PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/22/13643
1.3 Title of PCN	SO-16 Narrow (VIPower): Package Bill of Material Upgrade (All Ctms)
1.4 Product Category	See list
1.5 Issue date	2022-09-09

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	Stello Matteo BILLE',Mario ASTUTI
2.1.2 Marketing Manager	Leonardo Agatino MICCOLI
2.1.3 Quality Manager	Daniela FAZIO

3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	New direct material part number (same supplier, different supplier or new supplier), Mold compound	Subcontractor UTAC - Thailand

4. Description of change

	Old	New
4.1 Description	Standard Leadframe Molding Compound SUMITOMO G605-L	Ultra High Density (UHD) Leadframe Molding Compound SUMITOMO G633CB
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	2022-09-02
7.2 Intended start of delivery	2022-12-02
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description	13643 Validation.zip		
8.2 Qualification report and qualification results	Available (see attachment)	**Issue Date**	2022-09-09

9. Attachments (additional documentations)

13643 Public product.pdf
13643 Validation.zip
13643 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
	VND810PTR-E	
	VNH5200ASTR-E	
	VNH7070ASTR	
	VNH7070BASTR	
	VNH7100BASTR	

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PRODUCT/PROCESS CHANGE NOTIFICATION

TITLE	**SO-16 Narrow (VIPower): Package Bill of Material Upgrade** (All Ctms)
IMPACTED PRODUCTS	See list
MANUFACT. STEP	Assembly
INVOLVED PLANT	Subcontractor UTAC - Thailand
CHANGE REASON	Capacity Increase
CHANGE DESCRIPTION	On VIPower products housed in SO-16 Narrow in UTAC assembly plant will be implemented the below change of Bill of material: **Current** Standard Leadframe Molding Compound SUMITOMO G605-L **New** Ulta High Density (UHD) Leaframe Molding Compound SUMITOMO G633CB See below additional details
TRACEABILITY	Dedicated Finished Good Codes
VALIDATION	Enclosed to this communication
REPORTS	13643 Validation.zip
IMPLEMENTATION	Upon Customer Agreement

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New BOM (Ultra High-Density Lead Frame and new Molding Compound) qualification for SOIC 16 Leads Narrow package in UTAC Thailand plant

