


PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company		STMicroelectronics International N.V
1.2 PCN No.	ADG/22/13213	
1.3 Title of PCN	L9788 (UR66): Super High Density (SHD) NEAP Leadframe Introduction	
1.4 Product Category	see list	
1.5 Issue date	2022-02-16	

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	Maurizio GALLINARI
2.1.2 Marketing Manager	Alberto DA DALT
2.1.3 Quality Manager	Marcello Donato MENCHISE

3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	New direct material part number (same supplier, different supplier or new supplier), Lead frame base material	ST Muar - Malaysia

4. Description of change

	Old	New
4.1 Description	- Leadframe matrix: Standard (2x8 positions) - Leadframe finishing: Rough-UPG3 (Ni/Pd/Ag-Au) - Mold injection point: corner gate - Marking: standard	- Leadframe: SHD (Super High Density, 4x12 positions) - Leadframe finishing: Sn with NEAP (Non Etching Adhesion Promoter) - Mold injection point: central top gate - Marking: re-layout linked to central top gate and 2D Marking introduction
4.2 Anticipated Impact on form, fit, function, quality, reliability or processability?	No Impact	

5. Reason / motivation for change

5.1 Motivation	Service and Capacity improvement. Manufacturing process optimization
5.2 Customer Benefit	CAPACITY INCREASE

6. Marking of parts / traceability of change

6.1 Description	Dedicated Finished Good Codes
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7. Timing / schedule

7.1 Date of qualification results	2022-06-30
7.2 Intended start of delivery	2022-07-31
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description			
8.2 Qualification report and qualification results	In progress	Issue Date	

9. Attachments (additional documentations)

13213 Public product.pdf
13213 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
	L9788TR	

PRODUCT/PROCESS CHANGE NOTIFICATION

TITLE	L-+, , 'fl F**L'Gi dYf'<][\ '8 Ybg]lmifG<8L'B95 D'@UXZUa Y'bfxcXi W]cb'
IMPACTED PRODUCTS	<ul style="list-style-type: none"> • L9788 • L9788TR
MANUFACTURING STEP	0E•^ { à '
INVOLVED PLANT	UVÁ ~ æÁÁ ææ•æe
CHANGE REASON	MU^!ç&^æ àÁOæ æ& Á] [ç^ { ^} dÁ æ ~ æ& !q * Á ! [&••Á] d á ææ }
CHANGE DESCRIPTION	Uæ& æ ^Á] * !æ^ Á @ [~ * @æ d [à ~ &ç } Á - &æ * ^• Á ^• & æ ^ à Á ^ [, Á
TRACEABILITY	D^á ææ^ á Á @ æ á @ á Á [á ^•
VALIDATION	See below ~ ~ ææææ } Á æ
IMPLEMENTATION	Y á ç Á R [Á æ ç Á] [] Á ^• ç { ^! Á } ! [ç æ



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UR66/L9788
LQFP14x14 100L EP in Muar
Migration to SHD Line and NEAP

Change Description

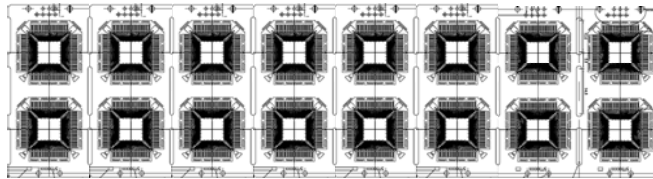
- As part of the overall strategy for QFP14x14, QFP10x10 and QFP7x7, we are progressing with the migration of UR66/L9788 from current matrix line to Super High Density (SHD) line in Muar Assy Plant
- Element of Changes for UR66/L9788 LQFP14x14 100L EP

Bill of Material

Item	Before	After
Strip size	57 x 215mm	85 x 250mm
Density (qty/strip)	16 units	48 units (SHD)
LF Finishing	RTuPG3	NEAP
Die Attach Material	2C2	2C2
Wire	1.2 mils Cu 2.0 mils Cu	1.2 mils Cu 2.0 mils Cu
Resin	G700LS	G700LS
Mold gate Injection	Side gate	Centre top gate
2D Marking	No	Yes

