

1/24/2019



**RELIABILITY MONITOR REPORT
FOR**

MFN 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:

MAX13054AEAS	MAX14483AAP+	MAX14748BEW	MAX16133LFM/	MAX16147WM7
MAX16936RATE	MAX17270ETE+	MAX17761XAT	MAX20008AFO	MAX20019ATB
MAX20019ATB	MAX20024AGX	MAX20024AGX	MAX20024CGX	MAX20037ATID
MAX20040ATPB	MAX20047AFPA	MAX20048ATG	MAX20049ATEB	MAX20069GTL/
MAX20084ATE	MAX20087ATPA	MAX20098ATE	MAX20327EWL	MAX20328AEW
MAX20330EWA	MAX20331EWL	MAX20332EWE	MAX20446ATG/	MAX20471ATC
MAX22195ATJ+	MAX22445FAW	MAX22446CAW	MAX25105EQP/	MAX30110ENW
MAX30112EWG	MAX30207	MAX31341EWC	MAX31876R0TZ	MAX38902AAT
MAX38903BAT	MAX40001ANT1	MAX40002ANS+	MAX40004ANS0	MAX40004ANS0
MAX40016ANL+	MAX40018ANA	MAX40200AUK	MAX44284HAN	MAX77860EWG
MAX86915EFD+	MAX86917EFD+	MAX86917EFD+	MAX98306ETD+	MAX98357BETE
MAX98357BEW	MAX98357BEW			

The calculated failure rate for devices using this process is:

FAILURE RATE: MTTF (YRS): 443210 QUANTITY: 4464 FAILS: 0 FITS: 0.3

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 10/1/2018 and 12/31/2018.

Process Information:

Process Description: MFN S18

OPERATING LIFE

DESCRIPTION	DATE	TEST	CONDITION	READPOINT	QUANTITY	FAILS	LOT
	CODE	VEHICLE					NO.
HIGH TEMP OP LIFE		MAX17761XATC+	125°C	1000 HRS	77	0	JBZO0Q001S\$
HIGH TEMP OP LIFE		MAX40002ANS+T	125°C	1000 HRS	80	0	JBNR1A005EC
HIGH TEMP OP LIFE		MAX14748BEWW+T	125°C	72 HRS	32	0	JBYL7A007E#
HIGH TEMP OP LIFE		MAX20049ATEB/VY+	125°C	192 HRS	80	0	JBYR1Q001CA
HIGH TEMP OP LIFE		MAX20049ATEB/VY+	125°C	192 HRS	80	0	JBYR1Q001CE
HIGH TEMP OP LIFE		MAX20049ATEB/VY+	125°C	192 HRS	80	0	JBYR1Q001CF
HIGH TEMP OP LIFE		MAX20471ATCA/V+	125°C	192 HRS	80	0	JBTI0Q002CA
HIGH TEMP OP LIFE		MAX77860EWG+T	125°C	192 HRS	47	0	JBJG6Q001HB
HIGH TEMP OP LIFE		MAX31876R0TZS+T	125°C	192 HRS	80	0	JBZG4Q001PB
HIGH TEMP OP LIFE	1704	MAX20019ATBA/V+T	135°C	192 HRS	80	0	JBOW5Q001B
HIGH TEMP OP LIFE	1715	MAX20471ATCA/V+	135°C	192 HRS	80	0	JBTI03001P
HIGH TEMP OP LIFE	1718	MAX30110ENWG+	135°C	192 HRS	80	0	JBRI4Q001SD
HIGH TEMP OP LIFE	1718	MAX30112EWG+	135°C	192 HRS	80	0	JBRI4Q001JD
HIGH TEMP OP LIFE	1721	MAX16936RATEA/V+	135°C	1000 HRS	78	0	JBRY7Q001DK

