



Product Change Notification - KSRA-20UFUA549

Date:

14 Jan 2019

Product Category:

8-bit Microcontrollers; Capacitive Touch Sensors

Affected CPNs:



Notification subject:

CCB 3368.001 Final Notice: Qualification of MMT as an additional assembly site for selected Atmel products of 35.4K, 35.5K and 19.6K available in 32L VQFN (5x5x0.9mm) package

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 MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package

Pre Change:

Assembled at ANAC assembly site with punched as singulation method using 8290 die attach material

Post Change:

Assembled at ANAC assembly site with punched as singulation method using 8290 die attach material and Assembled at MMT assembly site with sawn as singulation method using 3280 die attach material

Pre and Post Change Summary:

	Pre Change		Post Change	
Assembly Site	Amkor Assembly & Test (Shanghai) Co., LTD / ANAC	Amkor Assembly & Test (Shanghai) Co., LTD / ANAC	Microchip Technology Thailand (Branch) / MMT	
Wire material	Au	Au	Au	
Die attach material	8290	8290	3280	
Molding compound material	G700	G700	G700	
Lead frame material	C194	C194	C194	
Singulation Method	punched	punched	sawn	

All inits in millimeter (mm)		Amkor Assembly & Test (Shanghai) Co., LTD / ANAC			Microchip Technology Thailand (Branch) / MMT		
Dimension Limits		Min	Nom	Max	Min	Nom	Max
Number of terminals	N	32			32		
	e	0.50 BSC			0.50 BSC		

Pitch							
Overall Height	A	0.8	0.85	0.9	0.8	0.9	1.0
Standoff	A1	0	0.01	0.05	0	0.02	0.05
Molded package thickness	A2	0.6	0.65	0.7	N/A		
Terminal Thickness	A3	0.20 REF			0.203 REF		
Overall Length	D	5.00BSC			0.500 BSC		
Molded package length	D1	4.75BSC			N/A		
Overall Width	E	5.00BSC			5.00 BSC		
Molded package Width	E1	4.75BSC			N/A		
Exposed Pad Length	D2	3.0	3.1	3.2	3.0	3.1	3.2
Exposed Pad Width	E2	3.0	3.1	3.2	3.0	3.1	3.2
Terminal Length	L	0.3	0.4	0.5	0.3	0.4	0.5
Terminal-to-exposed-pad	K	0.2	-	-	0.2	-	-
Mold angle		0		12 ⁰	N/A	N/A	N/A
Package Chamfer	P	0.24	0.42	0.6	N/A	N/A	N/A
Exposed Tie Bar Length	Q	0.3	0.4	0.65	N/A	N/A	N/A
Exposed Tie Bar Width	R	0.13	0.17	0.23	N/A	N/A	N/A
POD Drawing		see attachment (PCN_KSRA-20UFUA549_Pre-Change_POD Drawing_ANAC_Punched)			see attachment (PCN_KSRA-20UFUA549_Pre-Change_POD Drawing_MCHP_Sawn)		

The dimensions of the products from MMT are within the specifications of the package from ANAC.

Impacts to Data Sheet:

Yes; Package outline drawing- change from punch version to saw singulated

Change Impact:

None

Reason for Change:

To improve productivity by qualifying MMT as an additional assembly site

Change Implementation Status:

In Progress

**Estimated First Ship Date:**

February 14, 2019 (date code: 1907)

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

Time Table Summary:

	January 2019					February 2019			
Workweek	01	02	03	04	05	06	07	08	09
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:

January 14, 2019: Issued final notification. Attached the Qualification Report. Provided estimated first ship date on February 14, 2019.

