

APEX MICROTECHNOLOGY CORPORATION
RELIABILITY PREDICTION
PB58

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	Commercial
Environment is Gf	Ground, Fixed
Case temperature is	40 C
Internal Power Dissipation =	22 W
Supply voltage is +/-	132 V
An AC signal is applied.	
Product introduction date:	01-Nov-89

The results of this prediction are:

11 failures per million hours; or,
MTBF=90.8 thousand hours.

Transistors, Low Frequency, Bipolar:

$$L_p = L_b * P_{iT} * P_{iR} * P_{iS}$$

Q5		Volts = 40	Watts = 1.2	Tj = 175	'K/W= 125
Usage:	Vstress = 2.5	Vpwr = 0.65	Ic = 1E-05	Vs = 0.0625	Power = 6.5E-06
Lb	PiT	PiR	PiS	Nc	Tj = 40.0008
0.00074	1.404925	1.0698	0.05462	1	6.07E-05

Q1		Volts = 40	Watts = 1.2	Tj = 175	'K/W= 125
Usage:	Vstress = 7.1	Vpwr = 4.7	Ic = 1E-05	Vs = 0.1775	Power = 4.7E-05
Lb	PiT	PiR	PiS	Nc	Tj = 40.0059
0.00074	1.405078	1.0698	0.07802	1	8.68E-05

Q7		Volts = 40	Watts = 1.2	Tj = 175	'K/W= 125
Usage:	Vstress = 2.5	Vpwr = 0.65	Ic = 1E-05	Vs = 0.0625	Power = 6.5E-06
Lb	PiT	PiR	PiS	Nc	Tj = 40.0008
0.00074	1.404925	1.0698	0.05462	1	6.07E-05

Q10		Volts = 350	Watts = 5	Tj = 200	'K/W= 35
Usage:	Vstress = 259	Vpwr = 127.5	Ic = 0.005	Vs = 0.74	Power = 0.6375
Lb	PiT	PiR	PiS	Nc	Tj = 62.3125
0.00074	2.20206	1.8139	0.44615	1	0.001319

Q4		Volts = 300	Watts = 20	Tj = 150	'K/W= 6.25
Usage:	Vstress = 144	Vpwr = 127.3	Ic = 0.001	Vs = 0.48	Power = 0.1273
Lb	PiT	PiR	PiS	Nc	Tj = 40.7956
0.00074	1.429166	3.0296	0.19927	1	0.000638

Q9		Volts = 300	Watts = 20	Tj = 150	'K/W= 6.25
Usage:	Vstress = 145	Vpwr = 129.5	Ic = 0.0015	Vs = 0.4833	Power = 0.19425
Lb	PiT	PiR	PiS	Nc	Tj = 41.2141
0.00074	1.442045	3.0296	0.20134	1	0.000651

Transistors, Low Frequency, Si JFET: Lb = 0.0045

$$L_p = L_b * P_{iT}$$

Q11		Volts = 300	Watts = 3	Tj = 150	'K/W= 41.6667
Usage:		Vpwr = 258	Id = 0.001		Power = 0.258
Lb	PiT			Nc	Tj = 50.75
0.0045	1.671607			1	0.007522

Transistors, Low Frequency, Si MOSFET: Lb = 0.012

$$L_p = L_b * P_{iT}$$

Q3,8		Volts = 350	Watts = 115.4	Tj = 175	'K/W= 1.29983
Usage:		Fraction Output Pwr = 1/	1		Power = 22
Lb	PiT			Nc	Tj = 68.5962

0.012

2.280564

2

0.054734