HIGH TEMP OP LIFE	1724	MAX14483AAP+	135°C	1000	HRS	79	0	NBNL6ACB
HIGH TEMP OP LIFE	1733	MAX16133LFM/V+	135°C	1000	HRS	80	0	JBNG23003KB
HIGH TEMP OP LIFE	1733	MAX16133LFM/V+	135°C	1000	HRS	80	0	JBNG23003KC
HIGH TEMP OP LIFE	1733	MAX16133LFM/V+	135°C	1000	HRS	79	0	JBNG23003KD
HIGH TEMP OP LIFE	1733	MAX38902AATA+	135°C	192	HRS	80	0	JBSX1Q002GF
HIGH TEMP OP LIFE	1735	MAX20047AFPA/V+	135°C	1000	HRS	78	0	JBQV6Q001IC
HIGH TEMP OP LIFE	1735	MAX20047AFPA/V+	135°C	1000	HRS	79	0	JBQV6Q001F
HIGH TEMP OP LIFE	1735	MAX20087ATPA/VY+	135°C	192	HRS	80	0	JBSM6Q002JQ
HIGH TEMP OP LIFE	1735	MAX40018ANA+	135°C	192	HRS	80	0	JBSV4Q001RJ
HIGH TEMP OP LIFE	1738	MAX20098ATEA/VY+	135°C	1000	HRS	80	0	JBTD3A004DC
HIGH TEMP OP LIFE	1740	MAX13054AEASA+	135°C	192	HRS	80	0	JBSL63001L#
HIGH TEMP OP LIFE	1743	MAX98357BETE+	135°C	1000	HRS	79	0	JBTS8Q001SC
HIGH TEMP OP LIFE	1743	MAX31341EWC+T	135°C	192	HRS	80	0	JBUB53001FA
HIGH TEMP OP LIFE	1743	MAX40016ANL+	135°C	192	HRS	80	0	JBUC0Q002EF
HIGH TEMP OP LIFE	1743	MAX17270ETE+	135°C	192	HRS	80	0	JBTT43002B#
HIGH TEMP OP LIFE	1744	MAX20446ATG/V+	135°C	192	HRS	80	0	JBTO6Q001VA
HIGH TEMP OP LIFE	1746	MAX98306ETD+T	135°C	1000	HRS	80	0	JBVH7A011AB
HIGH TEMP OP LIFE	1747	MAX40001ANT12+TG7	135°C	1000	HRS	80	0	JBKB6A005N#
HIGH TEMP OP LIFE	1748	MAX98357BEWL+TG7	135°C	1000	HRS	80	0	JBTS8Q002A
HIGH TEMP OP LIFE	1749	MAX98357BEWL+TG7	135°C	1000	HRS	79	0	JBTS8Q003B
HIGH TEMP OP LIFE	1751	MAX20328AEWA+T	135°C	192	HRS	80	0	JBUK8Q001P#
HIGH TEMP OP LIFE	1752	MAX40001ANT12+TG7	135°C	1000	HRS	80	0	JBKB6A006A
HIGH TEMP OP LIFE	1752	MAX20037ATID/V	135°C	192	HRS	80	0	JBTU8A009H
HIGH TEMP OP LIFE	1801	MAX20040ATPB/VY+	135°C	192	HRS	60	0	JBUD4A006AQ
HIGH TEMP OP LIFE	1801	MAX20040ATPB/VY+	135°C	192	HRS	20	0	JBUD4A006AQ
HIGH TEMP OP LIFE	1803	MAX98306ETD+T	125°C	1000	HRS	79	0	JBVH7A011CB
HIGH TEMP OP LIFE	1805	MAX98306ETD+T	135°C	1000	HRS	80	0	JBVH7A012CA
HIGH TEMP OP LIFE	1806	MAX20332EWE+T	135°C	192	HRS	80	0	JBUA9Q001HC
HIGH TEMP OP LIFE	1807	MAX40002ANS+T	125°C	500	HRS	80	0	JBNR1A005EC
HIGH TEMP OP LIFE	1808	MAX20330EWA+T	125°C	192	HRS	78	0	JBTM4Q001H#
HIGH TEMP OP LIFE	1808	MAX22195ATJ+	125°C	192	HRS	80	0	JBYP8Q001OQ
HIGH TEMP OP LIFE	1810	MAX20008AFOD/VY+	135°C	192	HRS	80	0	JBTJ4A010FQ
HIGH TEMP OP LIFE	1810	MAX44284HANT+TG7	135°C	1000	HRS	80	0	JBYC9Q002AA
HIGH TEMP OP LIFE	1810	MAX22445FAWE+	125°C	192	HRS	80	0	BBXZ0AAQ
HIGH TEMP OP LIFE	1810	MAX20327EWL+	125°C	192	HRS	80	0	JBYL4Q002AC
HIGH TEMP OP LIFE	1811	MAX44284HANT+TG7	135°C	1000	HRS	80	0	JBYC9Q001RC

