Product Change Notification / JAON-18YDKI646

Date:

09-Jun-2023

Product Category:

Broadband Gateway

PCN Type:

Manufacturing Change

Notification Subject:

CCB 5014.002 and CCB 6268 Final Notice: Qualification of a new die size (1.932x1.860mm) for Die #1 of selected Microsemi LE9641PQC, LE9651PQC, LE9641PQCT, and LE9651PQCT catalog part numbers (CPN) available in 48L VQFN (7x7x1.0mm) package assembled at MTAI assembly site.

Affected CPNs:

JAON-18YDKI646_Affected_CPN_06092023.pdf
JAON-18YDKI646_Affected_CPN_06092023.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 a new die size (1.932x1.860mm) for Die #1 of selected Microsemi LE9641PQC, LE9651PQC, LE9641PQCT, and LE9651PQCT catalog part numbers (CPN) available in 48L VQFN (7x7x1.0mm) package assembled at MTAI assembly site.

Pre and Post Change Summary:

<table>
<tr><th colspan="2"></th><th colspan="2">Pre Change</th><th colspan="2">Post Change</th></tr>
<tr><td rowspan="2">Fabrication Location</td><td>Die # 1</td><td colspan="2">Global Foundries, Singapore - Fab 7 (GF07)</td><td colspan="2">Global Foundries, Singapore - Fab 7 (GF07)</td></tr>
<tr><td>Die # 2</td><td>Global Foundries, Singapore - Fab 2 (GF02)</td><td>Microchip Technology Colorado – Fab 5 (MCSO)</td><td>Global Foundries, Singapore - Fab 2 (GF02)</td><td>Microchip Technology Colorado – Fab 5 (MCSO)</td></tr>
<tr><td rowspan="3">Die Size</td><td rowspan="2">Die # 1</td><td colspan="2">2.204 x 2.258 mm</td><td colspan="2">1.932x1.860mm</td></tr>
<tr><td colspan="4">Please see attached pre and post change comparison for Die # 1 Location</td></tr>
<tr><td>Die # 2</td><td colspan="2">1.57 x 1.72 mm</td><td colspan="2">1.57 x 1.72 mm</td></tr>
<tr><td colspan="2">Assembly Site</td><td colspan="2">Microchip Technology Thailand

(HQ) (MTAI)</td><td colspan="2">Microchip Technology Thailand

(HQ) (MTAI)</td></tr>
<tr><td colspan="2">Wire Material</td><td colspan="2">CuPdAu</td><td colspan="2">CuPdAu</td></tr>
<tr><td colspan="2">Die Attach Material</td><td colspan="2">3280</td><td colspan="2">3280</td></tr>
<tr><td colspan="2">Molding Compound Material</td><td colspan="2">G700LTD</td><td colspan="2">G700LTD</td></tr>
<tr><td colspan="2">Lead Frame Material</td><td colspan="2">A194</td><td colspan="2">A194</td></tr>
</table>

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve productivity by qualifying a new die size.

Change Implementation Status: In Progress

Estimated First Ship Date: June 25, 2023 (date code: 2326)

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="4">May 2022</th><th rowspan="2">></th><th colspan="4">June 2023</th></tr>
<tr><td>Workweek</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr>
<tr><td>Initial 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>Qual Report Availability</td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td></tr>
</table>

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:
May 24, 2022: Issued initial notification with reference CCB 5014.002.
June 09, 2023: Issued final notification. Added reference CCB 6268 in notification subject. Attached is the qualification report and added estimated first ship by June 25, 2023.

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

Attachments:

PCN_JAON-18YDKI646_Qual_Report.pdf
PCN_JAON-18YDKI646_Pre and Post Change_Summary.pdf

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

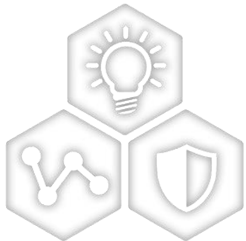
Terms and Conditions:

If you wish to receive Microchip PCNs via email please register for our PCN email service at our PCN home page select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the PCN FAQ section.