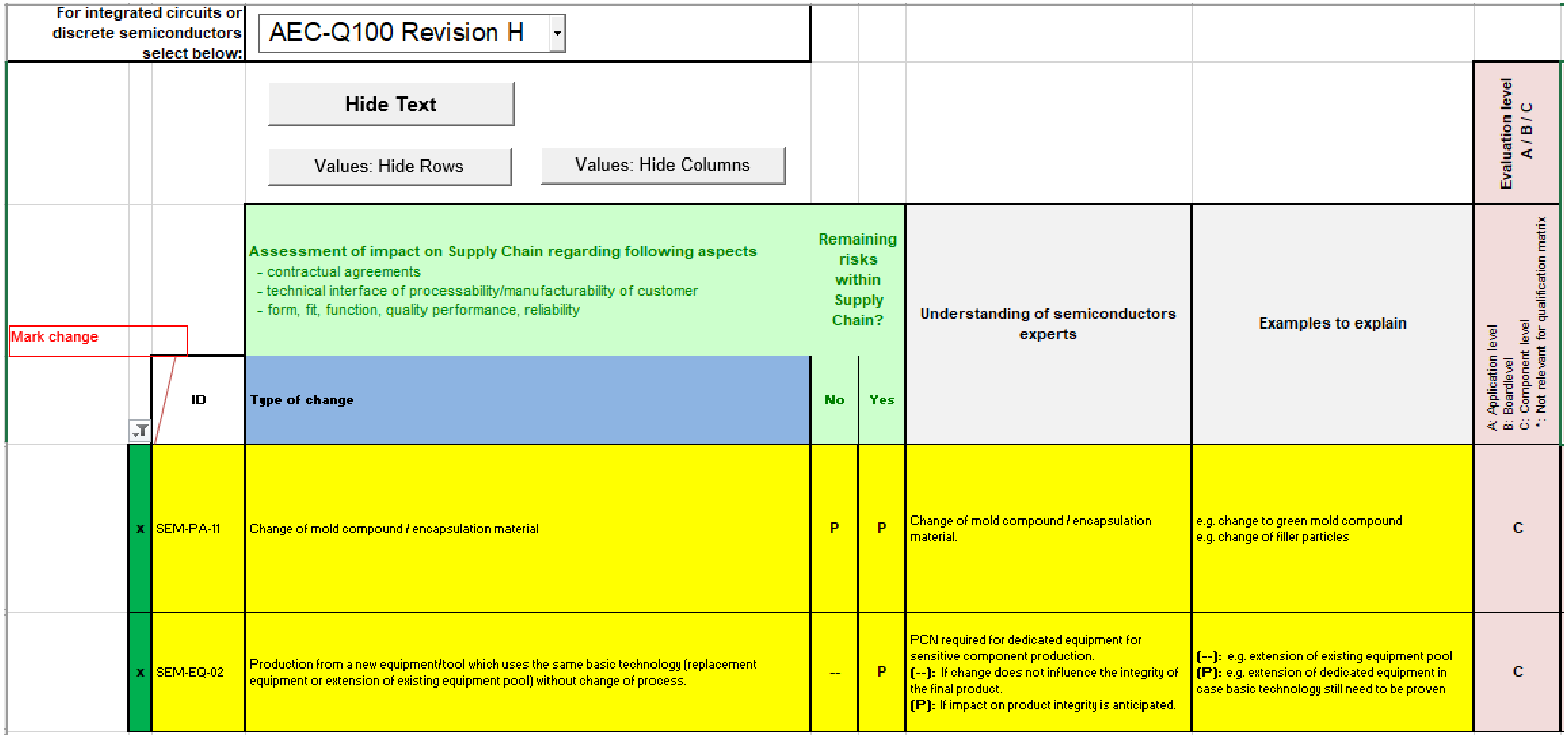
Agenda

Change description

- Aim of this document is to describe the activity performed to qualify the new bill of material in UNITED TESTING AND ASSEMBLY CENTER (namely UTAC).
- The SOIC Narrow 16 Leads package is assembled in UTAC Thailand plant.
- Full qualification activity has been performed in order to qualify the new UTAC bill of material (ULTRA HIGH-DENSITY Lead frame for SOIC Narrow 16 Leads package with Lead frame size 100 x 300 mm with 360 Unit/strip and new SUMITOMO G633CB Molding Compound).
- The new materials are ensuring the same quality and electrical characteristics as the current products assembled using the current bill of material (Lead frame size 43 x 215 mm with 64 Unit/strip and the current SUMITOMO G605-L Molding Compound).

ZVEI Guidelines

- According to ZVEI recommendations, the notification is required.



For integrated circuits or discrete semiconductors select below: AEC-Q100 Revision H

		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 within Supply Chain?**		**Understanding of semiconductors experts**	**Examples to explain**	**Evaluation level A / B / C** A: Application level B: Boardlevel C: Component level *: Not relevant for qualification matrix
	ID	**Type of change**	**No**	**Yes**			
x	SEM-PA-11	Change of mold compound / encapsulation material	P	P	Change of mold compound / encapsulation material.	e.g. change to green mold compound e.g. change of filler particles	C
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.	--	P	PCN required for dedicated equipment for sensitive component production. **(--):** If change does not influence the integrity of the final product. **(P):** If impact on product integrity is anticipated.	**(--):** e.g. extension of existing equipment pool **(P):** e.g. extension of dedicated equipment in case basic technology still need to be proven	C

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Bill Of Material Comparison

Actual Bill of Material	
ITEM	**MATERIAL**
FRAME	SO16 Narrow
WIRE	1 MIL CU / 2 MILS CU / 2.5 MILS CU
DIE ATTACH	GLUE HENKEL QMI529HT-2A1
MOLD COMPOUND	RESIN SUMITOMO G605-L

➡

New Bill of Material	
ITEM	**MATERIAL**
FRAME	SO16 Narrow UHD
WIRE	1 MIL CU / 2 MILS CU / 2.5 MILS CU
DIE ATTACH	GLUE HENKEL QMI529HT-2A1
MOLD COMPOUND	RESIN SUMITOMO G633CB