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

Attachment(s):

[PCN_KSRA-20UFUA549_Qual_Report.pdf](#)

[PCN_KSRA-20UFUA549_Pre-Change_POD_Drawing_ANAC_Punched.pdf](#)

[PCN_KSRA-20UFUA549_Post-Change_POD_Drawing_MCHP_Sawn.pdf](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

Terms and Conditions:

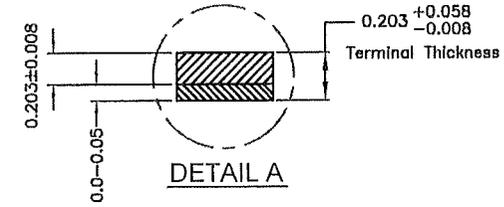
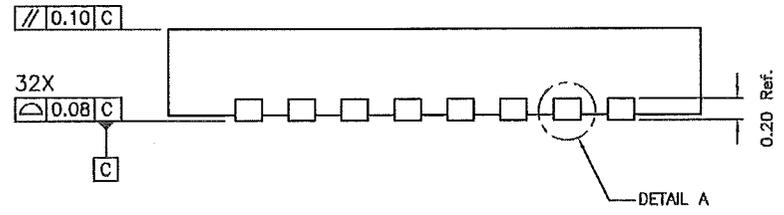
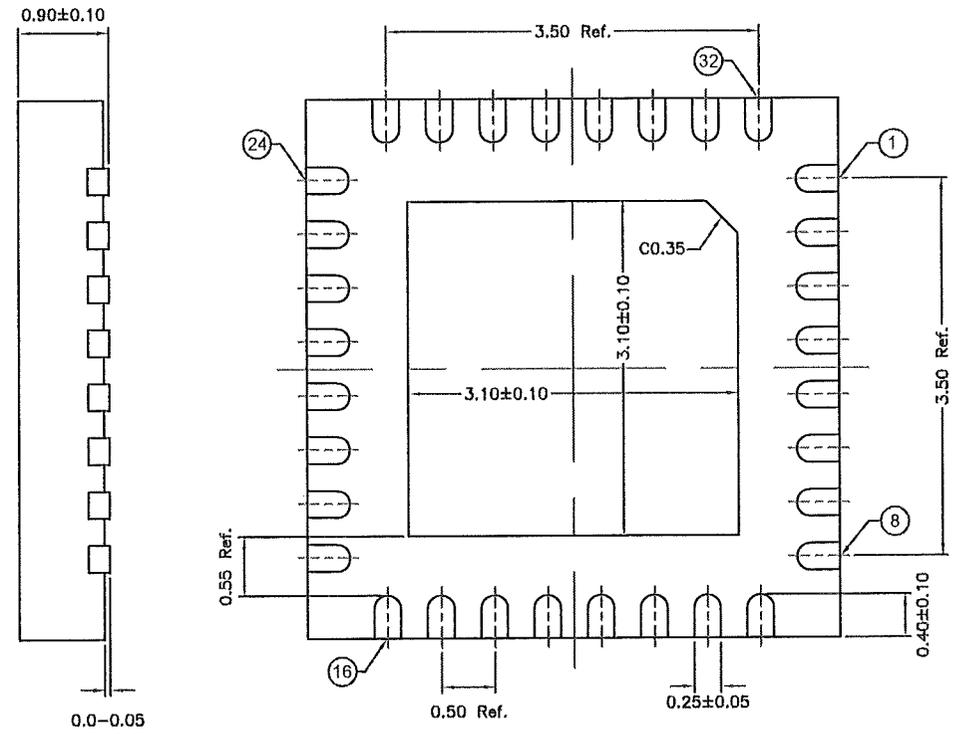
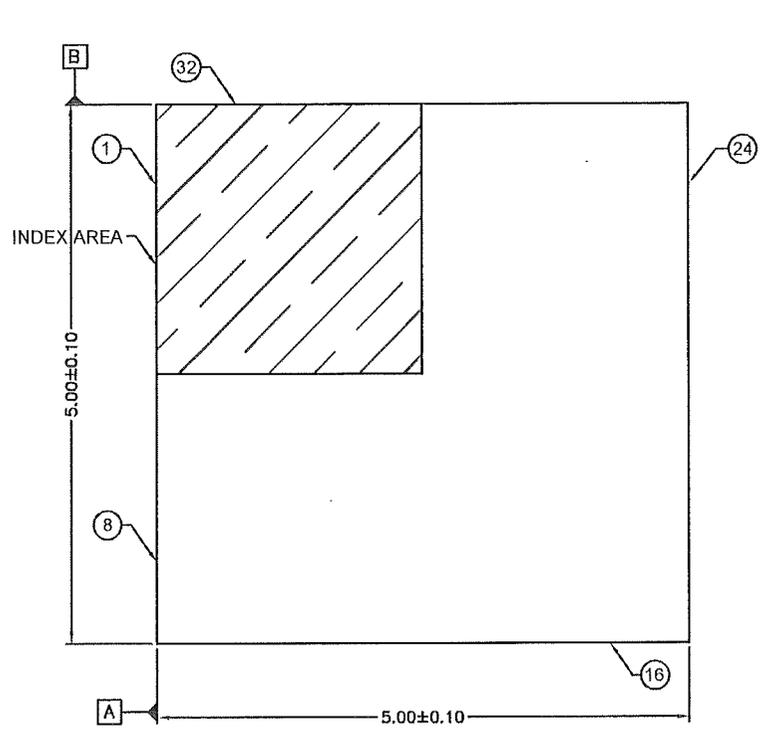
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Affected Catalog Part Numbers (CPN)

