PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	MDG/22/13553
1.3 Title of PCN	DFN8 Lead frame change for automotive EEPROM products at ST Calamba (Philippines)
1.4 Product Category	All automotive EEPROM in DFN8 package
1.5 Issue date	2022-07-08

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	Benoit RODRIGUES
2.1.2 Marketing Manager	Philippe GANIVET
2.1.3 Quality Manager	Rita PAVANO

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	N/A

4. Description of change		
	Old	New
4.1 Description	For all automotive EEPROM products packaged in DFN8 at ST Calamba (Philippines), the leadframe supplier CWTC is terminating production at its Japan plant and move manufacturing to its Taiwan plant. The lead frame reference changes from EFTEC-64 (Japan plant)...	...to C194 (Taiwan plant). C194 remains a copper base lead frame. Electroplating remains unchanged.
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No change	

5. Reason / motivation for change	
5.1 Motivation	CWTC leadframe supplier terminates production at its Japan plant and moves manufacturing to its Taiwan plant.
5.2 Customer Benefit	SERVICE CONTINUITY

6. Marking of parts / traceability of change	
6.1 Description	N/A

7. Timing / schedule	
7.1 Date of qualification results	2022-08-12
7.2 Intended start of delivery	2023-01-01
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)
13553 Public product.pdf 13553 PCN Calamba leadframe plant change DFN8 automotive.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
	M24128-DRMF3TG/K	
	M24256-DRMF3TG/K	
	M24512-DRMF3TG/K	
	M24C02-DRMF3TG/K	
	M24C04-DRMF3TG/K	
	M24C08-DRMF3TG/K	
	M24C16-DRMF3TG/K	
	M24C32-DRMF3TG/K	
	M24C64-DRMF3TG/K	
	M95020-DRMF3TG/K	
	M95040-DRMF3TG/K	
	M95080-DRMF3TG/K	
	M95128-DRMF3TG/K	
	M95160-DRMF3TG/K	
	M95256-DRMF3TG/K	
	M95320-DRMF3TG/K	
	M95512-DRMF3TG/K	
	M95640-DRMF3TG/K	

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PRODUCT / PROCESS CHANGE NOTIFICATION

DFN8 Lead frame change for automotive EEPROM products at ST Calamba (Philippines)

What is the change?

For all automotive EEPROM products packaged in DFN8 at ST Calamba (Philippines), the leadframe supplier CWTC is terminating production at its Japan plant and move manufacturing to its Taiwan plant.

The **lead frame** reference changes from EFTEC-64 (Japan plant) to C194 (Taiwan plant). C194 remains a copper base lead frame. Electroplating remains unchanged.

Why?

CWTC leadframe supplier terminates production at its Japan plant and moves manufacturing to its Taiwan plant.

When?

The change will be implemented from Week 01 / 2023.
The change could be implemented earlier upon customer agreement.
First samples will be available from Week 38 / 2022 (see details in Appendix B).

How will the change be qualified?

This change has been qualified using the standard STMicroelectronics Corporate Procedures for Quality and Reliability.

Qualification plan is included in this document, final report forecasted Week 32 / 2022.

What is the impact of the change?

