

ISO-9001 Certified

Industrial Automation with PCs

ADVANTECH CO., LTD.

QA Test Report

PCA-6751

(Reliability Prediction)

Report No: 2000R028

Issue Stamp

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**Manager of QA
Department**

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**Reliability
Engineer**

Reliability Prediction

I.Date: 6 / 22 /2000

II.Model Name: PCA-6751

III. Revision: B1 01-1F

**IV.Description: Half-size Pentium CPU card with
266 MHz CPU,VGA,LCD,Ethernet
and SSD**

**V.Equipment: Bellcore Calculation Method:
Limited Stress-Methed 1,Case 3.**

VI:Simulated Environment:

.Environment:Ground Fix

.Temperature:25° C

.Quality:Level 1

**.Follow Standard:Bellcore Calculation Method:
Limited Stress-Methed1,Case 3.**

.Stress:50%

. Memory module & Battery excluded

Reliability Prediction

VII. Prediction Result:

A.Failure Rate: 9514.1765 FITs.
B.MTBF : 105,106. hours

VIII. Index: A.Failure Rate & Assembly MTBF
B.Part Failure List

Short List Report

RelCalc for Windows, Version 5.0-BELL6 (Release 1999.1)

Company: ADVANTECH

DOC: PCA-6751.CIR RECORDS: 143

DESCRIPTION: PCA-6751

ENV: GF TEMP: 25.00 C CF: 1.00000 MODEL: Serial

FR= 9514.1765 FITs MTBF= 105106.3120 hrs. Parts= 734

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=5.2

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
1428274125	IC,Logic	1	IC 74LS125	102.3288	1.08
14S4021300	IC,Logic	2	IC SMT 213	113.6127	1.19
14S4382300	IC,Logic	1	IC TPS3823-33	50.3854	0.53
14S4397700	IC,Logic	1	IC SMD W83977TF	100.7595	1.06
14S4486700	IC,Logic	1	IC ICW48S87-04H	57.3827	0.60
14S5307400	IC,Logic	1	74ALS74	56.8064	0.60
14S5801400	IC,Logic	1	IC 74HCT14	74.6481	0.78
14S5A00800	IC,Logic	2	IC 74V1G08	119.1909	1.25
14S5A01400	IC,Logic	2	IC 744VIG14	106.5366	1.12
14S5A13210	IC,Logic	1	74AHCT1G32	56.3535	0.59
14S5A24560	IC,Logic	1	74VHC2445FT	87.8959	0.92
14S9007500	IC,Logic	1	IC LM75 TEMPER.SENSOR	66.7820	0.70
14S8253600	IC,GateArray/PAL	1	CPLD XC9536	64.6767	0.68
14S4000080	IC,Micro	1	IC 69000 BGA	107.9753	1.13
14S4026600	IC,Micro	1	PENTIUM 266	217.6872	2.29
14S4237140	IC,Micro	1	INTEL 82371EB	167.4720	1.76
14S4243910	IC,Micro	1	INTEL FW82439TX	167.4720	1.76
14S4255900	IC,Micro	1	IC INTEL 82559	158.7482	1.67
14S6032810	IC,RAM	1	IC SOJ 32K*8	299.6312	3.15
14S6164500	IC,RAM	1	LP61G6464BF	600.4868	6.31
14S6202000	IC,ROM/PROM	1	W29C020	329.8651	3.47
14S6334610	IC,ROM/PROM	1	IC AT93LC46	62.0997	0.65
14S3110100	IC,Linear	1	IC SC1101	29.2308	0.31
14S4000600	IC,Linear	1	PCDN006	90.0656	0.95
14S4048500	IC,Linear	2	IC LTC485	41.2770	0.43
2233018110	IC,Linear	2	RC PAC1284	108.5363	1.14
1310390410	Transistor	5	NPN 2N3904 3P	137.5308	1.45
1312441010	Transistor	1	MOSFET SI4410	91.6872	0.96
1312993410	Transistor	1	MOSFET SI9934DY	105.1220	1.10
1314101010	Transistor	2	REG US1010	318.4131	3.35
1314108410	Transistor	1	REG EZ1084CM	159.2065	1.67
1300005440	Diode	5	DIODE BAT54C	149.8258	1.57
1300103541	Diode	1	DIODE MBRD1035CTL	29.9652	0.31
1300283540	Diode	1	DIODE MMBD2835LT1	27.5062	0.29
1300414800	Diode	2	DIODE 1N4148	55.0123	0.58
1300582041	Diode	1	DIODE 1N5820	29.9652	0.31
1304100041	Optoelectronic	1	LED GREEN	4.87655	0.05
1019556107	Resistor	1	560 1/10W 1% 0805 CR	2.26771	0.02
1059700301	Resistor	1	3 1/10W 5% 0805 CR	2.26771	0.02
105A507503	Resistor	3	75 1/16W 1% 0603 CR	6.80312	0.07
105A510003	Resistor	2	100 1/16W 1% 0603 CR	4.53541	0.05
105A511513	Resistor	1	1.15K 1/16W 1% 0603 CR	3.12299	0.03
105A515003	Resistor	1	150 1/16W 1% 0603 CR	2.26771	0.02
105A515403	Resistor	3	154 1/16W 1% 0603 CR	6.80312	0.07
105A516503	Resistor	1	165 1/16W 1% 0603 CR	2.26771	0.02
105A524903	Resistor	1	249 1/16W 1% 0603 CR	2.26771	0.02

