



Reliability Report

Report Title: LT8609S at ADI Penang Qualification

Report Number: 22573

Revision: A

Date: 27 August 2024

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the ADI Penang as manufacturing site for LT8609S product in a 16-LGA package. The LT8609S is a 2A, 42V synchronous Buck regulator.

Qualified Components

ADI P/N
PMS0230PG00E00-02

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	LT8609S
Die Id	8609-2
Die Size (mm)	1.20 x 1.86
Wafer Fabrication Site	Vanguard - Taiwan
Wafer Fabrication Process	0.35um DMOS
Die Substrate	Si
Metallization / # Layers	AlCu/3
Polyimide	No
Passivation	undoped-oxide/SiN

Die/Fab Test Results
Table 2: Die/Fab Test Results - at Vanguard-Taiwan

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	110C 85%RH 17.7 psia, Biased, 264 hours	LT8609S	Q22573.1.BHAST.TL1	0/77
		130C 85%RH 33.3 psia, Biased, 96 Hours		1006639.1b.JHAST	0/77
		130C 85%RH 33.3 psia, Biased, 192hours		EO9399K.BHAST	0/77
				1006638.JHAST	0/77
				1006640.JHAST	0/77
High Temperature Operating Life (HTOL)	JESD22-A108	125°C<Tj<135°C, Biased, 1,000 Hours	LT8609S	EO9461L.HTOL	0/77
				1006638.HTOL	0/77
				1006639.HTOL	0/77
				1006640.HTOL	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LT8609S	EO9399F.HTS	0/45
				1006638.HTS	0/45
				1006639.HTS	0/45
				1006640.HTS	0/45

¹ These samples were subjected to preconditioning (per J-STD-020 Level 3) prior to the start of the stress test. Level 3 preconditioning consists of the following: Bake: 48 hrs @ 125°C, Unbiased Soak: 192 hrs @ 30°C, 60%RH, Reflow: 3 passes through an reflow oven with a peak temperature of 260°C.

Package/Assembly Product Characteristics

Table 3: Package/Assembly Product Characteristics - 16-LGA at ADI Penang

Product Characteristics	Product(s) to be qualified	Product used for Substitution Data
Generic/Root Part #	LT8609S	LTC7150S
Package	16-LGA	42-CSP_BGA
Body Size (mm)	3.00 x 3.00 x 0.94	6.00 x 5.00 x 1.30
Assembly Location	ADI Penang	ADI Penang
MSL/Peak Reflow Temperature(°C)	3 / 260°C	3 / 260°C
Mold Compound	Sumitomo G311E	Sumitomo G311E
Substrate Material	BT Resin	BT Resin
Terminal Finish Composition	Au	96.5Sn3Ag0.5Cu
Bump Type/ Composition/ Diameter (um)/ pitch (um)	Copper Pillar/ 98.2Sn_1.8Ag/ 85/ 155	Copper Pillar/ 98.2Sn_1.8Ag/ 100/ 150

Package/Assembly Test Results
Table 4: Package/Assembly Test Results - LGA at ADI Penang

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 2,000 Hours	LTC7150S	1045571.HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LT8609S	Q22573.1.BHAST.TL1	0/77
			LTC7150S	1045571.JHAST	0/77
				1032587.JHAST	0/77
				1046935.JHAST	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-3	LT8609S	Q22573.1.MSL3.TL1	0/77
Temperature Cycling (TC) ¹	JESD22-A104	-65°C/+150°C, 500 Cycles	LT8609S	Q22573.1.TC.TL1	0/77
		-65°C/+150°C, 1000 Cycles	LTC7150S	1032587.JTC	0/77
				1046935.JTC	0/77
				999998.JTC	0/77
Unbiased HAST (UHST) ¹	JESD22-A118	110C 85%RH 17.7 psia, 264 hours	LT8609S	Q22573.1.UHAST.TL1	0/77
		130C 85%RH 33.3 psia, 96 hours	LTC7150S	1032587.JUHAST	0/77
				1045571.JUHAST	0/77
				1046935.JUHAST	0/77

¹ These samples were subjected to preconditioning (per J-STD-020 Level 3) prior to the start of the stress test. Level 3 preconditioning consists of the following: Bake: 48 hrs @ 125°C, Unbiased Soak: 192 hrs @ 30°C, 60%RH, Reflow: 3 passes through an reflow oven with a peak temperature of 260°C.

ESD and Latch-Up Test Results

Table 5: ESD Test Result

ESD Model	Generic/Root Part #	Package	ESD Test Spec	RC Network	Highest Pass Level	Class
FICDM	LT8609S	16-LGA	JS-002	1Ω, Cpkg	±2000V	C3
HBM	LT8609S	16-LGA	JS-001	1.5kΩ, 100pF	±4000V	3A

Table 6: Latch Up Test Result

LU Test Spec	Generic/Root Part #	Passing Current	Temperature (T _A)	Class
JESD78	LT8609S	+100mA, -100mA	125°C	II

Approvals

Reliability Engineer: Lay Yong Ong