



ZIPPY TECHNOLOGY CORP.

Mean Time Between Failures PREDICTION REPORT

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : DZRH2-5800V2V(RoHS)(PMBus WP1.2)

Approval By	<i>Matthew - Chou</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, 'JAN-10-2018' 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: JAN-10-2018
End Item Title : DZRH2 SERIES MTBF
End Item Part Number : DZRH2-5800V2V(RoHS)(PMBus WP1.2)
DZRH2-5800V2V(RoHS)(PMBus WP1.2) MTBF : 227,363
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : DZRH / MTBF
Power Unit Module : DZRH-2800V2(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.

$$\text{Total Failure Rate}(F) = M \lambda / (3/2) + B \lambda = 5.758873 / (3/2) + 0.558998 = 4.398247$$

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

$$\text{DZRH2-5800V2V(RoHS)(PMBus WP1.2)(MTBF)} = F / 10^6 \text{ (Hrs)} = 1 / (4.398247 / 10^6) = 227,363$$

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

Date : JAN-10-2018 Time : 11:42:33
End Item Title : DZRH SERIES MTBF
End Item Part Number : DZRH-2800V2(RoHS)(PMBus WP1.2)
DZRH-2800V2(RoHS)(PMBus WP1.2) MTBF : 173,645
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : DZRH / MTBF
Module Reference Designation : DZRH
Environmental Condition : GB
Ambient Temperature: 25°C

DZRH-2800V2(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	B106130006	BOM	SPECIAL	1	0.125044	0.125044
4	B106130007	BOM	SPECIAL	1	0.138499	0.138499
5	B106130008	BOM	SPECIAL	1	0.536111	0.536111
6	B106130009	BOM	SPECIAL	1	0.214017	0.214017
7	B106130010	BOM	SPECIAL	1	0.047663	0.047663
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	B200010167	BOM	NMIL	1	0.000747	0.000747
17	B200010190	BOM	NMIL	1	0.002434	0.002434
18	B200010233	BOM	NMIL	2	0.000351	0.000702
19	B200010234	BOM	NMIL	2	0.000351	0.000702
20	B200010249	BOM	NMIL	1	0.000290	0.000290
21	B200010260	BOM	NMIL	2	0.000674	0.001348
22	B200010262	BOM	NMIL	3	0.072168	0.216504
23	B200010268	BOM	NMIL	8	0.065527	0.524216
24	B200020017	BOM	NMIL	1	0.002332	0.002332

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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	B200030069	BOM	NMIL	2	0.002308	0.004616
26	B200030107	BOM	NMIL	4	0.002308	0.009232
27	B200040035	BOM	NMIL	1	0.001366	0.001366
28	B200040065	BOM	NMIL	2	0.011646	0.023292
29	B200040073	BOM	NMIL	9	0.011646	0.104814
30	B200040108	BOM	NMIL	1	0.011646	0.011646
31	B200040139	BOM	NMIL	1	0.015829	0.015829
32	B200050032	BOM	NMIL	3	0.003013	0.009039
33	B200050083	BOM	NMIL	2	0.003013	0.006026
34	B200090055	BOM	NMIL	1	0.001476	0.001476
35	B200110006	BOM	NMIL	4	0.002896	0.011584
36	B200110042	BOM	NMIL	10	0.002210	0.022100
37	B200110046	BOM	NMIL	4	0.002896	0.011584
38	B200110095	BOM	NMIL	2	0.002896	0.005792
39	B200110123	BOM	NMIL	3	0.002210	0.006630
40	B200110190	BOM	NMIL	1	0.002896	0.002896
41	B200110202	BOM	NMIL	1	0.002896	0.002896
42	B200110227	BOM	NMIL	1	0.002896	0.002896
43	B200110235	BOM	NMIL	1	0.002896	0.002896
44	B200110279	BOM	NMIL	2	0.002210	0.004420
45	B200110282	BOM	NMIL	1	0.002896	0.002896
46	B200110313	BOM	NMIL	1	0.002896	0.002896
47	B200110357	BOM	NMIL	2	0.002896	0.005792
48	B200110468	BOM	NMIL	3	0.002896	0.008688
49	B200110488	BOM	NMIL	2	0.002210	0.004420
50	B200110489	BOM	NMIL	1	0.002210	0.002210
51	B200110490	BOM	NMIL	2	0.002210	0.004420
52	B200110501	BOM	NMIL	1	0.002210	0.002210
53	B200110505	BOM	NMIL	3	0.002210	0.006630
54	B200110506	BOM	NMIL	1	0.002210	0.002210
55	B200110508	BOM	NMIL	1	0.002210	0.002210
56	B200110512	BOM	NMIL	1	0.002210	0.002210
57	B200110523	BOM	NMIL	1	0.002210	0.002210
58	B200110524	BOM	NMIL	1	0.002210	0.002210
59	B200110541	BOM	NMIL	1	0.002210	0.002210
60	B200110550	BOM	NMIL	2	0.002210	0.004420
61	B200110571	BOM	NMIL	2	0.002210	0.004420
62	B200110574	BOM	NMIL	1	0.002319	0.002319
63	B200110581	BOM	NMIL	3	0.002210	0.006630
64	B200110627	BOM	NMIL	2	0.002319	0.004638

