

RELIABILITY REPORT





Reliability Data Report

Product Family R598

LTM8001 / LTM8002 / LTM8003 / LTM8008 /
LTM8020 / LTM8021 / LTM8022 / LTM8023 /
LTM8024 / LTM8025 / LTM8026 / LTM8027 /
LTM8028 / LTM8029 / LTM8031 / LTM8032 /
LTM8033 / LTM8040 / LTM8041 / LTM8042 /
LTM8045 / LTM8046 / LTM8047 / LTM8048 /
LTM8049 / LTM8050 / LTM8052 / LTM8053 /
LTM8054 / LTM8055 / LTM8056 / LTM8057 /
LTM8058 / LTM8061 / LTM8062 / LTM8063 /
LTM8064 / LTM8065 / LTM8067 / LTM8068 /
LTM8073 / LTM8074

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Report Number: R598

Report generated on: Thu Jan 24 16:17:18 PST 2019

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 04x04	72	1744	1744	240	0
BGA 06X06	77	1544	1544	77	0
BGA 06X11	154	1145	1145	154	0
BGA 09X11	154	1052	1052	154	0
BGA 15X09	77	1533	1533	77	0
BGA 15X15	231	1120	1324	939	0
LGA 06X06	77	0717	0717	77	0
LGA 06X11	145	0749	1121	145	0
LGA 09X11	77	0733	0733	77	0
LGA 15X09	308	0809	0949	308	0
LGA 11X15	231	0945	1022	231	0
LGA 15X15	381	0821	1046	560	0
Totals	1,984	-	-	3,039	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 04x04	176	1744	1744	579	0
BGA 06X11	434	1225	1748	1125	0
BGA 09X11	596	1236	1518	1218	0
BGA 15X09	1184	1302	1714	1574	0
BGA 11X15	231	1516	1516	887	0
BGA 15X15	1173	1120	1733	1605	0
LGA 06X06	250	0717	1527	868	0
LGA 06X11	157	1632	1748	153	0
LGA 09X11	274	1245	1631	378	0
LGA 15X09	1232	0739	1509	2235	0
LGA 11X15	508	1213	1521	1529	0
LGA 15X15	833	0912	1646	461	0
Totals	7,048	-	-	12,612	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 04x04	419	1744	1744	607	0
BGA 06X06	457	1440	1547	570	0
BGA 06X11	1771	1138	1632	674	0
BGA 09X11	2640	1145	1632	845	0
BGA 15X09	3361	1121	1634	1675	0
BGA 11X15	795	1335	1634	287	0
BGA 15X15	2550	1120	1623	1611	0
LGA 06X06	2093	0646	1618	1306	0
LGA 06X11	2043	0804	1625	1680	0
LGA 09X11	7650	0723	1636	2792	0
LGA 15X09	9540	0739	1635	4524	0
LGA 11X15	4119	0945	1632	2911	0
LGA 15X15	7349	0831	1637	2964	0
Totals	44,787	-	-	22,446	0

- (1) Assumes Activation Energy = 1.0 Electron Volts
- (2) Failure Rate Equivalent to +55 °C, 60% Confidence Level =0.6 FITS
- (3) Mean Time Between Failure in Years = 189241.86
- (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 04x04	257	1744	1744	514	0
BGA 06X06	474	1435	1547	562	0
BGA 06X09	50	1652	1652	5	0
BGA 06X11	1470	1145	1748	1370	0
BGA 09X11	2929	1036	1651	1720	0
BGA 15X09	1254	1121	1710	1019	0
BGA 11X15	381	1516	1711	255	0
BGA 15X15	2432	1120	1806	1947	0
LGA 06X06	997	0717	1648	972	0
LGA 06X11	1111	0804	1748	1836	0
LGA 09X11	2490	0723	1712	1723	0
LGA 15X09	4772	0809	1714	4760	0
LGA 11X15	1310	0945	1701	1208	0
LGA 15X15	7678	0903	1806	3161	0
Totals	27,605	-	-	21,052	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 04x04	261	1744	1744	477	0
BGA 06X06	442	1440	1547	539	0
BGA 06X11	691	1141	1748	883	0
BGA 09X11	1048	1052	1518	1048	0
BGA 15X09	690	1121	1625	921	0
BGA 11X15	231	1516	1516	231	0
BGA 15X15	1319	1120	1806	1774	0
LGA 06X06	680	0717	1527	872	0
LGA 06X11	1099	0804	1748	1891	0
LGA 09X11	1109	0723	1411	1708	0
LGA 15X09	3145	0809	1509	4445	0
LGA 11X15	766	0945	1245	1109	0
LGA 15X15	1835	0903	1806	2756	0
Totals	13,316	-	-	18,654	0