Short List Report

RelCalc for Windows, Version 5.0-BELL6 (Release 1999.1)

Company: ADVANTECH

DOC: PCA-6751.CIR RECORDS: 143

DESCRIPTION: PCA-6751

ENV: GF TEMP: 25.00 C CF: 1.00000 MODEL: Serial

FR= 9514.1765 FITs MTBF= 105106.3120 hrs. Parts= 734

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=5.2

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
105A527003	Resistor	3	270 1/16W 1% 0603 CR	6.80312	0.07
105A527403	Resistor	1	274 1/16W 1% 0603 CR	2.26771	0.02
105A551013	Resistor	2	5.1K 1/16W 1% 0603 CR	4.53541	0.05
105A554903	Resistor	1	549 1/16W 1% 0603 CR	2.26771	0.02
105A561903	Resistor	1	619 1/16W 1% 0603 CR	2.26771	0.02
105A562023	Resistor	1	62K 1/16W 1% 0603 CR	2.26771	0.02
105A700009	Resistor	13	1 1/16W 0603 CR	29.4802	0.31
105A701009	Resistor	2	10 1/16W 5% 0603 CR	4.53541	0.05
105A702209	Resistor	1	22 1/16W 5% 0603 CR	2.26771	0.02
105A702703	Resistor	4	27 1/16W 5% 0603 CR	9.07083	0.10
105A703309	Resistor	23	33 1/16W 5% 0603 CR	52.1573	0.55
105A704709	Resistor	2	47 1/16W 5% 0603 CR	4.53541	0.05
105A707509	Resistor	4	75 1/16W 5% 0603 CR	9.07083	0.10
105A710019	Resistor	20	1K 1/16W 5% 0603 CR	45.3541	0.48
105A710029	Resistor	32	10K 1/16W 0603 CR	72.5666	0.76
105A710039	Resistor	1	100K 1/16W 5% 0603 CR	2.26771	0.02
105A715029	Resistor	4	15K 1/16W 5% 0603 CR	9.07083	0.10
105A720049	Resistor	1	2M 1/16W 5% 0603 CR	13.6062	0.14
105A722009	Resistor	5	220 1/16W 5% 0603 CR	11.3385	0.12
105A722019	Resistor	1	2.2K 1/16W 5% 0603 CR	2.26771	0.02
105A722029	Resistor	1	22K 1/16W 5% 0603 CR	2.26771	0.02
105A727019	Resistor	2	2.7K 1/16W 5% 0603 CR	4.53541	0.05
105A730009	Resistor	4	300 1/16W 5% 0603 CR	9.07083	0.10
105A747009	Resistor	3	470 1/16W 5% 0603 CR	6.80312	0.07
105A747019	Resistor	34	4.7K 1/16W 5% 0603 CR	77.1020	0.81
105A747029	Resistor	1	47K 1/16W 5% 0603 CR	2.26771	0.02
105A747039	Resistor	2	470K 1/16W 5% 0603 CR	4.53541	0.05
105A756019	Resistor	2	5.6K 1/16W 5% 0603 CR	4.53541	0.05
105A756039	Resistor	2	560K 1/16W 5% 0603 CR	4.53541	0.05
105A782019	Resistor	2	8.2K 1/16W 5% 0603 CR	4.53541	0.05
1540710008	Resistor	9	NETR 10 1/16W 8P4R	56.2139	0.59
1540710208	Resistor	1	NETR 1K 8P4R	6.24599	0.07
1540710308	Resistor	7	NETR 10K 1/16W 8P4R	43.7219	0.46
1540727208	Resistor	3	NETR 2.7K 8P4R	18.7380	0.20
1540756208	Resistor	2	NETR 5.6K 8P4R	12.4920	0.13
1540782208	Resistor	17	NETR 8.2K 8P4R	106.1818	1.12
1541700008	Resistor	14	NETR 33 8P4R	87.4438	0.92
1541700208	Resistor	4	NETR 4.7K 8P4R	24.9840	0.26
1111610050	Capacitor	6	10UF 16V 20% EC	256.0367	2.69
1111622091	Capacitor	3	22UF 16V 20% EC	128.0183	1.35
1111622190	Capacitor	5	220UF 16V 20% EC	213.3639	2.24
1119615292	Capacitor	5	1500UF 6.3V 20% EC	355.6065	3.74
1122701050	Capacitor	5	1UF 25V 0805 MCC	27.3281	0.29
1122710490	Capacitor	211	0.1UF 25V 0603 MCC	1153.2468	12.12
1124410090	Capacitor	16	10PF 50V 5% 0603 MCC	87.4500	0.92
1124420080	Capacitor	3	20PF 50V 5% 0603 MCC	16.3969	0.17

