



ZIPPY TECHNOLOGY CORP.

Mean Time Between Failures PREDICTION REPORT

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : M1U2-5AC0K2H(RoHS)(PMBus WP1.2)

Approval By		正式 資料 用 章	
Prepared By			

ZIPPY TECHNOLOGY CORP.
6F.,NO.48,WUQUAN RD.,
WUGU DIST.,NEW TAIPEI CITY,TAIWAN,R.O.C.
RELIABILITY PREDICTION STANDARD REPORT
(Sorted by Part Number)
MIL-HDBK-217F, Notice 2

PRED-FIRST (c) Reliability Prediction Program, BJM Engineering Services

Date: MAY-19-2020
End Item Title : M1U2 SERIES MTBF
End Item Part Number : M1U2-5AC0K2H(RoHS)(PMBus WP1.2)
M1U2-5AC0K2H(RoHS)(PMBus WP1.2) MTBF : 210,192
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : M1U / MTBF
Power Unit Module : M1U-2AC0K2(RoHS)(PMBus WP1.2)
Environmental Condition: GB
Ambient Temperature: 25°C

RELIABILITY MODELING OF REDUNDANT UNITS

Two Redundant Units:

Two identical units may be connected in parallel, each capable of supplying the total required output. If one unit fails and can be removed from the system (does not interfere with the operation of the other unit), then the other unit supplies the required output. Using a constant failure rate, the following relations apply.

$$\text{Total Failure Rate}(F) = M\lambda^{(3/2)} + B\lambda = 6.095216/(3/2) + 0.694086 = 4.757563$$

$M\lambda$ = Main power failure rate , $B\lambda$ = Back plane failure rate

$$M1U2-5AC0K2H(RoHS)(PMBus WP1.2)(MTBF) = F/10^6 \text{ (Hrs)} = 1/(4.757563/10^6) = 210,192$$

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RELIABILITY PREDICTION STANDARD REPORT
(Sorted by Part Number)
MIL-HDBK-217F, Notice 2

Date : MAY-15-2020 Time : 14:08:41
End Item Title : M1U SERIES MTBF
End Item Part Number : M1U-2AC0K2(RoHS)(PMBus WP1.2)
M1U-2AC0K2(RoHS)(PMBus WP1.2) MTBF : 164,063
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : M1U / MTBF
Module Reference Designation : M1U
Environmental Condition : GB
Ambient Temperature: 25°C

M1U-2AC0K2(RoHS)(PMBus WP1.2)

ITEM #	Part Number	Ref Desig	Qual Level	Quant	Individual Failure Rate (F/10 ⁶ Hrs)	Total Failure Rate (F/10 ⁶ Hrs)
1	B106110003	BOM	SPECIAL	1	0.121417	0.121417
2	B106330002	BOM	SPECIAL	1	0.098741	0.098741
3	B106330003	BOM	SPECIAL	1	0.579389	0.579389
4	B106330004	BOM	SPECIAL	1	0.129476	0.129476
5	B106600002	BOM	SPECIAL	1	0.166547	0.166547
6	B106600003	BOM	SPECIAL	1	0.183211	0.183211
7	B106600004	BOM	SPECIAL	1	0.231360	0.231360
8	B200000272	BOM	NMIL	1	0.004579	0.004579
9	B200000308	BOM	NMIL	1	0.013289	0.013289
10	B200000333	BOM	NMIL	1	0.005806	0.005806
11	B200000559	BOM	NMIL	1	0.005483	0.005483
12	B200000601	BOM	NMIL	2	0.005806	0.011612
13	B200010052	BOM	NMIL	1	0.000627	0.000627
14	B200010056	BOM	NMIL	1	0.000600	0.000600
15	B200010068	BOM	NMIL	1	0.069762	0.069762
16	B200010235	BOM	NMIL	4	0.065527	0.262108
17	B200010252	BOM	NMIL	10	0.072168	0.721680
18	B200010253	BOM	NMIL	2	0.065527	0.131054
19	B200010261	BOM	NMIL	1	0.000540	0.000540
20	B200010273	BOM	NMIL	4	0.072168	0.288672
21	B200020034	BOM	NMIL	1	0.002941	0.002941
22	B200020037	BOM	NMIL	19	0.000424	0.008056
23	B200020038	BOM	NMIL	4	0.002120	0.008480
24	B200040073	BOM	NMIL	1	0.011646	0.011646

