Product Change Notification						
(Notification - P1808046c-DIGI) (CST-R2-AD141 / FKZ001)						
	August 16, 2018					
То:	Our Valued Digi-Key Electronics Customer					
Overview:	The purpose of this notification is to communicate a product Electronics America, Inc. (REA) devices.	change of select Renesas				
	This notification announces the generation change of 32Mb an products, with a die shrink from 0.15um to 0.11um process. The					
	 Along with the die shrink, the following items may also change for specific details and replacement part availability). 1. Assembly site from Renesas Semiconductor (Beijing, China) (Taiwan) 2. Base Metal of Lead Frame from 42Alloy to Cu 3. Lead Plating from SN-Cu to Cu 					
	 Load Flating from Or Out to Out Inner structure of package Package dimensions Packing Tray specification Tape and Reel specification Moisture Sensitivity Level from MSL2 to MSL3 Electrical specifications 					
Affected Products:	company.					
	Part numbers given in this list are for active part numbers in R this notification.	EA database at the time of				
Key Dates:	Final last time buy (LTB) orders placed to REA or to a franchised REA distributor.	June 15 th , 2019				
	Planned date for last time shipment (LTS) from REA.	Dec. 15 th , 2019				
	Replacement part sample availability and mass production	See Appendix 1				
Response: Please place last time buy (LTB) orders in a timely manner prior to the key dates listed to avoid product availability issues. If you anticipate volumes beyond your regular rate, please contact your REA sales representative with a forecast of your requirements. Shipments between the LTB and LTS dates are Non-Cancelable and Non-Returnable (NCNR).						
Please work with your REA sales representative and/or FAE to transition to the replacement devices.						
Please contact your REA sales representative for any questions or comments.						
Thank you for your attention.						
Sincerely,						
Renesas Electronics Am	ierica, Inc.					

Density	Package Type	Affected Part Number	Replacement Part Number	Samples	Mass Production
		R1LV3216RSA-5SI#B1	RMLV3216AGSA-5S2#AA0	0-1-0040	lan 2010
2014	48pin-TSOP(I)	R1LV3216RSA-5SI#S1	RMLV3216AGSA-5S2#KA0	Oct. 2018	Jan. 2019
32Mb -		R1LV3216RSD-5SI#B0	RMLV3216AGSD-5S2#AA0		
	52pin-µTSOP	R1LV3216RSD-5SI#S0	RMLV3216AGSD-5S2#HA0		
		R1WV6416RSA-5SI#B0	RMWV6416AGSA-5S2#AA0	D	Mar. 0040
	48pin-TSOP(I)	R1WV6416RSA-5SI#S0	RMWV6416AGSA-5S2#KA0	Dec. 2018	Jan. 2019 Mar. 2019 Jan. 2019
C 41 4b		R1WV6416RSD-5SI#B0	RMWV6416AGSD-5S2#AA0		
64Mb	52pin-µTSOP	R1WV6416RSD-5SI#S0	RMWV6416AGSD-5S2#HA0		
		R1WV6416RBG-5SI#B0	RMWV6416AGBG-5S2#AC0	0 1 0040	
	48ball-FBGA	R1WV6416RBG-5SI#S0	RMWV6416AGBG-5S2#KC0	Oct. 2018	Jan. 2019

Appendix 1: Affected Part Numbers & Replacement Device Availability for Digi-Key



Appendix 2: Change Details

(1) 32Mb 48pin-TSOP(I)

