Qualification Results Summary for ADA4522-1 Die Revision B

QUALIFICATION PLAN / STATUS			
TEST	**SPECIFICATION**	**SAMPLE SIZE**	**RESULTS**
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	**3 x 11**	**Pass**
Latch-Up	JEDEC JESD78	**1 x 3**	**Pass**
Electrostatic Discharge *Human Body Model*	ESDA/JEDEC JS-001	**3/voltage**	**Pass 4000 V**
Electrostatic Discharge *Field-Induced Charged Device Model*	ESDA/JEDEC JS-002	**3/voltage**	**Pass 1250 V**

*Preconditioned per J-STD-020

Qualification Plan # 14842

Qualification Description	ADA4522-4 Die Revision B Qualification				
Reliability Engineering Site	ADGT	Strategy, Cost Center	IADTG-LPT, ?	Request Date	01 Oct 2018
Material Available Date	02 Sep 2019	Planned Release Date	07 Oct 2019	Site Reliability Engineer	Not Provided

Qualification Type:

New Product	No	Product Revision	Yes	Package Related	No	Fab Process Related	Yes
Customer Related	No	Engineering Evaluation	No	Rel Monitor / ELF	No	PSD	NA
CAPA #	Not Provided	Risk Assessment	No				

Qualification Team:

Qual Requestor	Truong, Xuan Yen	Design Engineer	Kusuda, Yoshinori	Reliability Engineer	Ouano, Leo
Rel Planner / Ops Engineer	Santiago, Jay	Assembly Engineer	Fried, Bruce	Test Engineer	Abilay, Mark
FA Engineer	Cooper, Elvis			Product Line Planner	Low, Kenneth

Summary (high-level summary of what is being qualified/evaluated):

This plan is to qualify the ADA4522-4 die revision B. ADA4522-4 is fabricated on the 0.18D2L5M60.5018 at E_TSMC8B08 and assembled on 14-SOIC_N and 14-TSSOP at AP1. These fab and assembly processes are qualified per qualification #11777.

The ADA4522-4 is the quad version of the ADA4522-2 and ADA4522-1, both of which also had undergone die revision per qualifications #14279 and #14590 respectively.

Qualification material specifications:
14-SOIC-N: ABS007632A, PKG#0548
14-TSSOP : ABS007548A, PKG#0222

Special Requirements:

Polyfuse functionality validation will use the one in the corresponding ADA4522-2 die revision.

Key Customers:

Key Customer Requirements:

Details:

Metal edits to resolve issues observed by customers:
1. Output Railing Problem: At power-up, the amplifier can get into a state, where the output stage sources feedback current through input B-B diode to bring the input-CM voltage out of the range. The amplifier can't recover from such state.
2. High Isy Problem: At power-up, the amplifier can get into a state, where internal LDO output (AVDD5) is shorted to external VDD. In such state, the amplifier can draw high Isy (~10mA at 10V and >100mA at >20V in case of ADA4522-2)

Revision details:
1. Disable feedback from FuseBlowEN bit to POR block, to prevent logic-latch at power-up and to prevent high Isy problem
2. Further Metal-Option (A) is implemented in case such FuseBlowEN feedback needs to be used
3. Take MasterFuse bit to force reset DigiTrim logic all the time during power-on.

This die revision has 16 DRCF violations less compared to previous version. Die size & pin/pad locations remain the same. Electrical spec should remain the same, except that power-up time may increase up to 10-20% depending on condition.

This die revision will require device specific tests:
1. SHR
2. FICDM
3. HBM
4. LU

SHR and FICDM will be performed on both packages.

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Qualification Plan # 14842 Device Information

ADA4522-4

Device Generic	ADA4522-4	Power Dissipation	0.200 Watts		
Device Description	55V Low Noise Zero Drift Op-Amp				
Other Device Options	capacitors - MIM caps				
Tech Group 883	Not Provided	Product Family	Not Provided	Test Program	Not Provided
Test Platform	Not Provided	DRC Waivers	None Provided	Life Test Spec	Not Provid

ADA4522-4 - Die Information (1 of 1)

Die ID	TMGM85 / B	Die Size	2.05x3.45 mm / 80.7x135.8 mils	Die Area	7.07 mm² / 10962.4 mils²
Transistor Count	46,740	Fab Technology	0.18um DMOS	Process Code	0.18D2L5M60.5018
Fab Site Code	E_TSMC8B08	Epi Layer	Yes	Poly Coat	Yes
Bond Pad Metal	AlCu	Passivation	undoped-oxide/SiN		
NVMOption1	ADI_EFUSE_PARALLEL_5V_POLYRES (14b)			NVMOption1Qty	1
Process Description	0.18um 1.8V/5V/60V BCD 5 layer metal process at TSMC				
Process Display Name	0.18µm DMOS			Site Display Name	TSMC Fab-8B