RelCalc for Windows, Version 5.0-BELL6 (Release 1999.1)

Company: ADVANTECH

DOC: PCA-6751.CIR RECORDS: 143

DESCRIPTION: PCA-6751

ENV: GF TEMP: 25.00 C CF: 1.00000 MODEL: Serial

FR= 9514.1765 FITs MTBF= 105106.3120 hrs. Parts= 734

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=5.2

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
1124422090	Capacitor	2	22PF 50V 5% 0603 MCC	10.9312	0.11
1124422190	Capacitor	2	220PF 50V 5% 0603 MCC	10.9312	0.11
1124433090	Capacitor	1	33PF 50V 5% 0603 MCC	5.46562	0.06
1124447090	Capacitor	8	47PF 50V 5% 0603 MCC	43.7250	0.46
1124510190	Capacitor	2	100PF 50V 0603 MCC	10.9312	0.11
1124510290	Capacitor	2	1000PF 50V 0603 MCC	10.9312	0.11
1124510390	Capacitor	13	0.01UF 50V 0603 MCC	71.0531	0.75
1124518190	Capacitor	20	180PF 50V 0603 MCC	109.3125	1.15
1124547180	Capacitor	2	470PF 50V 0603 MCC	10.9312	0.11
1129510390	Capacitor	1	0.01UF 1KV 10%1808 MCC	5.46562	0.06
1129701090	Capacitor	3	1UF 10V 0603 MCC	16.3969	0.17
1129710060	Capacitor	8	10UF 10V 1206 MCC	43.7250	0.46
1169622190	Capacitor	1	220UF 4V 4TPB220M	42.6728	0.45
1211101561	Inductive	1	1.5UH 8A COIL	2.40360	0.03
1211102761	Inductive	1	2.7UH 8A COIL	2.40360	0.03
1212301000	Inductive	13	BEAD BLM11M102S	31.2468	0.33
1212301020	Inductive	36	BEAD BLM11B141S	86.5297	0.91
1212301050	Inductive	6	BEAD BLM11P600S	14.4216	0.15
1212302000	Inductive	16	BEAD BLM21P300S	38.4577	0.40
14S3417100	Inductive	1	IC PT4171S	19.9768	0.21
1809A50290	Switch	2	VR	128.0184	1.35
1651203291	Connector	1	IC SKT PLCC 32P	18.2071	0.19
1651500001	Connector	2	S.O.DIMM SKT 144P	163.8635	1.72
1652508207	Connector	1	TERMINAL PHONEJACK	4.55176	0.05
1653002100	Connector	3	PIN 2*1P	3.41382	0.04
1653003100	Connector	3	PIN 3*1P	5.12073	0.05
1653003200	Connector	1	PIN 3*2P	3.41382	0.04
1653004100	Connector	1	PIN 4*1P	2.27588	0.02
1653004200	Connector	1	PIN 4*2P	4.55176	0.05
1653005100	Connector	2	PIN 5*1P	5.68970	0.06
1653005202	Connector	1	PIN 5*2P	5.68970	0.06
1653006100	Connector	1	PIN 6*1P	3.41382	0.04
1653025211	Connector	1	HEADER 50P	28.4485	0.30
1653120225	Connector	1	PCB SKT 20*2P	22.7588	0.24
1653132220	Connector	1	PCB SKT 32*2P	36.4141	0.38
1653205200	Connector	2	BOX HEADER 5*2	11.3794	0.12
1653220203	Connector	1	BOX HEADER 20*2	22.7588	0.24
1653413200	Connector	1	BOX HEADER 13*2	14.7932	0.16
1653417200	Connector	1	BOX HEADER 17*2	19.3450	0.20
1653910261	Connector	1	CONN. 10*2P	11.3794	0.12
1653920200	Connector	1	CONN.DF13-40DP	22.7588	0.24
1654409103	Connector	1	D-SUB CONN 9P	5.12073	0.05
1654515302	Connector	1	D0SUB CONN 15P	8.53456	0.09
1654606301	Connector	1	MINI DIN 6P	3.41382	0.04
1655003000	Connector	1	WAFER 3P	1.70691	0.02
1655204030	Connector	1	HOUSING 4P	2.27588	0.02

Short List Report

RelCalc for Windows, Version 5.0-BELL6 (Release 1999.1)

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DOC: PCA-6751.CIR RECORDS: 143

DESCRIPTION: PCA-6751

ENV: GF TEMP: 25.00 C CF: 1.00000 MODEL: Serial

FR= 9514.1765 FITs MTBF= 105106.3120 hrs. Parts= 734

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=5.2

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
1655305020	Connector	1	WAFER 5P	2.84485	0.03
1659254005	Connector	1	WAFER BOX 5P	2.84485	0.03
1231*****	QuartzCrystal	2	X'TAL	300.0000	3.15
1233*****	CrystalOscillator	1	QUARTZCONTROLLED	360.0000	3.78
1305000040	Fuse	4	POLYSWITCH 1.1A	120.0000	1.26