Strip size comparison

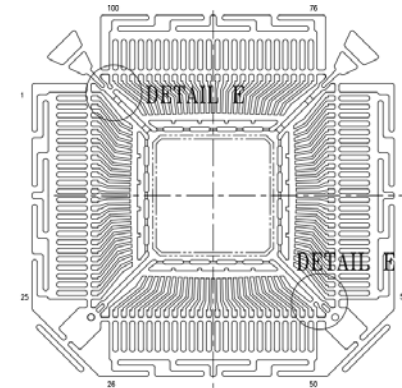
Matrix
2 x 8
16 units



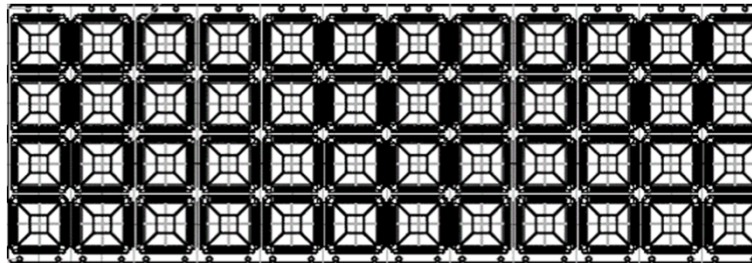
57.6mm

215.7mm

Matrix:
5FT50149



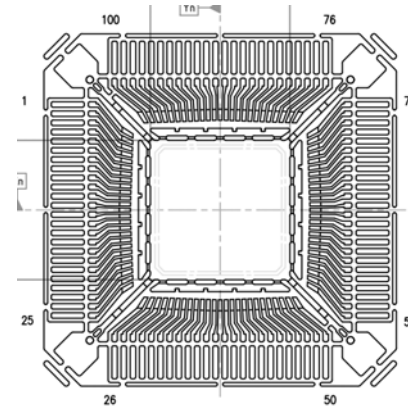
SHD
4 x 12
48 units



85 mm

250 mm

SHD:
5FT90119



Remarks:

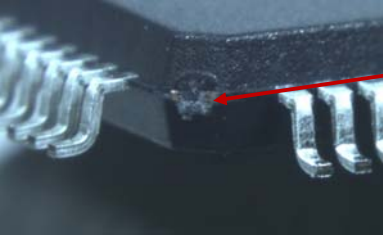
No changes in unit geometry. Only change strip size

Mold Injection Gates

Same Basic Technology - Transfer Molding

SIDE GATE INJECTION	TOP GATE INJECTION
	 <p data-bbox="1360 703 1696 735">Mold compound injection</p> <p data-bbox="1171 889 1549 930">Package view by side</p>

Dummy Sample



Gate Injection Notch

Dummy Sample



ZVEI ID Selection

PROCESS - ASSEMBLY		
X	SEM-PA-04	Change of lead frame finishing material / area (internal)
X	SEM-PA-05	Change of lead and heat slug plating material/plating thickness (external)
X	SEM-PA-13	Change of product marking
X	SEM-PA-14	Change in process technology (e.g. trim and form, leadframe preparation ...)
X	SEM-PA-17	Change of specified assembly process sequence (deletion and/or additional process step)
EQUIPMENT		
X	SEM-EQ-02	Production from a new equipment/tool which uses the same basic technology (replacement equipment or extension of existing equipment pool) without change of process.

→ From RTUPG3 to NEAP finishing

→ From Pre-Plated (NiPdAuAg) to Post-Plated (Pure Tin)

→ 2D Marking introduction and central top notch

→ SHD strip leadframe introduction

→ Additional Process (Post-plating with Pure Tin)

→ New Equipment, but same basic technology, transfer molding

Tests that should be considered according to ZVEI guideline

AEC-Q100 Revision H	Temperature Humidity Bias or biased HAST	Autoclave or Unbiased HAST	Temperature Cycling	Power Temperature Cycling	High Temperature Storage Life	Wire Bond Pull	Solderability	Lead Integrity	Lead free	Hermetic Package Test	Die Shear	Parameter-Analysis: Comparison of current with changed device characterization, electrical distribution	For Cu Wire Products: Consider AEC-Q006
	THB	AC	TC	PTC	HTSL	WBP	SD	LI	LF	MECH	DS		
	A2	A3	A4	A5	A6	C2	C3	C6	E12	G1-4	G7		
Stress Test to be considered as per ZVEI guideline	•	•	•	M	•	C	•	•	L	H	H	•	•
Stress Test performed by ST	X	X	X	X	X	X	X		X				X

Reason for exception of tests by ST

- C6: Not required for surface mount devices.
- G1-4 and G7: Not Applicable. Cavity Package Integrity Tests. Applicable to Hermetic Package only.
- Electrical distribution comparison: N.A. No deviations in terms of electrical performances are expected due to the change in leadframe finishing.



ST Qualification Plan

Reliability Test								
No	Test Name	Test method	Test Condition	Steps	Analysis/Comments	Sample size (unit)		
						Qual 1	Qual 2	Qual 3
1	PC (MSL3)	JEDEC J-STD-020	Peak Reflow Temp = 260°C	Final	MSL 3 will be applied on all the parts submitted to TC, THB, PTC, AC	231 (TC+THB+AC)	276 (TC+THB+PTC+AC)	231 (TC+THB+PTC+AC)
2	TC Thermal Cycle	JESD22-A104	-55°C/+150°C	1000/2000 cycles	ATE Delamination check (SAM) DPA analysis in line with Q006	77	77	77
3	HTS High Temperature Storage	JESD22-A103	150°C	1000/2000 hrs	ATE DPA analysis in line with Q006	45	45	45
4	THB Temperature Humidity Bias	JESD22-A101	85°C/ 85%RH	1000/2000 hrs	ATE Delamination check (SAM) DPA analysis in line with Q006	77	77	77
5	PTC Power Temperature Cycling	JESD22-A105	TJ -40°C/+150°C With Bias	1000/2000 cycles	ATE		45	
6	AC Autoclave	JESD22-A102	AC (121°C/2atm @ 96 hours)	96 hrs	Visual Inspection	77	77	77