Korea Laboratory Accreditation Scheme

# CERTIFICATE OF ACCREDITATION

## QRT Inc.

Accreditation No. : KT218

Corporation Registration No. : 134411-0059857

Address of Laboratory : (Branch site) 2091, Gyeongchung-daero, Bubal-eup, Icheon-si, Gyeonggi-do, Republic of Korea
(Branch site-1) 215, Daesinro Heungdeokgu Cheongjusi Chungcheongbuk-do, Republic of Korea
(Branch site-2) 109, Gwanggyo-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do. Republic of Korea
(Satellite facilities-1) 2091, Gyeongchung-daero, Bubal-eup, Icheon-si, Gyeonggi-do, Republic of Korea

Date of Initial Accreditation : April 19, 2004

Validity of Accreditation : July 02, 2024 ~ July 01, 2028

Scope of Accreditation : Attached Annex

Date of issue : July 15, 2026

This testing laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to Joint ISO-ILAC-IAF Communiqué).

Head
Korea Laboratory Accreditation Scheme

Korea Laboratory Accreditation Scheme(KOLAS) is a signatory to the ILAC Mutual Recognition Arrangement

## 03. Electrical Testing

03.014 Environmental and Reliability

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| AEC-Q100-005-REV-D1:2012 | Electrical materials and components | NON-VOLATILE MEMORY PROGRAM/ERASE ENDURANCE, DATA RETENTION, AND OPERATIONAL LIFE TEST<br>(Exception)<br>3.6 Measurements<br>4 Failure criteria | Temperature :<br>(55 ~ 150) °C | BS | N |
| JESD22-A103E.01:2021 | Electrical materials and components | HIGH TEMPERATURE STORAGE LIFE<br>(Exception)<br>4.2 Measurements<br>4.3 Failure criteria | Temperature :<br>(125 ~ 300) °C | BS-1 | N |
| JESD22-A104F.01:2023 | Electrical materials and components | TEMPERATURE CYCLING<br>(Exception)<br>5.9 Measurements<br>6 Failure criteria | Temperature :<br>(-65 ~ 150) °C | BS-1 | N |
| JESD22-A105D:2020 | Electrical materials and components | POWER AND TEMPERATURE CYCLING<br>(Exception)<br>4.4 Measurements<br>5 Failure criteria | Temperature :<br>(-40 ~ 125) °C | BS-1 | N |
| JESD22-A108G:2022 | Electrical materials and components | TEMPERATURE, BIAS, AND OPERATING LIFE<br>(Exception)<br>6 Measurements<br>7 Failure criteria | Temperature :<br>(-40 ~ 200) °C | BS-1 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A110E.01 :2021 | Electrical materials and components | HIGHLY ACCELERATED TEMPERATURE AND HUMIDITY STRESS TEST (HAST)<br>(Exception)<br>5 Failure criteria | Temperature: (110 ~ 130) °C<br>Humidity : 85 % R.H.<br>Vapor Pressure : (122 ~ 230) kPa | BS-1 | N |
| JESD22-A113I:2020 | Electrical materials and components | PRECONDITIONING OF NONHERMETIC SURFACE MOUNT DEVICES PRIOR TO RELIABILITY TESTING<br>(Exception)<br>4.1 Initial electrical test<br>4.10 Final electrical test | Temperature Cycling<br>Temperature : (-40 ~ 150) °C<br>Bake out<br>Temperature : 125 °C<br>Moisture Soak<br>Temperature: (30 ~ 85) °C<br>Humidity: (60 ~ 85) % R.H<br>Reflow<br>Peak Temperature.: Max. 260 °C | BS-1 | N |
| JESD22-A117E:2018 | Electrical materials and components | ELECTRICALLY ERASABLE PROGRAMMABLE ROM (EEPROM) PROGRAM/ERASE ENDURANCE AND DATA RETENTION STRESS TEST<br>(Exception)<br>4.1.3 Electrical test verification<br>4.4 Measurements<br>5 Failure criteria and calculation | Temperature : (55 ~ 150) °C | BS-1 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A118B.01 :2021 | Electrical materials and components | ACCELERATED MOISTURE RESISTANCE - UNBIASED HAST (Exception) 5 Failure criteria | Temperature: (110 ~ 130) °C Humidity : 85 % R.H. Vapor Pressure : (122 ~ 230) kPa | BS-1 | N |
| JESD22-A119A:2 015 | Electrical materials and components | LOW TEMPERATURE STORAGE LIFE (Exception) 3.2 Measurements 3.3 Failure criteria | Temperature : (-40 ~ -65) °C | BS-1 | N |
