# Product Qualification Report

# IRF4104

Trench ULV

## 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

Qualified according to **JEDEC Standard** and assessed as PASS

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

**Qualified 2016**

# IRF4104PBF
# PG-TO220-3

## Electrical Stress Test Results:

| Test Description | Abbr. | Condition | Duration | Lots/SS | Fail/Qty | Result |
|---|---|---|---|---|---|---|
| High Temperature Reverse Bias<br>JESD22 A108 | HTRB | Ta = 150°C/175°C**<br>$V_{DS}$ = 80% $V_{DS,max}$ | 1000h | 3 x 77 | 0 / 231 | PASS |
| High Temperature Gate Bias<br>JESD22 A108 | HTGB | Ta = 150°C/175°C**<br>$V_{GS}$ =80% $V_{GS,max}$ | 1000h | 3 x 77 | 0 / 231 | PASS |
| Temperature Humidity Bias***<br>JESD22 A101<br><br>**Or**<br><br>Biased Highly Accelerated Stress Test***<br>JESD22 A110 | THB*<br><br><br><br><br>HAST* | Ta = 85°C<br>RH = 85%<br>$V_{DS}$ = 80% $V_{DS,max}$ ****<br><br><br>Ta = 130°C<br>RH = 85%<br>$V_{DS}$ = 80% $V_{DS,max}$ **** | 1000 h<br><br><br><br><br>96h | 3 x 77 | 0 / 231 | PASS |
| Intermitted Operational Life Test<br>MIL-STD 750 / Meth.1037 | IOL* | Delta T=100K | 8572 cycles | 3 x 77 | 0 / 231 | PASS |
| ESD (HBM).<br>JESD22 A114 | HBM | 1C ( 1000 V to < 2000 V ) | | | | |
| ESD (CDM).<br>JESD22 C101 | CDM | C3 ( > 1000 V ) | | | | |

## Environmental Stress Test Results:

| Test Description | Abbr. | Condition | Duration | Lots/SS | Fail/Qty | Result |
|---|---|---|---|---|---|---|
| Pre-conditioning (SMD device only)<br>J-STD020 / JESD22 A113 | PC | MSL and 3x reflow 260°C | | 4 x 231 | 0 / 924 | PASS |
| Temperature Cycling<br>JESD22 A104 | TC* | -55°C to +150°C | 1000 cycles | 3 x 77 | 0 / 231 | PASS |
| Autoclave***<br>JESD22 A102<br><br>**Or**<br><br>Unbiased Highly Accelerated Stress Test***<br>JESD22 A118 | AC*<br><br><br><br><br>UHAST* | Ta=121°C RH=100%<br><br><br><br><br>Ta = 130°C<br>RH = 85% | <br><br><br><br>96h | 3 x 77 | 0 / 231 | PASS |

**Notes:**

* SMD devices reliability stress tests are performed after preconditioning test (PC) according to JESD22

** According to product datasheet Tj maximum rating

*** Selection based on equipment and hardware availability

**** See AEC Q101 Rev. D1 Table 2 for reference

**Trademarks**
All referenced product or service names and trademarks are the property of their respective owners.

**Edition 2016-01-22**

**Published by**

**Infineon Technologies AG**

**81726 München, Germany**

**© 2023 Infineon Technologies AG. All Rights Reserved.**

**Do you have a question about this document?**

**Email: erratum@infineon.com**

**Document reference**

**n.a.**

**IMPORTANT NOTICE**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology delivery terms and conditions and prices please contact your nearest Infineon Technologies office (**www.infineon.com**).

**WARNINGS**

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.