

PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company		STMicroelectronics International N.V
1.2 PCN No.	ADG/18/11071	
1.3 Title of PCN	M10 Microcontrollers Family: Assembly of LQFP 64L Package and Final Test Transfer from ST Malta to ST Muar (ST Line FP40)	
1.4 Product Category	see list	
1.5 Issue date	2018-09-13	

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	Luca RODESCHINI
2.1.2 Marketing Manager	Daniele Alfredo BRAMBILLA
2.1.3 Quality Manager	Alberto MERVIC

3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Transfer	Line transfer for a full process or process brick (process step, control plan, recipes) from one site to another site: Assembly site (SOP 2617)	ST Muar Plant (Malaysia) – Recipient Site

4. Description of change

	Old	New
4.1 Description	Assembly and Testing in ST Malta	Assembly and Testing in ST Malta and ST Muar
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 Increase
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	2018-09-04
7.2 Intended start of delivery	2018-10-30
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description	11071 Validation reports.zip		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2018-09-13

9. Attachments (additional documentations)

11071 Public product.pdf
11071 Validation reports.zip
11071 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
	SPC560P40L1BEFBR	

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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 : M10 Microcontrollers Family: Assembly of LQFP 64L Package and Final Test Transfer from ST Malta to ST Muar (ST Line FP40)

PCN Reference : ADG/18/11071

Subject : Public Products List

Dear Customer,

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

SPC560P40L1BEAAR	SPC560P40L1CEFBR	SPC560P34L1CEFAY
SPC560P34L1BEABR	SPC560P40L1BEFBR	SPC560P40L1BEABY
SPC560P34L1BEAAY	SPC560P40L1BEAAY	SPC560P34L1BEABY
SPC560P34L1CEFAR	SPC560P34L1CEFBY	SPC560P40L1CEFAR
SPC560P40L1BEABR	SPC560P34L1CEFBR	SPC560P40L1BEFBY
SPC560P34L1BEAAR		



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PRODUCT/PROCESS CHANGE NOTIFICATION

SUBJECT **M10 MICROCONTROLLERS FAMILY: ASSEMBLY OF LQFP 64L PACKAGE AND FINAL TEST TRANSFER FROM ST MALTA TO ST MUAR – ST LINE FP40**

IMPACTED PRODUCTS

Complete set of ST silicon line FP40 (M10 Microcontrollers family) assembled in LQFP 64L (10x10mm) package and electrically tested in Malta:

Commercial Product Code	
SPC560P40L1B2FBR	SPC560P40L1CEFAR
SPC560P40L1B2FBY	SPC560P40L1CEFBR
SPC560P40L1BEAAR	SPC560P34L1BEAAR
SPC560P40L1BEAAY	SPC560P34L1BEAAY
SPC560P40L1BEABR	SPC560P34L1BEABR
SPC560P40L1BEABY	SPC560P34L1BEABY
SPC560P40L1BEFBR	SPC560P34L1CEFAR
SPC560P40L1BEFBY	SPC560P34L1CEFAY
SPC560P40L1C2FBR	SPC560P34L1CEFBR
SPC560P40L1C2FBY	SPC560P34L1CEFBY

MANUFACTURING STEP

Assembly and Electrical Final Test

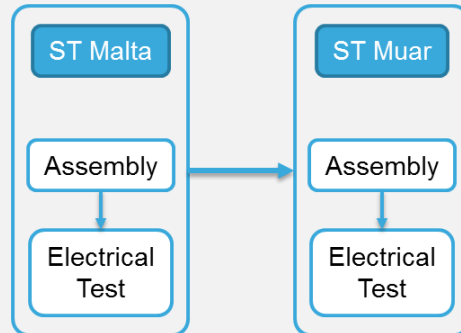
INVOLVED PLANT

ST Muar Plant (Malaysia) – Recipient Site

CHANGE REASON

Service and Capacity improvement.