| JESD22-B101D:2 022 | Electrical materials and components | EXTERNAL VISUAL (Exception) 6 Failure criteria | Magnification : Max. 100 X | BS-1 | N |
| JESD74A:2007 | Electrical materials and components | EARLY LIFE FAILURE RATE CALCULATION PROCEDURE FOR SEMICONDUCTOR COMPONENTS (Exception) 4.4 Failure analysis | Temperature : (55 ~ 150) °C | BS-1 | N |
| MIL-STD-202H:2 015 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ELECTRONIC AND ELECTRICAL COMPONENT PARTS 103 Humidity (steady state) 107 Thermal shock (Exception) Table III. Thermal Shock conditions(liquid) 108 Life (at elevated ambient temperature) (Exception) 4.3 Measurements | 103 : Conditioning Temperature : 40 °C Exposure Humidity : (90 ~ 95) % R.H. Temperature : 40 °C<br>107 : (-65 ~ 150) °C<br>108 : (70 ~ 200) °C | BS-1 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-810H:2019 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ENVIRONMENTAL ENGINEERING CONSIDERATIONS AND LABORATORY TESTS<br>501.7 High Temperature (Exception)<br>2.2.2 Procedure III Tactical-Standby to Operational<br>502.7 Low Temperature (Exception)<br>2.2.2 Procedure III Manipulation<br>503.7 Temperature Shock<br>507.6 Humidity<br>Table 507.6-VIII Hot Humid - Natural Cycle B3.<br>Table 507.6-IX Aggravated cycle | 501.7 : (30 ~ 71) °C<br>502.7 : (-61 ~ -21) °C<br>503.7 : (-61 ~ 71) °C<br>507.6 :<br>Humidity:(30 ~ 95) % R.H. ,<br>Temperature:(30 ~ 60) °C | BS-1 | N |
| AEC-Q100-002-REV-E:2013 | Electrical materials and components | HUMAN BODY MODEL (HBM) ELECTROSTATIC DISCHARGE TEST | Voltage :<br>(50 ~ 8 000) V | BS-2 | N |
| AEC-Q100-004-REV-D:2012 | Electrical materials and components | IC LATCH-UP TEST (Exception)<br>5. Failure criteria | Current : Max 2 A<br>Voltage : Max 100 V | BS-2 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| AEC-Q100-011-REV-D:2019 | Electrical materials and components | CHARGED DEVICE MODEL (CDM) ELECTROSTATIC DISCHARGE TEST<br>(Exception)<br>3.2.3 Relay Discharge Method<br>3.4 Measurements<br>4 Failure criteria | Voltage :<br>(50 ~ 2 000) V | BS-2 | N |
| AEC-Q101-001-REV-A:2005 | Electrical materials and components | HUMAN BODY MODEL (HBM) ELECTROSTATIC DISCHARGE(ESD) TEST<br>(Exception)<br>3.4 Measurements<br>4 Failure criteria | Voltage :<br>(50 ~ 8 000) V | BS-2 | N |
| AEC-Q101-005-REV-A:2019 | Electrical materials and components | CHARGED DEVICE MODEL (CDM) ELECTROSTATIC DISCHARGE(ESD) TEST<br>(Exception)<br>3.4 Measurements<br>4 Failure criteria | Voltage :<br>(50 ~ 2 000) V | BS-2 | N |
| ANSI/ESDA/JEDEC JS-001-2017 | Electrical materials and components | FOR ELECTROSTATIC DISCHARGE (ESD)SENSITIVITY TESTING HUMAN BODY MODEL (HBM) - COMPONENT LEVEL<br><br>(Exception)<br>6.1 Parametric and Functional Testing<br>6.7 Testing After Stressing<br>7.0 Failure criteria | Voltage :<br>(50 ~ 8 000) V | BS-2 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A115C:2010 | Electrical materials and components | ELECTROSTATIC DISCHARGE (ESD) SENSITIVITY TESTING MACHINE MODEL (MM) (Exception) 5 Failure criteria | Voltage : (50 ~ 1 500) V | BS-2 | N |
| JESD22-C101F:2013 | Electrical materials and components | FIELD-INDUCED CHARGED-DEVICE MODEL TEST METHOD FOR ELECTROSTATIC DISCHARGE WITHSTAND THRESHOLDS OF MICRO ELECTRONIC COMPONENTS (Exception) 11 Failure criteria | Voltage : (50 ~ 2 000) V | BS-2 | N |
| JESD78F:2022 | Electrical materials and components | IC LATCH-UP TEST (Exception) 5 Latch-up detection criteria | Current : Max 2 A Voltage : Max 100 V | BS-2 | N |
