

RSC-IMX51
Reliability Prediction Report
(MTBF)

MTBF Number : EMTBF-A41801
Release Date : 2011/10/21

Issue Stamp

Simon Lin
DQV Manager

Linda Ren
Test Engineer

Reliability Prediction(MTBF)

I. Model Name : RSC-IMX51

Description : - Freescale i.MX51 800 MHz Processor

- Onboard 512MB DDR2 SDRAM

- Onboard 4GB MLC NAND Flash

- 4 USB, 2 COM, Mini USB

- 10/100 LAN, SD Socket

- Fanless & Slim design

- Single +12V

II. Predication Date : 2011/10/21

III. Prediction Site : Avalue Technology Software – DQV Dept.

IV. Predicted by : Linda Ren

V. Equipment : RelCalc for Windows 5.0-BELL6

VI. Simulation Environment :

— Temperature : 25°C

— Standard : Bellcore

VII. Prediction Result :

— Failure Rate : See the next page

— MTBF : See the next page

Avalue Reliability Prediction Report

Date 2011/10/21

Temperature 25°C

File Name E9697A41802R.cir

Time PM 05: 30

Assembly Name	Part Number	Model	Method	Environment	Mission Time	Qty	Failure Rate	MTBF
RSC-IMX51	E9697A41802R	Bellcore	Method 1 Case 3	GF,GU-Ground Fixed	8760hrs	II	5963.3331	167691.4540 (Hrs)

Prepare : Linda

Short List Report

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RelCalc for Windows, Version 5.0-BELL6 (Release 2000.1)

Company: Avalue Technology

DOC: E9697A41802R.CIR RECORDS: 154

DESCRIPTION: Circuit Description

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

FR= 5963.3331 FITs MTBF= 167691.4540 hrs. Parts= 954

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=3.3

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
E14S2522800R	IC,Logic	1	IC AD5228BUJZ10-RL7	52.3843	0.88
E14S3215100H	IC,Logic	2	DIODES AP2151WG-7	103.6160	1.74
E14S3219100H	IC,Logic	2	DIODES AP2191WG-7	102.3425	1.72
E14S3500000H	IC,Logic	1	FREESCALE SGT15000XNAA3	56.3391	0.94
E14S3714500H	IC,Logic	2	ANPEC APW7145KAI-TRG	103.6160	1.74
E14S4038501H	IC,Logic	1	IC DS90C385AMTX/NOPB	77.2653	1.30
E14S4251401H	IC,Logic	1	SMSC USB2514B-AEZG	57.1719	0.96
E14S4323200H	IC,Logic	1	EXAR SP3232EEA-L/TR	53.8475	0.90
E14S4331700H	IC,Logic	1	SMSC USB3317C-CP-TR	55.3858	0.93
E14S4389200H	IC,Logic	1	FREESCALE MC13892VL	84.3600	1.41