- **Form:** No change
- **Fit:** No change
- **Function:** No change

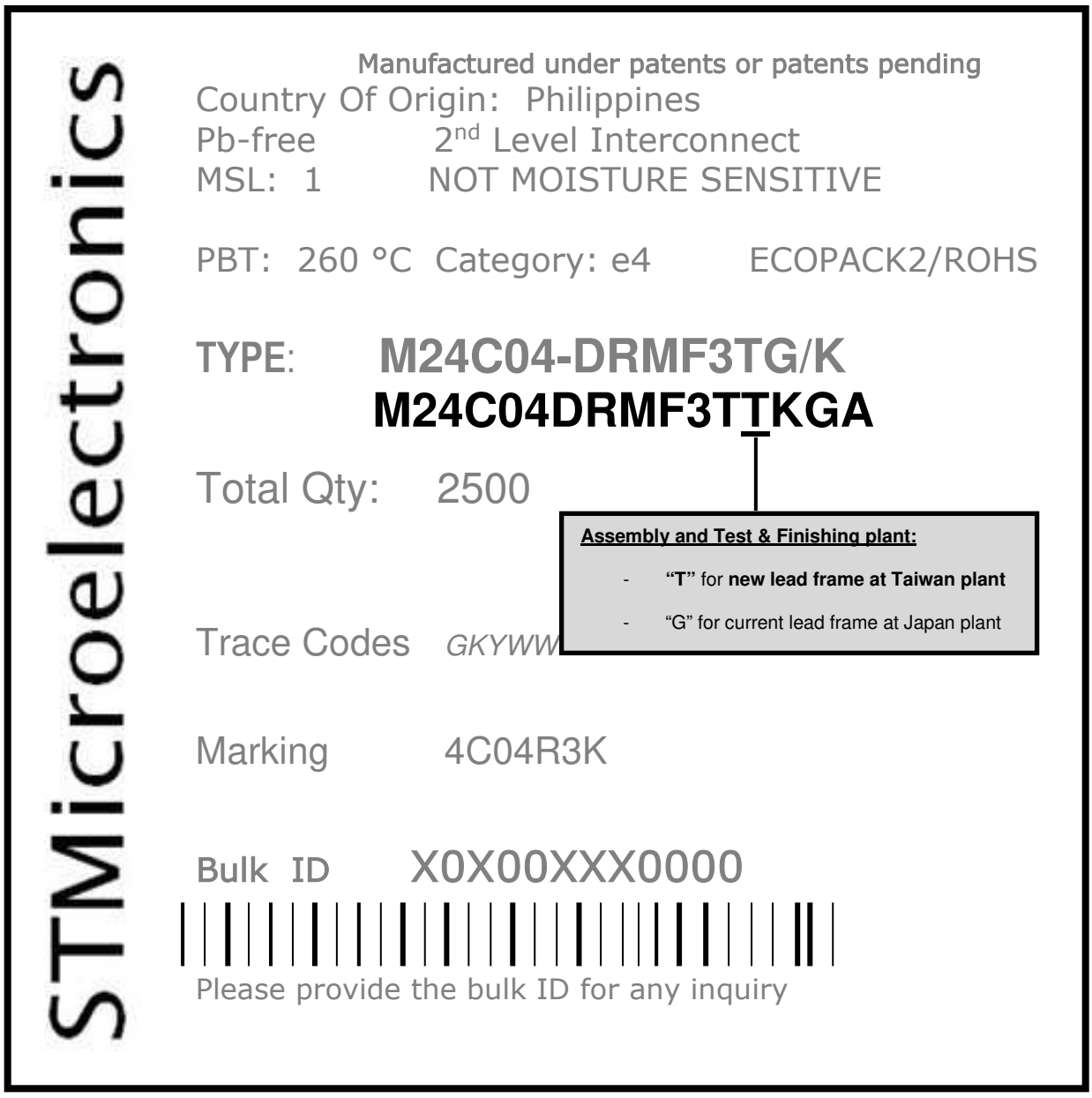
How can the change be seen?

The change is visible on the FG, **no marking difference**.

- ***BOX LABEL MARKING***

On the BOX LABEL MARKING, the difference is visible inside the **Finished Good Part Number**:

Example for M24C04-DRMF3TG/K



Appendix A- Product Change Information

Product family / Commercial products:	All automotive EEPROM in DFN8 package
Customer(s):	All customers
Type of change:	Leadframe material change
Reason for the change:	Leadframe supplier terminates production
Description of the change:	
Forecast date of the change: (Notification to customer)	Week 27 / 2022
Forecast date of Qualification samples availability for customer(s):	See appendix B.
Qualification Report availability:	Qualification plan included in this document, See appendix C.
Marking to identify the changed product:	Not Applicable
Product Line(s) and/or Part Number(s):	
Description of the qualification program:	Standard ST Microelectronics Corporate Procedures for Quality and Reliability
Estimated date of first shipment:	Week 01 / 2023

