

## RELIABILITY PREDICTION STANDARD REPORT

(Sorted by Part Number)

MIL-HDBK-217F, Notice 2

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

Date: MAR-30-2010

End Item Title : DM1U2 SERIES MTBF

End Item Part Number : DM1U2-5650V4H (RoHS)

DM1U2-5650V4H (RoHS) MTBF : 194,528

Module Title: ZIPPY TECHNOLOGY CORP

Module Part Number : DM1U/MTBF

Power Unit Module : DM1U-2650V (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.

$$\begin{aligned}\text{Total Failure Rate}(F) &= M \lambda / (3/2) + B \lambda \\ &= 7.201674 / (3/2) + 0.338102 = 5.139218\end{aligned}$$

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

$$\begin{aligned}\text{DM1U2-5650V4H (RoHS)(MTBF)} &= F / 10^6 \text{Hrs} = 5.139218 / 10^6 \\ &= 194,582\end{aligned}$$

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 : MAR-29-2010      Time : 11:48:39  |                                        |                             |              |              |                     |                     |
| End Item Title : DM1U SERIES MTBF        |                                        |                             |              |              |                     |                     |
| End Item Part Number : DM1U-2650V (RoHS) |                                        |                             |              |              |                     |                     |
| Module Title : ZIPPY TECHNOLOGY CORP     |                                        |                             |              |              |                     |                     |
| Module Part Number : DM1U/MTBF           |                                        |                             |              |              |                     |                     |
| Module Reference Designation : DM1U      |                                        |                             |              |              |                     |                     |
| Environmental Condition : GB             |                                        |                             |              |              |                     |                     |
| Ambient Temperature: 25°C                |                                        |                             |              |              |                     |                     |
|                                          |                                        |                             |              |              |                     |                     |
| <b><u>DM1U-2650V (RoHS)</u></b>          |                                        |                             |              |              |                     |                     |
|                                          |                                        |                             |              |              |                     |                     |
| <b>ITEM</b>                              | <b>Part</b>                            | <b>Ref</b>                  | <b>Qual</b>  | <b>Quant</b> | <b>Individual</b>   | <b>Total</b>        |
| <b>#</b>                                 | <b>Number</b>                          | <b>Desig</b>                | <b>Level</b> |              | <b>Failure Rate</b> | <b>Failure Rate</b> |
|                                          |                                        |                             |              |              | <b>(F/10^6Hrs)</b>  | <b>(F/10^6Hrs)</b>  |
| 1                                        | B102330003                             | BOM                         | NMIL         | 1            | 0.132621            | 0.132621            |
| 2                                        | B102330004                             | BOM                         | NMIL         | 1            | 0.069564            | 0.069564            |
| 3                                        | B102330005                             | BOM                         | NMIL         | 1            | 0.125731            | 0.125731            |
| 4                                        | B103160002                             | BOM                         | NMIL         | 1            | 0.206970            | 0.206970            |
| 5                                        | B103160003                             | BOM                         | NMIL         | 1            | 0.130324            | 0.130324            |
| 6                                        | B103160004                             | BOM                         | NMIL         | 1            | 0.008316            | 0.008316            |
| 7                                        | B103160005                             | BOM                         | NMIL         | 1            | 1.222003            | 1.222003            |
| 8                                        | B103180007                             | BOM                         | NMIL         | 1            | 0.044939            | 0.044939            |
| 9                                        | B200000001                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 10                                       | B200000296                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 11                                       | B200000316                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 12                                       | B200000332                             | BOM                         | SPECIAL      | 2            | 0.094935            | 0.189870            |
| 13                                       | B200000333                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 14                                       | B200000357                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 15                                       | B200000364                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 16                                       | B200010052                             | BOM                         | NMIL         | 2            | 0.000798            | 0.001596            |
| 17                                       | B200010109                             | BOM                         | NMIL         | 6            | 0.000798            | 0.004788            |
| 18                                       | B200010112                             | BOM                         | NMIL         | 4            | 0.031398            | 0.125592            |
| 19                                       | B200010116                             | BOM                         | NMIL         | 8            | 0.031398            | 0.251184            |
| 20                                       | B200010125                             | BOM                         | NMIL         | 1            | 0.000798            | 0.000798            |
| 21                                       | B200010140                             | BOM                         | NMIL         | 1            | 0.031398            | 0.031398            |

