



ZIPPY TECHNOLOGY CORP.

Mean Time Between Failures PREDICTION REPORT

MIL-HDBK-217F, Notice 2

Product : Redundant Switching Power Supply

Model/Type : DR1U2-5600V2H(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: MAR-05-2020
End Item Title : DR1U2 SERIES MTBF
End Item Part Number : DR1U2-5600V2H(RoHS)(PMBus WP1.2)
DR1U2-5600V2H(RoHS)(PMBus WP1.2) MTBF : 229,445
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : DR1U / MTBF
Power Unit Module : DR1U-2600V2(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.

$$\text{Total Failure Rate}(F) = M\lambda / (3/2) + B\lambda = 5.707204 / (3/2) + 0.553543 = 4.358346$$

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

$$\text{DR1U2-5600V2H(RoHS)(PMBus WP1.2)(MTBF)} = F / 10^6 \text{ (Hrs)} = 1 / (4.358346 / 10^6) = 229,445$$

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(Sorted by Part Number)
MIL-HDBK-217F, Notice 2

Date : MAR-05-2020 Time : 11:22:23
End Item Title : DR1U SERIES MTBF
End Item Part Number : DR1U-2600V2(RoHS)(PMBus WP1.2)
DR1U-2600V2(RoHS)(PMBus WP1.2) MTBF : 175,217
Module Title : ZIPPY TECHNOLOGY CORP
Module Part Number : DR1U / MTBF
Module Reference Designation : DR1U
Environmental Condition : GB
Ambient Temperature: 25°C

DR1U-2600V2(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	B106080003	BOM	SPECIAL	1	0.290440	0.290440
2	B106580002	BOM	SPECIAL	1	0.120063	0.120063
3	B106580003	BOM	SPECIAL	1	0.582545	0.582545
4	B106580004	BOM	SPECIAL	1	0.244162	0.244162
5	B106580005	BOM	SPECIAL	1	0.268431	0.268431
6	B200000296	BOM	NMIL	1	0.005248	0.005248
7	B200000308	BOM	NMIL	2	0.013289	0.026578
8	B200000316	BOM	NMIL	1	0.005601	0.005601
9	B200000357	BOM	NMIL	1	0.013289	0.013289
10	B200000559	BOM	NMIL	1	0.005483	0.005483
11	B200000603	BOM	NMIL	1	0.005248	0.005248
12	B200000612	BOM	NMIL	1	0.004716	0.004716
13	B200010162	BOM	NMIL	1	0.073390	0.073390
14	B200010190	BOM	NMIL	1	0.004985	0.004985
15	B200010238	BOM	NMIL	2	0.073390	0.146780
16	B200010252	BOM	NMIL	6	0.072168	0.433008
17	B200010268	BOM	NMIL	4	0.065527	0.262108
18	B200010269	BOM	NMIL	3	0.000652	0.001956
19	B200010270	BOM	NMIL	3	0.000652	0.001956
20	B200020024	BOM	NMIL	1	0.000424	0.000424
21	B200030069	BOM	NMIL	1	0.001906	0.001906
22	B200030107	BOM	NMIL	4	0.001906	0.007624
23	B200040073	BOM	NMIL	13	0.011646	0.151398
24	B200040094	BOM	NMIL	1	0.015829	0.015829

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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	B200040120	BOM	NMIL	1	0.011646	0.011646
26	B200040133	BOM	NMIL	2	0.011646	0.023292
27	B200040150	BOM	NMIL	1	0.011646	0.011646
28	B200050081	BOM	NMIL	5	0.003013	0.015065
29	B200050085	BOM	NMIL	1	0.003013	0.003013
30	B200050088	BOM	NMIL	1	0.003013	0.003013
31	B200090005	BOM	NMIL	1	0.001476	0.001476
32	B200110001	BOM	NMIL	1	0.002896	0.002896
33	B200110035	BOM	NMIL	1	0.002896	0.002896
34	B200110046	BOM	NMIL	1	0.002896	0.002896
35	B200110091	BOM	NMIL	2	0.002896	0.005792
36	B200110123	BOM	NMIL	1	0.002210	0.002210
37	B200110127	BOM	NMIL	1	0.003039	0.003039
38	B200110162	BOM	NMIL	1	0.002896	0.002896
39	B200110192	BOM	NMIL	1	0.002210	0.002210
40	B200110279	BOM	NMIL	1	0.002210	0.002210
41	B200110282	BOM	NMIL	1	0.002896	0.002896
42	B200110357	BOM	NMIL	4	0.002896	0.011584
43	B200110488	BOM	NMIL	2	0.002210	0.004420
44	B200110490	BOM	NMIL	1	0.002210	0.002210
45	B200110505	BOM	NMIL	3	0.002210	0.006630
46	B200110506	BOM	NMIL	1	0.002210	0.002210
47	B200110512	BOM	NMIL	1	0.002210	0.002210
48	B200110523	BOM	NMIL	3	0.002210	0.006630
49	B200110530	BOM	NMIL	1	0.002210	0.002210
50	B200110544	BOM	NMIL	1	0.002210	0.002210
51	B200110571	BOM	NMIL	2	0.002210	0.004420
52	B200110590	BOM	NMIL	3	0.002319	0.006957
53	B200110715	BOM	NMIL	2	0.002896	0.005792
54	B200110733	BOM	NMIL	11	0.002026	0.022286
55	B200110738	BOM	NMIL	6	0.002026	0.012156
56	B200110739	BOM	NMIL	1	0.002026	0.002026
57	B200110775	BOM	NMIL	1	0.002026	0.002026
58	B200110808	BOM	NMIL	8	0.002026	0.016208
59	B200110811	BOM	NMIL	1	0.002026	0.002026
60	B200110814	BOM	NMIL	1	0.002026	0.002026
61	B200110819	BOM	NMIL	1	0.002026	0.002026
62	B200110821	BOM	NMIL	1	0.002126	0.002126
63	B200110851	BOM	NMIL	1	0.002026	0.002026
64	B200110870	BOM	NMIL	1	0.002126	0.002126

