

Product Change Notification / ALAN-13SUCS155

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15-Jul-2022

Product Category:

PoE PSE, Reverse Power Feed

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4826 Final Notice: Qualification of TJS5 as an additional fabrication site for PD69208T4ILQ-TR-LE, PD81101ILQ-TR-LE, PD69204T4ILQ-TR-LE, and PD39208ILQ-TR-LE catalog part numbers (CPN) in 56L VQFN (8x8x1.0mm) package.

Affected CPNs:

ALAN-13SUCS155_Affected_CPN_07152022.pdf ALAN-13SUCS155_Affected_CPN_07152022.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 TJS5 as an additional fabrication site for PD69208T4ILQ-TR-LE, PD81101ILQ-TR-LE, PD69208MILQ-TR-LE, PD69204T4ILQ-TR-LE, and PD39208ILQ-TR-LE catalog part numbers (CPN) in 56L VQFN (8x8x1.0mm) package.

Pre and Post Change Summary:

1	brication ocation	TowerJazz – Fab2 (TJM2)		TowerJazz – Fab2 (TJM2)			TowerJazz Panasonic Semiconductor Co., LTD. (TJS5)				
\ w	afer Size	8" inch		8" inch			8" inch				
	вом	0.1 μF	0.1 μF 0402 Capacitor (C36)		17.4 k	17.4 k Ω 0402 Resistor (R52)			17.4 k Ω 0402 Resistor (R52)		
	mponent				See pre and post change summary						
	ISO	ISO-9001 CERTIFIED	IATF16949 CERTIFIED	ISO-14001 CERTIFIED	ISO-9001 CERTIFIED	IATF16949 CERTIFIED	ISO-14001 CERTIFIED	ISO-9001 CERTIFIED	IATF16949 CERTIFIED	ISO-14001 CERTIFIED	

Impacts to Data Sheet:None

Change Impact:Requires minor update to external application circuit. See Modification to AN3361 and AN3615 Reference Design document.

Reason for Change:To improve manufacturability and on-time delivery performance by qualifying TowerJazz Panasonic Semiconductor Co., LTD. (TJS5) as an additional fabrication site.

Change Implementation Status:In Progress

Estimated First Ship Date:June 28, 2022 (date code: 2227)

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

Time Table Summary:

	November 2021			>		Jur	ne 20)22			
Workweek	4	4	4	4	4		2	2	2	2	2
workweek	5	6	7	8	9		3	4	5	6	7
Initial PCN Issue											
Date				Х							
Qual Report											
Availability									Х		
Final PCN Issue											
Date									Х		
Estimated											
Implementation											х
Date											

Method to Identify Change:Traceability code

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

Revision History: November 24, 2021: Issued initial notification.

June 14, 2022: Issued final notification. Attached the Qualification Report. Provided estimated first ship date to be on June 28, 2022.

July 15, 2022: Re-issued final notification. Updated change impact. Revised pre and post change summary in PCN letter and added the Pre and post change summary in ppt file.

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

Attachments:

Modification-to-AN3361-and-AN3615-Reference-Design-00004588B.pdf PCN ALAN-13SUCS155 Qualification Report.pdf PCN_ALAN-ALAN-13SUCS155_Pre and Post Change_Summary.pdf

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PD69208/PD69204/PD39208

Implications of Adding TowerJazz 5 as Alternative Manufacture Site

Introduction

Microchip manufactures PD6920x and PD39208 devices using wafers from TowerJazz Fab 2 (TJ2) located in Migdal HaEmek, Israel. To bring additional capacity, the PD6920x and PD39208 devices will be manufactured using wafers from TowerJazz Fab 5 (TJ5) in Arai, Japan. This manufacturing change is documented in PCN ALAN-13SUCS155.

1. Reference Designs

The application note AN3361 Designing an IEEE® 802.3af/at/bt PoE System Based on PD692x0/PD69208 (www.microchip.com/DS00003361) provides detailed information and circuitry design guidelines for the implementation of a Power over Ethernet (PoE) Power Source Equipment (PSE) system, based on Microchip's PD69208T4, PD69204T4, or PD69208M PoE Managers and PD69210, PD69220 or PD69200 PoE Controllers. Application note AN3615 Designing an IEEE® 802.3af/at PoE System Based on PD39210 + PD39208 Chipset (www.microchip.com/DS00003615) is the equivalent application note for the Microchip PD39210 + PD39208 Chipset.

