	R1WV6416RBG-5SI#S0			Tape & Reel
			R1WV6416RBG-7SI#S0				
			R1WV6416RBG-7SR#S0				
52pin-μTSOP	32Mb 3V	x16	R1LV3216RSD-5SR#B0	R1LV3216RSD-5SI#B0	Tray	p.7, p.13, pp.14-15	
			R1LV3216RSD-7SI#B0				
			R1LV3216RSD-7SR#B0				
			R1LV3216RSD-5SR#S0	R1LV3216RSD-5SI#S0			Tape & Reel
	R1LV3216RSD-7SI#S0						
	R1LV3216RSD-7SR#S0						
	R1WV6416RSD-5SR#B0	R1WV6416RSD-5SI#B0	Tray				
	R1WV6416RSD-7SI#B0						
R1WV6416RSD-7SR#B0							
R1WV6416RSD-5SR#S0	R1WV6416RSD-5SI#S0			Tape & Reel			
R1WV6416RSD-7SI#S0							
R1WV6416RSD-7SR#S0							

- Regarding unlisted orderable part names of pre-change products here,
R1LV3216RSA-5SI#B0/#S0 are already announced in August, 2016 (document No. CST-R2-AJ094), as a site change of Back-end process (assembly and final-test) including a change of assembly materials.
R1WV6416RBG-5SI#B0/#S0, R1LV3216RSD-5SI#B0/#S0 and R1WV6416RSD-5SI#B0/#S0 are already announced in August, 2016 (document No. CST-R2-AJ095), as a site change of Final-test process.

(2) 4Mb Fast SRAM : 36pin-SOJ, 44pin-SOJ package

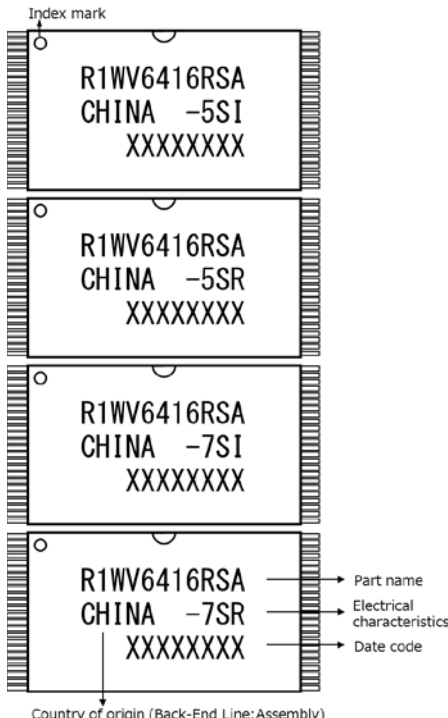
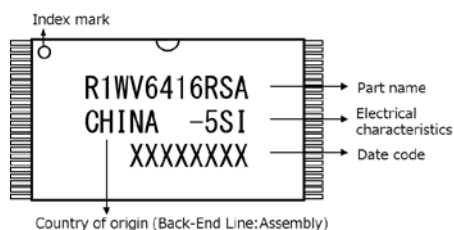
Package Type	Product Type (Memory Cap., Supply Voltage)	Organi- zation (bit)	Orderable Part Name		Packing Type	Page No. of Comparison Table
			Pre Change	Post Change		
36pin-SOJ	4Mb Fast 5V	x8	R1RP0408DGE-0PI#B0	←	Magazine	p.9
			R1RP0408DGE-0PR#B0	←		
			R1RP0408DGE-2LR#B0	←		
			R1RP0408DGE-2PI#B0	←		
			R1RP0408DGE-2PR#B0	←		
	4Mb Fast 3V	x8	R1RW0408DGE-0PI#B0	←	Magazine	p.10
			R1RW0408DGE-0PR#B0	←		
			R1RW0408DGE-2LR#B0	←		
			R1RW0408DGE-2PI#B0	←		
			R1RW0408DGE-2PR#B0	←		
44pin-SOJ	4Mb Fast 5V	x16	R1RP0416DGE-0PR#B0	←	Magazine	p.11
			R1RP0416DGE-2LR#B0	←		
			R1RP0416DGE-2PI#B0	←		
			R1RP0416DGE-2PR#B0	←		
			R1RP0416DGE-2SR#B0	←		
			R1RP0416DGE-2UR#B0	←		
			R1RP0416DGE-2VR#B0	←		
	4Mb Fast 3V	x16	R1RW0416DGE-0PR#B0	←	Magazine	p.12
			R1RW0416DGE-2LR#B0	←		
			R1RW0416DGE-2UR#B0	←		