Appendix B- Concerned products :

PRODUCT	Samples availability
M24C04-DRMF3TG/K	Week 38
M24C64-DRMF3TG/K	Week 38
M95640-DRMF3TG/K	Week 38
M95128-DRMF3TG/K	Week 38
M24128-DRMF3TG/K	Week 38
M24C02-DRMF3TG/K	Week 38
M24512-DRMF3TG/K	Week 39
M95512-DRMF3TG/K	Week 39
M24C32-DRMF3TG/K	Week 39
M95320-DRMF3TG/K	Week 39
M95256-DRMF3TG/K	Week 39
M24256-DRMF3TG/K	Week 39
M24C08-DRMF3TG/K	Week 39
M24C16-DRMF3TG/K	Week 40
M95080-DRMF3TG/K	Week 40
M95160-DRMF3TG/K	Week 40
M95040-DRMF3TG/K	Week 40
M95020-DRMF3TG/K	Week 40

Appendix C- Reliability Evaluation plan

See next pages

AECQ100 Guidelines

Table 2 Test #	A2	A3	A4	A5	A6	B1	B2	B3	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	E2	E3	E4	E5	E7	E9	E10	E11	E12	G1-G4	G5	G6	G7	G8
Test Abbreviation	THB	AC	TC	PTC	HTSL	HTOL	ELFR	EDR	WBS	WBP	SD	PD	SBS	LI	EM	TDDB	HCI	NBTI	SM	HBM	CDM	LU	ED	CHAR	EMC	SC	SER	LF	MECH	DROP	LT	DS	IWV
DESIGN																																	
Active Element Design		●	●	M		●	●	DJ							D	D	D	D	D	●	●	●	●	●	●	●	●			F			
Circuit Rerouting			A	M																●	●	●	●	●	●	●							
Wafer Dimension / Thickness			E	M		●	●		E	E								●		E	E	E	●										
WAFER FAB																																	
Lithography	●		●	M		●	G		●	●								●					●										
Die Shrink	●	●		M		●	●	DJ							●	●	●	●	●	●	●	●	●	●	●	●	●						
Diffusion/Doping				M		●	G											●		●	●	●	●	●									
Polysilicon			●	M		●		DJ										●		●	●	●	●	●									
Metallization / Vias / Contacts	●	●	●	M		●			●	●					●				●				●	●		●							
Passivation / Oxide / Interlevel Dielectric	K	K	●	M		●	GN	DJ	K	●						●	●	●	●	●	●	●	●	●									
Backside Operation			●	M		●														M	M	●		●					H			H	
FAB Site Transfer	●	●	●	M		●	●	J	●	●					●	●	●	●	●	●	●	●	●						H			H	
ASSEMBLY																																	
Die Overcoat / Underfill	●	●	●	M	●	●																					●						H
Leadframe Plating	●	●	●	M	●					C	●			●														L				H	
Bump Material / Metal System	●	●	●	M	●	●						●	●														●	L					
Leadframe Material		●	●	M	●					●	●	●		●												●		L	H			H	
Leadframe Dimension		●	●	M							●	●		●												●		L	H				
Wire Bonding	●	●	●	Q	●				●	●													M			●			H				

Lead Frame material change :

- Reliability : AC, TC, HTSL
- Physical analysis : WBP, Solderability, POA

Notes :

- LI is only requested for “through hole package” => no the case
- SC is only requested for “Smart Power” devices => not the case.