| ANSI/ESDA/JEDEC JS-002-2018 | Electrical materials and components | FOR ELECTROSTATIC DISCHARGE SENSITIVITY TESTING CHARGE DEVICE MODEL (CDM) - DEVICE LEVEL (Exception) 7.7.2 Device Test 7.2.2.1 Pre-Stress Testing 7.2.2.2 Failure criteria | Voltage : (50 ~ 2 000) V | BS-2 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A102E:2015 | Electrical materials and components | ACCELERATED MOISTURE RESISTANCE UNBIASED AUTOCLAVE<br>(Exception)<br>5 Failure criteria | Temperature :121 °C<br>Humidity :100 % R.H.<br>vapor Pressure :205 kPa | BS-1 | N |
| JESD22-A101D.01:2021 | Electrical materials and components | STEADY STATE TEMPERATURE HUMIDITY BIAS LIFE TEST<br>(Exception)<br>5 Failure criteria | Temperature : 85 °C<br>Humidity : 85 % R.H. | BS-1 | N |
| IPC/JEDEC J-STD-020F:2022 | Electrical materials and components | MOISTURE/REFLOW SENSITIVITY CLASSIFICATION FOR NONHERMETIC SURFACE MOUNT DEVICES<br>(Exception)<br>3.6 Electrical test<br>5.2 Initial electrical test<br>5.8 Final electrical test | Bake<br>Temperature : 125 °C<br>Moisture Soak<br>Temperature: (30 ~ 85) °C<br>Humidity : (60 ~ 85) % R.H<br>Reflow<br>Peak Temperature : Max. 260 °C | BS | N |
| AEC-Q100-008-REV-A:2003 | Electrical materials and components | EARLY LIFE FAILURE RATE (ELFR)<br>(Exception)<br>3.3 Acceptance Criteria<br>3.4 Sample Disposition | Temperature :<br>(55 ~ 150) °C | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| IPC/JEDEC J-STD-020F:2022 | Electrical materials and components | MOISTURE/REFLOW SENSITIVITY CLASSIFICATION FOR NONHERMETIC SURFACE MOUNT DEVICES<br>(Exception)<br>3.6 Electrical test<br>5.2 Initial electrical test<br>5.8 Final electrical test | Bake<br>Temperature : 125 °C<br>Moisture Soak<br>Temperature: (30 ~ 85) °C<br>Humidity : (60 ~ 85) % R.H<br>Reflow<br>Peak Temperature : Max. 260 °C | BS-1 | N |
| JESD22-A101D.01:2021 | Electrical materials and components | STEADY STATE TEMPERATURE HUMIDITY BIAS LIFE TEST<br>(Exception)<br>5 Failure criteria | Temperature : 85 °C<br>Humidity : 85 % R.H. | BS | N |
| JESD22-A102E:2015 | Electrical materials and components | ACCELERATED MOISTURE RESISTANCE UNBIASED AUTOCLAVE<br>(Exception)<br>5 Failure criteria | Temperature :121 °C<br>Humidity :100 % R.H.<br>vapor Pressure :205 kPa | BS | N |
| JESD22-A103E.01:2021 | Electrical materials and components | HIGH TEMPERATURE STORAGE LIFE<br>(Exception)<br>4.2 Measurements<br>4.3 Failure criteria | Temperature :<br>(125 ~ 300) °C | BS | N |
| JESD22-A104F.01:2023 | Electrical materials and components | TEMPERATURE CYCLING<br>(Exception)<br>5.9 Measurements<br>6 Failure criteria | Temperature :<br>(-65 ~ 150) °C | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A105D:2020 | Electrical materials and components | POWER AND TEMPERATURE CYCLING<br>(Exception)<br>4.4 Measurements<br>5 Failure criteria | Temperature :<br>(-40 ~ 125) °C | BS | N |
| JESD22-A106B.02:2022 | Electrical materials and components | THERMAL SHOCK<br>(Exception)<br>4.2 Measurements<br>4.3 Failure criteria | Temperature :<br>(-65 ~ 150) °C | BS | N |
| JESD22-A108G:2022 | Electrical materials and components | TEMPERATURE, BIAS, AND OPERATING LIFE<br>(Exception)<br>6 Measurements<br>7 Failure criteria | Temperature :<br>(-40 ~ 200) °C | BS | N |
| JESD22-A110E.01:2021 | Electrical materials and components | HIGHLY ACCELERATED TEMPERATURE AND HUMIDITY STRESS TEST (HAST)<br>(Exception)<br>5 Failure criteria | Temperature: (110 ~ 130) °C<br>Humidity : 85 % R.H.<br>Vapor Pressure : (122 ~ 230) kPa | BS | N |
