



TEST DATA OF CBS2004815

(48V INPUT)

Regulated DC Power Supply
Mar. 3, 2001

Approved by : Takayuki Fukuda
Takayuki Fukuda Design Manager

Prepared by : Atsushi Yoshiyama
Atsushi Yoshiyama Design Engineer

コーセル株式会社
COSEL CO.,LTD.



CONTENTS

| | |
|--|----|
| 1. Line Regulation | 1 |
| 静的入力変動 | |
| 2. Input Current (by Input Voltage) | 2 |
| 入力電流 (入力電圧特性) | |
| 3. Input Current (by Load Current) | 3 |
| 入力電流 (負荷特性) | |
| 4. Input Power (by Load Current) | 4 |
| 入力電力 (負荷特性) | |
| 5. Efficiency (by Input Voltage) | 5 |
| 効率 (入力電圧特性) | |
| 6. Efficiency (by Load Current) | 6 |
| 効率 (負荷特性) | |
| 7. Load Regulation | 7 |
| 静的負荷変動 | |
| 8. Ripple Voltage (by Load Current) | 8 |
| リップル電圧 (負荷特性) | |
| 9. Ripple-Noise | 9 |
| リップルノイズ | |
| 10. Overcurrent Protection | 10 |
| 過電流保護 | |
| 11. Overvoltage Protection | 11 |
| 過電圧保護 | |
| 12. Dynamic Load Response | 12 |
| 動的負荷変動 | |
| 13. Rise and Fall Time | 13 |
| 立上り、立下り時間 | |
| 14. Ambient Temperature Drift | 14 |
| 周囲温度変動 | |
| 15. Minimum Input Voltage for Regulated Output Voltage | 15 |
| 最低レギュレーション電圧 | |
| 16. Ripple Voltage (by Ambient Temperature) | 16 |
| リップル電圧 (周囲温度特性) | |
| 17. Time Lapse Drift | 17 |
| 経時ドリフト | |
| 18. Output Voltage Accuracy | 18 |
| 定電圧精度 | |
| 19. Condensation | 19 |
| 結露特性 | |
| 20. Line Noise Tolerance | 20 |
| 入力雑音耐量 | |
| 21. Figure of Testing Circuitry | 21 |
| 測定回路図 | |

(Final Page 21)

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---------------------------|--|----------|-------------------|--------------------|--|----------|-----------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|
| Item | Line Regulation 静的入力変動 | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>33</td><td>15.132</td><td>15.130</td></tr> <tr><td>36</td><td>15.131</td><td>15.130</td></tr> <tr><td>40</td><td>15.131</td><td>15.130</td></tr> <tr><td>48</td><td>15.131</td><td>15.130</td></tr> <tr><td>55</td><td>15.131</td><td>15.129</td></tr> <tr><td>60</td><td>15.131</td><td>15.129</td></tr> <tr><td>70</td><td>15.131</td><td>15.129</td></tr> <tr><td>76</td><td>15.131</td><td>15.129</td></tr> <tr><td>80</td><td>15.131</td><td>15.129</td></tr> </tbody> </table> | | Input Voltage [V] | Output Voltage [V] | | Load 50% | Load 100% | 33 | 15.132 | 15.130 | 36 | 15.131 | 15.130 | 40 | 15.131 | 15.130 | 48 | 15.131 | 15.130 | 55 | 15.131 | 15.129 | 60 | 15.131 | 15.129 | 70 | 15.131 | 15.129 | 76 | 15.131 | 15.129 | 80 | 15.131 | 15.129 |
| Input Voltage [V] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 15.132 | 15.130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 15.131 | 15.130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 15.131 | 15.130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 15.131 | 15.130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | 15.131 | 15.129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 15.131 | 15.129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 15.131 | 15.129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76 | 15.131 | 15.129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 15.131 | 15.129 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: Slanted line shows the range of the rated input voltage.