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10F, No.50, MIN CHYUAN RD  
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|    |            |     |      |    |          |          |
|----|------------|-----|------|----|----------|----------|
| 22 | B200020016 | BOM | NMIL | 1  | 0.005156 | 0.005156 |
| 23 | B200020017 | BOM | NMIL | 3  | 0.005156 | 0.015468 |
| 24 | B200030019 | BOM | NMIL | 4  | 0.001995 | 0.007980 |
| 25 | B200030029 | BOM | NMIL | 1  | 0.007617 | 0.007617 |
| 26 | B200030037 | BOM | NMIL | 2  | 0.007617 | 0.015234 |
| 27 | B200040053 | BOM | NMIL | 1  | 0.016111 | 0.016111 |
| 28 | B200040065 | BOM | NMIL | 1  | 0.005967 | 0.005967 |
| 29 | B200040073 | BOM | NMIL | 12 | 0.005967 | 0.071604 |
| 30 | B200040083 | BOM | NMIL | 1  | 0.016111 | 0.016111 |
| 31 | B200040084 | BOM | NMIL | 1  | 0.007909 | 0.007909 |
| 32 | B200050024 | BOM | NMIL | 1  | 0.005218 | 0.005218 |
| 33 | B200050037 | BOM | NMIL | 5  | 0.005218 | 0.026090 |
| 34 | B200050070 | BOM | NMIL | 6  | 0.005218 | 0.031308 |
| 35 | B200090005 | BOM | NMIL | 1  | 0.001518 | 0.001518 |
| 36 | B200110006 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 37 | B200110042 | BOM | NMIL | 10 | 0.004650 | 0.046500 |
| 38 | B200110046 | BOM | NMIL | 4  | 0.004650 | 0.018600 |
| 39 | B200110095 | BOM | NMIL | 10 | 0.004650 | 0.046500 |
| 40 | B200110120 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 41 | B200110123 | BOM | NMIL | 2  | 0.004650 | 0.009300 |
| 42 | B200110172 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 43 | B200110177 | BOM | NMIL | 3  | 0.004650 | 0.013950 |
| 44 | B200110192 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 45 | B200110202 | BOM | NMIL | 3  | 0.004650 | 0.013950 |
| 46 | B200110227 | BOM | NMIL | 5  | 0.004650 | 0.023250 |
| 47 | B200110235 | BOM | NMIL | 3  | 0.004650 | 0.013950 |
| 48 | B200110311 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 49 | B200110313 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 50 | B200110357 | BOM | NMIL | 2  | 0.004650 | 0.009300 |
| 51 | B200110488 | BOM | NMIL | 2  | 0.004650 | 0.009300 |
| 52 | B200110489 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 53 | B200110490 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 54 | B200110491 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 55 | B200110503 | BOM | NMIL | 4  | 0.005115 | 0.020460 |
| 56 | B200110506 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 57 | B200110512 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 58 | B200110523 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 59 | B200110524 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 60 | B200110541 | BOM | NMIL | 1  | 0.004650 | 0.004650 |
| 61 | B200110551 | BOM | NMIL | 1  | 0.004650 | 0.004650 |