With the introduction of the PD6920x and PD39208 TJ5 material, there is a minor change to the Application Schematic and BOM. Component C36 is changed from a 0.1 μ F capacitor to a 17.4 k Ω resistor. This resistor has a Reference Designator R52. This change is mandatory for TJ5 material and optional for TJ2 material. There is no performance degradation in making this change for TJ2 material. Either the 0.1 μ F capacitor or the 17.4 k Ω resistor can be used for TJ2 material with no detrimental effect.

It is recommended to make this component change on all platforms to accommodate both TJ2 and TJ5 materials.

1.1 Physical PCB Implications

and its subsidiaries

C36 is a 0.1 μ F 10V X7R, 0402 capacitor. C36 is connected from the VAUX5 pin of the IC to analog ground. It will be replaced by R52 which is a 17.4 $k\Omega$ 1% 0402 resistor. As both components are 0402, R52 is a "drop in" replacement for C36. There is no critical implication on the PCB design or manufacturing process.

2. Identification of TJ2 and TJ5 Material

The following sections describe the two methods to identify TJ2 and TJ5 material:

- · By inspection of the physical package marking.
- Through the 16-byte communication protocol.

2.1 Physical Package Marking

The following figure shows that the TJ2 material is marked "LE" where TJ5 material is marked "ZZ".

Figure 2-1. Package Markings







TJ5 Material marked ZZ Where ZZ are random characters with no meaning

2.2 16-Byte Protocol

For IEEE® 802.3bt firmware, see section 3.2.2 Get BT PoE Device Status in the *BT Serial Communication Protocol User Guide*. For IEEE 802.3at/af firmware, see section 4.2.2 Get PoE Device Status in the *Serial Communication Protocol User Guide*. These documents can be found in Microchips Software Library.

The following figure shows the "bt" version.

Figure 2-2. Get BT PoE Device Status

[0] KEY	[1] ECHO	[2] SUB	[3] SUB1	[4] SUB2	[5] DATA	[6] DATA	[7] DATA	[8] DATA	[9] DATA	[10] DATA	[11] DATA	[12] DATA
0x02	##	0x07	0xD3	Val	0x4E	0x4E	0x4E	0x4E	0x4E	0x4E	0x4E	0x4E
Request	_	Global	BT Device Info	CSNum	N	N	N	N	N	N	N	N
0x03	##	Val	Val		Val	Val	Val	Val	Val	Val	Val	Val
Telemetry	_	CSNum	PoE Devi	ice-Version	Device Status	Device Event	Device Found	MCHP Use8	Temperature [Celsius]	TSH [Celsius]	Reset/POR Counters	N

- V2R4 is 0x4A02
- V2R5 is 0x5BC2

3. Revision History

Revision	Date	Description
В	06/2022	 The following is the summary of changes made in this revision: Changed the document title from Modification to AN3361 and AN3615 Reference Design to Implications of Adding TowerJazz 5 as Alternative Manufacture Site. Added 2. Identification of TJ2 and TJ5 Material section. Added information to 1. Reference Designs section.
Α	05/2022	Initial Revision