Part name: R1LV3216RSA-5SI

Water process line Renease Semiconductor Manufacturing Co., I.d., Sajio Factry (Japan)	Item		EOL product	Successor product	
RILV32168A-SSI#SI (Tape & Reel packing) RILV3216AGSA-SS2#K0 (Tape & Reel packing) Vefer process line Reness Semiconduct Manufacturing Co.,Ltd. - Samp Tule 0.15um 0.11um Assembly line Amkor Technology Malaysia (Malaysia) - Country of origin display MALAYSIA - Package marking specification Part mane - Specification Malaysia (Tape & Reel packing) - Package marking specification Malaysia (Tape & Reel packing) - Vefer process line Malaysia (Tape & Reel packing) - Package marking specification Malaysia (Tape & Reel packing) - Specification Malaysia - SS1 - - Vefer process file Malaysia - SS1 - - Vefer package marking specification Malaysia (Tape & Reel packing) - - Vefer package marking specification Malaysia (Tape & Reel packing) - - - Vefer package marking specification Courtry of origin (Back-End Line Alegements) - - - - Vefer package	Ordorable	part pamo	R1LV3216RSA-5SI#B1 (Tray packing)	RMLV3216AGSA-5S2#AA0 (Tray packing)	
When process line Salip Factry (Japan) Le Memory cell TFL Lod type Capacitor cell	Orderable	part name	R1LV3216RSA-5SI#S1 (Tape & Reel packing)	RMLV3216AGSA-5S2#KA0 (Tape & Reel packing)	
Design rule 0.15um 0.11um Assembly line Amkor Technology Malaysia (Malaysia) ← Country of origin display MALAYSIA ← JEITA Package Code P-TSOP(1)48-12x18.4-0.50 ← Package marking specification Index mark Electroat duraterrates MALAYSIA -SS1 Electroat duraterrates Index mark VXXXXXXX Lead frame material Cu ← Lead frame material Cu ← Nodd Epoxy paste ← Wire bonding Epoxy paste ← Wire bonding Epoxy resin (Halogen-free) ← Nodd Epoxy resin (Halogen-free) ← Final test line Powertech Technology Inc. (Taiwan) ← Tray JEECE Tray without Reness S ← Number Or (Noth the postion to the down side (LawArd) ← Tray JEECE Tray without Reness Longo ← Number Or tay of post size rune is 10400000000000000000000000000000000000	Wafer pro	cess line		\leftarrow	
Assembly line Amkor Technology Malaysia (Malaysia)	Memory ce	ell	TFT Load type Capacitor cell	←	
Country of origin display MALAYSIA	Design rul	e	0.15um	0.11um	
JEITA Package Code P-TSOP(1)48-12x18.4-0.50 ← Package marking specification Imdex mark Imdex mark Imdex mark Package marking specification Imdex mark Imdex mark Imdex mark MaLAYS1A - SS1 Emerstand Imdex mark Imdex mark MaLAYS1A - SS1 Emerstand Imdex mark Imdex mark MaLAYS1A - SS2 Country of origin (Back-End Line-Assembly) Imdex mark Imdex mark Lead frame material Cu Country of origin (Back-End Line-Assembly) Imdex mark Lead plating Sn (pure tin) Country of origin (Back-End Line-Assembly) Country of origin (Back-End Line-Assembly) Mald Epoxy paste Country of origin (Back-End Line-Assembly) Country of origin (Back-End Line-Assembly) Mald Epoxy paste Cu Cu Cu Mald Epoxy paste Cu Cu Cu Mald Epoxy paste Cu Cu Cu Mald Epoxy paste Cur Cur Cur Mald Epoxy paste Cur Cur Cur Tray JEECT withitout Renessa Logo Cur	Assembly	line	Amkor Technology Malaysia (Malaysia)	\leftarrow	
Package marking specification Imdex mark Image: R1LV3216RSA MALAYSIA -5SI XXXXXXX Pert name bedrication Image: R1LV3216AGSA MALAYSIA -5S2 Country of origin (Back-End Line:Assembly) Assembly Lead frame material Cu Cu Lead frame material Cu Cu Lead frame material Cu Cu Lead plating Sin (pure tin) C Die bonding Epoxy paste C Wire bonding Epoxy resin (Halogen-free) C Mold Epoxy resin (Halogen-free) C Die thickness Current thickness C Final test line Powertech Technology Inc. (Taiwan) C Storage number Direction from the top left position to the down side of ICs on a tray (when the position of chamfer in tray's comer is bottom left.) C Tage & Refer Storage number of rusy (Max.) 10 trays + 1 tray (cover) C Tage & packing Longe in x 340mm x 60mm C C	Country of	f origin display	MALAYSIA	\leftarrow	
Package marking specification R1LV3216RSA mALAYSIA -5S1 XXXXXXX Part name Bitchical diaracterial di diaracterial diaracterial diaracterial diaracterial diaracterial	JEITA Pack	kage Code	P-TSOP(1)48-12x18.4-0.50	\leftarrow	
material Cu Cu Lead plating Sn (pure tin) C Die bonding Epoxy paste C Micro bonding Au C Assembly Mold Epoxy resin (Halogen-free) C Material Inner structure Inner structure Current thickness C Die thickness Ourrent thickness C C Final test line Powertech Technology Inc. (Taiwan) C Tray JEDEC Tray without Renesas Logo C Tray Oite size: 12mm x 18.4mm) C Tray Direction from the top left position to the down side C packing Direction from the top left position to the down side C Inner box size Current specification C Inner box size S11mm x 175mm x 104mm C Tape & Reel Current specification C Inner box size Current specification C Inner box size S1000pcs/reel C Inner box size 362mm x 340mm x 60mm C			R1LV3216RSA Part name MALAYSIA -5SI Characteristics XXXXXXXX Det Date code	RMLV3216AGSA MALAYSIA -5S2 XXXXXXXX Date code	
Die bonding Epoxy paste C Wire bonding Au C Mold Epoxy resin (Halogen-free) C Material Inner structure of package Epoxy resin Oth Spot silver plaing Lead Die thickness Current thickness C C Final test line Powertech Technology Inc. (Taiwan) C C Storage JEDEC Tray without Reness Logo C C Tray JEDEC Tray without Reness Logo C C Storage 96pcs/tray C C Inner box size (LWWsh) Direction from the top left position to the down side of ICs on a tray Otherase Logo C Inner box size (LWWsh) 351mm x 175mm x 104mm C C Tape & Reel packing Embosed 1,000pcs/reel C C Moisture-proof performance MSL 3 C C			Cu		