2. Comparison table

(1) 48pin-TSOP(I) 32Mb(3V) Part name : R1LV3216RSA

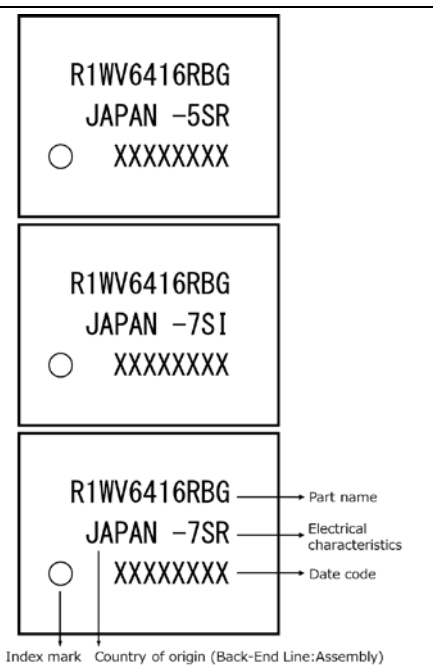
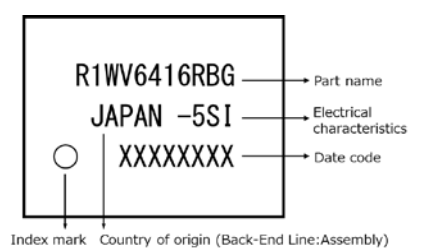
Item		Pre Change	Post Change
Orderable part name		R1LV3216RSA-5SR/-7SI/-7SR#B0 (Tray packing)	R1LV3216RSA-5SI#B1 (Tray packing)
		R1LV3216RSA-5SR/-7SI/-7SR#S0 (Tape & Reel packing)	R1LV3216RSA-5SI#S1 (Tape & Reel packing)
Assembly line		Renesas Semiconductor Beijing (China)	Amkor Technology Malaysia (Malaysia)
Country of origin display		CHINA	MALAYSIA
JEITA Package Code		P-TSOP(1)48-12x18.4-0.50	P-TSOP(1)48-12x18.4-0.50
Package marking specification			
Assembly Material	Lead frame material	42Alloy	Cu
	Lead plating	Sn-Cu	Sn (pure tin)
	Die bonding	Epoxy film	Epoxy paste
	Wire bonding	Au	Au
	Mold	Epoxy resin (Halogen-included)	Epoxy resin (Halogen-free)
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Tray packing	Packing specification	Current specification	New specification
	Tray	JEDEC Tray with Renesas Logo (TSOP I package size: 12mm x 18.4mm)	JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm)
	Storage number	96pcs/tray	96pcs/tray
	Laying direction of ICs on a tray	Direction from the top left position to the down side (when the position of chamfer in tray's corner is bottom left.)	No change
	Number of trays (Max.)	8 trays + 1 tray (cover)	10 trays + 1 tray (cover)
	Inner box size (LxWxH)	330mm x 152mm x 75mm	351mm x 175mm x 104mm
Tape & Reel packing	Packing specification	Current specification	New specification
	Embossed tape	Current specification (type name : TE3216-16P)	New specification (type name : TSOP48-3)
	Storage number	1,000pcs/reel	1,000pcs/reel
	Inner box size (LxWxH)	347mm x 368mm x 54mm	362mm x 340mm x 60mm
Moisture-proof performance		MSL 2	MSL 3
Shipping label		Current specification	No change in format (Changes in orderable part name, country of origin and MSL display)

- Note: Accompanied with a change of JEDEC tray, the package seat position in tray pocket is to be changed. Please see page 18.
- Note: Accompanied with a change of embossed tape, the package seat position in taping pocket is not to be changed. No change in width and pitch of embossed tape. No change in reel diameter.

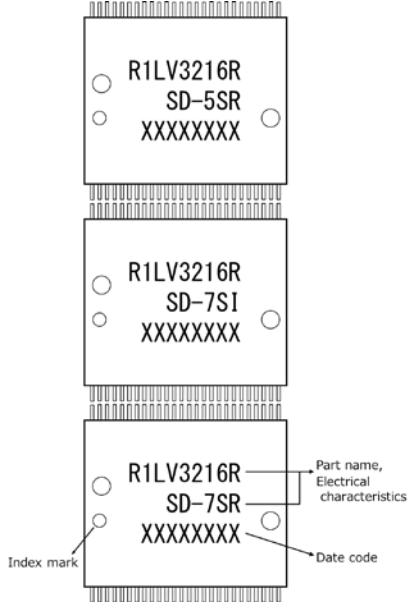
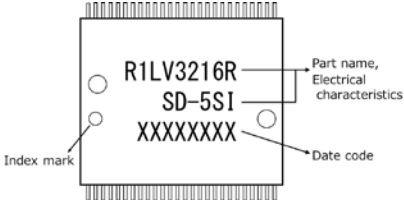
Item		Pre Change	Post Change
Orderable part name		R1WV6416RSA-5SI/-5SR/-7SI/-7SR#B0 (Tray packing) R1WV6416RSA-5SI/-5SR/-7SI/-7SR#S0 (Tape & Reel packing)	R1WV6416RSA-5SI#B0 (Tray packing) R1WV6416RSA-5SI#S0 (Tape & Reel packing)
Assembly line		Renesas Semiconductor Beijing (China)	←
Country of origin display		CHINA	←
JEITA Package Code		P-TSOP(1)48-12x18.4-0.50	←
Package marking specification			
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Tray packing	Packing specification	Current specification	New specification
	Tray	JEDEC Tray with Renesas Logo (TSOP I package size: 12mm x 18.4mm)	JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm)
	Storage number	96pcs/tray	96pcs/tray
	Laying direction of ICs on a tray	Direction from the top left position to the down side (when the position of chamfer in tray's corner is bottom left.)	No change
	Number of trays (Max.)	8 trays + 1 tray (cover)	10 trays + 1 tray (cover)
	Inner box size (LxWxH)	330mm x 152mm x 75mm	351mm x 175mm x 104mm
Tape & Reel packing	Packing specification	Current specification	New specification
	Embossed tape	Current specification (type name : TE3216-16P)	New specification (type name : TSOP48-3)
	Storage number	1,000pcs/reel	1,000pcs/reel
	Inner box size (LxWxH)	347mm x 368mm x 54mm	362mm x 340mm x 60mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

- Note: Accompanied with a change of JEDEC tray, the package seat position in tray pocket is to be changed. Please see page 18.
- Note: Accompanied with a change of embossed tape, the package seat position in taping pocket is not to be changed. No change in width and pitch of embossed tape. No change in reel diameter.

