

ZIPPY TECHNOLOGY CORP
10F, No.50, MIN CHYUAN 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-29-2013
End Item Title : MRT SERIES MTBF
End Item Part Number : MRT-5320G0V (RoHS)
MRT-5320G0V (RoHS) MTBF : 157,210
Module Title: ZIPPY TECHNOLOGY CORP
Module Part Number : MRT / MTBF
Power Unit Module : MRT-2320G-R (RoHS)
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.

$$\text{Total Failure Rate}(F) = M \lambda / (3/2) + B \lambda = 8.498151 / (3/2) + 0.695472 = 6.360906$$

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

$$\text{MRT-5320G0V (RoHS)(MTBF)} = F / 10^6 \text{Hrs} = 6.360906 / 10^6 = 157,210$$

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

Date : JAN-29-2013 Time : 14:21:42
 End Item Title : MRT SERIES MTBF
 End Item Part Number : MRT-2320G-R (RoHS)
 MRT-2320G-R (RoHS) MTBF : 117,673
 Module Title : ZIPPY TECHNOLOGY CORP
 Module Part Number : MRT / MTBF
 Module Reference Designation : MRT
 Environmental Condition : GB
 Ambient Temperature: 25°C

MRT-2320G-R (RoHS)

ITEM #	Part Number	Ref Desig	Qual Level	Quant	Individual Failure Rate (F/10 ⁶ Hrs)	Total Failure Rate (F/10 ⁶ Hrs)
1	B102330004	BOM	NMIL	1	0.069564	0.069564
2	B103210004	BOM	NMIL	1	0.065162	0.065162
3	B104540002	BOM	NMIL	1	0.204674	0.204674
4	B104540003	BOM	NMIL	1	0.267539	0.267539
5	B200000080	BOM	SPECIAL	1	0.094935	0.094935
6	B200000252	BOM	SPECIAL	2	0.094935	0.189870
7	B200000268	BOM	SPECIAL	1	0.094935	0.094935
8	B200000308	BOM	SPECIAL	4	0.094935	0.379740
9	B200000325	BOM	SPECIAL	1	0.094935	0.094935
10	B200000442	BOM	SPECIAL	1	0.094935	0.094935
11	B200000455	BOM	SPECIAL	1	0.094935	0.094935
12	B200010009	BOM	NMIL	1	0.000798	0.000798
13	B200010022	BOM	NMIL	3	0.000798	0.002394
14	B200010052	BOM	NMIL	3	0.000798	0.002394
15	B200010175	BOM	NMIL	4	0.031398	0.125592
16	B200010176	BOM	NMIL	3	0.031398	0.094194
17	B200010192	BOM	NMIL	5	0.000798	0.003990
18	B200020021	BOM	NMIL	1	0.006751	0.006751
19	B200020024	BOM	NMIL	15	0.005156	0.077340
20	B200030019	BOM	NMIL	2	0.007617	0.015234
21	B200030023	BOM	NMIL	1	0.007617	0.007617
22	B200030042	BOM	NMIL	1	0.007617	0.007617
23	B200040015	BOM	NMIL	1	0.005967	0.005967
24	B200040059	BOM	NMIL	1	0.005967	0.005967

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25	B200040102	BOM	NMIL	1	0.016111	0.016111
26	B200040110	BOM	NMIL	1	0.016111	0.016111
27	B200050040	BOM	NMIL	5	0.005218	0.026090
28	B200050048	BOM	NMIL	1	0.005218	0.005218
29	B200060019	BOM	NMIL	1	0.014607	0.014607
30	B200090006	BOM	NMIL	1	0.001518	0.001518
31	B200110001	BOM	NMIL	1	0.004650	0.004650
32	B200110040	BOM	NMIL	2	0.004650	0.009300
33	B200110042	BOM	NMIL	2	0.004650	0.009300
34	B200110046	BOM	NMIL	1	0.004650	0.004650
35	B200110120	BOM	NMIL	1	0.004650	0.004650
36	B200110138	BOM	NMIL	1	0.004650	0.004650
37	B200110176	BOM	NMIL	1	0.004650	0.004650
38	B200110282	BOM	NMIL	1	0.004650	0.004650
39	B200110317	BOM	NMIL	1	0.004650	0.004650
40	B200110337	BOM	NMIL	2	0.005115	0.010230
41	B200110422	BOM	NMIL	2	0.004650	0.009300
42	B200110512	BOM	NMIL	1	0.004650	0.004650
43	B200110588	BOM	NMIL	1	0.004650	0.004650
44	B200110709	BOM	NMIL	2	0.004650	0.009300
45	B200110729	BOM	NMIL	4	0.004650	0.018600
46	B200110730	BOM	NMIL	1	0.004650	0.004650
47	B200110733	BOM	NMIL	16	0.004650	0.074400
48	B200110735	BOM	NMIL	1	0.004650	0.004650
49	B200110738	BOM	NMIL	7	0.004650	0.032550
50	B200110740	BOM	NMIL	2	0.004650	0.009300
51	B200110743	BOM	NMIL	1	0.004650	0.004650
52	B200110744	BOM	NMIL	1	0.004650	0.004650
53	B200110771	BOM	NMIL	1	0.005115	0.005115
54	B200110775	BOM	NMIL	2	0.004650	0.009300
55	B200110794	BOM	NMIL	1	0.004650	0.004650
56	B200110800	BOM	NMIL	2	0.004650	0.009300
57	B200110807	BOM	NMIL	1	0.004650	0.004650
58	B200110808	BOM	NMIL	4	0.004650	0.018600
59	B200110811	BOM	NMIL	1	0.004650	0.004650
60	B200110817	BOM	NMIL	1	0.004650	0.004650
61	B200110828	BOM	NMIL	1	0.004650	0.004650
62	B200110829	BOM	NMIL	3	0.007440	0.022320
63	B200110831	BOM	NMIL	3	0.004650	0.013950
64	B200110834	BOM	NMIL	2	0.004650	0.009300
65	B200110835	BOM	NMIL	2	0.004650	0.009300
66	B200110841	BOM	NMIL	1	0.004650	0.004650
67	B200110842	BOM	NMIL	1	0.004650	0.004650
68	B200110845	BOM	NMIL	1	0.004650	0.004650

