Product/Process Change Notice - PCN 24_0225 Rev. -

Analog Devices, Inc. One Analog Way, Wilmington, MA 01887, USA

This notice is to inform you of a change that will be made to certain ADI products (see Appendix A) that you may have purchased in the last 2 years. **Any inquiries or requests with this PCN (additional data or samples) must be sent to ADI within 30 days of publication date.** ADI contact information is listed below.

PCN Title:	LTM4620, LTM4620A, LTM4677, LTM4648 and LTM4649 Change of FET
Publication Date:	04-Oct-2024
Effectivity Date:	06-Jan-2025 *(the earliest date that a customer could expect to receive changed material)*
Revision Description:	Initial Release

Description Of Change:

Analog Devices, Inc. qualified an alternate FET for use in the assembly of LTM4620, LTM4620A, LTM4677, LTM4648 and LTM4649.

Reason For Change:

Current FET facing End of Life (EOL).

Impact of the change (positive or negative) on fit, form, function & reliability:

There is no change in the form, fit, function, quality or reliability of the products.

Product Identification *(this section will describe how to identify the changed material)*

Production shipment of the product incorporating the new material will begin no sooner than the effective date.

Summary of Supporting Information:

Qualification has been performed per Industry Standard Test Methods. See attached Qualification Results Summary.

Supporting Documents

Attachment 1: Type: Qualification Results Summary

ADI_PCN_24_0225_Rev_-_Qual Report for FET Component Change.pdf...

Note: If applicable, the device material declaration will be updated due to material change.

ADI Contact Information:

For questions on this PCN, please send an email to the regional contacts below or contact your local ADI sales representatives.

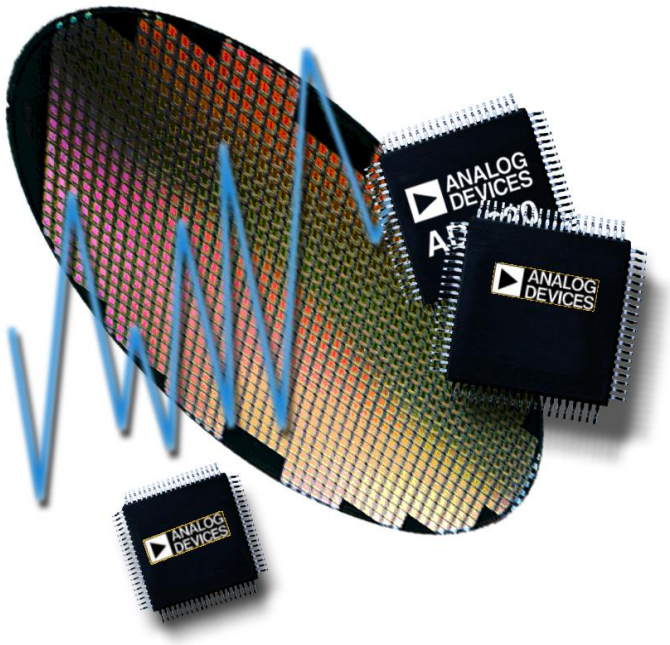
Americas:	Europe:	Japan:	Korea:	Rest of Asia:
PCN_Americas@analog.com	PCN_Europe@analog.com	PCN_Japan@analog.com	PCN_Korea@analog.com	PCN_ROA@analog.com

Appendix A - Affected ADI Models:

Added Parts On This Revision - Product Family / Model Number (27)

LTM4620 / LTM4620EV#PBF	LTM4620 / LTM4620EY#PBF	LTM4620 / LTM4620IV#PBF	LTM4620 / LTM4620IY	LTM4620 / LTM4620IY#PBF
LTM4620 / LTM4620MPY	LTM4620 / LTM4620MPY#PBF	LTM4620A / LTM4620AEV#2HKPBF	LTM4620A / LTM4620AEV#PBF	LTM4620A / LTM4620AEY#PBF
LTM4620A / LTM4620AIV#PBF	LTM4620A / LTM4620AIY	LTM4620A / LTM4620AIY#PBF	LTM4620A / LTM4620AMPY	LTM4620A / LTM4620AMPY#PBF
LTM4648 / LTM4648EY#PBF	LTM4648 / LTM4648IY	LTM4648 / LTM4648IY#PBF	LTM4649 / LTM4649EY#3MDPBF	LTM4649 / LTM4649EY#PBF
LTM4649 / LTM4649IY	LTM4649 / LTM4649IY#PBF	LTM4677 / LTM4677EY#PBF	LTM4677 / LTM4677EY#QN41-1PBF	LTM4677 / LTM4677IY
LTM4677 / LTM4677IY#3OMPBF	LTM4677 / LTM4677IY#PBF			

Appendix B - Revision History:			
Rev	**Publish Date**	**Effectivity Date**	**Rev Description**
Rev. -	04-Oct-2024	06-Jan-2025	Initial Release



Reliability Report

Report Title: LTM4620, LTM4620A, LTM4677, LTM4648 and LTM4649 Material Set Change Qualification

Report Number: 19271

Revision: A

Date: 5 May 2024

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the PMU9168 MOSFET component from OnSemi in the LTM4620, LTM4620A and LTM4677 product in 144-CSP_BGA, LTM4648 and LTM4649 product in a 68-CSP_BGA package. The LTM4620, LTM4649, LTM4677 are the selected qualification vehicles.

