PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	MDG/24/14652
1.3 Title of PCN	ST MUAR (Malaysia) Conversion from Matrix to Super High Density (SHD) leadframe for STM8A AUTOMOTIVE listed products in LQFP80 14x14 package.
1.4 Product Category	STM8AF52x, STM8AF62x, STM8AL3x
1.5 Issue date	2024-07-30

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	Ricardo Antonio DE SA EARP
2.1.2 Marketing Manager	Veronique BARLATIER
2.1.3 Quality Manager	Pascal NARCHE

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 finishing material / area (internal)	ST MUAR - MALAYSIA

4. Description of change

	Old	New
4.1 Description	Matrix Leadframe with lead Finishing: Spot Ag	SHD Leadframe with lead Finishing: Ring Ag The New Bill of Materials in ST Muar (Malaysia) assembly plant with High Density Matrix Leadframe is described in Additional information document.
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	Form: Yes - marking change Fit: No change, Function: No change, No impact for customer	

5. Reason / motivation for change

5.1 Motivation	The strategy of ST GPM Group is to increase the robustness and improve performances, quality and functionality of our products. This is achieved by introducing new Bill Of Material for STM8Ax products.
5.2 Customer Benefit	SERVICE CONTINUITY

6. Marking of parts / traceability of change

6.1 Description	Traceability ensured by ST internal tools

7. Timing / schedule

7.1 Date of qualification results	2025-04-05
7.2 Intended start of delivery	2025-05-06
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description	14652 MDRF-GPM-RER2409 PCN14652 - ST Muar LQFP14x14 FP Mtx to SHD - reliab plan.pdf

8.2 Qualification report and qualification results	Available (see attachment)	**Issue Date**	2024-07-30

9. Attachments (additional documentations)

14652 Public product.pdf
14652 MDRF-GPM-RER2409 PCN14652 - ST Muar LQFP14x14 FP Mtx to SHD - reliab plan.pdf
14652 PCN14652_Additional information.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**
	STM8AF528ATAY	
	STM8AF528ATCY	
	STM8AF52AATAY	
	STM8AF52AATCY	
	STM8AF52AATDY	
	STM8AF628ATCX	
	STM8AF628ATCY	
	STM8AL318ATCY	
	STM8AL31E8ATAY	
	STM8AL31E8ATCY	
	STM8AL3L8ATCY	
	STM8AL3LE8ATAY	
	STM8AL3LE8ATCY	

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MDRF-GPM-RER2409 PCN14652 - ST Muar LQFP14x14 FP Mtx to SHD - Auto

Reliability Evaluation Plan

July 04th, 2024

MDRF GPM GPM Quality & Reliability Department

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MDRF-GPM-RER2409 PCN14652 ST MUAR – MTX to SHD conversion
LQFP 14x14 80L Auto
Package Test Vehicles

Package line	Assembly Line	Package	Device (RawLine Code)	Diffusion Process Plant	Number of Reliability Lots
LQFP	LQFP 14*14	80L	79A	CMOS F9 G01	1
LQFP	LQFP 14*14	80L	79K	CMOS F9 G02	1
LQFP	LQFP 14*14	80L	79K with PBO	CMOS F9 G02	1

Note : Electrical distribution & Parameter-Analysis (Comparison of current with changed device characterization, electrical distribution) will be covered according to the ZVEI

MDRF-GPM-RER2409 PCN14652 ST MUAR – MTX to SHD conversion
LQFP 14x14 80L Auto
Extract AEC – Q100 Reliability flow

