



Product Change Notification / GBNG-14COLQ123

Date:

27-Jul-2021

Product Category:

Inductive Position Sensors

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4485.001 Final Notice: Qualification of MMT as a new assembly site for selected Microsemi LX3301A device family available in 14L TSSOP (4.4mm) package.

Affected CPNs:

[GBNG-14COLQ123_Affected_CPN_07272021.pdf](#)

[GBNG-14COLQ123_Affected_CPN_07272021.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 MMT as a new assembly site for selected Microsemi LX3301A device family available in 14L TSSOP (4.4mm)

package.

Pre and Post Change Summary:

	Pre Change	Post Change
Assembly Site	UTAC Thai Limited (UTL-1) LTD. (NSEB)	Microchip Technology Thailand (Branch) (MMT)
Wire material	PdCu	Au
Die attach material	8200T	2200D
Molding compound material	G605L	G600V
Lead frame material	C7025	C7025
Lead frame DAP surface prep	Bare Copper Spot Ag	Bare Copper Selective Ag
Lead frame design	Please see attached pre and post change comparison	

Impacts to Data Sheet:

None

Change Impact:

None

Reason for Change:

To improve on-time delivery performance by qualifying MMT as a new assembly site.

Change Implementation Status:

In Progress

Estimated First Ship Date:

August 16, 2021 (date code: 2134)

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

Time Table Summary:

	July 2021					August 2021				
Workweek	27	28	29	30	31	32	33	34	35	36
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:

July 27, 2021: 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_GBNG-14COLQ123_Qual_Report.pdf](#)

[PCN_GBNG-14COLQ123_Pre and Post Change_Summary.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.

Affected Catalog Part Numbers (CPN)

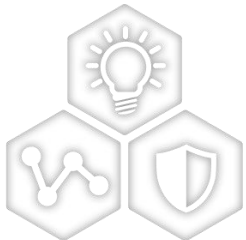
LX3301AQPW

LX3301AQPW-TR

CCB 4082.013 and 4485.001 Pre and Post Change Summary PCN #: GBNG-14COLQ123

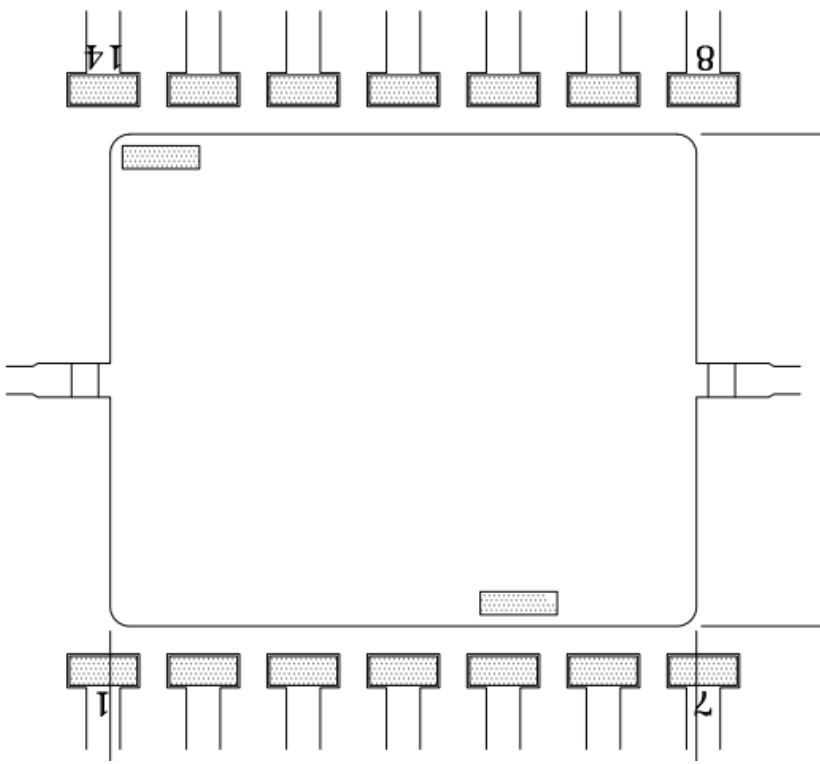
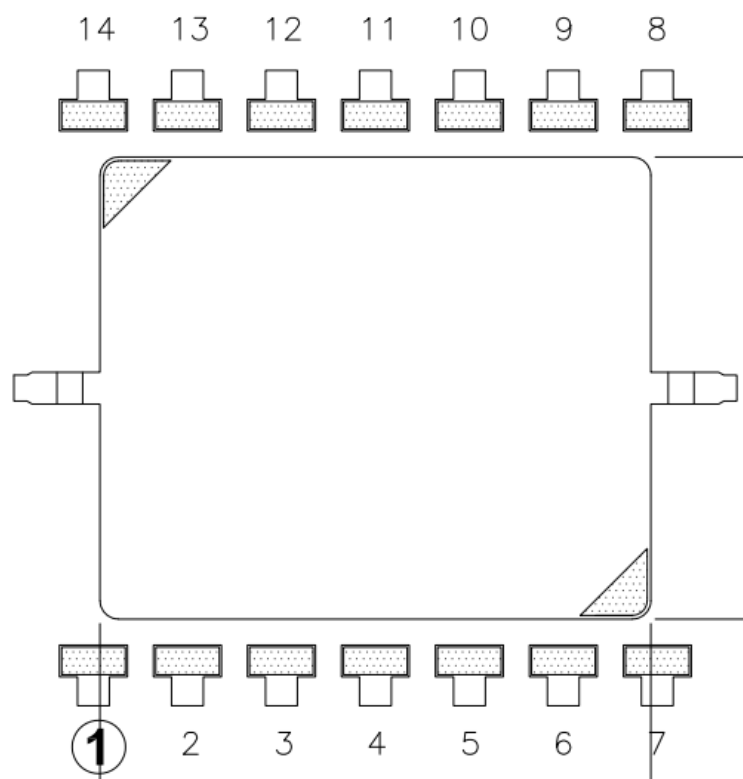