Qualified Components

ADI P/N
PMU9168
SE006847-01

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics

Product Characteristics	Product(s) to be qualified	
Generic/Root Part #	LTM4620	LTM4649
Die Id	3855	3855-9
Die Size (mm)	1.78 x 1.78	1.78 x 1.78
Wafer Fabrication Site	ADI Camas	ADI Camas
Wafer Fabrication Process	0.6um BiCMOS	0.6um BiCMOS
Die Substrate	Si	Si
Metallization / # Layers	AlCu/ 2	AlCu/ 2
Polyimide	No	No
Passivation	doped-oxide/SiN	doped-oxide/SiN

Die/Fab Test Results

Table 2: Die/Fab Test Results - BiCMOS

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	LTM4620	Q19271.1HTOL	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LTM4620	Q19271.1HTS	0/50
			LTM4649	Q19271.3HTS	0/50
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LTM4620	Q19271.1HAST	0/25
		110C 85%RH 17.7 psia, Biased, 264 Hours	LTM4649	Q19271.3HAST	0/25

[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 oven with a peak temperature of 245°C.

Package/Assembly Product Characteristics

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

Product Characteristics	Product(s) to be qualified		
Generic/Root Part #	LTM4620	LTM4649	LTM4677
Package	144-CSP_BGA	68-CSP_BGA	144-CSP_BGA
Body Size (mm)	15.00 x 15.00 x 5.01	9.00 x 15.00 x 4.92	16.00 x 16.00 x 5.01
Assembly Location	ADI Penang	ADI Penang	ADI Penang
MSL/Peak Reflow Temperature(°C)	3 / 245	3 / 245	4 / 245
Mold Compound	Hitachi GE100LFCWA	Hitachi GE100LFCWA	Sumitomo G311E
Die Attach/Underfill/TIM	Multicore 95Sn/5Sb / NA / NA	Multicore 95Sn/5Sb / NA / NA	Multicore 95Sn/5Sb / NA / NA
Substrate Material	BT Resin	BT Resin	BT Resin
Terminal Finish	96.5Sn_3.0Ag_0.5Cu	96.5Sn_3.0Ag_0.5Cu	96.5Sn_3.0Ag_0.5Cu
Wire Bond Material/Diameter (mils)	Tanaka Gold GLD/ 1.00	Tanaka Gold GLD/ 1.00	N/A

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - CSP_BGA at ADPG

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	LTM4620	Q19271.1HTS	0/50
			LTM4649	Q19271.3HTS	0/50
			LTM4677	Q19271.2HTS	0/50
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	LTM4620	Q19271.1HAST	0/25
		110C 85%RH 17.7 psia, Biased, 264 Hours	LTM4649	Q19271.3HAST	0/25
Temperature Cycling (TC)[1]	JESD22-A104	-55°C/+125°C, 1,000 Cycles	LTM4620	Q19271.1TMCL	0/77
			LTM4649	Q19271.3TMCL	0/77
Temperature Cycling (TC)[2]	JESD22-A104	-55°C/+125°C, 1,000 Cycles	LTM4677	Q19271.2TMCL	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	110C 85%RH 17.7 psia, 264 Hours	LTM4649	Q19271.3uHAST	0/77
		130C 85%RH 33.3 psia, 96 Hours	LTM4620	Q19271.1uHAST	0/77
Unbiased HAST (UHST)[2]	JESD22-A118	110C 85%RH 17.7 psia, 264 Hours	LTM4677	Q19271.2uHAST	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 oven with a peak temperature of 245°C.

[2] These samples were subjected to preconditioning (per J-STD-020 Level 4) prior to the start of the stress test. Level 4 preconditioning consists of the following: Bake: 48 hrs @ 125°C, Unbiased Soak: 96 hrs @ 30°C, 60%RH, Reflow: 3 passes through an oven with a peak temperature of 245°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	LTM4649	68-CSP_BGA	JS-002	1Ω, Cpkg	±2000V	C3
HBM	LTM4649	68-CSP_BGA	JS-001	1.5kΩ, 100pF	±4000V	3A
FICDM	LTM4677	144-CSP_BGA	JS-002	1Ω, Cpkg	±750V	C3
HBM	LTM4677	144-CSP_BGA	JS-001	1.5kΩ, 100pF	±2500V	2

Approvals

Reliability Engineer: Lay Yong Ong