Product Change Notification / JAON-12ULDX371

Date:

03-May-2023

Product Category:

Power Discrete Components

PCN Type:

Manufacturing Change

Notification Subject:

CCB 5286 Final Notice: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as an additional fabrication site for selected 1700V SiC Schottky Barrier Diode (SBD) products of MSC010SDA170xx, MSC030SDA170xx, MSC050SDA170xx, MSC2X3xSDA170J, and MSC2X5xSDA170J device families available in die sales products, 2L TO-247, and 4L SOT-227 packages.

Affected CPNs:

JAON-12ULDX371_Affected_CPN_05032023.pdf
JAON-12ULDX371_Affected_CPN_05032023.csv

Notification Text:

PCN Status: Final Notification

PCN Type: Manufacturing Change

Microchip Parts Affected: Please open one of the files found in the Affected CPNs section.
Note: For your convenience Microchip includes identical files in two formats (.pdf and .xls)

Description of Change: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as an additional fabrication site for selected 1700V SiC Schottky Barrier Diode (SBD) products of MSC010SDA170xx, MSC030SDA170xx, MSC050SDA170xx, MSC2X3xSDA170J, and MSC2X5xSDA170J device families available in die sales products, 2L TO-247, and 4L SOT-227 packages.

Pre and Post Change Summary:

	Pre Change	Post Change	
Fabrication Site	X-Fab Silicon Foundries (XFTX)	X-Fab Silicon Foundries (XFTX)	Microchip Technology Colorado – Fab 5 (MCSO)
Certification	ISO 9001	ISO 9001	ISO9001/ ISO41001/ IATF16949

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve productivity and on-time delivery performance by qualifying MCSO as an additional fabrication site.

Change Implementation Status: In Progress

Estimated First Ship Date: May 30, 2023 (date code: 2322)

Note: Please be advised that after the estimated first ship date customers may receive pre and post change parts.

Time Table Summary:

	September 2022					>	May 2023				
Workweek	36	37	38	39	40		18	19	20	21	22
Initial PCN Issue Date				x							
Qual Report Availability							x				
Final PCN Issue Date							x				
Estimated Implementation Date											x

Method to Identify Change: Traceability code

Qualification Report: Please open the attachments included with this PCN labeled as PCN_#_Qual_Report.

Revision History: September 20, 2022: Issued initial notification.

May 3, 2023: Issued final notification. Attached the Qualification Report. Provided estimated first ship date to be on May 30, 2023.

The change described in this PCN does not alter Microchip's current regulatory compliance regarding the material content of the applicable products.

Attachments:

PCN_JAON-12ULDX371_Qual Report.pdf

Please contact your local Microchip sales office with questions or concerns regarding this notification.

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Affected Catalog Part Numbers (CPN)

MSC010SDA170B
MSC010SDA170D/S
MSC030SDA170B
MSC030SDA170D/S
MSC050SDA170B
MSC050SDA170D/S
MSC2X30SDA170J
MSC2X31SDA170J
MSC2X50SDA170J
MSC2X51SDA170J

Date: Wednesday, May 03, 2023

QUALIFICATION REPORT SUMMARY

PCN #: JAON-12ULDX371

Date:

January 16, 2023

Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as an additional fabrication site for selected 1700V SiC Schottky Barrier Diode (SBD) products of MSC010SDA170xx, MSC030SDA170xx, MSC050SDA170xx, MSC2X3xSDA170J, and MSC2X5xSDA170J device families available in die sales products, 2L TO-247, and 4L SOT-227 packages.

Purpose: Qualification of Microchip Technology Colorado – Fab 5 (MCSO) as an additional fabrication site for selected 1700V SiC Schottky Barrier Diode (SBD) products of MSC010SDA170xx, MSC030SDA170xx, MSC050SDA170xx, MSC2X3xSDA170J, and MSC2X5xSDA170J device families available in die sales products, 2L TO-247, and 4L SOT-227 packages.

I. Summary:

In keeping with guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements" based on Commercial Plan, 3 lots of MSCxxxSDAxxx will be used for qualification testing of the S2B1xxx mask. This memo summarizes the activities and results completed for S2B1xxx.

II. Conclusion:

Based on the current results, the S2B1xxx mask for 700V, 1200V, and 1700V has met the reliability guidelines implemented in the commercial qualification plan.

