Customer Notification

(CN Tracking Number: EE-QR-180808-01)

Version 1.0

Customer:	All Customers
Renesas Product Type:	Standard SRAM (TSOP) products. Please refer to the list on page 8
Description of Change:	Addition of outer lead plating fab for SRAM TSOP products assembled in Amkor Technology Malaysia Sdn. Bhd.
Reason for Change:	To serve the objective of stable supply and lead time reduction.
Identification:	None by orderable part name or marking on package. The plating fab can be traced by referring to a control sheet of assembly process based on the date code marked on the package.
Schedules:	From Jan. 2019 onwards
Anticipated Impact:	There is no change in the fit, form and function of the package material. No change in quality & reliability.
Document no.	EEQC-PCN-CR-18-0033
Internal Reference:	CST-R2-AE323

In case of any question, please contact:

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Düsseldorf, 7 August 2018

Background of Change:

Renesas announces addition of outer lead plating fab for SRAM TSOP products assembled in "Amkor Technology Malaysia Sdn. Bhd." (hereinafter called "ATM").

Details of Change:

We will add "Syntronixs Asia Sdn. Bhd." (hereinafter called "Syntronixs") as a partner fab of outer lead plating (pure-Sn) process for SRAM TSOP products assembled in ATM. After the change, the outer lead plating will be processed in parallel both at existing partner fab, "SII Ishizaki (Melaka) Sdn. Bhd." (hereinafter called "SII Ishizaki") and at newly added Syntronixs.
The outer lead plating process is exactly same between Syntronixs and SII Ishizaki in terms of quality and reliability. Syntronixs has already mass production results for other products outsourced from ATM and also MCU products assembled in Renesas Semiconductor KL Sdn. Bhd. For Renesas SRAM TSOP products, evaluation and reliability tests have been successfully done to prove there is no problem.

Assembly process flow is shown in the following before and after change.

Comparison

Pre Change

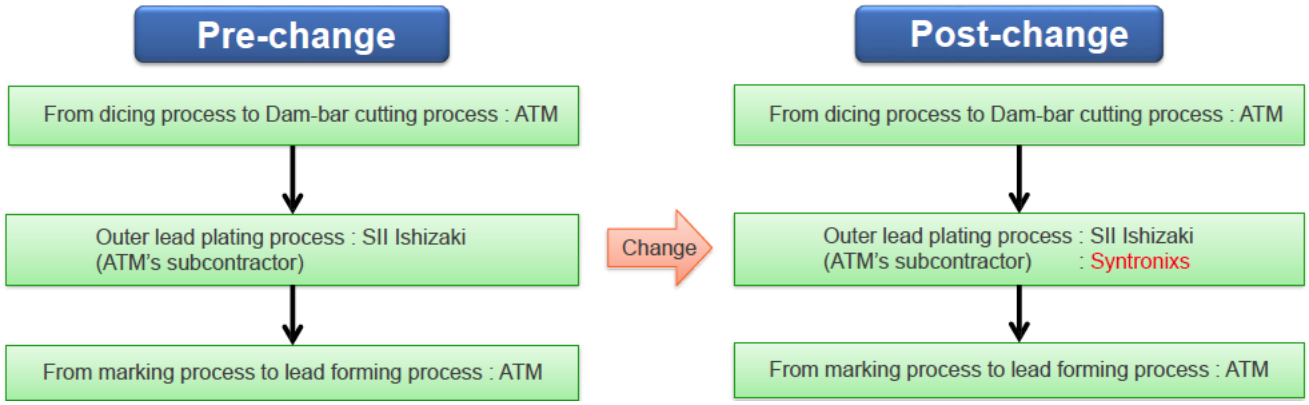
Factory	Process name
ATM	Dicing
	Die Bonding
	Wire Bonding
	Molding
	Tie bar Cutting
SII Ishizaki	Outer lead Plating
ATM	Marking (*)
	Lead Forming / Singulation

