



AAEON Technology INC.
ISO-9001/ISO-14001 Certified
Industrial Automation PCs

TB-86 A/D BOARD

Reliability Prediction Report

(MTBF)

Release Date: NOV.02, 2001

Issue Stamp

QA Manager

QE Manager

Test Engineer

Reliability Prediction (MTBF)

I . Model Name: TB-86 A/D Board

II . Prediction Date: NOV. 02, 2001

III . Prediction Site: AAEON QE Dept.

IV . Predicted by : Linda Sun

V . Equipment: Relx Ver.7.1 Visual Reliability Software

VI. Simulation Environment:

- Temperature: 25 degrees C
- Standard: Telcordia (Bellcore) Standard

VII. Term and Definition:

- Unit An assembly of device.
- Duty Cycle Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
- Quantity The quantity of the selected item.
- Failure Rate Used to specify that the failure rate is to be calculated based the selected Calculation models. The multiplier is 1,000,000.
- MTBF MTBF is always specified in hours.

VIII. Prediction Result:

- Failure Rate: 9.075477 ppm
- MTBF: 110,187. Hours

X. Prediction Table:

AAEON Reliability Prediction Report

Part Number TB-86 CTR_BRD
Reference Des
Date 11. 2, 2001
Environment GF, GU - Ground Fixed, Uncontrolled
Temperature 25.00

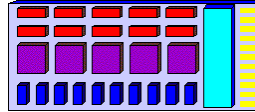


Description Top-level assembly
File Name Tb-86.rpj
Time 3:25 PM
Failure Rate 9.075477
MTBF 110,187

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
TB-86 CTR_BRD	TB-86 CTR_BRD	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	9.075477	110,187

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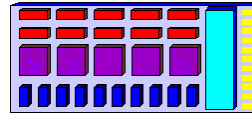


Description Top-level assembly
File Name Tb-86.rpj
Time 3:25 PM
Failure Rate 9.075477
MTBF 110,187

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1	Connection	J6	Bellcore Issue 6	Level I		0.001138	1.00	.0125	0.001138	878780270.71
2	Connection	P1	Bellcore Issue 6	Level I		0.008535	1.00	.0940	0.008535	117170702.76
3	Connection	J1	Bellcore Issue 6	Level I		0.002845	1.00	.0313	0.002845	351512108.28
4	Connection	J2,J10	Bellcore Issue 6	Level I		0.005690	2.00	.1254	0.011379	175756054.14
5	Connection	J4	Bellcore Issue 6	Level I		0.001138	1.00	.0125	0.001138	878780270.71
6	Connection	J3	Bellcore Issue 6	Level I		0.002276	1.00	.0251	0.002276	439390135.35
7	Connection	J11	Bellcore Issue 6	Level I		0.001707	1.00	.0188	0.001707	585853513.81
8	Connection	J13	Bellcore Issue 6	Level I		0.039828	1.00	.4389	0.039828	25108007.73
9	Connection	U4	Bellcore Issue 6	Level I		0.004552	1.00	.0502	0.004552	219695067.68
10	Connection	U10	Bellcore Issue 6	Level I		0.015931	1.00	.1755	0.015931	62770019.34
11	Connection	J14	Bellcore Issue 6	Level I		0.005690	1.00	.0627	0.005690	175756054.14
12	Integrated Circuit	U10	Bellcore Issue 6	Level I		1.961548	1.00	21.6137	1.961548	509801.55
13	Integrated Circuit	U4	Bellcore Issue 6	Level I		0.126749	1.00	1.3966	0.126749	7889592.70
14	Integrated Circuit	U14	Bellcore Issue 6	Level I		0.085231	1.00	.9391	0.085231	11732812.35
15	Integrated Circuit	U7,U8	Bellcore Issue 6	Level I		0.066268	2.00	1.4604	0.132536	15090255.81
16	Integrated Circuit	U12	Bellcore Issue 6	Level I		0.067023	1.00	.7385	0.067023	14920161.32
17	Integrated Circuit	U16~U18	Bellcore Issue 6	Level I		0.043131	3.00	1.4257	0.129392	23185427.29
18	Integrated Circuit	U19	Bellcore Issue 6	Level I		0.059366	1.00	.6541	0.059366	16844654.92
19	Integrated Circuit	U1,U2	Bellcore Issue 6	Level I		0.033907	2.00	.7472	0.067814	29492567.67
20	Integrated Circuit	U15	Bellcore Issue 6	Level I		0.059366	1.00	.6541	0.059366	16844654.92
21	Integrated Circuit	U6	Bellcore Issue 6	Level I		0.069779	1.00	.7689	0.069779	14330932.93
22	Inductor	L1,L2	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
23	Inductor	L3,L6	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
24	Inductor	L4,L6~L11,L13,L20	Bellcore Issue 6	Level I		0.002268	9.00	.2249	0.020409	440974090.03
25	Semiconductor	Q4	Bellcore Issue 6	Level I		0.159207	1.00	1.7542	0.159207	6281149.14
26	Semiconductor	D5	Bellcore Issue 6	Level I		0.023881	1.00	.2631	0.023881	41874327.58
27	Semiconductor	U9	Bellcore Issue 6	Level I		0.023881	1.00	.2631	0.023881	41874327.58
28	Semiconductor	U5	Bellcore Issue 6	Level I		0.159207	1.00	1.7542	0.159207	6281149.14
29	Semiconductor	U3	Bellcore Issue 6	Level I		0.159207	1.00	1.7542	0.159207	6281149.14
30	Semiconductor	Q2,Q5,Q5,Q8,Q9	Bellcore Issue 6	Level I		0.023881	5.00	1.3157	0.119405	41874327.58
31	Semiconductor	Q1,Q3,Q10	Bellcore Issue 6	Level I		0.159207	3.00	5.2627	0.477620	6281149.14

