Taiwan Semiconductor Co. Ltd.
11Fl., No. 205, Sec. 3, Beishin Rd.
Xindian Dist., New Taipei City 231
Taiwan, R.O.C.
Tel.:+886 2 8913 1588
Fax: +886 2 8913 1788
www.taiwansemi.com

Process Change Notification

This is to inform you that a design and/or process change/s will be implemented to the following product(s) listed below. This notification requires your concurrence within 45 days upon receipt of this notification.

The plan change/s will take effect 90 calendar days from the date of this notification.

Please work with your local Taiwan Semiconductor Sales Representative to manage your inventory of the existing product if your evaluation of this change will require more than 90 calendar days.

For additional data and samples, you can contact your local Taiwan Semiconductor Field Quality Service or Customer Quality Engineer within 45 days upon receipt of this notification

PCN No: PCN22013
Title: 600V UG Series, SOD123W & SMA Additional Wafer Source
Issue Date: 2022/8/2

If you have any questions concerning this change, please contact:

PCN Coordinator
Name : Delia Chang
E-Mail: delia.chang@mail.ts.com.tw
Phone: +886-3-928-5117 ext. 315

PCN Originator
Name : Daisy Liang
E-mail: daisy@mail.tsyew.com.cn
Phone: +86 5438691091 ext. 3103

Reliability Engineer
Name : Roben Jiao
E-mail: roben@mail.tsyew.com.cn
Phone: + 86 5438691091 ext. 3110

PCN Type: Additional Wafer Source

Effectivity:
Expected 1st device shipment date: 2022/10/31
Last Order Date: 2023/1/29
Last Delivery Date: 2024/1/29

Product Category (Description) :
600V Ultra Fast Rectifier in SOD123W & SMA package.
See detailed part numbers in the List of Affected Devices.

Description of Change:
This change notification is being issued to notify customer that in order to assure continuity of supply, Taiwan Semiconductor Company is qualifying its own wafer fabrication located in Li-je for 600V, Ultra Fast Rectifier assembled in SOD123W & SMA package.

Full electrical characterization and high reliability testing has been completed on the representative devices to ensure no change to the device functionality or electrical specifications in the datasheet.

Wafer Structure Comparison:

Item	Current	Additional	Remarks
Die Source	Silan	Lije	Add second source
Wafer Diameter	5”	6”	Larger wafer diameter
Top/Back Metal Layer	Ti-Ni-Ag	Ti-Al-Ti-Ni-Ag	Different metal layer
Die Passivation	Polyimide	SiO2/TEOS/Polyimide	Different passivation material
Die Dimension (UF1JLW-SOD123W)	42.5mil*42.5mil 230μm	42.5mil*42.5mil 280μm	Different die thickness
Die Dimension (UG2JA-SMA)	57mil*57mil 280μm	57mil*57mil 280μm	Same die dimension

Remarks: No major differences that can affect product quality and reliability. No expected impact to the product functionality (form, fit and function).

Qualification Results :

Qual Vehicle: UF1JLW (2 lots), UGS30J (1 lot)
Qualification/Reliability Result (AECQ-101)

Item	**Test Condition / Duration**	**Reference Standard**	**#lot**	**Sample Size**	**Remarks**
Pre- and Post-Stress Electrical Test	Electrical characteristic @25°C	Data sheet	3	555*3	Pass
Pre-conditioning	Bake:125°C 24hrs Soak:85°C RH:85% 168hrs IR Reflow: Tpeak=245±5°C 3cycles	JESD22A-113	3	308*3	Pass

Item	Test Condition / Duration	Reference Standard	#lot	Sample Size	Remarks
EV (External Visual)	Inspect part construction and marking, per TSC Spec.	JESD22B-101	3	555*3	Pass
PV (Parameter Verification)	Electrical characterization @-55/25/150°C	Data sheet	3	25 *3	Pass
HTRB (High Temperature Reverse Bias)	100% Rated VR (Tj=175°C) / 1008hrs	MIL-STD-750 Method 1038	3	77*3	Pass
TC (Temp. Cycling)	150°C(+15,-0)/15mins, -55°C(-10,+0)/15mins, 1016 cycles	JESD22A-104 Appendix 6	3	77*3	Pass
UHAST (Unbiased Highly Accelerated Stress Test)	Ta=130°C, 85% RH/ 96hrs	JESD22-A118	3	77*3	Pass
HAST (Highly Accelerated Stress Test)	Ta=110°C, 85% RH 80% rated VR up to 42Vmax /264H	JESD22-A110	3	77*3	Pass
IOL (Intermittent Operational Life)	On/3.5mins, Off/3.5mins, △Tj≥100°C, 8640cycles	MIL-STD-750 Method 1037 AEC-Q101 Table 2A	3	77*3	Pass
ESD (IEC)	Contact: (C=150pf R:330Ω)/ 10Pulses	IEC-61000-4-2	3	15*3	Pass
ESD HBM	HBM: (C=100pf R:1500Ω)/ 6Pulses	AEC-Q101-001	3	30*3	8KV/H3B
ESD CDM	CDM: (Field induced charge)/ 6Pulses	AEC-Q101-005	3	30*3	>1KV/C5
DPA (Destructive Physical Analysis)	TC passed chose 2pcs of the 1 lot HAST or HTRB passed chose 2pcs of the 1 lot	AEC-Q101-004	4	4*4	Pass
RSH (Resist.to Solder Heat)	Ta=260±5°C/ 10secs	JESD22-A111 (SMD)	3	30*3	Pass
TR (Thermal Resistance)	Per. TSC Spec.	JESD24-3, 24-4, 24-6 as appropriate	1	10*1	Pass

Conclusion: The product passed the full reliability required in AECQ101 standard.

Identification and Traceability:

Item	Identification
Traceability	Product date code

Effect of Change:

There is no impact in product Form, Fit and Function. This change will guarantee Taiwan Semiconductor commitment on customer service and satisfaction through continuous improvement.

List of Affected Devices:

Family	Package	Ordering Code
Ultra Fast Surface Mount Rectifier	SOD-123W	UF1JLW
Ultra Fast Surface Mount Rectifier	SOD-123W	UF1JLWH
High Efficient Surface Mount Rectifier	DO-214AC (SMA)	UG2JA
High Efficient Surface Mount Rectifier	DO-214AC (SMA)	UG2JAH