Product Change Notice (PCN)

Subject: Addition of a production site and material changes for RH850/F1KM-S2, S4 and F1KH-D8 Series
Publication Date: 8/20/2025
Effective Date: 3/2/2026
Revision Description: Initial Release
Description of Change:

Renesas will add the following production site for RH850/F1KM-S2, F1KM-S4(BGA) and F1KH-D8.

Wafer Process (WP) and Wafer Test (WT): Naka Factory

For products of WP: Naka – Assembly: Suzhou, ϕ20um Cu-wire and mold resin for ϕ20um Cu-wire will be used (There are no material changes in ATJ-Kumamoto and Yonezawa products).

Related items depending on addition of the production site and material changes are as follows:

<table>
<tr><th colspan="2" rowspan="2">Items</th><th colspan="5">Current</th><th colspan="5">After site addition</th></tr>
<tr><th colspan="2">F1KM-S2</th><th>F1KH-D8</th><th>F1KH-D8</th><th>F1KM-S4</th><th colspan="2">F1KM-S2</th><th>F1KH-D8</th><th>F1KH-D8</th><th>F1KM-S4</th></tr>
<tr><td rowspan="2">PKG</td><td>Type</td><td colspan="3">LQFP</td><td colspan="2">BGA</td><td colspan="3">LQFP</td><td colspan="2">BGA</td></tr>
<tr><td>Pin</td><td colspan="2">100,144,176pin</td><td>176pin</td><td>233,324pin</td><td>233,272pin</td><td colspan="2">100,144,176pin</td><td>176pin</td><td>233,324pin</td><td>233,272pin</td></tr>
<tr><td colspan="2">WP Sites</td><td colspan="5">TSMC</td><td colspan="5">Naka</td></tr>
<tr><td colspan="2">WT Sites</td><td colspan="4">Ardentec (ADT)</td><td>Ardentec (ADT)
TeraPower (TPW)</td><td colspan="5">Naka</td></tr>
<tr><td colspan="2">Assembly Sites</td><td>ATJ</td><td>Suzhou</td><td>Suzhou</td><td colspan="2">Yonezawa</td><td>ATJ</td><td>Suzhou</td><td>Suzhou</td><td colspan="2">Yonezawa</td></tr>
<tr><td colspan="2">Wire</td><td>Cu-wire for ATJ</td><td>Φ23um Cu-wire</td><td>Φ23um Cu-wire</td><td colspan="2">φ20um Cu-wire</td><td>Cu-wire for ATJ</td><td>Φ20um Cu-wire</td><td>Φ20um Cu-wire</td><td colspan="2">φ20um Cu-wire</td></tr>
<tr><td colspan="2">Mold-resin</td><td>Mold-resin For ATJ</td><td>Mold-resin A for Cu-wire</td><td>Mold-resin A for Cu-wire</td><td colspan="2">Mold-resin B for Cu-wire</td><td>Mold-resin For ATJ</td><td>Mold-resin B for Cu-wire</td><td>Mold-resin B for Cu-wire</td><td colspan="2">Mold-resin B for Cu-wire</td></tr>
</table>

Affected Product List:

Refer to “Product List” in “Appendix”.

Reason for Change:

For the stable supply of products.

Impact on Fit, Form, Function, Quality & Reliability:

The change will have no impact on the form, fit, function, quality and reliability of the devices.

Product Identification:

Each product can be identified by a mark or label, see “Appendix” for details.

Qualification Status:

Refer to "Q100 Qualification Test Results” in "Appendix".

Sample Availability Date:

12/1/2025
Please note that available samples will be maximum 50pcs.

Device Material Declaration:

Please contact Renesas' sales representatives.

Note:

1. Acknowledgement must be received by Renesas within 30 days or Renesas will consider the change as approved.

2. If timely acknowledgement is provided by Customer, then Customer shall have 90 days from the date of receipt of this PCN to make any objections to this 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.

3. If customer cannot accept the PCN then customer must provide Renesas with a last time buy demand and purchase order.

For additional information regarding this notice, please contact your Renesas sales representative.