Wire bonding Au ← Assembly Mold Epoxy resin (Halogen-free) ← Assembly Inner structure of package Image: Sportsilver plating Lead Die thickness Current thickness ← Final test line Powertech Technology Inc. (Taiwan) ← Tray JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm) ← Storage number 96pcs/tray ← Laying direction Direction from the top left position to the down side of trays (Max.) 10 trays + 1 tray (cover) ← Tape & Reel packing Embossed Layne Current specification ← Tape & Reel packing Storage 1.000pcs/reel ← ← Moisture-proof performance MSL 3 ←		Lead plating	Sn (pure tin)	←	
Assembly Material Mold Epoxy resin (Halogen-free) ← Epoxy resin Chip Spot silver plaining Lead Inner structure of package Die thickness ← Final test line Powertech Technology Inc. (Taiwan) ← Tray JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm) ← Storage number 96pcs/tray ← Laying direction for the top left position to the down side of ICs on a tray (when the position of chamfer in tray's corner is bottom left.) Inner box size (LxWxH) Current specification ← Tape & Reel packing Action 2000 Current specification ← Tape & Reel packing Storage 1,000pcs/reel ← Inner box size (LxWxH) 362mm x 340mm x 60mm ← Moisture-proof MSL 3 ←		Die bonding	Epoxy paste	\leftarrow	
Assembly Material Inner structure of package Image: Epoxy resin Chip Spot silver plating Lead Die thickness Current thickness Final test line Powertech Technology Inc. (Taiwan) <-		Wire bonding	Au	\leftarrow	
Material Inner structure Inner s	Assembly Material	Mold	Epoxy resin (Halogen-free)	←	
Final test line Powertech Technology Inc. (Taiwan) ← Final test line Powertech Technology Inc. (Taiwan) ← ray JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm) ← Storage number Storage number 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.) ← Number of trays (Max.) 10 trays + 1 tray (cover) ← Inner box size (LXWXH) 351mm x 175mm x 104mm ← Tape & Reel packing Embossed tape Current specification ← Moisture-proof trays vize (LXWXH) 362mm x 340mm x 60mm ← ← Moisture-proof performarce MSL 3 ← ←			Resin	←	
Tray JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm) ← Storage number 96pcs/tray ← Laying direction packing 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.) Direction from the top left position to the down side (LxWxH) ← Tape & Reel packing Embossed tape Gurrent specification ← Tape & Reel packing Storage number 1,000pcs/reel ← Moisture-proof performance 362mm x 340mm x 60mm ←	Die thickne	ess	Current thickness	\leftarrow	
Iray (TSOP I package size: 12mm x 18.4mm) () Storage number 96pcs/tray () Laying direction of ICs on a tray Direction from the top left position to the down side of ICs on a tray () Vumber of trays (Max.) Direction of chamfer in tray's corner is bottom left.) () Number of trays (Max.) 10 trays + 1 tray (cover) () Inner box size (LxWxH) 351mm x 175mm x 104mm () Tape & Reel packing Storage number 1,000pcs/reel Inner box size (LxWxH) 362mm x 340mm x 60mm () Moisture-proof performume MSL 3 ()	Final test l	ine	Powertech Technology Inc. (Taiwan)	\leftarrow	
number 96pcs/tray C Tray packing Laying direction of Los 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.) C Number of trays (Max.) 10 trays + 1 tray (cover) C Inner box size (LxWxH) 351mm x 175mm x 104mm C Tape & Reel packing Embossed tape Current specification C Inner box size (LxWxH) 362mm x 340mm x 60mm C C Moisture-proof MSL 3 C C		Tray		←	
packing packing packing number of trays (when the position of chamfer in tray's corner is bottom left.) (when the position of chamfer in tray's corner is bottom left.) Number of trays (Max.) 10 trays + 1 tray (cover) (Inner box size (LXWXH) 351mm x 175mm x 104mm (Tape & Reel packing packing packing Embossed Current specification (Storage number 1,000pcs/reel (Inner box size (LXWXH) 362mm x 340mm x 60mm (Moisture-proof performance MSL 3 (-	96pcs/tray	←	
trays (Max.) 10 trays + 1 tray (cover) ← Inner box size (LxWxH) 351mm x 175mm x 104mm ← Tape & Reel packing Embossed tape Current specification ← Storage number 1,000pcs/reel ← Inner box size (LxWxH) 362mm x 340mm x 60mm ← Moisture-proof performance MSL 3 ←		of ICs on a tray		←	
Image: display black with display		trays (Max.)	10 trays + 1 tray (cover)	←	
Tape & Reel packing Storage number 1,000pcs/reel ← Moisture-proof performance MSL 3 ←		(L×W×H)	351mm x 175mm x 104mm	←	
Reel packing Storage number 1,000pcs/reel ← Iner box size (LxWxH) 362mm x 340mm x 60mm ← Moisture-proof performance MSL 3 ←	Tapo 9	tape	Current specification	←	
Inner box size (LxWxH) 362mm x 340mm x 60mm ← Moisture-proof performance MSL 3 ←	Reel	number	1,000pcs/reel	←	
performance MISL 3		(LxWxH)	362mm x 340mm x 60mm	←	
Shipping label Current specification No change in format (Changes in orderable part na			MSL 3	←	
	Shipping <mark>l</mark> a	abel	Current specification	No change in format (Changes in orderable part name)	



