Product Change Notice (PCN)

Subject: NSD/PSD Photolithography Process Change and STI Process Change
Publication Date: 10/12/2023
Effective Date: 4/11/2024

Revision Description:
Initial Release

Description of Change:
This notice is to advise our customers that there will be changes in NSD/PSD Photolithography process and STI process on P91E0A PMICs and P9149 DPUs.

Descriptions	Current	New
NSD/PSD Photolithography Process	NIKON DUV 4X Tool at NSD/PSD Photo Step	ASML DUV 4X Tool at NSD/PSD Photo Step
STI Process	O3 TEOS for STI Fill	HDP for STI Fill

Affected Product List: Refer Appendix B

Reason for Change:
1. Advanced ASML tool with higher resolution, which give better DOF (Depth of Focus) margin and uniformity and lower rework rates with better inline control
2. Better STI oxide thickness uniformity and gap-fill improvements

Impact on Fit, Form, Function, Quality & Reliability:
The change will have no impact on the form, fit, function, quality, reliability and environmental compliance of the products.

Product Identification:
Datecode. This information will be shared to customers when new process starts.

Qualification Status: Completed. Refer Appendix A
Sample Availability Date: 10/1/2023
Device Material Declaration: Available upon request

Note:

1. Acknowledgement must be received by Renesas within 30 days or Renesas will consider the change as approved.

2. If timely acknowledgement is provided by Customer, then Customer shall have 90 days from the date of receipt of this PCN to make any objections to this PCN. If Customer fails to make objections to this PCN within 90 days of the receipt of the PCN then Renesas will consider the PCN changes as approved.

3. If customer cannot accept the PCN then customer must provide Renesas with a last time buy demand and purchase order.

For additional information regarding this notice, please contact idt-pcn@lm.renesas.com

Qualification Test Report

Oct 3, 2023

Product: **P91E0A**

Programmable Multi Channel PMIC

Technology: **BD180LV / Dongbu HiTek**
Chip-Area: **3.860 x 3.160 mm**
Package: **VFQFPN 100 [9.0 x 9.0 mm]**
Operating Temperature: **-40°C to 105°C / AEC-Q100 Grade 2**
Operating Voltage: **3.135V to 5.25V**
Qualification Plan: **QTP_Q22-02-002**

Qual lot No. 1
Silicon Rev.: A0
Lot No.: QEU088444PY
Date Code: 2244
QCI #: R00001789

AEC-Q100 Test Results

Test No.	Test	Conditions	n/r lot 1	Remarks
B1	High Temperature Operating Life [JESD22-A108] [HTOL]	125°C / 4.25V 1000hrs	77/0	Done, passed
E2	ESD/HBM [AEC-Q100-002]	± 0.5kV ± 1.0kV ± 2.0kV	3/0 3/0 3/0	Done, passed
E3	ESD/CDM [AEC-Q100-011]	± 500V ± 750V	3/0 3/0	Done, passed
E4	Latch-Up [AEC-Q100-004] [LU]	V_{DD} = Nominal to 1.5x max oper (or MSV) I_{TR} = ± 100mA (except GPIO at ± 40mA) T_{amb} = 105 °C	6/0	Done, passed
E5	Electrical Distributions [AEC Q100-009] [ED]	-40°C RT 105°C	10/0 10/0 10/0	Done, passed

Test No.	Test	Conditions	n/r lot 1	Remarks
E7	Characterization [AEC Q003] [CHAR]	-40°C RT 105°C	10/0 10/0 10/0	Done, passed

Pass / Fail Rating

The pass / fail rating of each unit were done by using ATE performing functional and parametric tests. The test temperatures were set to:

Cold Temperature Test: -40°C
Room Temperature Test: +25°C
Hot Temperature Test: +105°C

HTOL was followed by a tri temperature test. All other stress tests were followed by hot and room tests.

Qualification Test Report

Oct 3, 2023

Product: **P9149**

6A Distributed Power Unit (DPU)

Technology: **BD180LV / Dongbu HiTek**
Chip-Area: **2.61 x 1.31 mm**
Package: **DFN 12 [3.0 x 4.0 mm]; wettable flank option**
Operating Temperature: **-40°C to 105°C / AEC-Q100 Grade 2**
Operating Voltage: **4V to 5.5V**
Qualification Plan: **QTP_Q22-02-002**

Qual lot No. 1
Silicon Rev.: A0
Lot No.: QEU088390PY
Date Code: 2243
QCI #: R00001981

AEC-Q100 Test Results

Test No.	Test	Conditions	n/r lot 1	Remarks
B1	High Temperature Operating Life [JESD22-A108] [HTOL]	125°C / 4.25V 1000hrs	77/0	**QBE from P91E0A** Done, passed
E2	ESD/HBM [AEC-Q100-002]	± 0.5kV ± 1.0kV ± 1.5kV ± 2.0kV	3/0 3/0 3/0 3/0	Done, passed
E3	ESD/CDM [AEC-Q100-011]	± 250V ± 500V ± 750V	3/0 3/0 3/0	Done, passed
E4	Latch-Up [AEC-Q100-004] [LU]	V_{DD} = Nominal to 1.5x max oper (or MSV) I_{TR} = ± 100mA (except GPIO at ± 40mA) T_{amb} = 105 °C	6/0	Done, passed

Test No.	Test	Conditions	n/r lot 1	Remarks
E5	Electrical Distributions [AEC Q100-009] [ED]	-40°C RT 105°C	10/0 10/0 10/0	Done, passed
E7	Characterization [AEC Q003] [CHAR]	-40°C RT 105°C	10/0 10/0 10/0	Done, passed

Pass / Fail Rating

The pass / fail rating of each unit were done by using ATE performing functional and parametric tests. The test temperatures were set to:

Cold Temperature Test: -40°C
Room Temperature Test: +25°C
Hot Temperature Test: +105°C

HTOL was followed by a tri temperature test. All other stress tests were followed by hot and room tests.

Appendix B – Affected Product List

P9149NRG2	P91E0A-N1FBVG28	P91E0A-H5NHG28	P91E0A-G1NHG28
P91E0A-H6NHG28	P91E0A-N2FBVG2	P9149NRG28	P91E0A-G2NHG2
P91E0A-H7NHG2	P91E0A-N2FBVG28	P9149VWNRG2	P91E0A-G2NHG28
P91E0A-H7NHG28	P91E0A-P1NHG2	P9149VWNRG28	P91E0A-G3NHG2
P91E0A-L1BVG2	P91E0A-P1NHG28	P9149VWTNRG2	P91E0A-G3NHG28
P91E0A-L1BVG28	P91E0A-Q1NHG2	P9149VWTNRG28	P91E0A-H4NHG2
P91E0A-N0BVG2	P91E0A-Q1NHG28	P9149WNRG2	P91E0A-H4NHG28
P91E0A-N0BVG28	P91E0A-V1NHG2	P9149WNRG28	P91E0A-H5NHG2
P91E0A-N1FBVG2	P91E0A-H6NHG2	P91E0A-G1NHG2	P91E0A-V1NHG28