AEC - Q100 - REV-H
September 11, 2014

Automotive Electronics Council
Component Technical Committee

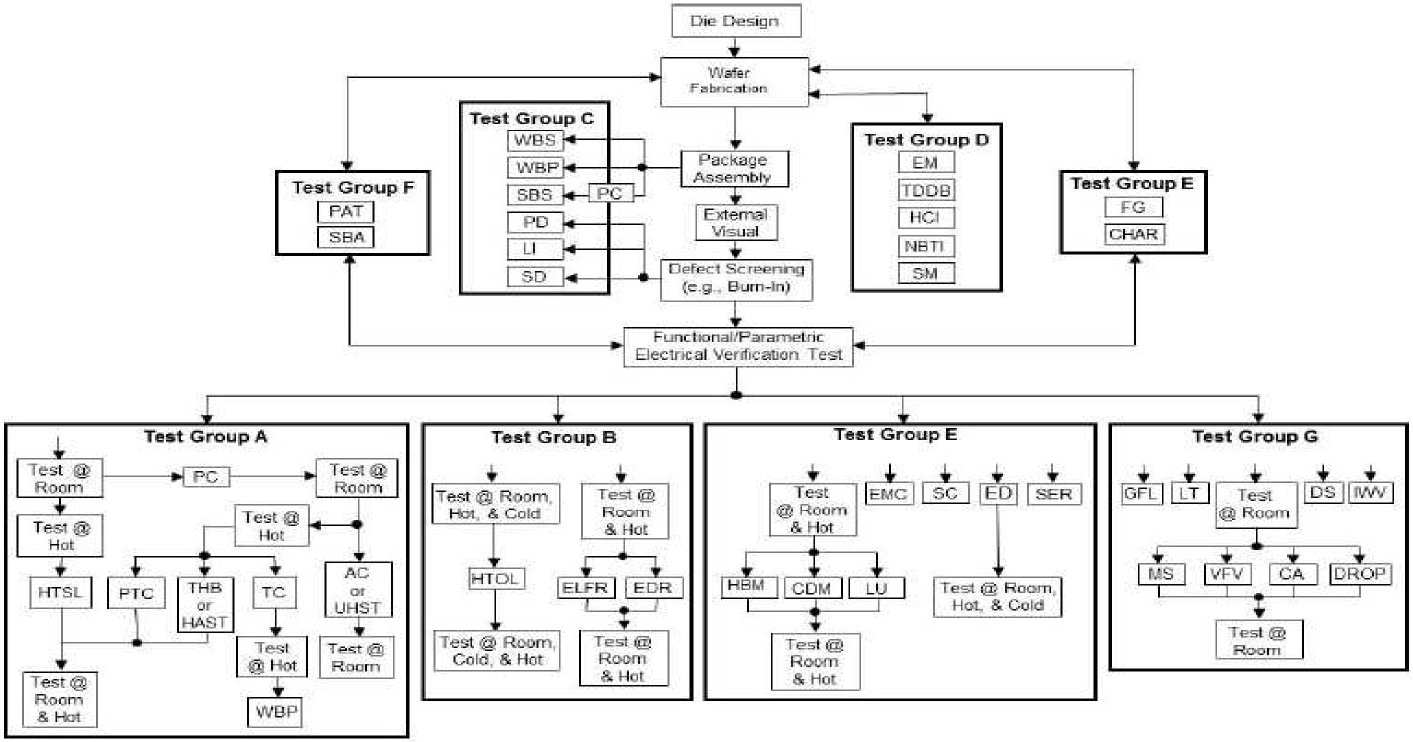

Figure 2: Qualification Test Flow

MDRF-GPM-RER2409 PCN14652 ST MUAR – MTX to SHD conversion LQFP 14x14 80L Auto

Package Reliability Trials

Reliability Trial & Standards		Test Conditions	Pass Criteria	Unit per Lot	Lot qty	More critical constraints for components
PC	Pre Conditioning: Moisture Sensitivity Jedec Level 3 J-STD-020/ JESD22-A113	Bake (125°C / 24 hrs) Soak (30°C / 60% RH / 192 hrs) for level 3 Convection reflow: 3 passes	3 passes MSL3	244	3	T0 test @ Room
uHAST (*)	UnBiased Highly Accelerated Temperature and Humidity Stress AEC-Q100 - JESD22 A118	130°C, 85%RH, 2 atm	96h	77	3	Read out after PC @ Room Read out 96h @ Room
TC(*)	Thermal Cycling AEC-Q100 - JESD22 A104	-55°C +150°C or equivalent	G0: 2000cy	90	3	Read out after PC @ Room + Hot Read out 1000cy/2000cy @ Hot
Wire Bond Pull after TC	Mil Std 883 Method 2011	Minimum pull strength after TC=3 grams	0cy/1000cy/ 2000cy	30 bonds from a minimum of 5 devices 30	3	5 devices @ 0cy/ 5 devices @ 1000cy/ 5 devices @ 2000cy
Wire Bond Shear after TC	AEC Q100-001	Min bond shear 15g	0cy/1000cy/ 2000cy		3	5 devices @ 0cy/ 5 devices @ 1000cy/ 5 devices @ 2000cy

(*) tests performed after preconditioning

MDRF-GPM-RER2409 PCN14652 ST MUAR – MTX to SHD conversion
LQFP 14x14 80L Auto
Package Reliability Trials

Reliability Trial & Standards		Test Conditions	Pass Criteria	Unit per Lot	Lot qty	More critical constraints for components
THB (*)	Temperature Humidity Bias AEC-Q100 - JESD22-A101	85°C, 85% RH, bias, 5,6V	1000h	77	3	Read out after PC @ Room + Hot Read out 500h/1000h @ Room + Hot
HTSL	High Temperature Storage Life AEC-Q100 - JESD22 A103	150°C- no bias	G0: 2000h	77	3	T0 test @ Room + Hot Read out 1000h/2000h @ Room + Hot
Construction analysis	JESD 22B102 JESDB100/B108	including Solderability, Physical dimensions	NA	50	2	1 with PBO/ 1 without PBO
ESD	ESD Charge Device Model JEDEC JS-002	Aligned with device datasheet	Aligned with device datasheet	3	3	T0 test @ Room + Hot Read out after ESD @ Room + Hot