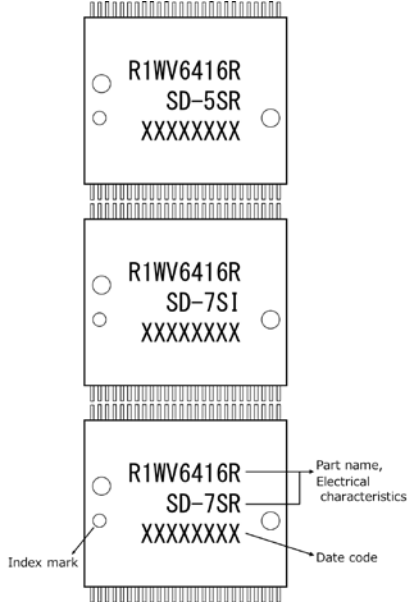
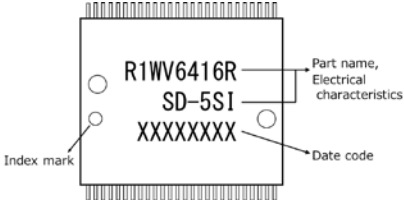
(3) 48ball-FBGA 64Mb(3V) Part name : R1WV6416RBG

Item		Pre Change	Post Change
Orderable part name		R1WV6416RBG-5SR/-7SI/-7SR#B0 (Tray packing)	R1WV6416RBG-5SI#B0 (Tray packing)
		R1WV6416RBG-5SR/-7SI/-7SR#S0 (Tape & Reel packing)	R1WV6416RBG-5SI#S0 (Tape & Reel packing)
Assembly line		J-Devices Kumamoto District (Japan)	←
Country of origin display		JAPAN	←
JEITA Package Code		P-TFBGA48-8.5x11-0.75	←
Package marking specification			
Assembly Material	Substrate material	Glass epoxy	←
	Solder ball	Sn-Ag-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Tray packing	Packing specification	Current specification	New specification
	Tray	JEDEC Tray with Renesas Logo (Tray type name : L196-121)	←
	Storage number	242pcs/tray	←
	Laying direction of ICs on a tray	Direction from the bottom right position to the top side (when the position of chamfer in tray's corner is bottom left.)	Direction from the top left position to the bottom side (when the position of chamfer in tray's corner is bottom left.)
	Number of trays (Max.)	8 trays + 1 tray (cover)	10 trays + 1 tray (cover)
	Inner box size (LxWxH)	330mm x 152mm x 75mm	351mm x 175mm x 104mm
Tape & Reel packing	Packing specification	Current specification	New specification
	Embossed tape	Current specification	No change
	Storage number	1,000pcs/reel	←
	Inner box size (LxWxH)	288mm x 273mm x 48mm	289mm x 264mm x 60mm
Moisture-proof performance		MSL 3	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

(4) 52pin- μ T SOP 32Mb(3V) Part name : R1LV3216RSD

Item		Pre Change	Post Change
Orderable part name		R1LV3216RSD-5SR/-7SI/-7SR#B0 (Tray packing)	R1LV3216RSD-5SI#B0 (Tray packing)
		R1LV3216RSD-5SR/-7SI/-7SR#S0 (Tape & Reel packing)	R1LV3216RSD-5SI#S0 (Tape & Reel packing)
Assembly line		Renesas Semiconductor Beijing (China)	←
JEITA Package Code		P-TSOP(2)52-8.89x10.79-0.40	←
Package marking specification			
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Tray packing	Packing specification	Current specification	New specification
	Tray	JEDEC Tray with Renesas Logo (Tray type name : L196-24)	←
	Storage number	230pcs/tray	←
	Laying direction of ICs on a tray	Direction from the bottom right position to the up side (when the position of chamfer in tray's corner is bottom left.)	Direction from the top left position to the down side (when the position of chamfer in tray's corner is bottom left.)
	Number of trays (Max.)	8 trays + 1 tray (cover)	10 trays + 1 tray (cover)
	Inner box size (LxWxH)	330mm x 152mm x 75mm	351mm x 175mm x 104mm
Tape & Reel packing	Packing specification	Current specification	New specification
	Embossed tape	Current specification	No change
	Storage number	1,000pcs/reel	←
	Inner box size (LxWxH)	288mm x 273mm x 48mm	289mm x 264mm x 60mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

(5) 52pin-μTSON 64Mb(3V) Part name : R1WV6416RSD

Item		Pre Change	Post Change
Orderable part name		R1WV6416RSD-5SR/-7SI/-7SR#B0 (Tray packing)	R1WV6416RSD-5SI#B0 (Tray packing)
		R1WV6416RSD-5SR/-7SI/-7SR#S0 (Tape & Reel packing)	R1WV6416RSD-5SI#S0 (Tape & Reel packing)
Assembly line		Renesas Semiconductor Beijing (China)	←
JEITA Package Code		P-TSON(2)52-8.89x10.79-0.40	←
Package marking specification			
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Tray packing	Packing specification	Current specification	New specification
	Tray	JEDEC Tray with Renesas Logo (Tray type name : L196-24)	←
	Storage number	230pcs/tray	←
	Laying direction of ICs on a tray	Direction from the bottom right position to the up side (when the position of chamfer in tray's corner is bottom left.)	Direction from the top left position to the down side (when the position of chamfer in tray's corner is bottom left.)
	Number of trays (Max.)	8 trays + 1 tray (cover)	10 trays + 1 tray (cover)
	Inner box size (LxWxH)	330mm x 152mm x 75mm	351mm x 175mm x 104mm
Tape & Reel packing	Packing specification	Current specification	New specification
	Embossed tape	Current specification	No change
	Storage number	1,000pcs/reel	←
	Inner box size (LxWxH)	288mm x 273mm x 48mm	289mm x 264mm x 60mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

