Product Change Notification / MFOL-16RWLS294

Date:

21-Jun-2022

Product Category:

Microprocessors

PCN Type:

Manufacturing Change

Notification Subject:

eSign# E000114850 Final Notice: Qualification of MCSO (Microchip -Fab 5) as a new fabrication site for Die # 2 of components DSC6003HI2B-024.0000T (Y2) and DSC6102HI2B-025.0000T (Y3) for modules ATSAMA5D27-WLSOM1 and ATSAMA5D27-WLSOM21 available in 188L Module (40.8x40.8x3.3mm) package assembled at MMT assembly site.

Affected CPNs:

MFOL-16RWLS294_Affected_CPN_06212022.pdf
MFOL-16RWLS294_Affected_CPN_06212022.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 (Microchip -Fab 5) as a new fabrication site for Die # 2 of components DSC6003HI2B-024.0000T (Y2) and DSC6102HI2B-025.0000T (Y3) for modules ATSAMA5D27-WLSOM1 and ATSAMA5D27-WLSOM21 available in 188L Module (40.8x40.8x3.3mm) package assembled at MMT assembly site.

Pre and Post Change Summary:

<table>
<tr><th colspan="3"></th><th>Pre-Change</th><th>Post Change</th></tr>
<tr><td rowspan="2">Fabrication Supplier and Location Component Y2</td><td rowspan="2">DSC6003HI2B-024.0000T</td><td>Die # 1</td><td>Global Foundries, Singapore-Fab 7 (GF07)</td><td>No Change</td></tr>
<tr><td>Die # 2</td><td>Silex Microsystems (SM01)</td><td>Microchip Technology Colorado – Fab 5 (MCSO)</td></tr>
<tr><td rowspan="2">Fabrication Supplier and Location Component Y3</td><td rowspan="2">DSC6102HI2B-025.0000T</td><td>Die # 1</td><td>Global Foundries, Singapore-Fab 7 (GF07)</td><td>No Change</td></tr>
<tr><td>Die # 2</td><td>Silex Microsystems (SM01)</td><td>Microchip Technology Colorado – Fab 5 (MCSO)</td></tr>
<tr><td colspan="2" rowspan="2">Wafer Diameter</td><td>Die # 1</td><td>12 inches</td><td>12 inches</td></tr>
<tr><td>Die # 2</td><td>6 inches</td><td>6 inches</td></tr>
<tr><td colspan="3">Quality Certification for Die1</td><td>ISO41001/ IATF16949</td><td>No Change</td></tr>
<tr><td colspan="3">Quality Certification for Die2</td><td>ISO9001</td><td>ISO9001/ ISO41001/ IATF16949</td></tr>
</table>

Note: Please see attached pre and post change comparison for Components Y2 and Y3 Location

Impacts to Data Sheet: None

Change Impact: None

Reason for Change: To improve manufacturability and on-time delivery performance by qualifying a second fabrication source at Microchip Technology Colorado - Fab 5 site.

Change Implementation Status: In Progress

Estimated First Ship Date: July 30, 2022 (date code: 2231)

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

Time Table Summary:

<table>
<tr><th></th><th colspan="5">June 2022</th><th colspan="4">July 2022</th></tr>
<tr><td>Workweek</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr>
<tr><td>Qual Report Availability</td><td></td><td></td><td></td><td>x</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Final PCN Issue Date</td><td></td><td></td><td></td><td>x</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Estimated Implementation Date</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>x</td><td></td></tr>
</table>

Method to Identify Change: Traceability code

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

Revision History: June 21, 2022: Issued final notification.

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

Attachments:

PCN_MFOL-16RWLS294_PRE AND POST CHANGE SUMMARY.pdf
PCN_MFOL-16RWLS294_ PACKAGE_QUAL_REPORT.pdf
PCN_MFOL-16RWLS294_PROCESS QUAL_REPORT.pdf

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

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If you wish to change your PCN profile, including opt out, please go to the PCN home page select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

MFOL-16RWLS294 - eSign# E000114850 Final Notice: Qualification of MCSO (Microchip -Fab 5) as a new fabı

Affected Catalog Part Numbers(CPN)

ATSAMA5D27-WLSOM1
ATSAMA5D27-WLSOM21

rication site for Die # 2 of components DSC6003HI2B-024.0000T (Y2) and DSC6102HI2B-025.0000T (Y3) f

for modules ATSAMA5D27-WLSOM1 and ATSAMA5D27-WLSOM21 available in 188L Module (40.8x40.8

x3.3mm) package assembled at MMT assembly site.