(注) 斜線は定格入力電圧範囲を示す。

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------------|-------------------|-------------------|--|--|---------|----------|-----------|-----|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|-----|---|---|---|-----|---|---|---|-----|---|---|---|-----|---|---|---|
| Item | Input Current (by Input Voltage) 入力電流 (入力電圧特性) | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>Input Current [A]</p> <p>Input Voltage [V]</p> <p>Legend:</p> <ul style="list-style-type: none"> Load 100% (Triangles) Load 50% (Squares) Load 0% (Circles) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated input voltage. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (注) 斜線は定格入力電圧範囲を示す。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Load 0%</th> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>8.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>16.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>24.0</td><td>0.009</td><td>0.009</td><td>0.009</td></tr> <tr><td>31.4</td><td>0.091</td><td>3.768</td><td>7.520</td></tr> <tr><td>33.0</td><td>0.088</td><td>3.542</td><td>7.240</td></tr> <tr><td>36.0</td><td>0.083</td><td>3.206</td><td>6.520</td></tr> <tr><td>40.0</td><td>0.077</td><td>2.878</td><td>5.800</td></tr> <tr><td>48.0</td><td>0.063</td><td>2.406</td><td>4.820</td></tr> <tr><td>60.0</td><td>0.052</td><td>1.936</td><td>3.840</td></tr> <tr><td>70.0</td><td>0.048</td><td>1.668</td><td>3.294</td></tr> <tr><td>76.0</td><td>0.045</td><td>1.543</td><td>3.036</td></tr> <tr><td>80.0</td><td>0.044</td><td>1.470</td><td>2.888</td></tr> <tr><td>---</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>---</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>---</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>---</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table> | | | Input Voltage [V] | Input Current [A] | | | Load 0% | Load 50% | Load 100% | 8.0 | 0.000 | 0.000 | 0.000 | 16.0 | 0.000 | 0.000 | 0.000 | 24.0 | 0.009 | 0.009 | 0.009 | 31.4 | 0.091 | 3.768 | 7.520 | 33.0 | 0.088 | 3.542 | 7.240 | 36.0 | 0.083 | 3.206 | 6.520 | 40.0 | 0.077 | 2.878 | 5.800 | 48.0 | 0.063 | 2.406 | 4.820 | 60.0 | 0.052 | 1.936 | 3.840 | 70.0 | 0.048 | 1.668 | 3.294 | 76.0 | 0.045 | 1.543 | 3.036 | 80.0 | 0.044 | 1.470 | 2.888 | --- | — | — | — | --- | — | — | — | --- | — | — | — | --- | — | — | — |
| Input Voltage [V] | Input Current [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 0% | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 0.000 | 0.000 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.0 | 0.000 | 0.000 | 0.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24.0 | 0.009 | 0.009 | 0.009 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31.4 | 0.091 | 3.768 | 7.520 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33.0 | 0.088 | 3.542 | 7.240 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36.0 | 0.083 | 3.206 | 6.520 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40.0 | 0.077 | 2.878 | 5.800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48.0 | 0.063 | 2.406 | 4.820 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60.0 | 0.052 | 1.936 | 3.840 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70.0 | 0.048 | 1.668 | 3.294 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76.0 | 0.045 | 1.543 | 3.036 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80.0 | 0.044 | 1.470 | 2.888 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------------|-------------------------------|-----------------------|-----------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---|---|---|---|---|---|---|--|--|--|
