



ZIPPY TECHNOLOGY CORP.

Mean Time Between Failures
PREDICTION REPORT

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : ZRH2-5800K2H(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: JUL-19-2022
End Item Title : ZRH2 SERIES MTBF
End Item Part Number : ZRH2-5800K2H(RoHS)(PMBus WP1.2)
ZRH2-5800K2H(RoHS)(PMBus WP1.2) MTBF : 235,055
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : ZRH / MTBF
Power Unit Module : ZRH-2800K2(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.

$$\text{Total Failure Rate}(F) = M\lambda^{1/3/2} + B\lambda = 5.539995/(3/2) + 0.560991 = 4.254321$$

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

$$\text{ZRH2-5800K2H(RoHS)(PMBus WP1.2)(MTBF)} = F/10^6 \text{ (Hrs)} = 1/(4.254321/10^6) = 235,055$$

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MIL-HDBK-217F, Notice 2

Date : APR-13-2017 Time : 13:41:56
End Item Title : ZRH SERIES MTBF
End Item Part Number : ZRH-2800K2(RoHS)(PMBus WP1.2)
ZRH-2800K2(RoHS)(PMBus WP1.2) MTBF : 180,506
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : ZRH / MTBF
Module Reference Designation : ZRH
Environmental Condition : GB
Ambient Temperature: 25°C

ZRH-2800K2(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	B105950003	BOM	SPECIAL	1	0.370902	0.370902
2	B105950005	BOM	SPECIAL	1	0.634362	0.634362
3	B105950007	BOM	SPECIAL	1	0.257539	0.257539
4	B105950008	BOM	SPECIAL	1	0.154079	0.154079
5	B105950009	BOM	SPECIAL	1	0.675223	0.675223
6	B200000001	BOM	NMIL	1	0.013060	0.013060
7	B200000388	BOM	NMIL	1	0.014785	0.014785
8	B200000558	BOM	NMIL	1	0.013434	0.013434
9	B200000603	BOM	NMIL	1	0.012043	0.012043
10	B200000620	BOM	NMIL	1	0.013434	0.013434
11	B200010052	BOM	NMIL	2	0.000325	0.000650
12	B200010109	BOM	NMIL	4	0.000697	0.002788
13	B200010192	BOM	NMIL	1	0.008014	0.008014
14	B200010249	BOM	NMIL	1	0.000325	0.000325
15	B200010250	BOM	NMIL	3	0.064435	0.193305
16	B200010253	BOM	NMIL	2	0.065527	0.131054
17	B200010254	BOM	NMIL	2	0.065527	0.131054
18	B200020024	BOM	NMIL	1	0.002332	0.002332
19	B200020034	BOM	NMIL	1	0.016175	0.016175
20	B200030069	BOM	NMIL	2	0.002308	0.004616
21	B200030107	BOM	NMIL	1	0.002308	0.002308
22	B200040035	BOM	NMIL	1	0.001366	0.001366
23	B200040065	BOM	NMIL	2	0.011646	0.023292
24	B200040073	BOM	NMIL	4	0.011646	0.046584