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69	B200110864	BOM	NMIL	1	0.004650	0.004650
70	B200110867	BOM	NMIL	2	0.004650	0.009300
71	B200110869	BOM	NMIL	1	0.004650	0.004650
72	B200120047	BOM	NMIL	1	0.008705	0.008705
73	B200140010	BOM	NMIL	1	0.067385	0.067385
74	B200140011	BOM	NMIL	1	0.035297	0.035297
75	B200160011	BOM	NMIL	1	0.065000	0.065000
76	B200160017	BOM	NMIL	1	0.065000	0.065000
77	B200170018	BOM	NMIL	4	0.004875	0.019500
78	B200170041	BOM	NMIL	2	0.005940	0.011880
79	B200180070	BOM	N/A	1	0.008146	0.008146
80	B200180086	BOM	N/A	1	0.008146	0.008146
81	B200190035	BOM	N/A	1	0.015889	0.015889
82	B200190064	BOM	N/A	1	0.016840	0.016840
83	B200200064	BOM	N/A	1	0.008470	0.008470
84	B200200074	BOM	N/A	1	0.015274	0.015274
85	B200200092	BOM	N/A	1	0.019676	0.019676
86	B200200113	BOM	N/A	3	0.009203	0.027609
87	B200200114	BOM	N/A	3	0.011856	0.035568
88	B200200115	BOM	N/A	1	0.007791	0.007791
89	B200200116	BOM	N/A	3	0.007144	0.021432
90	B200200118	BOM	N/A	3	0.015274	0.045822
91	B200200123	BOM	N/A	1	0.005546	0.005546
92	B200200140	BOM	N/A	1	0.006048	0.006048
93	B200200142	BOM	N/A	2	0.014056	0.028112
94	B200200154	BOM	N/A	1	0.009203	0.009203
95	B200220063	BOM	N/A	1	0.002416	0.002416
96	B200230026	BOM	N/A	1	0.050508	0.050508
97	B200230198	BOM	N/A	1	0.058210	0.058210
98	B200230276	BOM	N/A	1	0.027414	0.027414
99	B200230288	BOM	N/A	4	0.019246	0.076984
100	B200230336	BOM	N/A	1	0.025409	0.025409
101	B200230338	BOM	N/A	5	0.029130	0.145650
102	B200230382	BOM	N/A	2	0.150432	0.300864
103	B200230433	BOM	N/A	7	0.048735	0.341145
104	B200250009	BOM	NMIL	1	0.023160	0.023160
105	B200260208	BOM	NMIL	1	0.027440	0.027440
106	B200260274	BOM	NMIL	1	0.027440	0.027440
107	B200280012	BOM	NMIL	3	0.015958	0.047874
108	B200290005	BOM	NMIL	1	0.013740	0.013740
109	B200300361	BOM	NMIL	1	0.003845	0.003845
110	B200300363	BOM	NMIL	1	0.026144	0.026144
111	B200300370	BOM	NMIL	1	0.003845	0.003845
112	B200300371	BOM	NMIL	1	0.003845	0.003845

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113	B200300382	BOM	NMIL	1	0.003845	0.003845
114	B200310007	BOM	NMIL	1	0.030600	0.030600
115	B210090168	BOM	KNOWNFR	2	2.098560	4.197120
116	B210160023	BOM	N/A	1	0.010000	0.010000
117	B210191725	N/A	STANDARD	1	0.015865	0.015865

Total Failure Rate (F/10⁶Hrs) : 8.498151
Mean Time (in hours) Between Failures (MTBF) : **117,673**