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65	B200110635	BOM	NMIL	2	0.002210	0.004420
66	B200110638	BOM	NMIL	1	0.002319	0.002319
67	B200110639	BOM	NMIL	1	0.002210	0.002210
68	B200110675	BOM	NMIL	2	0.002210	0.004420
69	B200110733	BOM	NMIL	1	0.002026	0.002026
70	B200110864	BOM	NMIL	1	0.002026	0.002026
71	B200111089	BOM	NMIL	2	0.002896	0.005792
72	B200160053	BOM	NMIL	1	0.008611	0.008611
73	B200170018	BOM	NMIL	2	0.003177	0.006354
74	B200200057	BOM	NMIL	2	0.008988	0.017976
75	B200200070	BOM	NMIL	1	0.007077	0.007077
76	B200200082	BOM	NMIL	7	0.008395	0.058765
77	B200200092	BOM	NMIL	7	0.009620	0.067340
78	B200200094	BOM	NMIL	1	0.004508	0.004508
79	B200200153	BOM	NMIL	2	0.005166	0.010332
80	B200200156	BOM	NMIL	5	0.006356	0.031780
81	B200200166	BOM	NMIL	4	0.006824	0.027296
82	B200200204	BOM	NMIL	2	0.007306	0.014612
83	B200200205	BOM	NMIL	2	0.007820	0.015640
84	B200200206	BOM	NMIL	1	0.008395	0.008395
85	B200200226	BOM	NMIL	1	0.002775	0.002775
86	B200210007	BOM	NMIL	1	0.021267	0.021267
87	B200220010	BOM	NMIL	1	0.003943	0.003943
88	B200220020	BOM	NMIL	1	0.003440	0.003440
89	B200220082	BOM	NMIL	3	0.001208	0.003624
90	B200230342	BOM	NMIL	1	0.002420	0.002420
91	B200230354	BOM	NMIL	2	0.011573	0.023146
92	B200230388	BOM	NMIL	2	0.009044	0.018088
93	B200230445	BOM	NMIL	1	0.002034	0.002034
94	B200230472	BOM	NMIL	2	0.013823	0.027646
95	B200230506	BOM	NMIL	1	0.001248	0.001248
96	B200230507	BOM	NMIL	2	0.011340	0.022680
97	B200240013	BOM	NMIL	2	0.009253	0.018506
98	B200250018	BOM	NMIL	1	0.015652	0.015652
99	B200260274	BOM	NMIL	1	0.019936	0.019936
100	B200260276	BOM	NMIL	1	0.019936	0.019936
101	B200260277	BOM	NMIL	1	0.019936	0.019936
102	B200280017	BOM	NMIL	3	0.000623	0.001869
103	B200290011	BOM	NMIL	2	0.002901	0.005802
104	B200300315	BOM	NMIL	1	0.008351	0.008351

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105	B200300478	BOM	NMIL	1	0.004836	0.004836
106	B200300479	BOM	NMIL	1	0.004127	0.004127
107	B200360064	BOM	NMIL	1	0.001528	0.001528
108	B200370051	BOM	NMIL	1	0.001196	0.001196
109	B200370085	BOM	NMIL	2	0.001196	0.002392
110	B200370111	BOM	NMIL	1	0.001196	0.001196
111	B210090232	BOM	SPECIAL	1	2.182912	2.182912
112	B210160043	BOM	NMIL	1	0.010000	0.010000
113	B210192649	BOM	NMIL	1	0.003548	0.003548
114	B210192691	BOM	NMIL	1	0.017022	0.017022

Total Failure Rate (F/10⁶Hrs) : 5.758873
Mean Time (in hours) Between Failures (MTBF) : **173,645**