

## PRODUCT / PROCESS CHANGE NOTIFICATION

### 1. PCN basic data

1.1 Company	 STMicroelectronics International N.V
1.2 PCN No.	ADG/24/14502
1.3 Title of PCN	VIPower® in QFN Package: New Leadframe Configuration
1.4 Product Category	see list
1.5 Issue date	2024-01-16

### 2. PCN Team

2.1 Contact supplier	
2.1.1 Name	ROBERTSON HEATHER
2.1.2 Phone	+1 8475853058
2.1.3 Email	heather.robertson@st.com
2.2 Change responsibility	
2.2.1 Product Manager	Carmelo PISTRITTO
2.2.2 Marketing Manager	Rosario RUGGERI
2.2.3 Quality Manager	Daniela FAZIO

### 3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	New direct material part number r (same supplier, different supplier or new supplier),(Lead frame dimensions)	ST Calamba - Philippines

### 4. Description of change

	Old	New
4.1 Description	5 Maps Leadframe configuration	2 Maps Leadframe configuration
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No Impact	

### 5. Reason / motivation for change

5.1 Motivation	Capacity increase
5.2 Customer Benefit	CAPACITY INCREASE

### 6. Marking of parts / traceability of change

6.1 Description	Dedicated Finished Good Codes
-----------------	-------------------------------

### 7. Timing / schedule

7.1 Date of qualification results	2024-01-05
7.2 Intended start of delivery	2024-03-31
7.3 Qualification sample available?	Upon Request

### 8. Qualification / Validation

8.1 Description	14502 details.pdf
8.2 Qualification report and qualification results	Available (see attachment)

### 9. Attachments (additional documentations)

14502 Public product.pdf 14502 details.pdf
---

10. Affected parts		
10. 1 Current		10.2 New (if applicable)
10.1.1 Customer Part No	10.1.2 Supplier Part No	10.1.2 Supplier Part No
	VN9D30Q100FTR	
	VN9D5D20FNTR	

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved



## Product/process change notification: **VIPower® in QFN Package: New Leadframe Configuration** ADG/24/14502

Product family	Technology	Package
VIPower HSD	VIPower M0A9 / M0A10	VFQFPN 6X6X1 32 <i>(optional)</i>

### Description of the change

Implementation of 2Maps leadframe configuration

See below additional details

### Reason

Capacity Increase

### Date of implementation

We are ready to implement upon customer agreement

### Impact of the change

Form	No impact
Fit	No impact
Function	No impact
Reliability	No impact
Processibility	No impact

### Qualification of the change

See below details and qualification data



# **VIPower® in QFN package - Calamba plant: L/F Configuration Conversion Project from 5Maps to 2Maps**

# Agenda

3 Change Description

4 ZVEI Guidelines

5 Bill Of Material Comparison

6 Details of Change

7 Selected Test Vehicles

8 Impacted products list

9 Qualification Lots Reliability Program

10 Conclusions

# Change description

- Aim of this document is to describe the conversion of the lead frame configuration, from 5Maps to 2Maps, used for the VIPower® products.
- The QFN package is assembled in Calamba plant.
- Detailed qualification activity has been performed in order to qualify the new 2Maps lead frame configuration.
- This report shows the positive results achieved. The new materials are ensuring the same quality and electrical characteristics as the current products assembled in 5Maps lead frame configuration.
- All reliability tests have been completed with positive results.

# ZVEI Guidelines

- According to ZVEI recommendations, the notification is required.

	Assessment of impact on Supply Chain regarding following aspects		Remaining risks within Supply Chain?		Understanding of semiconductors experts	Examples to explain	A: Application level B: Boardlevel C: Component level * Not relevant for qualification matrix
	Type of change		No	Yes			
ID	SEM-PA-03	Change in leadframe dimensions	P	P	Change in leadframe dimensions which has impact to the specified electrical parameter acc. data sheet or specification (e.g. heat sink, pin dimensions, die paddle size, ...) Not included: Variation within specification.	e. g. change in lead frame geometry	<b>B</b>

# Bill Of Material Comparison (QFN package)

## Actual Bill of Material

ITEM	MATERIAL
WIRE	1.2 MILS Cu
WIRE	2.5 MILS Cu
FRAME	FRAME QFN 32L 6X6 4.2sq 5M
DIE ATTACH	GLUE ATROX 800HT2V-P1
MOLD COMPOUND	RESIN CEL 9240ZHF10W