| Item | Input Current (by Load Current) 入力電流 (負荷特性) | Temperature 25°C | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>—△— Input Volt. 36V - - -□- Input Volt. 48V - - ○- Input Volt. 76V</p> <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Current 36V [A]</th> <th>Input Current 48V [A]</th> <th>Input Current 76V [A]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.082</td><td>0.062</td><td>0.044</td></tr> <tr><td>2.0</td><td>1.012</td><td>0.774</td><td>0.509</td></tr> <tr><td>4.0</td><td>1.918</td><td>1.449</td><td>0.948</td></tr> <tr><td>6.0</td><td>2.844</td><td>2.140</td><td>1.380</td></tr> <tr><td>8.0</td><td>3.798</td><td>2.842</td><td>1.820</td></tr> <tr><td>10.0</td><td>4.720</td><td>3.536</td><td>2.264</td></tr> <tr><td>12.0</td><td>5.710</td><td>4.261</td><td>2.717</td></tr> <tr><td>13.4</td><td>6.410</td><td>4.770</td><td>3.026</td></tr> <tr><td>14.8</td><td>7.080</td><td>5.270</td><td>3.354</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table> | Load Current [A] | Input Current 36V [A] | Input Current 48V [A] | Input Current 76V [A] | 0.0 | 0.082 | 0.062 | 0.044 | 2.0 | 1.012 | 0.774 | 0.509 | 4.0 | 1.918 | 1.449 | 0.948 | 6.0 | 2.844 | 2.140 | 1.380 | 8.0 | 3.798 | 2.842 | 1.820 | 10.0 | 4.720 | 3.536 | 2.264 | 12.0 | 5.710 | 4.261 | 2.717 | 13.4 | 6.410 | 4.770 | 3.026 | 14.8 | 7.080 | 5.270 | 3.354 | — | — | — | — | — | — | — | — | | | | | | |
| Load Current [A] | Input Current 36V [A] | Input Current 48V [A] | Input Current 76V [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 0.082 | 0.062 | 0.044 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 1.012 | 0.774 | 0.509 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 1.918 | 1.449 | 0.948 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 2.844 | 2.140 | 1.380 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 3.798 | 2.842 | 1.820 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 4.720 | 3.536 | 2.264 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 5.710 | 4.261 | 2.717 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 6.410 | 4.770 | 3.026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 7.080 | 5.270 | 3.354 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.082</td><td>0.062</td><td>0.044</td></tr> <tr><td>2.0</td><td>1.012</td><td>0.774</td><td>0.509</td></tr> <tr><td>4.0</td><td>1.918</td><td>1.449</td><td>0.948</td></tr> <tr><td>6.0</td><td>2.844</td><td>2.140</td><td>1.380</td></tr> <tr><td>8.0</td><td>3.798</td><td>2.842</td><td>1.820</td></tr> <tr><td>10.0</td><td>4.720</td><td>3.536</td><td>2.264</td></tr> <tr><td>12.0</td><td>5.710</td><td>4.261</td><td>2.717</td></tr> <tr><td>13.4</td><td>6.410</td><td>4.770</td><td>3.026</td></tr> <tr><td>14.8</td><td>7.080</td><td>5.270</td><td>3.354</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table> | Load Current [A] | Input Current [A] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | 0.0 | 0.082 | 0.062 | 0.044 | 2.0 | 1.012 | 0.774 | 0.509 | 4.0 | 1.918 | 1.449 | 0.948 | 6.0 | 2.844 | 2.140 | 1.380 | 8.0 | 3.798 | 2.842 | 1.820 | 10.0 | 4.720 | 3.536 | 2.264 | 12.0 | 5.710 | 4.261 | 2.717 | 13.4 | 6.410 | 4.770 | 3.026 | 14.8 | 7.080 | 5.270 | 3.354 | — | — | — | — | — | — | — | — | | | |
| Load Current [A] | Input Current [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 0.082 | 0.062 | 0.044 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 1.012 | 0.774 | 0.509 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 1.918 | 1.449 | 0.948 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 2.844 | 2.140 | 1.380 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 3.798 | 2.842 | 1.820 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 4.720 | 3.536 | 2.264 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 5.710 | 4.261 | 2.717 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 6.410 | 4.770 | 3.026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 7.080 | 5.270 | 3.354 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated load current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (注) 斜線は定格負荷電流範囲を示す。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|-------------------|-------------------|------------------|-----------------|---------|---------|-------------------|-------------------|-------------------|-----|-----|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|---|---|---|-----|---|---|---|