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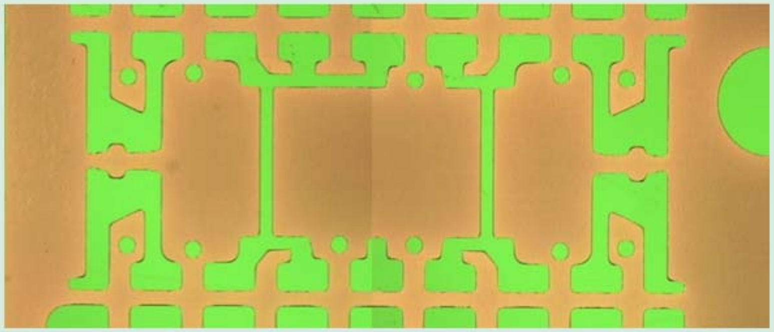
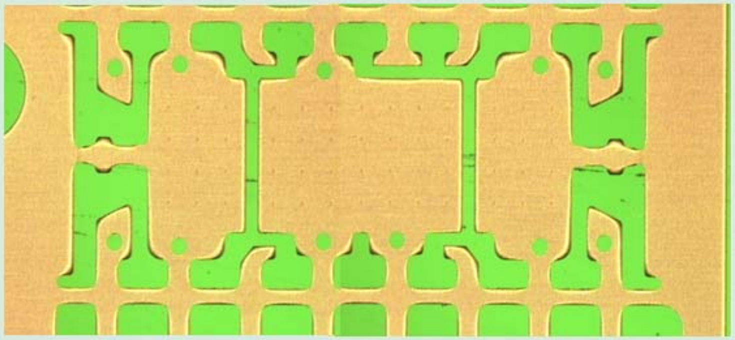
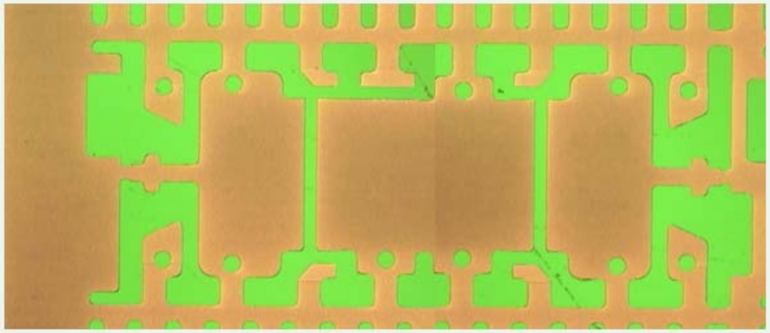
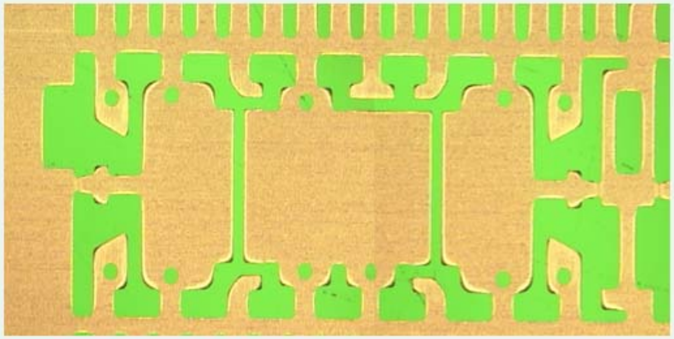
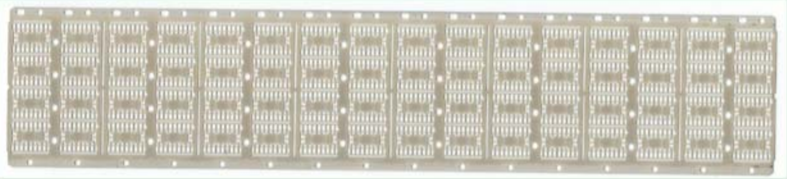
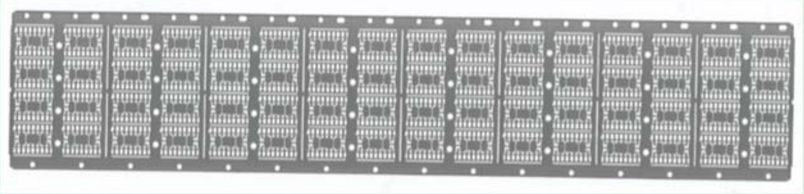
