

# RENESAS SEMICONDUCTOR RELIABILITY REPORT

GROUP : 78K0RKx3-L  
DEVICE : Refer to Product List  
APPLICATION : Consumer / Industry

Quality Assurance Div.  
Renesas Electronics Corporation

## Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
  2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
  3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
  4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
  5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
  6. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.  
 "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.  
 "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.  
 Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
  7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
  8. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
  9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
  10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
  11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
  12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
  13. This document shall not be reproduced or duplicated in any form or disclosed to any third party, in whole or in part, without prior written consent of Renesas Electronics.
  14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.
- (Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.
- (Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-2 October 2020)

Table. Reliability test results (QFP)

Test Items	Reference	Test Conditions	Results Failure/Size	Comment
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=125 °C, Vccmax, 1000 hrs	0/22	
High Temperature Storage Life (HTSL)	JESD22-A103	Ta=150 °C, 1000 hrs	0/22	
Temperature Humidity bias (THB) (*1)	JESD22-A101	Ta=85 °C, RH=85 %, Vccmax, 1000 hrs	0/22	
Temperature Cycling (TC) (*1)	JESD22-A104	Ta=-65 °C to 150 °C , 300 cycles	0/22	
Latch-Up (LU)	JESD78	Pulse Current Injection, I=+/-150 mA	0/3	
Electrostatic discharge (ESD-HBM)	JS-001	1.5 kΩ, 100 pF, +/-2000 V, 1 time	0/3	Class: 2
Electrostatic discharge (ESD-CDM)	JESD22-C101	+/-500V,1time	0/3	Class: C2
Solderability (SD)	J-STD-002	245 °C, 5 s, Solder coverage ≥95 %	0/5	
Resistance to Soldering Heat (PC)	JESD22-A113, J-STD-020	MSL3(Moisture Sensitivity Level 3)	0/22	

\*1) With preconditioning per JESD22-A113, MSL 3

·It is tested to confirm that all the samples are satisfied with an individual product specification.

Note :

Basically qualification tests were performed using a representative product with the same wafer process and the same package structure .

Table. Reliability test results (BGA)

Test Items	Reference	Test Conditions	Results Failure/Size	Comment
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=125 °C, Vccmax, 1000 hrs	0/22	
High Temperature Storage Life (HTSL)	JESD22-A103	Ta=150 °C, 1000 hrs	0/22	
Temperature Humidity bias (THB) (*1)	JESD22-A101	Ta=85 °C, RH=85 %, Vccmax, 1000 hrs	0/22	
Temperature Cycling (TC) (*1)	JESD22-A104	Ta=-55 °C to 125 °C , 500 cycles	0/22	
Latch-Up (LU)	JESD78	Pulse Current Injection, I=+/-150 mA	0/3	
Electrostatic discharge (ESD-HBM)	JS-001	1.5 kΩ, 100 pF, +/-2000 V, 1 time	0/3	Class: 2
Electrostatic discharge (ESD-CDM)	JESD22-C101	+/-500V,1time	0/3	Class: C2
Resistance to Soldering Heat (PC)	JESD22-A113, J-STD-020	MSL3(Moisture Sensitivity Level 3)	0/22	

\*1) With preconditioning per JESD22-A113, MSL 3

•It is tested to confirm that all the samples are satisfied with an individual product specification.

Note :

Basically qualification tests were performed using a representative product with the same wafer process and the same package structure .

The failure rate of the device in an actual use condition can be estimated by the below procedure.

**•Equation for the failure rate estimation ( $\lambda$ )**

$$\lambda = \lambda_b \times \pi T \text{ (FIT)}$$

① Unique failure rate ( $\lambda_b$ )

$$\lambda_b = 8.19 \text{ FIT}$$

Unique failure rate at  $T_a = 55 \text{ }^\circ\text{C}$  using 60 % confidence level.