(6) 36pin-SOJ 4Mb Fast(5V) x8 Part name : R1RP0408DGE

Item		Pre Change	Post Change
Orderable part name		R1RP0408DGE-0PI/-0PR/-2LR/-2PI/-2PR#B0 (Magazine packing)	←
Assembly line		Renesas Semiconductor Beijing (China)	←
Country of origin display		CHINA	←
JEITA Package Code		P-SOJ36-10.16x23.39-1.27	←
Package marking specification (The Electrical characteristics is an example.)			No change
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Magazine packing	Packing specification	Current specification	New specification
	Magazine	Magazine code : JP400PC	←
	Storage number	22pcs/magazine	←
	Number of magazines (Max.)	60 magazines	←
	Inner box size (LxWxH)	600mm x 172mm x 77mm	595mm x 170mm x 72mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

- Regarding R1RP0408DGE, laser marking on the package's surface is processed at final test site.

(7) 36pin-SOJ 4Mb Fast(3V) x8 Part name : R1RW0408DGE

Item		Pre Change	Post Change
Orderable part name		R1RW0408DGE-0PI/-0PR/-2LR/-2PI/2PR#B0 (Magazine packing)	←
Assembly line		Renesas Semiconductor Beijing (China)	←
Country of origin display		CHINA	←
JEITA Package Code		P-SOJ36-10.16x23.39-1.27	←
Package marking specification (The Electrical characteristics is an example.)			No change
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Magazine packing	Packing specification	Current specification	New specification
	Magazine	Magazine code : JP400PC	←
	Storage number	22pcs/magazine	←
	Number of magazines (Max.)	60 magazines	←
	Inner box size (LxWxH)	600mm x 172mm x 77mm	595mm x 170mm x 72mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

- Regarding R1RW0408DGE, laser marking on the package's surface is processed at final test site.

(8) 44pin-SOJ 4Mb Fast(5V) x16 Part name : R1RP0416DGE

Item		Pre Change	Post Change
Orderable part name		R1RP0416DGE -0PR/-2LR/-2PI/-2PR/-2SR/-2UR/-2VR#B0 (Magazine packing)	←
Assembly line		Renesas Semiconductor Beijing (China)	←
Country of origin display		CHINA	←
JEITA Package Code		P-SOJ44-10.16x28.47-1.27	←
Package marking specification (The Electrical characteristics is an example.)			No change
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Magazine packing	Packing specification	Current specification	New specification
	Magazine	Magazine code : JP400PC	←
	Storage number	18pcs/magazine	←
	Number of magazines (Max.)	60 magazines	←
	Inner box size (LxWxH)	600mm x 172mm x 77mm	595mm x 170mm x 72mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

- Regarding R1RP0416DGE, laser marking on the package's surface is processed at final test site.

(9) 44pin-SOJ 4Mb Fast(3V) x16 Part name : R1RW0416DGE

Item		Pre Change	Post Change
Orderable part name		R1RW0416DGE -0PR/-2LR/-2PI/-2PR/-2SR/-2UR#B0 (Magazine packing)	←
Assembly line		Renesas Semiconductor Beijing (China)	←
Country of origin display		CHINA	←
JEITA Package Code		P-SOJ44-10.16x28.47-1.27	←
Package marking specification (The Electrical characteristics is an example.)			No change
Assembly Material	Lead frame material	42Alloy	←
	Lead plating	Sn-Cu	←
	Die bonding	Epoxy film	←
	Wire bonding	Au	←
	Mold	Epoxy resin (Halogen-included)	←
Final test line		Renesas Semiconductor Beijing (China)	Powertech Technology Inc. (Taiwan)
Magazine packing	Packing specification	Current specification	New specification
	Magazine	Magazine code : JP400PC	←
	Storage number	18pcs/magazine	←
	Number of magazines (Max.)	60 magazines	←
	Inner box size (LxWxH)	600mm x 172mm x 77mm	595mm x 170mm x 72mm
Moisture-proof performance		MSL 2	←
Shipping label		Current specification	No change in format (Changes in Renesas internal code)

- Regarding R1RW0416DGE, laser marking on the package's surface is processed at final test site.

3. Product integration by EOL of “-5SR, -7SI, -7SR” products (for 32Mb / 64Mb Low Power SRAM)

- Regarding the EOL of “-5SR, -7SI, -7SR” products, these "Access and Temperature grades" are unified to "-5SI" (see below).