| JESD22-A113I:2020 | Electrical materials and components | PRECONDITIONING OF NONHERMETIC SURFACE MOUNT DEVICES PRIOR TO RELIABILITY TESTING<br>(Exception)<br>4.1 Initial electrical test<br>4.10 Final electrical test | Temperature Cycling<br>Temperature : (-40 ~ 150) °C<br>Bake out<br>Temperature : 125 °C<br>Moisture Soak<br>Temperature: (30 ~ 85) °C<br>Humidity: (60 ~ 85) % R.H<br>Reflow<br>Peak Temperature.: Max. 260 °C | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A117E:2018 | Electrical materials and components | ELECTRICALLY ERASABLE PROGRAMMABLE ROM (EEPROM) PROGRAM/ERASE ENDURANCE AND DATA RETENTION STRESS TEST<br>(Exception)<br>4.1.3 Electrical test verification<br>4.4 Measurements<br>5 Failure criteria and calculation | Temperature :<br>(55 ~ 150) °C | BS | N |
| JESD22-A118B.01:2021 | Electrical materials and components | ACCELERATED MOISTURE RESISTANCE - UNBIASED HAST<br>(Exception)<br>5 Failure criteria | Temperature: (110 ~ 130) °C<br>Humidity : 85 % R.H.<br>Vapor Pressure : (122 ~ 230) kPa | BS | N |
| JESD22-A119A:2015 | Electrical materials and components | LOW TEMPERATURE STORAGE LIFE<br>(Exception)<br>3.2 Measurements<br>3.3 Failure criteria | Temperature :<br>(-40 ~ -65) °C | BS | N |
| JESD22-B101D:2022 | Electrical materials and components | EXTERNAL VISUAL<br>(Exception)<br>6 Failure criteria | Magnification :<br>Max. 100 X | BS | N |
| JESD22-B110B.01:2019 | Electrical materials and components | MECHANICAL SHOCK – DEVICE AND SUBASSEMBLY<br>(Exception)<br>4.3 Measurements<br>5 Failure criteria | Acceleration Peak:<br>(1 000 ~ 29 000) m/s² | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-B113B:2018 | Electrical materials and components | BOARD LEVEL CYCLIC BEND TEST METHOD FOR INTERCONNECT RELIABILITY CHARACTERIZATION OF SMT ICS FOR HANDHELD ELECTRONIC PRODUCT<br>(Exception)<br>10 Electrical monitoring requirements and failure criteria | Frequency : (1 ~ 3) Hz<br>Depth : (2 ~ 4) mm | BS | N |
| JESD74A:2007 | Electrical materials and components | EARLY LIFE FAILURE RATE CALCULATION PROCEDURE FOR SEMICONDUCTOR COMPONENTS<br>(Exception)<br>4.4 Failure analysis | Temperature :<br>(55 ~ 150) °C | BS | N |
| JESD22-B103B.01:2016 | Electrical materials and components | VIBRATION, VARIABLE FREQUENCY<br>(Exception)<br>4.3 Optional stress application - Random vibration test (cont'd)<br>Table 2 - Overall measures of random vibration test levels<br>; Service condition A, B<br>4.4 Measurements<br>5 Failure Criteria | Frequency :<br>(10 ~ 2 000) Hz<br>Acceleration :<br>(10 ~ 500) $m/s^2$ | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-810H:2019 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ENVIRONMENTAL ENGINEERING CONSIDERATIONS AND LABORATORY TESTS<br>501.7 High Temperature (Exception)<br>2.2.2 Procedure III Tactical-Standby to Operational<br>502.7 Low Temperature (Exception)<br>2.2.2 Procedure III Manipulation<br>503.7 Temperature Shock<br>507.6 Humidity<br>Table 507.6-VIII Hot Humid - Natural Cycle B3.<br>Table 507.6-IX Aggravated cycle<br>509.7 Salt Fog | 501.7 : (30 ~ 71) °C<br>502.7 : (-61 ~ -21) °C<br>503.7 : (-61 ~ 71) °C<br>507.6 : (30 ~ 95) % R.H. , (30 ~ 60) °C<br>509.7 : Temperature 35 °C , Salt solution : 5 % | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-202H:2015 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ELECTRONIC AND ELECTRICAL COMPONENT PARTS<br>101 Salt atmosphere (corrosion)<br>(Exception)<br>4.2 Preperation of specimen<br>5.2 Measurement<br>103 Humidity (steady state)<br>107 Thermal shock<br>108 Life (at elevated ambient temperature)<br>(Exception)<br>4.3 Measurements<br>201 Vibration<br>(Exception)<br>5.1 Measurements<br>204 Vibration, high frequency<br>(Exception)<br>4.7 Test condition F (3 