

ABCD Company: PCA01234

Mean Time Between Failure (MTBF) – Report

Version 1

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1 Outline

ABCD Company requested an MTBF prediction according to Telcordia SR-332 Issue 3 as well as derating analysis on the PCA01234 PCBA.

This report, prepared by Williams Consulting documents the failure rate analysis and the results of the calculation.

Definitions

- BOM = Bill of Materials
- FIT = Failures in Time - units are failures/billion hours
- MTBF = Mean Time Between Failure – units are hours

2 Analysis

Prediction Parameters:

- Calculation Model: Telcordia SR-332 Issue 3
- Calculation Method: Parts Count method
- Temperature: 55°C
- Environment: Ground, fixed controlled
- Quality Levels: Level II

3 Results

Board Level MTBF

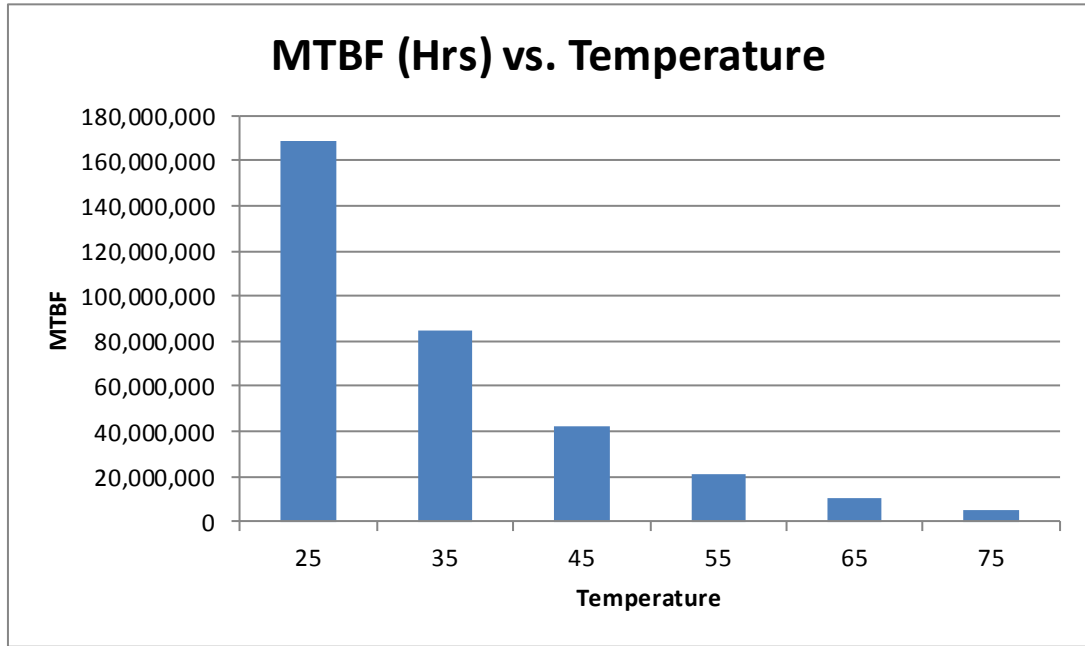
- Failure Rate: 47.33 FITS
- MTBF: 21,128,025 Hours

See Detailed Reports for 55°C in Appendix A

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MTBF Report

Board Level MTBF vs. Temperature



Temperature (°C)	25	35	45	55	65	75
Failure Rate (FITS)	5.9163	11.8326	23.6653	47.3305	94.6610	189.3220
MTBF (Hrs)	169,024,202	84,512,101	42,256,051	21,128,025	10,564,013	5,282,006

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Appendix A: 55° C Detail Reports

