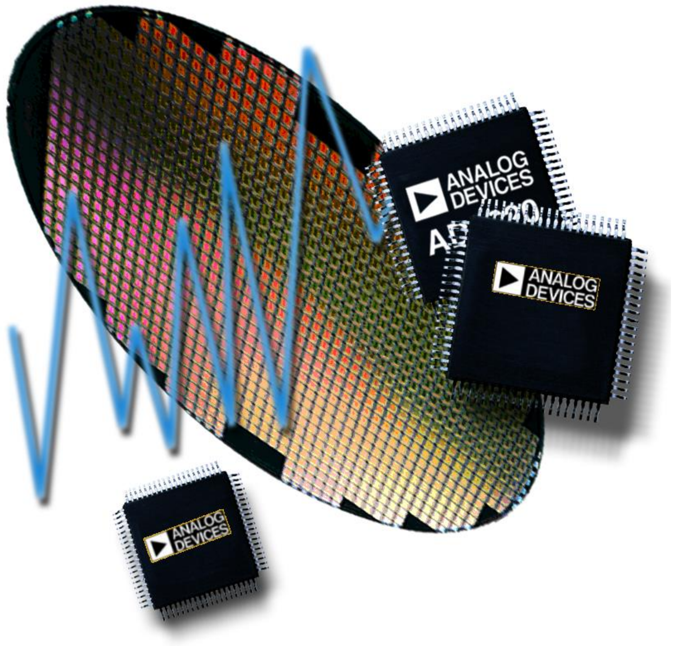
ANALOG
DEVICES



Reliability Report

Report Title: LTM4700 Material Set Change Qualification

Report Number: 19501

Revision: A

Date: 19 November 2023

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the LTM4700 product in a 330-BGA package using alternate source Alpha & Omega FET and PMS0518PG00E09 substrate.

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics

Product Characteristics	Product(s) to be qualified	
Generic/Root Part #	LTM4700	LTM4700
Die Id	3104	3884
Die Size (mm)	1.41 x 1.33	2.92 x 2.67
Wafer Fabrication Site	Vanguard	ADI Camas
Wafer Fabrication Process	0.6µm BiCMOS	0.6µm BiCMOS
Die Substrate	Si	Si
Metallization / # Layers	AlSiCu	AlCu
Polyimide	No	No
Passivation	undoped-oxide/SiN	doped-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
High Temperature Operating Life (HTOL)	JESD22-A108	125°C<Tj<135°C, Biased, 1,000 Hours	LTM4700	Q19501.1HTOL	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LTM4700	Q19501.1HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	110C 85%RH 17.7 psia, Biased, 264hrs	LTM4700	Q19501.1HAST	0/30

[1] These samples were subjected to preconditioning at MSL 4 with 3x reflow peak temp of 245°C prior to the start of the stress test. MSL4 consists of the following: Bake: 48 hrs @ 125°C, Unbiased Soak: 96 hrs @ 30°C, 60%RH.

Package/Assembly Product Characteristics

Table 3: Package/Assembly Product Characteristics - 330-BGA at ADI Penang

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	LTM4700
Package	330-BGA
Body Size (mm)	22.00 x 15.00 x 7.87
Assembly Location	ADI Penang
MSL/Peak Reflow Temperature(°C)	4 / 245
Mold Compound	Sumitomo G311E
Substrate Laminate Supplier	Daisho Denshi
Leadframe Material	BT Resin
Lead Finish	96.5Sn_3.0Ag_0.5Cu
Wire Bond Material/Diameter (mils)	Gold / 1.00

QMCL

P/N	Description	Vendor
PMS0518PG00E09-01	22x15mm Substrate	Daisho Denshi
SE006518-01	Discrete FET	Alpha & Omega

Package/Assembly Test Results

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

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LTM4700	Q19501.1HTS	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	110C 85%RH 17.7 psia, Biased, 264hrs	LTM4700	Q19501.1HAST	0/30
Temperature Cycling (TC)[1]	JESD22-A104	-55°C/+125°C, 1,000 Cycles	LTM4700	Q19501.1TC	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	110C 85%RH 17.7 psia, 264hrs	LTM4700	Q19501.1UHAST	0/77

[1] These samples were subjected to preconditioning at MSL 4 with 3x reflow peak temp of 245°C prior to the start of the stress test. MSL4 consists of the following: Bake: 48 hrs @ 125°C, Unbiased Soak: 96 hrs @ 30°C, 60%RH.

Approvals

Reliability Engineer: Lay Yong Ong