

RENESAS SEMICONDUCTOR RELIABILITY REPORT

GROUP : RL78/G13
DEVICE : R5F101XXX
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 (QFN)

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 (SOP)

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 .

Table. Reliability test results (LGA)

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 (λ)

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

① Unique failure rate (λ_b)

$$\lambda_b = 3.8 \text{ FIT}$$

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

② Temperature term (πT)

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

E_a : Activation energy (eV)

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

πT 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
πT	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	RL78/G13	R5F1016AASM	PTSP0020J*	51	RL78/G13	R5F101BGANA	PWQN0032K*
2	RL78/G13	R5F1016AASP	PLSP0020J*	52	RL78/G13	R5F101BGDNA	PWQN0032K*
3	RL78/G13	R5F1016ADSP	PLSP0020J*	53	RL78/G13	R5F101CAALA	PWLG0036K*
4	RL78/G13	R5F1016CASM	PTSP0020J*	54	RL78/G13	R5F101CADLA	PWLG0036K*
5	RL78/G13	R5F1016CASP	PLSP0020J*	55	RL78/G13	R5F101CCALA	PWLG0036K*
6	RL78/G13	R5F1016CDSP	PLSP0020J*	56	RL78/G13	R5F101CCDLA	PWLG0036K*
7	RL78/G13	R5F1016DASM	PTSP0020J*	57	RL78/G13	R5F101CDALA	PWLG0036K*
8	RL78/G13	R5F1016DASP	PLSP0020J*	58	RL78/G13	R5F101CDDLA	PWLG0036K*
9	RL78/G13	R5F1016DDSP	PLSP0020J*	59	RL78/G13	R5F101CEALA	PWLG0036K*
10	RL78/G13	R5F1016EASM	PTSP0020J*	60	RL78/G13	R5F101CEDLA	PWLG0036K*
11	RL78/G13	R5F1016EASP	PLSP0020J*	61	RL78/G13	R5F101CFALA	PWLG0036K*
12	RL78/G13	R5F1016EDSP	PLSP0020J*	62	RL78/G13	R5F101CFDLA	PWLG0036K*
13	RL78/G13	R5F1017AANA	PWQN0024K*	63	RL78/G13	R5F101CGALA	PWLG0036K*
14	RL78/G13	R5F1017ADNA	PWQN0024K*	64	RL78/G13	R5F101CGDLA	PWLG0036K*
15	RL78/G13	R5F1017CANA	PWQN0024K*	65	RL78/G13	R5F101EAANA	PWQN0040K*
16	RL78/G13	R5F1017CDNA	PWQN0024K*	66	RL78/G13	R5F101EADNA	PWQN0040K*
17	RL78/G13	R5F1017DANA	PWQN0024K*	67	RL78/G13	R5F101ECANA	PWQN0040K*
18	RL78/G13	R5F1017DDNA	PWQN0024K*	68	RL78/G13	R5F101ECDNA	PWQN0040K*
19	RL78/G13	R5F1017EANA	PWQN0024K*	69	RL78/G13	R5F101EDANA	PWQN0040K*