② Temperature term ( $\pi T$ )

$$\pi T = \exp\{11600 \times E_a \times (1/(273+55) - 1/(273+T_a))\}$$

$E_a$  : Activation energy (eV)

$T_a$  : Ambient temperature ( $^\circ\text{C}$ )

$\pi T$  simplified chart as  $E_a = 0.7 \text{ eV}$

$T_a$ ( $^\circ\text{C}$ )	40	50	55	60	65	70	75	80	85	90	100	110
$\pi T$	0.31	0.68	1	1.45	2.08	2.95	4.15	5.77	7.96	10.88	19.82	34.99

**•MTTF ( Mean Time To Failure )**

$$MTTF = 1/\lambda$$

## Reference about Renesas package code

Package type	Package code *1	
Lead type plastic package	QFP	PxQP
	SOP	PxSP
Non-lead type plastic package	QFN	PxQN
Grid array type plastic package	BGA	PxBG
	LGA	PxLG

\*1. First four digit

Table. Product list

No	Group	Product part number	Package code	No	Group	Product part number	Package code
1	78K0RKx3-L	UPD78F1001GA(R)-HAA-AX	PTQP0048*	51	78K0RKx3-L	UPD78F1007GA-HAB-AX	PTQP0064*
2	78K0RKx3-L	UPD78F1001GA(R)-XXX-HAA-AX	PTQP0048*	52	78K0RKx3-L	UPD78F1007GA-XXX-HAB-AX	PTQP0064*
3	78K0RKx3-L	UPD78F1001GA(S)-HAA-AX	PTQP0048*	53	78K0RKx3-L	UPD78F1008GA(R)-XXX-HAB-AX	PTQP0064*
4	78K0RKx3-L	UPD78F1001GA(S)-XXX-HAA-AX	PTQP0048*	54	78K0RKx3-L	UPD78F1008GA(S)-XXX-HAB-AX	PTQP0064*
5	78K0RKx3-L	UPD78F1001GA-HAA-AX	PTQP0048*	55	78K0RKx3-L	UPD78F1008GA-HAB-AX	PTQP0064*
6	78K0RKx3-L	UPD78F1001GA-XXX-HAA-AX	PTQP0048*	56	78K0RKx3-L	UPD78F1008GA-XXX-HAB-AX	PTQP0064*
7	78K0RKx3-L	UPD78F1002GA(R)-HAA-AX	PTQP0048*	57	78K0RKx3-L	UPD78F1009GA(R)-XXX-HAB-AX	PTQP0064*
8	78K0RKx3-L	UPD78F1002GA(R)-XXX-HAA-AX	PTQP0048*	58	78K0RKx3-L	UPD78F1009GA(S)-HAB-AX	PTQP0064*
9	78K0RKx3-L	UPD78F1002GA(S)-XXX-HAA-AX	PTQP0048*	59	78K0RKx3-L	UPD78F1009GA(S)-XXX-HAB-AX	PTQP0064*
10	78K0RKx3-L	UPD78F1002GA-HAA-AX	PTQP0048*	60	78K0RKx3-L	UPD78F1009GA(S)-XXX-HAB-E1-AX	PTQP0064*
11	78K0RKx3-L	UPD78F1002GA-XXX-HAA-AX	PTQP0048*	61	78K0RKx3-L	UPD78F1009GA(S)-XXX-HAB-E2-AX	PTQP0064*
