Product Change Notice (PCN)

Subject: Addition of production sites and material changes for RH850/F1KM-S1 Series
Publication Date: 1/30/2025
Effective Date: 9/1/2025
Revision Description: Initial Release (HPLM-2025-0064)
Revision1 (9 Part Numbers deleted)
R7F7016844AFD-C#AA9,R7F7016844AFD-C#BA9,R7F7016844AFD-C#KA9
R7F7016863AFD-C#AA9,R7F7016863AFD-C#BA9,R7F7016863AFD-C#KA9
R7F7016864AFD-C#AA9,R7F7016864AFD-C#BA9,R7F7016864AFD-C#KA9

Description of Change:

Renesas plans to add the following production sites for RH850/F1KM-S1 Series.

1.Wafer Process (WP) and Wafer Test (WT): Naka Factory
For both Suzhou Factory and Nishiki Factory, ϕ20umCu-wire and mold resin for ϕ20um 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).
2.Back Grind (BG) and Dicing (DIC): Oita Factory
3.Assembly and Final Test (FT): Nishiki Factory

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

Item	Current		Additional Production Site		
WP Site	TSMC		Naka		
WT Site	Ardentec / TeraPower		Naka / TeraPower		
BG/DIC Site	Suzhou	ATJ-Usuki / ATJ-Kumamoto	Suzhou	Oita	ATJ-Usuki / ATJ-Kumamoto
Assembly Site	Suzhou	ATJ-Kumamoto	Suzhou	Nishiki	ATJ-Kumamoto
FT Site	Suzhou	Tera Probe / ATJ-Kumamoto	Suzhou	Nishiki	Tera Probe / ATJ-Kumamoto
Wire	φ23um Cu-wire	ATJ Cu-wire	φ20um Cu-wire		ATJ Cu-wire
Mold Resin	Mold Resin A for Cu-wire	ATJ Mold Resin	Mold Resin B for Cu-wire		ATJ Mold Resin
Applicable PKG (LQFP)	48, 64, 80 and 100pin	100pin	48, 64, 80 and 100pin	64, 80 and 100pin	100pin

Renesas will determine allocations of production sites based on each production capacity.

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.

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-S1 Series (LQFP100pin, ATJ-Kumamoto)

R7F7016843AFD-C#AA1	R7F7016844AFD-C#KA1	R7F7016854AFD-C#BA1	R7F7016864AFD-C#AA1
R7F7016843AFD-C#BA1	R7F7016853AFD-C#AA1	R7F7016854AFD-C#KA1	R7F7016864AFD-C#BA1
R7F7016843AFD-C#KA1	R7F7016853AFD-C#BA1	R7F7016863AFD-C#AA1	R7F7016864AFD-C#KA1
R7F7016844AFD-C#AA1	R7F7016853AFD-C#KA1	R7F7016863AFD-C#BA1	
R7F7016844AFD-C#BA1	R7F7016854AFD-C#AA1	R7F7016863AFD-C#KA1	

RH850/F1KM-S1 Series (LQFP100pin, Suzhou and Nishiki)

R7F7016843AFP-C#AA1	R7F7016853AFP-C#AA1	R7F7016863AFP-C#BA9	R7F701A643AFP-C#AA1
R7F7016843AFP-C#BA1	R7F7016853AFP-C#BA1	R7F7016863AFP-C#KA1	R7F701A643AFP-C#BA1
R7F7016843AFP-C#KA1	R7F7016853AFP-C#KA1	R7F7016863AFP-C#KA9	R7F701A643AFP-C#KA1
R7F7016844AFP-C#AA1	R7F7016854AFP-C#AA1	R7F7016864AFP-C#AA1	R7F701A653AFP-C#AA1
R7F7016844AFP-C#AA9	R7F7016854AFP-C#BA1	R7F7016864AFP-C#AA9	R7F701A653AFP-C#BA1
R7F7016844AFP-C#BA1	R7F7016854AFP-C#KA1	R7F7016864AFP-C#BA1	R7F701A653AFP-C#KA1
R7F7016844AFP-C#BA9	R7F7016863AFP-C#AA1	R7F7016864AFP-C#BA9	R7F701A663AFP-C#AA1
R7F7016844AFP-C#KA1	R7F7016863AFP-C#AA9	R7F7016864AFP-C#KA1	R7F701A663AFP-C#BA1
R7F7016844AFP-C#KA9	R7F7016863AFP-C#BA1	R7F7016864AFP-C#KA9	R7F701A663AFP-C#KA1