Appendix 3: Change Details

(2) 32Mb 52pin-µTSOP Part name:R1LV3216RSD-5SI

Item		EOL product	Successor product	
Orderable part name R1L		R1LV3216RSD-5SI#B0 (Tray packing)	RMLV3216AGSD-5S2#AA0 (Tray packing)	
Orderable part name		R1LV3216RSD-5SI#S0 (Tape & Reel packing)	RMLV3216AGSD-5S2#HA0 (Tape & Reel packing)	
Mafor pro	coss line	Renesas Semiconductor Manufacturing Co., Ltd.	← · · · · · · · · · · · · · · · · · · ·	
I water process line		Saijo Factry (Japan)	~	
Memory ce	ell	TFT Load type Capacitor cell	←	
Design rul	e	0.15um	0.11um	
Assembly	line	Renesas Semiconductor Beijing (China)	Greatek Electronics Inc. (Taiwan)	
IEITA Pack	kage Code	P-TSOP(2)52-8.89x10.79-0.40	\leftarrow	
Package marking specification		R1LV3216R SD-5SI Index mark	RMLV3216AG SD-5S2 Index mark	
	Lead frame	42Alloy	Cu	
	material			
	Lead plating	Sn-Cu	Sn (pure tin)	
F	Die bonding	Epoxy film	Epoxy paste	
	Wire bonding	Au	Au	
Assembly	Mold	Epoxy resin (Halogen-included)	Epoxy resin (Halogen-free)	
Material	Inner structure of package	Resin	Resin Au Wire	
Die thickne	ess	Current thickness	Changed	
Final test l	ine	Powertech Technology Inc. (Taiwan)	\leftarrow	
	Тгау	JEDEC Tray with Renesas Logo (Tray type name : L196-24)	←	
	Storage number	230pcs/tray	←	
Fray backing	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.)	←	
	Number of trays (Max.)	10 trays + 1 tray (cover)	←	
	Inner box size (LxWxH)	351mm x 175mm x 104mm	←	
Tape & Reel packing	Embossed tape	Current specification	New specification	
	Storage number	1,000pcs/reel	←	
	Inner box size (LxWxH)	289mm x 264mm x 60mm	←	
Moisture-p performan		MSL 2	MSL 3	
Shipping la	abel	Current specification	No change in format (Changes in orderable part name, country of origin and MSL display)	



Appendix 4: Change Details

(3) 64Mb 48pin-TSOP(I)

Part name: R1WV6416RSA-5SI

Item		EOL product	Successor product		
Orderable part name R1WV6416RSA-5S		R1WV6416RSA-5SI#B0 (Tray packing)	RMWV6416AGSA-5S2#AA0 (Tray packing)		
Orderable part name		R1WV6416RSA-5SI#S0 (Tape & Reel packing)	RMWV6416AGSA-5S2#KA0 (Tape & Reel packing)		
Wafer process line Renesas Semiconductor Manufacturing Co.,Ltd. Saijo Factry (Japan)		←			
Memory ce	ell	TFT Load type Capacitor cell	<i>←</i>		
Design rul	e	0.15um	0.11um		
Assembly	line	Renesas Semiconductor Beijing (China)	Greatek Electronics Inc. (Taiwan)		
Country of	f origin display	CHINA	TAIWAN		
JEITA Pack		P-TSOP(1)48-12x18.4-0.50	\leftarrow		
Package marking specification		Index mark R1WV6416RSA CHINA -5SI XXXXXXXX Country of origin (Back-End Line:Assembly)	Index mark RMWV6416AGSA Part name TAIWAN -5S2 Electrical characteristics XXXXXXXX Date code Country of origin (Back-End Line:Assembly)		
	Lead frame material	42Alloy	Cu		
	Lead plating	Sn-Cu	Sn (pure tin)		
	Die bonding	Epoxy film	Epoxy film		
	Wire bonding	Au	Au		
	Mold	Epoxy resin (Halogen-included)	Epoxy resin (Halogen-free)		
Assembly Material	Inner structure of package	Resin Chip Lead	Epoxy resin Chip Spot silver plating Lead		
Die thickne	ess	Current thickness	\leftarrow		
Final test li	ine	Powertech Technology Inc. (Taiwan)	\leftarrow		
	Tray	JEDEC Tray without Renesas Logo (TSOP I package size: 12mm x 18.4mm)	←		
	Storage number	96pcs/tray	←		
Tray packing	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.)	←		
	Number of trays (Max.)	10 trays + 1 tray (cover)	←		
	Inner box size (LxWxH)	351mm x 175mm x 104mm	←		
Tape & Reel packing	Embossed tape	Current specification	←		
	Storage number	1,000pcs/reel	←		
	Inner box size (LxWxH)	362mm x 340mm x 60mm	←		
Moisture-p performan		MSL 2	MSL 3		
Shipping la	abel	Current specification	No change in format (Changes in orderable part name, country of origin and MSL display)		



Appendix 5: Change Details

(4) 64Mb 52pin-µTSOP Part name : R1WV6416RSD-5SI

Item		EOL product	Successor product		
Dud eve tet	R1WV6416RSD-5SI#B0 (Tray packing)		RMWV6416AGSD-5S2#AA0 (Tray packing)		
Orderable part name		R1WV6416RSD-5SI#S0 (Tape & Reel packing)	RMWV6416AGSD-5S2#HA0 (Tape & Reel packing)		
		Renesas Semiconductor Manufacturing Co., Ltd.	←		
		Saijo Factry (Japan)			
Memory ce		TFT Load type Capacitor cell	÷		
Design rul		0.15um	0.11um		
Assembly		Renesas Semiconductor Beijing (China)	Greatek Electronics Inc. (Taiwan)		
JEITA Pack	kage Code	P-TSOP(2)52-8.89x10.79-0.40	<i>←</i>		
Package marking specification		R1WV6416R SD-5SI Index mark	RMWV6416AG SD-5S2 Index mark		
	Lead frame	42Alloy	Cu		
	material				
	Lead plating	Sn-Cu	Sn (pure tin)		
	Die bonding	Epoxy film	Epoxy film		
	Wire bonding	Au	Au		
Assembly Material	Mold	Epoxy resin (Halogen-included)	Epoxy resin (Halogen-free)		
	Inner structure of package		Epoxy resin Chip Spot silver plating Lead		
Die thickne	ess	Current thickness	\leftarrow		
Final test l	ine	Powertech Technology Inc. (Taiwan)	←		
	Тгау	JEDEC Tray with Renesas Logo (Tray type name : L196-24)	←		
	Storage number	230pcs/tray	←		
Tray packing	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.)	←		
	Number of trays (Max.)	10 trays + 1 tray (cover)	←		
	Inner box size (LxWxH)	351mm x 175mm x 104mm	←		
Tape &	Embossed tape	Current specification	New specification		
Reel packing	Storage number	1,000pcs/reel	←		
	Inner box size (LxWxH)	289mm x 264mm x 60mm	←		
Moisture-p performan		MSL 2	MSL 3		
Shipping label		Current specification	No change in format (Changes in orderable part name, country of origin and MSL display)		

