



## Reliability Data Report Product Family R504

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LTM4600 / LTM4601 / LTM4601A /  
LTM4602 / LTM4603 / LTM4604 /  
LTM4605 / LTM4606 / LTM4607 /  
LTM4608 / LTM4609 / LTM4611 /  
LTM4612 / LTM4614 / LTM4615 /  
LTM4616 / LTM4617 / LTM4618 /  
LTM4619 / LTM4620 / LTM4620A /  
LTM4627 / LTM4628 / LTM4630 /  
LTM4633 / LTM4637 / LTM4641 /  
LTM4649 / LTM4676

# Reliability Data Report

## Report Number: R504

Report generated on: Thu Sep 19 19:21:22 PDT 2013

OPERATING LIFE TEST					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS (+125°C) <sup>1</sup>	No. of FAILURES <sub>2,3</sub>
BGA 15X09	75	1228	1228	75	0
BGA 15X15	154	1150	1209	115	0
LGA 15X09	788	0634	0843	788	0
LGA 15X15	2384	0452	1223	2233	0
Totals	3,401	-	-	3,211	0
HIGHLY ACCELERATED STRESS TEST AT +131 DEG C / 85% RH					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS (+85°C) <sup>4</sup>	No. of FAILURES
BGA 15X15	50	1235	1235	96	0
LGA 15X15	556	0645	1237	1450	0
Totals	606	-	-	1,546	0
TEMP CYCLE FROM -65 TO 150 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
BGA 15X09	77	1228	1228	115	0
BGA 15X15	981	1147	1235	710	0
LGA 06X06	100	0646	0749	55	0
LGA 15X09	4693	0634	1309	2651	0
LGA 15X15	28549	0513	1320	14878	0
Totals	34,400	-	-	18,409	0
TEMP CYCLE FROM -55 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
BGA 15X15	680	1209	1228	587	0
LGA 15X09	909	0634	1304	1128	0
LGA 15X15	7802	0643	1302	9637	0
Totals	9,391	-	-	11,352	0
TEMP CYCLE FROM -40 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
LGA 15X09	76	0710	0710	76	0
LGA 15X15	230	0632	0642	230	0
Totals	306	-	-	306	0

(1) Assumes Activation Energy = 1.0 Electron Volts

(2) Failure Rate Equivalent to +55 °C, 60% Confidence Level = 0.57 FITS

(3) Mean Time Between Failure in Years = 199952.52

(4) Assumes 20X Acceleration from 85 °C to +131 °C

Note 1: 1 FIT = 1 Failure in One Billion Hours.

Note 2: HAST, Temp Cycle & Thermal Shock are subjected to J-STD-020 MSL 3/4 Preconditioning

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THERMAL SHOCK FROM -65 TO 150 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
BGA 15X09	77	1228	1228	115	0
BGA 15X15	707	1147	1235	425	0
LGA 15X09	4312	0634	1309	2278	0
LGA 15X15	22659	0332	1320	10978	0
Totals	27,755	-	-	13,796	0
THERMAL SHOCK FROM -55 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
BGA 15X15	608	1049	1306	419	0
LGA 15X09	886	0634	1304	1204	0
LGA 15X15	7306	0708	1302	10055	0
Totals	8,800	-	-	11,678	0
POWER CYCLE FROM 50 TO 100 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
LGA 15X09	117	0712	0730	5850	0
LGA 15X15	347	0513	1048	16325	0
Totals	464	-	-	22,175	0
HIGH TEMPERATURE BAKE AT 150 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
BGA 15X09	77	1228	1228	77	0
BGA 15X15	1309	1147	1239	1245	0
LGA 15X09	4930	0634	1309	5212	0
LGA 15X15	26556	0441	1320	29135	0
Totals	32,872	-	-	35,669	0
HIGH TEMPERATURE BAKE AT 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
LGA 15X09	25	1229	1229	1	0
LGA 15X15	150	1231	1231	7	0
Totals	175	-	-	8	0
HIGH TEMPERATURE BAKE AT 175 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
LGA 15X15	533	0648	1006	308	0
Totals	533	-	-	308	0

(5) Board Mount Temp Cycle Meets IPC-9701 / JESD22-A104.

(6) Board Mount Temp Cycle Includes Full Electrical Characterization, XRAY & Cross-sections.

(7) Each Board Mounted Vehicle is Cycled up to 2000 Times or More.



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BOARD MOUNTED TEMP CYCLE FROM 0 TO 100 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES <sup>5, 6, 7</sup>	No. of FAILURES
BGA 15X15	76	1227	1227	150	0
LGA 15X15	124	0632	1040	594	0
Totals	200	-	-	744	0
BOARD MOUNTED TEMP CYCLE FROM -40 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES <sup>5, 6, 7</sup>	No. of FAILURES
BGA 15X15	77	1029	1029	154	0
LGA 15X09	783	0634	0729	950	0
LGA 15X15	634	0513	0941	1014	0
Totals	1,494	-	-	2,118	0
BOARD MOUNTED TEMP CYCLE FROM -55 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES <sup>5, 6, 7</sup>	No. of FAILURES
LGA 15X15	185	0624	1041	256	0
Totals	185	-	-	256	0
MECHANICAL SHOCK (JESD22-B104 CONDITION B - PEAK = 1500G)					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE		No. of FAILURES
LGA 15X09	25	0634	0634		0
LGA 15X15	140	0708	1039		0
Totals	165	-	-		0
VIBRATION VARIABLE FREQUENCY (JESD22-B103 CONDITION A - PEAK = 20G)					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE		No. of FAILURES
LGA 15X09	40	0634	0713		0
LGA 15X15	144	0708	1039		0
Totals	184	-	-		0