

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.

PCN No: PCN21012

Title: Trench SKY Additional Wafer Source Qualification

Issue Date: 2021/9/7

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

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PCN Type: Additional Wafer Source

Effectivity:

Expected 1st device shipment date: 2021/12/6

Product Category (Description):

Trench SKY products assembled in SOD-123HE, SOD-123W, SOD-128, TO-220AB, TO-277A (SMPC) and SMPC4.0 packages.

Description of Change:

Taiwan Semiconductor Company with head office located in Taipei qualified additional wafer sources for T-SKY products. This change will improve the delivery support and service to all TSC customers.

Reliability tests and electrical characterization has been completed on representative part numbers to ensure no change to device functionality or electrical specifications in the datasheet.

TSC Site	Current	Additional
YEW (Yangxin)	MOSEL Hsinchu, Taiwan R.O.C.	HZ Lion Hangzhou, China
A01 (ILAN)	MOSEL Hsinchu, Taiwan R.O.C.	GWIT Shenzhen, China

Qualification/Reliability Result:

A. Qualification Grade: Automotive (AECQ-101)

Qual Vehicle: TSS83L45, TSSE3U60, TSSW3U60, TST20U100C, TST20U45C, TST30L45C, TST30U45C

Package Type: SOD-128, SOD-123HE, SOD-123W, TO-220AB

Stress Test Abbreviation	Test Methods	Test Conditions	Final Readpoint	Requirements		Results	Remarks
				SS	*# Lots	Rej/SS	
TEST	Product Datasheet	Test at room temp	-	All	7	0 Fails	Passed
EV	JESD22-B101	per reference standard	-	All	7	0 Fails	Passed
PC	J-STD-020	MSL-1 (3x reflow at 260°C)	-	All	3	0 Fails	Passed
TC + PC	JESD22-A104	-55°C to +150°C; 15 mins dwell	1000 cycs	77	7	0/539	Passed
UHAST + PC	JESD22-A118	130°C/85% RH; unbiased	96 hrs	77	7	0/539	Passed
HAST + PC	JESD22-A110	110°C/85% RH; V=80% VR; 42V max	264 hrs	77	7	0/539	Passed
RSH	JESD22-A111	SMD (Pb free): 260°C; 10 sec	10 secs	30	3	0/90	Passed
RSH	JESD22-B106	PTH (Pb free): 270°C; 7 sec	10 secs	30	4	0/120	Passed
HTRB	MIL-STD-750-1	Tj=Tjmax; V=100% rated V	1000 hrs	77	7	0/539	Passed

IOL + PC	MIL-STD-750	Ta=25°C; ΔTj=100°C; 2.0 min on/off	15000 cycs	77	3	0/231	Passed
IOL + PC	MIL-STD-750	Ta=25°C; ΔTj=100°C; 3.5 min on/off	8460 cycs	77	4	0/308	Passed
DPA	AEC-Q101-004	Post-TC	results	2	7	0/14	Passed
DPA	AEC-Q101-004	Post-HAST	results	2	7	0/14	Passed
TR	JESD24	per product datasheet	results	10	7	0/70	Passed
PV	TSC Datasheet	per product datasheet	results	25	7	0/175	Passed
ESD (IEC)	IEC-61000-4-2	per product spec	results	15	7	0/105	Passed
ESD-HBM	AEC-Q101-001	per product spec	results	30	7	0/210	Class H3B
ESD-CDM	AEC-Q101-005	per product spec	results	30	7	0/210	Class C5

B. Qualification Grade: Non-automotive (JESD22)

Qual Vehicle: TSP12U120S, TSF20H100C, TST40L100CW

Package Type: TO-227A (SMPC), ITO-220AB, TO-220AB

Stress Test Abbreviation	Test Methods	Test Conditions	Final Readpoint	Requirements		Results	Remarks
				SS	*# Lots	Rej/SS	
TEST	Product Datasheet	Test at room temp	-	All	3	0 Fails	Passed
PC	J-STD-020	MSL-1 (3x reflow at 260°C)	-	308	3	0/924	Passed
TC + PC	JESD22-A104	-55°C to +150°C; 15 mins dwell	1000 cycs	77	3	0/231	Passed
UHASt + PC	JESD22-A118	130°C/85% RH; unbiased	96 hrs	77	3	0/231	Passed
HAST + PC	JESD22-A110	110°C/85% RH; V=80% VR; 42V max	264 hrs	77	1	0/77	Passed
H3TRB + PC	JESD22-A101	85°C/85% RH; Vin=80% rated V (100V max)	1000 hrs	77	2	0/154	Passed
HTRB	MIL-STD-750-1	Tj=Tjmax; V=80% rated V	1000 hrs	77	3	0/231	Passed
IOL + PC	MIL-STD-750	Ta=25°C; ΔTj=100°C; 2.0 min on/off	7500 cycs	77	1	0/77	Passed
IOL + PC	MIL-STD-750	Ta=25°C; ΔTj=100°C; 3.5 min on/off	4286 cycs	77	2	0/154	Passed
PV	TSC Datasheet	per product datasheet	results	25	3	0/75	Passed
ESD-HBM	AEC-Q101-001	per product spec	results	30	3	0/90	Class H3B
ESD-CDM	AEC-Q101-005	per product spec	results	30	3	0/90	Class C5

Note: *1 qualification lot per QV.

Effect of Change:

There is no impact in product Form, Fit and Function.

No change in datasheet parameters and product performance.

List of Affected Devices:

Package	Product ID / Ordering Code
SOD-128	TSS83L45
SOD-123HE	TSSE3U45
SOD-123HE	TSSE3U45H
SOD-123HE	TSSE3U60
SOD-123HE	TSSE3U60H
SOD-123W	TSSW3U45
SOD-123W	TSSW3U45H
SOD-123W	TSSW3U60
SOD-123W	TSSW3U60H
TO-220AB	TST20U45C
TO-220AB	TST20U100C
TO-220AB	TST30L45C
TO-220AB	TST30U45C
TO-220AB	TST30U60C
TO-277A (SMPC)	TSP10U100S
TO-277A (SMPC)	TSP12U120S
TO-277A (SMPC)	TSP15U100S
SMPC4.0	TSPB15U100S
SMPC4.0	TSPB5H100S