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ZVEI Guidelines

Class SEM-PA-02 => Evaluation level B (Board Level)

ID	Type of change	Assessment of impact on Supply Chain regarding following aspects - contractual agreements - technical interface of processability/manufacturability of customer - form, fit, function, quality performance, reliability	Remaining risks on Supply Chain? No	Remaining risks on Supply Chain? Yes	Understanding of semiconductors experts	Evaluation level A / B / C (A: Application level; B: Boardlevel; C: Component level; *: will become A/B/C after decision; **: Not relevant for qualification)	Line evaluation (can be evaluated by data or audition site check)	AEC-Q100 Revision H	Check of specification (for raw material only)	THB A2	AC A3	TC A4	PTC A5	HTSL A6	HTOL B1	ELFR B2	EDR B3	WBS C1	WBP C2	SD C3	PD C4	SBS C5	LI C6	EM D1	TDDB D2	HCI D3	NBTI D4	SM D5	HBM/MM E2	CDM E3	LU E4	ED E5	CHAR E7	EMC E9	SC E10	SER E11	LF E12	MECH G1-4	DROP G5	LT G6	DS G7	IWV G8
	ANY																																									
SEM-PA-02	Change of leadframe base material		P	P	New leadframe material in new composition.	B	-		-	-	•	•	M	•	-	-	-	-	•	•	•	-	U	-	-	-	-	-	-	-	-	-	-	V	-	L	H	-	-	H	-

Change of leadframe base material:
- Reliability : AC or uHAST, TC, HTSL
- Physical analysis : WBP, Solderability, POA

Notes :
- LI is only requested for “through hole package” => no the case
- SC is only requested for “Smart Power” devices => not the case.

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Package-oriented reliability tests

Test	Test short description					
	Method	**Conditions**	**Sample Size / lot**	**No. of lots**	**Read-outs**	**Acceptance Criteria**
PC	**Preconditioning: moisture sensitivity level 1**					
	JESD22-A113 / J-STD-020	Pre-bake 24hrs@125°C 168hrs Soak @ 85°C/85%rh (MSL1) 3x reflow @ 260°C + 100TC (-65°c/+150°c)	231	3	0h After PC	0/231
HTSL (a)	**High temperature storage life**					
	JESD22-A103	High Temperature Storage at 150 °C	77	3	504 hrs **1008 hrs**	0/77 0/77
TC (a)	**Temperature cycling (Air to Air)**					
	JESD22-A104	-65 °C / +150°C (condition C) 2 cycles per hour	77	3	500 cy **1000 cy + WBP**	0/77 0/77
uHAST (a)	**Unbiased High accelerated stress test**					
	JESD22-A118	130 °C, 85% RH, 230 kPa, no bias	77	3	**96 hrs**	0/77

Note (a) : TC, uHAST and HTSL are first subject to preconditioning flow PC

BOLD = gating

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Package-oriented Physical data

Test	Test short description					
	Method	**Conditions**	**Sample size / lots**	**No. of lots**	**Read-outs**	**Criteria**
SD	**Solderability**					
	Internal spec.		40	1	N/A	**No defect**
PD	**Physical dimension (POA)**					
	Internal spec.		30	3	N/A	**No defect**
WBP	**Wire Bond Pull**					
	Internal spec.		30 bonds	3	N/A	**No deviation**

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Document Revision History		
Date	Rev.	Description of the Revision
June 15, 2022	1.0	Christian POLI

Source Documents & Reference Documents		
Source document Title	**Rev.:**	**Date:**

Public Products List

Publict 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 : DFN8 Lead frame change for automotive EEPROM products at ST Calamba (Philippines)

PCN Reference : MDG/22/13553

Subject : Public Products List

Dear Customer,

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

M24C04-DRMF3TG/K	M95256-DRMF3TG/K	M95128-DRMF3TG/K
M95040-DRMF3TG/K	M24128-DRMF3TG/K	M24C32-DRMF3TG/K
M24256-DRMF3TG/K	M95080-DRMF3TG/K	M95320-DRMF3TG/K
M95160-DRMF3TG/K	M24C08-DRMF3TG/K	M24512-DRMF3TG/K
M95512-DRMF3TG/K	M24C16-DRMF3TG/K	M95640-DRMF3TG/K
M24C02-DRMF3TG/K	M24C64-DRMF3TG/K	M95020-DRMF3TG/K

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