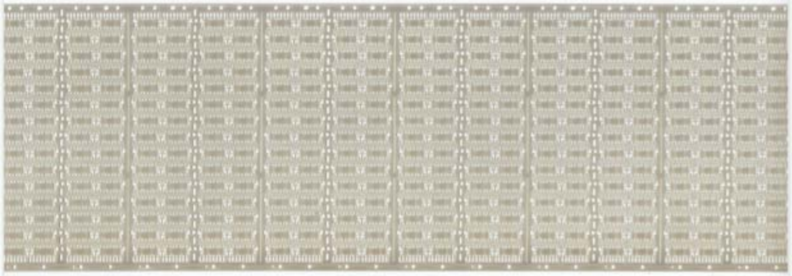
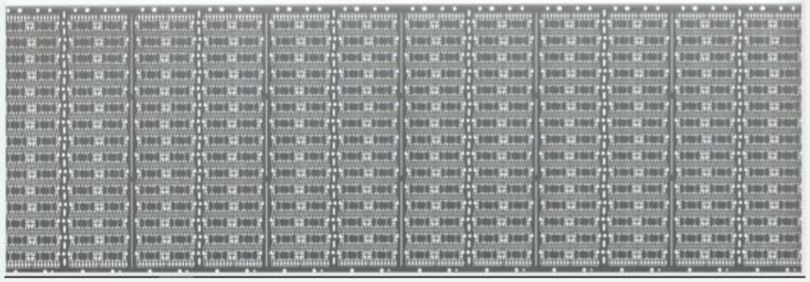
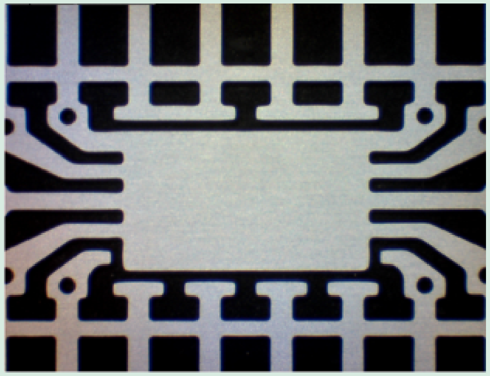
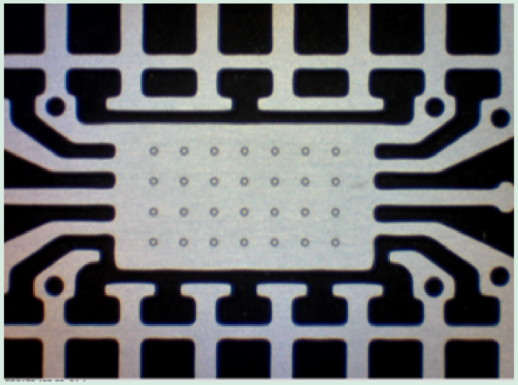
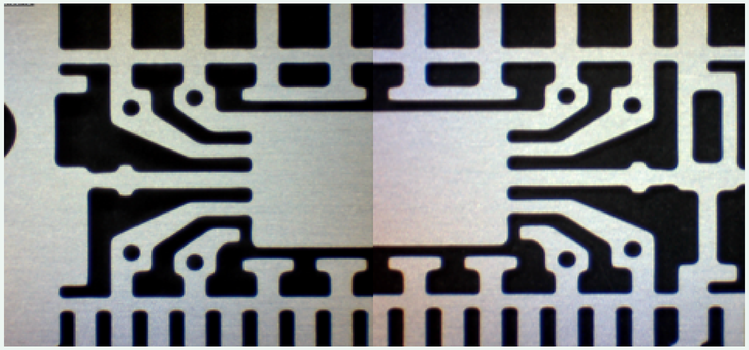
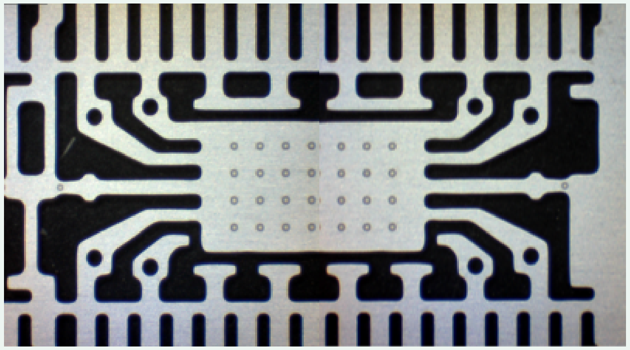
Lead frame comparison (VH46, VH70, VH71, VH73)