QUALIFICATION REPORT SUMMARY
Process Qualification Report

PCN #: MFOL-16RWLS294

Date:
November 14, 2019

Qualification of a new fabrication site (Microchip -Fab 5) for selected Micrel DSCxxx and DSAxxx product available in 6L VDFN, 4L VDFN, 4L VFLGA, 6L VFLGA, 4L VLGA, 14L VQFN and 20L VQFN packages.

I. Summary:

The purpose of this report is to qualify Fab 5 G2.5 MEMS (Mask 59401) for product family Mask 3610Q, 3610R, 3610V, per AEC-Q100 specification and following guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements".

II. Conclusion:

Based on the results, Fab 5 G2.5 MEMS mask# 3610Q, 3610R, 3610V complies with the AEC-Q100 specification and reliability guidelines implemented in the qualification plan. Therefore, the product family with Fab5 G2.5 MEMS mask 3610Q, 3610R, 3610V is released as qualified Q100 Grade 1 products.

III. Device Description:

Device	D4BD-L3, D500-M3,610RA3A
Mask	3610R (TGEA1+59401), 3610Q (TALA1+59401), 3610V (SG6A1+59401)
Document Revision	A
Document Control #	ML112019005E
CCB	3433 and E000114850

IV. Qualification Material:

	Lot 1	Lot 2	Lot 3
Device	DSC1004DL1-121.5000	DSC1101DM1-170.0000	DSC613RA1A-0106
MPC	3610R9J5A003	3610Q5J7A003	3610V4AWA003
Wafer Lot	MCSO520083773.000/ GF35919404999.100	MCSO520094446.000/ TC03920075522.100	MCSO520083774.000/ GF07919404984.000
Assembly Lot	NSEB201200020.000	NSEB201300465.000	NSEB201300001.000
Package	VDFN-6L	VDFN-6L	LGA-6L
Assembly Site	UTAC	UTAC	UTAC
Final Test	UTAC	UTAC	UTAC
Project #	39140-1	39141-1	39142-1
Qualification Tests	HTOL, ELFR, LTOL, ESD/LU	HTOL, ELFR, LTOL, ESD/LU	HTOL, ELFR, LTOL, ESD/LU

V. Qualification Data:

ELFR (EARLY LIFE FAILURE RATE)

Test Method/ Condition	JESD22, Method 108, Ta = + 125°C, VCC = 3.6V,48 HRS Minimum sample size 800 units/lot
Lot #	**Results (Fail/Pass)**
Lot 1	0/814
Lot 2	0/824
Lot 3	0/810

Post stress ATE @ Room +25°C, and Hot +125°C

HTOL (High Temperature Operating Life)

Test Method/ Condition	JESD22, Method 108, Ta = + 125°C, VCC = 3.6V, 1008 HRS Minimum sample size 77 units/lot
Lot #	**Results (Fail/Pass)**
Lot 1	0/77
Lot 2	0/90
Lot 3	0/96

Post stress ATE @ Room +25°C, Cold -40°C and Hot +125°C

LTOL (Low Temperature Operating Life)

Test Method/ Condition	JESD22, Method 108, Ta = -40°C, VCC = 3.6V, 1008 HRS
Lot #	**Results (Fail/Pass)**
Lot 1	0/74
Lot 2	0/77
Lot 3	0/98

Post stress ATE @ Room +25°C, Cold -40°C and Hot +125°C

ESD / LU / CDM

Test	Reference Method	Results (Fail/Pass)	Notes
HBM	JEDEC JS-001/ AEC-Q100-001	±500V 0/3 ±1000V 0/3 ±2000V 0/3 ±4000V 0/3	DSC1004DL1-121.5000 Pass 4000V, Lot #1
Test	Reference Method	Results (Fail/Pass)	Notes