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Boston Tel: 852-2943-5100 Tel: 60-3-7651-7906 Germany - Heilbronn Tel: 49-7131-72400 Tel: 49-7131-72400 Tel: 49-7131-72400 Tel: 60-4-227-8870 Germany - Karlsruhe Tel: 49-721-625370 Tel: 86-25-8473-2460 Tel: 60-4-227-8870 Germany - Karlsruhe Tel: 49-721-625370 Tel: 86-532-8502-73555 Tel: 63-2-634-9065 Germany - Munich Tel: 49-89-627-144-0 Tel: 630-285-0071 Tel: 86-21-3326-8000 Tel: 65-6334-8870 Fax: 49-89-627-144-0 Tel: 630-285-0075 China - Shenyang Taiwan - Hsin Chu Germany - Rosenheim Tel: 972-818-705 Tel: 86-24-2334-2829 Tel: 886-3-577-8366 Tel: 49-8031-354-560 Tel: 49-8031-354-560 Tel: 972-818-7423 Tel: 86-755-8864-2200 Tel: 886-7-213-7830 Tel: 972-818-7423 Tel: 86-186-6233-1526 Tel: 886-2-2508-8600 Tel: 39-0331-742611 Tel: 248-848-4000 Tel: 86-23-5300 Tel: 86-22-5980-5300 Tel: 86-29-8833-7252 Tel: 88-25-5448-2100 Novi, MI Tel: 248-848-4000 Tel: 86-29-8833-7252 Tel: 86-29-8833-7252 Tel: 84-28-5448-2100 Netherlands - Drunen Tel: 31-416-690399 Tel: 31-773-5453 Tel: 86-59-2388138 Tel: 317-773-5453 Tel: 86-756-3210040 Tel: 317-773-5453 Tel: 317-773-5453 Tel: 317-773-5453 Tel	·		Malaysia - Kuala Lumpur	Tel: 49-2129-3766400
Tel: 774-760-0087 Fax: 774-760-0088 China - Qingdao Philippines - Manila Tel: 49-721-625370 Chicago Tel: 86-532-8502-7355 Tel: 63-2-634-9065 Germany - Munich Itasca, IL China - Shanghai Singapore Tel: 49-89-627-144-0 Tel: 630-285-0071 Tel: 86-21-3326-8000 Tel: 86-6334-8870 Fax: 49-89-627-144-44 Fax: 630-285-0075 China - Shenyang Taliwan - Hsin Chu Germany - Rosenheim Tel: 49-80-627-144-44 Tel: 630-285-0075 China - Shenyang Taliwan - Hsin Chu Germany - Rosenheim Tel: 49-80-627-144-44 Tel: 630-285-0075 China - Shenzhen Taliwan - Kaohsiung Tel: 49-8031-354-560 Addison, TX China - Shenzhen Taliwan - Kaohsiung Israel - Ra'anana Tel: 972-818-7423 Tel: 86-755-8864-2200 Tel: 886-7-213-7830 Tel: 972-9-744-7705 Italy - Milan Detroit Tel: 86-186-6233-1526 Tel: 886-2-2508-8600 Tel: 39-0331-742611 Novi, MI Tel: 248-848-4000 Tel: 66-27-5980-5300 Tel: 66-2-694-1351 Tel: 39-0331-466781 Italy - Padova Houston, TX China - Xiam Tel: 281-894-5983 Tel: 86-29-8833-7252 Tel: 86-29-8833-7252 Tel: 84-28-5448-2100 Netherlands - Drunen Tel: 317-773-8323 Tel: 317-773-8453 Tel: 317-773-8453 Tel: 317-773-8453 Tel: 317-773-8453 Tel: 317-773-5453 Tel: 38-756-3210040 Tel: 48-22-3325737	Boston			
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Chicago Tel: 86-532-8502-7355 Tel: 63-2-634-9065 Germany - Munich Itasca, IL China - Shanghai Singapore Tel: 49-89-627-144-0 Tel: 630-285-0071 Tel: 86-21-3326-8000 Tel: 65-6334-8870 Fax: 49-89-627-144-44 Fax: 630-285-0075 China - Shenyang Taiwan - Hsin Chu Germany - Rosenheim Dallas Tel: 86-24-2334-2829 Tel: 886-3-577-8366 Tel: 49-8031-354-560 Addison, TX China - Shenzhen Taiwan - Kaohsiung Israel - Ra'anana Tel: 972-818-7423 Tel: 86-755-8864-2200 Tel: 886-7-213-7830 Tel: 972-9-744-7705 Fax: 972-818-2924 China - Suzhou Taiwan - Taipei Italy - Milan Detroit Tel: 86-186-6233-1526 Tel: 886-2-2508-8600 Tel: 39-0331-742611 Novi, MI China - Wuhan Thailand - Bangkok Fax: 39-0331-466781 Tel: 248-848-4000 Tel: 86-27-5980-5300 Tel: 66-2-694-1351 Italy - Padova Tel: 281-894-5983 Tel: 86-292-8833-7252 Tel: 84-28-5448-2100 Netherlands - Drunen Indianapolis China - Xiamen Tel: 86-592-2388138 Tel: 86-692-2388138			, ,	Germany - Karlsruhe