CHANGE DESCRIPTION



Two changes are herewith considered:

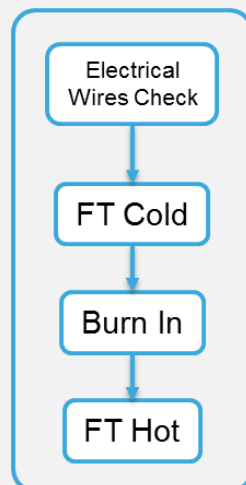
✚ transfer of LQFP 64L package assembly from ST Malta to ST Muar;

✚ activation of electrical final test in Muar, in addition to Malta (backup).

Regarding package assembly, opportunity has been taken to implement latest solutions adopting a High Density leadframes matrix, already in use in ST Muar for this type of package.

As far as materials are concerned, following Bill Of Material improvements have been implemented (see below table for comparison):

	ST Malta	ST Muar
Leadframe	LQFP 64L 10x10 6sq C7025 OptG SpAg	LQFP 64L 10SQ 5.17sqOpA SpAg+TNCU3
Resin	SUMITOMO EME-G700L/LS	SUMITOMO EME-G700LS
Glue	ABLESTIK QMI9507	ABLESTIK QMI9507
Wire	WIRE CuPd CLR3 D0.7	WIRE CuPd CLR3 D0.7



In terms of electrical test, adopted flows and ATE models remains unchanged and aligned with latest ST Customer Notifications dated September 2017. Test Flow is replicating the one already foreseen in ST Malta, performing in particular:

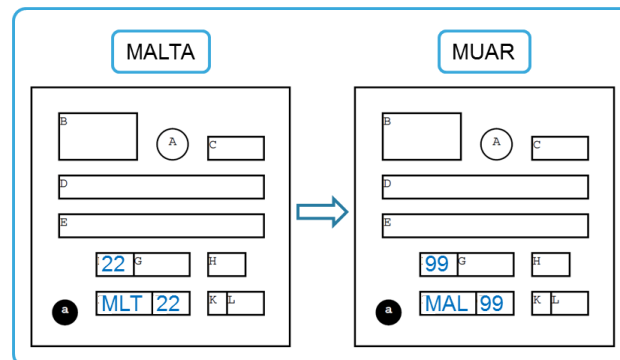
✚ wires check at Room temperature (ATE model: Hatina)

✚ full test at Cold temperature (ATE model: J750)

✚ Burn In 100%

✚ full test at Hot temperature (ATE model: J750)

TRACEABILITY



New dedicated Finished Good code (Internal Part Number – Box Labels) and product marking:



ST Plants code



Country Of Origin

Example is showing the case of both steps (assembly and

final test) performed in the same site. Mixed solution will be possible for assembly in Muar and final test in Malta (99 and 22 respectively).

VALIDATION

Validation is based on ZVEI recommendations. It represents an additional step with respect to the existing qualified configurations for the M10 products family (90nm technology – different QFP packages), herewith reported:

Diffusion	Assembly	Wires	Resin	Final Test	Status
Rousset 8"	Muar	Au	G700L	Malta	Qualified
Rousset 8"	Malta	Au	G700L	Malta	Qualified
Crolles 12"	Malta	CuPd	G700L	Malta	Qualified
Crolles 12"	Malta	CuPd	G700LS	Malta	Qualified
Crolles 12"	Muar	CuPd	G700LS	Muar	This PCN

and has been performed according to below qualification plan adopting the ST silicon line FB40 (same technology family of FP40) as Test Vehicle:

	Temperature Humidity Bias or biased HAST	Autoclave or Unbiased HAST	Temperature Cycling	Power Temperature Cycling	High Temperature Storage Life	High Temperature Operating Life	Early Life Failure Rate	Wire Bond Shear	Wire Bond Pull	Solderability	Physical Dimensions	Solder Ball Shear	Lead Integrity	Electrical Distribution
	THB	AC	TC	PTC	HTSL	HTOL	ELFR	WBS	WBP	SD	PD	SBS	LI	ED
ZVEI Reference	A2	A3	A4	A5	A6	B1	B2	C1	C2	C3	C4	C5	C6	E5
SEM-PA-18	●	●	●	M	-	●	●	●	●	●	●	T	●	●
SEM-TF-01	-	-	-	-	-	-	-	-	-	-	-	-	-	●
Performed by ST	x	x	x	-	x	x ¹	x ¹	x	x	x	x	-	-	x ²

Trials have been executed according to AEC-Q100 and AEC-Q006 standards.

Referring to the ZVEI (AEC-Q100) guidelines, following elements have been considered:

- ✚ HTSL: not requested, but performed as part of robust validation process;
- ✚ HTOL: ⁽¹⁾ replaced by evaluation of Burn In data;
- ✚ ELFR: ⁽¹⁾ replaced by evaluation of Burn In data;
- ✚ Solder Ball Shear: not applicable, requested for BGA devices only;
- ✚ Lead Integrity: not applicable, requested for “through hole” devices only;
- ✚ ED: ⁽²⁾ full correlation exercise for electrical final test transfer; qualification and pre-production data analysis and verification for assembly transfer.

CURRENT PRODUCTS

Current Finished Good codes assembled in ST Malta will be terminated and replaced by the new ones made in ST Muar. Electrical final test will be available in both sites to support the transition phase.

All products versions will converge toward a unique technical configuration based on:

- ✚ Diffusion: ST Crolles 12” line;
- ✚ Assembly: ST Muar line with CuPd wires.

On top of the above, products portfolio will be cleaned up by removing some low runner part numbers (Commercial Product codes) that will be terminated. New scenario will be as per below reported table:

Commercial Product	Will Be	Proposed Alternative
SPC560P40L1B2FBR	maintained	not applicable
SPC560P40L1B2FBY	terminated	SPC560P40L1CEFBR
SPC560P40L1BEAAR	terminated	SPC560P40L1CEFAR
SPC560P40L1BEAAY	terminated	SPC560P40L1CEFAR
SPC560P40L1BEABR	terminated	SPC560P40L1CEFBR
SPC560P40L1BEABY	terminated	SPC560P40L1CEFBR
SPC560P40L1BEFBR	terminated	SPC560P40L1CEFBR
SPC560P40L1BEFBY	terminated	SPC560P40L1CEFBR
SPC560P40L1C2FBR	terminated	SPC560P40L1CEFBR
SPC560P40L1C2FBY	terminated	SPC560P40L1CEFBR
SPC560P40L1CEFAR	maintained	not applicable
SPC560P40L1CEFBR	maintained	not applicable
SPC560P34L1BEAAR	terminated	SPC560P34L1CEFAR
SPC560P34L1BEAAY	terminated	SPC560P34L1CEFAY
SPC560P34L1BEABR	terminated	SPC560P34L1BEABY
SPC560P34L1BEABY	maintained	not applicable
SPC560P34L1CEFAR	maintained	not applicable
SPC560P34L1CEFAY	maintained	not applicable
SPC560P34L1CEFBR	terminated	SPC560P34L1BEABY
SPC560P34L1CEFBY	terminated	SPC560P34L1BEABY

REPORTS

Assembly: Reliability Report - Bolero256K RR000418AG6050 Rev 1_2

Electrical Final Test:

- FP40 Hatina Validation Report
- FP40_256K_Muar_FT_Qualification_Report
 - FP40_FT_Muar_Malta_Comparison_Cold
 - FP40_FT_Muar_Malta_Comparison_Hot
 - FP40_Muar_FT_Cpk_Report
 - FP40_Muar_FT_Endurance_Cold_Report
 - FP40_Muar_FT_Endurance_Hot_Report
 - FP40_Muar_FT_GRR_Report

IMPLEMENTATION

We are ready to implement the change immediately upon Customer agreement