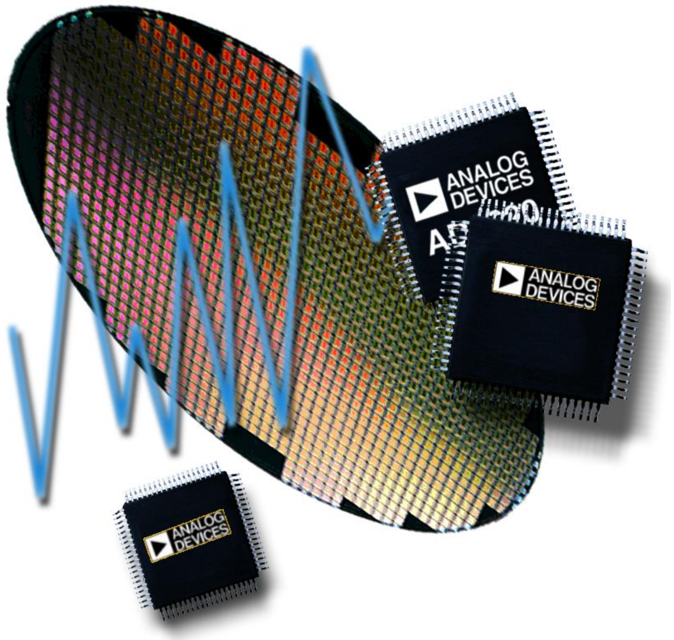
ANALOG DEVICES



Reliability Report

Report Title: LTC3833 LFCSP Die Revision Qualification

Report Number: 21704

Revision: A

Date: 19 November 2025

Summary

This report documents the successful completion of the reliability qualification requirements for the Die Revision (routing change) Qualification release of the LTC3833 product in a 20-LFCSP package. The LTC3833 is a synchronous step-down DC/DC switching regulator controller targeted for high power applications. It drives all N-channel power MOSFETs.

Die/Fab Product Characteristics

1: Die/Fab Product Characteristics- 0.6µm BiCMOS

Product Characteristics	Product(s) to be qualified	Product(s) used for Substitution Data		
Generic/Root Part #	LTC3833	LTC3850	LTC4359	LTC6804-1
Die Id	3833-9	8VL3850XV	L4359D	L6804BSXV
Die Size (mm)	1.51 x 1.51	1.58 x 1.52	1.65 x 1.04	3.81 x 4.72
Wafer Fabrication Site	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1	Vanguard Fab1
Wafer Fabrication Process	0.6µm BiCMOS	0.6µm BiCMOS	0.6µm BiCMOS	0.6µm BiCMOS
Die Substrate	Si	Si	Si	Si
Metallization	AlCu	AlCu	AlCu	AlCu
Polyimide	No	No	No	No
Passivation	oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN

Die/Fab Test Results

Table 2: Die/Fab Test Results - 0.6µm BiCMOS at Vanguard-Taiwan

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Early Life Failure Rate (ELFR)	AEC-Q100-008	Ta=125°C, 48 Hours	LTC3850	Z47785.ELF	0/800
				Z47818.ELF	0/800
				Z48161.ELF	0/800
			LTC6804-1	Q14858.1	0/800
				Q14858.2	0/800
				Q14858.3	0/800
	JESD22-A108 / JESD74	125°C, 48 Hours	LTC4359	Q18141.1ELFX	0/800
				Q18141.5ELFX	0/800
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=125°C, Biased, 1,000 Hours	LTC4359	Q18141.1HTOL	0/77
				Q18141.4HTOL	0/77
				Q18141.5HTOL	0/77
			LTC6804-1	Q14858.1HTOL	0/77
				Q14858.2HTOL	0/77
				Q14858.3HTOL	0/77
			LTC3850	Z47785.HTOL	0/77
				Z47818.HTOL	0/77
				Z48161.HTOL	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LTC6804-1	Q18270.1HTS	0/45
			LTC4359	Q18141.1HTS	0/45
		175°C, 1,000 Hours	LTC3850	Z47785.HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130°C 85%RH 33.3 psia, Biased, 96 Hours	LTC4359	Q16937.3BHAST	0/77
				Q16937.4BHAST	0/77
				Q16937.5BHAST	0/77
		130°C 85%RH 33.3 psia, Biased, 192 Hours	LTC3850	Z47785.JHAST	0/77
				Z47818.JHAST	0/77
				Z48161.JHAST	0/77
Highly Accelerated Temperature and Humidity Stress Test (HAST)[2]	JESD22-A110	130°C 85%RH 33.3 psia, Biased, 96 Hours	LTC6804-1	Q14858.1BHAST	0/77
				Q14858.2BHAST	0/77
				Q14858.3BHAST	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.