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25	B200040107	BOM	NMIL	1	0.002994	0.002994
26	B200040110	BOM	NMIL	1	0.001026	0.001026
27	B200050032	BOM	NMIL	1	0.003013	0.003013
28	B200050083	BOM	NMIL	2	0.003013	0.006026
29	B200060030	BOM	NMIL	1	0.006706	0.006706
30	B200090055	BOM	NMIL	1	0.001476	0.001476
31	B200110006	BOM	NMIL	4	0.002925	0.011700
32	B200110042	BOM	NMIL	5	0.002194	0.010970
33	B200110123	BOM	NMIL	2	0.002194	0.004388
34	B200110190	BOM	NMIL	1	0.002925	0.002925
35	B200110202	BOM	NMIL	1	0.002925	0.002925
36	B200110223	BOM	NMIL	4	0.003086	0.012344
37	B200110227	BOM	NMIL	1	0.002925	0.002925
38	B200110235	BOM	NMIL	2	0.002925	0.005850
39	B200110279	BOM	NMIL	1	0.002194	0.002194
40	B200110313	BOM	NMIL	1	0.002925	0.002925
41	B200110317	BOM	NMIL	1	0.002925	0.002925
42	B200110325	BOM	NMIL	2	0.002925	0.005850
43	B200110441	BOM	NMIL	1	0.002925	0.002925
44	B200110473	BOM	NMIL	1	0.002925	0.002925
45	B200110490	BOM	NMIL	1	0.002194	0.002194
46	B200110524	BOM	NMIL	1	0.002194	0.002194
47	B200110530	BOM	NMIL	1	0.002194	0.002194
48	B200110635	BOM	NMIL	2	0.002194	0.004388
49	B200110646	BOM	NMIL	1	0.002194	0.002194
50	B200110678	BOM	NMIL	1	0.002194	0.002194
51	B200110706	BOM	NMIL	1	0.002194	0.002194
52	B200111088	BOM	NMIL	1	0.002925	0.002925
53	B200111089	BOM	NMIL	2	0.002925	0.005850
54	B200160022	BOM	NMIL	1	0.008899	0.008899
55	B200170057	BOM	NMIL	2	0.003168	0.006336
56	B200170069	BOM	NMIL	3	0.003168	0.009504
57	B200180096	BOM	NMIL	2	0.001907	0.003814
58	B200180103	BOM	NMIL	1	0.001845	0.001845
59	B200190065	BOM	NMIL	1	0.010191	0.010191
60	B200190084	BOM	NMIL	1	0.004493	0.004493
61	B200200057	BOM	NMIL	3	0.008984	0.026952
62	B200200070	BOM	NMIL	1	0.007074	0.007074
63	B200200092	BOM	NMIL	5	0.009616	0.048080
64	B200200094	BOM	NMIL	1	0.004506	0.004506

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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	B200200126	BOM	NMIL	2	0.009616	0.019232
66	B200200156	BOM	NMIL	4	0.006353	0.025412
67	B200200204	BOM	NMIL	1	0.007303	0.007303
68	B200210007	BOM	NMIL	1	0.021267	0.021267
69	B200220010	BOM	NMIL	1	0.003943	0.003943
70	B200220073	BOM	NMIL	1	0.002605	0.002605
71	B200220074	BOM	NMIL	1	0.002117	0.002117
72	B200220086	BOM	NMIL	5	0.001208	0.006040
73	B200230277	BOM	NMIL	1	0.002274	0.002274
74	B200230342	BOM	NMIL	1	0.002420	0.002420
75	B200230354	BOM	NMIL	2	0.011573	0.023146
76	B200230484	BOM	NMIL	1	0.028457	0.028457
77	B200230506	BOM	NMIL	1	0.001248	0.001248
78	B200230507	BOM	NMIL	2	0.011340	0.022680
79	B200240010	BOM	NMIL	2	0.008764	0.017528
80	B200250018	BOM	NMIL	1	0.015652	0.015652
81	B200260332	BOM	NMIL	1	0.025995	0.025995
82	B200260401	BOM	NMIL	1	0.019936	0.019936
83	B200280012	BOM	NMIL	1	0.011440	0.011440
84	B200290020	BOM	NMIL	2	0.011159	0.022318
85	B200300458	BOM	NMIL	1	0.004190	0.004190
86	B200300459	BOM	NMIL	1	0.029184	0.029184
87	B200310012	BOM	NMIL	1	0.005232	0.005232
88	B200360064	BOM	NMIL	1	0.001528	0.001528
89	B200370051	BOM	NMIL	1	0.001196	0.001196
90	B200370085	BOM	NMIL	3	0.001196	0.003588
91	B210060136	BOM	NMIL	1	0.024396	0.024396
92	B210090232	BOM	SPECIAL	1	2.182912	2.182912
93	B210160002	BOM	NMIL	1	0.010000	0.010000
94	B210191722	BOM	NMIL	1	0.000429	0.000429
95	B210192570	BOM	NMIL	1	0.017022	0.017022
96	B210192577	BOM	NMIL	1	0.003548	0.003548

Total Failure Rate (F/10⁶Hrs) : 5.539995
Mean Time (in hours) Between Failures (MTBF) : 180,506