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|     |            |     |      |   |          |          |
|-----|------------|-----|------|---|----------|----------|
| 62  | B200110571 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 63  | B200110581 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 64  | B200110584 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 65  | B200110613 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 66  | B200110627 | BOM | NMIL | 2 | 0.005115 | 0.010230 |
| 67  | B200110638 | BOM | NMIL | 1 | 0.005115 | 0.005115 |
| 68  | B200120172 | BOM | NMIL | 1 | 0.008705 | 0.008705 |
| 69  | B200120173 | BOM | NMIL | 1 | 0.006870 | 0.006870 |
| 70  | B200120174 | BOM | NMIL | 1 | 0.008705 | 0.008705 |
| 71  | B200160034 | BOM | NMIL | 1 | 0.105000 | 0.105000 |
| 72  | B200170015 | BOM | NMIL | 2 | 0.008810 | 0.017620 |
| 73  | B200190065 | BOM | N/A  | 1 | 0.014104 | 0.014104 |
| 74  | B200200012 | BOM | N/A  | 4 | 0.009203 | 0.036812 |
| 75  | B200200017 | BOM | N/A  | 6 | 0.011856 | 0.071136 |
| 76  | B200200021 | BOM | N/A  | 2 | 0.015274 | 0.030548 |
| 77  | B200200053 | BOM | N/A  | 3 | 0.014056 | 0.042168 |
| 78  | B200200057 | BOM | N/A  | 1 | 0.018108 | 0.018108 |
| 79  | B200200060 | BOM | N/A  | 2 | 0.012930 | 0.025860 |
| 80  | B200200062 | BOM | N/A  | 1 | 0.007791 | 0.007791 |
| 81  | B200200069 | BOM | N/A  | 1 | 0.006575 | 0.006575 |
| 82  | B200200082 | BOM | N/A  | 7 | 0.016657 | 0.116599 |
| 83  | B200200096 | BOM | N/A  | 2 | 0.008147 | 0.016294 |
| 84  | B200220010 | BOM | N/A  | 3 | 0.002761 | 0.008283 |
| 85  | B200220036 | BOM | N/A  | 4 | 0.002647 | 0.010588 |
| 86  | B200220048 | BOM | N/A  | 1 | 0.002647 | 0.002647 |
| 87  | B200230226 | BOM | N/A  | 2 | 0.022233 | 0.044466 |
| 88  | B200230277 | BOM | N/A  | 1 | 0.041493 | 0.041493 |
| 89  | B200230337 | BOM | N/A  | 1 | 0.022047 | 0.022047 |
| 90  | B200230338 | BOM | N/A  | 1 | 0.029130 | 0.029130 |
| 91  | B200230356 | BOM | N/A  | 3 | 0.044090 | 0.132270 |
| 92  | B200230381 | BOM | N/A  | 2 | 0.047121 | 0.094242 |
| 93  | B200230387 | BOM | N/A  | 2 | 0.052193 | 0.104386 |
| 94  | B200230388 | BOM | N/A  | 2 | 0.032199 | 0.064398 |
| 95  | B200260269 | BOM | NMIL | 2 | 0.043960 | 0.087920 |
| 96  | B200260274 | BOM | NMIL | 1 | 0.043960 | 0.043960 |
| 97  | B200260275 | BOM | NMIL | 1 | 0.043960 | 0.043960 |
| 98  | B200260276 | BOM | NMIL | 1 | 0.043960 | 0.043960 |
| 99  | B200260277 | BOM | NMIL | 1 | 0.043960 | 0.043960 |
| 100 | B200280017 | BOM | NMIL | 2 | 0.015958 | 0.031916 |
| 101 | B200290011 | BOM | NMIL | 2 | 0.013740 | 0.027480 |

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|     |            |                                                |                                  |   |          |          |
|-----|------------|------------------------------------------------|----------------------------------|---|----------|----------|
| 102 | B200300295 | BOM                                            | NMIL                             | 1 | 0.026144 | 0.026144 |
| 103 | B200300311 | BOM                                            | NMIL                             | 1 | 0.003845 | 0.003845 |
| 104 | B210090090 | BOM                                            | KNOWNFR                          | 1 | 2.030495 | 2.030495 |
| 105 | B210160043 | BOM                                            | N/A                              | 1 | 0.010000 | 0.010000 |
| 106 | B210191265 | N/A                                            | STANDARD                         | 1 | 0.020588 | 0.020588 |
|     |            |                                                |                                  |   |          |          |
|     |            |                                                |                                  |   |          |          |
|     |            |                                                | Total Failure Rate (F/10^6Hrs) : |   |          | 7.201674 |
|     |            | Mean Time (in hours) Between Failures (MTBF) : |                                  |   |          | 138,857  |