

## RELIABILITY PREDICTION STANDARD REPORT

(Sorted by Part Number)

MIL-HDBK-217F, Notice 2

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

Date: MAR-09-2009

End Item Title : R1S SERIES MTBF

End Item Part Number : R1S2-5380V4H (RoHS)

R1S2-5380V4H (RoHS) MTBF : 223,678

Module Title: ZIPPY TECHNOLOGY CORP

Module Part Number : P1S / MTBF

Power Unit Module : P1S-2400V-R (RoHS)

Environmental Condition: GB

### 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.

$$\begin{aligned}\text{Total Failure Rate}(F) &= M \lambda / ( 3 / 2 ) + B \lambda \\ &= 5.687795 / ( 3 / 2 ) + 0.678840 = 4.470703\end{aligned}$$

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

$$\begin{aligned}\text{R1S2-5380V4H (RoHS)(MTBF)} &= F / 10^6 \text{Hrs} = 4.470703 / 10^6 \\ &= 223,678\end{aligned}$$

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-09-2009      Time : 14:40:29   |                                        |                             |              |              |                     |                     |
| End Item Title : P1S SERIES MTBF          |                                        |                             |              |              |                     |                     |
| End Item Part Number : P1S-2400V-R (RoHS) |                                        |                             |              |              |                     |                     |
| Module Title : ZIPPY TECHNOLOGY CORP      |                                        |                             |              |              |                     |                     |
| Module Part Number : P1S/MTBF             |                                        |                             |              |              |                     |                     |
| Module Reference Designation : P1S        |                                        |                             |              |              |                     |                     |
| Environmental Condition : GB              |                                        |                             |              |              |                     |                     |
|                                           |                                        |                             |              |              |                     |                     |
|                                           |                                        |                             |              |              |                     |                     |
| <b><u>P1S-2400V-R (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                                         | B103120002                             | BOM                         | NMIL         | 1            | 0.290448            | 0.290448            |
| 2                                         | B103120007                             | BOM                         | NMIL         | 1            | 0.220943            | 0.220943            |
| 3                                         | B200000001                             | BOM                         | SPECIAL      | 3            | 0.094935            | 0.284805            |
| 4                                         | B200000092                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 5                                         | B200000144                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 6                                         | B200000242                             | BOM                         | SPECIAL      | 2            | 0.094935            | 0.189870            |
| 7                                         | B200000272                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 8                                         | B200000276                             | BOM                         | SPECIAL      | 1            | 0.094935            | 0.094935            |
| 9                                         | B200010057                             | BOM                         | NMIL         | 4            | 0.031398            | 0.125592            |
| 10                                        | B200010067                             | BOM                         | NMIL         | 1            | 0.000798            | 0.000798            |
| 11                                        | B200010083                             | BOM                         | NMIL         | 1            | 0.000798            | 0.000798            |
| 12                                        | B200020004                             | BOM                         | NMIL         | 8            | 0.005156            | 0.041248            |
| 13                                        | B200030018                             | BOM                         | NMIL         | 2            | 0.018136            | 0.036272            |
| 14                                        | B200030019                             | BOM                         | NMIL         | 1            | 0.018136            | 0.018136            |
| 15                                        | B200040029                             | BOM                         | NMIL         | 1            | 0.005967            | 0.005967            |
| 16                                        | B200050036                             | BOM                         | NMIL         | 1            | 0.005218            | 0.005218            |
| 17                                        | B200050040                             | BOM                         | NMIL         | 1            | 0.005218            | 0.005218            |
| 18                                        | B200050045                             | BOM                         | NMIL         | 3            | 0.005218            | 0.015654            |
| 19                                        | B200050054                             | BOM                         | NMIL         | 1            | 0.078027            | 0.078027            |
| 20                                        | B200060007                             | BOM                         | NMIL         | 1            | 0.012969            | 0.012969            |
| 21                                        | B200110001                             | BOM                         | NMIL         | 1            | 0.004650            | 0.004650            |