Package Type	Memory Cap., Supply Voltage	bit	Pre Change			Post Change					
			Orderable Part Name	Access time	Operation Temp.	Orderable Part Name	Access time	Operation Temp.			
48pin-TSOP(I)	32Mb 3V	x16	R1LV3216RSA-5SR#B0	55ns	0°C ~70°C	R1LV3216RSA-5SI#B1 R1LV3216RSA-5SI#S1	55ns	-40°C ~85°C			
			R1LV3216RSA-5SR#S0								
			R1LV3216RSA-7SI#B0	70ns	-40°C ~85°C						
			R1LV3216RSA-7SI#S0								
	R1LV3216RSA-7SR#B0	70ns	0°C ~70°C								
	R1LV3216RSA-7SR#S0										
	64Mb 3V	x16	R1WV6416RSA-5SI#B0	55ns	-40°C ~85°C				R1WV6416RSA-5SI#B0 R1WV6416RSA-5SI#S0	55ns	-40°C ~85°C
			R1WV6416RSA-5SI#S0								
R1WV6416RSA-5SR#B0			70ns	-40°C ~85°C							
R1WV6416RSA-5SR#S0											
R1WV6416RSA-7SI#B0			70ns	-40°C ~85°C							
R1WV6416RSA-7SI#S0											
R1WV6416RSA-7SR#B0	70ns	0°C ~70°C									
R1WV6416RSA-7SR#S0											
48ball-FBGA	64Mb 3V	x16	R1WV6416RBG-5SR#B0	55ns	0°C ~70°C	R1WV6416RBG-5SI#B0 R1WV6416RBG-5SI#S0	55ns	-40°C ~85°C			
			R1WV6416RBG-5SR#S0								
			R1WV6416RBG-7SI#B0	70ns	-40°C ~85°C						
			R1WV6416RBG-7SI#S0								
R1WV6416RBG-7SR#B0	70ns	0°C ~70°C									
R1WV6416RBG-7SR#S0											
52pin-μTSP	32Mb 3V	x16	R1LV3216RSD-5SR#B0	55ns	0°C ~70°C	R1LV3216RSD-5SI#B0 R1LV3216RSD-5SI#S0	55ns	-40°C ~85°C			
			R1LV3216RSD-5SR#S0								
			R1LV3216RSD-7SI#B0	70ns	-40°C ~85°C						
			R1LV3216RSD-7SI#S0								
	R1LV3216RSD-7SR#B0	70ns	0°C ~70°C								
	R1LV3216RSD-7SR#S0										
	64Mb 3V	x16	R1WV6416RSD-5SR#B0	55ns	0°C ~70°C				R1WV6416RSD-5SI#B0 R1WV6416RSD-5SI#S0	55ns	-40°C ~85°C
			R1WV6416RSD-5SR#S0								
R1WV6416RSD-7SI#B0			70ns	-40°C ~85°C							
R1WV6416RSD-7SI#S0											
R1WV6416RSD-7SR#B0	70ns	0°C ~70°C									
R1WV6416RSD-7SR#S0											

- #B0, #B1: Tray packing, #S0, #S1: Tape & Reel packing.

4. Electrical characteristics (DC/AC) (for 32Mb / 64Mb Low Power SRAM)

- Regarding the EOL of “-5SR, -7SI, -7SR” products, electrical characteristics (DC/AC) of unified “-5SI” product is completely upper-compatible with “-5SR, -7SI, -7SR” products (see below).

(1)–a. Electrical characteristics (DC) : 32Mb(3V) R1LV3216RSA, R1LV3216RSD

Products

Item	Pre Change	Post Change
Orderable part name	R1LV3216RSA-5SR, -7SI, -7SR#B0	R1LV3216RSA-5SI#B1
	R1LV3216RSA-5SR, -7SI, -7SR#S0	R1LV3216RSA-5SI#S1
	R1LV3216RSD-5SR, -7SI, -7SR#B0	R1LV3216RSD-5SI#B0
	R1LV3216RSD-5SR, -7SI, -7SR#S0	R1LV3216RSD-5SI#S0

DC conditions

Item	Symbol	Pre Change	Symbol	Post Change
Supply voltage	Vcc	2.7V~3.6V	Vcc	←
Operating temperature range	Ta	5SR, 7SR	Ta	-40°C~85°C
		7SI		
Input high voltage	VIH	2.4V(min.) / Vcc+0.2V(max.)	VIH	←
Input low voltage	VIL	-0.2V(min.) / 0.4V(max.)	VIL	←

DC characteristics

Item	Symbol	Pre Change	Symbol	Post Change		
Operating Current	Icc1(TTL, Min.Cycle)	55mA(max.) / 40mA(typ.)	Icc1(TTL, Min.Cycle)	←		
	Icc2(MOS, Cycle=1us)	8mA(max.) / 3mA(typ.)	Icc2(MOS, Cycle=1us)	←		
Standby current	ISB(TTL)	0.3mA(max.) / 0.1mA(typ.)		ISB(TTL)	←	
		ISB1(MOS)	~25°C		12uA(max.) / 4uA(typ.)	ISB1(MOS)
	~40°C		24uA(max.) / 7uA(typ.)	~40°C	←	
	~70°C		50uA(max.)	~70°C	←	
	~85°C (for 7SI)	80uA(max.)	~85°C	←		
Output high voltage	VOH	IOH=-0.5mA	2.4V(min.)	VOH	IOH=-0.5mA	←
Output low voltage	VOL	IOL=2mA	0.4V(max.)	VOL	IOL=2mA	←

Capacitance

Item	Symbol	Pre Change	Symbol	Post Change
Input capacitance	C in	10pF(max.)	C in	←
Input/Output capacitance	C I/O	10pF(max.)	C I/O	←

Data retention characteristics

Item	Symbol	Pre Change	Symbol	Post Change		
Vcc for data retention	VDR	2.0V(min.)	VDR	←		
Data retention current	IccDR	~25°C	IccDR	~25°C	←	
		~40°C		12uA(max.) / 4uA(typ.) 24uA(max.) / 7uA(typ.)	~40°C	←
		~70°C		50uA(max.)	~70°C	←
		~85°C (for 7SI)		80uA(max.)	~85°C	←
Chip deselect time to data retention	tCDR	0ns(min.)	tCDR	←		
Operation recovery time	tR	5ms(min.)	tR	←		

(1)-b. Electrical characteristics (AC) : 32Mb(3V) R1LV3216RSA, R1LV3216RSD

Products

Item	Pre Change	Post Change
Orderable part name	R1LV3216RSA-5SR, -7SI, -7SR#B0	R1LV3216RSA-5SI#B1
	R1LV3216RSA-5SR, -7SI, -7SR#S0	R1LV3216RSA-5SI#S1
	R1LV3216RSD-5SR, -7SI, -7SR#B0	R1LV3216RSD-5SI#B0
	R1LV3216RSD-5SR, -7SI, -7SR#S0	R1LV3216RSD-5SI#S0