Post Change

Factory	Process name
ATM	Dicing
	Die Bonding
	Wire Bonding
	Molding
	Tie bar Cutting
SII Ishizaki, or Syntronixs	Outer lead Plating
ATM	Marking (*)
	Lead Forming / Singulation

Summary of the change

We will add "Syntronixs Asia Sdn. Bhd." (hereinafter called "Syntronixs") as a partner fab of outer lead plating (pure-Sn) process for SRAM TSOP products assembled in "Amkor Technology Malaysia Sdn. Bhd." (hereinafter called "ATM"). After the change, the outer lead plating will be processed in parallel both at existing "SII Ishizaki (Melaka) Sdn. Bhd." (hereinafter called "SII Ishizaki") and at newly added Syntronixs.



Parallel fabrication of outer lead plating

The outer lead plating will be processed in parallel both at existing SII Ishizaki and at newly added Syntronixs.

Both companies utilize online process control system using barcode which is attached on every product.

Assembly Process Flow

Pre-change

Location	Process
ATM	Dicing
	Die Bonding
	Wire Bonding
	Molding
	Dam-bar Cutting
(ATM's subcontractor) SII Ishizaki	Outer lead plating
ATM	Marking (*)
	Lead forming

Change

Post-change

Location	Process
ATM	Dicing
	Die Bonding
	Wire Bonding
	Molding
	Dam-bar Cutting
(ATM's subcontractor) SII Ishizaki **Syntronixs**	Outer lead plating
ATM	Marking (*)
	Lead forming

(*) Regarding the following products, marking is processed at the final test site, not at the assembly site.
R1RP0416DSB, R1RW0416DSB, R1LV1616HSA.

4M Change comparison

From 4M perspectives, there is no difference in quality and workmanship between two fab sites. Syntronixs is an experienced outsourcing company and shares best practices in the field of consumer, industrial and automotive products.

	Item	SII Ishizaki	Syntronixs	Result
Certification	Official certification	ISO 14001,9001 / TS 16949	ISO 14001,9001 / TS 16949	Equivalent
Man	· Operator · Technician	Work by certified person	Work by certified person	Equivalent
Machine	· Plating · Inspection	· Belt type plating equipment · Fluorescent X-ray plating thickness measuring system	· Belt type plating equipment · Fluorescent X-ray plating thickness measuring system	Equivalent
Material	Plating solution	Electrolytic pure-Sn plating solution	Electrolytic pure-Sn plating solution	Equivalent
Method	Plating method	Electrolytic plating method	Electrolytic plating method	Equivalent

About Traceability

Confirmation method for traceability and product identification

There is no difference in manufacturing and quality by additional outsourcing of the outer plating process.

For that reason, orderable part name and marking etc. will not be changed.

The fab of plating process can be traceable by referring to a lot traveler card of assembly process based on the date code marked on the package.

Results of quality verification

We set up outer lead plating process (Syntronixs) and verify the below check items. The result show that all check items are within specification.
Therefore, we qualify Syntronixs as plating process fab for our products.

Check item	Judgement
Performance of pure-Sn plating	Passed
Reliability test result	Passed
Whisker test result	Passed

Results of quality verification

Performance of pure-Sn plating for a representative product is as follows.

Check item	Criteria	Summary Result			Judgement
Visual inspection	Discoloration, stain, peeled plating, bent lead .etc	0 / 80			Passed
Plating thickness	7.0 ~ 18.0 µm	Min.	Max.	Ave.	Passed
		13.0	14.9	13.9	
Solderability test (Steam Aging 8hrs)	≥ 95 % coverage	0 / 10			Passed

Results of quality verification

Reliability test result for a representative product is as follows.

