

Process Change Notification

This is to inform you that a design and/or process change will be implemented to the affected product(s) and this notification is for your information and concurrence. This change is planned to take effect in 90 calendar days from the date of this notification.

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

Please contact your local Taiwan Semiconductor Field Quality Service or Customer Quality Engineer within 45 days of receipt of this notification if you require any additional data or samples.

PCN No: PCN22006

Title: SSD Products Wafer Source, Wafer Diameter, EMC & Bonding Wire Change

Issue Date: 2022/5/4

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

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PCN Type: Wafer source, wafer diameter, EMC and bonding wire change

Effectivity:

Expected 1st device shipment date: 2022/8/2

Last order date: 2022/10/31

Last delivery date: 2023/10/31

Product Category (Description):

Identified part numbers assembled in SOT-23, SOT323, SOD323, TO-92 packages. The full lists of products affected are listed in the "List of Affected Devices" section.

Package	Family
SOT-323	SWCH, SKY, Transistor
SOT-23	SWCH, SKY, Transistor
SOD-323	SKY
TO-92	Transistor

Description of Change:

This PCN is to inform customers regarding the initiated changes by TSC supplier for devices manufactured in SOT-23, SOT-323, SOD323, TO-92 to ensure the continuity of supply and guarantee commitment on customer service and satisfaction.

Details of changes on the each package are enclosed in this notification letter. Include the electrical test data as coincide for comparison report

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

BOM Comparison

Item	From	To	Remarks
Wafer Source	Fab-AS	Fab-Gen / Fab-YW	Change on wafer supplier
Wafer Diameter	5"	6"	Different
Bonding wire	Au	Cu	Different
Molding Compound	SG-8300CS	KHG600	Different

Qualification and Reliability Result:

NO.	Test	Test Conditions/ Standard	No. of Lots	Sample Size	Result
1	Pre-conditioning	JESD22-A113, J-STD-020 Temp. Cycle: -40 °C ~ +60 °C, 5 cycles Bake: 125 °C for 24 hrs. Soak: > MSL1: 85 °C RH: 85 %, 168 Hrs IR Reflow Temperature: 260 (+5/-0)°C @ 3x cycles	3 lots	308	PASS
2	HTRB	MIL-STD-750-1 M1038 Tj=Tjmax, at least 80% rated Vr, 1000Hours	3 lots	77	PASS
3	Temperature Cycling	JESD22-A104 '-55(-10/+0)°C/15min to 150(+15/- 0)°C/15min, 1000 cycles	3 lots	77	PASS
4	TC Delamination Test (TCDT)	JESD22-A104, AEC-Q101 Appendix 6, J- STD-035 100 % C-SAM after TC, If delam: Decap, inspect + wire pull on all wires from top 5 delam units. If no delam: no action needed	3 lots	77	PASS
5	HAST	JESD22-A110, Ta=130°C, 85%RH 80% rated VR up to 5.6Vmax, 96Hours	3 lots	77	PASS
6	Intermittent Operational Life	Ta=25°C, ΔTj >= 100 °C, SMD 2 mins ON + 2 mins OFF , TO92 3.5 mins ON + 3.5 mins OFF 6000 cycle	3 lots	77	PASS
7	UHAST	JESD22-A118, Ta=130°C, 85%RH, 96hrs	3 lots	77	PASS
8	Destructive Physical Analysis (DPA)	JESD22-A104, JESD22-B116 TC passed choose 2pcs of the 1 lot HAST or H3TRB passed choose 2 pcs of the 1 lot: Visual inspection, SAM, X-ray, decapsulation than Visual inspection	1 lot	4	PASS
9	Resistance to Solder Heat	JESD22-A111 SMD, B-106 PTH Pb free: 260(+5/-0)°C , 10 sec (+2/-0)	1 lot	30	PASS
10	Wire Bond Pull	MIL-STD-750 Method 2037 Pre and Post process change comparison to evaluate process change robustness.	1 lot	10 bonds ≥ 5 parts	PASS
11	Bond Shear	AEC-Q101-003 Cpk: JEDEC: ≥ 1.33	1 lot	10 bonds ≥ 5 parts	PASS
12	Die shear	MIL-STD-750D Method 2017.2, Cpk: JEDEC: ≥ 1.33	1 lot	5	PASS
13	Solderability	J-STD-002 245 °C ± 5 °C (Pb-free)	1 lot	10	PASS
14	Thermal Resistance	JESD24, per product datasheet	1 lot	5	PASS
15	PV	Product Datasheet, test over the part temp range, Cpk ≥ 1.33	3 lots	30	PASS
16	ESD	HBM JS-001 10pcs for each ESD level, (C=100pf R=1500Ω)	3 lots	30	Cap 4KV~5KV
		CDM JS-002 10pcs for each ESD level allowed.	3 lots	30	Cap 1.3KV~2KV