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Qualification Plan # 14842 Package Information

Package Information 1 (ADA4522-4)

Pin Count	14	Package Type	SOIC_N	Package Code	R
Assembly Site	Amkor (AP1)	Die Attach	Ablestik 84-1LMIS R4	Molding Compound	Sumitomo G600
Body Size (mm)	8.65x3.90x1.55	Pad Cavity (micron)	2410.00x4320.00 (10411200.00 micron²)	Die Overcoat	N/A
Substrate / Leadframe Material	Copper Alloy 194	Leadframe Type	Stamped	Singulation Method	Not Provided
Leadframe PreTreatment	Not Provided	Embedded Passives	Not Provided	Solder Ball Material / Lead Finish	Matte Sn
Wire Type	2N Gold	Wire Diameter (mils)	0.80	ADI Reference Number	000548
Wire Bond	Yes	Flip Chip	No	Copper Pillar	No
Stacked Die	No	DieToLeadForwardWires	14	MOD Package Basic	14-SOIC_N-150_MIL
POD Spec	Po0198			Additional Package Info (primarily for BGA's)	
Number of Layers	Not Provided	Substrate / Leadframe Supplier	Not Provided	Ball Diameter / Leadframe Thickness (mm)	Not Provided
Ball / Lead Pitch	Not Provided	Vendor Substrate Draw # / Leadframe Package Part #	101309810 (HDLF)	Solder Mask Material	Not Provided
Ball Opening	Not Provided				

Package Information 2 (ADA4522-4)

Pin Count	14	Package Type	TSSOP_4.4	Package Code	RU
Assembly Site	Amkor (AP1)	Die Attach	Ablestik 8290	Molding Compound	Sumitomo G700K
Body Size (mm)	5.00x4.40x1.00	Pad Cavity (micron)	3000.00x3810.00 (11430000.00 micron²)	Die Overcoat	N/A
Substrate / Leadframe Material	Copper Alloy 194	Leadframe Type	Stamped	Singulation Method	Not Provided
Leadframe PreTreatment	Not Provided	Embedded Passives	Not Provided	Solder Ball Material / Lead Finish	Matte Sn
Wire Type	2N Gold	Wire Diameter (mils)	0.80	ADI Reference Number	000222
Wire Bond	Yes	Flip Chip	No	Copper Pillar	No
Stacked Die	No	DieToLeadForwardWires	14	MOD Package Basic	14-TSSOP_4.4-4.4_MM
POD Spec	PO0095			Additional Package Info (primarily for BGA's)	
Number of Layers	Not Provided	Substrate / Leadframe Supplier	Not Provided	Ball Diameter / Leadframe Thickness (mm)	Not Provided
Ball / Lead Pitch	Not Provided	Vendor Substrate Draw # / Leadframe Package Part #	101330934 (HDLF)	Solder Mask Material	Not Provided
Ball Opening	Not Provided				

Qualification Plan # 14842 Fab Substitute Data

Complete tests, Public tests, 500 results max
Generic Test: ELF, HAST, HTOL, HTS, LTOL, LTS, THB
Fab Site Code: E_TSMC8B08
Process Code: 0.18D2L5M40.50, 0.18D2L5M40.5018, 0.18D2L5M60.50, 0.18D2L5M60.5018, 0.18D2L5M60.5018Q, 0.18D2L5M60.50Q
Die Size X >= 1.845
Die Size Y >= 3.1005
returned 104 test(s)

Un-Started tests, In-Process tests, Complete tests, Public & Confidential tests, 500 results max
Generic Test: HTOL
Qual Number(s): 10980
returned 4 test(s)
Fab Sub data copied from Qual# 11777 on 7/3/2019, 33 in total.
Complete tests, Public tests, 500 results max
Generic Test: ELF, HAST, HTOL, HTS, LTOL, LTS, THB
Qual Number(s): 11777
returned 3 test(s)