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LEAD FRAME COMPARISON: 14L TSSOP

NSEB		MMT	
			
Lead frame DAP surface prep	Bare Copper Spot Ag	Lead frame DAP surface prep	Bare Copper Selective Ag
Lead-lock	No	Lead-lock	No



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: GBNG-14COLQ123

Date
May 20, 2021

**Qualification of MMT as a new assembly site for selected
Microsemi LX3301A device family available in 14L TSSOP
(4.4mm) package. This is a Q100 Grade 1 package
qualification.**



MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of MMT as a new assembly site for selected Microsemi LX3301A device family available in 14L TSSOP (4.4mm) package. This is a Q100 Grade 1 package qualification.
CCB No.	4485 and 4485.001
CN	ES351114
QUAL ID	R2100172 Rev. A
MP CODE	VXBF14D4XVA1
Part No.	LX3301AQPW
Bonding No.	BDM-002766 Rev. A
<u>Package</u>	
Type	14L TSSOP
Package size	4.4 mm
Die thickness	11 mils
Die size	113.5 x 85.5 mils
<u>Lead Frame</u>	
Paddle size	126 x 150 mils
Material	C7025
Surface	Bare Copper-Selective Ag
Process	Etched
Lead Lock	None
Part Number	10101417
Treatment	BOT
<u>Material</u>	
Epoxy	2200D
Wire	Au wire 1.0 mils
Mold Compound	G600V
Plating Composition	Matte Sn



MICROCHIP PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code	QTY In	QTY Out	Assembly Yield
MMT-213802276.000	XFML921037397.100	2051H33	1481	1480	99.93%
MMT-213802275.000	XFML921037397.100	2051EJT	1200	1189	99.08%
MMT-213802273.000	XFML921037397.100	2051644	1300	1286	98.92%
				Average Yield	99.35%

Result

☒

Pass

☐

Fail

☐

14L TSSOP (4.4 mm) assembled by MMT 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
<u>Precondition</u> <u>Prior Perform</u> <u>Reliability Tests</u> (At MSL Level 1)	Electrical Test: +25°C and 125°C System: TMT_SNR_XP	JESD22-A113	693(0)	693		Good Devices
	Bake 150°C, 24 hrs System: CHINEE	JIP/IPC/JEDEC		693		
	85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH	J-STD-020E		693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test: +25°C and 125°C System: TMT_SNR_XP			0/693	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: TABAI ESPEC TSA-70H	JESD22-A104		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +125°C System: TMT_SNR_XP		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on MMT-213802276.000)		5(0) Units	0/5	Pass	
	Bond Strength: Wire Pull (> 2.5 grams) Bond Shear (>15.00 grams)		15 (0) 15 (0)	0/15 0/15	Pass Pass	See attachment 1 Wire pull & bond shear after Temp Cycle
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: TMT_SNR_XP		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on MMT-213802276.000)		5(0) Units	0/5	Pass	
HAST	Stress Condition: +130°C/85%RH, 96 hrs. Bias Volt: 5.6 Volts System: HAST 6000X	JESD22-A110		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C and 125°C System: TMT_SNR_XP		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on MMT-213802276.000)		5(0) Units	0/5	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
High Temperature Storage Life	Stress Condition: Bake 175°C, 504 hrs System: SHEL LAB Electrical Test: +25°C and 125°C System: TMT_SNR_XP	JESD22-A103	45(0)	45 0/45	Pass	45 units
Solderability Temp 245°C	Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping:Solder Temp.245°C Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6 System: ERSA RA 2200D Visual Inspection: External Visual Inspection	J-STD-002	22 (0)	22 22 0/22	Pass	
Physical Dimensions	Physical Dimension, 10 units from 1 lot	JESD22-B100/B108	30(0) Units	0/30	Pass	See attachment 4 Physical Dimension
Bond Strength Data Assembly	Wire Pull (>4.00 grams) Bond Shear (>18.00 grams)	Mil. Std. 883-2011 CDF-AEC-Q100-001	30 (0) Wires Cpk>1.67 30 (0) bonds Cpk>1.67	0/30 Cpk=2.07 0/30 Cpk=2.79	Pass Pass	See attachment 2 Wire pull & bond shear data assembly