	Top View	**Bottom View**
Current frame		
New frame		

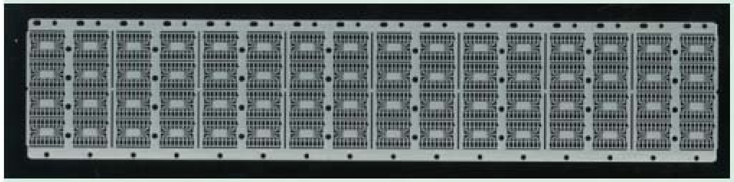
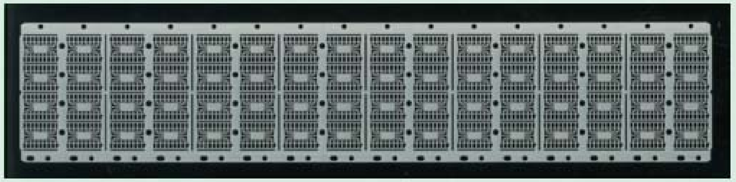
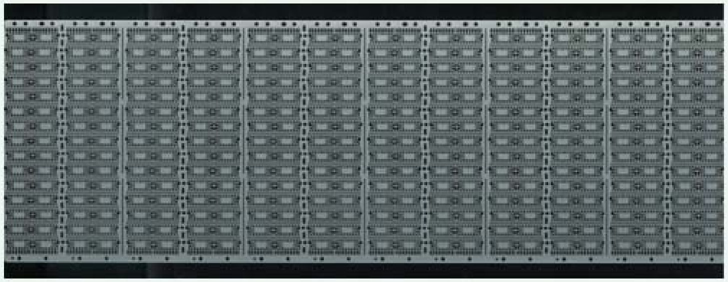
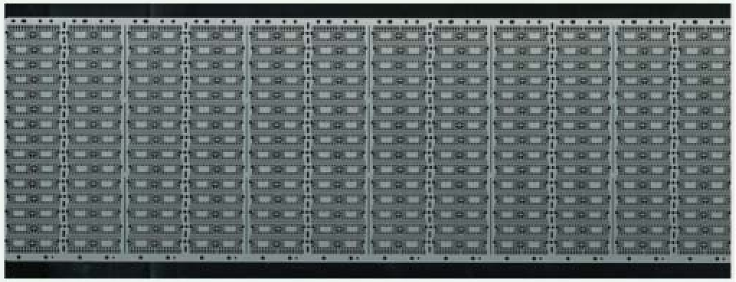
Lead frame comparison (VH46, VH70, VH71, VH73)

	Top	**Bottom**
Current frame		
New frame		

Lead frame comparison (VNE4)

	Top View	Bottom View
Current frame		
New frame		

Lead frame comparison (VNE4)

	Top	Bottom
Current frame		
New frame		

Mold compound comparison

Supplier	**Sumitomo**	**Sumitomo**
Commercial Part	**G600**	**G633CB**
Application	Non-QFN Pkg	Non-QFN Pkg
Strip size	Matrix LF	UHD LF
Commercial / Development	Commercial	Commercial
Formulation :		
Filler Type	Silica	Silica
Filler Content (%)	~86.5	~87.0
Spherical / Flake (% / %)	100% Spherical	100% Spherical
Filler Sieved Size Max (um)/ (%)	75 (sieved)	75 (sieved)
Typical Properties :		
Spiral flow (cm)	85	110
Gel time (sec)	25	30
Specific gravity	1.99	1.99
Tg (degC)	130	135
Thermal expansion -1 (ppm/degC)	10	9
Thermal expansion -2 (ppm/degC)	40	38
Flammability UL-94	V-0	V-0
Flexural strength @ RT (N/mm^2)	185	160
@ 260°C (N/mm^2)	21	13
Flexural modulus @ RT (N/mm^2)	24000	25000
@ 260°C (N/mm^2)	720	600

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Selected Test Vehicles & Impacted products list

Test Vehicles:	ST silicon line
- VNH5200ASTR-E	VH4603
- VNH7100BASTR	VH7603
- VND810PTR-E	VNE401

Impacted products:	ST silicon line
- VNH5200ASTR-E	VH4603
- VNH7070ASTR	VH7003
- VNH7070BASTR	VH7303
- VN01TTTR	VH7603
- VNH7100BASTR	VH7603
- VNH7110ASTR	VH7603
- VND810PTR-E	VNE401

Conclusions

- Full qualification activity has been performed in STM in order to qualify the new bill of material for SOIC 16 Leads Narrow package in UTAC (Thailand).
- The new materials are ensuring the same quality and electrical characteristics as the current products assembled in SOIC 16 Leads Narrow.
- Electrical drift analysis and reliability report attached.

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 : SO-16 Narrow (VIPower): Package Bill of Material Upgrade (All Ctms)

PCN Reference : ADG/22/13643

Subject : Public Products List

Dear Customer,

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

VNH7070ASTR	**VNH7100BASTR**	**VNH7070BASTR**
VN01TTTR	**VNH5200ASTR-E**	

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