Product Change Notification / CENO-11OMTT994

Date:

13-Jun-2024

Product Category:

Linear Regulators

PCN Type:

Manufacturing Change

Notification Subject:

CCB 6506 Final Notice: Qualification of HANA as an additional assembly site for selected MCP1703x, MCP182xx, TC1108, TC126x and TC2117 device families using 100x87 mils paddle size available in 3L SOT-223 package.

Affected CPNs:

CENO-11OMTT994_Affected_CPN_06132024.pdf
CENO-11OMTT994_Affected_CPN_06132024.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 HANA as an additional assembly site for selected MCP1703x, MCP182xx, TC1108, TC126x and TC2117 device families using 100x87 mils paddle size available in 3L SOT-223 package.

Pre and Post Change Summary:

Table 1

	Pre Change	Post Change	
Assembly Site	Lingsen Precision Industries, LTD. (LPI)	Lingsen Precision Industries, LTD. (LPI)	Hana Semiconductor CO., LTD. (HANA)
Wire Material	Au	Au	Au
Die Attach Material	CRM-1064L	CRM-1064L	84-1 LMISR4
Molding Compound Material	G600	G600	G600
Lead-Frame Material	PMC	PMC	C194
Lead-Frame Paddle Size	118x97mils	118x97mils	100x87mils

** Note: Refer to the attached Table 1-Affected CPNs for part numbers applicable to this change*

Table 2

	Pre Change		Post Change	
Assembly Site	Lingsen Precision Industries, LTD. (LPI)	Hana Semiconductor CO., LTD. (HANA)	Lingsen Precision Industries, LTD. (LPI)	Hana Semiconductor CO., LTD. (HANA)
Wire Material	Au	Au	Au	Au
Die Attach Material	CRM-1064L	84-1 LMISR4	CRM-1064L	84-1 LMISR4
Molding Compound Material	G600	G600	G600	G600
Lead-Frame Material	PMC	C194	PMC	C194
Lead-Frame Paddle Size	118x97mils	118x101mils	118x97mils	100x87mils
DAP Surface Prep	Ring Ag	Spot Ag	Ring Ag	Ring Ag

** Note: Refer to the attached Table 2-Affected CPNs for part numbers applicable to this change*

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve on-time delivery performance by qualifying HANA as an additional assembly site.

Change Implementation Status: In Progress

Estimated First Ship Date: July 20, 2024 (date code: 2429)

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

Time Table Summary:

	September 2023					>	June 2024					July 2024				
Workweek	35	36	37	38	39		22	23	24	25	26	27	28	29	30	31
Initial PCN Issue Date			x													
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: September 12, 2023: Issued initial notification.
June 13, 2024: Issued final notification. Attached the Qualification Report. Revised the affected parts list in Table 1 to add MCP1825S-2502E/DBVAO catalog part number (CPN) and remove MCP1703AT-3402E/DBV01 catalog part number (CPN) due to EOL. Revised the Pre and Post Change Summary attachment to specify the change applicable for the affected catalog part numbers (CPN) listed in Table 1 and Table 2. Provided estimated first ship date to be on July 20, 2024.

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

Attachments:

Table 1-Affected_CPNs.pdf
Table 2-Affected_CPNs.pdf
PCN_CENO-11OMTT994_Pre_and_Post_Change Summary.pdf
PCN_CENO-11OMTT994_Qual_Report.pdf

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

Terms and Conditions:

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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)

