# APEX MICROTECHNOLOGY CORPORATION RELIABILITY PREDICTION <br> PA94 

by

Date of prediction: 05-Dec-01

This reliability prediction is based on MIL-HDBK-217F, December 2, 1991 including Notice 2, February 28, 1995.

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Conditions of this prediction are as follows:
    Hybrid quality level is Commercial
    Environment is Gf Ground, Fixed
    Case temperature is 40 C
    Internal Power Dissipation = 5 W
    Supply voltage is +/-
    400 V
    An AC signal is applied.
    Product introduction date: 25-Nov-99
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    The results of this prediction are:
        26.8 failures per million hours; or,
        \(M T B F=37.4\) thousand hours.
    Transistors, Low Frequency, Bipolar:
$\mathrm{Lp}=\mathrm{Lb}$ * PiT * PiR * PiS


Transistors, Low Frequency, Si MOSFET: Lb $=0.012$
$\mathrm{Lp}=\mathrm{Lb}$ * PiT

| Q30 |  | Volts $=$ | 450 | Watts = | 15 | $\mathrm{Tj}=$ | 150 | 'K/W= | 8.3333 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Usage: |  | Vpwr = | 200 | $\mathrm{ld}=$ | 0.01 |  |  | Power | 2 |  |
| Lb | PiT |  |  |  |  |  | Nc | $\mathrm{Tj}=$ | 56.667 |  |
| 0.012 | 1.859858 |  |  |  |  |  | 1 |  |  | 0.022318 |
| Q12,13 |  | Volts $=$ | 450 | Watts = | 4 | $\mathrm{Tj}=$ | 150 | 'K/W= | 31.25 |  |
| Usage: |  | Vpwr = | 397 | $\mathrm{ld}=$ | 0.0025 |  |  | Power | 0.9846 |  |
| Lb | PiT |  |  |  |  |  | Nc | $\mathrm{Tj}=$ | 70.768 |  |
| 0.012 | 2.3632 |  |  |  |  |  | 2 |  |  | 0.056717 |



Capacitors, ceramic general purpose type CK:

0.000513
0.00511

Diodes, Low Frequency:
Lp = Lb * PiT * PiS * PiC

Diodes, Zener, Lb =
0.002

| D1,2 |  |  | Volts |
| :--- | :--- | :--- | :--- |
| Usage: |  |  |  |
| Lb | PiT | PiS | PiC |
| 0.002 | 1.362867 | 1 | 2 |

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Nc
2
'K/W= 111.11
Power $=9 \mathrm{E}-06$
$\mathrm{Tj}=\quad 40.001$ 0.010903

Hybrid microcircuit:
Lp=sumLc*(1+.2*PiE) * PiF * PiQ * PiL

| 0.318562 | 1.4 | 5.8 | 10 | 1.0343 |
| :--- | :--- | :--- | :--- | :--- |

Total failures per million hours $=\quad 26.753$
Mean time between failures $=\quad 37379$