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ITEM #	Part Number	Ref Desig	Qual Level	Quant	Individual Failure Rate (F/10 ⁶ Hrs)	Total Failure Rate (F/10 ⁶ Hrs)
25	B200040104	BOM	NMIL	1	0.003751	0.003751
26	B200050081	BOM	NMIL	2	0.003013	0.006026
27	B200050084	BOM	NMIL	1	0.003013	0.003013
28	B200050085	BOM	NMIL	2	0.003013	0.006026
29	B200050088	BOM	NMIL	3	0.003013	0.009039
30	B200060029	BOM	NMIL	1	0.013678	0.013678
31	B200090005	BOM	NMIL	1	0.001476	0.001476
32	B200110001	BOM	NMIL	3	0.002896	0.008688
33	B200110042	BOM	NMIL	4	0.002210	0.008840
34	B200110046	BOM	NMIL	2	0.002896	0.005792
35	B200110095	BOM	NMIL	2	0.002896	0.005792
36	B200110099	BOM	NMIL	4	0.002896	0.011584
37	B200110120	BOM	NMIL	1	0.002896	0.002896
38	B200110128	BOM	NMIL	1	0.001551	0.001551
39	B200110151	BOM	NMIL	1	0.002896	0.002896
40	B200110172	BOM	NMIL	1	0.002896	0.002896
41	B200110261	BOM	NMIL	1	0.002210	0.002210
42	B200110282	BOM	NMIL	1	0.002896	0.002896
43	B200110303	BOM	NMIL	2	0.003039	0.006078
44	B200110313	BOM	NMIL	1	0.002896	0.002896
45	B200110473	BOM	NMIL	3	0.002896	0.008688
46	B200110498	BOM	NMIL	2	0.002210	0.004420
47	B200110512	BOM	NMIL	4	0.002210	0.008840
48	B200110529	BOM	NMIL	10	0.002210	0.022100
49	B200110598	BOM	NMIL	2	0.002210	0.004420
50	B200110608	BOM	NMIL	3	0.002835	0.008505
51	B200110635	BOM	NMIL	2	0.002210	0.004420
52	B200110729	BOM	NMIL	1	0.002026	0.002026
53	B200110733	BOM	NMIL	5	0.002026	0.010130
54	B200110738	BOM	NMIL	1	0.002026	0.002026
55	B200110739	BOM	NMIL	2	0.002026	0.004052
56	B200110743	BOM	NMIL	2	0.002026	0.004052
57	B200110814	BOM	NMIL	1	0.002026	0.002026
58	B200110851	BOM	NMIL	1	0.002026	0.002026
59	B200110854	BOM	NMIL	1	0.002026	0.002026
60	B200120170	BOM	NMIL	1	0.005001	0.005001
61	B200120198	BOM	NMIL	1	0.004765	0.004765
62	B200160022	BOM	NMIL	1	0.009218	0.009218
63	B200170018	BOM	NMIL	5	0.003177	0.015885
64	B200170021	BOM	NMIL	1	0.003177	0.003177

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ITEM #	Part Number	Ref Desig	Qual Level	Quant	Individual Failure Rate (F/10 ⁶ Hrs)	Total Failure Rate (F/10 ⁶ Hrs)
65	B200170032	BOM	NMIL	2	0.003177	0.006354
66	B200170055	BOM	NMIL	2	0.003721	0.007442
67	B200180104	BOM	NMIL	1	0.001974	0.001974
68	B200180108	BOM	NMIL	1	0.001974	0.001974
69	B200190035	BOM	NMIL	1	0.011714	0.011714
70	B200190038	BOM	NMIL	1	0.011714	0.011714
71	B200200074	BOM	NMIL	4	0.007820	0.031280
72	B200200075	BOM	NMIL	2	0.009676	0.019352
73	B200200114	BOM	NMIL	2	0.006356	0.012712
74	B200200170	BOM	NMIL	1	0.007306	0.007306
75	B200200204	BOM	NMIL	2	0.007306	0.014612
76	B200200213	BOM	NMIL	1	0.003924	0.003924
77	B200200224	BOM	NMIL	2	0.004199	0.008398
78	B200220021	BOM	NMIL	1	0.003440	0.003440
79	B200220082	BOM	NMIL	3	0.001208	0.003624
80	B200230288	BOM	NMIL	1	0.001165	0.001165
81	B200230336	BOM	NMIL	1	0.001661	0.001661
82	B200230338	BOM	NMIL	4	0.001978	0.007912
83	B200230469	BOM	NMIL	1	0.016249	0.016249
84	B200230487	BOM	NMIL	3	0.018501	0.055503
85	B200230538	BOM	NMIL	2	0.018274	0.036548
86	B200260266	BOM	NMIL	1	0.000196	0.000196
87	B200260417	BOM	NMIL	1	0.000219	0.000219
88	B200260419	BOM	NMIL	1	0.000221	0.000221
89	B200260430	BOM	NMIL	1	0.000251	0.000251
90	B200260440	BOM	NMIL	1	0.000223	0.000223
91	B200280012	BOM	NMIL	1	0.000623	0.000623
92	B200290011	BOM	NMIL	2	0.002901	0.005802
93	B200300502	BOM	NMIL	1	0.094536	0.094536
94	B200300503	BOM	NMIL	1	0.007802	0.007802
95	B200310012	BOM	NMIL	1	0.005232	0.005232
96	B200340045	BOM	NMIL	1	0.079074	0.079074
97	B200370088	BOM	NMIL	1	0.001373	0.001373
98	B200370115	BOM	NMIL	1	0.001196	0.001196
99	B210090234	BOM	SPECIAL	1	2.276868	2.276868
100	B210160059	BOM	NMIL	1	0.010000	0.010000
101	B210193166	BOM	NMIL	1	0.053839	0.053839

Total Failure Rate (F/10⁶Hrs) : 6.095216

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ITEM #	Part Number	Ref Desig	Qual Level	Quant	Individual Failure Rate (F/10 ⁶ Hrs)	Total Failure Rate (F/10 ⁶ Hrs)
Mean Time (in hours) Between Failures (MTBF) :						164,063