



Reliability Report

Report Title: ADP3120A, ADP3118 and ADP3110A
8" EP13x Transfer

Report Number: 5958

Date: 24th October 2006

Summary

This report documents the successful completion of the reliability qualification requirements for release of the ADP3120A, ADP3118 and ADP3110A products in a 8-SOICnb package. The ADP3120A is the qual vehicle and substitutes for the ADP3118 and ADP3110A as they come from the same die and fall under the functionality of the ADP3120A. The ADP3120A, ADP3118 and ADP3110A are dual, high voltage MOSFET drivers optimized for driving two N-channel MOSFETs, the two switches in a non-isolated synchronous buck power converter.

Table 1. Product Characteristics

Part Number	ADP3120A
Maximum Power Dissipation (W)	0.24
Device / Die Rev	6501Z
Die Size (mm)	.88 x 1.21
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	H6_16VDPDMI
Transistor Count	220
Passivation Layer	undoped-oxide/SiN
Bond Pad Metal Composition	AlCu
Available Package(s)	8-SOICnb
Body Size (mm)	3.90 x 4.90 x 1.62
Assembly Location	Carsem-M
Die Attach	Ablestik 8006
Lead Frame Material	Copper Olin 194
Bond Wire Type	Gold
Bond Wire Dia. (mils)	1.20
Mold Compound	Sumitomo 6600
Lead Frame Finish	Tin / Lead Solder Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow	260deg C (-5/+0deg C)

Description/Results of Tests Performed

Table 2 provides a description of the qualification tests conducted and the associated test results on the ADP3120A as described in Table 1.

Table 2. Reliability Qualification Test Results

Test Name	Conditions	Specification	Part Number	Package	Fab Technology	Lot Number	Sample Size	Qty. Rejects
Autoclave ¹	121C 100%RH 2atm 168hrs	JEDEC-STD-22, Method A102	ADP3120A	8-SOICnb	H6_16VDPDMI	R42845.1	77	0
						R42846.1	77	0
						R42847.1	77	0
Early Life Failure	TJ = 150C 48hrs	MIL-STD-883, Method 1015	ADP3120A	8-SOICnb	H6_16VDPDMI	R31644.2	318	0
						R39265.2	510	0
						R39266.2	270	0
						R39266.3	80	0
						R31644.3	352	0
High Temperature Operating Life	TJ = 150C 1000hrs	JESD22-A108	ADP3120A	8-SOICnb	H6_16VDPDMI	R31644.1	75	0
						R39265.1	76	0
						R39266.1	77	0
High Temperature Storage	150C 1000hrs	JEDEC-STD-22, Method A103	ADP3120A	8-SOICnb	H6_16VDPDMI	R42851.1	77	0
						R42852.1	77	0
						R42853.1	77	0
Highly Accelerated Stress Test ¹	130C 85%RH 2atm, Biased 96hrs	JEDEC-STD-22, Method A110	ADP3120A	8-SOICnb	H6_16VDPDMI	R42849.2	41	0
						R42848.1	77	0
						R42850.1	77	0
						R42849.1	77	0
Solder Heat Resistance ¹	See Below	ADI-0049	ADP3120A	8-SOICnb	H6_16VDPDMI	R42854.1	10	0
						R42855.1	10	0
						R42856.1	10	0
Temperature Cycle ¹	-65C/+150C 500cycles	JEDEC-STD-22, Method A104	ADP3120A	8-SOICnb	H6_16VDPDMI	R42857.1	77	0
						R42858.1	77	0
						R42859.1	77	0

In addition, samples of some of the many device types manufactured with these technologies are continuously undergoing reliability evaluation as part of the ADI Reliability Monitor Program. This additional qualification data, as well as FIT data, is available on Analog Devices' web site at: <http://www.analog.com/corporate/quality/read/1stpage.html>.

[1] These Samples were subjected to preconditioning (per J-STD-020 Level 1) prior to the start of the stress test. Level 1 preconditioning consists of the following:

- Bake: 24 hrs @ 125°C
- Unbiased Soak: 168 hrs @ 85°C, 85%RH
- Reflow: 3 passes through an oven with a peak temperature of 260+0/-5°C for a minimum of 10 seconds.

ESD Testing

The results of Human Body Model (HBM) and Field Induced Charge Device Model (FICDM) ESD testing are summarized in Table 4.

ADI measures ESD results using stringent test procedures based on the specifications listed in the above table. Any comparison with another supplier's results should ensure that the same ESD test procedures have been used. For further details, please see the EOS/ESD chapter of the ADI Reliability Handbook at <http://www.analog.com/corporate/quality/manuals/>.

Table 4. ADP3120A ESD Test Results

ESD Model	Generic	Package	ESD Test Spec	RC Network	Highest Pass Level	First Fail Level	Class
FICDM	ADP3120A	8-SOICnb	ESD Assoc. STM5.3.1- 1999	1 Ω , Cpkg	1500V	2000V	C6
FICDM	ADP3118	8-SOICnb	ESD Assoc. STM5.3.1- 1999	1 Ω , Cpkg	2000V	NA	C7
HBM	ADP3120A	8-SOICnb	ESD Assoc. STM5.1- 2001	1.5k Ω , 100pF	1500V	2000V	1C
HBM	ADP3118	8-SOICnb	ESD Assoc. STM5.1- 2001	1.5k Ω , 100pF	2500V	3000V	2

Latch-up Testing

Six samples of the ADP3120A passed Latch-up testing at Ta=25°C per JEDEC Standard JESD78, Class I, Level A.

Approvals

Reliability Engineer: Mark Forde

This report has been approved by electronic means (2.0).

Additional Information

Data sheets and other additional information are available on Analog Devices' web site at the addresses shown below.

Home Page: <http://www.analog.com>
Sales Info: http://www.analog.com/world/corp_fin/sales_directory/distrib.html
Reliability Data: <http://www.analog.com/corporate/quality/read/1stpage.html>
Reliability Handbook: <http://www.analog.com/corporate/quality/manuals/>