Appendix

Product List

RH850/F1KM-S2 Series (Assembly Site : ATJ-Kumamoto)

R7F7017603AFD-C#AA1	R7F7017623AFD-C#KA1	R7F701A614AFD-C#BA2	R7F701A634AFD-C#AA1
R7F7017603AFD-C#AA2	R7F7017623AFD-C#KA2	R7F701A614AFD-C#KA1	R7F701A634AFD-C#AA2
R7F7017603AFD-C#BA1	R7F7017643AFD-C#BA1	R7F701A614AFD-C#KA2	R7F701A634AFD-C#BA1
R7F7017603AFD-C#BA2	R7F7017643AFD-C#BA2	R7F701A624AFD-C#AA1	R7F701A634AFD-C#BA2
R7F7017603AFD-C#KA1	R7F7017643AFD-C#TA1	R7F701A624AFD-C#AA2	R7F701A634AFD-C#TA1
R7F7017603AFD-C#KA2	R7F7017643AFD-C#TA2	R7F701A624AFD-C#BA1	R7F701A634AFD-C#TA2
R7F7017623AFD-C#AA1	R7F701A614AFD-C#AA1	R7F701A624AFD-C#BA2	
R7F7017623AFD-C#BA1	R7F701A614AFD-C#AA2	R7F701A624AFD-C#KA1	
R7F7017623AFD-C#BA2	R7F701A614AFD-C#BA1	R7F701A624AFD-C#KA2	

RH850/F1KM-S2 Series (Assembly Site : Suzhou)

R7F7017603AFP-C#AA1	R7F7017643AFP-C#BA1	R7F701A624AFP-C#KA1	R7F701A773AFP-C#AA1
R7F7017603AFP-C#BA1	R7F7017643AFP-C#TA1	R7F701A634AFP-C#AA1	R7F701A773AFP-C#BA1
R7F7017603AFP-C#KA1	R7F701A614AFP-C#AA1	R7F701A634AFP-C#BA1	R7F701A773AFP-C#KA1
R7F7017623AFP-C#AA1	R7F701A614AFP-C#BA1	R7F701A634AFP-C#TA1	R7F701A783AFP-C#AA1
R7F7017623AFP-C#BA1	R7F701A614AFP-C#KA1	R7F701A763AFP-C#AA1	R7F701A783AFP-C#BA1
R7F7017623AFP-C#KA1	R7F701A624AFP-C#AA1	R7F701A763AFP-C#BA1	R7F701A783AFP-C#KA1
R7F7017643AFP-C#AA1	R7F701A624AFP-C#BA1	R7F701A763AFP-C#TA1	

RH850/F1KH-D8 Series (Assembly Site : Suzhou)

R7F7017083AFP-C#AA1	R7F7017083AFP-C#TA1	R7F7017093AFP-C#BA1	R7F7017093AFP-C#TA1
R7F7017083AFP-C#BA1	R7F7017093AFP-C#AA1		

RH850/F1KH-D8 Series (Assembly Site : Yonezawa)

R7F7017103ABG-C#AC1	R7F7017113ABG-C#AC1	R7F7017143ABG-C#AC1	R7F7017153ABG-C#AC1
R7F7017103ABG-C#BC1	R7F7017113ABG-C#BC1	R7F7017143ABG-C#BC1	R7F7017153ABG-C#BC1
R7F7017103ABG-C#HC1	R7F7017113ABG-C#HC1	R7F7017143ABG-C#HC1	R7F7017153ABG-C#HC1
R7F7017104ABG-C#AC1	R7F7017114ABG-C#AC1	R7F7017144ABG-C#AC1	R7F7017154ABG-C#AC1
R7F7017104ABG-C#BC1	R7F7017114ABG-C#BC1	R7F7017144ABG-C#BC1	R7F7017154ABG-C#BC1
R7F7017104ABG-C#HC1	R7F7017114ABG-C#HC1	R7F7017144ABG-C#HC1	R7F7017154ABG-C#HC1

