

RELIABILITY PREDICTION STANDARD REPORT

(Sorted by Part Number)

MIL-HDBK-217F, Notice 2

PRED-FIRST (c) Reliability Prediction Program, BJM Engineering Services

Date: DEC-07-2010

End Item Title : MTWX SERIES MTBF

End Item Part Number : MTW4-5O30V3H (RoHS)

MTW4-5O30V3H (RoHS) MTBF : 353,651

Module Title: ZIPPY TECHNOLOGY CORP

Module Part Number : MTW/MTBF

Power Unit Module : MTW-5900V (RoHS)

Environmental Condition: GB

Ambient Temperature: 25°C

RELIABILITY MODELING OF REDUNDANT UNITS

Four Redundant Units:

Four 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.

$$\begin{aligned} \text{MTBF} &= (1/\lambda) + (1/\lambda) + (1/\lambda) + (1/\lambda) - (1/(\lambda + \lambda + \lambda + \lambda)) \\ &= (15/4)\lambda \end{aligned}$$

λ = failure rate per million hours

$$\text{MTW4-5O30V3H (RoHS)(MTBF)} = (15/4)\lambda = (15/4) \times 94,307 = 359,168$$

ZIPPY TECHNOLOGY CORP
10F,No.50,MIN CHYUAN RD
SHIN-TIEN,TAIPEI HSIEN,TAIWAN,R.O.C.

	RELIABILITY PREDICTION STANDARD REPORT					
		(Sorted by Part Number)				
		MIL - HDBK - 217F, Notice 2				
Date : DEC-07-2010 Time : 13:45:28						
End Item Title : MTW SERIES MTBF						
End Item Part Number : MTW-5900V (RoHS)						
Module Title : ZIPPY TECHNOLOGY CORP						
Module Part Number : MTW/MTBF						
Module Reference Designation : MTW						
Environmental Condition : GB						
Ambient Temperature: 25°C						
<u>MTW-5900V (RoHS)</u>						
ITEM	Part	Ref	Qual	Quant	Individual	Total
#	Number	Desig	Level		Failure Rate	Failure Rate
					(F/10^6Hrs)	(F/10^6Hrs)
1	B102720004	BOM	NMIL	1	0.069564	0.069564
2	B102920003	BOM	NMIL	1	0.622938	0.622938
3	B102920004	BOM	NMIL	1	0.622938	0.622938
4	B103210004	BOM	NMIL	1	0.065162	0.065162
5	B103510010	BOM	NMIL	1	0.879263	0.879263
6	B200000001	BOM	SPECIAL	1	0.094935	0.094935
7	B200000058	BOM	SPECIAL	1	0.094935	0.094935
8	B200000063	BOM	SPECIAL	1	0.094935	0.094935
9	B200000080	BOM	SPECIAL	1	0.094935	0.094935
10	B200000252	BOM	SPECIAL	1	0.094935	0.094935
11	B200000276	BOM	SPECIAL	1	0.094935	0.094935
12	B200000351	BOM	SPECIAL	1	0.094935	0.094935
13	B200010022	BOM	NMIL	2	0.000798	0.001596
14	B200010052	BOM	NMIL	3	0.000798	0.002394
15	B200010057	BOM	NMIL	3	0.032096	0.096288
16	B200010067	BOM	NMIL	4	0.000798	0.003192
17	B200010080	BOM	NMIL	3	0.032096	0.096288
18	B200010081	BOM	NMIL	2	0.032096	0.064192
19	B200010083	BOM	NMIL	2	0.000816	0.001632
20	B200010084	BOM	NMIL	1	0.032096	0.032096
21	B200010109	BOM	NMIL	6	0.000798	0.004788

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22	B200020004	BOM	NMIL	13	0.005156	0.067028
23	B200020016	BOM	NMIL	3	0.005156	0.015468
24	B200020021	BOM	NMIL	1	0.006751	0.006751
25	B200030019	BOM	NMIL	1	0.010519	0.010519
26	B200030030	BOM	NMIL	1	0.003446	0.003446
27	B200030046	BOM	NMIL	2	0.010519	0.021037
28	B200040059	BOM	NMIL	2	0.005967	0.011934
29	B200040067	BOM	NMIL	1	0.016469	0.016469
30	B200040068	BOM	NMIL	1	0.016469	0.016469
31	B200050024	BOM	NMIL	2	0.005218	0.010436
32	B200050039	BOM	NMIL	1	0.005218	0.005218
33	B200050040	BOM	NMIL	4	0.005218	0.020872
34	B200060009	BOM	NMIL	2	0.014932	0.029864
35	B200090005	BOM	NMIL	1	0.018095	0.018095
36	B200110001	BOM	NMIL	5	0.004650	0.023250
37	B200110035	BOM	NMIL	1	0.004650	0.004650
38	B200110040	BOM	NMIL	6	0.004650	0.027900
39	B200110042	BOM	NMIL	10	0.004650	0.046500
40	B200110046	BOM	NMIL	10	0.004650	0.046500
41	B200110123	BOM	NMIL	6	0.004650	0.027900
42	B200110172	BOM	NMIL	7	0.004650	0.032550
43	B200110192	BOM	NMIL	2	0.004650	0.009300
44	B200110202	BOM	NMIL	1	0.004650	0.004650
45	B200110227	BOM	NMIL	5	0.004650	0.023250
46	B200110276	BOM	NMIL	3	0.004650	0.013950
47	B200110279	BOM	NMIL	5	0.004650	0.023250
48	B200110282	BOM	NMIL	6	0.004650	0.027900
49	B200110303	BOM	NMIL	4	0.005115	0.020460
50	B200110309	BOM	NMIL	2	0.004650	0.009300
51	B200110343	BOM	NMIL	1	0.004650	0.004650
52	B200110402	BOM	NMIL	1	0.004650	0.004650
53	B200110487	BOM	NMIL	1	0.004650	0.004650
54	B200110488	BOM	NMIL	1	0.004650	0.004650
55	B200110492	BOM	NMIL	1	0.004650	0.004650
56	B200110494	BOM	NMIL	4	0.004650	0.018600
57	B200110496	BOM	NMIL	2	0.004650	0.009300
58	B200110504	BOM	NMIL	1	0.005115	0.005115
59	B200110508	BOM	NMIL	1	0.004650	0.004650
60	B200110510	BOM	NMIL	2	0.004650	0.009300
61	B200110512	BOM	NMIL	7	0.004650	0.032550