| Item | Input Power (by Load Current) 入力電力 (負荷特性) | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | <hr/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>—▲— Input Volt. 36V - - - □ - - Input Volt. 48V - - ○ - - Input Volt. 76V</p> <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>36V [W]</th> <th>48V [W]</th> <th>76V [W]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>2.0</td><td>36.6</td><td>37.2</td><td>38.7</td></tr> <tr><td>4.0</td><td>73.2</td><td>74.4</td><td>77.4</td></tr> <tr><td>6.0</td><td>110.8</td><td>112.8</td><td>122.4</td></tr> <tr><td>8.0</td><td>148.4</td><td>151.2</td><td>161.6</td></tr> <tr><td>10.0</td><td>186.0</td><td>189.2</td><td>198.4</td></tr> <tr><td>12.0</td><td>223.6</td><td>228.8</td><td>240.0</td></tr> <tr><td>13.4</td><td>244.4</td><td>249.6</td><td>260.8</td></tr> <tr><td>14.8</td><td>265.2</td><td>270.4</td><td>281.6</td></tr> </tbody> </table> | | | Load Current [A] | 36V [W] | 48V [W] | 76V [W] | 0.0 | 0 | 0 | 0 | 2.0 | 36.6 | 37.2 | 38.7 | 4.0 | 73.2 | 74.4 | 77.4 | 6.0 | 110.8 | 112.8 | 122.4 | 8.0 | 148.4 | 151.2 | 161.6 | 10.0 | 186.0 | 189.2 | 198.4 | 12.0 | 223.6 | 228.8 | 240.0 | 13.4 | 244.4 | 249.6 | 260.8 | 14.8 | 265.2 | 270.4 | 281.6 | | | | | | | | | | | |
| Load Current [A] | 36V [W] | 48V [W] | 76V [W] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 36.6 | 37.2 | 38.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 73.2 | 74.4 | 77.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 110.8 | 112.8 | 122.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 148.4 | 151.2 | 161.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 186.0 | 189.2 | 198.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 223.6 | 228.8 | 240.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 244.4 | 249.6 | 260.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 265.2 | 270.4 | 281.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Power [W]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>3.0</td><td>3.0</td><td>3.4</td></tr> <tr><td>2.0</td><td>36.6</td><td>37.2</td><td>38.7</td></tr> <tr><td>4.0</td><td>69.1</td><td>69.4</td><td>72.2</td></tr> <tr><td>6.0</td><td>102.1</td><td>102.6</td><td>104.9</td></tr> <tr><td>8.0</td><td>135.7</td><td>135.8</td><td>138.6</td></tr> <tr><td>10.0</td><td>170.2</td><td>169.7</td><td>172.2</td></tr> <tr><td>12.0</td><td>205.1</td><td>204.0</td><td>206.1</td></tr> <tr><td>13.4</td><td>229.7</td><td>228.1</td><td>230.1</td></tr> <tr><td>14.8</td><td>255.3</td><td>252.9</td><td>254.8</td></tr> <tr><td>---</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>---</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table> | | | Load Current [A] | Input Power [W] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | 0.0 | 3.0 | 3.0 | 3.4 | 2.0 | 36.6 | 37.2 | 38.7 | 4.0 | 69.1 | 69.4 | 72.2 | 6.0 | 102.1 | 102.6 | 104.9 | 8.0 | 135.7 | 135.8 | 138.6 | 10.0 | 170.2 | 169.7 | 172.2 | 12.0 | 205.1 | 204.0 | 206.1 | 13.4 | 229.7 | 228.1 | 230.1 | 14.8 | 255.3 | 252.9 | 254.8 | --- | - | - | - | --- | - | - | - |
| Load Current [A] | Input Power [W] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 3.0 | 3.0 | 3.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 36.6 | 37.2 | 38.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 69.1 | 69.4 | 72.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 102.1 | 102.6 | 104.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 135.7 | 135.8 | 138.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 170.2 | 169.7 | 172.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 205.1 | 204.0 | 206.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 229.7 | 228.1 | 230.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 255.3 | 252.9 | 254.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| --- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