Attachment 1

Wire Pull & Ball Shear After TC 500 Cycles (R2100172)													
Sub group	Wire Pull Strength (Grams)						Sub group	Ball Shear Strength (Grams)					
	wire	mode	wire	mode	wire	mode		Ball	mode	Ball	mode	Ball	mode
1	10.79	5	9.98	5	10.14	5	1	37.67	2	37.81	2	36.72	2
2	11.12	5	10.12	5	10.25	5	2	37.61	2	38.66	2	35.25	2
3	10.61	5	9.98	5	9.20	5	3	35.71	2	33.63	2	39.96	2
4	11.53	5	10.09	5	10.11	5	4	36.27	2	37.10	2	37.65	2
5	9.64	5	9.87	5	9.54	5	5	37.00	2	38.45	2	37.86	2
MIN.	9.20						MIN.	33.63					
MAX	11.53						MAX	39.96					
AVG.	10.20						AVG.	37.16					
STD.	0.61						STD.	1.53					
SPEC	2.50						SPEC	15.00					

WIRE PULL FAILURE MODE CRITERIA

MODE 1 = LIFTED WELD <Reject>

MODE 2 = LIFTED BALL <Reject>

MODE 3 = BROKEN AT MID-SPAN

MODE 4 = BROKEN AT WELD

MODE 5 = BROKEN AT BALL-NECK

MODE 6 = CRATERING <Reject>

BALL SHEAR FAILURE MODE CRITERIA

MODE 1 = BALL LIFT <Reject>

MODE 2 = BALL SHEAR

MODE 3 = BALL PAD LIFT

MODE 4 = CRATERING <Reject>

Note: Average ball diameter = 2.35 Mils

Attachment 2

Wire Pull & Ball Shear Strength Assembly Data (14L TSSOP)

REL# R2100172

CN# ES351114

MPC# VXBF14D4XVA1

WF# XFML921037397.100

Sub group	Wire Pull Strength (Grams)						Sub group	Ball Shear Strength (Grams)					
	wire	mode	wire	mode	wire	mode		Ball	mode	Ball	mode	Ball	mode
1	8.50	5	8.60	5	7.80	5	1	28.60	2	28.30	2	28.60	2
2	8.60	5	9.00	5	7.30	5	2	29.90	2	32.30	2	30.70	2
3	8.90	5	9.40	5	7.60	5	3	28.60	2	29.80	2	30.30	2
4	9.50	5	9.50	5	7.90	5	4	30.10	2	27.50	2	30.40	2
5	9.40	5	8.50	5	7.50	5	5	30.20	2	33.40	2	29.30	2
6	8.50	5	9.40	5	7.90	5	6	29.50	2	29.80	2	30.40	2
7	9.10	5	8.90	5	7.70	5	7	27.60	2	28.60	2	31.10	2
8	8.80	5	9.30	5	7.40	5	8	30.20	2	29.50	2	29.50	2
9	8.70	5	8.40	5	7.80	5	9	32.10	2	33.00	2	28.90	2
10	9.40	5	8.40	5	7.30	5	10	28.90	2	30.10	2	29.90	2
MIN.	7.30						MIN.	27.50					
MAX	9.50						MAX	33.40					
AVG.	8.50						AVG.	29.90					
STD.	0.72						STD.	1.42					
Cpk.	2.07						Cpk.	2.79					
SPEC	4.00						SPEC	18.00					