Appendix 6: Change Details

(5) 64Mb 48ball-FBGA	Part name: R1WV6416RBG-5SI
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Item		EOL product	Successor product	
Orderable part name		R1WV6416RBG-5SI#B0 (Tray packing)	RMWV6416AGBG-5S2#AC0 (Tray packing)	
Orderable part name		R1WV6416RBG-5SI#S0 (Tape & Reel packing)	RMWV6416AGBG-5S2#KC0 (Tape & Reel packing)	
Wafer process line		Renesas Semiconductor Manufacturing Co.,Ltd. Saijo Factry (Japan)	←	
Memory ce	ell	TFT Load type Capacitor cell	<i>←</i>	
Design rul	e	0.15um	0.11um	
Assembly		J-Devices Kumamoto District (Japan)	\leftarrow	
,	f origin display	JAPAN	No display	
JEITA Pack		P-TFBGA48-8.5x11-0.75	P-TFBGA48-7.5x8.5-0.75	
Package D	imensions	8.5 x 11.0mm	7.5 x 8.5mm	
Ball Pitch		0.75mm	\leftarrow	
Package marking specification		R1WV6416RBG Part name JAPAN -5SI Electrical characteristics XXXXXXXX Date code	RMWV6416AG Part name, Electrical characteristics BG-5S2 XXXXXXXX Dot Date code	
	Substrate material	Glass epoxy	←	
	Solder ball	Sn-Ag-Cu	←	
	Die bonding	Epoxy film	←	
	Wire bonding	Au	←	
	Mold	Epoxy resin (Halogen-included)	Epoxy resin (Halogen-free)	
	Inner structure of package	D/A Resin	←	
Die thickne	ess	Current thickness	<i>←</i>	
Final test li	ine	Powertech Technology Inc. (Taiwan)	\leftarrow	
	Tray	JEDEC Tray with Renesas Logo (Tray type name : L196-121)	JEDEC Tray with Renesas Logo (Tray type name : L196-45) (Same as other 7.5x8.5mm 48ball FBGA Type)	
Tray	Storage number	242pcs/tray	253pcs/tray	
packing	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.)	← 	
	Number of trays (Max.)	10 trays + 1 tray (cover)	← 	
	Inner box size (LxWxH)	351mm x 175mm x 104mm	← 	
Tape &	Embossed tape	Current specification	New specification (Same as other 7.5x8.5mm 48ball FBGA Type)	
Reel packing	Storage number	1,000pcs/reel	← 	
	Inner box size (LxWxH)	289mm x 264mm x 60mm	← 	
Moisture-p performan		MSL 3	←	
Shipping la	abel	Current specification	No change in format (Changes in orderable part name)	



Appendix 7: 32Mb Electrical Characteristics (AC/DC)

(1)-a. Electrical characteristics (DC): 32Mb

Products

Item	EOL product	Successor product
	R1LV3216RSA-5SI#B1	RMLV3216AGSA-5S2#AA0
Orderable part name	R1LV3216RSA-5SI#S1	RMLV3216AGSA-5S2#KA0
	R1LV3216RSD-5SI#B0	RMLV3216AGSD-5S2#AA0
	R1LV3216RSD-5SI#S0	RMLV3216AGSD-5S2#HA0

DC conditions

Item	Symbol	EOL product	Symbol	Successor product
Supply voltage	Vcc	2.7V~3.6V	Vcc	\leftarrow
Operating temperature range	Та	-40℃~85℃	Та	\leftarrow
Input high voltage	VIH	2.4V(min.) / Vcc+0.2V(max.)	VIH	2.2V(min.) / Vcc+0.3V(max.)
Input low voltage	VIL	-0.2V(min.) / 0.4V(max.)	VIL	-0.3V(min.) / 0.6V(max.)