TC1108-3.3VDB
TC1108-5.0VDB
TC1108-2.5VDBTR
TC1108-2.8VDBTR
TC1108-3.0VDBTR
TC1108-2.5VDB
TC1108-2.8VDB
TC1108-3.0VDB
TC1108-2.7VDB
TC1108-2.7VDBTR
TC1108-3.3VDBTR
TC1108-5.0VDBTR
MCP1826S-3002E/DB
MCP1826S-0802E/DB
MCP1826S-1202E/DB
MCP1826S-1802E/DB
MCP1826S-2502E/DB
MCP1826ST-1802E/DB
MCP1826ST-2502E/DB
MCP1826ST-3002E/DB
MCP1826ST-3302E/DB
MCP1826ST-5002E/DB
MCP1826S-3302E/DB
MCP1826S-5002E/DB
MCP1826S-1002E/DB
MCP1826ST-1002E/DB
MCP1826ST-0802E/DB
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MCP1703T-3301E/DB
MCP1703T-1202E/DB
MCP1703-1202E/DB
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MCP1703A-2052E/DB
MCP1703A-4102E/DB
MCP1703AT-4102E/DB
MCP1703AT-3072E/DB
MCP1703AT-5001E/DB
MCP1826S-5002E/DBVAO
MCP1703A-5002E/DBVAO
MCP1703AT-5002E/DBVAO
MCP1703AT-3302E/DBVAO
MCP1825ST-1202E/DB
MCP1825ST-1802E/DB
MCP1825ST-2502E/DB
MCP1825ST-3002E/DB
MCP1825ST-3302E/DB
MCP1825ST-5002E/DB
MCP1824ST-0802E/DB
MCP1824ST-1202E/DB
MCP1824ST-1802E/DB
MCP1824ST-2502E/DB
MCP1824ST-3002E/DB
MCP1824ST-3302E/DB
MCP1824ST-5002E/DB
MCP1825S-0802E/DB
MCP1825S-1202E/DB
MCP1825S-1802E/DB
MCP1825S-2502E/DB