20	RL78/G13	R5F1017EDNA	PWQN0024K*	70	RL78/G13	R5F101EDDNA	PWQN0040K*
21	RL78/G13	R5F1018AALA	PWLG0025K*	71	RL78/G13	R5F101EEANA	PWQN0040K*
22	RL78/G13	R5F1018ADLA	PWLG0025K*	72	RL78/G13	R5F101EEDNA	PWQN0040K*
23	RL78/G13	R5F1018CALA	PWLG0025K*	73	RL78/G13	R5F101EFANA	PWQN0040K*
24	RL78/G13	R5F1018CDLA	PWLG0025K*	74	RL78/G13	R5F101EFDNA	PWQN0040K*
25	RL78/G13	R5F1018DALA	PWLG0025K*	75	RL78/G13	R5F101EGANA	PWQN0040K*
26	RL78/G13	R5F1018DDLA	PWLG0025K*	76	RL78/G13	R5F101EGDNA	PWQN0040K*
27	RL78/G13	R5F1018EALA	PWLG0025K*	77	RL78/G13	R5F101EHANA	PWQN0040K*
28	RL78/G13	R5F1018EDLA	PWLG0025K*	78	RL78/G13	R5F101EHDNA	PWQN0040K*
29	RL78/G13	R5F101AAASP	PLSP0030J*	79	RL78/G13	R5F101FAAFP	PLQP0044G*
30	RL78/G13	R5F101AADSP	PLSP0030J*	80	RL78/G13	R5F101FADFP	PLQP0044G*
31	RL78/G13	R5F101ACASP	PLSP0030J*	81	RL78/G13	R5F101FCAFP	PLQP0044G*
32	RL78/G13	R5F101ACDSP	PLSP0030J*	82	RL78/G13	R5F101FCDFP	PLQP0044G*
33	RL78/G13	R5F101ADASP	PLSP0030J*	83	RL78/G13	R5F101FDAFP	PLQP0044G*
34	RL78/G13	R5F101ADDSP	PLSP0030J*	84	RL78/G13	R5F101FDDFP	PLQP0044G*
35	RL78/G13	R5F101AEASP	PLSP0030J*	85	RL78/G13	R5F101FEAFP	PLQP0044G*
36	RL78/G13	R5F101AEDSP	PLSP0030J*	86	RL78/G13	R5F101FEDFP	PLQP0044G*
37	RL78/G13	R5F101AFASP	PLSP0030J*	87	RL78/G13	R5F101FFAFP	PLQP0044G*
38	RL78/G13	R5F101AFDSP	PLSP0030J*	88	RL78/G13	R5F101FFDFP	PLQP0044G*
39	RL78/G13	R5F101AGASP	PLSP0030J*	89	RL78/G13	R5F101FGAFP	PLQP0044G*
40	RL78/G13	R5F101AGDSP	PLSP0030J*	90	RL78/G13	R5F101FGDFP	PLQP0044G*
41	RL78/G13	R5F101BAANA	PWQN0032K*	91	RL78/G13	R5F101FHAFP	PLQP0044G*
42	RL78/G13	R5F101BADNA	PWQN0032K*	92	RL78/G13	R5F101FHDFP	PLQP0044G*
43	RL78/G13	R5F101BCANA	PWQN0032K*	93	RL78/G13	R5F101FJAFP	PLQP0044G*
44	RL78/G13	R5F101BCDNA	PWQN0032K*	94	RL78/G13	R5F101FJDFF	PLQP0044G*
45	RL78/G13	R5F101BDANA	PWQN0032K*	95	RL78/G13	R5F101FKAFF	PLQP0044G*
46	RL78/G13	R5F101BDDNA	PWQN0032K*	96	RL78/G13	R5F101FKDFP	PLQP0044G*
47	RL78/G13	R5F101BEANA	PWQN0032K*	97	RL78/G13	R5F101FLAFP	PLQP0044G*
48	RL78/G13	R5F101BEDNA	PWQN0032K*	98	RL78/G13	R5F101FLDFP	PLQP0044G*
49	RL78/G13	R5F101BFANA	PWQN0032K*	99	RL78/G13	R5F101GAAFB	PLQP0048K*
50	RL78/G13	R5F101BFDNA	PWQN0032K*	100	RL78/G13	R5F101GAANA	PWQN0048K*