III. Device Description:

Device	Next Gen 700 V, 1200V, and 1700 V SiC SBD in TO-220, TO-247, SOT-227
MSL	MSL 3546 for 700V, MSL 3661 for 1200V, and MSL 3659 for 1700V
Product	MSCxxSBAxxx
Document Revision	A
CCB No.	5286

IV. Qualification Material:

Test Lot	Lot 1	Lot 2	Lot 3
WAFER LOT	SIC205001	SC1151	SC0312
ASSEMBLY LOT	MP2126CC02	MP2207CC02	MP2124CC08
PACKAGE	TO-247	SOT-227	TO-247
QUAL TESTS	HTRB, TC, HAST, UHAST, IOL	HTRB, TC, HAST, UHAST, IOL	HTRB, TC, HAST, UHAST, IOL

Test Lot	Lot 6	Lot 7	Lot 8	Lot 9
WAFER LOT	SC1251	SIC200601	SIC4002	SC0331
ASSEMBLY LOT	MP2201CC05	MP2124CC02	MP2124CC06	MP2124CC04
PACKAGE	TO-247	TO-247	TO-268	TO-220
QUAL TESTS	HTRB, TC, HAST, UHAST, IOL	HTRB, TC, HAST, UHAST, IOL	HTRB, HAST, UHAST, IOL	HTRB, TC, HAST, UHAST, IOL

V. Qualification Data:

Temperature Cycling (TC)

Test Method	JESD22-A-104 Appendix Six
Test Condition	Temp Range: -55°C to 175°C, Cycle Readpoint: 400 cycles
Sample Size (30)	(Fail/Pass)
Lot 1	0 / 26
Lot 2	0 / 26
Lot 3	0 / 26
Lot 4	0 / 26
Lot 5	0 / 26
Lot 7	0 / 26

Pre & Post Testing was done @ +25°C

Intermittent Operating Life (IOL)

Test Method	MIL-STD-750 Method 1037
Test Condition	ΔTj: 100°C, 6000 Cycles
Sample Size (30)	(Fail/Pass)
Lot 1	0 / 26
Lot 2	0 / 26
Lot 3	0 / 26
Lot 4	0 / 26
Lot 5	0 / 26
Lot 6	0 / 26
Lot 7	0 / 26

Pre & Post Testing was done @ +25°C

High Temperature Reverse Bias (HTRB)

Test Method	MIL-STD-750-1 M1038 Method A
Test Condition	80% Vds, 175°C, 1000 Hours
Sample Size (25)	(Fail/Pass)
Lot 1	0 / 26
Lot 2	0 / 26
Lot 3	0 / 26
Lot 4	0 / 26
Lot 5	0 / 26
Lot 6	0 / 26
Lot 7	0 / 26

Pre & Post Testing was done @ +25°C

Highly Accelerated Stress Test (HAST)

Test Method	JESD22-A-110
Test Condition	Time: 96 Hours, Vds:42V, Ta:130°C, RH:85 %
Sample Size (30)	(Fail/Pass)
Lot 1, 2, 3, 4, 5, 6, and 7	0 / 182

Pre & Post Testing was done @ +25°

Unbiased Highly Accelerated Stress Test (UHAST)

Test Method	JESD22-A-102
Test Condition	Time: 96 Hours, Ta:130°C, RH:85%
Sample Size (30)	(Fail/Pass)
Lot 1, 2, 3, 4, 5, 6, and 7	0 / 182

Pre & Post Testing was done @ +25°

Package Qualification Data

1.0 Build Details

Package	TO268
Device	MSC050SDA120D/S

2.0 Yield and Cycle Time Summary

Cycle Time	Result
10 days	Passed

3.0 Quality Data and Results

Cycle Time	Description	Interface	Requirement	Result
Die Attach Wirebond	Solder Void	LF-DIE	5.00%	Passed
	Wire Pull Test (15 mils)	Diode - Leadframe	350 g	Passed
	Bond Shear Test (15 mils)	Diode	700 g	Passed
		Leadframe	700 g	Passed
	Crater Test	N/A	No evidence of cratering	Passed
	Loop Height	N/A	No wire should touch the loop height limit of the jig	Passed

Conclusion and Recommendation

No major issue encountered.

Note that no final test reject sent for FA since final test yield is 99%.

It is recommended that the next build of this device should be treated as PRODUCTION BUILD.

This also verifies that all the materials used in this build are considered qualified.