Product Change Notification: DSNO-15WHBQ656

Date:

20-Dec-2024

Product Category:

Power Discrete Components

Notification Subject:

CCB 6016.001 Final Notice: Qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J and CC3129 catalog part numbers (CPN) available in 4L SOT-227 package.

Affected CPNs:

DSNO-15WHBQ656_Affected_CPN_12202024.pdf
DSNO-15WHBQ656_Affected_CPN_12202024.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 MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J and CC3129 catalog part numbers (CPN) available in 4L SOT-227 package.

Pre and Post Change Summary:

	Pre Change	Post Change	
Fabrication Site	EPISIL Technologies Inc. (ET6B)	EPISIL Technologies Inc. (ET6B)	Microchip Technology Colorado (MCSO)
Wafer Diameter	6 inches	6 inches	6 inches

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve productivity by qualifying MCSO as an additional fabrication site.

Change Implementation Status: In Progress

Estimated First Ship Date: January 02, 2025 (date code: 2501)

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

Time Table Summary:

	December 2024				January 2025				
Workweek	49	50	51	52	01	02	03	04	05
Initial PCN Issue Date									
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: December 18, 2024: Issued final notification.
December 20, 2024: Re-issued final notification. Revised the notification subject and removed CC3132, CC3133, CC3134 and CC3135 catalog part numbers (CPN) in the affected parts list.

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

Attachments:

PCN_DSNO-15WHBQ656_Qual Report.pdf

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

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DSNO-15WHBQ656 - CCB 6016.001 Final Notice: Qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J and CC3129 catalog part numbers (CPN) available in 4L SOT-227 package.

APT2X100DQ100J
APT2X100DQ120J
APT2X100DQ60J
APT2X101DQ100J
APT2X101DQ120J
APT2X101DQ60J
APT2X30DQ120J
APT2X30DQ60J
APT2X31DQ120J
APT2X31DQ60J
APT2X60DQ100J
APT2X60DQ120J
APT2X60DQ60J
APT2X61DQ100J
APT2X61DQ120J
APT2X61DQ60J
CC3129

QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: DSNO-15WHBQ656

Date:
August 19, 2024

Qualification of MCSO6 as an additional fabrication site for selected APT1xx, APT2xx, APT3xx, APT4xx, APT5xx, APT6xx and APT8xx device families available in various packages. The qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J, CC3129, CC3132, CC3133, CC3134 and CC3135 catalog part numbers available in 4L SOT-227 package will be qualified by similarity (QBS).

Purpose: **Qualification of MCSO6 as an additional fabrication site for selected APT1xx, APT2xx, APT3xx, APT4xx, APT5xx, APT6xx and APT8xx device families available in various packages. The qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J, CC3129, CC3132, CC3133, CC3134 and CC3135 catalog part numbers available in 4L SOT-227 package will be qualified by similarity (QBS).**

I. Summary:

In keeping with guidelines established in Microchip specification QCI-39000, “Worldwide Quality Conformance Requirements”, multiple wafer lots of Ultrafast soft recover rectifier diodes (DQ FRED) were run at Microchip’s Fab 5 to qualify MSLs #3689 / #3671. These processes are 1000V and 1200V rated. This report also includes summary test results from an early development where 600V versions of the DQ FRED diode were previously released in Fab 5.

The product options used for this qualification represented 2 lots from the largest die of each voltage and 2 smaller die from each voltage. The larger die represents higher current capability. The 1000V option differs only by a dopant level difference and was validated by WAT analysis and parametric testing.,

II. Conclusion:

No unresolved failures were noted on any of the DQ FRED diodes evaluated. Only limited fails attributed to thermal runaway and mechanical damage were observed. None of the fails were related to die fabrication and Fastech has provided corrective actions related to the observed fails as per guidelines established in Microchip specification QCI-39000, “Worldwide Quality Conformance Requirements.

Based on these results, the APTxxDQ1y0 DQ FRED Diodes in Fab 5 has met the reliability guidelines defined in the qualification plan for production release.

III. Device Description:

Devices	600, 100V and 1200V DQ FRED rectifier diodes
MSL	36xx (600V) / 3689 (1000V) / 3671 (1200V)
Product	600V / 1000V / 1200V DQ FRED Diodes
Document Revision	A
CCB No.	6016 and 6016.001

IV. Qualification Material:

Test Lot	Lot 1	Lot 2	Lot 3	Lot 4
WAFER LOT	OX2194	0W0409	1X1288	1X2818
ASSEMBLY WO #	Need to Fill In	Need to Fill In	Need to Fill In	Need to Fill In
PACKAGE	TO-247 – 2L	TO-247 – 2L	TO-247 – 2L	TO-247 – 2L
QUAL TESTS	HTRB, IOL, HAST, TC, UHAST	HTRB, IOL, HAST, TC, UHAST	HTRB, IOL, HAST, TC, UHAST	HTRB, IOL, HAST, TC, UHAST
WO # / HTRB	PDWO80003527	PDWO80001062	PDWO80007598	PDWO80007595
WO # / TC	PDWO80003528	PDWO80001064	PDWO80040777	PDWO80007617
WO # / IOL	PDWO80003529	PDWO80001065	PDWO80039039	PDWO80007616
WO # / HAST	PDWO80003526	PDWO80001067	PDWO80039438	PDWO80007597
WO # / UHAST	PDWO80003525	PDWO80001066	PDWO80040775	PDWO80007596

Qualification Material (cont.):