AT42QT1244-MUR
AT42QT1245-MU
AT42QT1245-MUR
ATMEGA168-20MQ
ATMEGA168-20MQR
ATMEGA168-20MUR
ATMEGA168P-20MUR
ATMEGA168PA-MN
ATMEGA168PA-MNR
ATMEGA168PA-MUA1
ATMEGA168PA-MURA1
ATMEGA168PV-10MUR
ATMEGA168V-10MQ
ATMEGA168V-10MQR
ATMEGA168V-10MQR610
ATMEGA48A-MU
ATMEGA48A-MUR
ATMEGA48P-20MUR
ATMEGA48PA-MNR
ATMEGA48PA-MURA5
ATMEGA48V-10MUR
ATMEGA48V-10MURA3
ATMEGA88-20MUR
ATMEGA88PA-MN
ATMEGA88PA-MNR
ATMEGA88PA-MURA6
ATMEGA88V-10MURA1
ATMEGA8L-8MUA4
ATMEGA8L-8MURA3
ATMEGA8L-8MURA5
ATTINY26-16MQR
ATTINY261A-MF
ATTINY261A-MFR
ATTINY28L-4MU
ATTINY28V-1MU
ATTINY828-MU
ATTINY828-MUR
QT60160-ISG
QT60240-ISG

REVISIONS			
REV.	DATE	DESCRIPTION	PROPOSED BY
A	APR 11 17	NEW RELEASE	PRACHIT P.



32X
 ⊕ 0.10 (M) C A B

MICROCHIP TECHNOLOGY
 (THAILAND)
 DOCUMENT CONTROL
 APR 18 2017
 MASTER COPY

- NOTE :
1. ALL DIMENSIONS ARE IN mm. ANGLES IN DEGREES.
 2. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS. COPLANARITY SHALL NOT EXCEED 0.08 mm.
 3. WARPAGE SHALL NOT EXCEED 0.10 mm.
 4. PACKAGE LENGTH / PACKAGE WIDTH ARE CONSIDERED AS SPECIAL CHARACTERISTIC. (S)
 5. REFER JEDEC MO-220.

UNLESS OTHERWISE SPECIFIED		APPROVALS	BY	DATE
1. ALL DIMENSIONS IN MM	6. LIMIT ON DIMENSION	DEPARTMENT MGR.	<i>[Signature]</i>	4/11/17
2. DO NOT SCALE PRINTS	FRACTIONS	FOL	<i>[Signature]</i>	4/11/17
3. REMOVE ALL BURRS	DECIMAL	EOL	<i>[Signature]</i>	4/11/17
4. BREAK ALL CORNERS.	ANGULAR	TEST ENGR	<i>[Signature]</i>	4/11/17
5. CONNER RADII.	7. SURFACE FINIAL			