MCP1825S-3002E/DB

MCP1825S-3302E/DB

MCP1825S-5002E/DB

MCP1825ST-0802E/DB

TC1262-2.5VDB

TC1262-2.8VDB

TC1262-3.0VDB

TC1262-3.3VDB

TC1262-5.0VDB

TC1262-2.5VDBTR

TC1262-2.8VDBTR

TC1262-3.0VDBTR

TC1262-3.3VDBTR

TC1262-5.0VDBTR

TC1264-1.8VDB

TC1264-2.5VDB

TC1264-3.0VDB

TC1264-3.3VDB

TC2117-2.5VDB

TC1264-1.8VDBTR

TC1264-2.5VDBTR

TC1264-3.0VDBTR

TC1264-3.3VDBTR

MCP1825S-1802E/DBVAO

MCP1825ST-3302E/DBVAO

MCP1825S-2502E/DBVAO

Catalog Part Number	
TC1108-3.3VDB	MCP1825ST-3002E/DB
TC1108-5.0VDB	MCP1825ST-3302E/DB
TC1108-2.5VDBTR	MCP1825ST-5002E/DB
TC1108-2.8VDBTR	MCP1824ST-0802E/DB
TC1108-3.0VDBTR	MCP1824ST-1202E/DB
TC1108-2.5VDB	MCP1824ST-1802E/DB
TC1108-2.8VDB	MCP1824ST-2502E/DB
TC1108-3.0VDB	MCP1824ST-3002E/DB
TC1108-2.7VDB	MCP1824ST-3302E/DB
TC1108-2.7VDBTR	MCP1824ST-5002E/DB
TC1108-3.3VDBTR	MCP1825S-0802E/DB
TC1108-5.0VDBTR	MCP1825S-1202E/DB
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MCP1826S-0802E/DB	MCP1825S-2502E/DB
MCP1826S-1202E/DB	MCP1825S-3002E/DB
MCP1826S-1802E/DB	MCP1825S-3302E/DB
MCP1826S-2502E/DB	MCP1825S-5002E/DB
MCP1826ST-1802E/DB	MCP1703AT-3301E/DB
MCP1826ST-2502E/DB	MCP1703AT-4002E/DB
MCP1826ST-3002E/DB	MCP1703AT-5002E/DB
MCP1826ST-3302E/DB	MCP1703A-4002E/DB
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MCP1826ST-1002E/DB	MCP1703AT-2052E/DB
MCP1826ST-0802E/DB	MCP1703A-2052E/DB
MCP1826ST-1202E/DB	MCP1703A-4102E/DB
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MCP1703-3302E/DB	MCP1703AT-3072E/DB
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MCP1703T-1202E/DB	MCP1703AT-3302E/DBVAO
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MCP1703-1802E/DB	MCP1825ST-2502E/DB
MCP1703-2502E/DB	MCP1825ST-0802E/DB
MCP1703-2802E/DB	TC1262-2.5VDB
MCP1703T-2502E/DB	TC1262-2.8VDB
MCP1703AT-5001E/DB	TC1262-3.0VDB
MCP1703T-2802E/DB	TC1262-3.3VDB
MCP1703T-3002E/DB	TC1262-5.0VDB
MCP1703T-3302E/DB	TC1262-2.5VDBTR
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MCP1703T-1802E/DB	TC1262-3.0VDBTR
MCP1703A-1502E/DB	TC1262-3.3VDBTR
MCP1703A-1802E/DB	TC1262-5.0VDBTR
MCP1703T-2402E/DB	TC1264-1.8VDB
MCP1703T-5002E/DB	TC1264-2.5VDB
MCP1703A-2502E/DB	TC1264-3.0VDB
MCP1703A-1202E/DB	TC1264-3.3VDB
MCP1703A-2802E/DB	TC2117-2.5VDB
MCP1703A-3002E/DB	TC1264-1.8VDBTR
MCP1703T-4002E/DB	TC1264-2.5VDBTR
MCP1703AT-1502E/DB	TC1264-3.0VDBTR
MCP1703AT-1802E/DB	TC1264-3.3VDBTR
MCP1703AT-2502E/DB	MCP1825S-1802E/DBVAO
MCP1703AT-2802E/DB	MCP1825ST-3302E/DBVAO
MCP1703AT-3002E/DB	MCP1825S-2502E/DBVAO
MCP1703AT-3302E/DB	

Catalog Part Number
MCP1703A-1502E/DB
MCP1703A-1802E/DB
MCP1703A-2502E/DB
MCP1703A-1202E/DB
MCP1703A-2802E/DB
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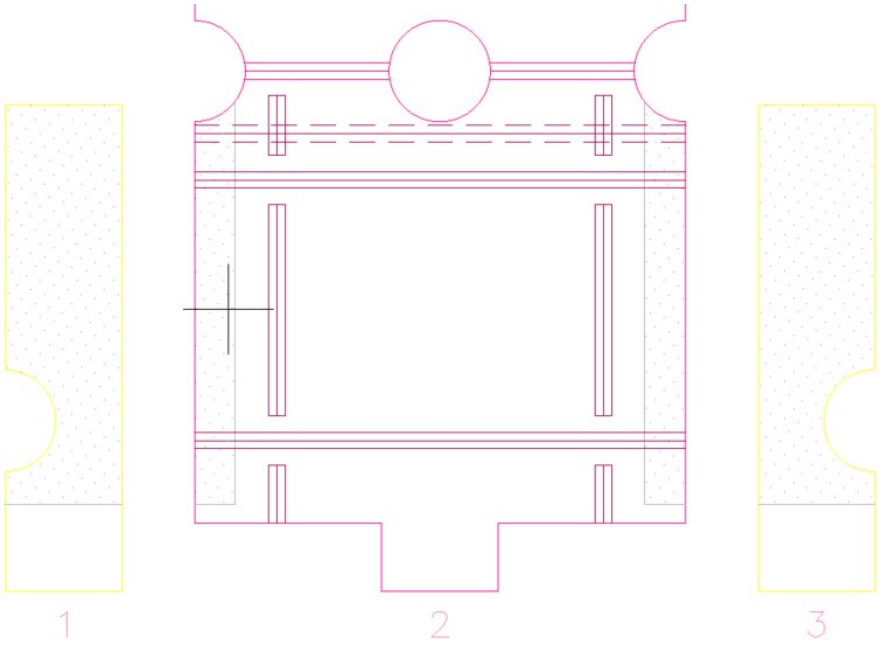
MCP1703A-3072E/DB
MCP1703AT-2052E/DB
MCP1703A-2052E/DB
MCP1703A-4102E/DB
MCP1703AT-4102E/DB
MCP1703AT-3072E/DB