HBM	JEDEC JS-001/ AEC-Q100-001	±500V 0/3 ±1000V 0/3 ±2000V 0/3 ±4000V 0/3	DSC1101DM1-170.0000 Pass 4000V, Lot #2
HBM	JEDEC JS-001/ AEC-Q100-001	±500V 0/3 ±1000V 0/3 ±2000V 0/3 ±4000V 0/3	DSC613RA1A-0106 Pass 4000V, Lot #3
CDM	JESD C101/ AEC-Q100-010	± 250V 0 /3 ±500V 0 /3 ± 750V 0 /3 ±1000V 0 /3 ± 1500V 0 /3 ± 2000V 0 /3	DSC1004DL1-121.5000 Pass 2000V, Lot#1
CDM	JESD C101/ AEC-Q100-010	± 250V 0 /3 ±500V 0 /3 ± 750V 0 /3 ±1000V 0 /3 ± 1500V 0 /3 ± 2000V 0 /3	DSC1101DM1-170.0000 Pass 2000V, Lot #2
CDM	JESD C101/ AEC-Q100-010	± 250V 0 /3 ±500V 0 /3 ± 750V 0 /3 ±1000V 0 /3 ± 1500V 0 /3 ± 2000V 0 /3	DSC613RA1A-0106 Pass 2000V, Lot #3
LU	EIA/JESD78 Room	0 6 I-test (105mA) 0 /6 0/V Test	DSC1004DL1-121.5000 (Lot #1)
	EIA/JESD78 Hot 125°C	0 6 I-test (105mA) 0 /6 0/V Test	

Test	Reference Method	Results (Fail/Pass)	Notes
LU	EIA/JESD78	0 6 I-test (105mA)	

	Room	0 /6 0/V Test	DSC1101DM1- 170.0000 (Lot #2)
	EIA/JESD78 Hot 125°C	0 6 I-test (105mA) 0 /6 0/V Test	
LU	EIA/JESD78 Room	0 6 I-test (105mA) 0 /6 0/V Test	DSC613RA1A-0106 Lot #3
	EIA/JESD78 Hot 125°C	0 6 I-test (105mA) 0 /6 0/V Test	