DC characteristics

Item	Symbol	EOL product		Symbol	Suc	cessor product
	Icc1(TTL, Min.Cycle)	55mA(n	nax.) / 40mA(typ.)	Icc1(TTL, Min.Cycle)	35mA(max.) / 27mA(typ.)	
Operating Current	Icc2(MOS, Cycle=1us)	8mA(n	nax.) / 3mA(typ.)	Icc2(MOS, Cycle=1us)	4mA(max.) / 2mA(typ.)	
	ISB(TTL)	0.3mA(n	nax.) / 0.1mA(typ.)	ISB(TTL)		\leftarrow
		~25℃	12uA(max.) / 4uA(typ.)	ISB1(MOS) -25℃ ~40℃ ~70℃ ~85℃	~25℃	4uA(max.) / 0.6uA(typ.)
Standby current		~40℃	24uA(max.) / 7uA(typ.)		~40℃	6uA(max.) / 1uA(typ.)
	ISB1(MOS)	~70℃	50uA(max.)		~70℃	17uA(max.) / 4uA(typ.)
		~85℃	80uA(max.)		24uA(max.) / 8uA(typ.)	
		IOH=-1mA	-		IOH=-1mA	2.4V(min.)
Output high voltage	VOH	IOH=-0.5mA	2.4V(min.)	VOH	IOH=-0.5mA	← 4uA(max.) / 0.6uA(typ. 6uA(max.) / 1uA(typ.) 17uA(max.) / 4uA(typ. 24uA(max.) / 8uA(typ. 2.4V(min.)
Output low voltage	VOL	IOL=2mA	0.4V(max.)	VOL	IOL=2mA	←

Capacitance

Item	Symbol	EOL product	Symbol	Successor product
Input capacitance	C in	10pF(max.)	C in	\leftarrow
Input/Output capacitance	C I/O	10pF(max.)	C I/O	\leftarrow

Data retention characteristics

Item	Symbol	EOL product		Symbol	Suc	Successor product	
Vcc for data retention	VDR		2.0V(min.)	VDR		1.5V(min.)	
		~25℃	12uA(max.) / 4uA(typ.)		~25℃	4uA(max.) / 0.6uA(typ.)	
Data retention current	1.00	~40°C	24uA(max.) / 7uA(typ.)	IccDR ~70℃ 17uA(max.)	6uA(max.) / 1uA(typ.)		
	IccDR	~70℃	50uA(max.)		~70℃	17uA(max.) / 4uA(typ.)	
		~85°C	80uA(max.)		~85℃	24uA(max.) / 8uA(typ.)	
Chip deselect time to data retention	tCDR		0ns(min.)	tCDR		\leftarrow	
Operation recovery time	tR		5ms(min.)	tR		\leftarrow	

Appendix 7 (cont.): 32Mb Electrical Characteristics (AC/DC)

(1)-b. Electrical characteristics (AC): 32Mb

Products

Item	EOL product	Successor product
	R1LV3216RSA-5SI#B1	RMLV3216AGSA-5S2#AA0
Ordorable part name	R1LV3216RSA-5SI#S1	RMLV3216AGSA-5S2#KA0
Orderable part name	R1LV3216RSD-5SI#B0	RMLV3216AGSD-5S2#AA0
	R1LV3216RSD-5SI#S0	RMLV3216AGSD-5S2#HA0

AC characteristics

Item	Symbol	EOL product	Symbol	Successor product	
Read cycle time	tRC	55ns(min.)	tRC	÷	
Address access time	tAA	55ns(max.)	tAA	←	
Chip select access time	tACS1 / tACS2	55ns(max.)	tACS1 / tACS2	45ns(max.)	
Output enable to output valid	tOE	25ns(max.)	tOE	22ns(max.)	
Output hold from address change	tOH	10ns(min.) tOH		←	
LB#,UB# access time	tBA	55ns(max.)	tBA	45ns(max.)	
Chip select to output in low-Z	tCLZ1 / tCLZ2	10ns(min.)	tCLZ1 / tCLZ2	←	
LB#,UB# enable to low-Z	tBLZ	5ns(min.)	tBLZ	←	
Output enable to output in low-Z	tOLZ	5ns(min.)	tOLZ	←	
Chip deselect to output in high-Z	tCHZ1 / tCHZ2	0ns(min.) / 20ns(max.)	tCHZ1 / tCHZ2	0ns(min.) / 18ns(max.)	
LB#,UB# disable to high-Z	tBHZ	0ns(min.) / 20ns(max.)	tBHZ	0ns(min.) / 18ns(max.)	
Output disable to output in high-Z	tOHZ	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 18ns(max.)	

hig	h-Z		

Item	Symbol	EOL product	Symbol	Successor product
Write cycle time	tWC	55ns(min.)	tWC	←
Address valid to end of write	tAW	50ns(min.)	tAW	35ns(min.)
Chip select to end of write	tCW	50ns(min.)	tCW	35ns(min.)
Write pulse width	tWP	40ns(min.)	tWP	35ns(min.)
LB#,UB# valid to end of write	tBW	50ns(min.)	tBW	35ns(min.)
Address setup time	tAS	Ons(min.)	tAS	←
Write recovery time	tWR	Ons(min.)	tWR	~
Data to write time overlap	tDW	25ns(min.)	tDW	←
Data hold from write time	tDH	Ons(min.)	tDH	←
Output enable from end of write	tOW	5ns(min.)	tOW	←
Output disable to output in high-Z	tOHZ	0ns(min.) / 20ns(max.)	tOHZ	0ns(min.) / 18ns(max.)
Write to output in high-Z	tWHZ	0ns(min.) / 20ns(max.)	tWHZ	0ns(min.) / 18ns(max.)