Note: Representative qualification report based on part number series

Conclusion: All representative part numbers for the change passed the qualification and reliability per JESD-22 and JESD-47 requirement

Effect of Change:

There is no impact on the form, fit, function, reliability or process ability. This change will guarantee Taiwan Semiconductor commitment on customer service and satisfaction through continuous improvement.

List of Affected Devices:

Package	Part Number	Package	Part Number	Package	Part Number
SOT-23	RB495D	SOT-23	BAS70-04	SOT-23	MMBT3906
SOT-23	RB495D-D0	SOT-23	BAS70-04-B0	SOT-23	MMBT3904
SOT-23	RB495D-B0	SOT-23	BAS70-04-D0	SOT-23	MMBT3906L
SOT-23	BAV99	SOT-23	BAS70-05	SOT-23	MMBT3904L
SOT-23	BAV99L	SOT-23	BAS70-05-B0	SOT-323	BAT54W
SOT-23	MMBT2222A	SOT-23	BAS70-05-D0	SOT-323	BAT54AW
SOT-23	BAT54	SOT-23	BAS70-06	SOT-323	BAT54CW
SOT-23	BAT54A	SOT-23	BAS70-06-B0	SOT-323	BAT54SW
SOT-23	BAT54C	SOT-23	BAS70-06-D0	SOT-323	RB706F-40
SOT-23	BAT54S	SOT-23	BC817-16	SOT-323	BC817-16W
SOT-23	BAS19	SOT-23	BC817-25	SOT-323	BC817-25W
SOT-23	BAS20	SOT-23	BC817-40	SOT-323	BC817-40W
SOT-23	BAS19-B0	SOT-23	BC846A	SOT-323	BC846AW
SOT-23	BAS20-B0	SOT-23	BC846B	SOT-323	BC846BW
SOT-23	BAS21	SOT-23	BC847A	SOT-323	BC846CW
SOT-23	BAS21-B0	SOT-23	BC847B	SOT-323	BC847AW
SOT-23	BAS21-D0	SOT-23	BC847C	SOT-323	BC847BW
SOT-23	BAS21A	SOT-23	BC848A	SOT-323	BC847CW
SOT-23	BAS21A-B0	SOT-23	BC848B	SOT-323	BC848AW
SOT-23	BAS21A-D0	SOT-23	BC848C	SOT-323	BC848BW
SOT-23	BAS21C	SOT-23	BC807-16	SOT-323	BC848CW
SOT-23	BAS21C-B0	SOT-23	BC807-25	SOT-323	BC849AW
SOT-23	BAS21C-D0	SOT-23	BC807-40	SOT-323	BC849BW
SOT-23	BAS21S	SOT-23	BC856A	SOT-323	BC849CW
SOT-23	BAS21S-B0	SOT-23	BC856B	SOT-323	BC850AW
SOT-23	BAS21S-D0	SOT-23	BC857A	SOT-323	BC850BW
SOT-23	BAS16	SOT-23	BC857B	SOT-323	BC850CW
SOT-23	BAW56	SOT-23	BC857C	SOT-323	BC807-16W
SOT-23	BAW56-B0	SOT-23	BC857A	SOT-323	BC807-25W
SOT-23	BAW56-D0	SOT-23	BC857B	SOT-323	BC807-40W
SOT-23	BAV70	SOT-23	BC857C	SOT-323	BAV99W
SOT-23	BAV70-B0	SOT-23	BC858A	SOD-323	RB751V-40
SOT-23	BAV70-D0	SOT-23	BC858B	SOT-23	MMBD4148CC
SOT-23	MMBD4148	SOT-23	BC858C	SOT-23	MMBD4148SE
SOT-23	MMBD4148CA	SOT-23	MMBT2907A	SOT-23	MMBD3004

