



5/9/2009

RELIABILITY MONITOR REPORT
FOR

TSMC 0.18 μ m Silicon Gate CMOS

MAXIM Integrated Products

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Sunnyvale, CA 94086

This Report was prepared by
Maxim 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:

| | | | | |
|-------------|-------------|-------------|-------------|--------------|
| DS26518 | DS33M33 | DS33R11 | DS34T108 | MAX4714EXT+T |
| MAX4928AETN | MAX4928AETN | MAX4928BETN | MAX49A8AETN | MAX9880EWM+ |

The calculated failure rate for devices using this process is:

FAILURE RATE: **MTTF (YRS): 71392** **FITS: 1.6**

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 and

Process Information:

Process Description: TSMC 0.18µm Silicon Gate CMOS

OPERATING LIFE

| DESCRIPTION | DATE CODE | TEST VEHICLE | CONDITION | READPOINT | QUANTITY | FAILS | LOT NO. |
|-------------------|-----------|--------------|-------------------------------|-----------|----------|----------|----------------|
| HIGH TEMP OP LIFE | 0802 | MAX4928BETN+ | 135C | 192 HRS | 48 | 0 | QKYYBQ001CQ |
| HIGH TEMP OP LIFE | 0810 | DS26518 | 125C, 2.0V (PSB) & 3.5V (PSA) | 1000 HRS | 45 | 0 | QG073727BK-NPI |
| HIGH TEMP OP LIFE | 0810 | DS26518 | 125C, 2.0V (PSB) & 3.5V (PSA) | 1000 HRS | 45 | 0 | QG073727BL-NPI |
| HIGH TEMP OP LIFE | 0810 | DS26518 | 125C, 2.0V (PSB) & 3.5V (PSA) | 1000 HRS | 45 | 0 | QG073727BJ-NPI |
| HIGH TEMP OP LIFE | 0812 | DS33R11 | 125C, 3.5V (PSA) & 2.0V (PSB) | 1000 HRS | 60 | 0 | QK080847AC |
| HIGH TEMP OP LIFE | 0814 | MAX4714EXT+T | 135C | 1000 HRS | 50 | 0 | Q3V0AA028Q1 |
| HIGH TEMP OP LIFE | 0814 | MAX4714EXT+T | 135C | 1000 HRS | 50 | 0 | Q3V0AA028Q2 |
| HIGH TEMP OP LIFE | 0814 | MAX4714EXT+T | 135C | 1000 HRS | 50 | 0 | Q3V0AA028Q3 |
| HIGH TEMP OP LIFE | 0816 | DS33R11 | 125C, 3.5V (PSA) & 2.0V (PSB) | 1000 HRS | 60 | 0 | QK080847AD |
| HIGH TEMP OP LIFE | 0824 | DS34T108 | 125C, 2.0V (PSB) & 3.5V (PSA) | 1000 HRS | 45 | 0 | QN085617AC-NPI |
| HIGH TEMP OP LIFE | 0831 | DS33M33 | 125C, 2.0V (PSB) & 3.5V (PSA) | 1000 HRS | 45 | 0 | QG095632AC-NPI |
| Total: | | | | | | 0 | |

STORAGE LIFE

| DESCRIPTION | DATE CODE | TEST VEHICLE | CONDITION | READPOINT | QUANTITY | FAILS | LOT NO. |
|-------------|-----------|--------------|-----------|-----------|----------|-------|---------|
|-------------|-----------|--------------|-----------|-----------|----------|-------|---------|

| | | | | | | | | |
|---------------|------|--------------|------|------|-----|----|----------|-----------------|
| STORAGE LIFE | 0805 | MAX4928AETN+ | 150C | 1000 | HRS | 77 | 0 | QKYZBQ001Q1 |
| STORAGE LIFE | 0805 | MAX4928AETN+ | 150C | 1000 | HRS | 77 | 0 | QKYZBQ001Q2 |
| STORAGE LIFE | 0805 | MAX4928AETN+ | 150C | 1000 | HRS | 77 | 0 | QKYZBQ001Q3 |
| STORAGE LIFE | 0810 | DS26518 | 150C | 1000 | HRS | 77 | 0 | QG073727BK-NPI |
| STORAGE LIFE | 0810 | DS26518 | 150C | 1000 | HRS | 77 | 0 | QG073727BL-NPI |
| STORAGE LIFE | 0810 | DS26518 | 150C | 1000 | HRS | 77 | 0 | QG073727BJ-NPI |
| STORAGE LIFE | 0812 | DS33R11 | 150C | 1000 | HRS | 77 | 0 | QK080847AC |
| STORAGE LIFE | 0814 | MAX4714EXT+T | 150C | 1000 | HRS | 80 | 0 | Q3V0AA028Q2 |
| STORAGE LIFE | 0814 | MAX4714EXT+T | 150C | 500 | HRS | 80 | 0 | Q3V0AA028Q3 |
| STORAGE LIFE | 0814 | MAX4714EXT+T | 150C | 1000 | HRS | 80 | 0 | Q3V0AA028Q1 |
| STORAGE LIFE | 0816 | DS33R11 | 150C | 1000 | HRS | 77 | 0 | QK080847AD |
| STORAGE LIFE | 0820 | DS34T108 | 150C | 1000 | HRS | 77 | 0 | QN085617ABA-NPI |
| STORAGE LIFE | 0824 | DS34T108 | 150C | 1000 | HRS | 77 | 0 | QN085617AC-NPI |
| Total: | | | | | | | 0 | |