Chicago Tel: 86-532-8502-7355 Tel: 63-2-634-9065 Germany - Munich Itasca, IL China - Shanghai Singapore Tel: 49-89-627-144-0 Tel: 630-285-0071 Tel: 86-21-3326-8000 Tel: 65-6334-8870 Fax: 49-89-627-144-44 Fax: 630-285-0075 China - Shenyang Taiwan - Hsin Chu Germany - Rosenheim Dallas Tel: 86-24-2334-2829 Tel: 886-357-8366 Tel: 49-8031-354-560 Addison, TX China - Shenzhen Taiwan - Kaohsiung Israel - Ra'anana Tel: 972-818-7423 Tel: 86-755-8864-2200 Tel: 886-7-213-7830 Tel: 972-9-744-7705 Fax: 972-818-2924 China - Suzhou Taiwan - Taipei Italy - Milan Detroit Tel: 86-186-6233-1526 Tel: 886-2-2508-8600 Tel: 39-0331-742611 Novi, MI China - Wuhan Thailand - Bangkok Fax: 39-0331-466781 Tel: 248-848-4000 Tel: 86-27-5980-5300 Tel: 66-2-694-1351 Italy - Padova Tel: 281-894-5983 Tel: 86-592-8833-7252 Tel: 84-28-5448-2100 Netherlands - Drunen Indianapolis China - Xiame Tel: 86-592-2388138 Tel: 86-692-3210040 Nor	Fax: 774-760-0088	China - Qingdao	Philippines - Manila	_
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Fax: 972-818-2924 China - Suzhou Taiwan - Taipei Italy - Milan Detroit Tel: 86-186-6233-1526 Tel: 886-2-2508-8600 Tel: 39-0331-742611 Novi, MI China - Wuhan Thailand - Bangkok Fax: 39-0331-466781 Tel: 248-848-4000 Tel: 86-27-5980-5300 Tel: 66-2-694-1351 Italy - Padova Houston, TX China - Xian Vietnam - Ho Chi Minh Tel: 39-049-7625286 Tel: 281-894-5983 Tel: 86-29-8833-7252 Tel: 84-28-5448-2100 Netherlands - Drunen Indianapolis China - Xiamen Tel: 84-28-5448-2100 Netherlands - Drunen Noblesville, IN Tel: 86-592-2388138 Fax: 31-416-690340 Norway - Trondheim Tel: 317-773-8453 Tel: 86-756-3210040 Tel: 47-72884388 Poland - Warsaw Tel: 317-536-2380 Los Angeles Tel: 48-22-3325737	Addison, TX	China - Shenzhen	Taiwan - Kaohsiung	Israel - Ra'anana
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	Tel: 317-536-2380			Poland - Warsaw
	Los Angeles			Tel: 48-22-3325737
Mission Viejo, CA Romania - Bucharest	Mission Viejo, CA			Romania - Bucharest
Tel: 949-462-9523 Tel: 40-21-407-87-50	Tel: 949-462-9523			Tel: 40-21-407-87-50
Fax: 949-462-9608 Spain - Madrid	Fax: 949-462-9608			Spain - Madrid
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Raleigh, NC Fax: 34-91-708-08-91	Raleigh, NC			Fax: 34-91-708-08-91
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Tel: 408-436-4270 Tel: 444-118-921-5800	Tel: 408-436-4270			Tel: 44-118-921-5800
Canada - Toronto Fax: 44-118-921-5820	Canada - Toronto			Fax: 44-118-921-5820
Tel: 905-695-1980	Tel: 905-695-1980			
Fax: 905-695-2078	Fax: 905-695-2078			