E14S4800700R	IC,Logic	1	PHISON PS8007SD	73.7520	1.24
E14S4848500H	IC,Logic	2	INTERSIL ISL8485EIBZ	101.6513	1.70
E14S4871000H	IC,Logic	1	SMSC LAN8710A-EZK	73.6018	1.23
E14S4902200H	IC,Logic	1	SII SII9022ACNU	60.7496	1.02
E14S5F00601H	IC,Logic	1	NXP 74LVC1G06GW	49.0061	0.82
E14S5F00702R	IC,Logic	8	IC SN74LVC1G07DBVR	521.3338	8.74
E14S5F01401R	IC,Logic	1	TI SN74LVC2G14DCKR	49.0061	0.82
E14S5X03400H	IC,Logic	1	ON NLSV1T34AMX1TCG	52.3843	0.88
E14S5X12503R	IC,Logic	3	FAIRCHILD NC7SP125P5X	154.4940	2.59
E14S6258520R	IC,Logic	1	F-R TC58NVG5D2FTA00	58.7894	0.99
E14S9930600R	IC,Logic	2	IC PCA9306DCURG4	105.8224	1.77
E14S4021311R	IC,GateArray/PAL	1	IC ADM213EARSZ	49.1499	0.82
E14S4051500H	IC,Micro	1	FREESCALE IMX51 800MHZ	112.0885	1.88
E14S6101GX0R	IC,RAM	4	DDR2 64M*16 HY5PS1G	428.0244	7.18
E1314111713H	IC,Linear	2	LDO AMS AMS1117	393.6900	6.60
E14S1486301H	IC,Linear	1	ANPEC APA4863RI-TRG	196.8450	3.30
E1310390411H	Transistor	12	NPN MMBT3904-7-F	147.3904	2.47
E1311119710R	Transistor	6	PNP 2SB1197KT146R	17.7385	0.30
E1315006210H	Transistor	5	MOS-PN ROHM US6M2TR	79.2095	1.33
E1315035110R	Transistor	1	MOS-N NDS351AN_NL	8.22365	0.14
E1315231710H	Transistor	3	MOS-P ANPEC	24.7854	0.42
E1315492510H	Transistor	1	MOS-PX2 VISHAY	15.8610	0.27
E1315495510R	Transistor	1	MOS-PX2 APEC	16.4665	0.28
E1315700212H	Transistor	2	MOS-N DIODES	32.1636	0.54
E1301005440H	Diode	3	SCH BAT54C	14.7780	0.25
E1301034040H	Diode	1	SBR DIODES B340A-13-F	10.4072	0.17
E1301075140R	Diode	7	SCH RB751V-40TE-17	25.3623	0.43
E1304200042H	Diode	1	LED YEL 0603 SMD 180MCD	1.81159	0.03
E1304300044H	Diode	1	LED BLU 0603 SMD	1.81159	0.03
E1304500040H	Diode	5	LED ORG	47.1747	0.79
E1305001240H	Diode	1	TVS DIODES SMAJ12A-13-F	10.5415	0.18
E1322040210H	Diode	12	VARISTOR 1PF 18V	70.0432	1.17
E10155020C3H	Resistor	8	LPR 0.02 1/2W@70°C 1%	57.3157	0.96
E1050501020H	Resistor	6	CR 1K	2.39867	0.04
E1050501210H	Resistor	1	CR 120	0.399779	0.01
E1050501230H	Resistor	3	CR 12K	1.19934	0.02
E1050501530H	Resistor	1	CR 15K	0.399780	0.01
E1050503020H	Resistor	2	CR 3K	0.799558	0.01
E1050503330H	Resistor	2	CR 33K	1.25642	0.02