ELF/HTOL PPM (Raw, for all Fab Sub Data) :0 Failures, 2796 Samples, 0 PPM

Fab Sub Data for 0.18um DMOS at E_TSMC8B08

Qual Number	Qual Test	Conditions	MSL, Peak Temp	Duration	Device	Die Number Die Revision	Fab Process(es)	Die Size(s)	Samples	Rejects
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	240	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	300	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	250	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	240	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	240	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	130	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	300	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	300	0
10810	ELF	Ta=150C	No Precon	P48	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	250	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	80	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	80	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180	TMDD17E /CENAZ9	0.18D2L5M60.5018@E_TSMC8B08	2.74×3.36	80	0
9925	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	60	0
9925	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	60	0
9925	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	60	0
10144	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7283	n92b_a	0.18D2L5M60.50@E_TSMC8B08	4.42×4.19	50	0
11382	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7294-2	TMFD86 / B	0.18D2L5M60.50@E_TSMC8B08	3.42×4.25	50	0
11582	HAST	130C 85%RH 33.3 psia, Biased	MSL3, 260°C	P96	AD7294-2	TMFD86 / B	0.18D2L5M60.50@E_TSMC8B08	3.42×4.25	50	0
10096	HTOL	125C‹Tj‹135C, Biased	No Precon	P1000	AD7294-2	N973B_A	0.18D2L5M60.5018@E_TSMC8B08	3.35×4.18	50	0
10096	HTOL	125C‹Tj‹135C, Biased	No Precon	P1000	AD7294-2	N973B_A	0.18D2L5M60.5018@E_TSMC8B08	3.35×4.18	50	0
10096	HTOL	125C‹Tj‹135C, Biased	No Precon	P1000	AD7294-2	N973B_A	0.18D2L5M60.5018@E_TSMC8B08	3.35×4.18	50	0
9925	HTOL	125C‹Tj‹135C, Biased	MSL3, 260°C	P2000	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	50	0
9925	HTOL	125C‹Tj‹135C, Biased	MSL3, 260°C	P2000	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	50	0
9925	HTOL	125C‹Tj‹135C, Biased	MSL3, 260°C	P2000	AD7179-1	S71B S95B	0.18D2L5M60.50Q@E_TSMC8B08 0.18C2L5M50.18@E_TSMC8B08	4.58×3.87 2.70×2.90	50	0
10980	HTOL	150C‹Tj‹175C, Biased	MSL1, 260°C	P500	ADA4522-2	TMFP28_M1/B	0.18D2L5M60.5018@E_TSMC8B08	1.59×2.29	82	0

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10980	HTOL	150C‹Tj‹175C, Biased	MSL1, 260°C	P500	ADA4522-2	TMFP28_M1/B	0.18D2L5M60.5018@E_TSMC8B08	1.59×2.29	82	0
10980	HTOL	150C‹Tj‹175C, Biased	MSL1, 260°C	P500	ADA4522-2	TMFP28_M1/B	0.18D2L5M60.5018@E_TSMC8B08	1.59×2.29	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4	TMGM85/A	0.18D2L5M60.5018@E_TSMC8B08	2.05×3.45	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4	TMGM85/A	0.18D2L5M60.5018@E_TSMC8B08	2.05×3.45	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4	TMGM85/A	0.18D2L5M60.5018@E_TSMC8B08	2.05×3.45	82	0

Qualification Plan # 14842 Assembly Substitute Data

Assembly Substitute Data Notes:

Complete tests, Public tests, 500 results max
Generic Test: Acc. Moisture Resistance, HAST, HTS, LTS, SHR, Temp Cycle, THB, Thermal Shock
Assembly Site: Amkor-P
Die Attach: Ablestik 8290
Molding Compound: Sumitomo G700K
Package Type: TSSOP_4.4
returned 317 test(s)

Complete tests, Public tests, 500 results max
Generic Test: Acc. Moisture Resistance, HAST, HTS, LTS, SHR, Temp Cycle, THB, Thermal Shock
Assembly Site: Amkor-P
Die Attach: Ablestik 84-1 LMISR4, Ablestik 84-1LMIS R4
Molding Compound: Sumitomo G600, Sumitomo G600C, Sumitomo G600H
Package Type: SOIC_N
Wire Diameter: 0.80, 1.00
returned 170 test(s)
Assembly Sub data copied from Qual# 11777 on 7/3/2019, 53 tests in total.
Complete tests, Public tests, 500 results max
Generic Test: Acc. Moisture Resistance, HAST, HTS, LTS, SHR, Temp Cycle, THB, Thermal Shock
Qual Number(s): 11777
returned 11 test(s)

Assembly Sub Data for SOIC_N at Amkor (AP1)