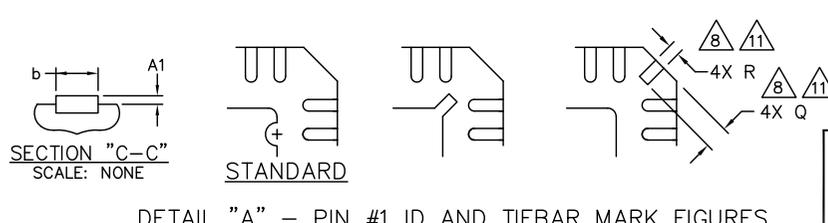
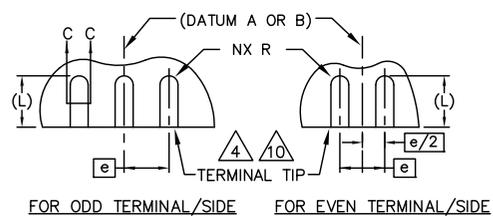
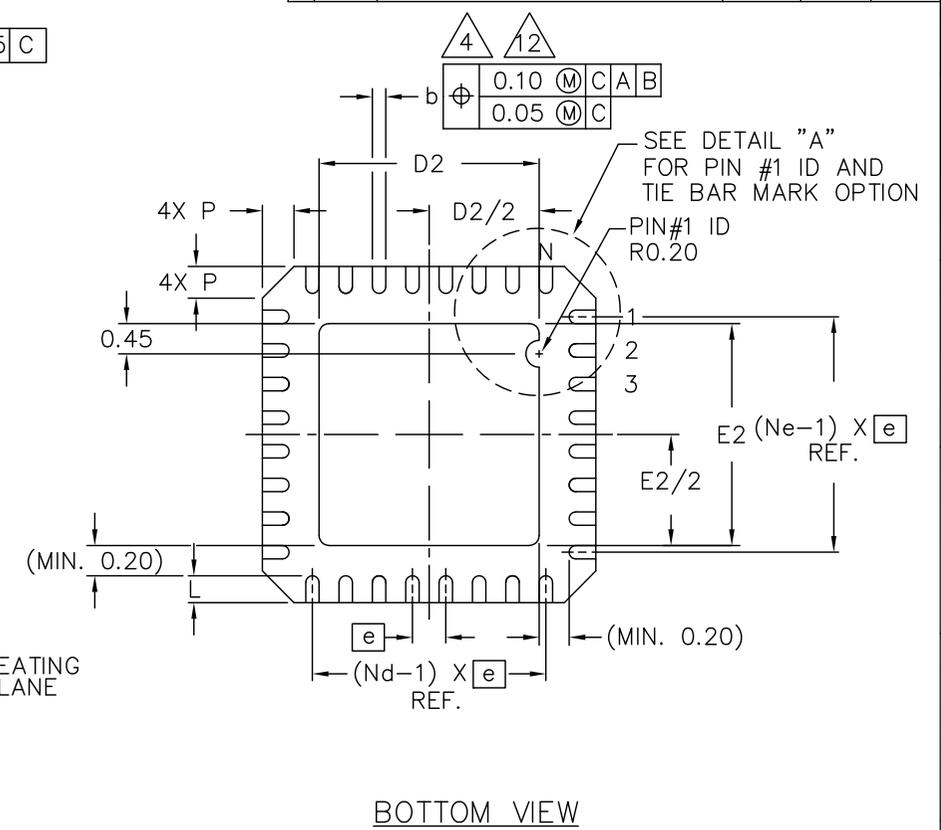
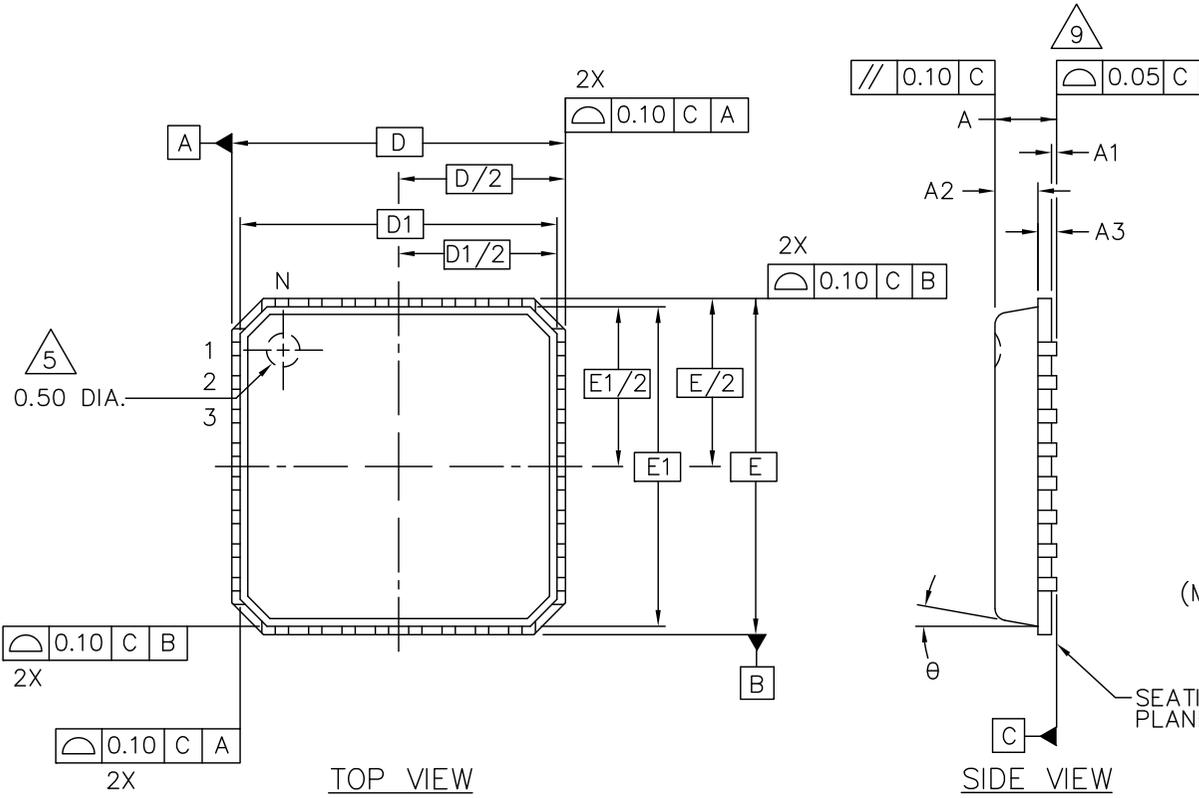
Microchip Technology Thailand

