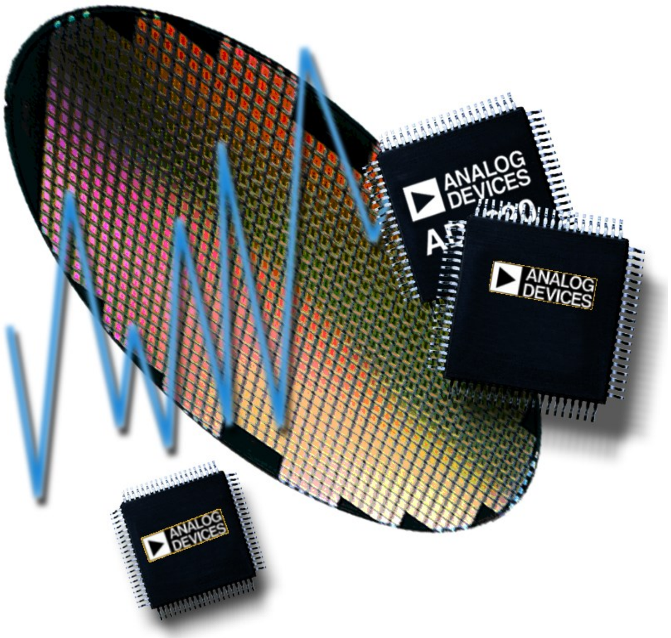
ANALOG
DEVICES



Reliability Report

Report Title: HMC717A Metal Mask Change Qualification

Report Number: 23205

Revision: A

Date: 12 March 2025

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the HMC717A product in a 16-LFCSP package. The HMC717ALP3E is a GaAs PHEMT MMIC Low Noise Amplifier that is ideal for fixed wireless and LTE/WiMAX/4G basestation front-end receivers operating between 4.8 and 6.0 GHz.

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics

Product Characteristics	Product
Generic	HMC717A
Die Id	L3401
Die Size (mm)	0.72 x 0.67
Wafer Fabrication Site	WinSemi
Wafer Fabrication Process	GaAs PHEMT
Die Substrate	GaAs
Metallization / # Layers	Au/3
Polyimide	No
Passivation	SiN

Die/Fab Test Results

Table 2: Die/Fab Test Results - GaAs PHEMT

Test Name	Spec	Conditions	Generic	Lot #	Fail/SS
High Temperature Operating Life (HTOL)[1]	JESD22-A108	150°C<Tj<175°C, Biased, 1,000 Hours	HMC1190A	Q13411.HO1	0/45
				Q13411.HO1	0/45
				Q13411.HO1	0/45
			ADCA3280	Q18371.1.1	0/77
				Q18371.2.1	0/77
				Q18371.3.1	0/77
			ADCA5190	Q18440.1.2	0/77
			ADCA5191	Q18440.1.1	0/45
				Q18440.2.1	0/45
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	HMC253A	Q16449.HS1	0/77
			HMC273A	Q12231.1	0/77
			HMC321A	Q12233.HS1	0/77
			HMC539A	Q12509.3	0/77

[1] 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 - 16-LFCSP at ASE

Product Characteristics	Product
Generic	HMC717A
Package	16-LFCSP
Body Size (mm)	3.00 x 3.00 x 0.85
Assembly Location	ASE
MSL/Peak Reflow Temperature(°C)	3 / 260°C
Mold Compound	Sumitomo G700LYT
Die Attach	Hitachi EN 4900GC conductive
Leadframe Material	Copper
Lead Finish	100% Matte Sn
Wire Bond Material/Diameter (mils)	4N Gold / 1.00

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - LFCSP at ASE

Test Name	Spec	Conditions	Generic	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	AD8351	Q12245.HS1	0/77
			ADL8104 - PE15	Q18823.1.HS1	0/77
			ADL8104 - PE15-0P	Q18823.1.HS2	0/77
Low Temperature Storage (LTS)	JESD22-A119	-55°C, 1,000 Hours	AD8351	Q12245.LS1	0/77
				Q12245.LS2	0/77
				Q12245.LS3	0/77
			ADA4528-2	Q12185.LS4	0/77
				Q12185.LS5	0/77
				Q12185.LS6	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-3	HMC717A	Q23205.1.SH1	0/30
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 1,000 Cycles	AD8351	Q12245.TC1	0/77
				Q12245.TC2	0/77
				Q12245.TC3	0/77
			HMC344ALP3E	Q14254.TC1	0/77
				Q14254.TC3	0/77
				Q14254.TC4	0/77
			HMC470A	Q21388.1.TC1	0/77
				Q21416.1.TC1	0/77
		-65°C/+150°C, 500 Cycles	ADP1765	Q12107.TC1	0/77
				Q12107.TC2	0/77
				Q12107.TC3	0/77

[1] 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.

ESD Test Results

Table 5: ESD Test Result

ESD Model	Generic	Package	ESD Test Spec	RC Network	Highest Pass Level	Class
FICDM	HMC717A	16-LFCSP	JS-002	1Ω, Cpkg	±1000V	C3
HBM	HMC717A	16-LFCSP	JS-001-2023	1.5kΩ, 100pF	±250V	1A

Approvals

Reliability Engineer: Carl Bunis