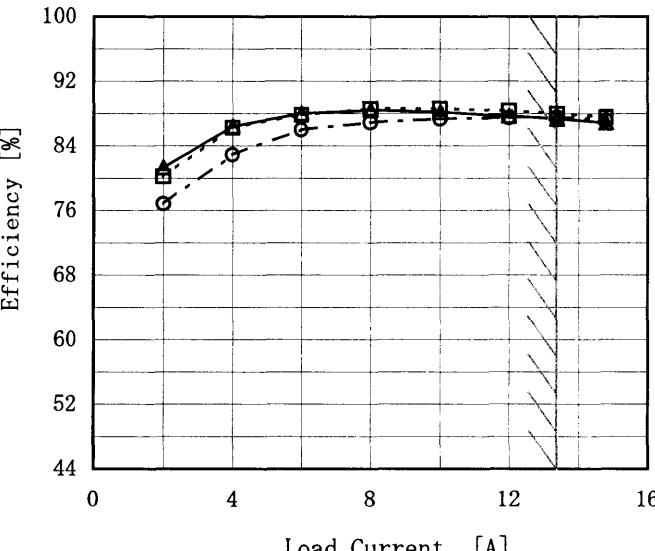
Note: Slanted line shows the range of the rated load current.

(注) 斜線は定格負荷電流範囲を示す。

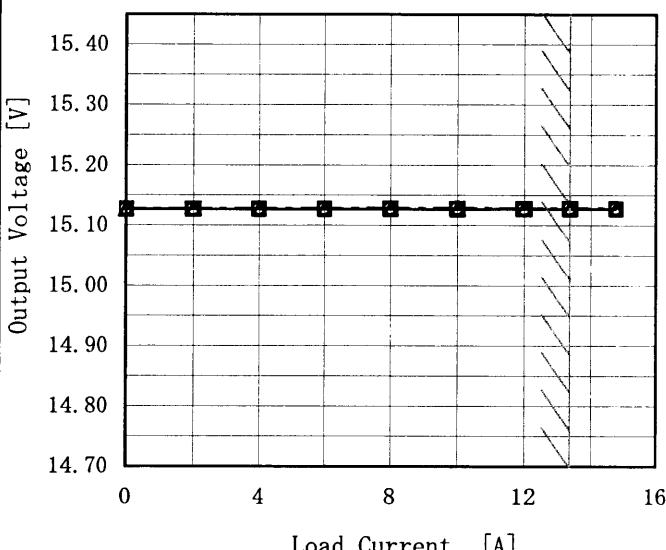
COSSEL

| Model | CBS2004815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|----------------|--|----------|-----------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|
| Item | Efficiency (by Input Voltage) 効率(入力電圧特性) | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>33</td><td>87.8</td><td>86.8</td></tr> <tr><td>36</td><td>88.4</td><td>87.5</td></tr> <tr><td>40</td><td>88.7</td><td>88.0</td></tr> <tr><td>48</td><td>88.3</td><td>88.0</td></tr> <tr><td>55</td><td>87.9</td><td>88.2</td></tr> <tr><td>60</td><td>87.7</td><td>88.1</td></tr> <tr><td>70</td><td>87.0</td><td>87.6</td></tr> <tr><td>76</td><td>86.6</td><td>87.4</td></tr> <tr><td>80</td><td>86.4</td><td>87.3</td></tr> </tbody> </table> | | Input Voltage [V] | Efficiency [%] | | Load 50% | Load 100% | 33 | 87.8 | 86.8 | 36 | 88.4 | 87.5 | 40 | 88.7 | 88.0 | 48 | 88.3 | 88.0 | 55 | 87.9 | 88.2 | 60 | 87.7 | 88.1 | 70 | 87.0 | 87.6 | 76 | 86.6 | 87.4 | 80 | 86.4 | 87.3 |
| Input Voltage [V] | Efficiency [%] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 87.8 | 86.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 88.4 | 87.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 88.7 | 88.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 88.3 | 88.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | 87.9 | 88.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 87.7 | 88.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 87.0 | 87.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76 | 86.6 | 87.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 86.4 | 87.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|----------------------|-------------------------------|------------------|----------------------|----------------------|----------------------|-------------------|-------------------|-------------------|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|---|---|---|----|---|---|---|
| Item | Efficiency (by Load Current) 効率(負荷特性) | Temperature 25°C | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>—△— Input Volt. 36V - - -□- Input Volt. 48V - - ○- Input Volt. 76V</p>  <table border="1"> <caption>Data points estimated from Figure A graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Efficiency [36V] (%)</th> <th>Efficiency [48V] (%)</th> <th>Efficiency [76V] (%)</th> </tr> </thead> <tbody> <tr><td>2.0</td><td>81.3</td><td>80.2</td><td>76.8</td></tr> <tr><td>4.0</td><td>86.4</td><td>86.3</td><td>82.9</td></tr> <tr><td>6.0</td><td>88.0</td><td>87.8</td><td>86.0</td></tr> <tr><td>8.0</td><td>88.4</td><td>88.6</td><td>86.9</td></tr> <tr><td>10.0</td><td>88.2</td><td>88.6</td><td>87.3</td></tr> <tr><td>12.0</td><td>87.7</td><td>88.3</td><td>87.5</td></tr> <tr><td>13.4</td><td>87.4</td><td>88.0</td><td>87.5</td></tr> <tr><td>14.8</td><td>86.9</td><td>87.6</td><td>87.1</td></tr> </tbody> </table> | | | Load Current [A] | Efficiency [36V] (%) | Efficiency [48V] (%) | Efficiency [76V] (%) | 2.0 | 81.3 | 80.2 | 76.8 | 4.0 | 86.4 | 86.3 | 82.9 | 6.0 | 88.0 | 87.8 | 86.0 | 8.0 | 88.4 | 88.6 | 86.9 | 10.0 | 88.2 | 88.6 | 87.3 | 12.0 | 87.7 | 88.3 | 87.5 | 13.4 | 87.4 | 88.0 | 87.5 | 14.8 | 86.9 | 87.6 | 87.1 | | | | | | | | | | | | | | | |