Table. Product list

MCR-22-0499

No	Group	Product part number	Package code	No	Group	Product part number	Package code
101	RL78/G13	R5F101GADFB	PLQP0048K*	161	RL78/G13	R5F101LCDFA	PLQP0064J*
102	RL78/G13	R5F101GADNA	PWQN0048K*	162	RL78/G13	R5F101LCDFB	PLQP0064K*
103	RL78/G13	R5F101GCAFB	PLQP0048K*	163	RL78/G13	R5F101LDABG	PVBG0064L*
104	RL78/G13	R5F101GCANA	PWQN0048K*	164	RL78/G13	R5F101LDAFA	PLQP0064J*
105	RL78/G13	R5F101GCDFB	PLQP0048K*	165	RL78/G13	R5F101LDAFB	PLQP0064K*
106	RL78/G13	R5F101GCDNA	PWQN0048K*	166	RL78/G13	R5F101LDDBG	PVBG0064L*
107	RL78/G13	R5F101GDAFB	PLQP0048K*	167	RL78/G13	R5F101LDDFA	PLQP0064J*
108	RL78/G13	R5F101GDANA	PWQN0048K*	168	RL78/G13	R5F101LDDFB	PLQP0064K*
109	RL78/G13	R5F101GDDFB	PLQP0048K*	169	RL78/G13	R5F101LEABG	PVBG0064L*
110	RL78/G13	R5F101GDDNA	PWQN0048K*	170	RL78/G13	R5F101LEAFA	PLQP0064J*
111	RL78/G13	R5F101GEAFB	PLQP0048K*	171	RL78/G13	R5F101LEAFB	PLQP0064K*
112	RL78/G13	R5F101GEANA	PWQN0048K*	172	RL78/G13	R5F101LEDBG	PVBG0064L*
113	RL78/G13	R5F101GEDFB	PLQP0048K*	173	RL78/G13	R5F101LEDFB	PLQP0064J*
114	RL78/G13	R5F101GEDNA	PWQN0048K*	174	RL78/G13	R5F101LEDFB	PLQP0064K*
115	RL78/G13	R5F101GFAFB	PLQP0048K*	175	RL78/G13	R5F101LFABG	PVBG0064L*
116	RL78/G13	R5F101GFANA	PWQN0048K*	176	RL78/G13	R5F101LFAFA	PLQP0064J*
117	RL78/G13	R5F101GDFB	PLQP0048K*	177	RL78/G13	R5F101LFAFB	PLQP0064K*
118	RL78/G13	R5F101GFDNA	PWQN0048K*	178	RL78/G13	R5F101LFDBG	PVBG0064L*
119	RL78/G13	R5F101GGAFB	PLQP0048K*	179	RL78/G13	R5F101LFDFA	PLQP0064J*
120	RL78/G13	R5F101GGANA	PWQN0048K*	180	RL78/G13	R5F101LDFB	PLQP0064K*
121	RL78/G13	R5F101GGDFB	PLQP0048K*	181	RL78/G13	R5F101LGABG	PVBG0064L*
122	RL78/G13	R5F101GGDNA	PWQN0048K*	182	RL78/G13	R5F101LGAFB	PLQP0064J*
123	RL78/G13	R5F101GHAFB	PLQP0048K*	183	RL78/G13	R5F101LGAFB	PLQP0064K*
124	RL78/G13	R5F101GHANA	PWQN0048K*	184	RL78/G13	R5F101LGDBG	PVBG0064L*
125	RL78/G13	R5F101GHDFB	PLQP0048K*	185	RL78/G13	R5F101LGDFB	PLQP0064J*
126	RL78/G13	R5F101GHDNA	PWQN0048K*	186	RL78/G13	R5F101LGDFB	PLQP0064K*
127	RL78/G13	R5F101GJAFB	PLQP0048K*	187	RL78/G13	R5F101LHABG	PVBG0064L*
128	RL78/G13	R5F101GJANA	PWQN0048K*	188	RL78/G13	R5F101LHAFB	PLQP0064J*
129	RL78/G13	R5F101GJDFB	PLQP0048K*	189	RL78/G13	R5F101LHAFB	PLQP0064K*