Appendix 7: 64Mb Electrical Characteristics (AC/DC)

(2)-a. Electrical characteristics (DC): 64Mb

Products

TTOULCES		
Item	EOL product	Successor product
	R1WV6416RSA-5SI#B0	RMWV6416AGSA-5S2#AA0
	R1WV6416RSA-5SI#S0	RMWV6416AGSA-5S2#KA0
Ordershie neutresse	R1WV6416RSD-5SI#B0	RMWV6416AGSD-5S2#AA0
Orderable part name	R1WV6416RSD-5SI#S0	RMWV6416AGSD-5S2#HA0
	R1WV6416RBG-5SI#B0	RMWV6416AGBG-5S2#AC0
	R1WV6416RBG-5SI#S0	RMWV6416AGBG-5S2#KC0

DC conditions

Item	Symbol	EOL product	Symbol	Successor product
Supply voltage	Vcc	2.7V~3.6V	Vcc	←
Operating temperature range	Та	-40°C~85°C	Та	\leftarrow
Input high voltage	VIH	2.4V(min.) / Vcc+0.2V(max.)	VIH	2.2V(min.) / Vcc+0.3V(max.)
Input low voltage	VIL	-0.2V(min.) / 0.4V(max.)	VIL	-0.3V(min.) / 0.6V(max.)

DC characteristics

Item	Symbol	E	OL product	Symbol	Succ	cessor product
Operating Current	Icc1(TTL, Min.Cycle)	60mA(n	nax.) / 45mA(typ.)	Icc1(TTL, Min.Cycle)	38mA(n	nax.) / 29mA(typ.)
Operating Current	Icc2(MOS, Cycle=1us)	10mA(max.) / 5mA(typ.)		Icc2(MOS, Cycle=1us)	5mA(m	ax.) / 2.5mA(typ.)
	ISB(TTL)	0.3mA(n	nax.) / 0.1mA(typ.)	ISB(TTL)		\leftarrow
		~25℃	24uA(max.) / 8uA(typ.)	ISB1(MOS)	~25°C	8uA(max.) / 1.2uA(typ.)
Standby current	ISB1(MOS)	~40℃	48uA(max.) / 14uA(typ.)		~40°C	12uA(max.) / 2uA(typ.)
		~70℃	100uA(max.)		~70℃	34uA(max.)
		~85℃	160uA(max.)		~85℃	46uA(max.)
Output high valtage	VOH	IOH=-1mA	-	VOH	IOH=-1mA	2.4V(min.)
Output high voltage	VON	IOH=-0.5mA	2.4V(min.)	VOH	IOH=-0.5mA	-
Output low voltage	VOL	IOL=2mA	0.4V(max.)	VOL	IOL=2mA	\leftarrow

Capacitance

Item	Symbol	EOL product	Symbol	Successor product
Input capacitance	C in	20pF(max.)	C in	\leftarrow
Input/Output capacitance	C I/O	20pF(max.)	C I/O	<i>←</i>

Data retention characteristics

Item	Symbol	l	EOL product	Symbol	Suc	cessor product
Vcc for data retention	VDR		2.0V(min.)	VDR		1.5V(min.)
		~25℃	24uA(max.) / 8uA(typ.)		~25℃	8uA(max.) / 1.2uA(typ.)
Data retention current	IccDR	~40℃	48uA(max.) / 14uA(typ.)	IccDR	~40℃	12uA(max.) / 2uA(typ.)
	ICCDR	~70℃	100uA(max.)		~70℃	34uA(max.)
		~85℃	160uA(max.)		~85℃	46uA(max.)
Chip deselect time to data retention	tCDR		0ns(min.)	tCDR		<i>←</i>
Operation recovery time	tR		5ms(min.)	tR		←

Appendix 7 (cont.): 64Mb Electrical Characteristics (AC/DC) (2)-b. Electrical characteristics (AC): 64Mb

Products

Item	EOL product	Successor product
	R1WV6416RSA-5SI#B0	RMWV6416AGSA-5S2#AA0
	R1WV6416RSA-5SI#S0	RMWV6416AGSA-5S2#KA0
	R1WV6416RSD-5SI#B0	RMWV6416AGSD-5S2#AA0
Orderable part name	R1WV6416RSD-5SI#S0	RMWV6416AGSD-5S2#HA0
	R1WV6416RBG-5SI#B0	RMWV6416AGBG-5S2#AC0
	R1WV6416RBG-5SI#S0	RMWV6416AGBG-5S2#KC0

AC characteristics

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



Appendix 7 (cont.): 64 Electrical Characteristics (AC/DC) (2)-b. Electrical characteristics (AC) : 64Mb

Write Cycle

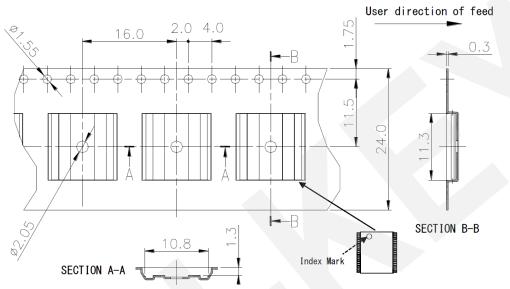
Item	Symbol	EOL product	Symbol	Successor product
Write cycle time	tWC	55ns(min.)	tWC	+
Address valid to end of write	tAW	50ns(min.)	tAW	45ns(min.)
Chip select to end of write	tCW	50ns(min.)	tCW	45ns(min.)
Write pulse width	tWP	40ns(min.)	tWP	←
LB#,UB# valid to end of write	tBW	50ns(min.)	tBW	45ns(min.)
Address setup time	tAS	0ns(min.)	tAS	←
Write recovery time	tWR	0ns(min.)	tWR	←
Data to write time overlap	tDW	25ns(min.)	tDW	←
Data hold from write time	tDH	Ons(min.)	tDH	←
Output enable from end of write	tOW	5ns(min.)	tOW	←
Output disable to output in high-Z	tOHZ	0ns(min.) / 20ns(max.)	tOHZ	←
Write to output in high-Z	tWHZ	0ns(min.) / 20ns(max.)	tWHZ	←

Appendix 8: Packing Specification

(1) Change the specification of the 52pin- μ TSOP Tape & Reel

- The package pocket form, size and seat position are to be changed (see below).
- No change in embossed tape width, pocket pitch and reel diameter.