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 04x04	257	1744	1744	471	0
BGA 06X06	364	1440	1547	329	0
BGA 06X11	457	1138	1437	458	0
BGA 09X11	712	1145	1452	622	0
BGA 15X09	1359	1121	1714	1287	0
BGA 11X15	231	1516	1516	231	0
BGA 15X15	1188	1120	1734	1636	0
LGA 06X06	1723	0717	1527	1103	0
LGA 06X11	1088	0804	1411	1578	0
LGA 09X11	6039	0723	1631	2839	0
LGA 15X09	5876	0827	1513	4063	0
LGA 11X15	2887	0945	1632	2576	0
LGA 15X15	4760	0932	1646	2374	0
Totals	26,941	-	-	19,567	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 09X11	36	0732	0732	1800	0
Totals	36	-	-	1,800	0

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HIGH TEMPERATURE BAKE AT 175 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE HRS	No. of FAILURES
BGA 15X09	91	1036	1036	91	0
LGA 06X11	231	0916	0916	462	0
LGA 09X11	50	1245	1245	50	0
LGA 11X15	154	1041	1041	77	0
LGA 15X15	844	1006	1045	847	0
Totals	1,370	-	-	1,527	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 04x04	231	1744	1744	231	0
BGA 06X11	331	1225	1437	331	0
BGA 09X11	1108	1036	1518	1083	0
BGA 15X09	1018	1121	1634	1279	0
BGA 11X15	655	1424	1634	655	0
BGA 15X15	1735	1120	1806	2328	0
LGA 06X06	856	0717	1527	938	0
LGA 06X11	728	0804	1632	998	0
LGA 09X11	3337	0723	1631	3332	0
LGA 15X09	4788	0820	1531	5297	0
LGA 11X15	1927	0809	1632	2528	0
LGA 15X15	2411	0816	1806	2569	0
Totals	19,125	-	-	21,569	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 06X09	50	1652	1652	50	0
BGA 06X11	546	1443	1626	546	0
BGA 09X11	1234	1245	1642	1234	0
BGA 15X09	846	1406	1621	846	0
BGA 15X15	100	1533	1604	100	0
LGA 06X06	238	1327	1537	213	0
LGA 06X11	250	1347	1625	225	0
LGA 09X11	2780	1313	1704	2705	0
LGA 15X09	2355	1333	1645	2206	0
LGA 11X15	598	1326	1631	523	0
LGA 15X15	4469	1326	1649	4219	0
Totals	13,466	-	-	12,867	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
BGA 15X09	82	1036	1036	247	0
LGA 09X11	37	0806	0806	74	0
LGA 15X09	90	0821	0821	132	0
Totals	209	-	-	453	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 -40 TO 125 DEG C					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE	K DEVICE CYCLES ^{5,6,7}	No. of FAILURES
LGA 09X11	221	0723	0723	444	0
LGA 15X15	313	0749	1210	623	0
Totals	534	-	-	1,067	0
MECHANICAL SHOCK (JESD22-B104 CONDITION B - PEAK = 1500G)					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE		No. of FAILURES
LGA 06X11	45	0804	0804		0
LGA 09X11	43	0723	0723		0
LGA 15X09	60	0827	0834		0
LGA 15X15	87	0816	1210		0
Totals	235	-	-		0
VIBRATION VARIABLE FREQUENCY (JESD22-B103 CONDITION A - PEAK = 20G)					
PACKAGE TYPE	SAMPLE SIZE	OLDEST DATE CODE	NEWEST DATE CODE		No. of FAILURES
LGA 06X11	45	0804	0804		0
LGA 09X11	45	0723	0723		0
LGA 15X09	60	0827	0834		0
LGA 15X15	199	0816	1210		0
Totals	349	-	-		0