HIGH TEMP OP LIFE	1811	MAX20048ATGA/VY+	135°C	192	HRS	80	0	JBTH5Q001EQ
HIGH TEMP OP LIFE	1811	MAX16147WM75SA+T	125°C	192	HRS	80	0	JBVY8Q002BB
HIGH TEMP OP LIFE	1814	MAX44284HANT+TG7	135°C	1000	HRS	80	0	JBVC9Q003AB
HIGH TEMP OP LIFE	1814	MAX44284HANT+TG7	135°C	1000	HRS	80	0	JBVC9A004A
HIGH TEMP OP LIFE	1814	MAX20331EWL+T	125°C	192	HRS	80	0	JBZC4Q001MC
HIGH TEMP OP LIFE	1816	MAX20084ATEA/VY+	125°C	192	HRS	80	0	JBZB1Q001IX
HIGH TEMP OP LIFE	1817	MAX20069GTL/V+	125°C	192	HRS	80	0	JBVY2Q001SQ
HIGH TEMP OP LIFE	1821	MAX38903BATB+	125°C	192	HRS	80	0	JCTK5Q001VF
Total:							0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5Q003DC
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5A005B
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5A004DA
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5Q003EC
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5A003EB
STORAGE LIFE		MAX20019ATBA/VY+T	150°C	200 HRS	78	0	JBOW5Q003EX
STORAGE LIFE		MAX17761XATC+	150°C	1000 HRS	80	0	JBZO0Q001S#
STORAGE LIFE		MAX30207	150°C	96 HRS	30	0	JCUG4Q002I-5
STORAGE LIFE		MAX30207	150°C	96 HRS	40	0	JCUG4Q002E-1
STORAGE LIFE		MAX98306ETD+T	150°C	1000 HRS	80	0	JBVH7A011CB
STORAGE LIFE		MAX20471ATCA/V+	150°C	1000 HRS	79	0	JBTI0Q002CA
STORAGE LIFE		MAX20471ATCA/V+	150°C	1000 HRS	80	0	JBTI0Q002CB
STORAGE LIFE		MAX20471ATCA/V+	150°C	1000 HRS	79	0	JBTI0Q002CC
STORAGE LIFE		MAX20024AGXXE/V+	150°C	500 HRS	40	0	JBSI9Q001C#
STORAGE LIFE		MAX25105EQP/V+	150°C	1000 HRS	80	0	TBTA5Q001JA
STORAGE LIFE		MAX25105EQP/V+	150°C	1000 HRS	80	0	TBTA5Q001J
STORAGE LIFE	1733	MAX16133LFM/V+	150°C	500 HRS	80	0	JBNG23003KB
STORAGE LIFE	1733	MAX16133LFM/V+	150°C	500 HRS	80	0	JBNG23003KC
STORAGE LIFE	1733	MAX16133LFM/V+	150°C	500 HRS	80	0	JBNG23003KD
STORAGE LIFE	1738	MAX20098ATEA/VY+	150°C	1000 HRS	80	0	JBTD3A004DC
STORAGE LIFE	1743	MAX98357BEWL+G7	150°C	1000 HRS	80	0	JBTS8Q001RC
STORAGE LIFE	1746	MAX98306ETD+T	150°C	1000 HRS	80	0	JBVH7A011AB
STORAGE LIFE	1747	MAX40001ANT12+TG7	150°C	1000 HRS	80	0	JBKB6A005N#
STORAGE LIFE	1748	MAX98357BEWL+TG7	150°C	1000 HRS	80	0	JBTS8Q002A
STORAGE LIFE	1749	MAX98357BEWL+TG7	150°C	1000 HRS	80	0	JBTS8Q003B

