



ZIPPY TECHNOLOGY CORP.

**Mean Time Between Failures
PREDICTION REPORT**

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : BZRH2-5550V2V(RoHS)(PMBus WP1.2)

Approval By	<i>Matthew - Chiu</i>	正 式 資 料 用 章	A red circular stamp with a double border. Inside, the text '正式資料' (Official Document) is at the top, 'JUL-05-2018' is in the middle, and '研發本部' (R&D Department) is at the bottom.
Prepared By	<i>Jain Huan Lin</i>		

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: JUL-05-2018
End Item Title : BZRH2 SERIES MTBF
End Item Part Number : BZRH2-5550V2V(RoHS)(PMBus WP1.2)
BZRH2-5550V2V(RoHS)(PMBus WP1.2) MTBF : 230,352
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : BZRH / MTBF
Power Unit Module : BZRH-2550V2(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.

$$\text{Total Failure Rate}(F) = M \lambda / (3/2) + B \lambda = 5.673282 / (3/2) + 0.558998 = 4.341186$$

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

$$\text{BZRH2-5550V2V(RoHS)(PMBus WP1.2)(MTBF)} = F / 10^6 \text{ (Hrs)} = 1 / (4.341186 / 10^6) = 230,352$$

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

Date : JUL-05-2018 Time : 11:32:43
End Item Title : BZRH SERIES MTBF
End Item Part Number : BZRH-2550V2(RoHS)(PMBus WP1.2)
BZRH-2550V2(RoHS)(PMBus WP1.2) MTBF : 176,265
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : BZRH / MTBF
Module Reference Designation : BZRH
Environmental Condition : GB
Ambient Temperature: 25°C

BZRH-2550V2(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	B103590002	BOM	SPECIAL	1	0.062505	0.062505
2	B106130005	BOM	SPECIAL	1	0.709416	0.709416
3	B106230003	BOM	SPECIAL	1	0.536111	0.536111
4	B106230004	BOM	SPECIAL	1	0.125044	0.125044
5	B106230005	BOM	SPECIAL	1	0.214017	0.214017
6	B106230007	BOM	SPECIAL	1	0.140138	0.140138
7	B106230008	BOM	SPECIAL	1	0.048300	0.048300
8	B200000316	BOM	NMIL	1	0.005601	0.005601
9	B200000357	BOM	NMIL	1	0.013289	0.013289
10	B200000558	BOM	NMIL	1	0.005248	0.005248
11	B200000601	BOM	NMIL	2	0.005806	0.011612
12	B200000603	BOM	NMIL	1	0.005248	0.005248
13	B200000637	BOM	NMIL	1	0.006974	0.006974
14	B200000638	BOM	NMIL	1	0.013289	0.013289
15	B200000656	BOM	NMIL	1	0.005248	0.005248
16	B200010112	BOM	NMIL	2	0.058974	0.117948
17	B200010167	BOM	NMIL	1	0.000747	0.000747
18	B200010190	BOM	NMIL	1	0.002434	0.002434
19	B200010233	BOM	NMIL	2	0.000351	0.000702
20	B200010234	BOM	NMIL	2	0.000351	0.000702
21	B200010249	BOM	NMIL	1	0.000290	0.000290
22	B200010260	BOM	NMIL	2	0.000674	0.001348
23	B200010262	BOM	NMIL	3	0.072168	0.216504
24	B200010268	BOM	NMIL	6	0.058974	0.353844

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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	B200020017	BOM	NMIL	1	0.002332	0.002332
26	B200030069	BOM	NMIL	2	0.002308	0.004616
27	B200030107	BOM	NMIL	4	0.002308	0.009232
28	B200040035	BOM	NMIL	1	0.001229	0.001229
29	B200040065	BOM	NMIL	2	0.011646	0.023292
30	B200040073	BOM	NMIL	9	0.011646	0.104814
31	B200040108	BOM	NMIL	1	0.011646	0.011646
32	B200040139	BOM	NMIL	1	0.014246	0.014246
33	B200050083	BOM	NMIL	2	0.003013	0.006026
34	B200050084	BOM	NMIL	3	0.003013	0.009039
35	B200090055	BOM	NMIL	1	0.001476	0.001476
36	B200110006	BOM	NMIL	4	0.002896	0.011584
37	B200110042	BOM	NMIL	10	0.002210	0.022100
38	B200110046	BOM	NMIL	4	0.002896	0.011584
39	B200110095	BOM	NMIL	2	0.002896	0.005792
40	B200110123	BOM	NMIL	3	0.002210	0.006630
41	B200110190	BOM	NMIL	1	0.002896	0.002896
42	B200110202	BOM	NMIL	1	0.002896	0.002896
43	B200110227	BOM	NMIL	1	0.002896	0.002896
44	B200110235	BOM	NMIL	1	0.002896	0.002896
45	B200110279	BOM	NMIL	2	0.002210	0.004420
46	B200110313	BOM	NMIL	1	0.002896	0.002896
47	B200110357	BOM	NMIL	2	0.002896	0.005792
48	B200110489	BOM	NMIL	1	0.002210	0.002210
49	B200110490	BOM	NMIL	2	0.002210	0.004420
50	B200110495	BOM	NMIL	1	0.002210	0.002210
51	B200110501	BOM	NMIL	1	0.002210	0.002210
52	B200110505	BOM	NMIL	1	0.002210	0.002210
53	B200110506	BOM	NMIL	1	0.002210	0.002210
54	B200110508	BOM	NMIL	1	0.002210	0.002210
55	B200110512	BOM	NMIL	1	0.002210	0.002210
56	B200110523	BOM	NMIL	1	0.002210	0.002210
57	B200110524	BOM	NMIL	1	0.002210	0.002210
58	B200110541	BOM	NMIL	1	0.002210	0.002210
59	B200110550	BOM	NMIL	2	0.002210	0.004420
60	B200110554	BOM	NMIL	4	0.002210	0.008840
61	B200110571	BOM	NMIL	2	0.002210	0.004420
62	B200110574	BOM	NMIL	1	0.002319	0.002319
63	B200110583	BOM	NMIL	2	0.002210	0.004420
64	B200110625	BOM	NMIL	1	0.002896	0.002896