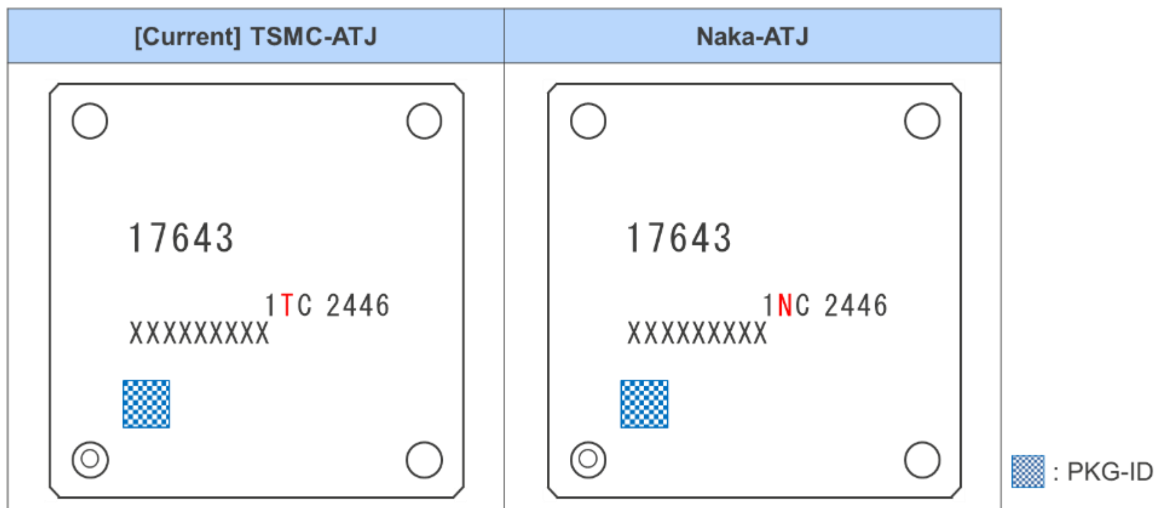
RH850/F1KM-S4 Series (Assembly Site : Yonezawa)

R7F7016503ABG-C#AC1	R7F7016513ABG-C#AC1	R7F7016523ABG-C#AC1	R7F7016533ABG-C#AC1
R7F7016503ABG-C#BC1	R7F7016513ABG-C#BC1	R7F7016523ABG-C#BC1	R7F7016533ABG-C#BC1
R7F7016503ABG-C#HC1	R7F7016513ABG-C#HC1	R7F7016523ABG-C#HC1	R7F7016533ABG-C#HC1
R7F7016504ABG-C#AC1	R7F7016514ABG-C#AC1	R7F7016524ABG-C#AC1	R7F7016534ABG-C#AC1
R7F7016504ABG-C#BC1	R7F7016514ABG-C#BC1	R7F7016524ABG-C#BC1	R7F7016534ABG-C#BC1
R7F7016504ABG-C#HC1	R7F7016514ABG-C#HC1	R7F7016524ABG-C#HC1	R7F7016534ABG-C#HC1

Mark Specification

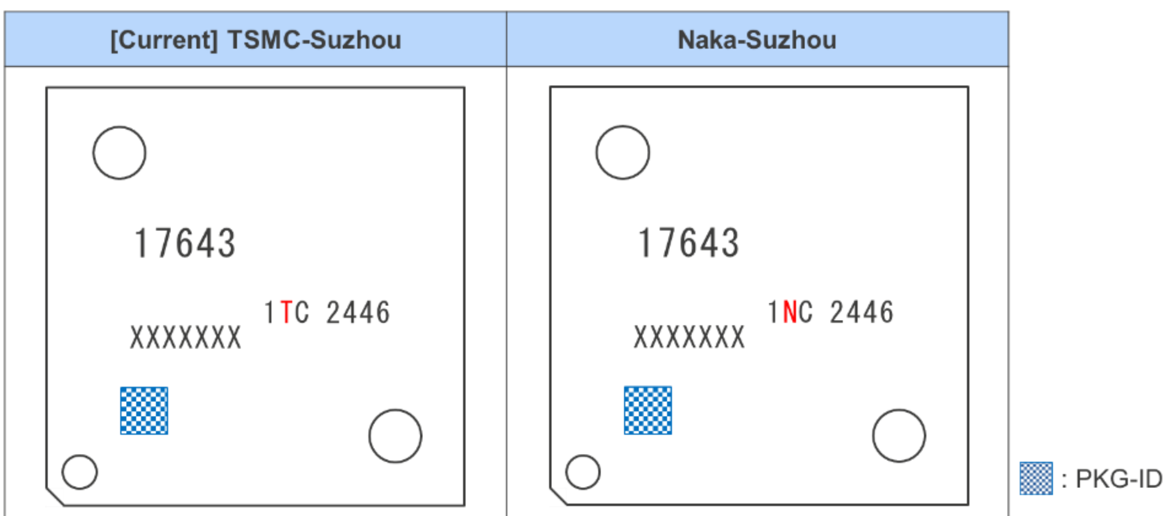
ATJ-Kumamoto LQFP Mark Example: R7F7017643AFD-C#BA1 (F1KM-S2 176pin)

The red character is different between TSMC and Naka products (TSMC: T, Naka: N).



