



Reliability Data Report Product Family R504

LTM4600 \ LTM4601 \ LTM4602 \ LTM4603 \
LTM4604 \ LTM4605 \ LTM4606 \ LTM4607 \
LTM4608 \ LTM4609 \ LTM4611 \ LTM4612 \
LTM4613 \ LTM4614 \ LTM4615 \ LTM4616 \
LTM4617 \ LTM4618 \ LTM4619 \ LTM4620 \
LTM4622 \ LTM4623 \ LTM4624 \ LTM4625 \
LTM4627 \ LTM4628 \ LTM4630 \ LTM4633 \
LTM4634 \ LTM4637 \ LTM4639 \ LTM4641 \
LTM4642 \ LTM4643 \ LTM4644 \ LTM4648 \
LTM4649 \ LTM4650 \ LTM4675 \ LTM4676 \
LTM4677

Reliability Data Report

Report Number: R504

Report generated on: Thu Jan 19 17:03:24 PST 2017

OPERATING LIFE TEST					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS (+125°C)¹	No. of FAILURES^{2, 3}
BGA 06X06	271	1206	1338	271	0
BGA 15X09	306	1228	1306	306	0
BGA 15X15	911	1141	1428	834	0
BGA 16X16	306	1324	1533	306	0
LGA 06X06	154	1430	1449	154	0
LGA 15X09	788	0634	0843	788	0
LGA 15X15	2448	0452	1223	2297	0
LGA 16X16	153	1233	1247	115	0
Totals	5,337	-	-	5,071	0

HIGHLY ACCELERATED STRESS TEST AT +130 DEG C / 85% RH					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS (+85°C)⁴	No. of FAILURES
BGA 06X06	201	1337	1527	771	0
BGA 09X11	305	1414	1532	961	0
BGA 15X09	1149	1306	1525	3998	0
BGA 15X15	958	1235	1530	2563	0
BGA 16X16	1258	1334	1535	3102	0
LGA 06X06	689	1338	1524	2497	0
LGA 15X09	77	1502	1502	147	0
LGA 15X15	3591	0645	1544	10130	0
LGA 16X16	434	1248	1447	913	0
Totals	8,662	-	-	25,082	0

PRESSURE COOKER TEST AT 15 PSIG , +121 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
LGA 15X09	50	1505	1505	1	0
Totals	50	-	-	1	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 =0.36 FITS
- (3) Mean Time Between Failure in Years = 315776.72
- (4) Assumes 20X Acceleration from 85 °C to +130 °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 Preconditioning

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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 06X06	883	1245	1527	476	0
BGA 09X11	307	1414	1532	349	0
BGA 15X09	2876	1150	1525	1809	0
BGA 11X15	77	1304	1304	77	0
BGA 15X15	3749	1148	1530	2883	0
BGA 16X16	1995	1216	1535	2006	0
LGA 06X06	868	1338	1524	813	0
LGA 15X09	1350	0634	1527	1441	0
LGA 11X15	153	1304	1304	153	0
LGA 15X15	13193	0643	1549	13717	0
LGA 16X16	1078	1147	1447	1074	0
Totals	26,529	-	-	24,798	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	620	1213	1517	198	0
BGA 15X15	3282	1141	1528	1659	0
BGA 16X16	675	1412	1511	67	0
LGA 15X09	7352	0634	1517	2917	0
LGA 15X15	53560	0513	1544	20158	0
LGA 16X16	473	1449	1509	47	0
Totals	65,962	-	-	25,046	0

THERMAL SHOCK FROM -55 TO 105 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES	No. of FAILURES
BGA 06X06	384	1245	1527	422	0
BGA 09X11	307	1414	1532	307	0
BGA 15X09	1416	1150	1525	1505	0
BGA 11X15	75	1304	1304	77	0
BGA 15X15	2203	1049	1530	1945	0
BGA 16X16	1966	1242	1535	1625	0
LGA 06X06	765	1338	1524	765	0
LGA 15X09	1108	0634	1527	1426	0
LGA 11X15	77	1304	1304	77	0
LGA 15X15	9794	0708	1533	12437	0
LGA 16X16	1033	1240	1447	917	0
Totals	19,128	-	-	21,503	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 06X06	384	1245	1527	422	0
BGA 09X11	307	1414	1532	307	0
BGA 15X09	1416	1150	1525	1505	0
BGA 11X15	75	1304	1304	77	0
BGA 15X15	2203	1049	1530	1945	0
BGA 16X16	1966	1242	1535	1625	0
LGA 06X06	765	1338	1524	765	0
LGA 15X09	1108	0634	1527	1426	0
LGA 11X15	77	1304	1304	77	0
LGA 15X15	9794	0708	1533	12437	0
LGA 16X16	1033	1240	1447	917	0
Totals	19,128	-	-	21,503	0

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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	151	1213	1306	151	0
BGA 15X15	1448	1141	1528	958	0
BGA 16X16	328	1412	1511	32	0
LGA 15X09	4797	0634	1505	2326	0
LGA 15X15	30716	0332	1544	12972	0
Totals	37,440	-	-	16,439	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 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
BGA 06X06	31	1412	1412	31	0
BGA 15X09	283	1447	1503	283	0
BGA 15X15	665	1405	1503	591	0
LGA 15X09	591	1229	1506	567	0
LGA 15X15	5198	1231	1514	4881	0
Totals	6,768	-	-	6,353	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 06X06	375	1245	1527	375	0
BGA 09X11	308	1414	1532	269	0
BGA 15X09	891	1213	1518	852	0
BGA 11X15	77	1324	1324	77	0
BGA 15X15	1999	1141	1528	1953	0
BGA 16X16	786	1334	1535	749	0
LGA 06X06	693	1338	1524	698	0
LGA 15X09	4980	0634	1344	5262	0
LGA 11X15	50	1304	1304	50	0
LGA 15X15	30092	0441	1549	32561	0
LGA 16X16	763	1248	1447	759	0
Totals	41,014	-	-	43,605	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	578	0648	1434	353	0
Totals	578	-	-	353	0

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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 ^{5,6,7}	No. of FAILURES
BGA 15X15	230	1227	1227	458	0
LGA 15X15	124	0632	1040	594	0
Totals	354	-	-	1,052	0

BOARD MOUNTED TEMP CYCLE FROM -40 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES ^{5,6,7}	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 ^{5,6,7}	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	188	0708	1348		0
Totals	228	-	-		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.