CCB 6506
Pre and Post Change Summary
PCN #: CENO-11OMTT994

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

Lead Frame Comparison

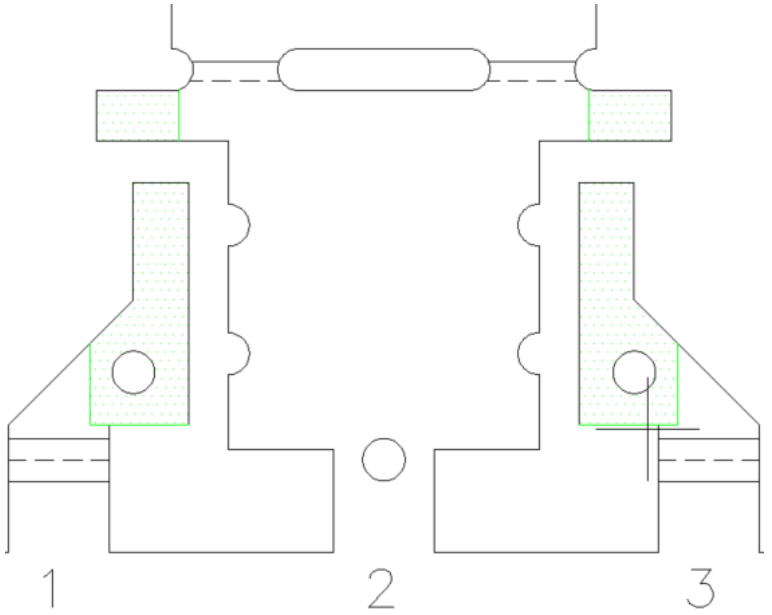
LPI



Note: Not to scale

Lead Frame Paddle Size	118x97 mils

HANA



Note: Not to scale

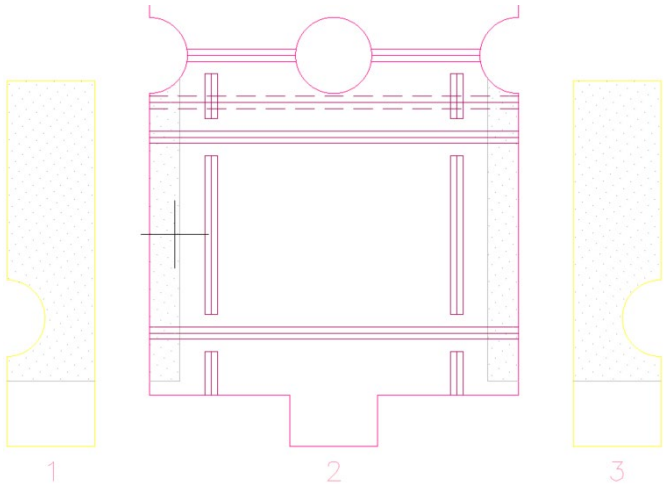
Lead Frame Paddle Size	100x87mils

*Note: This comparison applies only to the catalog part numbers (CPN) found in "*Table 1-Affected_CPNs*".