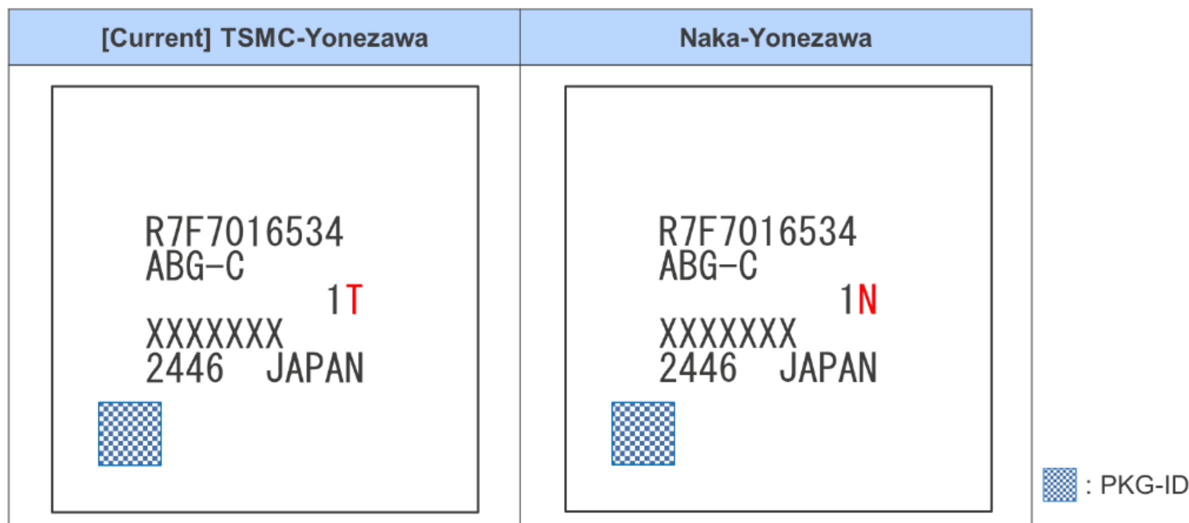
Suzhou LQFP Mark Example: R7F7017643AFP-C#BA1 (F1KM-S2 176pin)

The red character is different between TSMC and Naka products (TSMC: T, Naka: N).



Yonezawa BGA Mark Example: R7F7016534ABG-C#BC1 (F1KM-S4 272pin)

The red character is different between TSMC and Naka products (TSMC: T, Naka: N).



Label Specification

ATJ-Kumamoto LQFP Label Example: R7F7017643AFD-C#BA1 (F1KM-S2 176pin)

The red characters are different between TSMC and Naka products.

[Current] WP : TSMC, Assy : ATJ-Kumamoto, FT : Tera Probe

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
280 40
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7017643AFD-C BA1xxxxxxx
SPN R7F7017643AFD-C#BA1 BA1xxxxxxx
MC : TWJPJP
ASSEMBLED IN JAPAN
FROM WAFERS OF TAIWAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 320
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

[Addition] WP : Naka, Assy : ATJ-Kumamoto, FT : Tera Probe

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
280 40
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7017643AFD-C BA1xxxxxxx
SPN R7F7017643AFD-C#BA1 BA1xxxxxxx
MC : JPJPJP
MADE IN JAPAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 320
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

Suzhou LQFP Label Example: R7F7017643AFP-C#BA1 (F1KM-S2 176pin)

The red characters are different between TSMC and Naka products.

[Current] WP : TSMC, Assy/FT : Suzhou

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
280 40
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7017643AFP-C BA1xxxxxxx
SPN R7F7017643AFP-C#BA1 BA1xxxxxxx
MC : TWCN
ASSEMBLED IN CHINA
FROM WAFERS OF TAIWAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 320
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

[Addition] WP : Naka, Assy/FT : Suzhou

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
280 40
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7017643AFP-C BA1xxxxxxx
SPN R7F7017643AFP-C#BA1 BA1xxxxxxx
MC : JPCN
ASSEMBLED IN CHINA
FROM WAFERS OF JAPAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 320
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

Yonezawa BGA Label Example: R7F7016534ABG-C#BC1 (F1KM-S4 272pin)

The red characters are different between TSMC and Naka products.

