



Report No. APR-22-H0382-A  
Date: Mar./15/2023

# RENESAS SEMICONDUCTOR RELIABILITY REPORT

DEVICE: R1RW0416DSB-2PI#D1  
R1RW0416DSB-2PI#S1

APPLICATION: Standard

Quality Assurance Div.  
Renesas Electronics Corporation

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(Rev.5.0-2 October 2020)

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## Reliability test result

| Test Items                                                 | Reference              | Test Conditions                                                                                                             | Results<br>Reject/Size |
|------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------|
| High Temperature Operating Life                            | JESD22-A108            | Ta = 125 °C, Vcc max, 1000 h                                                                                                | 0/231                  |
| Low Temperature Operating Life                             | JESD22-A108            | Tj = -40 °C, Vcc max, 1000 h                                                                                                | 0/32                   |
| High Temperature Storage Life                              | JESD22-A103            | Ta = 150 °C, 1000 h                                                                                                         | 0/75                   |
| Temperature Humidity Bias (HAST)                           | JESD22-A110            | Ta = 130 °C, 85% RH, Vcc max, 96 h                                                                                          | 0/75                   |
| Temperature Cycling                                        | JESD22-A104            | Ta = -65 °C to +150 °C, 300 cycles                                                                                          | 0/75                   |
| Unbiased Temperature Humidity (Unbiased HAST)              | JESD22-A118            | Ta = 130 °C, 85%RH, 96h                                                                                                     | 0/75                   |
| Resistance to Soldering Heat                               | JESD22-A113, J-STD-020 | Bake:125 °C, 24 h<br>Moisture Soak: 30 °C 70% RH, 192h (JEDEC-MSL3 Equivalent)<br>Reflow: 260 °C peak, 255 °C 30 s, 3 times | 0/33                   |
| Solderability                                              | J-STD-002              | 245 °C, 5 s<br>95% solder coverage minimum                                                                                  | 0/5                    |
| Electrostatic discharge (HBM Method)                       | JS-001                 | C = 100 pF, R = 1.5 kΩ, ±1000 V                                                                                             | 0/3                    |
| Electrostatic discharge (CDM Method)                       | JESD22-C101            | ±500 V                                                                                                                      | 0/3                    |
| Latch-up (I-Test)                                          | JESD78                 | ±150 mA                                                                                                                     | 0/3                    |
| Tin Whisker Acceptance (Temperature Humidity Storage)      | JESD22-A121            | Ta = 30 °C, 60% RH, 4000 h                                                                                                  | 0/3                    |
| Tin Whisker Acceptance (High Temperature Humidity Storage) | JESD22-A121            | Ta = 55 °C, 85% RH, 4000 h                                                                                                  | 0/3                    |
| Tin Whisker Acceptance (Temperature Cycling)               | JESD22-A121            | Ta = -40/85 °C, 1500 cycles                                                                                                 | 0/3                    |
| Estimated Failure Rate                                     | -                      | 8.1 FIT or less<br>Prerequisites: Ta = 55 °C, Ea = 0.5 eV, C.L. = 60%                                                       |                        |
| System Soft Error Testing (SSER)                           | JESD89-1               | 218 FIT/Mbit or less (no error)<br>Prerequisites: C.L. = 60%                                                                |                        |

Reliability test results may include data from family representative products. MSL Preconditioning was performed prior to HAST, Temperature Cycling and Unbiased HAST.

The Criteria shall follow the electrical characteristics in Specifications, except for Solderability and SSER.

Preconditioning Details: Bake (125 °C, 24 h) -> Moisture Soak (30 °C 70% RH, 192 h) -> Reflow (260 °C peak, 3 times)