Pre Change (Embossed tape type name : MTE2416H-52PTG-A)



Post Change (Embossed tape type name : uTSOP-52L)

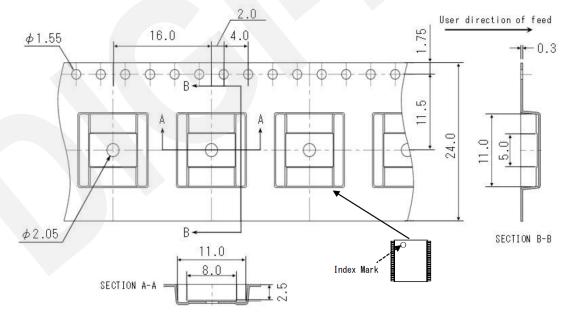
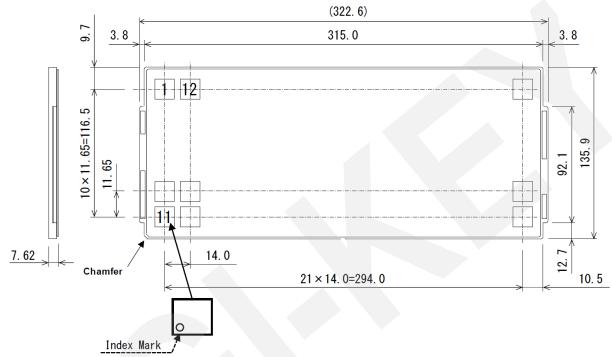


Figure. 52pin-µTSOP Embossed Carrier tape Dimensions (Unit: mm)

Appendix 8 (cont.): Packing Specification

- (2) Change the specification of the 48ball-FBGA Tray
 - Because of changing package outline size, the tray pocket size is to be changed (see below).
 - No change in Laying direction of ICs on a tray.

Pre Change (Tray type name : L196-121, Storage number : 242pcs/tray)



Post Change (Tray type name : L196-45, Storage number : 253pcs/tray)

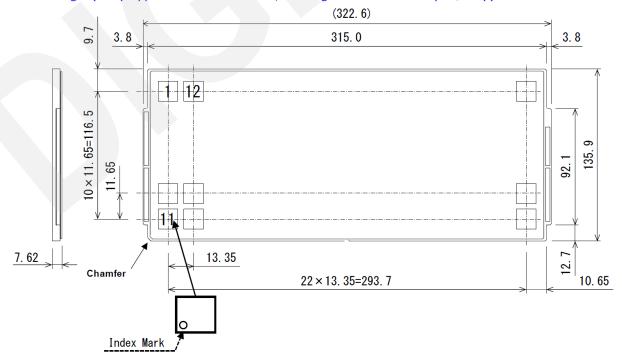
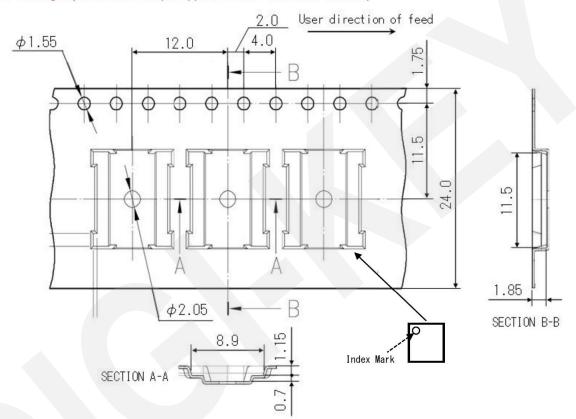


Figure: Dimension of 48ball-FBGA tray and the method to pack ICs (Unit: mm)

Appendix 8 (cont.): Packing Specification

- (3) Change the specification of the 48ball-FBGA Tape & Reel
 - Because of changing package outline size, the package pocket form, size, seat position and embossed tape width are to be changed (see below).
 - No change in pocket pitch and reel diameter.

Pre Change (Embossed tape type name : TE2412-48FHK)



Post Change (Embossed tape type name : MTE1612H-48F7Q)

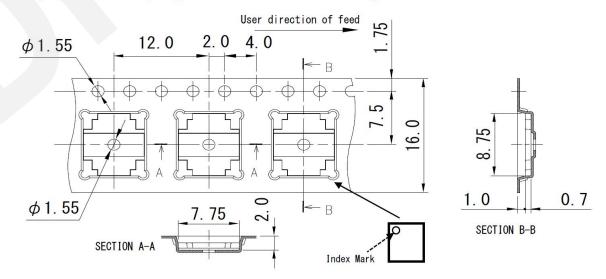


Figure. 48ball-FBGA Embossed Carrier tape Dimensions (Unit: mm)