130	RL78/G13	R5F101GJDNA	PWQN0048K*	190	RL78/G13	R5F101LHDBG	PVBG0064L*
131	RL78/G13	R5F101GKAFB	PLQP0048K*	191	RL78/G13	R5F101LHDFB	PLQP0064J*
132	RL78/G13	R5F101GKANA	PWQN0048K*	192	RL78/G13	R5F101LHDFB	PLQP0064K*
133	RL78/G13	R5F101GKDFB	PLQP0048K*	193	RL78/G13	R5F101LJABG	PVBG0064L*
134	RL78/G13	R5F101GKDNA	PWQN0048K*	194	RL78/G13	R5F101LJAFB	PLQP0064J*
135	RL78/G13	R5F101GLAFB	PLQP0048K*	195	RL78/G13	R5F101LJAFB	PLQP0064K*
136	RL78/G13	R5F101GLANA	PWQN0048K*	196	RL78/G13	R5F101LJDBG	PVBG0064L*
137	RL78/G13	R5F101GLDFB	PLQP0048K*	197	RL78/G13	R5F101LJDFA	PLQP0064J*
138	RL78/G13	R5F101GLDNA	PWQN0048K*	198	RL78/G13	R5F101LJDFB	PLQP0064K*
139	RL78/G13	R5F101JCAFA	PLQP0052J*	199	RL78/G13	R5F101LKAFB	PLQP0064J*
140	RL78/G13	R5F101JCDFB	PLQP0052J*	200	RL78/G13	R5F101LKAFB	PLQP0064K*
141	RL78/G13	R5F101JDAFA	PLQP0052J*	201	RL78/G13	R5F101LKDFB	PLQP0064J*
142	RL78/G13	R5F101JDDFA	PLQP0052J*	202	RL78/G13	R5F101LKDFB	PLQP0064K*
143	RL78/G13	R5F101JEAFB	PLQP0052J*	203	RL78/G13	R5F101LLAFA	PLQP0064J*
144	RL78/G13	R5F101JEDFA	PLQP0052J*	204	RL78/G13	R5F101LLAFB	PLQP0064K*
145	RL78/G13	R5F101JFAFA	PLQP0052J*	205	RL78/G13	R5F101LLDFA	PLQP0064J*
146	RL78/G13	R5F101JFDFA	PLQP0052J*	206	RL78/G13	R5F101LLDFB	PLQP0064K*
147	RL78/G13	R5F101JGAFA	PLQP0052J*	207	RL78/G13	R5F101MFAFA	PLQP0080J*
148	RL78/G13	R5F101JGDFB	PLQP0052J*	208	RL78/G13	R5F101MFAFB	PLQP0080K*
149	RL78/G13	R5F101JHAFB	PLQP0052J*	209	RL78/G13	R5F101MFDFA	PLQP0080J*
150	RL78/G13	R5F101JHDFB	PLQP0052J*	210	RL78/G13	R5F101MFDFA	PLQP0080K*
151	RL78/G13	R5F101JJAFB	PLQP0052J*	211	RL78/G13	R5F101MGAFB	PLQP0080J*
152	RL78/G13	R5F101JJDFB	PLQP0052J*	212	RL78/G13	R5F101MGAFB	PLQP0080K*
153	RL78/G13	R5F101JKAFB	PLQP0052J*	213	RL78/G13	R5F101MGDFB	PLQP0080J*
154	RL78/G13	R5F101JKDFB	PLQP0052J*	214	RL78/G13	R5F101MGDFB	PLQP0080K*
155	RL78/G13	R5F101JLAFA	PLQP0052J*	215	RL78/G13	R5F101MHAFB	PLQP0080J*
156	RL78/G13	R5F101JLDFA	PLQP0052J*	216	RL78/G13	R5F101MHAFB	PLQP0080K*
157	RL78/G13	R5F101LCABG	PVBG0064L*	217	RL78/G13	R5F101MHDFA	PLQP0080J*
158	RL78/G13	R5F101LCAFA	PLQP0064J*	218	RL78/G13	R5F101MHDFB	PLQP0080K*
159	RL78/G13	R5F101LCAFB	PLQP0064K*	219	RL78/G13	R5F101MJAFB	PLQP0080J*
160	RL78/G13	R5F101LCDBG	PVBG0064L*	220	RL78/G13	R5F101MJAFB	PLQP0080K*