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62	B200110514	BOM	NMIL	1	0.004650	0.004650
63	B200110531	BOM	NMIL	1	0.004650	0.004650
64	B200110551	BOM	NMIL	1	0.004650	0.004650
65	B200110553	BOM	NMIL	1	0.004650	0.004650
66	B200110639	BOM	NMIL	1	0.004650	0.004650
67	B200110659	BOM	NMIL	1	0.004650	0.004650
68	B200120015	BOM	NMIL	1	0.008509	0.008509
69	B200120154	BOM	NMIL	1	0.008509	0.008509
70	B200120160	BOM	NMIL	1	0.008705	0.008705
71	B200140013	BOM	NMIL	1	0.035297	0.035297
72	B200160017	BOM	NMIL	1	0.065000	0.065000
73	B200160022	BOM	NMIL	1	0.065000	0.065000
74	B200170015	BOM	NMIL	8	0.005156	0.041248
75	B200170040	BOM	NMIL	2	0.005156	0.010312
76	B200180075	BOM	N/A	3	0.008923	0.026769
77	B200190022	BOM	N/A	1	0.015889	0.015889
78	B200190033	BOM	N/A	1	0.013308	0.013308
79	B200190035	BOM	N/A	1	0.015889	0.015889
80	B200200012	BOM	N/A	2	0.009203	0.018406
81	B200200017	BOM	N/A	7	0.011856	0.082992
82	B200200057	BOM	N/A	2	0.018108	0.036216
83	B200200060	BOM	N/A	1	0.012930	0.012930
84	B200200061	BOM	N/A	4	0.008470	0.033880
85	B200200062	BOM	N/A	2	0.007791	0.015582
86	B200200066	BOM	N/A	1	0.010911	0.010911
87	B200200069	BOM	N/A	1	0.006575	0.006575
88	B200200074	BOM	N/A	8	0.015274	0.122192
89	B200200084	BOM	N/A	2	0.005546	0.011092
90	B200220018	BOM	N/A	3	0.002416	0.007248
91	B200220020	BOM	N/A	1	0.002337	0.002337
92	B200220048	BOM	N/A	1	0.002647	0.002647
93	B200230057	BOM	N/A	2	0.032296	0.064592
94	B200230149	BOM	N/A	1	0.056039	0.056039
95	B200230198	BOM	N/A	6	0.059504	0.357024
96	B200230210	BOM	N/A	1	0.051630	0.051630
97	B200230277	BOM	N/A	1	0.042415	0.042415
98	B200230327	BOM	N/A	2	0.170936	0.341872
99	B200230338	BOM	N/A	4	0.029777	0.119108
100	B200250009	BOM	NMIL	1	0.084699	0.084699
101	B200250016	BOM	NMIL	2	0.084699	0.169398

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102	B200260195	BOM	NMIL	1	0.090008	0.090008
103	B200260228	BOM	NMIL	1	0.090008	0.090008
104	B200260251	BOM	NMIL	1	0.090008	0.090008
105	B200260291	BOM	NMIL	1	0.090008	0.090008
106	B200280012	BOM	NMIL	2	0.015958	0.031916
107	B200300219	BOM	NMIL	1	0.003930	0.003930
108	B200300236	BOM	NMIL	1	0.003930	0.003930
109	B200300237	BOM	NMIL	1	0.003930	0.003930
110	B200300273	BOM	NMIL	1	0.026725	0.026725
111	B200310003	BOM	NMIL	1	0.031280	0.031280
112	B210140008	BOM	KNOWNFR	2	2.097352	4.194704
113	B210160025	BOM	N/A	1	0.010000	0.010000
114	B210191119	N/A	STANDARD	1	0.020588	0.020588
			Total Failure Rate (F/10^6Hrs) :			10.603712
		Mean Time (in hours) Between Failures (MTBF) :			94,307	