AC characteristics
Read Cycle

Item	Symbol	Pre Change		Symbol	Post Change
Read cycle time	tRC	5SR	55ns(min.)	tRC	55ns(min.)
		7SI, 7SR	70ns(min.)		
Address access time	tAA	5SR	55ns(max.)	tAA	55ns(max.)
		7SI, 7SR	70ns(max.)		
Chip select access time	tACS1 / tACS2	5SR	55ns(max.)	tACS1 / tACS2	55ns(max.)
		7SI, 7SR	70ns(max.)		
Output enable to output valid	tOE	5SR	25ns(max.)	tOE	25ns(max.)
		7SI, 7SR	35ns(max.)		
Output hold from address change	tOH	5SR	10ns(min.)	tOH	←
		7SI, 7SR	10ns(min.)		
LB#,UB# access time	tBA	5SR	55ns(max.)	tBA	55ns(max.)
		7SI, 7SR	70ns(max.)		
Chip select to output in low-Z	tCLZ1 / tCLZ2	5SR	10ns(min.)	tCLZ1 / tCLZ2	←
		7SI, 7SR	10ns(min.)		
LB#,UB# enable to low-Z	tBLZ	5SR	5ns(min.)	tBLZ	←
		7SI, 7SR	5ns(min.)		
Output enable to output in low-Z	tOLZ	5SR	5ns(min.)	tOLZ	←
		7SI, 7SR	5ns(min.)		
Chip deselect to output in high-Z	tCHZ1 / tCHZ2	5SR	0ns(min.) / 20ns(max.)	tCHZ1 / tCHZ2	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
LB#,UB# disable to high-Z	tBHZ	5SR	0ns(min.) / 20ns(max.)	tBHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
Output disable to output in high-Z	tOHZ	5SR	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		

Write Cycle

Item	Symbol	Pre Change		Symbol	Post Change
Write cycle time	tWC	5SR	55ns(min.)	tWC	55ns(min.)
		7SI, 7SR	70ns(min.)		
Address valid to end of write	tAW	5SR	50ns(min.)	tAW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Chip select to end of write	tCW	5SR	50ns(min.)	tCW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Write pulse width	tWP	5SR	40ns(min.)	tWP	40ns(min.)
		7SI, 7SR	55ns(min.)		
LB#,UB# valid to end of write	tBW	5SR	50ns(min.)	tBW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Address setup time	tAS	5SR	0ns(min.)	tAS	←
		7SI, 7SR	0ns(min.)		
Write recovery time	tWR	5SR	0ns(min.)	tWR	←
		7SI, 7SR	0ns(min.)		
Data to write time overlap	tDW	5SR	25ns(min.)	tDW	25ns(min.)
		7SI, 7SR	35ns(min.)		
Data hold from write time	tDH	5SR	0ns(min.)	tDH	←
		7SI, 7SR	0ns(min.)		
Output enable from end of write	tOW	5SR	5ns(min.)	tOW	←
		7SI, 7SR	5ns(min.)		
Output disable to output in high-Z	tOHZ	5SR	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
Write to output in high-Z	tWHZ	5SR	0ns(min.) / 20ns(max.)	tWHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		

(2)-a. Electrical characteristics (DC) : 64Mb(3V) R1WV6416RSA, R1WV6416RBG, R1WV6416RSD

Products

Item	Pre Change	Post Change
Orderable part name	R1WV6416RSA-5SI, 5SR, -7SI, -7SR#B0	R1WV6416RSA-5SI#B0
	R1WV6416RSA-5SI, 5SR, -7SI, -7SR#S0	R1WV6416RSA-5SI#S0
	R1WV6416RBG-5SR, -7SI, -7SR#B0	R1WV6416RBG-5SI#B0
	R1WV6416RBG-5SR, -7SI, -7SR#S0	R1WV6416RBG-5SI#S0
	R1WV6416RSD-5SR, -7SI, -7SR#B0	R1WV6416RSD-5SI#B0
	R1WV6416RSD-5SR, -7SI, -7SR#S0	R1WV6416RSD-5SI#S0

DC conditions

Item	Symbol	Pre Change	Symbol	Post Change
Supply voltage	Vcc	2.7V~3.6V	Vcc	←
Operating temperature range	Ta	5SR, 7SR	Ta	-40°C~85°C
		5SI, 7SI		
Input high voltage	VIH	2.4V(min.) / Vcc+0.2V(max.)	VIH	←
Input low voltage	VIL	-0.2V(min.) / 0.4V(max.)	VIL	←

DC characteristics

Item	Symbol	Pre Change	Symbol	Post Change	
Operating Current	Icc1(TTL, Min.Cycle)	60mA(max.) / 45mA(typ.)	Icc1(TTL, Min.Cycle)	←	
	Icc2(MOS, Cycle=1us)	10mA(max.) / 5mA(typ.)	Icc2(MOS, Cycle=1us)	←	
Standby current	ISB(TTL)	0.3mA(max.) / 0.1mA(typ.)	ISB(TTL)	←	
	ISB1(MOS)	~25°C	ISB1(MOS)	~25°C	←
		~40°C		~40°C	←
		~70°C		~70°C	←
		~85°C (for 5SI, 7SI)		~85°C	←
Output high voltage	VOH	IOH=-0.5mA	VOH	IOH=-0.5mA	←
Output low voltage	VOL	IOL=2mA	VOL	IOL=2mA	←