WIRE PULL FAILURE MODE CRITERIA

MODE 1 = LIFTED WELD <Reject>

MODE 2 = LIFTED BALL <Reject>

MODE 3 = BROKEN AT MID-SPAN

MODE 4 = BROKEN AT WELD

MODE 5 = BROKEN AT BALL-NECK

MODE 6 = CRATERING <Reject>

BALL SHEAR FAILURE MODE CRITERIA

MODE 1 = BALL LIFT <Reject>

MODE 2 = BALL SHEAR

MODE 3 = BALL PAD LIFT

MODE 4 = CRATERING <Reject>

Attachment 3

Ball Diameter			
	R2100172-01	R2100172-02	R2100172-03
Item	MMT-213802276.000	MMT-213802275.000	MMT-213802273.000
	Mils	Mils	Mils
1	2.30	2.35	2.42
2	2.31	2.41	2.35
3	2.36	2.36	2.34
4	2.39	2.37	2.41
5	2.42	2.38	2.36
6	2.35	2.33	2.29
7	2.36	2.29	2.36
8	2.41	2.31	2.32
9	2.34	2.38	2.29
10	2.37	2.30	2.40
		MIN	2.29
		MAX	2.42
		Average	2.35
		STD	0.04

Attachment 4

Physical Dimension of 14L TSSOP , MMT assembly (R2100172)												
ITEM	Overall Length	Overall Width	Overall Height	Pitch	§ Standoff (SMD)	Terminal Length	Terminal Width	Terminal Thickness	Molded Package Width	Molded Package Thickness	§ Lead Co-planarity (SMD)	Foot Angle
	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	
Spec Min	0.193	0.246	0.039	0.026 REF	0.002	0.020	0.007	0.004	0.169	0.033		
Spec Max	0.201	0.256	0.043		0.006	0.028	0.012	0.008	0.177	0.037	0.004	8.000
1	0.196	0.252	0.041	0.025	0.004	0.021	0.009	0.005	0.175	0.036	0.001	5.470
2	0.197	0.252	0.041	0.026	0.005	0.022	0.009	0.005	0.174	0.036	0.000	5.320
3	0.197	0.252	0.041	0.026	0.005	0.022	0.009	0.006	0.174	0.037	0.000	3.030
4	0.197	0.252	0.042	0.026	0.004	0.022	0.009	0.006	0.175	0.036	0.000	5.790
5	0.196	0.252	0.041	0.025	0.004	0.022	0.009	0.006	0.174	0.036	0.001	5.320
6	0.196	0.252	0.041	0.026	0.004	0.021	0.009	0.005	0.174	0.036	0.000	3.030
7	0.197	0.252	0.042	0.026	0.004	0.022	0.009	0.006	0.173	0.036	0.000	5.790
8	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	3.040
9	0.197	0.252	0.042	0.026	0.004	0.021	0.009	0.005	0.174	0.036	0.000	3.040
10	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	5.790
11	0.197	0.252	0.042	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	3.040
12	0.198	0.252	0.041	0.026	0.004	0.022	0.009	0.005	0.174	0.036	0.000	3.040
13	0.196	0.252	0.042	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	3.030
14	0.196	0.252	0.041	0.026	0.004	0.021	0.009	0.006	0.174	0.037	0.000	4.160
15	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	3.030
16	0.197	0.253	0.043	0.026	0.004	0.022	0.009	0.005	0.175	0.036	0.000	5.320
17	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.001	6.010
18	0.197	0.252	0.042	0.025	0.004	0.021	0.009	0.006	0.174	0.036	0.000	4.170
19	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.173	0.036	0.000	5.330
20	0.196	0.253	0.041	0.026	0.004	0.022	0.009	0.005	0.173	0.036	0.000	3.040
21	0.197	0.253	0.041	0.026	0.004	0.021	0.009	0.006	0.174	0.036	0.000	4.280
22	0.198	0.252	0.041	0.026	0.004	0.021	0.009	0.006	0.174	0.036	0.000	4.190
23	0.197	0.252	0.042	0.026	0.005	0.022	0.009	0.006	0.174	0.036	0.001	3.050
24	0.198	0.252	0.041	0.026	0.005	0.022	0.009	0.005	0.174	0.036	0.000	3.040
25	0.197	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	4.530
26	0.198	0.252	0.043	0.026	0.004	0.021	0.009	0.006	0.174	0.036	0.000	3.040
27	0.196	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.001	4.170
28	0.197	0.253	0.041	0.026	0.004	0.022	0.009	0.006	0.175	0.036	0.000	5.330
29	0.196	0.252	0.042	0.026	0.004	0.021	0.010	0.006	0.174	0.036	0.000	3.990
30	0.197	0.252	0.041	0.026	0.004	0.021	0.009	0.006	0.174	0.036	0.000	4.370
MIN	0.196	0.252	0.041	0.025	0.004	0.021	0.009	0.005	0.173	0.036	0.000	3.030
MAX	0.198	0.253	0.043	0.026	0.005	0.022	0.010	0.006	0.175	0.037	0.001	6.010
Average	0.197	0.252	0.041	0.026	0.004	0.022	0.009	0.006	0.174	0.036	0.000	4.193
STD	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.102