



Product Change Notification / GBNG-28ZDDO521

Date:

01-Feb-2021

Product Category:

Power Management - System Supervisors/Voltage Detectors

PCN Type:

Manufacturing Change

Notification Subject:

CCB 3788.002 Final Notice: Qualification of Lintec backside coating (BSC) material for selected Micrel MIC2782xxx device family available in 6L WLCSP (1.2x0.8x0.63mm) package at UAT assembly site.

Affected CPNs:

[GBNG-28ZDDO521_Affected_CPN_02012021.pdf](#)
[GBNG-28ZDDO521_Affected_CPN_02012021.csv](#)

Notification Text:

PCN Status:

Final notification

PCN Type:

Manufacturing Change

Microchip Parts Affected:

Please open one of the icons found in the Affected CPNs section above.

NOTE: For your convenience Microchip includes identical files in two formats (.pdf and .xls).

Description of Change:

Qualification of Lintec backside coating (BSC) material for selected Micrel MIC2782xxx device family available in 6L WLCSP (1.2x0.8x0.63mm) package at UAT assembly site.

Pre Change:

Using Hysol CG1001 backside coating (BSC) material and 70 um backside coating (BSC) thickness.

Post Change:

Using Lintec LC2826H backside coating (BSC) material and 25 um backside coating (BSC) thickness.

Pre and Post Change Summary:

	Pre Change	Post Change
Assembly Site	Unisem Advance Tech (UAT)	Unisem Advance Tech (UAT)
Solder Ball Material	SNAC 105 (ball drop)	SNAC 105 (ball drop)
Solder Ball Size	250 um	250 um
Solder Ball Pitch	400 um	400 um
Backside Coating (BSC) Material	Hysol CG1001	Lintec LC2826H
Backside Coating (BSC) Thickness	70 um	25 um

Impacts to Data Sheet:

None

Change Impact:

None

Reason for Change:

To improve manufacturability by qualifying Lintec LC2826H backside coating (BSC) material.

Change Implementation Status:

In Progress

Estimated First Ship Date:

February 28, 2021 (date code: 2110)

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

Time Table Summary:

	February 2021				
Workweek	06	07	08	09	10
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:

February 01, 2021: Issued final notification. Attached the qualification report. Provided estimated first ship date to be on February 28, 2021.

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

Attachments:

[PCN_GBNG-28ZDD0521_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)

MIC2782CLYCS-TR

MIC2782CRYCS-TR

MIC2782DLYCS-TR

MIC2782DRYCS-TR

MIC2782ELYCS-TR

MIC2782EMYCS-TR

MIC2782FLYCS-TR

MIC2782FRYCS-TR



QUALIFICATION REPORT SUMMARY

PCN #: GBNG-28ZDDO521

Date
January 7, 2020

Qualification of UAT as a new assembly site for selected products available in 8L WLCSP package. The selected Micrel MIC2782xxx device family available in 6L WLCSP (1.2x0.8x0.63mm) package using Lintec as a new backside coating (BSC) material will qualify by similarity (QBS).

Purpose: Qualification of UAT as a new assembly site for selected products available in 8L WLCSP package. The selected Micrel MIC2782xxx device family available in 6L WLCSP (1.2x0.8x0.63mm) package using Lintec as a new backside coating (BSC) material will qualify by similarity (QBS).

I: Summary:

This memo summarizes Stress Tests that qualify UNISEM for WLCSP processing of products built in the 0.13um 66k88 technology fabricated on 8" wafers fabricated at UMC. Consistent with the guidelines established in Microchip's quality specification for Assembly of a new device family/process, three assembly lots of AT668LC product (the largest device projected for this technology) were processed through the front end of the WLCSP package process. Material from each build was stressed and tested to demonstrate the robustness of the new assembly.

Conclusion:

Based on these results, 0.13um 66k88 products built in UMC's 8" FAB packaged in WLCSP form meet the reliability guidelines implemented in the qualification plan. Therefore, WLCSP package processing of product wafers built in the 66k88 technology can be released to production as Industrial Grade product

II: Description of Package / Die selected for Qualification:

	Qualification Report		
Assembly site	UAT		
BD number	BDE-005522-01		
CCB #	3788 and 3788.002		
Memo log of the Qual report	ML11201900BI		
Parent Lot / Wafer	QPL2CB	Wafer12	Lot 1
	QPL2CA	Wafer 5	Lot 2
	QQ041C	Wafer 4	Lot 6
	QQ041C	Wafer 12	Lot 4
	QPMJQD	Wafer 9	Lot 3
	QPMJQA	Wafer 3	Lot 5
MPN	668LCTFLBA00		
CPN	25CSM04T-I/CS0668		
Mask	668LC		
Package Group	WLCSP		
Wafer size	8 inch		
Pin count	8		
Polyimide thickness	7.5um		
RDL Metal Width	32 um +/- 5um		
RDL material	0.1um Ti(sp.) + 0.2um Cu(sp.) + 4um Cu (pl.)		
UBM composition	0.1um Ti(sp.) + 0.2um Cu(sp.) + 8.6um Cu (pl.)		
Ball Height	100 um (after reflow)		
Ball size	185 um (before reflow) ; 165 um (after reflow)		
Ball pitch	500 um		
BackSide Coating Material	Lintec LC2826H		
BackSide Coating	25um		