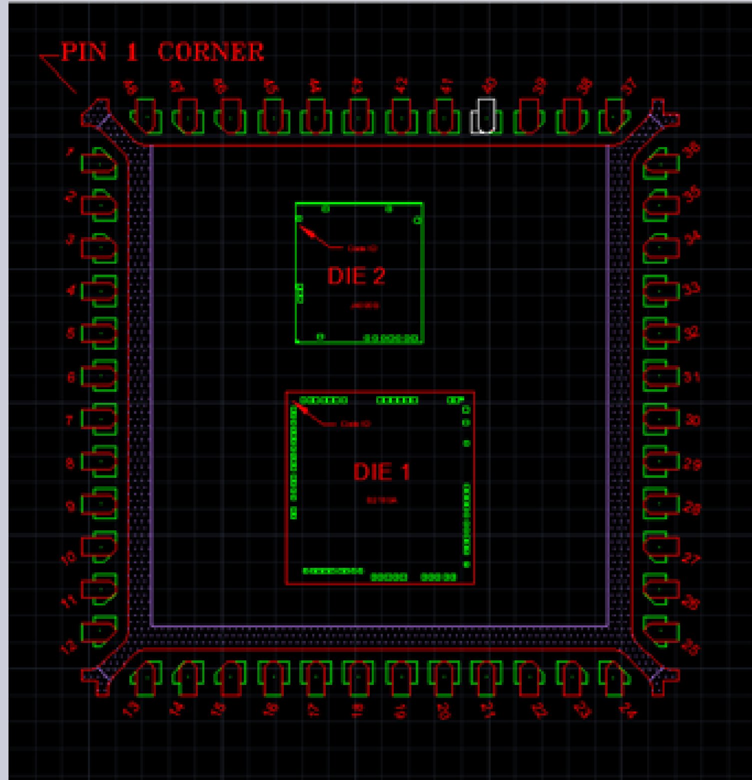
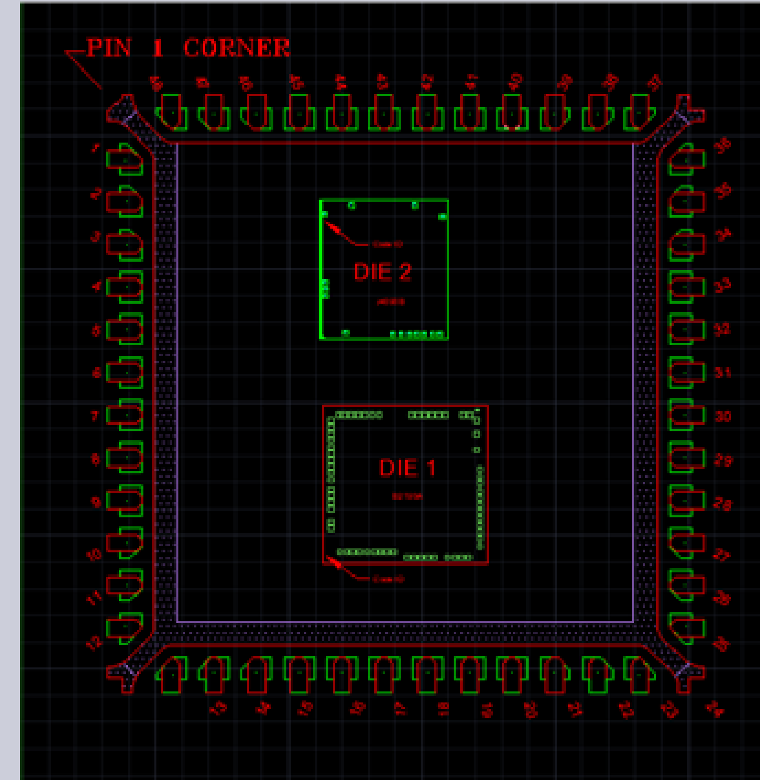
If you wish to change your PCN profile, including opt out, please go to the PCN home page select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

CCB 5014.002
Pre and Post Change Summary
PCN#: JAON-18YDKI646

A Leading Provider of Smart, Connected and Secure Embedded Control Solutions



Pre and post change comparison

Pre change	Post Change
	

Note: Not-to-scale

© 2022 Microchip Technology Inc. and its subsidiaries

MICROCHIP

QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN # JAON-18YDKI646

Date:
April 24, 2023

Qualification of a new die size (1.932x1.860mm) for Die #1 of selected Microsemi LE9641PQC, LE9651PQC, LE9641PQCT, and LE9651PQCT catalog part numbers (CPN) available in 48L VQFN (7x7x1.0mm) package assembled at MTAI assembly site.