12	78K0RKx3-L	UPD78F1003GA(R)-HAA-AX	PTQP0048*	62	78K0RKx3-L	UPD78F1009GA(S)-XXX-HAB-E3-AX	PTQP0064*
13	78K0RKx3-L	UPD78F1003GA(R)-XXX-HAA-AX	PTQP0048*	63	78K0RKx3-L	UPD78F1009GA(S)-XXX-HAB-E4-AX	PTQP0064*
14	78K0RKx3-L	UPD78F1003GA(S)-HAA-AX	PTQP0048*	64	78K0RKx3-L	UPD78F1009GA-HAB-AX	PTQP0064*
15	78K0RKx3-L	UPD78F1003GA(S)-XXX-HAA-AX	PTQP0048*	65	78K0RKx3-L	UPD78F1009GA-XXX-HAB-AX	PTQP0064*
16	78K0RKx3-L	UPD78F1003GA-HAA-AX	PTQP0048*	66	78K0RKx3-L	UPD78F1007F1(R)-XXX-AN1-A	PVBG0064*
17	78K0RKx3-L	UPD78F1003GA-XXX-HAA-AX	PTQP0048*	67	78K0RKx3-L	UPD78F1007F1(S)-XXX-AN1-A	PVBG0064*
18	78K0RKx3-L	UPD78F1003GA-XXX-HAA-E2-AX	PTQP0048*	68	78K0RKx3-L	UPD78F1007F1-AN1-A	PVBG0064*
19	78K0RKx3-L	UPD78F1000GB(R)-GAF-AX	PLQP0044*	69	78K0RKx3-L	UPD78F1007F1-XXX-AN1-A	PVBG0064*
20	78K0RKx3-L	UPD78F1000GB(R)-XXX-GAF-AX	PLQP0044*	70	78K0RKx3-L	UPD78F1008F1(R)-XXX-AN1-A	PVBG0064*
21	78K0RKx3-L	UPD78F1000GB-GAF-AX	PLQP0044*	71	78K0RKx3-L	UPD78F1008F1(S)-XXX-AN1-A	PVBG0064*
22	78K0RKx3-L	UPD78F1001GB(R)-XXX-GAF-AX	PLQP0044*	72	78K0RKx3-L	UPD78F1008F1-AN1-A	PVBG0064*
23	78K0RKx3-L	UPD78F1001GB(S)-XXX-GAF-AX	PLQP0044*	73	78K0RKx3-L	UPD78F1008F1-XXX-AN1-A	PVBG0064*
24	78K0RKx3-L	UPD78F1001GB-GAF-AX	PLQP0044*	74	78K0RKx3-L	UPD78F1009F1(R)-XXX-AN1-A	PVBG0064*
25	78K0RKx3-L	UPD78F1001GB-XXX-GAF-AX	PLQP0044*	75	78K0RKx3-L	UPD78F1009F1(S)-AN1-A	PVBG0064*
26	78K0RKx3-L	UPD78F1002GB(R)-XXX-GAF-AX	PLQP0044*	76	78K0RKx3-L	UPD78F1009F1(S)-XXX-AN1-A	PVBG0064*
27	78K0RKx3-L	UPD78F1002GB(S)-XXX-GAF-AX	PLQP0044*	77	78K0RKx3-L	UPD78F1009F1-AN1-A	PVBG0064*
28	78K0RKx3-L	UPD78F1002GB-GAF-AX	PLQP0044*	78	78K0RKx3-L	UPD78F1009F1-XXX-AN1-A	PVBG0064*
29	78K0RKx3-L	UPD78F1002GB-XXX-GAF-AX	PLQP0044*	79	78K0RKx3-L	UPD78F1007F1(R)-XXX-AA2-A	PVBG0064*
30	78K0RKx3-L	UPD78F1003GB(R)-GAF-AX	PLQP0044*	80	78K0RKx3-L	UPD78F1007F1(S)-AA2-A	PVBG0064*
31	78K0RKx3-L	UPD78F1003GB(R)-GAF-E1-AX	PLQP0044*	81	78K0RKx3-L	UPD78F1007F1(S)-XXX-AA2-A	PVBG0064*