Package	Part Number	Package	Part Number	Package	Part Number
SOT-23	MMBD3004CA	SOT-23	BZX84C2V4	TO-92	KTC3198-O
SOT-23	MMBD3004CC	SOT-23	BZX84C2V7	TO-92	KTC3198-Y
SOT-23	MMBD3004SE	SOT-23	BZX84C3V0	TO-92	KTC3198-GR
SOT-23	BAS70	SOT-23	BZX84C3V3	TO-92	KTC3198-BL
SOT-23	BAS70-B0	SOT-23	BZX84C3V6	TO-92	KTC3198-O-B0
SOT-23	BAS70-D0	SOT-23	BZX84C3V9	TO-92	KTC3198-Y-B0
SOT-23	AZ23C2V7	SOT-23	BZX84C4V3	TO-92	KTC3198-GR-B0
SOT-23	AZ23C3V0	SOT-23	BZX84C4V7	TO-92	KTC3198-BL-B0
SOT-23	AZ23C3V3	SOT-23	BZX84C5V1	TO-92	KTC3198-O-M0
SOT-23	AZ23C3V6	SOT-23	BZX84C5V6	TO-92	KTC3198-Y-M0
SOT-23	AZ23C3V9	SOT-23	BZX84C6V2	TO-92	KTC3198-GR-M0
SOT-23	AZ23C4V3	SOT-23	BZX84C6V8	TO-92	KTC3198-BL-M0
SOT-23	AZ23C4V7	SOT-23	BZX84C7V5	TO-92	BC546A
SOT-23	AZ23C5V1	SOT-23	BZX84C8V2	TO-92	BC546B
SOT-23	AZ23C5V6	SOT-23	BZX84C9V1	TO-92	BC546C
SOT-23	AZ23C6V2	SOT-23	BZX84C10	TO-92	BC547A
SOT-23	AZ23C6V8	SOT-23	BZX84C11	TO-92	BC547B
SOT-23	AZ23C7V5	SOT-23	BZX84C12	TO-92	BC547C
SOT-23	AZ23C8V2	SOT-23	BZX84C13	TO-92	BC548A
SOT-23	AZ23C9V1	SOT-23	BZX84C15	TO-92	BC548B
SOT-23	AZ23C10	SOT-23	BZX84C16	TO-92	BC548C
SOT-23	AZ23C11	SOT-23	BZX84C18	TO-92	BC549A
SOT-23	AZ23C12	SOT-23	BZX84C20	TO-92	BC549B
SOT-23	AZ23C13	SOT-23	BZX84C22	TO-92	BC549C
SOT-23	AZ23C15	SOT-23	BZX84C24	TO-92	BC550A
SOT-23	AZ23C16	SOT-23	BZX84C27	TO-92	BC550B
SOT-23	AZ23C18	SOT-23	BZX84C30	TO-92	BC550C
SOT-23	AZ23C20	SOT-23	BZX84C33		
SOT-23	AZ23C22	SOT-23	BZX84C36		
SOT-23	AZ23C24	SOT-23	BZX84C39		
SOT-23	AZ23C27				
SOT-23	AZ23C30				
SOT-23	AZ23C33				
SOT-23	AZ23C36				
SOT-23	AZ23C39				
SOT-23	AZ23C43				
SOT-23	AZ23C47				
SOT-23	AZ23C51				