## New Bill of Material

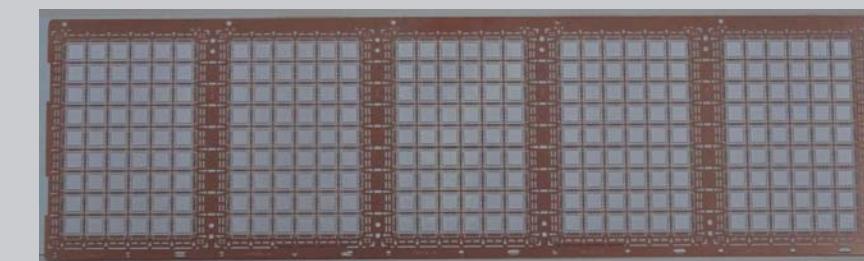
ITEM	MATERIAL
WIRE	1.2 MILS Cu
WIRE	2.5 MILS Cu
FRAME	FRAME QFN 32L 6X6 4.2sq 2M
DIE ATTACH	GLUE ATROX 800HT2V-P1
MOLD COMPOUND	RESIN CEL 9240ZHF10W



# Details of Change

## Current Lead frame configuration vs new one

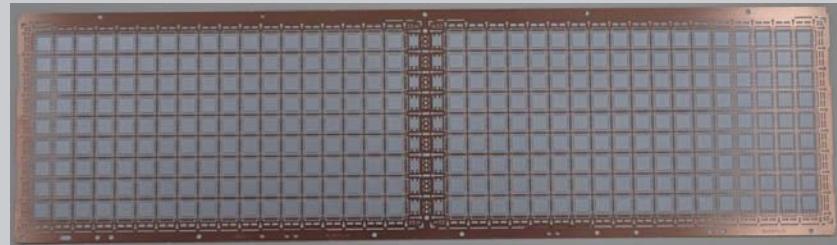
### 5 Maps Lead frame configuration



- Lead Frame configuration: 5Maps
- Unit density: 270 units/strip



### 2 Maps Lead frame configuration



- Lead Frame configuration: 2Maps
- Unit density: 324 units/strip

## Selected Test Vehicle

- VIPower® in QFN package:
  - VN9D5D20FNTR (Silicon Line XV9703)

# Impacted product list

## Commercial products:

- VN9D5D20FTR
- VN9E30FTR
- VN9D5D20FNTR
- VN9D30Q100FTR

## ST silicon line

- XV6703
- XV9103
- XV9703
- XV9903

# Qualification Lots Reliability Program

Test	Reference	AEC-Q100 STM Test Conditions	XV97 1 <sup>st</sup> Q. Lot 78238GWE01	XV97 2 <sup>nd</sup> Q. Lot 783138WK02	XV97 3 <sup>rd</sup> Q. Lot 783138WKZZ	XV97 Ref. Lot 78238GJKZW	Results
MSL3		<ul style="list-style-type: none"> <li>Pre-Conditioning Jedec Level 3</li> <li>Bake (125°C / 24 hours)</li> <li>Soak (30 / 60%RH / 192 hours)</li> <li>3x Convection Reflow at 260°C</li> </ul>	DONE	DONE	DONE	DONE	PASSED
T.C.	JESD22A-104	-55°C/+150°C Duration = 1000TC	0/77	0/77	0/77	0/77	PASSED
E.S.	JESD22A-102	AC (Ta = 121°C, Pa = 2 atm for 96 hours)	0/77	0/77	0/77	0/77	PASSED

# Conclusions

- Detailed qualification activity has been performed in order to qualify the new 2Maps lead frame configuration for the VIPower® products.
- All reliability tests (AEC-Q100 requirement) have been completed with positive results.
- Neither functional nor parametric rejects were detected at final electrical test.
- This report shows the positive results achieved. The new materials are ensuring the same quality and electrical characteristics as the current products assembled in 5Maps lead frame configuration.

## Public Products List

Public Products are off the shelf products. They are not dedicated to specific customers, they are available through ST Sales team, or Distributors, and visible on ST.com

**PCN Title :** VIPower® in QFN Package: New Leadframe Configuration

**PCN Reference :** ADG/24/14502

**Subject :** Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

VN9E30FTR	VN9D5D20FNTR	VN9D5D20FTR
VN9D30Q100FTR		

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved