APEX MICROTECHNOLOGY CORPORATION
RELIABILITY PREDICTION
PA10M/883

by

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Date of prediction: 15-Mar-01

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

Conditions of this prediction are as follows:

Hybrid quality level is		B	
Environment is	Gf	Ground, Fixed	
Case temperature is		40	C
Internal Power Dissipation =		5	W
Supply voltage is +/-		36	V

An AC signal is applied.
Product introduction date: 01-Aug-80

The results of this prediction are:
0.16 failures per million hours; or,
MTBF= 6356 thousand hours.

Monolithic Bipolar and MOS Linear Devices:

Lp = C1 * PiT

IC1			Watts =	3.14	Tj =	200	#/Qs =	56		
Usage:			Watts =	0.1			Max Tj =	45.573		
C1	PiT							Nc		
0.01	0.512782							1		0.005128

Transistors, Low Frequency, Bipolar:

Lp = Lb * PiT * PiR * PiS

Q3,5,7,8			Volts =	40	Watts =	1.2	Tj =	175	'K/W=	125	
Usage:	Vstress =	0.65	Vpwr =	0.65	Ic =	0.0001	Vs =	0.0163	Power =	7E-05	
Lb	PiT		PiR	PiS				Nc	Tj =	40.008	
0.00074	1.405146		1.0698	0.0473				4			0.000211
Q4			Volts =	40	Watts =	1.2	Tj =	175	'K/W=	125	
Usage:	Vstress =	0.65	Vpwr =	0.65	Ic =	0.0034	Vs =	0.0163	Power =	0.0022	
Lb	PiT		PiR	PiS				Nc	Tj =	40.274	
0.00074	1.413235		1.0698	0.0473				1			5.29E-05
Q1			Volts =	120	Watts =	1.2	Tj =	200	'K/W=	145.83	
Usage:	Vstress =	66.6	Vpwr =	33	Ic =	0.005	Vs =	0.555	Power =	0.165	
Lb	PiT		PiR	PiS				Nc	Tj =	64.063	
0.00074	2.275332		1.0698	0.2514				1			0.000453
Q2,6			Volts =	100	Watts =	83	Tj =	200	'K/W=	2.1084	
Usage:	Vstress =	69	Fraction Output Pwr = 1/			1	Vs =	0.69	Power =	5	
Lb	PiT		PiR	PiS				Nc	Tj =	50.542	
0.00074	1.750735		5.1293	0.3821				2			0.005078

Capacitors, ceramic general purpose type CK:

Lp = Lb * PiT * PiC * PiV Lb = 0.00099

C1,2			Volts =	100	pF =	470			
Usage:	Vstress =	69					S =	0.69	
Lb	PiT	PiC	Pi V					Nc	
0.00099	1.92167	0.269	2.5209					2	0.002585
C3			Volts =	45	pF =	26			
Usage:	Vstress =	2					S =	0.0444	
Lb	PiT	PiC	Pi V					Nc	
0.00099	1.92167	0.208	1.0004					1	0.000395

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

Diodes, Zener, Lb = 0.002

D1,4			Volts =	3.1	Watts =	2.5	Tj =	175	'K/W=	60
Usage:					Ic =	0.0011			Power =	0.0036
Lb	PiT	PiS	PiC					Nc	Tj =	40.214
0.002	1.368569	1	2					1		0.005474

Sum of all components 0.019376

Hybrid microcircuit:

Lp=sumLc*(1+.2*PiE)	* PiF	*	PiQ	*	PiL
0.019376	1.4		5.8	1	1

Total failures per million hours = 0.1573
Mean time between failures = 6E+06