[2] These samples were subjected to preconditioning at MSL 3 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-LFCSP at UTAC (UT2)

Product Characteristics	Product(s) to be qualified	Product(s) used for Substitution Data			
Generic/Root Part #	LTC3833	LT8708	LTC3859AL	LTC7801	LT8364
Package	20-LFCSP	40-LFCSP	38-LFCSP	24-LFCSP	12-LFCSP
Body Size (mm)	3.00 x 4.00 x 0.75	5.00 x 8.00 x 0.75	5.00 × 7.00 × 0.75	4.00 × 5.00 × 0.75	4.00 x 3.00 x 0.75
Assembly Location	UTAC (UT2)	UTAC (UT2)	UTAC (UT2)	UTAC (UT2)	UTAC (UT2)
MSL/Peak Reflow Temperature(°C)	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C	1 / 260°C
Mold Compound	Sumitomo G770HCD	Sumitomo G770HCD	Sumitomo G770HCD	Sumitomo G770HCD	Sumitomo G770HCD
Die Attach	Ablestik 8200T Conductive	Ablestik 8200T Conductive	Ablestik 8200T Conductive	Ablestik 8200T Conductive	Ablestik 8200T Conductive
Leadframe Material	Copper	Copper	Copper	Copper	Copper
Lead Finish	100Sn	100Sn	100Sn	100Sn	100Sn
Wire Bond Material/Diameter (mils)	Gold / 1.00	Gold / 1.00	Gold / 1.00	Gold / 1.00	Gold / 1.00

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - LFCSP at UTAC (UT2)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LT8708	Q20914.1.HT1	0/77[2]
			LTC3859AL	Z51545.HTS	0/45[2]
			LTC7801	Z52429.HTS	0/45[2]
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130°C 85%RH 33.3 psia, Biased, 96 Hours	LTC3859AL	Z51542.JHAST	0/77
				Z51545.JHAST	0/77
				Z51778.1a.JHAST	0/77
			LTC7801	Z52429.2.JHAST	0/77
				Z52439.2a.JHAST	0/77
				Z52452.1a.JHAST	0/77
			LT8708	Q20914.1.HA1	0/77
				Q20914.2.HA2	0/77
				Q20914.3.HA3	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-1	LT8364	Q21735.1.SH1	0/11
				Q21735.2.SH2	0/11
				Q21735.3.SH3	0/11
			LTC3859AL	Z51542.BULK	0/11
				Z51545.BULK	0/11
				Z51778.1a.BULK	0/11
			LT8708	Q20914.1.SH1	0/11
				Q20914.2.SH2	0/11
				Q20914.3.SH3	0/11
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 500 Cycles	LTC3859AL	Z51542.JTC	0/77
				Z51545.JTC	0/77
				Z51778.1a.JTC	0/77
			LTC7801	Z52429.JTC	0/77
				Z52439.2a.JTC	0/77
				Z52452.1a.JTC	0/77
		-55C/+150°C, 1,500 Cycles	LT8708	Q20914.1.TC1	0/77
				Q20914.2.TC2	0/77

				Q20914.3.TC3	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	130°C 85%RH 33.3 psia, 96 Hours	LTC3859AL	Z51542.JUHAST	0/77
				Z51545.JUHAST	0/77
				Z51778.1a.JUHAST	0/77
			LTC7801	Z52429.JUHAST	0/77
				Z52439.2a.JUHAST	0/77
				Z52452.1a.JUHAST	0/77
			LT8708	Q20914.1.UH1	0/77
				Q20914.2.UH2	0/77
				Q20914.3.UH3	0/77

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[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.

[2] Lot extended to 2000 hours

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	LTC3833	20-LFCSP	JS-002	1Ω, Cpkg	±1250V	C3
HBM	LTC3833	20-LFCSP	JS-001	1.5kΩ, 100pF	4000V	3A

Table 6: Latch Up Test Result

LU Test Spec	Generic/Root Part #	Passing Current	Passing Over-Voltage	Temperature (T_A)	Class
JESD78	LTC3833	+200mA, -200mA,	+41V, 6.3V, 6.3V	125°C	II

Approvals

Reliability Engineer: Ryell Keena Lagamayo