# Product Qualification Report

# BGA9C1MN9

4.5GHz Low Noise Amplifier with Gain Steps and MIPI Control

## Description

This product qualification report describes the characteristics of the product with respect to quality and reliability.

The qualification sample selection was done on production lots which were manufactured and tested on standard production processes and meet the defined requirements.

The qualification test results of those products as outlined in this document are based on **JEDEC** for target applications and may reference existing qualification results of similar products. Such referencing is justified by the structural similarity of the products.

## Qualification Assessment

Fully qualified according to **JEDEC** for **Industrial Applications** and assessed as PASS

For further information about comparable products, please contact the nearest Infineon Technologies office (www.infineon.com).

**BGA9C1MN9**
**PG-TSNP-9-6**
**MSL: 1; 260 °C**

**qualified 2021**

**Electrical Stress Test Results:**

| Test Description | Abbr. | Condition | Duration | Lots/SS | Fail/Qty | Result |
|---|---|---|---|---|---|---|
| Electrical Parameter Assessment JESD86 | ED | -40 °C, 25 °C, 85 °C | | 3 x 10 | 0 / 30 | PASS |
| High Temperature Operating Life JESD22-A108 | HTOL | $T_a$ = 145 °C $V_{dd} \geq V_{dd_max}$ | 1000 h | 3 x 77 | 0 / 231 | PASS |
| Early Life Failure Rate JESD22-A108, JESD74 | ELFR | $T_a$ = 145 °C $V_{dd} \geq V_{dd_max}$ | 48 h | 3 x 800 | 0 / 2400 | PASS |
| Electrostatic Discharge Human Body Model JS-001 | ESD-HBM | Class 1C 1000 V to < 2000 V | | 1 x 3 | 0 / 3 | PASS |
| Electrostatic Discharge Charged Device Model JS-002 | ESD-CDM | Class C3 ≥ 1000 V | | 1 x 3 | 0 / 3 | PASS |
| Latch Up JESD78 | LU | $T_a$ = 85 °C $I_{trigger}$ = 150 mA | | 1 x 3 | 0 / 3 | PASS |

**Environmental Stress Test Results:**

| Test Description | Abbr. | Condition | Duration | Lots/SS | Fail/Qty | Result |
|---|---|---|---|---|---|---|
| High Temperature Storage Life JESD22-A103 | HTSL | $T_a$ = 150 °C | 1000 h | 3 x 25 | 0 / 75 | PASS |
| Pre-conditioning JESD22-A113, J-STD020 | PC | Soak acc. MSL 1, 3x reflow, 260 °C | | 3 x 75 | 0 / 225 | PASS |
| Temperature Cycling JESD22-A104 | TC* | -55 °C to 150 °C | 1000 cycles | 3 x 25 | 0 / 75 | PASS |
| Highly Accelerated Temperature and Humidity Stress Test JESD22-A110 | HAST* | $T_a$ = 130 °C rh = 85 % $V_{dd} \geq V_{dd_max}$ | 96 h | 3 x 25 | 0 / 75 | PASS |
| Unbiased Highly Accelerated Stress Test JESD22-A118 | UHAST* | $T_a$ = 130 °C rh = 85 % | 96 h | 3 x 25 | 0 / 75 | PASS |

**Mechanical Stress Test Results:**

| Test Description | Abbr. | Condition | Duration | Lots/SS | Fail/Qty | Result |
|---|---|---|---|---|---|---|
| Physical Dimensions JESD22-B100 | PD | | | 1 x 30 | 0 / 30 | PASS |
| Solderability J-STD-002 | SD | | | 3 x 22 | 0 / 66 | PASS |

**Notes:**
* For SMD devices reliability stress tests performed after preconditioning test (PC) according to JESD22-A113

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**Document reference**

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