MICROCHIP

Lead Frame Comparison

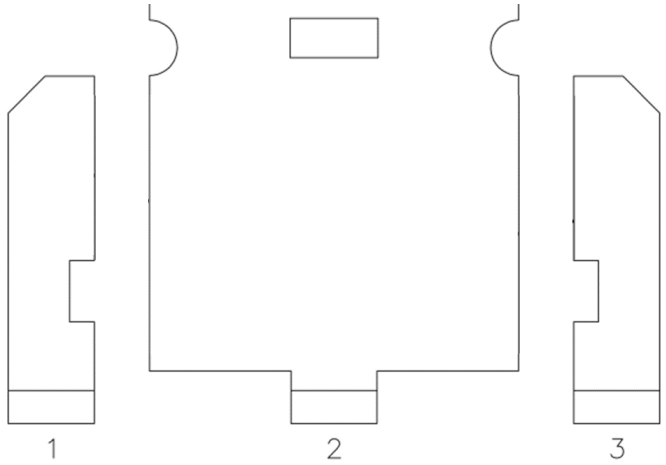
LPI



Note: Not to scale

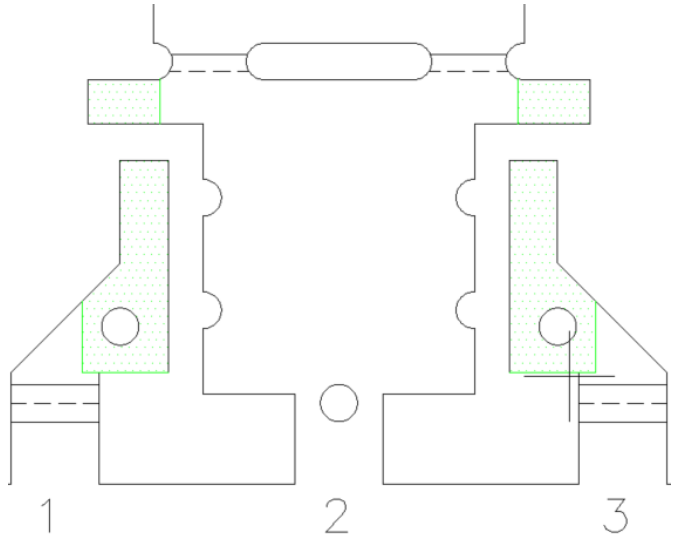
Lead Frame Paddle Size	118x97 mils
DAP Surface Prep	Ring AG

HANA



Note: Not to scale

Lead Frame Paddle Size	118x101 mils
DAP Surface Prep	Spot AG



Note: Not to scale

Lead Frame Paddle Size	100x87mils
DAP Surface Prep	Ring AG

*Note: This comparison applies only to the catalog part numbers (CPN) found in "*Table 2-Affected_CPNs*".

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QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: CENO-11OMTT994

Date:
May 29, 2024

Qualification of HANA as an additional assembly site for selected MCP1703x, MCP182xx, TC1108, TC126x and TC2117 device families using 100x87 mils paddle size available in 3L SOT-223 package.

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PACKAGE QUALIFICATION REPORT

Purpose	Qualification of HANA as an additional assembly site for selected MCP1703x, MCP182xx, TC1108, TC126x and TC2117 device families using 100x87 mils paddle size available in 3L SOT-223 package.
CN	E000194060
QUAL ID	R2301796 Rev. A
MP CODE	GEAJ14F6XVD1
Part No.	MCP1826S-5002E/DBVAO
Bonding No.	BD-001686 Rev. 01
CCB No.	6506
Package`	
Type	3L SOT-223
Die thickness	11 mils
Die size	48.5 x 65.1 mils
Lead Frame	
Paddle size	100 x 87 mils
Material	C194
Surface	Ring Ag
Process	Stamp
Lead Lock	No
Part Number	134760B
Treatment	Rough
Material	
Epoxy	84-1LMISR4
Wire	Au wire 1.0 mil
Mold Compound	G600
Plating Composition	Matte Sn

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PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code	QTY In	QTY Out	Assembly Yield
HANA242500009.000	TMPE224036782.110	2338YVW	1011	1011	100.00%
HANA242500010.000	TMPE224036782.110	2338YW0	1200	1200	100.00%
HANA242500011.000	TMPE224036782.110	2338YW4	1200	1200	100.00%
			Average Yield		100.00%