[Current] WP : TSMC, Assy/FT : Yonezawa

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
500 220
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7016534ABG-C BA1xxxxxxx
SPN R7F7016534ABG-C#BA1 BA1xxxxxxx
MC : TWJP
ASSEMBLED IN JAPAN
FROM WAFERS OF TAIWAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 720
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

[Addition] WP : Naka, Assy/FT : Yonezawa

xxxxxxxxxxxx xxxxxxxxxxxx
2446 2446
500 220
Pb-Free T.
RENESAS
MSL : 3
D/N R7F7016534ABG-C BA1xxxxxxx
SPN R7F7016534ABG-C #BA1 BA1xxxxxxx
MC : JPJP
MADE IN JAPAN
2024/11/25
PID xxxxxxxxxx-xxx
QTY 720
PCD xxxxxxxxxx
T/C 2446 xxxxxxxxxxxx
S.LOT xxxxxxxxxxxx

Naka : Renesas Semiconductor Manufacturing Co., Ltd. (Naka Factory)
TSMC : Taiwan Semiconductor Manufacturing Company Limited
TeraPower : TeraPower Technology Inc.
Ardentec : Ardentec Corporation
ATJ-Kumamoto : Amkor Technology Japan, Inc.(Kumamoto)
Suzhou : Renesas Semiconductor (Suzhou) Co., Ltd.
Yonezawa : Renesas Electronics Corporation Yonezawa Factory.
Tera Probe : Tera Probe, Inc.

Q100 Qualification Test Results

AEC-Q100-REV-H

[Note : Qualification tests were performed using a representative product with the same wafer process and the same package structure, and also using generic data.]

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results (Fail of Total)	Comments: (N/A =Not Applicable)
TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS								
PC	A1	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, &PTC ; Peak Reflow Temp=260°C	Min.MSL=3			MSL=3	-
THB ~~or~~ ~~HAST~~	A2	JESD22 A101	Temperature Humidity Bias: (Test @ Rm/Hot) Ta=85°C, RH=85%, 1000hrs	3	77	231	0 of 231	-
~~AC or~~ UHST ~~or TH~~	A3	JESD22 A118	Unbiased Highly Accelerated Stree Test: (Test @ Rm) Ta=110°C, 85% RH, 264h	3	77	231	0 of 231	-
TC	A4	JESD22 A104	Temperature Cycle: (Test @ Hot) Ta=-55°C to 150°C, 1000cyc	3	77	231	0 of 231 0 Fails after TC (WBP)	-
PTC	A5	JESD22 A105	Power Temperature Cycle: (Test @ Rm/Hot) -	-	-	-	-	N/A
HTSL	A6	JESD22 A103	High Temperature Storage Life: (Test @ Rm/Hot) Ta=175°C, 500hrs	1	45	45	0 of 45	-
TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS								
HTOL	B1	JESD22 A108	High Temp Operating Life: (Test @ Rm/Cold/Hot) Ta=150°C, 1000hrs	3	77	231	0 of 231	-
ELFR	B2	AEC-Q100-008	Early Life Failure Rate: (Test @ Rm/Hot) Ta=125°C, 48hrs	3	800	2400	0 of 2400	-
EDR	B3	AEC-Q100-005	NVM Endurance & Data Retention Test: (Test @ Rm/Hot) — For HTOL	3	77	231	0 of 231	-
			For HTSL	1	45	45	0 of 45	-
TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS								
WBS	C1	AEC-Q100-001 AEC-Q003	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts Min.	30 bonds	0 of 30bonds	Cpk>1.67
WBP	C2	Mil-STD-883 Method 2011 AEC-Q003	Wire Bond Pull: (Cpk > 1.67); Each bonder used	30 bonds	5 parts Min.	30 bonds	0 of 30bonds	Cpk>1.67
SD	C3	JESD22 B102 JSTD-002D	Solderability: (>95% coverage) 8 hr steam aging prior to testing	1	15	15	0 of 15	LQFP results BGA : N/A
PD	C4	JESD22 B100, JESD22 B108 AEC-Q003	Physical Dimensions: (Cpk > 1.67)	3	10	30	0 of 30	Cpk>1.67
SBS	C5	AEC-Q100-010 AEC-Q003	Solder Ball Shear: (Cpk > 1.67); 5 balls from min. of 10 devices	3	50balls	150	0 of 150	BGA results LQFP : N/A
LI	C6	JESD22 B105	Lead Integrity: (No lead cracking or breaking); Through-hole only; 10 leads from each of 5 devices	-	-	-	-	N/A
TEST GROUP D – DIE FABRICATION RELIABILITY TESTS								
EM	D1	JESD61	Electromigration:	-	-	-	Pass	Confirmed by process TEG
TDDB	D2	JESD35	Time Dependant Dielectric Breakdown:	-	-	-	Pass	Confirmed by process TEG
HCI	D3	JESD60 & 28	Hot Carrier Injection:	-	-	-	Pass	Confirmed by process TEG
NBTI	D4	JESD90	Negative Bias Temperature Instability:	-	-	-	Pass	Confirmed by process TEG
SM	D5	JESD61,87 & 202	Stress Migration:	-	-	-	Pass	Confirmed by process TEG

