



ZIPPY TECHNOLOGY CORP.

**Mean Time Between Failures
PREDICTION REPORT**

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : ZRH2-5AF0K2H(RoHS)(PMBus WP1.2)

Approval By		正式資料 用章	
Prepared By			

ZIPPY TECHNOLOGY CORP.
10F.,No.50,MINQUAN RD.,
XINDIAN 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: APR-15-2019
End Item Title : ZRH2 SERIES MTBF
End Item Part Number : ZRH2-5AF0K2H(RoHS)(PMBus WP1.2)
ZRH2-5AF0K2H(RoHS)(PMBus WP1.2) MTBF : 200,647
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : ZRH / MTBF
Power Unit Module : ZRH-2AF0K2(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.

$$\text{Total Failure Rate}(F) = M \lambda / (3/2) + B \lambda = 6.736149 / (3/2) + 0.493105 = 4.983871$$

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

$$\text{ZRH2-5AF0K2H(RoHS)(PMBus WP1.2)(MTBF)} = F / 10^6 \text{ (Hrs)} = 1 / (4.983871 / 10^6) = 200,647$$

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RELIABILITY PREDICTION STANDARD REPORT
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MIL-HDBK-217F, Notice 2

Date : SEP-18-2018 Time : 15:21:36
End Item Title : ZRH SERIES MTBF
End Item Part Number : ZRH-2AF0K2(RoHS)(PMBus WP1.2)
ZRH-2AF0K2(RoHS)(PMBus WP1.2) MTBF : 148,453
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : ZRH / MTBF
Module Reference Designation : ZRH
Environmental Condition : GB
Ambient Temperature: 25°C

ZRH-2AF0K2(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	B106020004	BOM	SPECIAL	1	0.229334	0.229334
2	B106020011	BOM	SPECIAL	1	1.280683	1.280683
3	B106020012	BOM	SPECIAL	1	1.394042	1.394042
4	B200000582	BOM	NMIL	1	0.010967	0.010967
5	B200000640	BOM	NMIL	3	0.006522	0.019566
6	B200000641	BOM	NMIL	2	0.006522	0.013044
7	B200010052	BOM	NMIL	1	0.000337	0.000337
8	B200010109	BOM	NMIL	1	0.000723	0.000723
9	B200010192	BOM	NMIL	1	0.008014	0.008014
10	B200010261	BOM	NMIL	1	0.000290	0.000290
11	B200010262	BOM	NMIL	1	0.012629	0.012629
12	B200010263	BOM	NMIL	1	0.001343	0.001343
13	B200010273	BOM	NMIL	6	0.012629	0.075774
14	B200010274	BOM	NMIL	2	0.076011	0.152022
15	B200010275	BOM	NMIL	4	0.076011	0.304044
16	B200020039	BOM	NMIL	1	0.002332	0.002332
17	B200030115	BOM	NMIL	2	0.002308	0.004616
18	B200040062	BOM	NMIL	1	0.000870	0.000870
19	B200040141	BOM	NMIL	13	0.000253	0.003289
20	B200040142	BOM	NMIL	1	0.011646	0.011646
21	B200040143	BOM	NMIL	1	0.002859	0.002859
22	B200050070	BOM	NMIL	1	0.003013	0.003013
23	B200050082	BOM	NMIL	1	0.003013	0.003013
24	B200050085	BOM	NMIL	2	0.003013	0.006026