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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	B200110872	BOM	NMIL	1	0.002026	0.002026
66	B200110891	BOM	NMIL	1	0.002126	0.002126
67	B200110928	BOM	NMIL	1	0.002026	0.002026
68	B200110970	BOM	NMIL	1	0.002126	0.002126
69	B200111016	BOM	NMIL	1	0.002026	0.002026
70	B200111022	BOM	NMIL	1	0.002026	0.002026
71	B200111024	BOM	NMIL	1	0.002026	0.002026
72	B200120170	BOM	NMIL	1	0.005001	0.005001
73	B200160017	BOM	NMIL	1	0.004760	0.004760
74	B200160053	BOM	NMIL	1	0.008611	0.008611
75	B200170047	BOM	NMIL	2	0.003721	0.007442
76	B200170071	BOM	NMIL	1	0.003177	0.003177
77	B200170079	BOM	NMIL	2	0.003721	0.007442
78	B200180112	BOM	NMIL	2	0.002134	0.004268
79	B200200075	BOM	NMIL	1	0.009676	0.009676
80	B200200082	BOM	NMIL	7	0.008395	0.058765
81	B200200092	BOM	NMIL	8	0.009620	0.076960
82	B200200140	BOM	NMIL	1	0.003664	0.003664
83	B200200142	BOM	NMIL	1	0.007306	0.007306
84	B200200143	BOM	NMIL	4	0.004199	0.016796
85	B200200153	BOM	NMIL	2	0.005166	0.010332
86	B200200158	BOM	NMIL	1	0.004508	0.004508
87	B200200193	BOM	NMIL	1	0.004827	0.004827
88	B200200197	BOM	NMIL	1	0.005939	0.005939
89	B200200205	BOM	NMIL	2	0.007820	0.015640
90	B200200207	BOM	NMIL	2	0.005166	0.010332
91	B200200208	BOM	NMIL	5	0.006356	0.031780
92	B200200213	BOM	NMIL	1	0.003924	0.003924
93	B200200237	BOM	NMIL	1	0.006824	0.006824
94	B200220010	BOM	NMIL	1	0.003943	0.003943
95	B200220020	BOM	NMIL	1	0.003440	0.003440
96	B200220082	BOM	NMIL	1	0.001208	0.001208
97	B200220087	BOM	NMIL	2	0.001125	0.002250
98	B200230210	BOM	NMIL	1	0.009001	0.009001
99	B200230263	BOM	NMIL	2	0.001263	0.002526
100	B200230281	BOM	NMIL	1	0.006574	0.006574
101	B200230288	BOM	NMIL	1	0.001165	0.001165
102	B200230381	BOM	NMIL	1	0.008569	0.008569
103	B200230388	BOM	NMIL	2	0.012204	0.024408
104	B200230436	BOM	NMIL	2	0.001803	0.003606

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105	B200230514	BOM	NMIL	1	0.001661	0.001661
106	B200230537	BOM	NMIL	1	0.016249	0.016249
107	B200230538	BOM	NMIL	2	0.018274	0.036548
108	B200230590	BOM	NMIL	1	0.015038	0.015038
109	B200240005	BOM	NMIL	1	0.009934	0.009934
110	B200250009	BOM	NMIL	1	0.000205	0.000205
111	B200260271	BOM	NMIL	1	0.000251	0.000251
112	B200260277	BOM	NMIL	1	0.000196	0.000196
113	B200270025	BOM	NMIL	1	0.000227	0.000227
114	B200280017	BOM	NMIL	1	0.000623	0.000623
115	B200300525	BOM	NMIL	1	0.094536	0.094536
116	B200300526	BOM	NMIL	1	0.007615	0.007615
117	B200370069	BOM	NMIL	1	0.001373	0.001373
118	B200370081	BOM	NMIL	1	0.000962	0.000962
119	B200370085	BOM	NMIL	1	0.001196	0.001196
120	B210090232	BOM	SPECIAL	1	2.182912	2.182912
121	B210160024	BOM	NMIL	1	0.016264	0.016264
122	B210160062	BOM	NMIL	1	0.010000	0.010000
123	B210193129	BOM	NMIL	1	0.023541	0.023541
124	B200110709	BOM	NMIL	1	0.002026	0.002026

Total Failure Rate (F/10⁶Hrs) : 5.707204
Mean Time (in hours) Between Failures (MTBF) : **175,217**