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

|    |            |     |      |   |          |          |
|----|------------|-----|------|---|----------|----------|
| 22 | B200110035 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 23 | B200110042 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 24 | B200110046 | BOM | NMIL | 6 | 0.004650 | 0.027900 |
| 25 | B200110073 | BOM | NMIL | 2 | 0.005115 | 0.010230 |
| 26 | B200110087 | BOM | NMIL | 5 | 0.004650 | 0.023250 |
| 27 | B200110120 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 28 | B200110123 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 29 | B200110172 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 30 | B200110192 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 31 | B200110261 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 32 | B200110282 | BOM | NMIL | 4 | 0.004650 | 0.018600 |
| 33 | B200110311 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 34 | B200110340 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 35 | B200110343 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 36 | B200110489 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 37 | B200110494 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 38 | B200110498 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 39 | B200110503 | BOM | NMIL | 1 | 0.005115 | 0.005115 |
| 40 | B200110506 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 41 | B200110510 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 42 | B200110519 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 43 | B200110520 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 44 | B200110521 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 45 | B200110523 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 46 | B200110524 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 47 | B200110544 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 48 | B200110549 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 49 | B200110550 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 50 | B200110561 | BOM | NMIL | 4 | 0.004650 | 0.018600 |
| 51 | B200110588 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 52 | B200110594 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 53 | B200110598 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 54 | B200110599 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 55 | B200110659 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 56 | B200120015 | BOM | NMIL | 1 | 0.008509 | 0.008509 |
| 57 | B200120017 | BOM | NMIL | 1 | 0.009576 | 0.009576 |
| 58 | B200120099 | BOM | NMIL | 1 | 0.007735 | 0.007735 |
| 59 | B200120156 | BOM | NMIL | 1 | 0.006870 | 0.006870 |
| 60 | B200140018 | BOM | NMIL | 1 | 0.035297 | 0.035297 |
| 61 | B200160011 | BOM | NMIL | 1 | 0.065000 | 0.065000 |

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

|    |            |     |                                                |   |          |          |
|----|------------|-----|------------------------------------------------|---|----------|----------|
| 62 | B200160017 | BOM | NMIL                                           | 1 | 0.065000 | 0.065000 |
| 63 | B200170026 | BOM | NMIL                                           | 2 | 0.005156 | 0.010312 |
| 64 | B200180016 | BOM | N/A                                            | 1 | 0.008923 | 0.008923 |
| 65 | B200190064 | BOM | N/A                                            | 1 | 0.016840 | 0.016840 |
| 66 | B200200006 | BOM | N/A                                            | 2 | 0.007144 | 0.014288 |
| 67 | B200200012 | BOM | N/A                                            | 2 | 0.009203 | 0.018406 |
| 68 | B200200017 | BOM | N/A                                            | 5 | 0.011856 | 0.059280 |
| 69 | B200200060 | BOM | N/A                                            | 1 | 0.012930 | 0.012930 |
| 70 | B200200061 | BOM | N/A                                            | 3 | 0.008470 | 0.025410 |
| 71 | B200200069 | BOM | N/A                                            | 1 | 0.006575 | 0.006575 |
| 72 | B200200101 | BOM | N/A                                            | 2 | 0.016657 | 0.033314 |
| 73 | B200220018 | BOM | N/A                                            | 3 | 0.002416 | 0.007248 |
| 74 | B200220021 | BOM | N/A                                            | 1 | 0.002337 | 0.002337 |
| 75 | B200220043 | BOM | N/A                                            | 1 | 0.002416 | 0.002416 |
| 76 | B200230132 | BOM | N/A                                            | 1 | 0.036220 | 0.036220 |
| 77 | B200230198 | BOM | N/A                                            | 5 | 0.058210 | 0.291050 |
| 78 | B200230210 | BOM | N/A                                            | 1 | 0.050508 | 0.050508 |
| 79 | B200230229 | BOM | N/A                                            | 1 | 0.232432 | 0.232432 |
| 80 | B200230338 | BOM | N/A                                            | 2 | 0.029130 | 0.058260 |
| 81 | B200250009 | BOM | NMIL                                           | 1 | 0.082858 | 0.082858 |
| 82 | B200260212 | BOM | NMIL                                           | 1 | 0.088051 | 0.088051 |
| 83 | B200260227 | BOM | NMIL                                           | 1 | 0.088051 | 0.088051 |
| 84 | B200260255 | BOM | NMIL                                           | 1 | 0.088051 | 0.088051 |
| 85 | B200280002 | BOM | NMIL                                           | 1 | 0.015958 | 0.015958 |
| 86 | B200300236 | BOM | NMIL                                           | 1 | 0.003845 | 0.003845 |
| 87 | B200300267 | BOM | NMIL                                           | 1 | 0.003845 | 0.003845 |
| 88 | B200300278 | BOM | NMIL                                           | 1 | 0.026144 | 0.026144 |
| 89 | B200310007 | BOM | NMIL                                           | 1 | 0.030600 | 0.030600 |
| 90 | B210090122 | BOM | KNOWNFR                                        | 1 | 2.134055 | 2.134055 |
| 91 | B210160006 | BOM | N/A                                            | 1 | 0.010000 | 0.010000 |
| 92 | B210190989 | N/A | STANDARD                                       | 1 | 0.022077 | 0.022077 |
| 93 | B210190990 | N/A | STANDARD                                       | 1 | 0.022077 | 0.022077 |
|    |            |     |                                                |   |          |          |
|    |            |     |                                                |   |          |          |
|    |            |     | Total Failure Rate (F/10^6Hrs) :               |   |          | 5.687795 |
|    |            |     | Mean Time (in hours) Between Failures (MTBF) : |   |          | 175,815  |