32	78K0RKx3-L	UPD78F1003GB(R)-XXX-GAF-AX	PLQP0044*	82	78K0RKx3-L	UPD78F1007F1-XXX-AA2-A	PVBG0064*
33	78K0RKx3-L	UPD78F1003GB(S)-XXX-GAF-AX	PLQP0044*	83	78K0RKx3-L	UPD78F1008F1(R)-XXX-AA2-A	PVBG0064*
34	78K0RKx3-L	UPD78F1003GB-GAF-AX	PLQP0044*	84	78K0RKx3-L	UPD78F1008F1(S)-XXX-AA2-A	PVBG0064*
35	78K0RKx3-L	UPD78F1003GB-XXX-GAF-AX	PLQP0044*	85	78K0RKx3-L	UPD78F1008F1-AA2-A	PVBG0064*
36	78K0RKx3-L	UPD78F1004GB(R)-XXX-GAG-AX	PLQP0052*	86	78K0RKx3-L	UPD78F1008F1-XXX-AA2-A	PVBG0064*
37	78K0RKx3-L	UPD78F1004GB(S)-XXX-GAG-AX	PLQP0052*	87	78K0RKx3-L	UPD78F1009F1(R)-XXX-AA2-A	PVBG0064*
38	78K0RKx3-L	UPD78F1004GB-GAG-AX	PLQP0052*	88	78K0RKx3-L	UPD78F1009F1(S)-AA2-A	PVBG0064*
39	78K0RKx3-L	UPD78F1004GB-XXX-GAG-AX	PLQP0052*	89	78K0RKx3-L	UPD78F1009F1(S)-XXX-AA2-A	PVBG0064*
40	78K0RKx3-L	UPD78F1005GB(R)-XXX-GAG-AX	PLQP0052*	90	78K0RKx3-L	UPD78F1009F1-AA2-A	PVBG0064*
41	78K0RKx3-L	UPD78F1005GB(S)-XXX-GAG-AX	PLQP0052*	91	78K0RKx3-L	UPD78F1009F1-XXX-AA2-A	PLQP0064*
42	78K0RKx3-L	UPD78F1005GB-GAG-AX	PLQP0052*	92	78K0RKx3-L	UPD78F1007GK(R)-XXX-GAJ-AX	PLQP0064*
43	78K0RKx3-L	UPD78F1005GB-XXX-GAG-AX	PLQP0052*	93	78K0RKx3-L	UPD78F1007GK(S)-XXX-GAJ-AX	PLQP0064*
44	78K0RKx3-L	UPD78F1006GB(R)-XXX-GAG-AX	PLQP0052*	94	78K0RKx3-L	UPD78F1007GK-GAJ-AX	PLQP0064*
45	78K0RKx3-L	UPD78F1006GB(S)-GAG-AX	PLQP0052*	95	78K0RKx3-L	UPD78F1007GK-XXX-GAJ-AX	PLQP0064*
46	78K0RKx3-L	UPD78F1006GB(S)-XXX-GAG-AX	PLQP0052*	96	78K0RKx3-L	UPD78F1008GK(R)-XXX-GAJ-AX	PLQP0064*
47	78K0RKx3-L	UPD78F1006GB-GAG-AX	PLQP0052*	97	78K0RKx3-L	UPD78F1008GK(S)-XXX-GAJ-AX	PLQP0064*
48	78K0RKx3-L	UPD78F1006GB-XXX-GAG-AX	PLQP0052*	98	78K0RKx3-L	UPD78F1008GK-GAJ-AX	PLQP0064*
49	78K0RKx3-L	UPD78F1007GA(R)-XXX-HAB-AX	PTQP0064*	99	78K0RKx3-L	UPD78F1008GK-XXX-GAJ-AX	PLQP0064*
50	78K0RKx3-L	UPD78F1007GA(S)-XXX-HAB-AX	PTQP0064*	100	78K0RKx3-L	UPD78F1009GK(R)-XXX-GAJ-AX	PLQP0064*