Result [X] Pass [ ] Fail [ ] _____

3L SOT-223 assembled by HANA 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
Precondition Prior Perform Reliability Tests (At MSL Level 1)	**Electrical Test:** +25°C and 125°C System: TTS	JESD22-A113	693(0)	0/693	Pass	Good Devices
	Bake 150°C, 24 hrs. System: CHINEE	JIP/ IPC/JEDEC J-STD-020E		693		
	85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH			693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test: +25°C and 125°C System: TTS		693(0)	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		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +125°C System: TTS		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on HANA242500009.000)		5(0) Units	0/5	Pass	
	Bond Strength: Wire Pull (>5.00 grams)		15(0)	0/15	Pass	See attachment 1 Wire pull after Temp Cycle
UNBIASED-HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C System: TTS		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on HANA242500009.000)		5(0) Units	0/5	Pass	
HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. **Bias Volt:** 6.0 Volts System: HAST 6000X	JESD22-A110		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C and 125°C System: TTS		231(0)	0/231	Pass	77 units / lot
	Decap Inspection (Information Only) (With 1 lot decap on HANA242500009.000)		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, 500 hrs. System: TPS Bake Oven **Electrical Test:** +25°C and 125°C System: TTS	JESD22-A103	 45(0)	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)	0/22 0/22 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)	0/22 0/22 0/22	 Pass	
Physical Dimensions	Physical Dimension, 10 units / 1 lot	JESD22-B100/B108	30(0) Units	0/30	Pass	See attachment 4 Physical Dimension
Bond Strength Data Assembly	Wire Pull (>5.00 grams) Bond Shear (>16.95 grams)	Mil. Std. 883-2011 CDF-AEC-Q100-001	30(0) Wires Cpk>1.67 30(0) bonds Cpk>1.67	0/30 Cpk=5.42 0/30 Cpk=1.90	Pass Pass	See attachment 2 Wire pull & bond shear data assembly

Attachment 1

Wire Pull After TC 500 Cycles (R2301796)						
Sub group	**Wire Pull Strength (Grams)**					
	w ire	mode	w ire	mode	w ire	mode
1	10.01	5	10.85	5	10.70	5
2	10.86	5	10.70	5	10.96	5
3	10.41	5	10.38	5	10.68	5
4	10.82	5	10.26	5	10.80	5
5	10.66	5	10.33	5	11.10	5
MIN.	10.01					
MAX	11.10					
AVG.	10.63					
STD.	0.30					
SPEC	5.00					

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>

Note: Average ball diameter = 2.55 Mils

Attachment 2

Wire Pull & Ball Shear Strength Assembly Data (3L SOT-223)

REL# R2301796 CN# E000194060

MPC# GEAJ14F6XVD1 WF# TMPE224036782.110

Sub	Wire Pull Strength (Grams)						Sub	Ball Shear Strength (Grams)					
group	wire	mode	wire	mode	wire	mode	group	Ball	mode	Ball	mode	Ball	mode
1	11.32	5	11.41	5	11.42	5	1	33.09	2	42.94	2	38.21	2
2	11.31	5	11.35	5	11.25	5	2	31.46	2	35.05	2	34.86	2
3	11.30	5	11.31	5	11.10	5	3	33.66	2	39.28	2	31.86	2
4	11.16	5	11.43	5	11.24	5	4	37.07	2	37.62	2	34.63	2
5	11.86	5	11.22	5	11.32	5	5	34.31	2	35.10	2	34.90	2
6	11.33	5	10.72	5	10.38	5	6	31.78	2	41.17	2	35.96	2
7	10.83	5	10.05	5	11.05	5	7	38.20	2	31.66	2	32.09	2
8	10.92	5	11.09	5	10.78	5	8	32.06	2	42.68	2	35.37	2
9	11.34	5	10.54	5	10.94	5	9	35.45	2	41.83	2	38.94	2
10	10.92	5	10.49	5	11.04	5	10	33.58	2	37.12	2	37.18	2
MIN.	10.05						**MIN.**	31.46					
MAX	11.86						**MAX**	42.94					
AVG.	11.08						**AVG.**	35.97					
STD.	0.37						**STD.**	3.34					
Cpk.	5.42						**Cpk.**	1.90					
SPEC	5.00						**SPEC**	16.95					