Test Lot	Lot 5	Lot 6	Lot 7	Lot 8
WAFER LOT	A1X1790.1A	A1X1630.1A	2B1942.12	A2B1942.1E
ASSEMBLY LOT	Need to Fill In	Need to Fill In	Need to Fill In	Need to Fill In
PACKAGE	TO-247 – 2L	TO-247 – 2L	TO-247 – 2L	TO-247 – 2L
QUAL TESTS	HTRB, IOL, HAST*	HTRB, IOL, HAST*, TC*, UHAST*, UIS	HTRB, IOL, HAST*, TC*, UHAST*	HTRB, IOL, HAST*, TC*, UHAST*
WO # / HTRB	PDWO80009313	PDWO80009317	PDWO80014235	PDWO80022157
WO # / TC	PDWO80009334	PDWO80009336	PDWO80014237	PDWO80022154
WO # / IOL	PDWO80009333	PDWO80009335	PDWO80014236	PDWO80022153
WO # / HAST	PDWO80009312	PDWO80009316	PDWO80014234	PDWO80022155
WO # / UHAST	PDWO80009311	PDWO80009315	PDWO80014233	PDWO80022156

V. Qualification Data:

High Temperature Reverse Bias (HTRB)

Test Method	MIL-STD-750-1, M1038 Method A
Test Condition	175 °C, 1000hrs, Vr = 600V / 1200V
Sample Sizes	**(Fail/Pass)**
Lot 1	0/82
Lot 2	0/80
Lot 3	0/82
Lot 4	0/82
Lot 5	0/26
Lot 6	0/26
Lot 7	0/26
Lot 8	0/25

Temperature Cycling (T/C)

Test Method	JESD22-A-104 appendix 6
Test Condition	T = -55 °C to 175 °C, 400 cycles
Sample Sizes	**(Fail/Pass)**
Lot 1	0/82
Lot 2	0/24
Lot 3	0/82
Lot 4	0/82
Lot 5	0/12
Lot 6	0/26
Lot 7	0/26
Lot 8	0/26

Intermittent Operating Life (IOL)

Test Method	MIL-STD-750-1 M1037
Test Condition	ΔTj = 100°C, 10,000 cycles
Sample Sizes	**(Fail/Pass)**
Lot 1	0/81
Lot 2	0/24
Lot 3	0/82
Lot 4	0/81
Lot 5	0/26
Lot 6	0/26
Lot 7	0/26
Lot 8	0/26

Highly Accelerated Stress Test (HAST)

Test Method	JESD22-A110
Test Condition	130°C / 85%, Vr = 42V / 96hrs
Sample Sizes	**(Fail/Pass)**
Lot 1	0/82
Lot 2	0/82
Lot 3	0/82
Lot 4	0/82
Lot 5	0/26
Lot 6	0/26
Lot 7	0/23
Lot 8	0/26

Unbiased HAST (UHAST)

Test Method	JESD22-A118
Test Condition	130°C , 85% humidity / 96 hrs
Sample Sizes	**(Fail/Pass)**
Lot 1	0/82
Lot 2	0/82
Lot 3	0/82
Lot 4	0/82
Lot 5	0/26
Lot 6	0/26
Lot 7	0/25
Lot 8	0/26

QUALIFICATION REPORT SUMMARY

PCN #: DSNO-15WHBQ656

Date:
February 06, 2024

Qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J, CC3129, CC3132, CC3133, CC3134 and CC3135 catalog part numbers available in 4L SOT-227 package.

PACKAGE QUALIFICATION REPORT

Purpose: **Qualification of MCSO6 as an additional fabrication site for selected APT1xx, APT2xx, APT3xx, APT4xx, APT5xx, APT6xx and APT8xx device families available in various packages. The qualification of MCSO as an additional fabrication site for APT2X100DQ100J, APT2X100DQ120J, APT2X100DQ60J, APT2X101DQ100J, APT2X101DQ120J, APT2X101DQ60J, APT2X30DQ120J, APT2X30DQ60J, APT2X31DQ120J, APT2X31DQ60J, APT2X60DQ100J, APT2X60DQ120J, APT2X60DQ60J, APT2X61DQ100J, APT2X61DQ120J, APT2X61DQ60J, CC3129, CC3132, CC3133, CC3134 and CC3135 catalog part numbers available in 4L SOT-227 package will be qualified by similarity (QBS).**

CCB No.: **6016.001**

Manufactures Part #(s):	APT2X101DQ60J, APT2X101DQ60J, APT2X101DQ100J, APT2X101DQ120J
Qualification Package(s):	SOT-227
Wafer Fab Lot #(s):	A2C1935, A2A1251, 2A1207, 2B1943
Package Date Code(s):	2329, 2329, 2317, 2329

Qualification Testing Result:

Item	Test	Test Conditions	Test Duration	No. of Lots	Sample Size/Lot	Result (Pass/Fail)
1	Parametric Verification	Per OTS	-	4	30	Passed
2	Test	Electrical Test at 25°C	-	4	78	Passed
3	External Visual	PDM Spec. 120-0800	-	4	78	Passed
4	Highly Accelerated Stress Test (HAST)	Ta=130°C, RH=85%. JESD22 A-110	96 Hours	4	24	Passed
5 5a.	Temperature Cycle (TC) Thermal Resistance	-55°C to 175°C. Mil-Std 750, Method 1051, Cond. C	100 cycles	4	24	Passed
6 6a	Intermittent Operating Life (IOL) Thermal Resistance	Delta Tj=100°C, Mil-Std 750 Method 1037	6000 cycles	4	24	Passed