| Load Current [A] | Efficiency [36V] (%) | Efficiency [48V] (%) | Efficiency [76V] (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 81.3 | 80.2 | 76.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 86.4 | 86.3 | 82.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 88.0 | 87.8 | 86.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 88.4 | 88.6 | 86.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 88.2 | 88.6 | 87.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 87.7 | 88.3 | 87.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 87.4 | 88.0 | 87.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 86.9 | 87.6 | 87.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.0</td><td>81.3</td><td>80.2</td><td>76.8</td></tr> <tr><td>4.0</td><td>86.4</td><td>86.3</td><td>82.9</td></tr> <tr><td>6.0</td><td>88.0</td><td>87.8</td><td>86.0</td></tr> <tr><td>8.0</td><td>88.4</td><td>88.6</td><td>86.9</td></tr> <tr><td>10.0</td><td>88.2</td><td>88.6</td><td>87.3</td></tr> <tr><td>12.0</td><td>87.7</td><td>88.3</td><td>87.5</td></tr> <tr><td>13.4</td><td>87.4</td><td>88.0</td><td>87.5</td></tr> <tr><td>14.8</td><td>86.9</td><td>87.6</td><td>87.1</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table> | | | Load Current [A] | Efficiency [%] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | 0.0 | - | - | - | 2.0 | 81.3 | 80.2 | 76.8 | 4.0 | 86.4 | 86.3 | 82.9 | 6.0 | 88.0 | 87.8 | 86.0 | 8.0 | 88.4 | 88.6 | 86.9 | 10.0 | 88.2 | 88.6 | 87.3 | 12.0 | 87.7 | 88.3 | 87.5 | 13.4 | 87.4 | 88.0 | 87.5 | 14.8 | 86.9 | 87.6 | 87.1 | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Efficiency [%] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 81.3 | 80.2 | 76.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 86.4 | 86.3 | 82.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 88.0 | 87.8 | 86.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 88.4 | 88.6 | 86.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 88.2 | 88.6 | 87.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.0 | 87.7 | 88.3 | 87.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 87.4 | 88.0 | 87.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.8 | 86.9 | 87.6 | 87.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated load current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (注) 斜線は定格負荷電流範囲を示す。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| | | | | |
|-----------|--|---------------------|-------------------------------|-------------------|
| Model | CBS2004815 | | | |
| Item | Load Regulation 静的負荷変動 | Temperature 25°C | Testing Circuitry Figure A | |
| Object | +15V13.4A | | | |
| 1. Graph | <p>—△— Input Volt. 36V - - -□- Input Volt. 48V - - ○- Input Volt. 76V</p>  | | | |
| 2. Values | Load Current [A] | Output Voltage [V] | | |
| | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 0.0 | | 15.127 | 15.127 | 15.127 |
| 2.0 | | 15.127 | 15.127 | 15.128 |
| 4.0 | | 15.127 | 15.128 | 15.128 |
| 6.0 | | 15.127 | 15.128 | 15.128 |
| 8.0 | | 15.127 | 15.128 | 15.129 |
| 10.0 | | 15.127 | 15.128 | 15.128 |
| 12.0 | | 15.127 | 15.128 | 15.128 |
| 13.4 | | 15.128 | 15.128 | 15.128 |
| 14.8 | | 15.128 | 15.128 | 15.129 |
| -- | | - | - | - |