Short List Report

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RelCalc for Windows, Version 5.0-BELL6 (Release 2000.1)

Company: Avalue Technology

DOC: E9697A41802R.CIR RECORDS: 154

DESCRIPTION: Circuit Description

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

FR= 5963.3331 FITs MTBF= 167691.4540 hrs. Parts= 954

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=3.3

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
E1050505630H	Resistor	1	CR 56K	0.399774	0.01
E1050506830H	Resistor	6	CR 68K 1/16W	6.25813	0.10
E1050507510H	Resistor	1	CR 750 1/16W	0.628212	0.01
E10505499A0H	Resistor	4	CR 49.9	1.59912	0.03
E1050560410H	Resistor	1	CR 6.04K 1/16W	0.628212	0.01
E1050700000H	Resistor	102	CR 0 1/16W 5%	40.7775	0.68
E1050701010H	Resistor	6	CR 100 1/16W 5%	3.97046	0.07
E1050701020H	Resistor	29	CR 1K 1/16W 5%	19.1906	0.32
E1050701030H	Resistor	86	CR 10K 1/16W 5%	56.9099	0.95
E1050701040H	Resistor	28	CR 100K	18.5288	0.31
E1050701050H	Resistor	9	CR 1M 1/16W 5%	3.59801	0.06
E1050701060H	Resistor	1	CR 10M	0.399779	0.01
E1050701520H	Resistor	1	CR 1.5K 1/16W	0.661743	0.01
E1050701530H	Resistor	1	CR 15K 1/16W	0.661743	0.01
E1050702010H	Resistor	2	CR 200 1/16W	2.37565	0.04
E1050702020H	Resistor	2	CR 2K 1/16W 5%	2.37565	0.04
E1050702040H	Resistor	2	CR 200K	0.799558	0.01
E10507020A0H	Resistor	1	CR 2 1/16W 5%	1.18782	0.02
E1050702200H	Resistor	38	CR 22	15.1916	0.25
E1050702220H	Resistor	11	CR 2.2K 1/16W	4.39757	0.07
E1050702230H	Resistor	3	CR 22K 1/16W 5%	1.19933	0.02
E1050703300H	Resistor	2	CR 33	0.799558	0.01
E1050703310H	Resistor	1	CR 330 1/16W 5%	0.661743	0.01
E1050704710H	Resistor	5	CR 470 1/16W 5%	1.99890	0.03
E1050704720H	Resistor	51	CR 4.7K	20.3887	0.34
E1050704730H	Resistor	1	CR 47K	0.399779	0.01
E1051501001H	Resistor	1	CR 10	0.628212	0.01
E1051501011H	Resistor	1	CR 100	0.628212	0.01
E1051501221H	Resistor	1	CR 1.2K 1/10W	0.628212	0.01
E1051505121H	Resistor	1	CR 5.1K 1/10W	0.399779	0.01
E1051511811H	Resistor	1	CR 1.18K 1/10W	0.706185	0.01
E1051512701H	Resistor	1	CR 127 1/10W	0.628212	0.01
E1051524911H	Resistor	1	CR 2.49K	0.628212	0.01
E1051547521H	Resistor	1	CR 47.5K 1/10W	0.628212	0.01
E1051564901H	Resistor	1	CR 649 1/10W	0.628212	0.01
E1051564921H	Resistor	1	CR 64.9K 1/10W	0.628212	0.01
E1051571521H	Resistor	1	CR 71.5K 1/10W 1%	0.628212	0.01
E1051580611H	Resistor	1	CR 8.06K	0.628213	0.01
E1051700001H	Resistor	2	CR 0 1/10W 5%	0.799558	0.01
E1051701031H	Resistor	2	CR 10K 1/10W 5%	0.799558	0.01
E1053700003H	Resistor	1	CR 0	0.661743	0.01
E1121610610H	Capacitor	28	MLCC 10UF 6.3V 20%	17.3350	0.29
E1121622620H	Capacitor	6	MLCC 22UF 6.3V 20%	4.34259	0.07
E1121647640H	Capacitor	5	MLCC 47UF 6.3V 20%	3.61883	0.06
E1122510500H	Capacitor	17	MLCC 1UF	7.37488	0.12
E1122547400H	Capacitor	1	MLCC 470NF 10V	0.410870	0.01
E1122547520H	Capacitor	13	MLCC 4.7UF 10V	5.34131	0.09
E1122722510H	Capacitor	12	MLCC 2.2UF	25.4172	0.43
E1122722630H	Capacitor	1	MLCC 22UF	0.907435	0.02

Short List Report

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RelCalc for Windows, Version 5.0-BELL6 (Release 2000.1)