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of a new die size (1.932x1.860mm) for Die #1 of selected Microsemi LE9641PQC, LE9651PQC, LE9641PQCT, and LE9651PQCT catalog part numbers (CPN) available in 48L VQFN (7x7x1.0mm) package assembled at MTAI assembly site.
CN	E000123097
QUAL ID	R2201159 Rev. A
MP CODE	3413J7M9CA01
Part No.	LE9641PQC
Bonding No.	BD-000490 Rev.02
CCB No.	5014.002 and 6268
Package	
Type	48L VQFN
Package size	7 x 7 x 1 mm
Die size	Die 1: 74.6 x 71.7 mils
	Die 2: 60.3 x 66.2 mils
Lead Frame	
Paddle size	232 x 232 mils
Material	A194
Surface	Selective Ag Plating
Process	Etched
Lead Lock	Yes
Part Number	10104808
Material	
Epoxy	3280
Wire	CuPdAu
Mold Compound	G700LTD
Plating Composition	Matte Sn

MICROCHIP

PACKAGE QUALIFICATION REPORT

Manufacturing Information:

Assembly Lot No.	Wafer No.	Date Code
MTAI231801352.000	GF07923119810.110	22319SJ

Result [X] Pass [ ] Fail [ ] ____________________

48L VQFN (7x7x1 mm) assembled by MTAI pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 3 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 3)	**Electrical Test:** +25°C System: Chroma3650	JESD22-A113	154(0)	0/154		Good Devices
	Bake 150°C, 24 hrs. System: CHINEE	JIP/ IPC/JEDEC J-STD-020E		0/154		
	30°C/60%RH Moisture Soak 192 hrs. System: TABAI ESPEC Model PR-3SPH			0/154		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			0/154		
	Electrical Test: +25°C System: Chroma3650		154(0)	0/154	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
UNBIASED-HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		0/77		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C System: Chroma3650		77(0)	0/77	Pass	77 units
	Stress Condition: +130°C/85%RH, 192 hrs. System: HAST 6000X			0/77		
	Electrical Test: +25°C System: Chroma3650		77(0)	0/77	Pass	
Wire sweep	Wire sweep Inspection 20 Wires	-	20(0) Wires	0/20	Pass	

QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: JAON-18YDKI646

Date:
April 2, 2021

Qualification of MTAI as an additional assembly site for selected MSCC products available in 48L VQFN (7x7x1mm) package.

MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of MTAI as an additional assembly site for selected MSCC products available in 48L VQFN (7x7x1mm) package.
CN	ES351324
QUAL ID	R2100011 rev. C
MP CODE	3411H7M9CA01
Part No.	LE9652PQC
Bonding No.	BDM-002786 Rev. A
CCB No.	4514
Package	
Type	48L VQFN
Package size	7x7x1.0 mm
Lead Frame	
Paddle size	232 x 232 mils
Material	A194
Surface	Ag selective Plated
Process	Etched
Lead Lock	Yes
Part Number	10104808
Material	
Epoxy	3280
Wire	CuPdAu wire
Mold Compound	G700LTD
Plating Composition	Matte Tin

PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
MTAI213802513.000	GF07921225657.200	2051C75
MTAI213802989.000	GF07921225657.200	2051DQ0
MTAI213802998.000	GF07921225657.200	2051DW 3

Result [X] Pass [ ] Fail [ ] ____________________

48L VQFN (7x7x1.0 mm) assembled by MTAI pass reliability test per QCI-39000.This package was qualified the Moisture/Reflow Sensitivity Classification Level 3 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 3)	**Electrical Test:** +25°C System: CHROMA3650	JESD22-A113	693(0)	693		Good Devices
	Bake 150°C, 24 hrs System: CHINEE	JIP/ IPC/JEDEC J-STD-020E		693		
	30°C/60%RH Moisture Soak 192 hrs. System: TABAI ESPEC Model PR-3SPH			693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test: +25°C System: CHROMA3650			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: +25°C System: CHROMA3650		231(0)	0/231	Pass	77 units / lot
	Stress Condition: -65°C to +150°C, 1000 Cycles System: TABAI ESPEC TSA-70H			231		
	Electrical Test: +25°C System: CHROMA3650		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (> 2.5 grams)		15 (0)	0/15	Pass	
	Bond Shear (>15.00 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: CHROMA3650		231(0)	0/231	Pass	77 units / lot
	Stress Condition: +130°C/85%RH, 192 hrs. System: HAST 6000X			231		
	Electrical Test: +25°C System: CHROMA3650		231(0)	0/231	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 System: CHROMA3650	JESD22-A103	 45(0)	45 0/45	 Pass	45 units
Solderability **Temp 215°C**	**Steam Aging:** Temp 93°C,8Hrs System: SAS-3000 Solder Dipping: Solder Temp.215°C Solder material: SnPb Sn63, Pb37 System: ERSA RA 2200D Visual Inspection: External Visual Inspection	J-STD-002	22 (0)	22 22 0/22	Pass	
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	
Bond Strength **Data Assembly**	Wire Pull (> 2.5 grams) Bond Shear (>15.00 grams)	Mil.Std. 883-2011 CDF-AEC-Q100-001	30 (0) Wires 30 (0) bonds	0/30 0/30	Pass Pass	

Affected Catalog Part Numbers (CPN)

LE9641PQC
LE9651PQC
LE9641PQCT
LE9651PQCT