

8/1/2019



**RELIABILITY MONITOR REPORT
FOR**

Epson S18

MAXIM INTEGRATED

**160 RIO ROBLES
SAN JOSE, CA 95134**

**This Report was prepared by
MAXIM INTEGRATED Reliability Engineering**

Summary:

The data in the tables that follow was generated as the result of an on-going Process Reliability Monitor. The specific products in this process monitor are:

MAX14878AWA	MAX14878AWA	MAX14915AFM	MAX15069ATP+	MAX15158ATJ+
MAX16972AGEE	MAX16995ATPI/	MAX17612AATB	MAX20002ATPB	MAX20003DATP
MAX20003TPB/	MAX20024CGX	MAX20024MGX	MAX20057ATIA/	MAX20090AUP/
MAX20097AUI/	MAX20412ATJA/	MAX20428ATIA/	MAX20444ATG/	MAX20461ATJA/
MAX20463GTCA	MAX25600ATI/V	MAX40056FAU	MAXM15067AM	MAXM17536AL
MAXM17552AM	MAXM17639AM	MAXM17712AM	MAXM17724AM	MAXM17724AM

The calculated failure rate for devices using this process is:

FAILURE RATE: MTTF (YRS): 246047 QUANTITY: 2534 FAILS: 0 FITS: 0.5

The parameters used to calculate this failure rate are as follows:

Cf: 60% Ea: 0.7 Tu: 25 °C

The reliability data follows and in this section is the detailed reliability data by stress. The reliability data section includes the latest data available. This report covers data between 4/1/2019 and 8/1/2019 .

Process Information:

Process Description: Epson S18

OPERATING LIFE

DESCRIPTION	DATE	TEST CODE VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
HIGH TEMP OP LIFE		MAXM17724AMB+T	125°C	500 HRS	46	0	ECTM2Q00Q1
HIGH TEMP OP LIFE		MAXM17724AMB+	125°C	500 HRS	45	0	ECTM2Q00Q2
HIGH TEMP OP LIFE		MAXM17712AMB+T	125°C	500 HRS	46	0	ECTM2Q00Q3
HIGH TEMP OP LIFE	1736	MAX20097AUI/V+	125°C	192 HRS	78	0	EBRB8Q002EA
HIGH TEMP OP LIFE	1736	MAX20097AUI/V+	125°C	1000 HRS	79	0	EBRB8Q002EC
HIGH TEMP OP LIFE	1740	MAX15069ATP+	125°C	192 HRS	80	0	EBTM1Q001B
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000 HRS	80	0	EBRB8Q002EB
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000 HRS	80	0	EBRB8Q002DB
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000 HRS	79	0	EBRB8Q002DC
HIGH TEMP OP LIFE	1743	MAX20003DATPB/VY+	125°C	1400 HRS	10	0	EBOQ3A063A
HIGH TEMP OP LIFE	1802	MAX20097AUI/V+	125°C	1000 HRS	77	0	EBRB8Q002DA
HIGH TEMP OP LIFE	1802	MAX20003DATPB/VY+	125°C	192 HRS	18	0	EBOQ3A063CH
HIGH TEMP OP LIFE	1814	MAX20444ATG/V+	125°C	192 HRS	80	0	EBYF7Q001NB
HIGH TEMP OP LIFE	1819	MAX15158ATJ+	125°C	192 HRS	80	0	EBZM4Q001BQ
HIGH TEMP OP LIFE	1820	MAX20412ATJA/V+	125°C	192 HRS	79	0	EBYI9Q002B
HIGH TEMP OP LIFE	1822	MAX17612AATB+	125°C	192 HRS	80	0	ECTK2Q001EQ
HIGH TEMP OP LIFE	1823	MAX16972AGEEB/V+	125°C	192 HRS	80	0	EBZA4Q001JX
HIGH TEMP OP LIFE	1825	MAX16995ATPI/V+	125°C	1000 HRS	80	0	EATY4A085BA

