

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: PCN22018

Title: 0603 Package ESD Protection Diode New Wafer Source

Issue Date: 2022/11/10

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

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PCN Type:

Wafer Supplier Change

Effectivity:

Expected 1st device shipment date: 2023/2/8

Last Order Date: 2023/5/9

Last Delivery Date: 2024/5/8

Product Category (Description):

Affected part (TESDU5V0) assembled in 0603 package supplied by Taiwan Semiconductor Co. Ltd.

Description of Change:

Taiwan Semiconductor Company supplier for TESDU5V0 device is qualifying a new wafer supplier due to current wafer supplier will end of life. This will ensure robust wafer supply and production delivery requirement with similar or comparable wafer performance. There will be no other changes on the product BOM.

Wafer Change:

Item	From	To	Remarks
Wafer Source	Supplier K	Supplier I	Different
Location	Russia	Taiwan	Different
Wafer diameter	4"	6"	Different
Die size	366*365um	330*330um	Different
Top metal/back metal	Al/Ag	AL/TiNiAg	Different

Qualification and Reliability Result:

1. Electrical test comparison

PN: TESDU5V0	ITEM	VR	IR	VC1	VC2	CJ
	TEST Condition	IR=1 mA	VR=5V	IPP=1A	IPP=5A	VR = 0V f = 1.0 MHz
	SPEC.	> 5.1V	< 2uA	< 9.8V	< 15V	15pF(TYP)
Before	MIN	6.099	0.002	9.200	12.300	12.690
	MAX	7.007	0.022	9.300	12.500	13.240
	AVG.	6.434	0.010	9.250	12.440	12.899
	CPK	2.340	85.610	3.667	12.864	---
After	MIN	6.241	0.007	8.200	11.200	11.020
	MAX	6.989	0.031	8.500	11.500	11.190
	AVG.	6.470	0.017	8.380	11.350	11.114
	CPK	2.420	90.950	4.831	10.104	---

Conclusion: New wafer supplier has similar electrical performance compared with existing supplier.

2. Device/Package Qualification

NO.	Test	Test Conditions	No. of Lots	Sample Size	Result
1	Pre-conditioning	J-STD-020 MSL-1 (3x reflow at 260°C)	3	3*231	Passed
2	Temperature Cycling	JESD22-A104 -55(-10/+0)°C/15min to 150(+15/-0) °C/15min, 1000cycles	3	3*77	Passed
3	Unbiased Highly Accelerated Stress Test	JESD22-A118 Ta=130°C, 85%RH, 96hrs	3	3*77	Passed

4	Highly Accelerated Stress Test	JESD22-A110 130°C/85% RH; V=80% VR; 42V max, 96hrs	3	3*77	Passed
5	Resistance to solder heat	JESD22-A111 SMD (Pb free): 260°C; 10 sec	3	3*10	Passed
6	High Temperature Storage Life	JESD22-A103 150°C 1000hrs	3	3*77	Passed
7	High Temperature Reverse Bias	MIL-STD-750-1 M1038 Tj=Tjmax, at least 80% rated Vr, 1000Hrs	3	3*77	Passed
8	Destructive Physical Analysis + SEM	AEC-Q101-004 Post-TC	3	3*2	Passed
9	Wire Bond Pull	MIL-STD-750 per assembly spec CPK≥1.33	3	3*30	Passed
10	Die Shear	MIL-STD-750 Per. TSC SPEC	3	3*5	Passed
11	Solderability	J-STD-002 245 °C ± 5 °C (Pb-free), 5sec	1	1*10	Passed
12	Parametric Verification	CPK > 1.33	2	2*10	Passed
13	ESD-HBM	JS-001 per product spec	1	1*30	CAP: 8KV
	ESD(Air)	IEC 61000-4-2 per product spec	1	1*15	CAP: 16KV
	ESD(Contact)	IEC 61000-4-2 per product spec	1	1*15	CAP: 8KV

Conclusion: New wafer supplier can satisfy the product reliability requirement.

Effect of Change:

There is no impact in product electrical specification, functionality, quality and reliability. This change will guarantee Taiwan Semiconductor commitment on customer service and satisfaction through continuous improvement.

List of Affected Devices:

Family	Package	P/N
ESD Protection Diode	0603	TESDU5V0 RGG