(*) tests performed after preconditioning

MDRF-GPM-RER2409 PCN14652 ST MUAR – MTX to SHD conversion
LQFP 14x14 80L Auto
Die Reliability Trials

Reliability Trial & Standards		Test Conditions	Pass Criteria	Unit per Lot	Lot qty	More critical constraints for components
ELFR	AEC-Q100-008 JESD22-A108	G0: 24h 150°c 2.2V	24h	800	1 lot 79K PBO 1 lot 79A	T0 test @ Room + Hot Read out 24h @ Room + Hot
HTOL	AEC-Q100-005 JESD22-A108	G0: 1200h 150°c 2.2V	1200h	77	1 lot 79K PBO 1 lot 79A	T0 test @ Room + Hot + Cold Read out 168/600/1200h @ Room + Hot + Cold

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PRODUCT/PROCESS CHANGE NOTIFICATION

PCN14652 – Additional information

ST MUAR (Malaysia) Conversion from Matrix to Super High Density (SHD) leadframe for STM8A AUTOMOTIVE listed products in LQFP80 14x14 package.

MDRF – General Purpose Microcontrollers Division (GPM)

What are the changes?

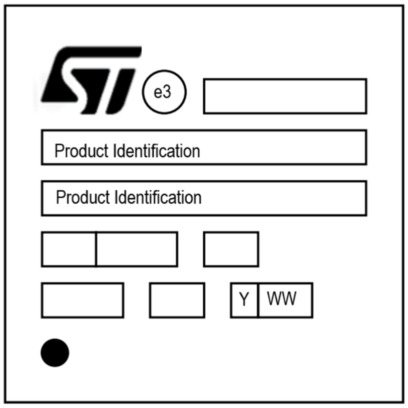
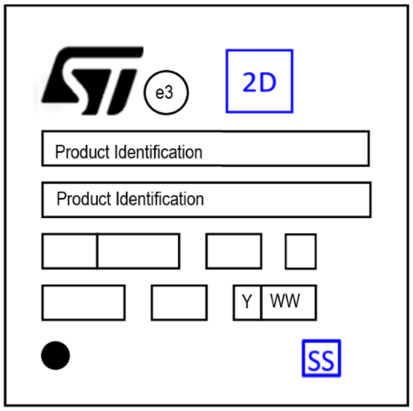
Changes described in table below:

	Current back-end lines	New back-end line
Assembly site	ST Muar (Malaysia)	
wire	Gold 1.0 mil	Gold 0.8 mil
Leadframe	Matrix	Super High Density (SHD)
Leadfinishing	Spot Ag, postplated (e3)	Ring Ag, postplated (e3)
Resin (1)	Sumitomo G700L	Sumitomo G700LS
Glue	LOCTITE ABLESTIK QMI9507-2A1	Hitachi EN4900GC
Enhanced Traceability in marking	No digit	2 digits SS marking 2D marking

(1) Package darkness changes depending on molding compound.
Pin1 identifier can change in terms of form and positioning.
Marking position and size could be different depending on the assembly line, without any loss of information.

How can the change be seen?

Top view example marking for BGA package.

Impacted Package	Current marking composition Example	New marking composition Example
LQFP80 14x14	 No Digit	 With Enhanced Tracability (2D & SS) marking

Y WW code**:** Year Week (manufacturing date)

PP code indicates the Assembly traceability plant code.

