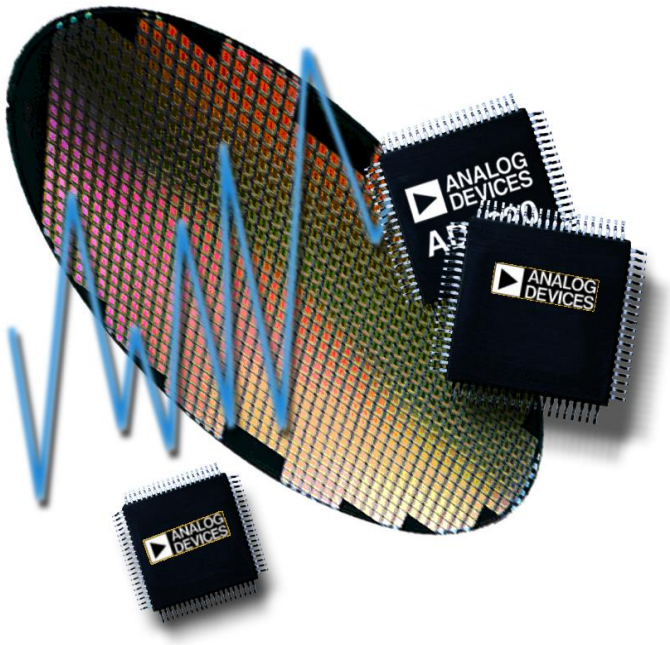

Reliability Report

Report Title: LT8315 Die Revision Qualification

Report Number: 23699

Revision: A

Date: 20 October 2025

Summary

This report documents the successful completion of the reliability qualification requirements for the Die 1 Revision release of the LT8315 product in a 20-TSSOP_4.4_EP package. The LT8315 is a high voltage flyback converter with integrated 630V/300mA switch. No opto-isolator is needed for regulation.

Die/Fab Product Characteristics

Table 1.1: Die/Fab Product Characteristics- 0.35µm BCDMOS at Vanguard Fab1

Product Characteristics	Product to be qualified	Product(s) used for Substitution Data				
Generic/Root Part #	LT8315	LT8390	LT8365	LTC7060	LT8316	LT8349
Die Id	8315	8390	8365	7060	8316	J8349
Die Size (mm)	1.43 x 1.02	1.52 x 2.44	1.28 x 2.85	1.65 x 2.46	1.02 x 1.43	1.87 x 2.57
Wafer Fabrication Site	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1
Wafer Fabrication Process	0.35µm BCDMOS	0.35µm BCDMOS	0.35µm BCDMOS	0.35µm BCDMOS	0.35µm BCDMOS	0.35µm BCDMOS
Die Substrate	Si	Si	Si	Si	Si	Si
Metallization / # Layers	AlCu/2	AlCu/2	AlCu/3	AlCu/3	AlCu/2	AlCu/3
Polyimide	No	No	No	No	No	No
Passivation	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN

Table 1.2: Die/Fab Product Characteristics- 0.50µm BCDMOS at Vanguard Fab1

Product Characteristics	Product to be qualified	Product used for Substitution Data
Generic/Root Part #	LT8315	LT8316
Die Id	449	448
Die Size (mm)	1.78 x 2.64	1.33 x 0.59
Wafer Fabrication Site	Vanguard Fab1	Vanguard Fab1
Wafer Fabrication Process	0.50µm BCDMOS	0.50µm BCDMOS
Die Substrate	Si	Si
Metallization / # Layers	AlCu/1	AlCu/1
Polyimide	No	No

Die/Fab Test Results

Table 2.1: Die/Fab Test Results - 0.35µm BCDMOS at Vanguard

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Early Life Failure Rate (ELFR)	AEC-Q100-008	Ta=150C, 48 Hours	LT8316	Q16439.2ELFR.LEGX	0/800
				Q16439.3ELFR.LEGX	0/800
				Q16439.5ELFR.LEGX	0/800
Early Life Failure Rate (ELFR)			LT8365	Q14979.1ELFR	0/800
				Q14979.2ELFR	0/800
				Q14979.ELFR	0/800
Early Life Failure Rate (ELFR)	MIL-STD-883, M1015	Ta=125C, 48 Hours	LT8349	Q19512.1ELF	0/800
				Q19619.3ELFR	0/800
				Q19619.7ELFR	0/800
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=150C, Biased, 1,000 Hours	LT8316	Q16439.5HTOL	0/77
				Q16439.2HTOLB	0/77
				Q16439.3HTOLB	0/77
			LTC7060	EO9373L.HTOL	0/77
				Q16176.2HTOL	0/77
				Q16176.2HTOL	0/77
			LT8390	Q16133.1HTOL	0/77
				Q16133.2.HTOL	0/77
				Q16133.3.HTOL	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LT8349	Q19512.1HTS	0/45
		150°C, 2,000 Hours	LT8316	Q16439.1HTS	0/45
			LT8390	Q17464.1HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 192 Hours	LT8316	Q16439.BHAST1	0/77
				Q16439.BHAST2	0/77
				Q16439.BHAST3	0/77
			LT8390	Q18097.5.PC.BHAST	0/77
				Q18097.15.PC.HAST	0/77
				Q18097.12PC.BHAST	0/77
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LT8349	Q19512.1HAST	0/77
				Q19512.2HAST	0/77
				Q19512.3HAST	0/77

[1] These samples were subjected to preconditioning at MSL 1 with 3x reflow peak temp of 260°C prior to the start of the stress test.