Qual Number	Qual Test	Conditions	MSL, Peak Temp	Duration	Device: Die Number Die Revision	Package	Samples	Rejects
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	80	0
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	79	0
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	81	0
9411	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM4853: E853E	8-SOIC_N @ Amkor (AP1)	82	0
9411	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM4853: E853E	8-SOIC_N @ Amkor (AP1)	82	0
9411	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM4853: E853E	8-SOIC_N @ Amkor (AP1)	82	0
10436	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM487E: C36C	8-SOIC_N @ Amkor (AP1)	82	0
10436	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM487E: C36C	8-SOIC_N @ Amkor (AP1)	82	0
10436	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM487E: C36C	8-SOIC_N @ Amkor (AP1)	81	0
10380	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4077-4: ADA4077-4	14-SOIC_N @ Amkor (AP1)	82	0
10380	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4077-4: ADA4077-4	14-SOIC_N @ Amkor (AP1)	82	0
10954	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	40	0
10954	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	41	0
10954	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	41	0
12048	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4622-1: ADA4622-2	8-SOIC_N @ Amkor (AP1)	82	0
12048	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADA4622-1: ADA4622-2	8-SOIC_N @ Amkor (AP1)	82	0
12450	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADM3065E: TMHC97	8-SOIC_N @ Amkor (AP1)	82	0
12450	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADM3065E: TMHC97	8-SOIC_N @ Amkor (AP1)	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
11777	HTS	150C	No Precon	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
9724	LTS	-55C	No Precon	P1000	AD7524S: E26C/A	16-SOIC_N @ Amkor (AP1)	82	0
9724	LTS	-55C	No Precon	P1000	AD7524S: E26C/A	16-SOIC_N @ Amkor (AP1)	82	0
9724	LTS	-55C	No Precon	P1000	AD7524S: E26C/A	16-SOIC_N @ Amkor (AP1)	82	0
9724	Temp Cycle	-65C/+150C	MSL1, 260°C	P1000	AD7524S: E26C/A	16-SOIC_N @ Amkor (AP1)	78	0
9724	Temp Cycle	-65C/+150C	MSL1, 260°C	P1000	AD7524S: E26C/A	16-SOIC_N @ Amkor (AP1)	80	0
9272	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	AD8544: 6424Y	14-SOIC_N @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-4	14-SOIC_N @ Amkor (AP1)	82	0
11777	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	81	0
11777	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
11777	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
13848	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	AD8418AW: AD8418AW	8-SOIC_N @ Amkor (AP1)	82	0
13848	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	AD8418AW: AD8418AW	8-SOIC_N @ Amkor (AP1)	82	0

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13848	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	AD8418AW: AD8418AW	8-SOIC_N @ Amkor (AP1)	82	0
11777	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
11777	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
11777	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADA4522-4: ADA4522-2	14-SOIC_N @ Amkor (AP1)	82	0
12450	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADM3065E: ADM3065E	8-SOIC_N @ Amkor (AP1)	82	0
12450	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADM3065E: ADM3065E	8-SOIC_N @ Amkor (AP1)	80	0
12450	Unbiased HAST	130C 85%RH 33.3 psia	MSL1, 260°C	P96	ADM3065E: TMHC97	8-SOIC_N @ Amkor (AP1)	82	0

Assembly Sub Data for TSSOP_4.4 at Amkor (AP1)

Qual Number	Qual Test	Conditions	MSL, Peak Temp	Duration	Device: Die Number Die Revision	Package	Samples	Rejects
10220	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	AD8040W: AD8040	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
8362	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4891-4: ADA4891-4	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10220	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADA4891-4W: ADA4891-4	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM1293: ADM12914	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM1293: ADM1293	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Autoclave	121C 100%RH 33.3 psia	MSL1, 260°C	P96	ADM1294: ADM1293	14-TSSOP_4.4 @ Amkor (AP1)	82	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180: M40	16-TSSOP_4.4 @ Amkor (AP1)	80	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180: M40	16-TSSOP_4.4 @ Amkor (AP1)	80	0
9157	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7180: M40	16-TSSOP_4.4 @ Amkor (AP1)	80	0
9935	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7190: S913B	24-TSSOP_4.4 @ Amkor (AP1)	82	0
9935	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7190: S913B	24-TSSOP_4.4 @ Amkor (AP1)	82	0
9935	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	AD7190: S913B	24-TSSOP_4.4 @ Amkor (AP1)	82	0
10718	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADG5412F: 8YM60A	16-TSSOP_4.4 @ Amkor (AP1)	78	0
10718	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADG5412F: 8YM60A	16-TSSOP_4.4 @ Amkor (AP1)	82	0
10718	HAST	130C 85%RH 33.3 psia, Biased	MSL1, 260°C	P96	ADG5412F: 8YM60A	16-TSSOP_4.4 @ Amkor (AP1)	81	0
10220	HTS	150C	No Precon	P1000	AD8040W: AD8040	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	HTS	150C	No Precon	P1000	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10220	HTS	150C	No Precon	P1000	ADA4891-4W: ADA4891-4	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10220	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	AD8040W: AD8040	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10954	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4177-4: ADA4177-2	14-TSSOP_4.4 @ Amkor (AP1)	82	0
11343	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4851-4: ADA4851-4	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10220	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADA4891-4W: ADA4891-4	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADM1293: ADM1293	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADM1293: ADM12914	14-TSSOP_4.4 @ Amkor (AP1)	82	0
10894	Temp Cycle	-65C/+150C	MSL1, 260°C	P500	ADM1294: ADM1293	14-TSSOP_4.4 @ Amkor (AP1)	82	0

