



ZIPPY TECHNOLOGY CORP.

Mean Time Between Failures PREDICTION REPORT

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : USP2-5AE0K2V(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: AUG-26-2020
End Item Title : USP2 SERIES MTBF
End Item Part Number : USP2-5AE0K2V(RoHS)(PMBus WP1.2)
USP2-5AE0K2V(RoHS)(PMBus WP1.2) MTBF : 211,684
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : USP / MTBF
Power Unit Module : USP-2AE0K2(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.

$$\text{Total Failure Rate}(F) = M\lambda / (3/2) + B\lambda = 6.410763 / (3/2) + 0.450172 = 4.724014$$

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

$$\text{USP2-5AE0K2V(RoHS)(PMBus WP1.2)(MTBF)} = F / 10^6 \text{ (Hrs)} = 1 / (4.724014 / 10^6) = 211,684$$

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

Date : Feb.14,2019 Time : 11:08:52
End Item Title : USP SERIES MTBF
End Item Part Number : USP-2AE0K2(RoHS)(PMBus WP1.2)
USP-2AE0K2(RoHS)(PMBus WP1.2) MTBF : 155,988
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : USP / MTBF
Module Reference Designation : USP
Environmental Condition : GB
Ambient Temperature: 25°C

USP-2AE0K2(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	B105900010	BOM	SPECIAL	1	0.235908	0.235908
2	B106110002	BOM	SPECIAL	1	0.184107	0.184107
3	B106110003	BOM	SPECIAL	1	0.121417	0.121417
4	B106330002	BOM	SPECIAL	1	0.099825	0.099825
5	B106330003	BOM	SPECIAL	1	0.600685	0.600685
6	B106330004	BOM	SPECIAL	1	0.129476	0.129476
7	B106330005	BOM	SPECIAL	1	0.266587	0.266587
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	B200000455	BOM	NMIL	1	0.008308	0.008308
12	B200000601	BOM	NMIL	2	0.005806	0.011612
13	B200010009	BOM	NMIL	1	0.000843	0.000843
14	B200010022	BOM	NMIL	1	0.000843	0.000843
15	B200010235	BOM	NMIL	4	0.065527	0.262108
16	B200010252	BOM	NMIL	12	0.072168	0.866016
17	B200010253	BOM	NMIL	2	0.065527	0.131054
18	B200010273	BOM	NMIL	4	0.072168	0.288672
19	B200020034	BOM	NMIL	1	0.002941	0.002941
20	B200020037	BOM	NMIL	21	0.000424	0.008904
21	B200020038	BOM	NMIL	4	0.002120	0.008480
22	B200030085	BOM	NMIL	1	0.002308	0.002308
23	B200040104	BOM	NMIL	1	0.004278	0.004278
24	B200050048	BOM	NMIL	1	0.002839	0.002839

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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	B200050085	BOM	NMIL	2	0.003013	0.006026
26	B200050088	BOM	NMIL	2	0.003013	0.006026
27	B200060029	BOM	NMIL	1	0.013678	0.013678
28	B200090005	BOM	NMIL	1	0.001476	0.001476
29	B200110001	BOM	NMIL	1	0.002896	0.002896
30	B200110035	BOM	NMIL	1	0.002896	0.002896
31	B200110040	BOM	NMIL	1	0.002896	0.002896
32	B200110042	BOM	NMIL	4	0.002210	0.008840
33	B200110046	BOM	NMIL	1	0.002896	0.002896
34	B200110095	BOM	NMIL	2	0.002896	0.005792
35	B200110099	BOM	NMIL	4	0.002896	0.011584
36	B200110151	BOM	NMIL	1	0.002896	0.002896
37	B200110172	BOM	NMIL	1	0.002896	0.002896
38	B200110254	BOM	NMIL	1	0.002896	0.002896
39	B200110303	BOM	NMIL	2	0.003039	0.006078
40	B200110305	BOM	NMIL	1	0.001551	0.001551
41	B200110313	BOM	NMIL	1	0.002896	0.002896
42	B200110317	BOM	NMIL	2	0.002896	0.005792
43	B200110512	BOM	NMIL	4	0.002210	0.008840
44	B200110529	BOM	NMIL	14	0.002210	0.030940
45	B200110598	BOM	NMIL	2	0.002210	0.004420
46	B200110729	BOM	NMIL	1	0.002026	0.002026
47	B200110733	BOM	NMIL	4	0.002026	0.008104
48	B200110741	BOM	NMIL	1	0.002026	0.002026
49	B200110743	BOM	NMIL	2	0.002026	0.004052
50	B200110814	BOM	NMIL	1	0.002026	0.002026
51	B200110829	BOM	NMIL	3	0.003716	0.011148
52	B200110854	BOM	NMIL	1	0.002026	0.002026
53	B200120198	BOM	NMIL	1	0.004765	0.004765
54	B200160022	BOM	NMIL	1	0.009711	0.009711
55	B200170032	BOM	NMIL	3	0.003177	0.009531
56	B200170055	BOM	NMIL	2	0.003721	0.007442
57	B200170074	BOM	NMIL	5	0.002840	0.014200
58	B200180108	BOM	NMIL	2	0.001974	0.003948
59	B200190038	BOM	NMIL	1	0.011714	0.011714
60	B200200074	BOM	NMIL	4	0.007820	0.031280
61	B200200075	BOM	NMIL	1	0.009676	0.009676
62	B200200114	BOM	NMIL	2	0.006356	0.012712
63	B200200143	BOM	NMIL	1	0.004199	0.004199
64	B200200167	BOM	NMIL	1	0.010356	0.010356

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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	B200200170	BOM	NMIL	1	0.007306	0.007306
66	B200200204	BOM	NMIL	2	0.007306	0.014612
67	B200200213	BOM	NMIL	1	0.003924	0.003924
68	B200220082	BOM	NMIL	3	0.001208	0.003624
69	B200230336	BOM	NMIL	1	0.001661	0.001661
70	B200230338	BOM	NMIL	3	0.001978	0.005934
71	B200230350	BOM	NMIL	5	0.027779	0.138895
72	B200230469	BOM	NMIL	4	0.019729	0.078916
73	B200260266	BOM	NMIL	1	0.000196	0.000196
74	B200260280	BOM	NMIL	1	0.000196	0.000196
75	B200260417	BOM	NMIL	1	0.000219	0.000219
76	B200260419	BOM	NMIL	1	0.000221	0.000221
77	B200260440	BOM	NMIL	1	0.000223	0.000223
78	B200280012	BOM	NMIL	1	0.000623	0.000623
79	B200290005	BOM	NMIL	1	0.002901	0.002901
80	B200290011	BOM	NMIL	2	0.002901	0.005802
81	B200290015	BOM	NMIL	2	0.011159	0.022318
82	B200300502	BOM	NMIL	1	0.094536	0.094536
83	B200300503	BOM	NMIL	1	0.007802	0.007802
84	B200310012	BOM	NMIL	1	0.005232	0.005232
85	B200370088	BOM	NMIL	1	0.001373	0.001373
86	B200370115	BOM	NMIL	1	0.001196	0.001196
87	B210000120	BOM	NMIL	1	0.002450	0.002450
88	B210060136	BOM	NMIL	1	0.024396	0.024396
89	B210140060	BOM	SPECIAL	1	2.277217	2.277217
90	B210160059	BOM	NMIL	1	0.010000	0.010000
91	B210192904	BOM	NMIL	1	0.142952	0.142952

Total Failure Rate (F/10⁶Hrs) : 6.410763
Mean Time (in hours) Between Failures (MTBF) : 155,988