RH850/F1KM-S1 Series (LQFP80pin, 64pin, Suzhou and Nishiki)

R7F7016873AFP-C#AA1	R7F7016894AFP-C#BA1	R7F7016914AFP-C#BA1	R7F701A683AFP-C#AA1
R7F7016873AFP-C#BA1	R7F7016894AFP-C#BA9	R7F7016914AFP-C#TA1	R7F701A683AFP-C#BA1
R7F7016873AFP-C#TA1	R7F7016894AFP-C#TA1	R7F7016923AFP-C#AA1	R7F701A683AFP-C#TA1
R7F7016874AFP-C#AA1	R7F7016894AFP-C#TA9	R7F7016923AFP-C#AA9	R7F701A693AFP-C#AA1
R7F7016874AFP-C#BA1	R7F7016903AFP-C#AA1	R7F7016923AFP-C#BA1	R7F701A693AFP-C#BA1
R7F7016874AFP-C#TA1	R7F7016903AFP-C#BA1	R7F7016923AFP-C#BA9	R7F701A693AFP-C#TA1
R7F7016883AFP-C#AA1	R7F7016903AFP-C#TA1	R7F7016923AFP-C#TA1	R7F701A703AFP-C#AA1
R7F7016883AFP-C#BA1	R7F7016904AFP-C#AA1	R7F7016923AFP-C#TA9	R7F701A703AFP-C#BA1
R7F7016883AFP-C#TA1	R7F7016904AFP-C#AA9	R7F7016924AFP-C#AA1	R7F701A703AFP-C#TA1
R7F7016884AFP-C#AA1	R7F7016904AFP-C#BA1	R7F7016924AFP-C#AA9	R7F701A713AFP-C#AA1
R7F7016884AFP-C#BA1	R7F7016904AFP-C#BA9	R7F7016924AFP-C#BA1	R7F701A713AFP-C#BA1
R7F7016884AFP-C#TA1	R7F7016904AFP-C#TA1	R7F7016924AFP-C#BA9	R7F701A713AFP-C#TA1
R7F7016893AFP-C#AA1	R7F7016904AFP-C#TA9	R7F7016924AFP-C#TA1	R7F701A723AFP-C#AA1
R7F7016893AFP-C#BA1	R7F7016913AFP-C#AA1	R7F7016924AFP-C#TA9	R7F701A723AFP-C#BA1
R7F7016893AFP-C#TA1	R7F7016913AFP-C#BA1	R7F701A673AFP-C#AA1	R7F701A723AFP-C#TA1
R7F7016894AFP-C#AA1	R7F7016913AFP-C#TA1	R7F701A673AFP-C#BA1	
R7F7016894AFP-C#AA9	R7F7016914AFP-C#AA1	R7F701A673AFP-C#TA1	

RH850/F1KM-S1 Series (LQFP48pin, Suzhou)

R7F7016933AFP-C#AA1	R7F7016943AFP-C#AA1	R7F7016953AFP-C#BA9	R7F701A733AFP-C#AA1
R7F7016933AFP-C#AA9	R7F7016943AFP-C#BA1	R7F7016953AFP-C#KA1	R7F701A733AFP-C#BA1
R7F7016933AFP-C#BA1	R7F7016943AFP-C#KA1	R7F7016953AFP-C#KA9	R7F701A733AFP-C#KA1
R7F7016933AFP-C#BA9	R7F7016944AFP-C#AA1	R7F7016954AFP-C#AA1	R7F701A743AFP-C#AA1
R7F7016933AFP-C#KA1	R7F7016944AFP-C#BA1	R7F7016954AFP-C#AA9	R7F701A743AFP-C#BA1
R7F7016933AFP-C#KA9	R7F7016944AFP-C#KA1	R7F7016954AFP-C#BA1	R7F701A743AFP-C#KA1
R7F7016934AFP-C#AA1	R7F7016953AFP-C#AA1	R7F7016954AFP-C#BA9	R7F701A753AFP-C#AA1
R7F7016934AFP-C#BA1	R7F7016953AFP-C#AA9	R7F7016954AFP-C#KA1	R7F701A753AFP-C#BA1
R7F7016934AFP-C#KA1	R7F7016953AFP-C#BA1	R7F7016954AFP-C#KA9	R7F701A753AFP-C#KA1

