

Product Change Notice (PCN)

Subject: Addition of a production site and material changes for RH850/F1KM-S4 Series Publication Date: 3/6/2025 Effective Date: 9/1/2025 Revision Description: Initial Release Description of Change:

Renesas plans to add the following production site for RH850/F1KM-S4 Series.

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

For Suzhou Factory, ϕ 20umCu-wire and mold resin for ϕ 20um Cu-wire will be used for Assembly Process of products whose Wafer Process is produced at Naka (There are no material changes in ATJ-Kumamoto). Related items depending on addition of the production site and material changes are as follows:

Item	Current			Additional Production Site			
WP Site	тѕмс			Naka			
WT Site	Ardentec / TeraPower			Naka / TeraPower			
Back Grind / Dicing Site	Suzhou	ATJ-Usuki / ATJ-Kumamoto		Suzhou	ATJ-Usuki / ATJ-Kumamoto		
Assembly Site	Suzhou	ATJ-Kumamoto		Suzhou	ATJ-Kumamoto		
Final Test Site	Suzhou	Tera Probe / TeraPower	ATJ-Kumamoto	Suzhou	Tera Probe *	ATJ-Kumamoto	
Wire	Ф23um Cu-wire	ATJ Cu-wire		Ф20um Cu-wire	ATJ Cu-wire		
Mold Resin	Mold Resin for Φ23um Cu-wire	ATJ Mold Resin		Mold Resin for Ф20um Cu-wire	ATJ Mold Resin		
Applicable PKG (LQFP)	100, 144 and 176pin	100, 144 and 176pin	100pin	100, 144 and 176pin	100, 144 and 176pin	100pin	

*TeraPower is not used for Final Test of the WP:Naka product.

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:

4/21/2025 Please note that only samples assembled at Suzhou (Maximum 50pcs) will be available.

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.
- 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-S4 Series (Assembly Site : Suzhou)

<u> </u>	•		
R7F7016363AFP-C#AA1	R7F7016483AFP-C#AA1	R7F701A584AFP-C#AA1	R7F701A813AFP-C#AA1
R7F7016363AFP-C#BA1	R7F7016483AFP-C#BA1	R7F701A584AFP-C#BA1	R7F701A813AFP-C#BA1
R7F7016363AFP-C#KA1	R7F7016483AFP-C#TA1	R7F701A584AFP-C#KA1	R7F701A813AFP-C#KA1
R7F7016443AFP-C#AA1	R7F7016493AFP-C#AA1	R7F701A594AFP-C#AA1	R7F701A823AFP-C#AA1
R7F7016443AFP-C#BA1	R7F7016493AFP-C#BA1	R7F701A594AFP-C#BA1	R7F701A823AFP-C#BA1
R7F7016443AFP-C#KA1	R7F7016493AFP-C#TA1	R7F701A594AFP-C#TA1	R7F701A823AFP-C#KA1
R7F7016453AFP-C#AA1	R7F701A554AFP-C#AA1	R7F701A604AFP-C#AA1	R7F701A833AFP-C#AA1
R7F7016453AFP-C#BA1	R7F701A554AFP-C#BA1	R7F701A604AFP-C#BA1	R7F701A833AFP-C#BA1
R7F7016453AFP-C#KA1	R7F701A554AFP-C#KA1	R7F701A604AFP-C#TA1	R7F701A833AFP-C#KA1
R7F7016463AFP-C#AA1	R7F701A564AFP-C#AA1	R7F701A793AFP-C#AA1	R7F701A843AFP-C#AA1
R7F7016463AFP-C#BA1	R7F701A564AFP-C#BA1	R7F701A793AFP-C#BA1	R7F701A843AFP-C#BA1
R7F7016463AFP-C#KA1	R7F701A564AFP-C#KA1	R7F701A793AFP-C#TA1	R7F701A843AFP-C#KA1
R7F7016473AFP-C#AA1	R7F701A574AFP-C#AA1	R7F701A803AFP-C#AA1	
R7F7016473AFP-C#BA1	R7F701A574AFP-C#BA1	R7F701A803AFP-C#BA1	
R7F7016473AFP-C#KA1	R7F701A574AFP-C#KA1	R7F701A803AFP-C#TA1	

RH850/F1KM-S4 Series (Assembly Site : ATJ-Kumamoto)

	-	-	
R7F7016463AFD-C#AA1	R7F7016483AFD-C#AA1	R7F701A574AFD-C#AA1	R7F701A594AFD-C#AA1
R7F7016463AFD-C#BA1	R7F7016483AFD-C#BA1	R7F701A574AFD-C#BA1	R7F701A594AFD-C#BA1
R7F7016463AFD-C#KA1	R7F7016483AFD-C#TA1	R7F701A574AFD-C#KA1	R7F701A594AFD-C#TA1
R7F7016473AFD-C#AA1	R7F7016493AFD-C#AA1	R7F701A584AFD-C#AA1	R7F701A604AFD-C#AA1
R7F7016473AFD-C#BA1	R7F7016493AFD-C#BA1	R7F701A584AFD-C#BA1	R7F701A604AFD-C#BA1
R7F7016473AFD-C#KA1	R7F7016493AFD-C#TA1	R7F701A584AFD-C#KA1	R7F701A604AFD-C#TA1
R7F7016443AFD-C#AA1	R7F7016453AFD-C#AA1	R7F701A554AFD-C#AA1	R7F701A564AFD-C#AA1
R7F7016443AFD-C#BA1	R7F7016453AFD-C#BA1	R7F701A554AFD-C#BA1	R7F701A564AFD-C#BA1
R7F7016443AFD-C#KA1	R7F7016453AFD-C#KA1	R7F701A554AFD-C#KA1	R7F701A564AFD-C#KA1

Mark Example: R7F7016453AFP(D)-C#BA1 (F1KM-S4 100pin)

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

The digit number of Trace Code is different between Suzhou and ATJ-Kumamoto products

(Suzhou: 7digits, ATJ-Kumamoto: 9digits). (The blue characters)

There are differences in the outline of ATJ-Kumamoto products.



Label Specification

Label Example: R7F7016453AFP(D)-C#BA1 (F1KM-S4 100pin)

The red characters are different between TSMC and Naka products.

The blue characters are different between ATJ-Kumamoto and Tera Probe products.

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



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



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



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



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

PCN#: [HPLM-2025-0074] PC-MCU-A037A/E

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: (Te Ta=110°C, 85% RH, 264h	est @ Rm)	3	77	231	0 of 231	-
тс	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 @ Rrr Ta=175°C, 500hrs	/Hot)	1	45	45	0 of 45	-
			TEST GRO	OUP B - ACCELERAT	TED LIFET	IME SIMU	LATION T	ESTS	
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	EDR B3 AEC-Q100-005	AEC-0100-005	NVM Endurance & Data Retention Test:	For HTOL	3	77	231	0 of 231	-
			(Test @ Rm/Hot) For HTSL		1	45	45	0 of 45	-
			TEST (GROUP C - PACKAG	E ASSEMB	LY INTEG	RITY TEST	rs	
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	-
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		-	-	-	-	N/A
Ц	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

Automotive Electronics Council Component Technical Committee

PCN#: [HPLM-2025-0074] PC-MCU-A037A/E

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	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.
			TEST GROUP F – DE	FECT SCR	EENING T	ESTS		
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 INT	EGRITY T	ESTS (for C	Ceramic Pac	kage 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