000 Hz)<br>4.9 Test condition H (80g peak)<br>4.10 Alternate procedure for use of linear in place of logarithmic change of frequency<br>5.1 Measurements | 101 : Temperature 35 °C , Salt solution : 5 %<br><br>103 : Conditioning Temperature : 40 °C , Exposure Humidity : (90 ~ 95) % R.H. Temperature : 40 °C<br><br>107 : (-65 ~ 150) °C<br><br>108 : (70 ~ 200) °C<br><br>201 : Frequency : (10 ~ 55) Hz, Displacement max 1.5 mm<br><br>204 : Frequency : (10 ~ 2 000) Hz , Acceleration : (100 ~ 500) $m/s^2$ | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| AEC-Q100-005-REV-D1:2012 | Electrical materials and components | NON-VOLATILE MEMORY PROGRAM/ERASE ENDURANCE, DATA RETENTION, AND OPERATIONAL LIFE TEST<br>(Exception)<br>3.6 Measurements<br>4 Failure criteria | Temperature :<br>(55 ~ 150) °C | BS-1 | N |
| AEC-Q100-008-REV-A:2003 | Electrical materials and components | EARLY LIFE FAILURE RATE (ELFR)<br>(Exception)<br>3.3 Acceptance Criteria<br>3.4 Sample Disposition | Temperature :<br>(55 ~ 150) °C | BS-1 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-750-1B: 2023 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ENVIRONMENTAL TEST METHODS FOR SEMICONDUCTOR DEVICES<br>1026.5 STEADY-STATE OPERATION LIFE<br>1032.2 HIGH–TEMPERATURE (NONOPERATING) LIFE (SAMPLE PLAN)<br>1037.3 INTERMITTENT OPERATION LIFE (SAMPLE PLAN)<br>1038.5 BURN–IN (FOR DIODES, RECTIFIERS, AND ZENERS)<br>1041.4 SALT ATMOSPHERE (CORROSION)<br>1051.9 TEMPERATURE CYCLING (AIR TO AIR)<br>(Exception) 3.1 Table condition D, E<br>1056.8 THERMAL SHOCK (LIQUID TO LIQUID) | 1026.5 : Temperature : (50 ~ 200) °C<br>1032.2 : Temperature : (125 ~ 300) °C<br>1037.3 : Current range : 20 A, ΔTj > 100 °C<br>1038.5 : Temperature : (50 ~ 200) °C<br>1041.4 : Temperature 35 °C , Salt solution : 5 %<br>1051.9 : Test condition A, B, C, F. G<br>Temperature : (-55 ~ 175 °C)<br>1056.8 : Temperature : (-65 ~ 150 °C) | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-750-2B: 2023 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD MECHANICAL TEST METHODS FOR SEMICONDUCTOR DEVICES<br>2006.2 CONSTANT ACCELERATION<br>2016.2 SHOCK<br>2026.14 SOLDERABILITY (Exception)<br>2.1 Test conditions. B. Test condition H is a hand soldering procedure<br>2056.3 VIBRATION, VARIABLE FREQUENCY<br>2066 PHYSICAL DIMENSIONS<br>2071.1 VISUAL AND MECHANICAL EXAMINATION<br>2073.2 VISUAL INSPECTION FOR DIE (SEMICONDUCTOR DIODE)<br>2076.5 RADIOGRAPHY | 2006.2 Stress level : (50 000 ~ 300 000) m/s²<br>2016.2 Shock level : (5 000 ~ 29 000) m/s²<br>2026.14 Temperature : 150 ~ 250 °C<br>2056.3 Frequency : (20 ~ 2 000) Hz<br>Acceleration : 200 m/s²<br>2066 Range : Max. 300 mm<br>2071.1 Magnification : Max. 200 X<br>2073.2 Magnification : Max. 200 X<br>2076.5 Voltage range : Max. 90 kV | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-883-1:2024 | Electrical materials and components | DEPARTMENT OF DEFENSE<br><br>TEST METHOD STANDARD ENVIRONMENTAL TEST METHODS FOR MICROCIRCUITS<br>1005.11 STEADY STATE LIFE<br>1008.2 STABILIZATION BAKE<br>1009.9 SALT ATMOSPHERE (CORROSION)<br>1010.9 TEMPERATURE CYCLING<br>1011.1 THERMAL SHOCK<br>1014.19 SEAL<br>1015.12 BURN-IN TEST | 1005.11 : Temperature : (55 ~ 200) °C<br>1008.2 : Temperature : (75 ~ 250) °C<br>1009.9 : Temperature 35 °C, Salt solution : 0.5 ~ 3.0%<br>1010.9 : Temperature : (-65 ~ 175) °C<br>1011.1 : Temperature : (-65 ~ 150) °C<br>1014.19 : Condition C4, C5 : (Optical leak test)<br>1015.12 : Temperature : (55 ~ 200) °C | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-883-2:2022 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD MECHANICAL TEST METHODS FOR