HIGH TEMP OP LIFE	1832	MAX20461ATJA/V+	125°C	192	HRS	80	0	ECTX8Q003GD
HIGH TEMP OP LIFE	1838	MAXM15067AMB+T	125°C	192	HRS	80	0	EBYQ6AAGAA
HIGH TEMP OP LIFE	1843	MAX25600ATI/VY+	125°C	192	HRS	80	0	EBZO8Q001K
HIGH TEMP OP LIFE	1846	MAX40056FAUA/V+	125°C	192	HRS	80	0	ECTT6Q001D
HIGH TEMP OP LIFE	1847	MAX20463GTCA/V+	125°C	192	HRS	80	0	ECUR0Q001GB
HIGH TEMP OP LIFE	1849	MAX20002ATPB/V+	125°C	1000	HRS	80	0	EAZR0A162BA
HIGH TEMP OP LIFE	1850	MAX20428ATIA/VY+	125°C	1000	HRS	78	0	EBZX5Q001H
HIGH TEMP OP LIFE	1850	MAX20428ATIA/VY+	125°C	500	HRS	79	0	EBZX5Q001I
HIGH TEMP OP LIFE	1850	MAX20428ATIA/VY+	125°C	1000	HRS	40	0	EBZX5Q001IA
HIGH TEMP OP LIFE	1850	MAX20428ATIA/VY+	125°C	1000	HRS	40	0	EBZX5Q001IA
HIGH TEMP OP LIFE	1850	MAX20057ATIA/VY+	125°C	192	HRS	80	0	ECUQ6Q001BQ
HIGH TEMP OP LIFE	1903	MAXM17536ALY#	125°C	192	HRS	47	0	EBUA6A028EA
HIGH TEMP OP LIFE	1903	MAXM17536ALY#	125°C	192	HRS	47	0	EBUA6A028EB
HIGH TEMP OP LIFE	1903	MAXM17536ALY#	125°C	192	HRS	47	0	EBUA6A028EC
HIGH TEMP OP LIFE	1907	MAX20003TPB/V+CP7	125°C	1000	HRS	80	0	EAZR0A193BX
HIGH TEMP OP LIFE	1913	MAX20024MGXXA/V+	125°C	1000	HRS	79	0	EAUZ8A109DA
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0	NBRH4AT
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0	NBRH4AU
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0	NBRH4AV
Total:							0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
STORAGE LIFE		MAXM17552AMB+	150°C	1000 HRS	80	0	EBLY9Q1	
STORAGE LIFE		MAXM17552AMB+	150°C	1000 HRS	80	0	EBLY9Q2	
STORAGE LIFE		MAXM17552AMB+	150°C	1000 HRS	80	0	EBLY9Q3	
STORAGE LIFE	1743	MAX20003DATPB/VY+	150°C	1000 HRS	29	0	EBOQ3A063A	
STORAGE LIFE	1817	MAX20024CGXXE/V+	150°C	1000 HRS	80	0	EATR5A271GA	
STORAGE LIFE	1823	MAX20090AUP/V+	150°C	1000 HRS	48	0	EBMS0Q001IA	
STORAGE LIFE	1823	MAX20090AUP/V+	150°C	1000 HRS	15	0	EBMS0Q001IA	
STORAGE LIFE	1849	MAX20002ATPB/V+	150°C	1000 HRS	80	0	EAZR0A162BA	
STORAGE LIFE	1850	MAX20428ATIA/VY+	150°C	2000 HRS	77	0	EBZX5Q001I	
STORAGE LIFE	1903	MAXM17536ALY#	150°C	1000 HRS	79	0	EBUA6A028EB	
STORAGE LIFE	1906	MAX14878AWA+	150°C	1000 HRS	80	0	NBRH4AS	
STORAGE LIFE	1907	MAX20003TPB/V+CP7	150°C	1000 HRS	80	0	EAZR0A193BX	
STORAGE LIFE	1913	MAX20024MGXXA/V+	150°C	1000 HRS	80	0	EAUZ8A109DA	
Total:							0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
TEMP CYCLE, 5' RAMP, 10' DWELL		MAXM17552AMB+	-65C TO +150C (Condition C)	1000 CYS	78	0	EBLY9Q1
TEMP CYCLE, 5' RAMP, 10' DWELL		MAXM17552AMB+	-65C TO +150C (Condition C)	1000 CYS	79	0	EBLY9Q2
TEMP CYCLE, 5' RAMP, 10' DWELL		MAXM17552AMB+	-65C TO +150C (Condition C)	1000 CYS	79	0	EBLY9Q3
TEMP CYCLE, 5' RAMP, 10' DWELL	1736	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000 CYS	72	0	EBRB8Q002EA
TEMP CYCLE, 5' RAMP, 10' DWELL	1736	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000 CYS	73	0	EBRB8Q002EC
TEMP CYCLE, 5' RAMP, 10' DWELL	1743	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000 CYS	73	0	EBRB8Q002EB
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX16995ATPI/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	EATY4A085BA
TEMP CYCLE, 5' RAMP, 10' DWELL	1849	MAX20002ATPB/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	EAZR0A162BA
TEMP CYCLE, 5' RAMP, 10' DWELL	1850	MAX20428ATIA/VY+	-65C TO +150C (Condition C)	1000 CYS	22	0	EBZX5Q001H
TEMP CYCLE, 5' RAMP, 10' DWELL	1850	MAX20428ATIA/VY+	-65C TO +150C (Condition C)	1000 CYS	76	0	EBZX5Q001H
TEMP CYCLE, 5' RAMP, 10' DWELL	1850	MAX20428ATIA/VY+	-65C TO +150C (Condition C)	1000 CYS	22	0	EBZX5Q001I
TEMP CYCLE, 5' RAMP, 10' DWELL	1850	MAX20428ATIA/VY+	-65C TO +150C (Condition C)	1000 CYS	79	0	EBZX5Q001IA
TEMP CYCLE, 5' RAMP, 10' DWELL	1903	MAXM17536ALY#	-65C TO +150C (Condition C)	1000 CYS	80	0	EBUA6A028EA
TEMP CYCLE, 5' RAMP, 10' DWELL	1903	MAXM17536ALY#	-65C TO +150C (Condition C)	1000 CYS	80	0	EBUA6A028EB
TEMP CYCLE, 5' RAMP, 10' DWELL	1903	MAXM17536ALY#	-65C TO +150C (Condition C)	1000 CYS	80	0	EBUA6A028EC
TEMP CYCLE, 5' RAMP, 10' DWELL	1906	MAX14878AWA+	-65C TO +150C (Condition C)	1000 CYS	80	0	NBRH4AS
TEMP CYCLE, 5' RAMP, 10' DWELL	1907	MAX20003TPB/V+CP7	-65C TO +150C (Condition C)	1000 CYS	79	0	EAZR0A193BX