Title: 32L VQFN 5x5mm, pitch 0.5 mm, exposed pad 3.1x3.1 mm
 PACKAGE OUTLINE DRAWING

SCALE: NONE Sheet: 1 of 1

DRAW: Wanut L. CHECKED: PRACHIT P. DRAWING No. B04-046 REV A

REVISION HISTORY					
REV	DCN NUMBER	DESCRIPTION	DATE	ORIGINATOR	INCORPORATOR
08	NA	ADDED MIN. PKG HEIGHT.	11/02/05	HUJEON	HUJEON
09	NA	ADDED 4OLD IN THE TABLE	12/12/07	JSIM	N/A
10	NA	ADDED EXPOSED PAD VARIATIONS 'E' 3.6X3.6 PAD SIZE	04/28/08	CHUNX	CHUNX
11	NA	ADDED NOTE ON THE PAGE 3: MOLD FLASH OR PLATING COVERAGE ON THE RING PAD AREA SHALL BE ALLOWABLE	09/02/08	GIJUNG	GIJUNG
12	NA	CHANGED THE MIN. GAB BTW LAND AND EXPOSED PAD TO FOLLOW JEDEC'S K DIMENSION	11/07/08	SUNSIL	SUNSIL
13	NA	ADD 28LD WITH 0.4mm LEAD LENGTH AND 0.23 LEAD WIDTH 3.5MM PAD SIZE	11/24/08	CHUNX	CHUNX
14	NA	ADDED 24 LD INFORMATION.	03/18/10	YJANG	YJANG
15	NA	ADDED 3.20MM PAD SIZE	01/06/10	LEEKYY	LEEKYY
16	NA	ADDED EXPOSED PAD VARIATIONS 'B' AT 4OLD	03/14/11	HYJCHO	HYJCHO
17	NA	ADDED 2.50 X 2.50 EXPOSED PAD	05/30/11	JSUSHIN	JSUSHIN
18	NA	ADDED VARIATION C EPAD TO PITCH VARIATION D TO MATCH	10/24/12	LEEKYY	LEEKYY