Table. Product list

No	Group	Product part number	Package code	No	Group	Product part number	Package code
101	78KORKx3-L	UPD78F1009GK(S)-XXX-GAJ-AX	PLQP0064*	161	78KORKx3-L	UPD78F1027GK-GAK-AX	PLQP0080*
102	78KORKx3-L	UPD78F1009GK-GAJ-AX	PLQP0064*	162	78KORKx3-L	UPD78F1028GK(R)-GAK-AX	PLQP0080*
103	78KORKx3-L	UPD78F1009GK-XXX-GAJ-AX	PLQP0064*	163	78KORKx3-L	UPD78F1028GK(S)-GAK-AX	PLQP0080*
104	78KORKx3-L	UPD78F1007GB(R)-XXX-GAH-AX	PLQP0064*	164	78KORKx3-L	UPD78F1028GK-GAK-AX	PLQP0080*
105	78KORKx3-L	UPD78F1007GB(S)-XXX-GAH-AX	PLQP0064*	165	78KORKx3-L	UPD78F1013F1(S)-BAK-A	PTBG0100*
106	78KORKx3-L	UPD78F1007GB-GAH-AX	PLQP0064*	166	78KORKx3-L	UPD78F1013F1(S)-XXX-BAK-A	PTBG0100*
107	78KORKx3-L	UPD78F1007GB-XXX-GAH-AX	PLQP0064*	167	78KORKx3-L	UPD78F1013F1-BAK-A	PTBG0100*
108	78KORKx3-L	UPD78F1008GB(R)-GAH-AX	PLQP0064*	168	78KORKx3-L	UPD78F1013F1-XXX-BAK-A	PTBG0100*
109	78KORKx3-L	UPD78F1008GB(S)-XXX-GAH-AX	PLQP0064*	169	78KORKx3-L	UPD78F1014F1(S)-BAK-A	PTBG0100*
110	78KORKx3-L	UPD78F1008GB(S)-XXX-GAH-AX	PLQP0064*	170	78KORKx3-L	UPD78F1014F1(S)-XXX-BAK-A	PTBG0100*
111	78KORKx3-L	UPD78F1008GB-XXX-GAH-AX	PLQP0064*	171	78KORKx3-L	UPD78F1014F1-BAK-A	PTBG0100*
112	78KORKx3-L	UPD78F1009GB(R)-GAH-AX	PLQP0064*	172	78KORKx3-L	UPD78F1014F1-XXX-BAK-A	PTBG0100*
113	78KORKx3-L	UPD78F1009GB(R)-XXX-GAH-AX	PLQP0064*	173	78KORKx3-L	UPD78F1013GF(R)-GAS-AX	PLQP0100*
114	78KORKx3-L	UPD78F1009GB(S)-XXX-GAH-AX	PLQP0064*	174	78KORKx3-L	UPD78F1013GF(R)-XXX-GAS-AX	PLQP0100*
115	78KORKx3-L	UPD78F1009GB-GAH-AX	PLQP0064*	175	78KORKx3-L	UPD78F1013GF(S)-GAS-AX	PLQP0100*
116	78KORKx3-L	UPD78F1009GB-XXX-GAH-AX	PLQP0064*	176	78KORKx3-L	UPD78F1013GF(S)-XXX-GAS-AX	PLQP0100*
117	78KORKx3-L	UPD78F1010GC(R)-GAD-AX	PLQP0080*	177	78KORKx3-L	UPD78F1013GF-GAS-AX	PLQP0100*
118	78KORKx3-L	UPD78F1010GC(R)-XXX-GAD-AX	PLQP0080*	178	78KORKx3-L	UPD78F1013GF-XXX-GAS-AX	PLQP0100*
119	78KORKx3-L	UPD78F1010GC(S)-GAD-AX	PLQP0080*	179	78KORKx3-L	UPD78F1014GF(R)-GAS-AX	PLQP0100*
120	78KORKx3-L	UPD78F1010GC(S)-XXX-GAD-AX	PLQP0080*	180	78KORKx3-L	UPD78F1014GF(R)-XXX-GAS-AX	PLQP0100*
121	78KORKx3-L	UPD78F1010GC-GAD-AX	PLQP0080*	181	78KORKx3-L	UPD78F1014GF(S)-GAS-AX	PLQP0100*
122	78KORKx3-L	UPD78F1010GC-XXX-GAD-AX	PLQP0080*	182	78KORKx3-L	UPD78F1014GF(S)-XXX-GAS-AX	PLQP0100*
123	78KORKx3-L	UPD78F1011GC(R)-GAD-AX	PLQP0080*	183	78KORKx3-L	UPD78F1014GF-GAS-AX	PLQP0100*
124	78KORKx3-L	UPD78F1011GC(R)-XXX-GAD-AX	PLQP0080*	184	78KORKx3-L	UPD78F1014GF-XXX-GAS-AX	PLQP0100*
125	78KORKx3-L	UPD78F1011GC(S)-GAD-AX	PLQP0080*	185	78KORKx3-L	UPD78F1029GF(R)-GAS-AX	PLQP0100*
126	78KORKx3-L	UPD78F1011GC(S)-XXX-GAD-AX	PLQP0080*	186	78KORKx3-L	UPD78F1029GF(S)-GAS-AX	PLQP0100*
127	78KORKx3-L	UPD78F1011GC-GAD-AX	PLQP0080*	187	78KORKx3-L	UPD78F1029GF-GAS-AX	PLQP0100*