STORAGE LIFE	1752	MAX40001ANT12+TG7	150°C	1000	HRS	80	0	JBKB6A006A
STORAGE LIFE	1805	MAX98306ETD+T	150°C	1000	HRS	80	0	JBVH7A012CA
STORAGE LIFE	1810	MAX44284HANT+TG7	150°C	1000	HRS	80	0	JBYC9Q002AA
STORAGE LIFE	1811	MAX44284HANT+TG7	150°C	1000	HRS	80	0	JBYC9Q001RC
STORAGE LIFE	1814	MAX44284HANT+TG7	150°C	1000	HRS	80	0	JBYC9Q003AB
STORAGE LIFE	1814	MAX44284HANT+TG7	150°C	1000	HRS	80	0	JBYC9A004A
Total:							0	

TEMPERATURE CYCLE

DESCRIPTION	DATE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
TEMP CYCLE, 15' RAMP, 15' DWELL		MAX40004ANS02+G7	-40C TO +125C (Condition G)	100	CYS	80	0	JBNR3A502
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX20019ATBA/VY+T	-65C TO +150C (Condition C)	1000	CYS	70	0	JBOW5Q003EX
TEMP CYCLE, 15' RAMP, 15' DWELL		MAX44284HANT+TG7	-40C TO +125C (Condition G)	100	CYS	80	0	JBCY9Q003AB
TEMP CYCLE, 15' RAMP, 15' DWELL		MAX44284HANT+TG7	-40C TO +125C (Condition G)	100	CYS	80	0	JBCY9Q004A
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX17761XATC+	-65C TO +150C (Condition C)	200	CYS	80	0	JBZO0Q001S#
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX20049ATEB/VY+	-65C TO +150C (Condition C)	500	CYS	90	0	JBYR1Q001CE
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX20471ATCA/V+	-65C TO +150C (Condition C)	500	CYS	80	0	JBTI0Q002CA
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX20471ATCA/V+	-65C TO +150C (Condition C)	500	CYS	80	0	JBTI0Q002CC
TEMP CYCLE, 15' RAMP, 15' DWELL	1725	MAX40004ANS02+TG7	-40C TO +125C (Condition G)	100	CYS	80	0	JBNR33010A#
TEMP CYCLE, 15' RAMP, 15' DWELL	1733	MAX40004ANS02+G7	-40C TO +125C (Condition G)	100	CYS	80	0	JBNR33019AO
TEMP CYCLE, 15' RAMP, 15' DWELL	1737	MAX20024AGXXC/V+	-40C TO +125C (Condition G)	100	CYS	1142	0	JBSI9Q001K
TEMP CYCLE, 15' RAMP, 15' DWELL	1737	MAX20024CGXXC/V+	-40C TO +125C (Condition G)	100	CYS	100	0	JBSI9Q001G
TEMP CYCLE, 15' RAMP, 15' DWELL	1745	MAX40001ANT12+TG7	-40C TO +125C (Condition G)	500	CYS	80	0	JBKB6Q003L#
TEMP CYCLE, 5' RAMP, 10' DWELL	1746	MAX98306ETD+T	-65C TO +150C (Condition C)	500	CYS	80	0	JBVH7A011AB