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results (Fail of Total)	Comments: (N/A =Not Applicable)
TEST GROUP E- ELECTRICAL VERIFICATION								
TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	0 of All	-
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (Test @ Rm/Hot); (2KV HBM / Class 2 or better)	1	3	3	0 of 3 ESD Level= HBM:2	HBM>2KV
CDM	E3	AEC-Q100-011	Electrostatic Discharge, Charged Device Model: (Test @ Rm/Hot); (750V corner leads, 500V all other leads / Class C4B or better)	1	3	3	0 of 3 ESD Level= CDM:C4B	Corner leads: 750V Pass All other leads:500V Pass
LU	E4	AEC-Q100-004	Latch-Up: (Test @ Rm/Hot)	1	6	6	0 of 6	-
ED	E5	AEC-Q100-009 AEC-Q003	Electrical Distributions: (Test @ Rm/Hot/Cold) (where applicable, Cpk>1.67)	3	30	90	Cpk>1.67	-
FG	E6	AEC-Q100-007	Fault Grading:	-	-	-	>98%	-
CHAR	E7	AEC-Q003	Characterization: (Test @ Rm/Hot/Cold)	-	-	-	Pass	According to Renesas standard procedure
EMC	E9	SAE J1752/3	Electromagnetic Compatibility (Radiated Emissions)	1	1	1	0 of 1	-
SC	E10	AEC Q100-012	Short Circuit Characterization	-	-	-	-	N/A
SER	E11	JESD89-1 JESD89-2 JESD89-3	Soft Error Rate	1	3	3	Pass	-
LF	E12	AEC-Q005	Lead (Pb) Free: (see AEC-Q005)	-	-	-	Pass	LQFP results Solderability: See SD (C3) result. Solder heat resistance: N/A (Wave Solder is Not recommended.) Whisker: Performed on product TEG with test method based on JESD201. BGA : N/A
TEST GROUP F – DEFECT SCREENING TESTS								
PAT	F1	AEC-Q001	Process Average Testing: (see AEC-Q001)	All	All	All	Reject units outside PAT limits	Apply to mass production according to Renesas standard procedure
SBA	F2	AEC-Q002	Statistical Bin/Yield Analysis: (see AEC-Q002)	All	All	All	Reject units outside criteria	Apply to mass production according to Renesas standard procedure
TEST GROUP G – CAVITY PACKAGE INTEGRITY TESTS (for Ceramic Package testing only)								
MS	G1	JESD22 B104	Mechanical Shock: (Test @ Rm)	-	-	-	-	N/A
VFV	G2	JESD22 B103	Variable Frequency Vibration: (Test @ Rm)	-	-	-	-	N/A
CA	G3	MIL-STD-883 Method 2001	Constant Acceleration: (Test @ Rm)	-	-	-	-	N/A
GFL	G4	MIL-STD-883 Method 1014	Gross and Fine Leak:	-	-	-	-	N/A
DROP	G5	----------------	Drop Test: (Test @ Rm) MEMS cavity parts only. Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface.	-	-	-	-	N/A
LT	G6	MIL-STD-883 Method 2004	Lid Torque:	-	-	-	-	N/A
DS	G7	MIL-STD-883 Method 2019	Die Shear:	-	-	-	-	N/A
IWV	G8	MIL-STD-883 Method 1018	Internal Water Vapor:	-	-	-	-	N/A