TEMP CYCLE, 5' RAMP, 10' DWELL	1913	MAX20024MGXXA/V+	-65C TO +150C (Condition C)	1000	CYS	80	0	EAUZ8A109DA
Total:							0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
BIASED MOISTURE		MAX14915AFM+	130C, 85% R.H.	96 HRS	52	0	EBSV1Q001N	
BIASED MOISTURE		MAX14915AFM+	130C, 85% R.H.	96 HRS	52	0	EBSV1Q001H	
BIASED MOISTURE	1817	MAX20024CGXXE/V+	130C, 85% R.H.	96 HRS	80	0	EATR5A271GA	
BIASED MOISTURE	1823	MAX20090AUP/V+	130C, 85% R.H.	96 HRS	78	0	EBMS0A005FX	
BIASED MOISTURE	1823	MAX20090AUP/V+	130C, 85% R.H.	96 HRS	80	0	EBMS0Q001IA	
BIASED MOISTURE	1823	MAX20090AUP/V+	130C, 85% R.H.	96 HRS	80	0	EBMS0Q001IC	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	22	0	EBZX5Q001H	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	192 HRS	70	0	EBZX5Q001H	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	22	0	EBZX5Q001I	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	200 HRS	22	0	EBZX5Q001I	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	192 HRS	70	0	EBZX5Q001I	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	22	0	EBZX5Q001IA	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	200 HRS	22	0	EBZX5Q001IA	
BIASED MOISTURE	1850	MAX20428ATIA/VY+	130C, 85% R.H.	192 HRS	70	0	EBZX5Q001IA	
BIASED MOISTURE	1903	MAXM17536ALY#	85 C/85% R.H.	144 HRS	28	0	EBUA6A028EA	
BIASED MOISTURE	1903	MAXM17536ALY#	85 C/85% R.H.	144 HRS	28	0	EBUA6A028EB	
BIASED MOISTURE	1903	MAXM17536ALY#	85 C/85% R.H.	144 HRS	28	0	EBUA6A028EC	
BIASED MOISTURE	1907	MAX20003TPB/V+CP7	130C, 85% R.H.	96 HRS	80	0	EAZR0A193BX	
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96 HRS	80	0	NBRH4AT	
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96 HRS	80	0	NBRH4AU	
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96 HRS	80	0	NBRH4AV	
Total:							0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
MOISTURE SOAK		MAXM17552AMB+	130C, 85% R.H.	96 HRS	80	0	EBLY9Q1
MOISTURE SOAK		MAXM17552AMB+	130C, 85% R.H.	96 HRS	80	0	EBLY9Q2
MOISTURE SOAK		MAXM17552AMB+	130C, 85% R.H.	96 HRS	80	0	EBLY9Q3
MOISTURE SOAK	1825	MAX16995ATPI/V+	130C, 85% R.H.	96 HRS	80	0	EATY4A085BA
MOISTURE SOAK	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	80	0	EBZX5Q001H
MOISTURE SOAK	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	80	0	EBZX5Q001I
MOISTURE SOAK	1850	MAX20428ATIA/VY+	130C, 85% R.H.	96 HRS	80	0	EBZX5Q001IA

MOISTURE SOAK	1903	MAXM17536ALY#	130C, 85% R.H. 96	HRS	80	0	EBUA6A028EA
MOISTURE SOAK	1903	MAXM17536ALY#	130C, 85% R.H. 96	HRS	80	0	EBUA6A028EB
MOISTURE SOAK	1903	MAXM17536ALY#	130C, 85% R.H. 96	HRS	80	0	EBUA6A028EC
MOISTURE SOAK	1913	MAX20024MGXXA/V+	130C, 85% R.H. 96	HRS	80	0	EAUZ8A109DA
MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H. 96	HRS	80	0	NBRH4AT
MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H. 96	HRS	80	0	NBRH4AU
MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H. 96	HRS	80	0	NBRH4AV

Total: **0**

FAILURE RATE: **MTTF (YRS): 246047** **QUANTITY: 2534** **FAILS: 0** **FITS: 0.5**