QUALIFICATION REPORT SUMMARY

PCN #: ALAN-13SUCS155

Date: May 31, 2022

Qualification of TJS5 as an additional fabrication site for PD69208T4ILQ-TR-LE, PD81101ILQ-TR-LE, PD69208MILQ-TR-LE, PD69204T4ILQ-TR-LE, and PD39208ILQ-TR-LE catalog part numbers (CPN) in 56L VQFN (8x8x1.0mm) package.

I. Summary:

Qualification of TJS5 as an additional fabrication site for PD69208T4ILQ-TR-LE, PD81101ILQ-TR-LE, PD69208MILQ-TR-LE, PD69204T4ILQ-TR-LE, and PD39208ILQ-TR-LE catalog part numbers (CPN) in 56L VQFN (8x8x1.0mm) package.

II. Device Description:

Device	PD69208M
Mask	VJH11
MSL	5579
Product Description	IEEE 802.3at / bt Type 3 8 ports, Fully Integrated PSE Manager,
	Industrial Temp.
Document Control Number	ML0520220084
Document Revision	A

III. Qualification Material:

Test / Lot	Lot 1	Lot 2	Lot 3
DEVICE	PD69208M V2R5	PD69208M V2R5	PD69208M V2R5
MASK, REV	VJH11; Rev A4	VJH11; Rev A4	VJH11; Rev A4
WAFER FAB	TPSCo Japan	TPSCo Japan	TPSCo Japan
WAFER LOT	EBPN691701AP	EBPN691801AP	TJS5922302674.100
ASSEMBLY LOT	EBPN691701AP-4	EBPN691801AP-4	NSEB224300484.000
TRACE CODE	1728TAB	1729TAE	22034CM
PACKAGE	56L VQFN 8x8x1.0mm	56L VQFN 8x8x1.0mm	56L VQFN 8x8x1.0mm
ASSEMBLY SITE	NSEB-THAILAND	NSEB-THAILAND	NSEB-THAILAND
TEST LOCATION		Garden Grove, CA-USA	
QUAL PROJECT#	42025-1	42025-2	42025-3
QUAL TESTS	HTOL, PRECOND, HTSL, HAST, UHAST, TC, PCA (Package Construction Analysis).	HTOL, PRECOND, HTSL, HAST, UHAST, TC.	HTOL, ESD.

BOM TABLE

		T		
	Assembly site	NSEB		
	BD Number	D-034107/B		
	MP Code (MPC)	VJH11T5HCA07		
	Part Number (CPN)	PD69208MILQ-TR-LE		
Misc.	MSL information	MSL-1/260		
	Assembly Shipping Media (T/R, Tube/Tray)	Tray		
	Base Quantity Multiple (BQM)	2000		
	Reliability Site	N/A		
	CCB No	4826		
	Paddle size	272x272 mils		
	Material	C194		
	DAP Surface Prep	NiPdAu		
	Treatment	No		
_	Process	Etched		
<u>Lead-Frame</u>	Lead-lock	Yes		
	Part Number	FR1165		
	Lead Plating	NiPdAu-PPF		
	Strip Size	250x70 mm		
	Strip Density	175 units/strip		
Bond Wire	Material	CuPdAu		
Die Attach	Part Number	590-4HT1		
<u>Die Attach</u>	Conductive	Yes		
<u>MC</u>	Part Number	G700LTD		
	PKG Type	VQFN		
<u>PKG</u>	Pin/Ball Count	56		
<u>PKG</u>	PKG width/size	8x8x1.0mm		

IV. Qualification Data:

High Temperature Operating Life (HTOL):

Test Method/ Condition	JESD22, Method 108, Tj = + 130°C, VCC = +57.0V, 1000 HR				
Lot #	Results (Fail/SS)		Minimum SS = 77		
Lot 1: EBPN691701AP-4	0/80 @168hrs	0/80 @500hrs	0/80 @1000hrs		
Lot 2: EBPN691801AP-4	0/80 @168hrs	0/80 @500hrs	0/80 @1000hrs		
Lot 3: NSEB224300484.000	0/80 @168hrs	0/80 @500hrs	0/80 @1000hrs		

Pre and Post testing was conducted at +25°C, -40°C & +85°C.

ESD-HBM/CDM

Test	Reference Method	Fail/Pass	Result
		<u>+</u> 500V 0/3	
HBM	IEDEC IS 004	<u>+</u> 1000V 0/3	Pass <u>+</u> 2000V
	JEDEC JS-001	<u>+</u> 1500V 0/3	
		<u>+</u> 2000V 0/3	
		<u>+</u> 250V 0/3	
	150 0400 044	<u>+</u> 500V 0/3	Pass <u>+</u> 1000V
	AEC-Q100-011	<u>+</u> 750V 0/3	
		<u>+</u> 1000V 0/3	

Pre and Post testing was conducted at +25°C.