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMAL ANGULAR X.X ± .1 ±1° X.XX ± .05 X.XXX ± .025		THIRD ANGLE PROJECTION				 www.amkor.com	
DESIGNED	HUJEON	DATE	09/08/01	TITLE			
INTERPRET DIM AND TOL PER ASME Y14.5M - 1994				PACKAGE OUTLINE, MLF2, 5 X 5 mm BODY			
MATERIAL	SEE CHART ABOVE			APPROVALS	DATE	SIZE	SIB NUMBER
FINISH	SEE CHART ABOVE			DESIGNED	09/08/01	A3	N/A
PRINTING IS AN ACTUAL SCALE	PRODUCT MANAGER	WKLKLE	09/08/01	CHECKED	SSIANG	09/08/01	DWG NUMBER
FORM NO: MBF_LF_6A.DWG	RELEASED	SMSEO	12/20/07	PRODUCT MANAGER	WKLKLE	09/08/01	45279
				SELF DWG NO./REV.	N/A	PO SPEC NO	SCALE
						001-0000-3817	12.5:1
							SHEET
							1 of 3

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SYMBOL	PITCH VARIATION A			NOTE	SYMBOL	PITCH VARIATION B			NOTE	SYMBOL	PITCH VARIATION C			NOTE	SYMBOL	PITCH VARIATION C			NOTE
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.	
ⓐ	0.80 BSC				ⓐ	0.65 BSC				ⓐ	0.65 BSC				ⓐ	0.50 BSC			
N	16			3	N	20			3	N	24			3	N	28			3
Nd	4			3	Nd	5			3	Nd	6			3	Nd	7			3
Ne	4			3	Ne	5			3	Ne	6			3	Ne	7			3
L	0.50	0.60	0.75		L	0.50	0.60	0.75		L	0.30	0.40	0.50		L	0.30	0.40	0.50	
b	0.28	0.33	0.40	4	b	0.23	0.28	0.35	4	b	0.23	0.28	0.35	4	b	0.18	0.23	0.30	4
D2	SEE EXPOSED PAD VARIATION: A,B				D2	SEE EXPOSED PAD VARIATION: A,B				D2	SEE EXPOSED PAD VARIATION: F				D2	SEE EXPOSED PAD VARIATION: D			
E2	SEE EXPOSED PAD VARIATION: A,B				E2	SEE EXPOSED PAD VARIATION: A,B				E2	SEE EXPOSED PAD VARIATION: F				E2	SEE EXPOSED PAD VARIATION: D			

SYMBOL	PITCH VARIATION D			NOTE	SYMBOL	PITCH VARIATION D			NOTE	SYMBOL	PITCH VARIATION E			NOTE	SYMBOL	PITCH VARIATION E			NOTE
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.	
ⓐ	0.50 BSC				ⓐ	0.50 BSC				ⓐ	0.40 BSC				ⓐ	0.40 BSC			
N	28			3	N	32			3	N	36			3	N	40			3
Nd	7			3	Nd	8			3	Nd	9			3	Nd	10			3
Ne	7			3	Ne	8			3	Ne	9			3	Ne	10			3
L	0.50	0.60	0.75		L	0.30	0.40	0.50		L	0.30	0.40	0.50		L	0.30	0.40	0.50	
b	0.18	0.23	0.30	4	b	0.18	0.23	0.30	4	b	0.15	0.20	0.25	4,12	b	0.15	0.20	0.25	4,12
D2	SEE EXPOSED PAD VARIATION: A,B,C,G				D2	SEE EXPOSED PAD VARIATION: B,C,D,E,I				D2	SEE EXPOSED PAD VARIATION: *				D2	SEE EXPOSED PAD VARIATION: B,D,E			
E2	SEE EXPOSED PAD VARIATION: A,B,C,G				E2	SEE EXPOSED PAD VARIATION: B,C,D,E,I				E2	SEE EXPOSED PAD VARIATION: *				E2	SEE EXPOSED PAD VARIATION: B,D,E			

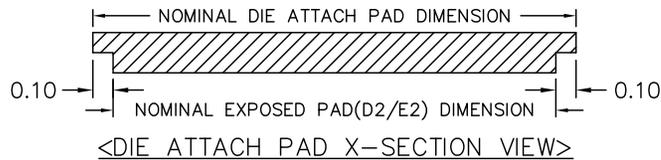
* NOT DESIGNED YET
 ** DESIGNED BUT NOT TOOLED UP