MICROCIRCUITS<br>2001.4 CONSTANT ACCELERATION<br>2002.5 MECHANICAL SHOCK<br>2004.7 LEAD INTEGRITY<br>2007.3 VIBRATION, VARIABLE FREQUENCY<br>2009.15 EXTERNAL VISUAL<br>2010.14 INTERNAL VISUAL (MONOLITHIC)<br>2012.11 RADIOGRAPHY<br>2013.1 INTERNAL VISUAL INSPECTION FOR DPA<br>2014 INTERNAL VISUAL AND MECHANICAL<br>2016 PHYSICAL DIMENSIONS<br>2020.9 PARTICLE IMPACT NOISE DETECTION TEST<br>2036.1 RESISTANCE TO SOLDERING HEAT | 2001.4 : Stress level : (50 000 ~ 300 000)m/s²<br>2002.5 : Shock level : (500 ~ 300 000) m/s²<br>2004.7 : Condition A : (Tension 0.227kgf, 30 sec) Acceleration: (200) m/s²<br>2007.3 : Frequency : (20 ~ 2000) Hz<br>2009.15 : Magnification : Max. 200 X<br>2010.14 : Magnification : Max. 200 X<br>2012.11 : Voltage range : Max. 90 kV<br>2013.1 : Magnification : Max. 200 X<br>2014 : Magnification : Max. 200 X<br>2016 : Range : 300 mm<br>2020.9 : Frequency : (40 ~ 265) Hz Acceleration: (100 ~ 200) m/s² Shock level: (1 000) m/s²<br>2036.1 : Condition : B(Dip) | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-883-3:2025 | Electrical materials and components | DEPARTMENT OF DEFENSE<br><br>TEST METHOD STANDARD ELECTRICAL TESTS (DIGITAL) FOR MICROCIRCUITS PART 3: TEST METHODS 3000-3999<br><br>METHOD 3015.9 ELECTROSTATIC DISCHARGE SENSITIVITY CLASSIFICATION | Voltage : (50 ~ 8 000) V | BS-2 | N |
| MIL-STD-750-1B:2023 | Electrical materials and components | DEPARTMENT OF DEFENSE<br><br>TEST METHOD STANDARD ENVIRONMENTAL TEST METHODS FOR SEMICONDUCTOR DEVICES PART 1: TEST METHOD 1000 THROUGH 1999<br><br>METHOD 1020.7 ELECTROSTATIC DISCHARGE SENSITIVITY (ESD) CLASSIFICATION | Voltage : (50 ~ 8 000) V | BS-2 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-750-1B: 2023 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD ENVIRONMENTAL TEST METHODS FOR SEMICONDUCTOR DEVICES<br>1027.3 STEADY-STATE OPERATION LIFE (SAMPLE PLAN)<br>1039.4 BURN-IN (FOR TRANSISTORS)<br>1040 BURN-IN (FOR THYRISTORS (CONTROLLED RECTIFIERS))<br>1042.4 BURN-IN AND LIFE TEST FOR POWER MOSFETS OR INSULATED GATE BIPOLAR TRANSISTORS (IGBT)<br>1048.1 BLOCKING LIFE<br>1071.18 HERMETIC SEAL | 1027.3 : Temperature : (55 ~ 200) °C<br>1039.4 : Temperature : (55 ~ 200) °C<br>1040 : Temperature : (55 ~ 200) °C<br>1042.4 : Temperature : (55 ~ 200) °C<br>1048.1 : Temperature : (55 ~ 200) °C<br>1071.18 : Condition L1, L2 : (Optical leak test) | BS | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| MIL-STD-750-2B: 2023 | Electrical materials and components | DEPARTMENT OF DEFENSE TEST METHOD STANDARD MECHANICAL TEST METHODS FOR SEMICONDUCTOR DEVICES<br>2031.7 RESISTANCE TO SOLDERING HEAT<br>2068.1 EXTERNAL VISUAL FOR NONTRANSPARENT GLASS-ENCASED, DOUBLE PLUG, NONCAVITY AXIAL LEADED DIODES<br>2069.2 PRE-CAP VISUAL, POWER MOSFET'S<br>2070.2 PRE-CAP VISUAL MICROWAVE DISCRETE AND MULTICHIP TRANSISTORS<br>2072.9 INTERNAL VISUAL TRANSISTOR (PRE-CAP) INSPECTION<br>2074.7 INTERNAL VISUAL INSPECTION (DISCRETE SEMICONDUCTOR DIODES)<br>2075.1 DECAP INTERNAL VISUAL DESIGN VERIFICATION | 2031.7 : Condition : B(Dip)<br>2068.1 : Magnification : Max. 200X<br>2069.2 : Magnification : Max. 200X<br>2070.2 : Magnification : Max. 200X<br>2072.9 : Magnification : Max. 200X<br>2074.7 : Magnification : Max. 200X<br>2075.1 : Magnification : Max. 200X | BS | N |
| AEC-Q100-002-REV-E:2013 | Electrical materials and components | HUMAN BODY MODEL (HBM) ELECTROSTATIC DISCHARGE TEST | Voltage :<br>(50 ~ 8 000) V | SF-1 | N |
| AEC-Q100-004-REV-D:2012 | Electrical materials and components | IC LATCH-UP TEST<br>(Exception)<br>5. Failure criteria | Current : Max 2 A<br>Voltage : Max 100 V | SF-1 | N |

| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| AEC-Q100-011-REV-D:2019 | Electrical materials and components | CHARGED DEVICE MODEL (CDM) ELECTROSTATIC DISCHARGE TEST (Exception) 3.2.3 Relay Discharge Method 3.4 Measurements 4 Failure criteria | Voltage : (50 ~ 2 000) V | SF-1 | N |
| AEC-Q101-001-REV-A:2005 | Electrical materials and components | HUMAN BODY MODEL (HBM) ELECTROSTATIC DISCHARGE(ESD) TEST (Exception) 3.4 Measurements 4 Failure criteria | Voltage : (50 ~ 8 000) V | SF-1 | N |
| AEC-Q101-005-REV-A:2019 | Electrical materials and components | CHARGED DEVICE MODEL (CDM) ELECTROSTATIC DISCHARGE(ESD) TEST (Exception) 3.4 Measurements 4 Failure criteria | Voltage : (50 ~ 2 000) V | SF-1 | N |
| ANSI/ESDA/JEDEC JS-001-2017 | Electrical materials and components | ELECTROSTATIC DISCHARGE (ESD)SENSITIVITY TESTING HUMAN BODY MODEL (HBM) - COMPONENT LEVEL (Exception) 6.1 Parametric and Functional Testing 6.7 Testing After Stressing 7.0 Failure criteria | Voltage : (50 ~ 8 000) V | SF-1 | N |