TEMPERATURE CYCLE

| DESCRIPTION | DATE CODE | TEST VEHICLE | CONDITION | READPOINT | QUANTITY | FAILS | LOT NO. | |
|---------------------------------|-----------|--------------|---------------|-----------|----------|-------|---------|-----------------|
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0805 | MAX4928AETN | -65C TO 150C | 1000 | CYS | 77 | 0 | QKYZBQ001Q1 |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0805 | MAX49A8AETN+ | -65C TO 150C | 1000 | CYS | 77 | 0 | QKYZBQ001Q3 |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0810 | DS26518 | -55C TO 125C | 1000 | CYS | 77 | 0 | QG073727BK-NPI |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0810 | DS26518 | -55C TO 125C | 1000 | CYS | 77 | 0 | QG073727BL-NPI |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0810 | DS26518 | -55C TO 125C | 1000 | CYS | 77 | 0 | QG073727BJ-NPI |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0812 | DS33R11 | -55C TO 125C | 1000 | CYS | 77 | 0 | QK080847AC |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0814 | MAX4714EXT+T | -65C TO 150C | 1000 | CYS | 80 | 0 | Q3V0AA028Q2 |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0814 | MAX4714EXT+T | -65C TO 150C | 500 | CYS | 80 | 0 | Q3V0AA028Q3 |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0814 | MAX4714EXT+T | -65C TO 150C | 1000 | CYS | 80 | 0 | Q3V0AA028Q1 |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0816 | DS33R11 | -55C TO 125C | 1000 | CYS | 77 | 0 | QK080847AD |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0820 | DS34T108 | -40C TO +125C | 1000 | CYS | 77 | 0 | QN085617ABA-NPI |
| TEMP CYCLE, 5' RAMP, 10' DWELL | 0824 | DS34T108 | -40C TO +125C | 1000 | CYS | 77 | 0 | QN085617AC-NPI |
| TEMP CYCLE, 15' RAMP, 15' DWELL | N/A | MAX9880EWM+T | -40C TO +125C | 1000 | CYS | 77 | 0 | QSZAQ001CB |
| TEMP CYCLE, 15' RAMP, 15' DWELL | N/A | MAX9880EWM+T | -40C TO +125C | 1000 | CYS | 77 | 0 | QSZAQ001DB |
| TEMP CYCLE, 15' RAMP, 15' DWELL | N/A | MAX9880EWM+T | -40C TO +125C | 1000 | CYS | 77 | 0 | QSZAQ001EB |

Total: 0

TEMPERATURE HUMIDITY BIAS

| DESCRIPTION | DATE CODE | TEST VEHICLE | CONDITION | READPOINT | QUANTITY | FAILS | LOT NO. |
|-----------------|-----------|--------------|------------------|-----------|----------|----------|-----------------|
| BIASED MOISTURE | 0810 | DS26518 | 85/85, 2.0 VOLTS | 1000 HRS | 44 | 0 | QG073727BK-NPI |
| BIASED MOISTURE | 0810 | DS26518 | 85/85, 2.0 VOLTS | 1000 HRS | 44 | 0 | QG073727BL-NPI |
| BIASED MOISTURE | 0810 | DS26518 | 85/85, 2.0 VOLTS | 1000 HRS | 44 | 0 | QG073727BJ-NPI |
| BIASED MOISTURE | 0812 | DS33R11 | 85/85, 3.5 VOLTS | 1000 HRS | 45 | 0 | QK080847AC |
| BIASED MOISTURE | 0816 | DS33R11 | 85/85, 3.5 VOLTS | 1000 HRS | 45 | 0 | QK080847AD |
| BIASED MOISTURE | 0820 | DS34T108 | 85/85, 3.5 VOLTS | 1000 HRS | 45 | 0 | QN085617ABA-NPI |
| BIASED MOISTURE | 0824 | DS34T108 | 85/85, 3.5 VOLTS | 1000 HRS | 45 | 0 | QN085617AC-NPI |
| Total: | | | | | | 0 | |

UNBIASED MOISTURE RESISTANCE

| DESCRIPTION | DATE CODE | TEST VEHICLE | CONDITION | READPOINT | QUANTITY | FAILS | LOT NO. |
|---------------|-----------|--------------|----------------|-----------|----------|----------|-----------------|
| MOISTURE SOAK | 0814 | MAX4714EXT+T | 85 C/85% R.H. | 1000 HRS | 45 | 0 | Q3V0AA028Q1 |
| MOISTURE SOAK | 0814 | MAX4714EXT+T | 85 C/85% R.H. | 1000 HRS | 45 | 0 | Q3V0AA028Q2 |
| MOISTURE SOAK | 0814 | MAX4714EXT+T | 85 C/85% R.H. | 1000 HRS | 45 | 0 | Q3V0AA028Q3 |
| HAST, NO BIAS | 0820 | DS34T108 | 130C, 85% R.H. | 100 HRS | 77 | 0 | QN085617ABA-NPI |
| HAST, NO BIAS | 0824 | DS34T108 | 130C, 85% R.H. | 100 HRS | 70 | 0 | QN085617AC-NPI |
| Total: | | | | | | 0 | |

FAILURE RATE: MTTF (YRS): 71392 FITS: 1.6