Post ATE Test was @ +25°C & +125°C

Pre and Post Change Summary

PCN# MFOL-16RWLS294

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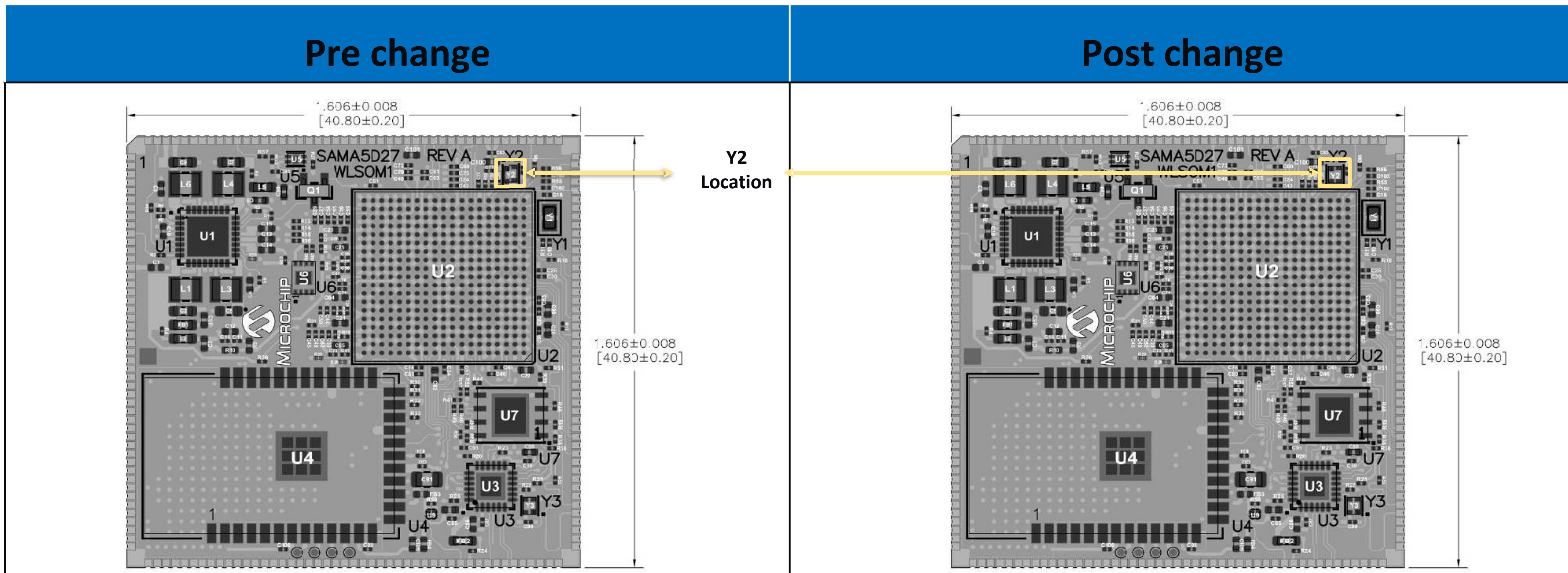
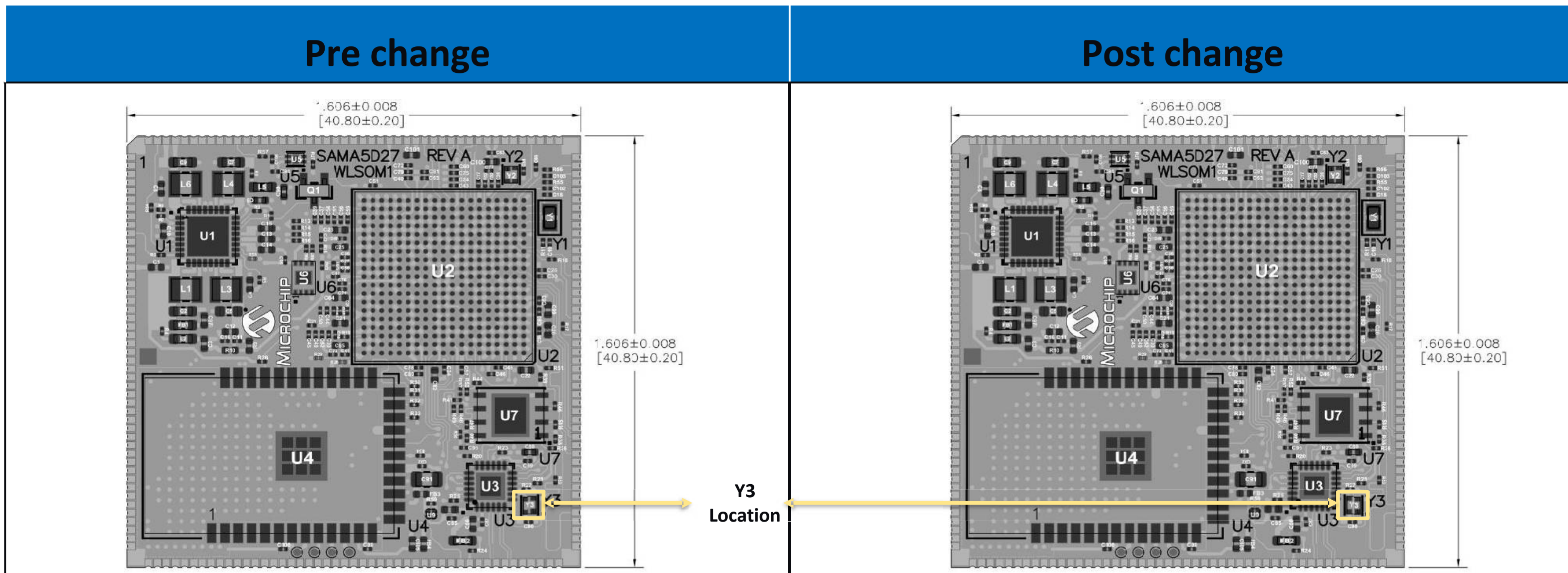
Location of Y2 component



Component	Catalog part number (CPN)
Y2	ATSAMA5D27-WLSOM21

MICROCHIP

Location of Y3 component



Component	Catalog part number (CPN)
Y3	ATSAMA5D27-WLSOM1

MICROCHIP

QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: MFOL-16RWLS294

Date:
January 22, 2020

Qualification of new bill of materials (BOM) in selected Micrel products available in 6L VDFN (3.2x2.5x0.9mm) package at NSEB assembly site.

MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of new bill of materials (BOM) in selected Micrel products available in 6L VDFN (3.2x2.5x0.9mm) package at NSEB assembly site.
CCB #:	3859 and E000114850
Reliability test site	UTL
CN	ES306693
QUAL ID	Q20005 Rev A
MP CODE	3610Q5H5A001
Part No.	D50C-M3
Bonding No.	BDE-005636 Rev. 02
<u>Package</u>	
Type	6L VDFN
Package size	3.2 x 2.5 x 0.9 mm
<u>Lead Frame</u>	
Paddle size	COL
Material	A194
Process	Etched
Lead Lock	Yes
Part Number	FR0510
<u>Material</u>	
Epoxy	HR-5104 / 2200D
Wire	Au wire
Mold Compound	G700LTD
Die Coat Material	JCR6109
Plating Composition	NiPdAu

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PACKAGE QUALIFICATION REPORT

Manufacturing Information

Lot No.	Wafer lot No.	Date Code
NSEB201400680.000	TC03920022154.000	1927G53
NSEB201400692.000	TC03920022154.000	1927G9W
NSEB201500083.000	TC03920022154.000	1928GAD

Result [X] Pass [ ] Fail [ ] ____________________

6L VDFN 3.2x2.5x0.9 mm assembled by NSEB pass reliability test per QCI-39000.This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard / Method	Qty. (Acc.)	Def/SS	Result	Remarks
Precondition Prior Perform Reliability Tests (At MSL Level 1)	**Electrical Test :**+25°C System: Tester: D10, Handler: AET55V8,V16	JESD22-A113	246(0)	246		Good Devices
	Bake 150°C, 24 hrs System: Oven chamber	JIP/ IPC/JEDEC J-STD-020E		246		
	85°C/85%RH Moisture Soak 168 hrs. System: Soak chamber			246		
	3x Convection-Reflow 265°C max System: Heat convection reflow			246		
	Electrical Test :+25°C System: Tester: D10, Handler: AET55V8,V16			0/246	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Temp Cycle	**Stress Condition:** -65°C to +150°C, 500 Cycles System: Hot and cold chamber	JESD22-A104		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +85°C and 125°C System: Tester: D10, Handler: AET55V8,V16		231(0)	0/231	Pass Pass	77 units / lot
	Bond Strength: Wire Pull (> 3.00 grams)		15 (0)	0/15	Pass	
UNBIASED-HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C System: Hot and moisture chamber		231(0)	0/231	Pass	77 units / lot
HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. **Bias Volt:** 3.3 Volts System: HAST 6000X	JESD22-A110		231		Parts had been pre-conditioned at 260°C
	Electrical Test:+25°C, 85°C and 125°C System: Tester: D10, Handler: AET55V8,V16		231(0) 5(0) Units	0/231 0/5	Pass Pass	77 units / lot

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
High Temperature Storage Life	**Stress Condition:** Bake 150°C, 1008 hrs System: SHEL LAB	JESD22-A103		50		50 units
	Electrical Test :+25°C and 125°C System: Oven chamber		50 (0)	0/50	Pass	
Solderability Temp 245°C	**Steam Aging:** Temp 93°C,8Hrs Solder Dipping:Solder Temp.245°C Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6 Visual Inspection: External Visual Inspection	J-STD-002	22 (0)	22 0/22	Pass	
Physical Dimensions	Physical Dimension, 10 units / lot from 3 lot	JESD22-B100/B108	30 (0) Units	0/30	Pass	
Bond Strength Data Assembly	Wire Pull (> 3.00 grams)	M2011	30 (0) Wires	0/30	Pass	
	Bond Shear (>10.00 grams)	JESD22-B116	30 (0) bonds	0/30	Pass	