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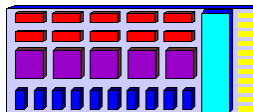


Description Top-level assembly
File Name Tb-86.rpj
Time 3:25 PM
Failure Rate 9.075477
MTBF 110,187

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
32	Semiconductor	D3,D4	Bellcore Issue 6	Level I		0.023881	2.00	.5263	0.047762	41874327.58
33	Semiconductor	D1,D2,D6	Bellcore Issue 6	Level I		0.023881	3.00	.7894	0.071643	41874327.58
34	Capacitor	470uF/16V	Bellcore Issue 6	Level I		0.071121	13.00	10.1876	0.924577	14060484.33
35	Capacitor	47uF/16V	Bellcore Issue 6	Level I		0.042673	7.00	3.2914	0.298709	23434140.55
36	Capacitor	10uF/16V	Bellcore Issue 6	Level I		0.027242	2.00	.6003	0.054484	36707972.85
37	Capacitor	10uF/10V	Bellcore Issue 6	Level I		0.028376	25.00	7.8168	0.709412	35240428.38
38	Capacitor	15PF/50V	Bellcore Issue 6	Level I		0.016339	2.00	.3601	0.032678	61202862.24
39	Capacitor	22PF/50V	Bellcore Issue 6	Level I		0.016339	5.00	.9002	0.081696	61202862.24
40	Capacitor	33PF/50V	Bellcore Issue 6	Level I		0.016339	4.00	.7201	0.065356	61202862.24
41	Capacitor	150PF/50V	Bellcore Issue 6	Level I		0.016339	1.00	.1800	0.016339	61202862.24
42	Capacitor	0.022uF/50V	Bellcore Issue 6	Level I		0.016339	6.00	1.0802	0.098035	61202862.24
43	Capacitor	1500PF/50V	Bellcore Issue 6	Level I		0.016339	1.00	.1800	0.016339	61202862.24
44	Capacitor	1000PF/50V	Bellcore Issue 6	Level I		0.016339	5.00	.9002	0.081696	61202862.24
45	Capacitor	0.01uF/50V	Bellcore Issue 6	Level I		0.015059	21.00	3.4845	0.316234	66406436.94
46	Capacitor	0.1uF/50V	Bellcore Issue 6	Level I		0.016339	92.00	16.5633	1.503198	61202862.24
47	Capacitor	0.039uF/50V	Bellcore Issue 6	Level I		0.015059	1.00	.1659	0.015059	66406436.94
48	Resistor	1.69K	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
49	Resistor	3.16K	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
50	Resistor	0	Bellcore Issue 6	Level I		0.002268	4.00	.0999	0.009071	440974090.03
51	Resistor	10	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
52	Resistor	100	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
53	Resistor	1K	Bellcore Issue 6	Level I		0.002268	6.00	.1499	0.013606	440974090.03
54	Resistor	10K	Bellcore Issue 6	Level I		0.002268	6.00	.1499	0.013606	440974090.03
55	Resistor	100K	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
56	Resistor	1M	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
57	Resistor	15K	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
58	Resistor	2.2K	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
59	Resistor	27	Bellcore Issue 6	Level I		0.002268	3.00	.0750	0.006803	440974090.03
60	Resistor	300	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
61	Resistor	3K	Bellcore Issue 6	Level I		0.002268	2.00	.0500	0.004535	440974090.03
62	Resistor	47	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03

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Failure Rate 9.075477
MTBF 110,187

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
63	Resistor	4.7K	Bellcore Issue 6	Level I		0.002268	16.00	.3998	0.036283	440974090.03
64	Resistor	680K	Bellcore Issue 6	Level I		0.002268	1.00	.0250	0.002268	440974090.03
65	Resistor	75	Bellcore Issue 6	Level I		0.003123	6.00	.2065	0.018738	320205543.99
66	Resistor	4.7K(9P8R)	Bellcore Issue 6	Level I		0.012492	1.00	.1376	0.012492	80051386.00
67	Resistor	22(8P4R)	Bellcore Issue 6	Level I		0.006246	5.00	.3441	0.031230	160102772.00
68	Connection	F1	Bellcore Issue 6	Level I		0.001138	1.00	.0125	0.001138	878780270.71
69	Miscellaneous	Y1,Y2	Bellcore Issue 6	Level I		0.150000	2.00	3.3056	0.300000	6666666.67
70	Miscellaneous	Q7	Bellcore Issue 6	Level I		0.150000	1.00	1.6528	0.150000	6666666.67
71	Miscellaneous	F1	Bellcore Issue 6	Level I		0.030000	1.00	.3306	0.030000	33333333.33
72	Integrated Circuit	U11	Bellcore Issue 6	Level I		0.075033	1.00	.8268	0.075033	13327385.04