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Qualification Plan # 14842 Test Info

To complete the qualification, the following qualification tests will be performed. The qualification material must be manufactured at a facility intended for final production using standard process flows and should be representative of material shipped to the customer (e.g. graded and branded).

Qual Test	Conditions	MSL	CSAM	Duration	Applicable Spec	Device	Lots • SS	Type	Package	Package Variant	Lab Site	eTest Site	eTest Variant	Data Log	Serialization	Accept / Reject
FICDM	All Pins, 1 Zap per Polarity	×	-	Single Duration	JS-002	ADA4522-4	1•21	Assy / Fab	14-SOIC_N	x	ADGT	ADGT-ENG	Ambient	Y	Y	500/ 499V
FICDM	All Pins, 1 Zap per Polarity	×	-	Single Duration	JS-002	ADA4522-4	1•21	Assy / Fab	14-TSSOP_4.4	x	ADGT	ADGT-ENG	Ambient	Y	Y	500/ 499V
HBM	Std. Sample, 1 Zap per Polarity	×	-	Single Duration	ESDA/JEDEC JS-001-2011	ADA4522-4	1•27	Fab	14-SOIC_N	x	ADGT	ADGT-ENG	Ambient	Y	Y	1000/ 999V
Latch Up	+25C, Biased	×	-	Single Duration	JESD78	ADA4522-4	1•15	Fab	14-SOIC_N	x	ADGT	ADGT-ENG	Ambient	Y	Y	100/ 99mA
SHR	See MSL	Level 1 260°C	Y	Precon	J-STD-020	ADA4522-4	1•30	Assy / Fab	14-SOIC_N	x	ADGT	ADGT-ENG	Ambient	Y	Y	= 0 Failed Parts
SHR	See MSL	Level 1 260°C	Y	Precon	J-STD-020	ADA4522-4	1•30	Assy / Fab	14-TSSOP_4.4	x	ADGT	ADGT-ENG	Ambient	Y	Y	= 0 Failed Parts

The total number of devices is 144. Check ADLIB for the approval status of this document, Qualification Plan #14842 in the RQP series.

Links to Jedec and MIL Test Specifications:

JEDEC: http://www.jedec.org/

MIL-STD-883: http://www.dscc.dla.mil/Downloads/MilSpec/Docs/MIL-STD-883/std883.pdf

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Qualification Results Summary for ADA4522-1 Die Revision B

QUALIFICATION PLAN / STATUS			
TEST	SPECIFICATION	SAMPLE SIZE	RESULTS
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	**3 x 11**	**In Process** **Expected Completion** May 2019
Latch-Up	JEDEC JESD78	**1 x 3**	**In Process** **Expected Completion** May 2019
Electrostatic Discharge *Human Body Model*	ESDA/JEDEC JS-001	**3/voltage**	**Pass 4000 V**
Electrostatic Discharge *Field-Induced Charged Device Model*	ESDA/JEDEC JS-002	**3/voltage**	**Pass 1250 V**

*Preconditioned per J-STD-020

Qualification Results Summary for ADA4522-2 Die Revision D

QUALIFICATION PLAN / STATUS			
TEST	**SPECIFICATION**	**SAMPLE SIZE**	**RESULTS**
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	**3 x 11**	**Pass**
Latch-Up	JEDEC JESD78	**1 x 3**	**Pass**
Electrostatic Discharge *Human Body Model*	ESDA/JEDEC JS-001	**3/voltage**	**Pass 4000 V**
Electrostatic Discharge *Field-Induced Charged Device Model*	ESDA/JEDEC JS-002	**3/voltage**	**Pass 1250 V**

*Preconditioned per J-STD-020