Table 2.2: Die/Fab Test Results - 0.50µm BCDMOS at Vanguard

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Early Life Failure Rate (ELFR)	AECQ100-008	Ta=150C, 48 Hours	LT8316	Q16439.2ELFR.LEGX	0/800
				Q16439.3ELFR.LEGX	0/800
				Q16439.5ELFR.LEGX	0/800
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1000 Hours	LT8315	Q19285.2HTS	0/45
		150°C, 2000 Hours	LT8316	Q16439.1HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LT8316	Q16439.BHAST1	0/77
				Q16439.BHAST2	0/77
				Q16439.BHAST3	0/77
			LT8315	Q19285.2BHAST	0/77
		130°C 85%RH, 33.3 psia, Biased, 192 Hours		Q19285.1BHAST	0/77
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=150C, Biased, 1,000 Hours	LT8315	Q17355.1HTOL	0/77
				Q19285.1HTOL	0/77
			LT8316	Q16439.2HTOLB	0/77
				Q16439.3HTOLB	0/77
		Ta=150C, Biased, 1,100 Hours		Q16439.5HTOL	0/77

[1] These samples were subjected to preconditioning at MSL 1 with 3x reflow peak temp of 260°C prior to the start of the stress test.

Package/Assembly Product Characteristics

Table 3: Package/Assembly Product Characteristics - 20-TSSOP_4.4_EP at UTAC (UT3)

Product Characteristics	Product(s) to be qualified	Product(s) used for Substitution Data					
Generic/Root Part #	LT8315	LT8316	LT8390	LTC3859A	LT8210	LT8292	LTC3899
Package	20-TSSOP_4.4_EP	20-TSSOP_4.4_EP	28-TSSOP_4.4_EP	38-TSSOP_4.4_EP	38-TSSOP_4.4_EP	38-TSSOP_4.4_EP	38-TSSOP_4.4_EP
Body Size (mm)	6.50 x 4.40 x 1.10	6.50 x 4.40 x 1.10	9.80 x 6.40 x 1.20	4.40 x 9.60 x 1.20	4.40 x 9.70 x 1.10	4.40 x 9.70 x 1.10	4.40 x 9.70 x 1.10
Assembly Location	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)	UTAC (UT3)
MSL/Peak Reflow Temperature(°C)	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C
Mold Compound	Sumitomo G605L	Sumitomo G605L	Sumitomo G605L	Sumitomo G605L	Sumitomo G605L	Sumitomo G605L	Sumitomo G605L
Die Attach	Ablestik 8200C	Ablestik 8200C	Ablestik 8200C	Ablestik 8200C	Ablestik 8200C	Ablestik 8200C	Ablestik 8200C
Leadframe Material	Copper	Copper	Copper	Copper	Copper	Copper	Copper
Lead Finish	100Sn	100Sn	100Sn	100Sn	100Sn	100Sn	100Sn
Wire Bond Material/Diameter (mils)	Tanaka GMG Gold / 1.00	Tanaka GMG Gold / 1.00	Tanaka GMG Gold / 1.00	Tanaka GPG Gold / 1.00	Tanaka GMG Gold / 1.00	Tanaka GMG Gold / 1.00	Tanaka GMG Gold / 1.00

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - TSSOP_4.4_EP at UTAC (UT3)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 2,000 Hours	LTC3859A	Z51543.HTS	0/45
			LT8390	Q16133.1HTS	0/45
			LT8316	Q16439.1HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LTC3859A	Z51543.JHAST	0/77
				Z51544.JHAST	0/77
				Z51779.JHAST	0/77
			LT8316	Q16439.BHAST1	0/77
				Q16439.BHAST2	0/77
				Q16439.BHAST3	0/77
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 192 Hours	LT8390	Q18097.5.PC.BHAST	0/77
				Q18097.15.PC.HAST	0/77
				Q18097.12PC.BHAST	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-1	LT8210	Q17130.1SHR	0/11
			LT8292	Q17651.1SHR	0/11
			LTC3899	Q22623.1.SH	0/11
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 2,000 Cycles	LTC3859A	Z51543.JTC	0/77
				Z51544.JTC	0/77
				Z51779.JTC	0/77
			LT8390	Q16133.1TC	0/77
				Q16133.2TC	0/77
				Q16133.3TC	0/77
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 1,000 Cycles	LT8316	Q16439.1TC	0/77
				Q16439.5TC	0/77
		-65°C/+150°C, 500 Cycles		Q16439.4TC	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	130C 85%RH 33.3 psia, 96 Hours	LTC3859A	Z51543.JUHAST	0/77
				Z51544.JUHAST	0/77
				Z51779.JUHAST	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	130C 85%RH 33.3 psia, 192 Hours	LT8316	Q16439.1UHAST	0/77
				Q16439.4UHAST	0/77
				Q16439.5UHAST	0/77

[1] These samples were subjected to preconditioning at MSL 1 with 3x reflow peak temp of 260°C prior to the start of the stress test.

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	LT8315	20-TSSOP_4.4_EP	JS-002	1Ω, Cpkg	±1250V	C3
HBM	LT8315	20-TSSOP_4.4_EP	JS-001	1.5kΩ, 100pF	±1500V	1C

Table 6: Latch Up Test Result

LU Test Spec	Generic/Root Part #	Passing Current	Passing Over-Voltage	Temperature (T_A)	Class
JESD78	LT8315	+200mA, -200mA	+100V	150°C	II

Approvals

Reliability Engineer: Ryell Keena Lagamayo