Test item	Condition	Time	Result
High Temp. Storage (*1)	Ta=150°C	1000hrs	0/96
Temp. Humidity Bias (*1)	Ta=85°C, 85%RH, Vcc=3.6V	1000hrs	0/135
HAST (*1)	Ta=130°C, 85%RH, Vcc=3.6V	96hrs	0/66
Temp. Cycle (*1)	Ta=-65°C/+150°C	300cycle	0/45
Reflow stress (*2)	Baking (125°C, 24hrs) → Soaking (30°C, 70%RH, 192hrs) → IR-Reflow (260°C, 3times)		0/33

(*1) Pre-conditioning : Same condition as "Reflow stress test".
(*2) Based on JEDEC STD-020D and JEITA EIAJ ED-4701/301B.
As for moisture sensitivity level and reflow profiles, please refer to the following Table.

MSL		Reflow profiles	
J-STD-020D	ED-4701/301B	Peak temp./time (Tp/tp)	Liquidous temp./time (TL/tL)
MSL=3	Rank E	260°C/30sec	217°C/60-150sec

Results of quality verification

Whisker test result for a representative product is as follows.

Test item	Pre-conditioning	Criteria	Judgement
30°C/60%RH/4000hrs	None	≤50µm	Passed
55°C/85%RH/4000hrs	220°C reflow	≤50µm	Passed
	260°C reflow	≤50µm	Passed
-55°C~85°C/1500cycle	220°C reflow	≤50µm	Passed
	260°C reflow	≤50µm	Passed

Product List:

Package Type	Product Type (Memory Cap., Supply Voltage)	Orderable part name
28pin-TSOP(I)	256Kb 5V	R1LP5256ESA-5SI#B1/#BJ/#S1
	256Kb 3V	R1LV5256ESA-5SI#B1/#S1
32pin-TSOP(I)	1Mb 5V	R1LP0108ESF-5SI#B1/#S1
	1Mb 3V	R1LV0108ESF-5SI#B1/#S1
		R1LV0108ESF-7SR#B1/#S1
32pin-sTSOP	1Mb 5V	R1LP0108ESA-5SI#B1/#S1
	1Mb 3V	R1LV0108ESA-5SI#B1/#BJ/#S1
	2Mb 3V	R1LV0208BSA-5SI#B1/#BK/#S1/#SK
	4Mb 3V	RMLV0408EGSA-4S2#AA1/#KA1
32pin-TSOP(II)	4Mb 5V	R1LP0408DSB-5SI#B1/#S1
	4Mb 3V	RMLV0408EGSB-4S2#AA1/#HA1
44pin-TSOP(II)	2Mb 3V	R1LV0216BSB-5SI#B1/#S1
	4Mb 3V	RMLV0414EGSB-4S2#AA1/#HA1
		RMLV0416EGSB-4S2#AA1/#HA1
	8Mb 3V	RMLV0808BGSB-4S2#AA0/#HA0
		RMLV0816BGSB-4S2#AA0/#HA0
	4Mb Fast 5V	R1RP0416DSB-0PI#D1
		R1RP0416DSB-0PR#D1
		R1RP0416DSB-2LR#D1/#S1
		R1RP0416DSB-2PI#D1
		R1RP0416DSB-2PR#D1/#S1
		R1RP0416DSB-2SR#D1
	4Mb Fast 3V	R1RW0416DSB-0PI#D1/#S1
		R1RW0416DSB-0PR#D1/#S1
		R1RW0416DSB-2LR#D1
		R1RW0416DSB-2PI#D1/#S1
		R1RW0416DSB-2PR#D1/#S1
		R1RW0416DSB-2SR#D1
		R1RW0416DSB-2UR#D1
48pin-TSOP(I)	8Mb 3V	RMLV0816BGSA-4S2#AA0/#KA0
	16Mb 3V	RMLV1616AGSA-5S2#AA0/#KA0
		R1LV1616HSA-4SI#B1/#S1
		R1LV1616HSA-5SI#B1/#BR/#S1#SR
	32Mb 3V	R1LV3216RSA-5SI#B1/#BU/#S1