Package Preconditioning:

Test Method/Condition	JEDEC J-STD-020 / JESD22-A113, MSL1 (+85°C/85%RH) 168hours, 3x Reflow @ +260°C (+0/-5C) Peak Reflow Temperature.	
Lot #	Results (Fail/SS)	Minimum SS = 246
Lot 1: EBPN691701AP-4	0/266	CSAM/PASS
Lot 2: EBPN691801AP-4	0/266	CSAM/PASS

Pre and Post testing was conducted at +25°C and +85°C.



HTSL (High Temperature Storage Life)

Test Method/Condition	JESD22-A113 @ MSL1, 3x IR @ +260°C; JESD22-A103, Ta = +150 °C, 1000 HRS.	
Lot #	Results (Fail/SS)	Minimum SS = 25
Lot 1: EBPN691701AP-4	0/25	CSAM/PASS
Lot 2: EBPN691801AP-4	0/25	CSAM/PASS

Pre and Post testing was conducted at +25°C & +85°C.

HAST (Highly Accelerated Temperature and Humidity Stress Test)

Test Method/Condition		3 @ MSL1, 3x IR	@ +260°C; fa = +130°C/85%RH, 192 HRS.
Lot #	Results (Fail/S	SS)	Minimum SS = 20
Lot 1: EBPN691701AP-4	0/20 ^{@96hrs}	0/20 ^{@192hrs}	CSAM/PASS
Lot 2: EBPN691801AP-4	0/20 ^{@96hrs}	0/20 ^{@192hrs}	CSAM/PASS

Pre and Post testing was conducted at +25°C & +85°C.

TC (Temperature Cycling)

Test Method/Condition	JESD22-A113 @ MSL1, 3x IR @ - JESD22-A104, Test Condition C, (
Lot #	Results (Fail/SS)	Minimum SS = 77
Lot 1: EBPN691701AP-4	0/77 CSAM/PASS	WBP/PASS
Lot 2: EBPN691801AP-4	0/77 CSAM/PASS	

Pre and Post testing was conducted at +25°C & +85°C.

UHAST (Un-bias HAST)

Test Method/Condition	JESD22-A113 @ MSL1, 3x IR @ +260°C; UHAST JESD22 A118 (Ta =+130°C/85% RH) 192 hours.
Lot #	Results (Fail/SS)
Lot 1: EBPN691701AP-4	0/77 @96hrs
Lot 2: EBPN691801AP-4	0/77 @96hrs 0/77 @192hrs

Pre and Post testing was conducted at +25°C.

PCA (Package Construction Analysis) reference FA#2022-00926

Test Method/Condition	Zero-hour decap and visual inspection.	
Lot #	Results	
Lot 1: EBPN691701AP-4	PASS	

V. Conclusion:

Based on the results, the PD69208M, mask# VJH11 complies with the reliability guidelines in Microchip. Therefore, this part can be released to production.

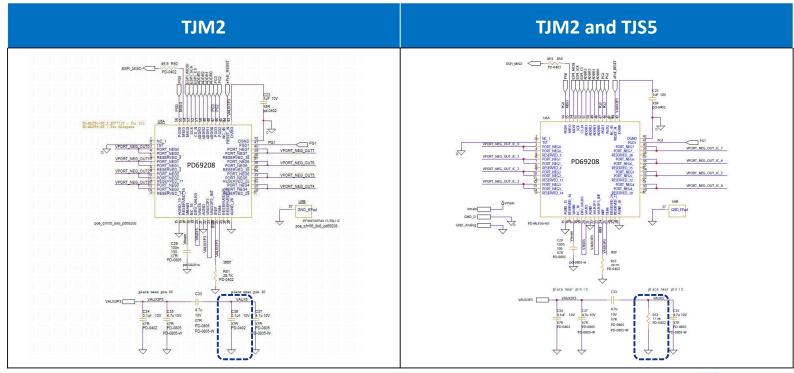
CCB 4826 Pre and Post Change Summary PCN# ALAN-13SUCS155



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Pre and Post Change Summary



*Note: Same component footprint, no PCB change required.



ALAN-13SUCS155 - CCB 4 PD81101IL PD69208N PD69204T and PD39208ILQ-TR-LE catalog part numbers

Affected Catalog Part Numbers(CPN)

PD69208T4ILQ-TR-LE PD81101ILQ-TR-LE PD69208MILQ-TR-LE PD69204T4ILQ-TR-LE PD39208ILQ-TR-LE