Capacitance

Item	Symbol	Pre Change	Symbol	Post Change
Input capacitance	C in	20pF(max.)	C in	←
Input/Output capacitance	C I/O	20pF(max.)	C I/O	←

Data retention characteristics

Item	Symbol	Pre Change	Symbol	Post Change	
Vcc for data retention	VDR	2.0V(min.)	VDR	←	
Data retention current	IccDR	~25°C	IccDR	~25°C	←
		~40°C		~40°C	←
		~70°C		~70°C	←
		~85°C (for 5SI, 7SI)		~85°C	←
Chip deselect time to data retention	tCDR	0ns(min.)	tCDR	←	
Operation recovery time	tR	5ms(min.)	tR	←	

(2)-b. Electrical characteristics (AC) : 64Mb(3V) R1WV6416RSA, R1WV6416RBG, R1WV6416RSD

Products

Item	Pre Change	Post Change
Orderable part name	R1WV6416RSA-5SI, 5SR, -7SI, -7SR#B0	R1WV6416RSA-5SI#B0
	R1WV6416RSA-5SI, 5SR, -7SI, -7SR#S0	R1WV6416RSA-5SI#S0
	R1WV6416RBG-5SR, -7SI, -7SR#B0	R1WV6416RBG-5SI#B0
	R1WV6416RBG-5SR, -7SI, -7SR#S0	R1WV6416RBG-5SI#S0
	R1WV6416RSD-5SR, -7SI, -7SR#B0	R1WV6416RSD-5SI#B0
	R1WV6416RSD-5SR, -7SI, -7SR#S0	R1WV6416RSD-5SI#S0

AC characteristics

Read Cycle

Item	Symbol	Pre Change		Symbol	Post Change
Read cycle time	tRC	5SI, 5SR	55ns(min.)	tRC	55ns(min.)
		7SI, 7SR	70ns(min.)		
Address access time	tAA	5SI, 5SR	55ns(max.)	tAA	55ns(max.)
		7SI, 7SR	70ns(max.)		
Chip select access time	tACS1 / tACS2	5SI, 5SR	55ns(max.)	tACS1 / tACS2	55ns(max.)
		7SI, 7SR	70ns(max.)		
Output enable to output valid	tOE	5SI, 5SR	25ns(max.)	tOE	25ns(max.)
		7SI, 7SR	35ns(max.)		
Output hold from address change	tOH	5SI, 5SR	10ns(min.)	tOH	←
		7SI, 7SR	10ns(min.)		
LB#,UB# access time	tBA	5SI, 5SR	55ns(max.)	tBA	55ns(max.)
		7SI, 7SR	70ns(max.)		
Chip select to output in low-Z	tCLZ1 / tCLZ2	5SI, 5SR	10ns(min.)	tCLZ1 / tCLZ2	←
		7SI, 7SR	10ns(min.)		
LB#,UB# enable to low-Z	tBLZ	5SI, 5SR	5ns(min.)	tBLZ	←
		7SI, 7SR	5ns(min.)		
Output enable to output in low-Z	tOLZ	5SI, 5SR	5ns(min.)	tOLZ	←
		7SI, 7SR	5ns(min.)		
Chip deselect to output in high-Z	tCHZ1 / tCHZ2	5SI, 5SR	0ns(min.) / 20ns(max.)	tCHZ1 / tCHZ2	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
LB#,UB# disable to high-Z	tBHZ	5SI, 5SR	0ns(min.) / 20ns(max.)	tBHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
Output disable to output in high-Z	tOHZ	5SI, 5SR	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		

Write Cycle

Item	Symbol	Pre Change		Symbol	Post Change
Write cycle time	tWC	5SI, 5SR	55ns(min.)	tWC	55ns(min.)
		7SI, 7SR	70ns(min.)		
Address valid to end of write	tAW	5SI, 5SR	50ns(min.)	tAW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Chip select to end of write	tCW	5SI, 5SR	50ns(min.)	tCW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Write pulse width	tWP	5SI, 5SR	40ns(min.)	tWP	40ns(min.)
		7SI, 7SR	55ns(min.)		
LB#,UB# valid to end of write	tBW	5SI, 5SR	50ns(min.)	tBW	50ns(min.)
		7SI, 7SR	65ns(min.)		
Address setup time	tAS	5SI, 5SR	0ns(min.)	tAS	←
		7SI, 7SR	0ns(min.)		
Write recovery time	tWR	5SI, 5SR	0ns(min.)	tWR	←
		7SI, 7SR	0ns(min.)		
Data to write time overlap	tDW	5SI, 5SR	25ns(min.)	tDW	25ns(min.)
		7SI, 7SR	35ns(min.)		
Data hold from write time	tDH	5SI, 5SR	0ns(min.)	tDH	←
		7SI, 7SR	0ns(min.)		
Output enable from end of write	tOW	5SI, 5SR	5ns(min.)	tOW	←
		7SI, 7SR	5ns(min.)		
Output disable to output in high-Z	tOHZ	5SI, 5SR	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		
Write to output in high-Z	tWHZ	5SI, 5SR	0ns(min.) / 20ns(max.)	tWHZ	0ns(min.) / 20ns(max.)
		7SI, 7SR	0ns(min.) / 25ns(max.)		

5. Packing specification (tray shipping)

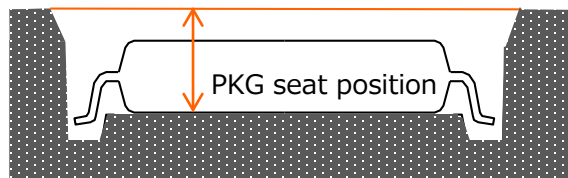
(1) Change the specification of the JEDEC tray (48pin-TSOP(I) products only)

- Regarding 48pin-TSOP(I) products (R1LV3216RSA and R1WV6416RSA), the package seat position in tray pocket is to be changed (see below).