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65	B200110635	BOM	NMIL	2	0.002210	0.004420
66	B200110639	BOM	NMIL	1	0.002210	0.002210
67	B200110641	BOM	NMIL	2	0.002319	0.004638
68	B200110670	BOM	NMIL	3	0.002896	0.008688
69	B200110675	BOM	NMIL	2	0.002210	0.004420
70	B200110683	BOM	NMIL	1	0.002319	0.002319
71	B200110733	BOM	NMIL	1	0.002026	0.002026
72	B200110864	BOM	NMIL	1	0.002026	0.002026
73	B200111089	BOM	NMIL	2	0.002896	0.005792
74	B200160053	BOM	NMIL	1	0.008611	0.008611
75	B200170072	BOM	NMIL	2	0.003721	0.007442
76	B200200057	BOM	NMIL	2	0.008988	0.017976
77	B200200070	BOM	NMIL	1	0.007077	0.007077
78	B200200082	BOM	NMIL	4	0.008395	0.033580
79	B200200092	BOM	NMIL	7	0.009620	0.067340
80	B200200094	BOM	NMIL	1	0.004508	0.004508
81	B200200153	BOM	NMIL	2	0.005166	0.010332
82	B200200156	BOM	NMIL	4	0.006356	0.025424
83	B200200166	BOM	NMIL	4	0.006824	0.027296
84	B200200204	BOM	NMIL	2	0.007306	0.014612
85	B200200205	BOM	NMIL	2	0.007820	0.015640
86	B200200206	BOM	NMIL	1	0.008395	0.008395
87	B200200208	BOM	NMIL	1	0.006356	0.006356
88	B200200226	BOM	NMIL	1	0.002775	0.002775
89	B200210007	BOM	NMIL	1	0.021267	0.021267
90	B200220010	BOM	NMIL	1	0.003943	0.003943
91	B200220020	BOM	NMIL	1	0.003440	0.003440
92	B200220082	BOM	NMIL	3	0.001208	0.003624
93	B200230342	BOM	NMIL	1	0.002178	0.002178
94	B200230354	BOM	NMIL	2	0.010416	0.020832
95	B200230388	BOM	NMIL	2	0.008140	0.016280
96	B200230445	BOM	NMIL	1	0.001831	0.001831
97	B200230472	BOM	NMIL	2	0.012441	0.024882
98	B200230506	BOM	NMIL	1	0.001123	0.001123
99	B200230507	BOM	NMIL	2	0.010206	0.020412
100	B200240013	BOM	NMIL	2	0.009253	0.018506
101	B200250018	BOM	NMIL	1	0.014087	0.014087
102	B200260274	BOM	NMIL	1	0.017942	0.017942
103	B200260276	BOM	NMIL	1	0.017942	0.017942
104	B200260277	BOM	NMIL	1	0.017942	0.017942

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105	B200280023	BOM	NMIL	2	0.000623	0.001246
106	B200290011	BOM	NMIL	2	0.002901	0.005802
107	B200300315	BOM	NMIL	1	0.007516	0.007516
108	B200300478	BOM	NMIL	1	0.004352	0.004352
109	B200300487	BOM	NMIL	1	0.003714	0.003714
110	B200360064	BOM	NMIL	1	0.001528	0.001528
111	B200370051	BOM	NMIL	1	0.001196	0.001196
112	B200370085	BOM	NMIL	2	0.001196	0.002392
113	B200370111	BOM	NMIL	1	0.001196	0.001196
114	B210090232	BOM	SPECIAL	1	2.182912	2.182912
115	B210160043	BOM	NMIL	2	0.010000	0.020000
116	B210192649	BOM	NMIL	1	0.003548	0.003548
117	B210192691	BOM	NMIL	1	0.017022	0.017022

Total Failure Rate (F/10⁶Hrs) : 5.673282
Mean Time (in hours) Between Failures (MTBF) : **176,265**