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| Test method | Materials Products | Standard designation | Test range | Site | Field testing |
|---|---|---|---|---|---|
| JESD22-A115C:2010 | Electrical materials and components | ELECTROSTATIC DISCHARGE (ESD) SENSITIVITY TESTING MACHINE MODEL (MM) (Exception) 5 Failure criteria | Voltage : (50 ~ 1 500) V | SF-1 | N |
| JESD22-C101F:2013 | Electrical materials and components | FIELD-INDUCED CHARGED-DEVICE MODEL TEST METHOD FOR ELECTROSTATIC DISCHARGE WITHSTAND THRESHOLDS OF MICRO ELECTRONIC COMPONENTS (Exception) 11 Failure criteria | Voltage : (50 ~ 3 000) V | SF-1 | N |
| JESD78F:2022 | Electrical materials and components | IC LATCH-UP TEST (Exception) 5 Latch-up detection criteria | Current : Max 2 A Voltage : Max 100 V | SF-1 | N |
| ANSI/ESDA/JEDEC JS-002-2018 | Electrical materials and components | ELECTROSTATIC DISCHARGE SENSITIVITY TESTING CHARGE DEVICE MODEL (CDM) - DEVICE LEVEL (Exception) 7.7.2 Device Test 7.2.2.1 Pre-Stress Testing 7.2.2.2 Failure criteria | Voltage : (50 ~ 2 000) V | SF-1 | N |

END.