Company: Avalue Technology

DOC: E9697A41802R.CIR RECORDS: 154

DESCRIPTION: Circuit Description

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

FR= 5963.3331 FITs MTBF= 167691.4540 hrs. Parts= 954

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=3.3

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
E1123510400H	Capacitor	150	MLCC 0.1UF	52.8473	0.89
E1123510510H	Capacitor	1	MLCC 1UF	0.635176	0.01
E1123510620H	Capacitor	9	MLCC 10UF	7.60146	0.13
E1123522410H	Capacitor	31	MLCC 220NF	9.39430	0.16
E1123522510H	Capacitor	7	MLCC 2.2UF 16V	5.91225	0.10
E1125510300H	Capacitor	30	MLCC 10NF	15.9756	0.27
E1127410100H	Capacitor	2	MLCC 100PF	0.706815	0.01
E1127415000H	Capacitor	6	MLCC 15PF 50V	1.85018	0.03
E1127420000H	Capacitor	4	MLCC 20PF	1.41363	0.02
E1127427000H	Capacitor	2	MLCC 27PF	0.706815	0.01
E1127430000H	Capacitor	2	MLCC 30PF	0.706815	0.01
E1127510200H	Capacitor	1	MLCC 1000PF 50V	0.308363	0.01
E1127522310H	Capacitor	1	MLCC 22NF	0.308363	0.01
E1127568100H	Capacitor	1	MLCC 680PF 50V	0.410870	0.01
E112X510230H	Capacitor	1	MLCC 1000PF	0.410870	0.01
E1177510100H	Capacitor	2	NETC 100PF	0.821740	0.01
E1181622780H	Capacitor	4	POS/TPE 220UF	160.6480	2.69
E1212201526H	Inductive	1	COIL 1.5UH 1.6A 20%	45.1373	0.76
E1212202227H	Inductive	3	COIL 2.2UH 1.5A 20%	135.4118	2.27
E1212203326H	Inductive	1	COIL 3.3UH	45.1373	0.76
E121220332CH	Inductive	1	COIL 3.3UH 1.3A 20%	16.6295	0.28
E1212206821H	Inductive	1	COIL 6.8UH	45.1373	0.76
E1213101210H	Inductive	20	BEAD 120(100MHZ)	332.5904	5.58
E1213102210H	Inductive	3	BEAD 220(100MHZ)	3.56347	0.06
E1213103001H	Inductive	7	BEAD 30(100MHZ)	8.31476	0.14
E1213107500H	Inductive	1	BEAD 75(100MHZ)	16.6295	0.28
E1600010402R	Switch	1	DIP SWITCH 4P 90D	42.8571	0.72
E1601010400R	Switch	1	TACT SWITCH 4PIN	42.8571	0.72
E1651X00600H	Connector	1	SIM CARD 6P H2.0 5U	63.2992	1.06
E1651X01001H	Connector	1	SD PUSH-PULL 10P	6.32992	0.11
E1652503106R	Connector	1	DC-J 3P 90D(M)	47.4744	0.80
E1652512302R	Connector	1	RJ45 12P 90D(F)	1.58248	0.03
E1653003106R	Connector	1	PH 3PX1	1.89898	0.03
E1653003202R	Connector	1	PIN HEADER 3P*2	3.79795	0.06
E1653004101R	Connector	2	PH 4P*1 2.0MM 180D(M)	5.06393	0.08
E1653004206R	Connector	3	PH 4P*2(W/O-P8)	13.2928	0.22
E1653010100R	Connector	1	PH 10P*1	6.32992	0.11
E1653302121R	Connector	1	MINI JUMPER	1.26598	0.02
E1654120100H	Connector	1	B-W 20P 1.25MM	12.6598	0.21
E1654252132H	Connector	1	MINI PCI-E 52P H=6.8 90D	32.9156	0.55
E1654409106R	Connector	1	D-SUB CONN. 9P	5.69693	0.10
E1654419301H	Connector	1	HDMI 19P 90D(F)	12.0268	0.20
E1654620000R	Connector	1	W-B 10PX2 1.25MM	12.6598	0.21
E1654640000R	Connector	1	DIN CONN. 40PIN	25.3197	0.42
E1654805304H	Connector	2	USB-MAB 5P 90D(F)	6.32992	0.11
E1655002000R	Connector	1	WAF 2P	1.26598	0.02
E1655302020R	Connector	4	WAF 2P B-W 2.0	5.06393	0.08
E1655304024R	Connector	1	WAFER 4P B-W	2.53197	0.04
E1655306020R	Connector	1	WAF 6P B-W 2.0	3.79795	0.06

Short List Report

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SortBy: PartType

Date: 10/21/2011 6:16 PM

RelCalc for Windows, Version 5.0-BELL6 (Release 2000.1)

Company: Avalue Technology

DOC: E9697A41802R.CIR RECORDS: 154

DESCRIPTION: Circuit Description

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

FR= 5963.3331 FITs MTBF= 167691.4540 hrs. Parts= 954

BELLCORE CALCULATION METHOD: LimitedStress - Method I, Case 3 PIFY=3.3

PartNumber	PartType	Qty	RefDes	TotalFR	%FR
E1655X05021R	Connector	1	WAF 5P B-W 1.25	3.16496	0.05
E1231302462H	QuartzCrystal	2	X'TAL 24.000MHZ	100.0000	1.68
E1231302565H	QuartzCrystal	1	X'TAL 25MHZ 20/30	50.0000	0.84
E1231332721H	QuartzCrystal	1	X'TAL TF-32.768KHZ	50.0000	0.84
E1233302660H	QuartzCrystal	1	OSC 26.000MHZ	50.0000	0.84
E1233322551H	QuartzCrystal	1	OSC 22.5792MHZ 1.8V/50	50.0000	0.84
E1758103012H	Battery	1	BATTERY 3V/5.5MAH	300.0000	5.03