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25	B200050090	BOM	NMIL	2	0.003013	0.006026
26	B200060024	BOM	NMIL	1	0.018146	0.018146
27	B200090055	BOM	NMIL	1	0.001476	0.001476
28	B200110042	BOM	NMIL	6	0.002210	0.013260
29	B200110046	BOM	NMIL	2	0.002896	0.005792
30	B200110120	BOM	NMIL	1	0.002896	0.002896
31	B200110223	BOM	NMIL	3	0.003039	0.009117
32	B200110325	BOM	NMIL	1	0.002896	0.002896
33	B200110346	BOM	NMIL	1	0.002896	0.002896
34	B200110470	BOM	NMIL	3	0.003716	0.011148
35	B200110508	BOM	NMIL	1	0.002210	0.002210
36	B200110512	BOM	NMIL	6	0.002210	0.013260
37	B200110573	BOM	NMIL	4	0.002319	0.009276
38	B200110574	BOM	NMIL	6	0.002319	0.013914
39	B200110629	BOM	NMIL	4	0.002319	0.009276
40	B200110727	BOM	NMIL	2	0.002210	0.004420
41	B200110732	BOM	NMIL	2	0.002026	0.004052
42	B200110733	BOM	NMIL	8	0.002026	0.016208
43	B200110737	BOM	NMIL	1	0.002210	0.002210
44	B200110739	BOM	NMIL	7	0.002026	0.014182
45	B200110743	BOM	NMIL	1	0.002026	0.002026
46	B200110744	BOM	NMIL	2	0.002026	0.004052
47	B200110771	BOM	NMIL	1	0.002026	0.002026
48	B200110775	BOM	NMIL	1	0.002026	0.002026
49	B200110789	BOM	NMIL	6	0.002210	0.013260
50	B200110794	BOM	NMIL	2	0.002026	0.004052
51	B200110800	BOM	NMIL	2	0.002026	0.004052
52	B200110821	BOM	NMIL	2	0.002126	0.004252
53	B200110850	BOM	NMIL	1	0.002126	0.002126
54	B200110865	BOM	NMIL	1	0.002026	0.002026
55	B200111014	BOM	NMIL	1	0.002026	0.002026
56	B200111107	BOM	NMIL	3	0.003716	0.011148
57	B200120204	BOM	NMIL	1	0.003700	0.003700
58	B200160054	BOM	NMIL	1	0.001469	0.001469
59	B200160056	BOM	NMIL	1	0.008899	0.008899
60	B200170029	BOM	NMIL	2	0.003721	0.007442
61	B200170073	BOM	NMIL	1	0.002424	0.002424
62	B200170074	BOM	NMIL	5	0.002840	0.014200
63	B200170075	BOM	NMIL	1	0.002424	0.002424
64	B200180105	BOM	NMIL	1	0.001845	0.001845

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65	B200180106	BOM	NMIL	1	0.001845	0.001845
66	B200190101	BOM	NMIL	1	0.012538	0.012538
67	B200200085	BOM	NMIL	1	0.007553	0.007553
68	B200200117	BOM	NMIL	1	0.005546	0.005546
69	B200200119	BOM	NMIL	1	0.004827	0.004827
70	B200200123	BOM	NMIL	5	0.003413	0.017065
71	B200200141	BOM	NMIL	1	0.007820	0.007820
72	B200200156	BOM	NMIL	3	0.006356	0.019068
73	B200200167	BOM	NMIL	1	0.009620	0.009620
74	B200200171	BOM	NMIL	2	0.004441	0.008882
75	B200200186	BOM	NMIL	1	0.003189	0.003189
76	B200200205	BOM	NMIL	4	0.007820	0.031280
77	B200200207	BOM	NMIL	1	0.005166	0.005166
78	B200200208	BOM	NMIL	2	0.006356	0.012712
79	B200200217	BOM	NMIL	3	0.006356	0.019068
80	B200200218	BOM	NMIL	15	0.009620	0.144300
81	B200200219	BOM	NMIL	4	0.005166	0.020664
82	B200220082	BOM	NMIL	1	0.001208	0.001208
83	B200220086	BOM	NMIL	2	0.001208	0.002416
84	B200220089	BOM	NMIL	2	0.001208	0.002416
85	B200230524	BOM	NMIL	1	0.002310	0.002310
86	B200230548	BOM	NMIL	1	0.034518	0.034518
87	B200230554	BOM	NMIL	4	0.014358	0.057432
88	B200260411	BOM	NMIL	1	0.023126	0.023126
89	B200260427	BOM	NMIL	1	0.023126	0.023126
90	B200260428	BOM	NMIL	1	0.023126	0.023126
91	B200270023	BOM	NMIL	1	0.017400	0.017400
92	B200280012	BOM	NMIL	1	0.000623	0.000623
93	B200310012	BOM	NMIL	1	0.006069	0.006069
94	B200360074	BOM	NMIL	1	0.001938	0.001938
95	B210000120	BOM	NMIL	3	0.002026	0.006078
96	B210000121	BOM	NMIL	1	0.001565	0.001565
97	B210060136	BOM	NMIL	1	0.024396	0.024396
98	B210090244	BOM	SPECIAL	1	2.245549	2.245549
99	B210160078	BOM	NMIL	1	0.010000	0.010000
100	B210192786	BOM	NMIL	1	0.002468	0.002468
101	B210192809	BOM	NMIL	1	0.025102	0.025102
102	B210192811	BOM	NMIL	1	0.095528	0.095528

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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)
Total Failure Rate (F/10 ⁶ Hrs) :						6.736149
Mean Time (in hours) Between Failures (MTBF) :						148,453