128	78KORKx3-L	UPD78F1011GC-XXX-GAD-AX	PLQP0080*	188	78KORKx3-L	UPD78F1030GF(R)-GAS-AX	PLQP0100*
129	78KORKx3-L	UPD78F1012GC(R)-GAD-AX	PLQP0080*	189	78KORKx3-L	UPD78F1030GF(S)-GAS-AX	PLQP0100*
130	78KORKx3-L	UPD78F1012GC(R)-XXX-GAD-AX	PLQP0080*	190	78KORKx3-L	UPD78F1030GF-GAS-AX	PLQP0100*
131	78KORKx3-L	UPD78F1012GC(S)-GAD-AX	PLQP0080*	191	78KORKx3-L	UPD78F1013GC(R)-UEU-AX	PLQP0100*
132	78KORKx3-L	UPD78F1012GC(S)-XXX-GAD-AX	PLQP0080*	192	78KORKx3-L	UPD78F1013GC(R)-XXX-UEU-AX	PLQP0100*
133	78KORKx3-L	UPD78F1012GC-GAD-AX	PLQP0080*	193	78KORKx3-L	UPD78F1013GC(S)-UEU-AX	PLQP0100*
134	78KORKx3-L	UPD78F1012GC-XXX-GAD-AX	PLQP0080*	194	78KORKx3-L	UPD78F1013GC(S)-XXX-UEU-AX	PLQP0100*
135	78KORKx3-L	UPD78F1027GC(R)-GAD-AX	PLQP0080*	195	78KORKx3-L	UPD78F1013GC-UEU-AX	PLQP0100*
136	78KORKx3-L	UPD78F1027GC(S)-GAD-AX	PLQP0080*	196	78KORKx3-L	UPD78F1013GC-XXX-UEU-AX	PLQP0100*
137	78KORKx3-L	UPD78F1027GC-GAD-AX	PLQP0080*	197	78KORKx3-L	UPD78F1014GC(R)-UEU-AX	PLQP0100*
138	78KORKx3-L	UPD78F1028GC(R)-GAD-AX	PLQP0080*	198	78KORKx3-L	UPD78F1014GC(R)-XXX-UEU-AX	PLQP0100*
139	78KORKx3-L	UPD78F1028GC(S)-GAD-AX	PLQP0080*	199	78KORKx3-L	UPD78F1014GC(S)-XXX-UEU-AX	PLQP0100*
140	78KORKx3-L	UPD78F1028GC-GAD-AX	PLQP0080*	200	78KORKx3-L	UPD78F1014GC-UEU-AX	PLQP0100*
141	78KORKx3-L	UPD78F1010GK(R)-GAK-AX	PLQP0080*	201	78KORKx3-L	UPD78F1014GC-XXX-UEU-AX	PLQP0100*
142	78KORKx3-L	UPD78F1010GK(R)-XXX-GAK-AX	PLQP0080*	202	78KORKx3-L	UPD78F1029GC(R)-UEU-AX	PLQP0100*
143	78KORKx3-L	UPD78F1010GK(S)-GAK-AX	PLQP0080*	203	78KORKx3-L	UPD78F1029GC(S)-UEU-AX	PLQP0100*
144	78KORKx3-L	UPD78F1010GK(S)-XXX-GAK-AX	PLQP0080*	204	78KORKx3-L	UPD78F1029GC-UEU-AX	PLQP0100*
145	78KORKx3-L	UPD78F1010GK-GAK-AX	PLQP0080*	205	78KORKx3-L	UPD78F1030GC(R)-UEU-AX	PLQP0100*
146	78KORKx3-L	UPD78F1010GK-XXX-GAK-AX	PLQP0080*	206	78KORKx3-L	UPD78F1030GC(S)-UEU-AX	PLQP0100*
147	78KORKx3-L	UPD78F1011GK(R)-GAK-AX	PLQP0080*	207	78KORKx3-L	UPD78F1030GC-UEU-AX	PLQP0100*
148	78KORKx3-L	UPD78F1011GK(R)-XXX-GAK-AX	PLQP0080*	208			
149	78KORKx3-L	UPD78F1011GK(S)-GAK-AX	PLQP0080*	209			
150	78KORKx3-L	UPD78F1011GK(S)-XXX-GAK-AX	PLQP0080*	210			
151	78KORKx3-L	UPD78F1011GK-GAK-AX	PLQP0080*	211			
152	78KORKx3-L	UPD78F1011GK-XXX-GAK-AX	PLQP0080*	212			
153	78KORKx3-L	UPD78F1012GK(R)-GAK-AX	PLQP0080*	213			
154	78KORKx3-L	UPD78F1012GK(R)-XXX-GAK-AX	PLQP0080*	214			
155	78KORKx3-L	UPD78F1012GK(S)-GAK-AX	PLQP0080*	215			
156	78KORKx3-L	UPD78F1012GK(S)-XXX-GAK-AX	PLQP0080*	216			
157	78KORKx3-L	UPD78F1012GK-GAK-AX	PLQP0080*	217			
158	78KORKx3-L	UPD78F1012GK-XXX-GAK-AX	PLQP0080*	218			
159	78KORKx3-L	UPD78F1027GK(R)-GAK-AX	PLQP0080*	219			
160	78KORKx3-L	UPD78F1027GK(S)-GAK-AX	PLQP0080*	220			