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Name: PCA01234

ID: Telcordia SR-332 Issue 3

Failure Rate(t) (FITs): 47.3305

MTBF (hrs): 21128025

Name	Supplier	Part Number	Reference Designator	Quantity	Failure Rate(t) (FITs)	MTBF (hrs)	Temperature	Quality
CAP CER 0.1UF 50V 10% X5R 0603	Taiyo Yuden	UMK107BJ104KAHT	C1000	1	0.1088	9.19E+09	55	Level II
CAP CER 1000PF 50V 10% X7R 0603	Yageo	CC0603KRX7R9BB102	C1001	1	0.1088	9.19E+09	55	Level II
CAP CER 1000PF 50V 10% X7R 0603	Yageo	CC0603KRX7R9BB102	C1002	1	0.1088	9.19E+09	55	Level II
CAP CER 0.1UF 50V 10% X5R 0603	Taiyo Yuden	UMK107BJ104KAHT	C1004	1	0.1088	9.19E+09	55	Level II
CAP CER 1UF 50V 10% X5R 0603	Taiyo Yuden	UMK107BJ105KA-T	C1005	1	0.1088	9.19E+09	55	Level II
CAP CER 1UF 50V 10% X5R 0603	Taiyo Yuden	UMK107BJ105KA-T	C1006	1	0.1088	9.19E+09	55	Level II
DIODE SCHOTTKY 100V 5A DO214AB	ComChip	CDBC5100-G	D1000	1	0.4791	2.09E+09	55	Level II
LED SUPER RED CLEAR 1206 SMD	lite-on	LTST-C150KRKT	D1001	1	0.8189	1.22E+09	55	Level II
DIODE SCHOTTKY 100V 5A DO214AB	ComChip	CDBC5100-G	D1100	1	0.4791	2.09E+09	55	Level II
LED SUPER RED CLEAR 1206 SMD	lite-on	LTST-C150KRKT	D1101	1	0.8189	1.22E+09	55	Level II
DIODE SCHOTTKY 30V 200MA SOT23	Fairchild	BAT54S	D4500	1	0.4791	2.09E+09	55	Level II
CONN HEADER 12POS 4.2MM R/A TIN	Molex	39-30-0120	J400	1	0.7092	1.41E+09	55	Level II
INDUCTOR SHIELD PWR 10UH 12575	TDK	SLF12575T-100M5R4-PF	L4600	1	0.3095	3.23E+09	55	Level II
MOSFET P-CH 60V 3A SOT223	Diodes Inc	ZXMP6A17GTA	Q4600	1	4.9947	2.00E+08	55	Level II
RES 4.70 OHM 5W 5% SMD	TE Connectivity	4-1879233-1	R1000	1	0.1032	9.69E+09	55	Level II
RES 5.1K OHM 1/4W 5% 1206 SMD	Panasonic	ERJ-8GEYJ512V	R1002	1	0.1032	9.69E+09	55	Level II
RES 0.0 OHM 1/10W JUMP 0603 SMD	Yageo	RC0603JR-070RL	R1003	1	0.1032	9.69E+09	55	Level II
RES 0.0 OHM 1/10W JUMP 0603 SMD	Yageo	RC0603JR-070RL	R1004	1	0.1032	9.69E+09	55	Level II
RES 1.00K OHM 1/10W 1% 0603 SMD	Yageo	RC0603FR-071KL	R1005	1	0.1032	9.69E+09	55	Level II
RES 10.0K OHM 1/10W 1% 0603 SMD	Yageo	RC0603FR-0710KL	R1006	1	0.1032	9.69E+09	55	Level II
RES 2.21K OHM 1/10W 1% 0603 SMD	Yageo	RC0603FR-072K21L	R1007	1	0.1032	9.69E+09	55	Level II
Rectifiers 600V 2A UltraFast	On Semiconductor	MURA260T3G	TZ600	1	0.4791	2.09E+09	55	Level II
IC BUS TRANSCVR 16BIT 48TSSOP	Texas Instruments	SN74LVC16T245DGGR	U400	1	0.6	1.67E+09	55	Level II
IC OPAMP GP 1MHZ RRO 8SOIC	Texas Instruments	LMV358MX/NOPB	U4001	1	4	2.50E+08	55	Level II
IC OPAMP GP 1MHZ RRO SOT23-5	National Semiconductor	LMV321M5/NOPB	U4501	1	4	2.50E+08	55	Level II
OPTOCOUPLER TRIAC 600V 6SMD ZC	lite-on	MOC3063S-TA1	U600	1	18.8751	5.30E+07	55	Level II
IC SCHMITT TRIG INV SOT-23-5	Texas Instruments	SN74LVC1G14DBVR	U601	1	0.8	1.25E+09	55	Level II
CRYSTAL 20MHZ 12PF SMD	TXC Corporation	AT-20.000MAGE-T	Y500	1	8.1126	1.23E+08	55	Level II