<STANDARD>

SYMBOLS	D2			E2			NOTE	
	MIN	NOM	MAX	MIN	NOM	MAX		
EXPOSED PAD VARIATIONS	A	2.60	2.70	2.80	2.60	2.70	2.80	
	B	2.70	2.80	2.90	2.70	2.80	2.90	
	C	3.00	3.10	3.20	3.00	3.10	3.20	
	D	3.20	3.30	3.40	3.20	3.30	3.40	
	E	3.40	3.50	3.60	3.40	3.50	3.60	
	F	3.50	3.60	3.70	3.50	3.60	3.70	
	G	2.70	2.80	2.90	2.70	2.80	2.90	
	H	2.90	3.00	3.10	2.90	3.00	3.10	
	I	2.40	2.50	2.60	2.40	2.50	2.60	

SYMBOL	COMMON DIMENSIONS			NOTE
	MIN.	NOM.	MAX.	
A	0.80	0.85	0.90	
A1	0.00	0.01	0.05	10
A2	0.60	0.65	0.70	
A3	0.20 REF.			
D	5.00 BSC			
D1	4.75 BSC			
E	5.00 BSC			
E1	4.75 BSC			
θ	0	-	12°	
P	0.24	0.42	0.60	
Q	0.30	0.40	0.65	8,11
R	0.13	0.17	0.23	8,11

GENERAL ; NOMINAL EXPOSED PAD(D2/E2) DIMENSION = NOMINAL DIE ATTACH PAD DIMENSION-0.20



Amkor Technology www.amkor.com

TITLE: PACKAGE OUTLINE, MLF2, 5 X 5 mm BODY

SIZE: A3	SD NUMBER: N/A	DRG NUMBER: 45279	REV: 18
SELF DRG NO./REV.: N/A	PO SPEC NO: 001-0000-3817	SCALE: 1:1	SHEET: 2 of 3

FORM NO: MBF_LF_7A.DWG

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NOTES:

1. DIE THICKNESS ALLOWABLE IS 0.305mm MAXIMUM(.012 INCHES MAXIMUM)
2. DIMENSIONING & TOLERANCES CONFORM TO ASME Y14.5M. – 1994.
3. N IS THE NUMBER OF TERMINALS.
Nd IS THE NUMBER OF TERMINALS IN X-DIRECTION &
Ne IS THE NUMBER OF TERMINALS IN Y-DIRECTION.
4. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM TERMINAL TIP.
5. THE PIN #1 IDENTIFIER MUST BE EXISTED ON THE TOP SURFACE OF THE PACKAGE BY USING INDENTATION MARK OR OTHER FEATURE OF PACKAGE BODY.
6. EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.
7. ALL DIMENSIONS ARE IN MILLIMETERS.
8. THE SHAPE SHOWN ON FOUR CORNERS ARE NOT ACTUAL I/O.
9. BILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
10. APPLIED ONLY FOR TERMINALS.
11. Q AND R APPLIES ONLY FOR STRAGHT TIEBAR SHAPES.
12. FOR 0.40mm LEAD PITCH, THE LEAD POSITION TOLERANCE MUST BE 0.07mm AT THE ACTUAL MEAN VALUE OF BODY SIZE.
13. MOLD FLASH OR PLATING COVERAGE ON THE RING PAD AREA SHALL BE ALLOWABLE

 Amkor Technology www.amkor.com			
TITLE			
PACKAGE OUTLINE, MLF2, 5 X 5 mm BODY			
SIZE	SID NUMBER	DWG NUMBER	REV
A3	N/A	45279	18
FORM NO: MBF_LF_7A.DWG		FORM NO	SCALE
N/A		001-0000-3817	1:1
3		2	1
3		2	1

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MICROCHIP

QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN# KSRA-20UFUA549

Date
October 18, 2018

Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package. The selected products of the 35.4K, 35.5K and 19.6K wafer technologies will qualify by similarity (QBS)