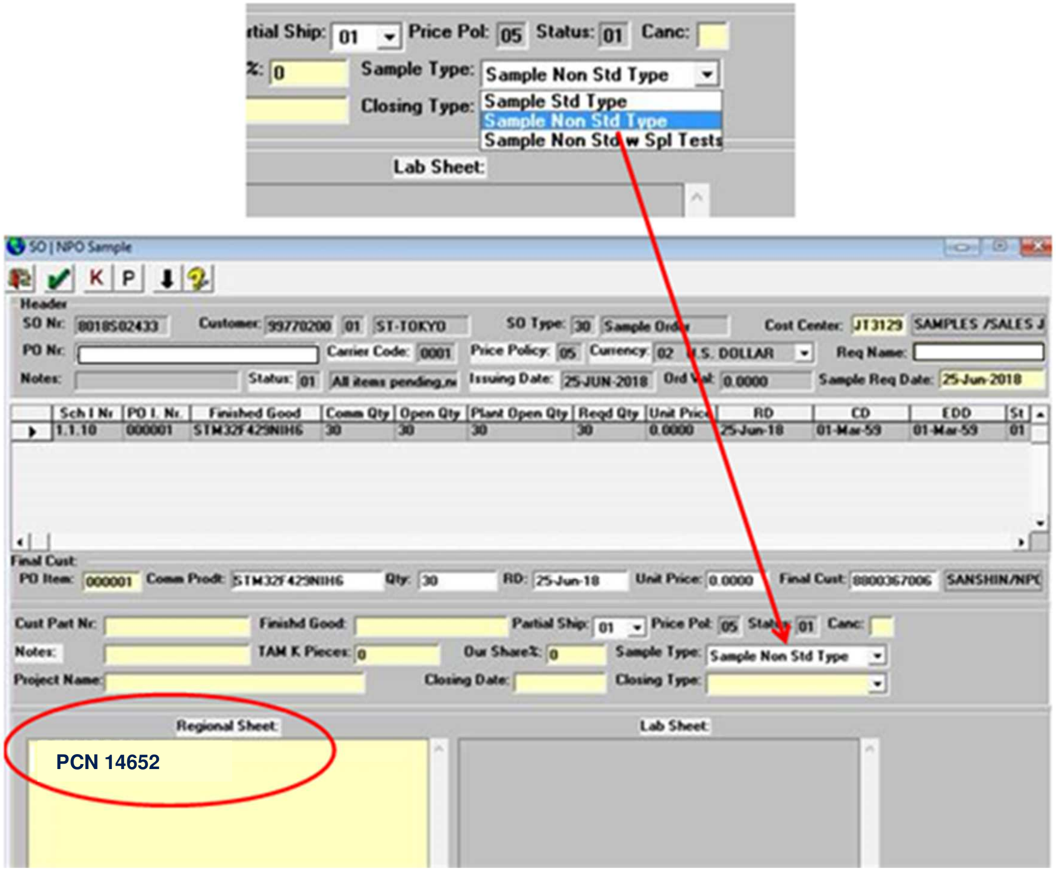
PP code	Assembly Line - Fab
99	ST Muar (Malaysia)

Please refer to Technical Note **TN1433** for package marking details.

How to order samples?

For all samples request linked to this PCN, please:

- place a **<u>Non-standard</u>** sample order (choose Sample Non Std Type from pull down menu).
- insert the PCN number “**PCN14652**” into the NPO Electronic Sheet/**Regional Sheet.**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request.



Partial Ship: 01 Price Pol: 05 Status: 01 Canc:
Sample Type: Sample Non Std Type

SO Nr: 8018S02433 Customer: 99770200 01 ST-TOKYO SO Type: 30 Sample Order Cost Center: JT3129 SAMPLES /SALES J
PO Nr: Carrier Code: 0001 Price Policy: 05 Currency: 02 U.S. DOLLAR Req Name:
Notes: Status: 01 All items pending,n Issuing Date: 25-JUN-2018 Ord Val: 0.0000 Sample Req Date: 25-Jun-2018

Sch I Nr	PO I. Nr.	Finished Good	Comm Qty	Open Qty	Plant Open Qty	Reqd Qty	Unit Price	RD	CD	EDD	St
1.1.10	000001	STM32F429NIH6	30	30	30	30	0.0000	25-Jun-18	01-Mar-59	01-Mar-59	01

PO Item: 000001 Comm Prodt: STM32F429NIH6 Qty: 30 RD: 25-Jun-18 Unit Price: 0.0000 Final Cust: 8800367006 SANSHIN/NPC

Cust Part Nr: Finishd Good: Partial Ship: 01 Price Pol: 05 Status: 01 Canc:
Notes: TAM K Pieces: 0 Our Share%: 0 Sample Type: Sample Non Std Type
Project Name: Closing Date: Closing Type:

Regional Sheet: PCN 14652

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PCN Title : ST MUAR (Malaysia) Conversion from Matrix to Super High Density (SHD) leadframe for STM8A AUTOMOTIVE listed products in LQFP80 14x14 package.
PCN Reference : MDG/24/14652

Subject : Public Products List

Dear Customer,

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

STM8AF628ATCY	STM8AF52AATAY	STM8AF528ATCY
STM8AF62AATAY	STM8AL318ATCX	STM8AF62AATCX
STM8AL3L8ATCX	STM8AF52AATCX	STM8AL31E8ATCX
STM8AF52AATAX	STM8AF628ATCX	STM8AF62AATCY
STM8AF52AATCY	STM8AL3LE8ATCY	STM8AF528ATCX
STM8AL3LE8ATAX	STM8AL31E8ATAY	STM8AL318ATCY
STM8AF52AATDY	STM8AF528ATAY	STM8AL31E8ATCY
STM8AL3LE8ATCX	STM8AL31E8ATAX	STM8AL3LE8ATAY
STM8AL3L8ATCY		

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