No change in outline dimensions and pocket pitch for JEDEC tray.

- Regarding other products (48ball-FBGA, 52pin- μ TSOP), no change in the JEDEC tray.

Package type	Pre Change		Post Change	
	Tray type name	PKG seat position (mm)	Tray type name	PKG seat position (mm)
48pin-TSOP(I)	L196-126	2.0	EA51220	1.5



Cross section of tray pocket

(2) Laying direction of ICs on a tray

- Regarding 48ball-FBGA products (R1WV6416RBG) and 52pin- μ TSOP (R1LV3216RSD, R1WV6416RSD), laying direction of ICs on a tray is to be changed (see below).
- No change in other products, because the direction is already same as the "Post Change" as shown below.

	Pre Change	Post Change
Laying direction of ICs on a tray		
Orderable part name	R1WV6416RBG-5SR/-7SI/-7SR#B0 R1LV3216RSD-5SR/-7SI/-7SR#B0 R1WV6416RSD-5SR/-7SI/-7SR#B0	R1WV6416RBG-5SI#B0 R1LV3216RSD-5SI#B0 R1WV6416RSD-5SI#B0

6. Shipping label

- Label format itself is not changed.
- Written specifications: "Internal code" is changed. See below for example.
(Note: Regarding R1LV3216RSA, "the country of origin" and MSL are changed.)

(1) R1LV3216RSA
(-5SR, -7SI, -7SR)

Pre Change

Pb-Free T. **RENESAS** MSL: 2

Internal code Display of the country of origin


D/N R1LV3216RSA-7SR B002
SPN R1LV3216RSA-7SR#B0 B002

2015/12/01
MC: JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN

MSL

Orderable part name

PID 154909700F-001
QTY 777 (PARTIAL)
PCD R1LV3216RSA-7SR#B0
T/C 1549 5062ZEEC
S. LOT ZE3363001Z



Note: Orderable part name is changed to "-5SI".

Post Change

Pb-Free T. **RENESAS** MSL: 3

D/N R1LV3216RSA-5SI B10L
SPN R1LV3216RSA-5SI#B1 B10L

2018/02/01
MC: JPMY
ASSEMBLED IN MALAYSIA
FROM WAFERS OF JAPAN

PID 154909G50F-001
QTY 777 (PARTIAL)
PCD A000025708
T/C 1805 8022KEOE
S. LOT ZE333K002Z



(2) Example of a EOL product
(-5SR, -7SI, -7SR)
except R1LV3216RSA

Pre Change

Pb-Free T. **RENESAS** MSL: 2

Internal code Display of the country of origin


D/N R1LV3216RSD-7SR B002
SPN R1LV3216RSD-7SR#B0 B002

2015/12/01
MC: JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN

MSL

Orderable part name

PID 15490970FF-001
QTY 777 (PARTIAL)
PCD R1LV3216RSD-7SR#B0
T/C 1549 5062ZE9C
S. LOT ZE3363009Z



Note: Orderable part name is changed to "-5SI".


Post Change

Pb-Free T. **RENESAS** MSL: 2

D/N R1LV3216RSD-5SI B00P
SPN R1LV3216RSD-5SI#B0 B00P

2018/02/01
MC: JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN

PID 154P0970FF-001
QTY 777 (PARTIAL)
PCD R1LV3216RSD-5SI#B0
T/C 1805 8022ZE9C
S. LOT ZE3383009Z



- (3) Example of a product whose orderable part name is not changed.


Pre Change

Internal code

Pb-Free T. RENESAS
MSL: 2

D/N R1RP0408DGE-2PR B004
SPN R1RP0408DGE-2PR#B0 B004

2015/12/01
MC: JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN



PID 154909705F-001
QTY 777 (PARTIAL)
PCD R1RP0408DGE-2PR#B0
T/C 1549 5062ZE8C
S. LOT ZEZ363008Z




Post Change

Pb-Free T. RENESAS
MSL: 2

D/N R1RP0408DGE-2PR B00Q
SPN R1RP0408DGE-2PR#B0 B00Q

2018/02/01
MC: JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN



PID 154P09705F-001
QTY 777 (PARTIAL)
PCD R1RP0408DGE-2PR#B0
T/C 1805 8022ZE8C
S. LOT ZEZ383008Z

7. Site information

- Final-test site information of the post-change products is as follows.

<Final-Test Site>

Company Name : Powertech Technology Inc.

Country Name : Taiwan

Company Address : No.10, Datong Rd., Hsinchu Industrial Park, Hukou, Hsinchu 30352, Taiwan
(for 48pin-TSOP(I), 48ball-FBGA, 52pin- μ TSOP)

No.879, Litoushan Sec., Wunshan Rd., Hsinpu, Hsinchu 30550, Taiwan
(for 36pin-SOJ, 44pin-SOJ)

- Only regarding R1LV3216RSA (32Mb 48pin-TSOP(I)), the site of assembly process is changed.

<Assembly Site>

Orderable part name of post-change product : R1LV3216RSA-5SI#B1 / #S1

Company Name : Amkor Technology Malaysia Sdn,Bhd.

Country Name : Malaysia

Company Address : 15km, Jalan Klang-Banting, 42507 Telok Panglima Garang, Kuala Langat,
Selangor Darul Ehsan, Malaysia

- Regarding other products except R1LV3216RSA (32Mb 48pin-TSOP(I)), the site of assembly process is not changed. Please see pp.5-12.