MICROCHIP PACKAGE QUALIFICATION REPORT

Purpose: Qualification of MMT as an additional assembly site for selected Atmel products available in 32L VQFN (5x5x0.9mm) package. The selected products of the 35.4K, 35.5K and 19.6K wafer technologies will qualify by similarity (QBS)

CCB No.: 3368 and 3368.001

Qual ID No.: QTP3485

Revision: A

Misc.	CN	ES197884-26089
	Assembly site	MMT
	BD Number	BDM-001739
	MP Code (MPC)	35473YRXBC01
	Part Number (CPN)	ATMEGA328P-MNR
Lead-Frame	Paddle size	150x150 mils
	Material	C194
	Manufacturer	ASM
	Surface	Bare Cu on paddle
	Treatment	BOT
	Process	Etched
	Lead-lock	Yes
	Part Number	10103202
	Lead Plating	Matte Tin
Bond Wire	Material	Au
Die Attach	Part Number	3280
	Conductive	Yes
MC	Part Number	G700LTD
PKG	PKG Type	VQFN
	Pin/Ball Count	32
	PKG width/size	5x5x0.9mm
Die	Die Thickness	11 mils
	Die Size	115.5 x 114.2 mils
	Fab Process (site)	35.4K/MCSO



MICROCHIP PACKAGE QUALIFICATION REPORT

Manufacturing Information:

Assembly Lot No.	Wafer Lot No.	Date Code
MMT-190800274.000	MCSO519061142.000	1821PH7
MMT-190800275.000	MCSO519061142.000	1821PH8
MMT-190800276.000	MCSO519061142.000	1821PH9

Result

Pass

Fail

Q100 Grade1 qual for 32L VQFN 5x5x0.9mm (RXB) on Atmel products at MMT assembly using 0.8 mil Au wire is qualified the Moisture/ Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020D standard. No delamination were observed on all the units.

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, 130°C	JESD22- A113	876(0)	0/876	Passed	Good Devices
	Bake 150°C, 24 hrs System: HERAEUS			876		
	85°C/85%RH Moisture Soak 168 hrs. System: Climats Excal 5423-HE	IPC/JEDEC J-STD-020D		876	Passed	
	3x Convection-Reflow 265°C max System: Mancorp CR.5000F			876		
	Electrical Test: +25°C, 130°C			0/876	Passed	
Temp Cycle	Stress Condition: (Standard) 65°C to +150°C, 500 Cycles System: VOTSCH VT 7012 S2	JESD22- A104	243(0)			Parts had been pre- conditioned at 260°C
	Electrical Test: +85°C, System: MAGNUM05 (Handtest)		243(0)	0/243	Passed	
	Bond Strength: Wire Pull (> 2.50 grams) Bond Shear (>15.00 grams)		15(0)	0/15	Passed	
UNBIASED- HAST	Stress Condition: (Standard) +130°C/85%RH, 96 hrs. System: HIRAYAMA HATEST PC- 422R8	JESD22- A118	245(0)			Parts had been pre- conditioned at 260°C
	Electrical Test: +25°C, 130°C System: MT9510 Handler:2580		245(0)	0/245	Passed	
HAST	Stress Condition: (Standard) +130°C/85%RH, 96 hrs. Bias Volt: 5.5 Volts System: HIRAYAMA HATEST PC- 422R8	JESD22- A110	237(0)			Parts had been pre- conditioned at 260°C
	Electrical Test: +25°C, 130°C System: MT9510 Handler:2580		237(0)	0/237	Passed	

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: HERAEUS	JESD22-A103	78(0)			78 units
	Electrical Test: +25°C, 130°C		78(0)	0/78	Passed	
Solderability Temp 245°C	Bake: Temp 155°C,4Hrs System: Oven Solder Bath: Temp.245°C Solder material: SnPb Visual Inspection: External Visual Inspection	JESD22B-102E	15 (0)	0/15	Passed	Performed at MPHIL
Physical Dimensions	Physical Dimension, 30 units from 1 lot	JESD22-B100/B108	30(0) Units	0/30	Passed	
Bond Strength Data Assembly	Wire Pull (> 2.50 grams)	M2011.8 MIL-STD-883	30(0) Wires	0/30	Passed	
	Bond Shear (>15.00 grams)	M2011.8 MIL-STD-883	30(0) bonds	0/30	Passed	