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			
	R2301796-1	R2301796-2	R2301796-3
Item	HANA242500009.000	HANA242500010.000	HANA242500011.000
	Mils	Mils	Mils
1	2.56	2.61	2.49
2	2.57	2.54	2.51
3	2.59	2.60	2.58
4	2.53	2.54	2.56
5	2.56	2.60	2.54
6	2.49	2.57	2.48
7	2.50	2.61	2.59
8	2.48	2.59	2.60
9	2.50	2.58	2.53
10	2.53	2.56	2.56
		MIN	2.48
		MAX	2.61
		Average	2.55
		STD	0.04

Attachment 4

Physical Dimension of 3L SOT-223 , HANA assembly (R2301796)							
ITEM	Package Length	Package Width	Package Thickness	Lead Tip to Tip	Lead Width	Lead Thickness	Lead Pitch
	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)
Spec Min.	6.300	3.300	1.570	6.700	0.660	0.230	2.300 BSC
Spec Max.	6.700	3.700	1.750	7.300	0.840	0.330	
1	6.498	3.490	1.612	7.012	0.761	0.283	2.300
2	6.500	3.483	1.610	6.989	0.750	0.274	2.304
3	6.483	3.485	1.611	7.001	0.742	0.276	2.299
4	6.487	3.484	1.609	7.004	0.755	0.274	2.294
5	6.482	3.483	1.602	7.002	0.748	0.268	2.307
6	6.488	3.491	1.606	6.991	0.755	0.271	2.295
7	6.495	3.483	1.608	7.017	0.766	0.263	2.303
8	6.484	3.485	1.613	7.009	0.759	0.279	2.292
9	6.491	3.484	1.611	7.005	0.762	0.270	2.303
10	6.499	3.485	1.615	7.002	0.758	0.279	2.300
11	6.494	3.484	1.616	7.000	0.759	0.280	2.294
12	6.490	3.483	1.615	6.995	0.755	0.280	2.300
13	6.492	3.479	1.620	6.996	0.756	0.271	2.292
14	6.483	3.495	1.612	7.002	0.748	0.273	2.290
15	6.490	3.485	1.611	7.000	0.758	0.272	2.297
16	6.488	3.491	1.606	6.994	0.761	0.272	2.296
17	6.496	3.491	1.610	6.990	0.755	0.264	2.288
18	6.491	3.490	1.613	6.996	0.745	0.269	2.294
19	6.484	3.482	1.608	7.001	0.760	0.272	2.295
20	6.498	3.479	1.605	6.990	0.725	0.275	2.298
21	6.496	3.486	1.614	7.018	0.762	0.272	2.300
22	6.486	3.482	1.617	7.010	0.745	0.274	2.310
23	6.482	3.484	1.610	7.016	0.761	0.275	2.298
24	6.487	3.487	1.617	7.009	0.769	0.271	2.290
25	6.477	3.480	1.613	6.995	0.762	0.265	2.294
26	6.485	3.496	1.608	7.006	0.775	0.278	2.292
27	6.492	3.481	1.610	7.000	0.764	0.266	2.296
28	6.487	3.483	1.615	6.989	0.769	0.274	2.291
29	6.482	3.480	1.612	7.011	0.767	0.270	2.294
30	6.496	3.487	1.615	7.014	0.770	0.271	2.297
MIN	6.477	3.479	1.602	6.989	0.725	0.263	2.288
MAX	6.500	3.496	1.620	7.018	0.775	0.283	2.310
Average	6.489	3.485	1.611	7.002	0.757	0.273	2.297
STD	0.006	0.004	0.004	0.009	0.010	0.005	0.005