III: Stress Results

High Temperature Storage

Test Method	JESD22-A103
Test Condition	Ta = 175°C / 504 hours
Sample Size	45 ea. One Lot minimum (500 hours)
Results	Passed
Lot 1 – UAT200600001.000	0 / 50 @ Room Temperature

MSL 1 Precondition + Temperature Cycling

Precondition Test Method	JESD22-A113
Precondition Test Condition	MSL-1 Bakeout (24hr/+150°C) 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265°C Peak Temp)
Test Method	JESD22-A104
Test Condition	-65°C / +150°C Air to Air, 500 Cycles
Required Sample Size	(77 ea. Per lot minimum)
Results	Passed
Lot 1 – UAT200600001.000	0 / 82 @ RT
Lot 2 – UAT200600002.000	0 / 82 @ RT
Lot 3 – UAT200600003.000	0 / 82 @ RT

MSL 1 Precondition + Unbiased HAST

Precondition Test Method	JESD22-A113
Precondition Test Condition	MSL-1 Bakeout (24hr/+150°C) 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265°C Peak Temp)
Test Method	JESD22-A118
Test Condition	+130°C / 85% RH 96 hours
Required Sample Size	(77 ea. Per lot minimum)
Results	Passed
Lot 1 – UAT200600001.000	0 / 82 @ RT
Lot 2 – UAT200600002.000	0 / 82 @ RT
Lot 3 – UAT200600003.000	0 / 82 @ RT

MSL 1 Precondition + Biased HAST

Precondition Test Method	JESD22-A113
Precondition Test Condition	MSL-1 Bakeout (24hr/+150°C) 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265°C Peak Temp)
Test Method	JESD22-A110
Test Condition	+130°C / 85% RH 96 hours / 5.5V Bias
Required Sample Size	(77 ea. Per lot minimum)
Results	Passed
Lot 4 – UAT200600004.000	0 / 82 @ RT
Lot 5 – UAT200600005.000	0 / 82 @ RT
Lot 6 – UAT200600006.000	0 / 82 @ RT

IV: Time Zero Physical Measurements

Samples from each lot were subjected to ball shear testing at Unisem and exceeded the process specification by substantial margins.

Lot 1

[illegible]

Lot 2

Shear Strength	Break mode	Shear Strength	Break mode
6.515	A	6.684	A
6.821	A	7.362	A
6.515	A	6.7	A
6.487	A	6.64	A
6.391	A	6.59	A
6.506	A	6.513	A
6.521	A	6.258	A
6.376	A	6.525	A
6.424	A	6.562	A
6.69	A	6.334	A
6.619	A	6.719	A
7.061	A	6.947	A
6.776	A	6.759	A
6.412	A	7.294	A
6.447	A	6.67	A
7.221	A	6.577	A
6.923	A	6.804	A
7.354	A	6.784	A
8.55	A	6.614	A
7.188	A	6.621	A
Result: Passed			

Lot 3

Shear Strength (mg/um2)	Break mode	Shear Strength (mg/um2)	Break mode
6.322	A	6.125	A
6.242	A	6.085	A
6.917	A	7.329	A
6.38	A	6.732	A
6.263	A	6.508	A
6.445	A	6.262	A
6.921	A	6.861	A
6.462	A	6.366	A
6.73	A	6.837	A
6.971	A	6.672	A
6.476	A	6.926	A
6.609	A	7.143	A
6.217	A	6.293	A
5.765	A	6.505	A
5.83	A	6.16	A
5.949	A	6.71	A
6.115	A	6.461	A
6.253	A	6.093	A
6.171	A	6.266	A
6.696	A	6.762	A
Result: Passed			

V: Post Stress Ball Shear Measurements

Unit	Shear Strength (mg/um2)	Unit	Shear Strength (mg/um2)
1	5.075	6	4.729
1	4.462	6	5.000
1	4.928	6	4.906
1	4.643	6	5.589
1	5.106	6	5.261
2	4.843	7	5.538
2	5.622	7	4.979
2	5.079	7	4.67
2	4.793	7	4.544
2	4.677	7	5.494
3	5.257	8	6.534
3	4.909	8	4.803
3	4.762	8	4.571
3	5.185	8	5.115
3	4.808	8	5.430
4	4.687	9	4.757
4	4.408	9	4.750
4	4.984	9	5.289
4	5.608	9	5.365
4	4.897	9	4.952
5	4.561	10	4.991
5	4.801	10	5.315
5	4.492	10	4.832
5	5.492	10	4.719
5	5.260	10	4.989
Result: Passed			