

Automotive Qualification Report
LM4040_EM3-5.0

		□	□	✓	✓	✓								
		Lot # 1 (S57FDA010A)	Lot # 2 (SQLAHA013C)	Lot # 3 (S4BAJ1001D)	Lot #4 (SHLCV1001B)	Lot # 5 (K58BBA072B)								
Precision Micropower Shunt Voltage Reference with Multiple Reverse Breakdown Voltages	Maxim Part Number	LM4040AEM3-5.0	MAX6316MUK47BY	MAX1617AMEE	MAX1632AEAI	MAX4625EUT (Note 2)								
	Description (Note 1)	AEC-Q100 (Note 4)	AEC-Q100 (Note 4)	Maxim	Maxim	Maxim								
	Operating Temperature	-40°C to +125°C	-40°C to +85°C	-55°C to +125°C	-40°C to +85°C	-40°C to +85°C								
	Temperature Grade	1	3	1	3	3								
	Fab Location	Maxim, San Jose	Maxim, San Jose	Maxim, San Jose	Maxim, San Jose	TSMC, Taiwan								
	Fab Process	B12 (8", 1.2 um MOS)	B12 (8", 1.2 um MOS)	B12 (8", 1.2 um MOS)	B12 (8", 1.2 um MOS)	0.6 um 1P2M MOS								
	Die	RF25Y-5Z	MS13X	PY09Y	PW57T-2Z	AH25Z-1Z								
	Assembly Location	NSEB, Thailand	Hana-AYT, Thailand	Anam/Amkor Philippines	Anam/Amkor Philippines	NSEB, Thailand								
	Die Size (mils)	30 x 31	43x38	86 x 116	93 X 134	57 x 35								
	Package	3 SOT23-3	5 SOT23-5	16-Lead QSOP	28-Lead SSOP	6 SOT23-6								
	Wire Bond Material	Au .001"	Au .001"	Au .0013"	Au .0013"	Au .001"								
	Mold Compound	EME6710S	MP8000AN	MP8000AN	MP8000AN	EME6710S								
	Die Attach	8006-2X (Non-cond.)	84-1LMISR4	84-1LMISR4	84-1LMISR4	8006-2X (Non-cond.)								
	Lead Frame	Copper	Copper	Copper	Copper	Copper								
	Lead Finish	85/15 Sn/Pb	85/15 Sn/Pb	85/15 Sn/Pb	85/15 Sn/Pb	85/15 Sn/Pb								
	Reliability Lot Number	A050032, DC 0512	A050033, DC 0520	R020037B, DC 0224	R020037A, DC 0230	R030086A/B/C, DC 0319								
		Failures/Sample Size		Failures/Sample Size		Failures/Sample Size								
AEC-Q100 Rev. F Tests	#	Conditions	+25C	+125C	-40C	+25C	+85C	-40C	+25C	+85C	-40C	+25C	+85C	-40C
MSL 1 - Preconditioning (PC)	A1	240C (Sn/Pb)	0/213			0/211						0/450		
		260C (100% Sn)												
=>CSAM		J-STD-020C (1 lot)	0/22			0/22								
Temperature Humidity-Bias (THB)	A2	85C/85%RH 1000 Hours										0/135		
Biased HAST (HAST)	A2	130C/85%RH 96 Hours	0/48			0/50		0/44		0/44				
Autoclave (AC)	A3	121C/85%RH 168 Hours						0/77		0/74				
Unbiased HAST (UHAST)	A3	130C/85%RH 96 Hours	0/50			0/48								
Temperature Cycle (TC)	A4	-65 to +150C 1000 Cycles	0/76			0/80		0/77		0/77		0/231		
=>Wirebond Pull (WBP)		>3 grams	Pending			0/50								
High Temperature Storage (HTSL)	A6	+150C 1000 Hours	0/75			0/79		0/77		0/77				
High Temperature Op Life (HTOL)	B1	+135C 1000 Hours	0/71			Pending /77				0/80				
Early Life Failure Rate (ELFR)	B2	+135C 48 Hours												
Maxim Infant Mortality (IME)		+135C 12 Hours						0/4994						
Wire Bond Shear (WBS)	C1		(Note 3)											
Wire Bond Pull (WBP)	C2		(Note 3)											
Solderability (SD)	C3		0/15											
Physical Dimensions (PD)	C4		0/10											
Lead Integrity (LI)	C6		0/5											
(EM, TDDb, HCI)	D1-3													
Pre- and Post-Stress Electrical (TEST)	E1		All			All		All		All		All		
Human Body Model ESD (HBM)	E2	JESD22/A114	1000V											
Machine Model ESD (MM)	E2	JESD22/A115												
Charged Device Model ESD (CDM)	E3	AEC-Q100-011	500V											
Latch-Up (LU)	E4	JESD78, Class II	Pending											

(Note 1) AEC-Q100 test performed per Rev. F guidelines. Maxim tests performed to internal specification 10-3006.

(Note 2) Tests performed on three assembly lots.

(Note 3) Monitor data from assembly subcontractor.

(Note 4) Pre- and post-stress testing performed at 25°C only.

✓ = Complete

□ = Open