Table. Product list

MCR-22-0499

No	Group	Product part number	Package code	No	Group	Product part number	Package code
221	RL78/G13	R5F101MJDF A	PLQP0080J*	281			
222	RL78/G13	R5F101MJDF B	PLQP0080K*	282			
223	RL78/G13	R5F101MKAF A	PLQP0080J*	283			
224	RL78/G13	R5F101MKAF B	PLQP0080K*	284			
225	RL78/G13	R5F101MKDF A	PLQP0080J*	285			
226	RL78/G13	R5F101MKDF B	PLQP0080K*	286			
227	RL78/G13	R5F101MLAF A	PLQP0080J*	287			
228	RL78/G13	R5F101MLAF B	PLQP0080K*	288			
229	RL78/G13	R5F101MLDF A	PLQP0080J*	289			
230	RL78/G13	R5F101MLDF B	PLQP0080K*	290			
231	RL78/G13	R5F101PF AF A	PLQP0100J*	291			
232	RL78/G13	R5F101PF AF B	PLQP0100K*	292			
233	RL78/G13	R5F101PF DF A	PLQP0100J*	293			
234	RL78/G13	R5F101PF DF B	PLQP0100K*	294			
235	RL78/G13	R5F101PG AF A	PLQP0100J*	295			
236	RL78/G13	R5F101PG AF B	PLQP0100K*	296			
237	RL78/G13	R5F101PG DF A	PLQP0100J*	297			
238	RL78/G13	R5F101PG DF B	PLQP0100K*	298			
239	RL78/G13	R5F101PH AF A	PLQP0100J*	299			
240	RL78/G13	R5F101PH AF B	PLQP0100K*	300			
241	RL78/G13	R5F101PH DF A	PLQP0100J*	301			
242	RL78/G13	R5F101PH DF B	PLQP0100K*	302			
243	RL78/G13	R5F101PJ AF A	PLQP0100J*	303			
244	RL78/G13	R5F101PJ AF B	PLQP0100K*	304			
245	RL78/G13	R5F101PJ DF A	PLQP0100J*	305			
246	RL78/G13	R5F101PJ DF B	PLQP0100K*	306			
247	RL78/G13	R5F101PK AF A	PLQP0100J*	307			
248	RL78/G13	R5F101PK AF B	PLQP0100K*	308			
249	RL78/G13	R5F101PK DF A	PLQP0100J*	309			
250	RL78/G13	R5F101PK DF B	PLQP0100K*	310			
251	RL78/G13	R5F101PL AF A	PLQP0100J*	311			
252	RL78/G13	R5F101PL AF B	PLQP0100K*	312			
253	RL78/G13	R5F101PL DF A	PLQP0100J*	313			
254	RL78/G13	R5F101PL DF B	PLQP0100K*	314			
255	RL78/G13	R5F101SH AF B	PLQP0128K*	315			
256	RL78/G13	R5F101SH DF B	PLQP0128K*	316			
257	RL78/G13	R5F101SJ AF B	PLQP0128K*	317			
258	RL78/G13	R5F101SJ DF B	PLQP0128K*	318			
259	RL78/G13	R5F101SK AF B	PLQP0128K*	319			
260	RL78/G13	R5F101SK DF B	PLQP0128K*	320			
261	RL78/G13	R5F101SL AF B	PLQP0128K*	321			
262	RL78/G13	R5F101SL DF B	PLQP0128K*	322			
263				323			
264				324			
265				325			
266				326			
267				327			
268				328			
269				329			
270				330			
271				331			
272				332			
273				333			
274				334			
275				335			
276				336			
277				337			
278				338			
279				339			
280				340			