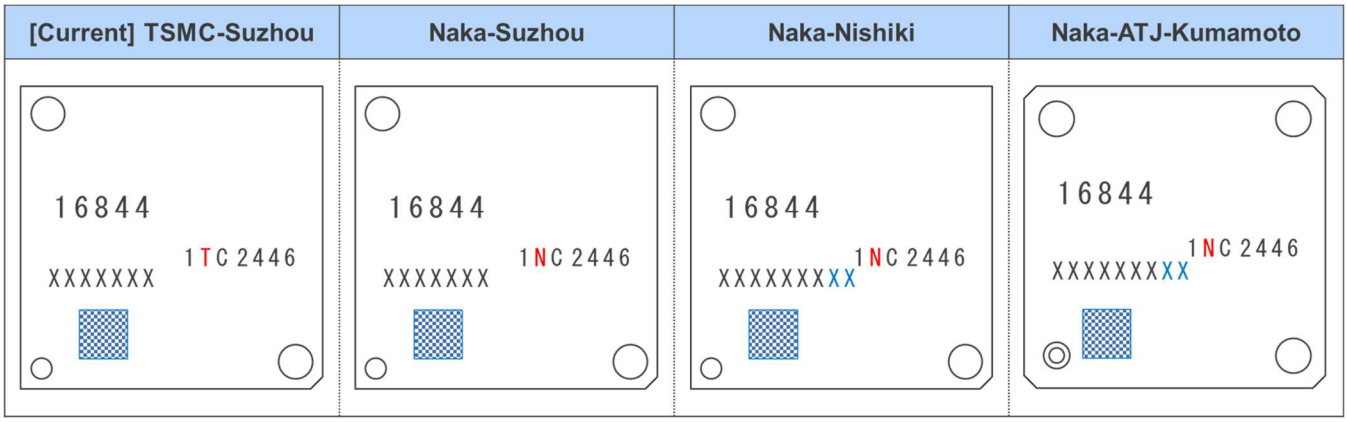
Mark Specification

Mark Example: R7F7016844AFP(D)-C#BA1 (F1KM-S1 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 Nishiki products (Suzhou: 7digits, Nishiki: 9digits). (The blue characters)

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

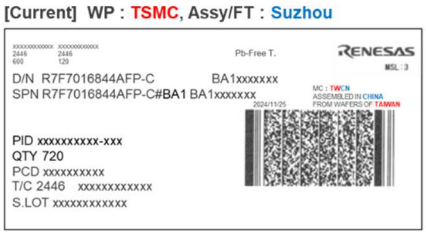


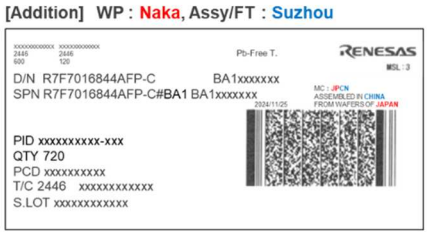
Label Specification

Label Example: R7F7016844AFP(D)-C#BA1 (F1KM-S1 100pin)

The red characters are different between TSMC and Naka products.

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





Naka : Renesas Semiconductor Manufacturing Co., Ltd. (Naka Factory)
TSMC : Taiwan Semiconductor Manufacturing Company Limited
TeraPower : TeraPower Technology Inc.
Oita : Renesas Electronics Co., Ltd. (Oita Factory)
Nishiki : Renesas Electronics Co., Ltd. (Nishiki Factory)
Suzhou : Renesas Semiconductor (Suzhou) Co., Ltd.
ATJ-Kumamoto : Amkor Technology Japan, Inc (Kumamoto)
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	-
			NVM Endurance & Data Retention Test: (Test @ Rm/Hot) — 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	-
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
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	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 – 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