TEMP CYCLE, 15' RAMP, 15' DWELL	1749	MAX40001ANT12+TG7	-40C TO +125C (Condition G)	1000	CYS	80	0	JBKB6A006A#
TEMP CYCLE, 15' RAMP, 15' DWELL	1750	MAX40001ANT12+TG7	-40C TO +125C (Condition G)	500	CYS	80	0	JBKB6A005N#
TEMP CYCLE, 5' RAMP, 10' DWELL	1750	MAX22446CAWE+	-65C TO +150C (Condition C)	1000	CYS	90	0	JBSD4Q001
TEMP CYCLE, 5' RAMP, 10' DWELL	1750	MAX22446CAWE+	-65C TO +150C (Condition C)	1000	CYS	90	0	JBSD4Q001KA
TEMP CYCLE, 5' RAMP, 10' DWELL	1750	MAX22446CAWE+	-65C TO +150C (Condition C)	500	CYS	90	0	JBSD4Q001LB
TEMP CYCLE, 15' RAMP, 15' DWELL	1803	MAX40004ANS02+TG7	-40C TO +125C (Condition G)	100	CYS	80	0	JBNR3A014BA
TEMP CYCLE, 5' RAMP, 10' DWELL	1803	MAX98306ETD+T	-65C TO +150C (Condition C)	1000	CYS	79	0	JBVH7A011CB
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		96	CYS	50	0	JBTT13086AA
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		240	CYS	50	0	JBTT13086AA
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+T	-65C TO +150C (Condition C)	96	CYS	50	0	JBTT13056EC
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX98306ETD+T	-65C TO +150C (Condition C)	1000	CYS	74	0	JBVH7A012CA
TEMP CYCLE, 15' RAMP, 15' DWELL	1833	MAX40004ANS02+TG7	-40C TO +125C (Condition G)	100	CYS	80	0	JBNR3A027AA
Total:							0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE	TEST	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
	CODE	VEHICLE					
BIASED MOISTURE		MAX20019ATBA/VY+T	130C, 85% R.H.	96 HRS	77	0	JBOW5Q003DC
BIASED MOISTURE		MAX20019ATBA/VY+T	130C, 85% R.H.	96 HRS	79	0	JBOW5A005B
BIASED MOISTURE		MAX20019ATBA/VY+T	130C, 85% R.H.	96 HRS	79	0	JBOW5Q003EC
BIASED MOISTURE		MAX20019ATBA/VY+T	130C, 85% R.H.	96 HRS	78	0	JBOW5A003EB
BIASED MOISTURE		MAX20019ATBA/VY+T	130C, 85% R.H.	96 HRS	79	0	JBOW5Q003EX
BIASED MOISTURE		MAX20471ATCA/V+	130C, 85% R.H.	96 HRS	79	0	JBTI0Q002CB
BIASED MOISTURE	1721	MAX16936RATEA/V+	85 C/85% R.H.	96 HRS	80	0	JBRY7Q001DK
BIASED MOISTURE	1733	MAX16133LFM/V+	85 C/85% R.H.	96 HRS	10	0	JBNG23003KB
BIASED MOISTURE	1746	MAX98306ETD+T	85 C/85% R.H.	96 HRS	80	0	JBVH7A011AB
BIASED MOISTURE	1749	MAX40001ANT12+TG7	130C, 85% R.H.	96 HRS	80	0	JBKB6A006A#
BIASED MOISTURE	1750	MAX40001ANT12+TG7	85 C/85% R.H.	96 HRS	80	0	JBKB6A005N#

BIASED MOISTURE	1805	MAX98306ETD+T	130C, 85% R.H. 96	HRS	80	0	JBVH7A012CA
				Total:		0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
MOISTURE SOAK		MAX44284HANT+TG7	130C, 85% R.H. 96	HRS	80	0	JBYC9Q003AB
MOISTURE SOAK		MAX44284HANT+TG7	130C, 85% R.H. 96	HRS	80	0	JBYC9A004A
MOISTURE SOAK		MAX17761XATC+	130C, 85% R.H. 96	HRS	80	0	JBZO0Q001S#
MOISTURE SOAK		MAX20049ATEB/VY+	130C, 85% R.H. 96	HRS	80	0	JBYR1Q001CE
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H. 96	HRS	80	0	JBTI0Q002CA
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H. 96	HRS	80	0	JBTI0Q002CB
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H. 96	HRS	80	0	JBTI0Q002CC
MOISTURE SOAK	1743	MAX86915EFD+	130C, 85% R.H. 96	HRS	77	0	JBTT1Q001OB
MOISTURE SOAK	1750	MAX40001ANT12+TG7	130C, 85% R.H. 96	HRS	80	0	JBKB6A005N#
MOISTURE SOAK	1805	MAX86917EFD+	130C, 85% R.H. 96	HRS	50	0	JBTT13086AA
MOISTURE SOAK	1805	MAX86917EFD+	85C, 85% R.H. 120	HRS	50	0	JBTT13086AA
MOISTURE SOAK	1805	MAX86917EFD+T	130C, 85% R.H. 96	HRS	50	0	JBTT13056EC
MOISTURE SOAK	1805	MAX86917EFD+T	85C, 85% R.H. 120	HRS	50	0	JBTT13056EC
				Total:		0	

FAILURE RATE: MTTF (YRS): 443210 QUANTITY: 4464 FAILS: 0 FITS: 0.3