Note: Slanted line shows the range of the rated load current.

(注) 斜線は定格負荷電流範囲を示す。

COSSEL

| Model | CBS2004815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|------------------|--|--|--------------------|--------------------|-----|-----|----|-----|-----|----|-----|-----|----|-----|------|----|------|------|----|------|------|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Item | Ripple Voltage (by Load Current) リップル電圧 (負荷特性) | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two sets of data points: Input Volt. 36V (solid line with triangle markers) and Input Volt. 76V (dashed line with circle markers). The x-axis represents Load Current [A] from 0 to 16. The y-axis represents Ripple Voltage [mV] from 0 to 50. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Output Voltage [mV] (Input Volt. 36V)</th> <th>Ripple Output Voltage [mV] (Input Volt. 76V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5</td><td>5</td></tr> <tr><td>2.7</td><td>10</td><td>15</td></tr> <tr><td>5.4</td><td>10</td><td>15</td></tr> <tr><td>8.0</td><td>10</td><td>15</td></tr> <tr><td>10.7</td><td>10</td><td>15</td></tr> <tr><td>13.4</td><td>10</td><td>15</td></tr> <tr><td>16.1</td><td>10</td><td>15</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> </tbody> </table> | | | Load Current [A] | Ripple Output Voltage [mV] (Input Volt. 36V) | Ripple Output Voltage [mV] (Input Volt. 76V) | 0.0 | 5 | 5 | 2.7 | 10 | 15 | 5.4 | 10 | 15 | 8.0 | 10 | 15 | 10.7 | 10 | 15 | 13.4 | 10 | 15 | 16.1 | 10 | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| Load Current [A] | Ripple Output Voltage [mV] (Input Volt. 36V) | Ripple Output Voltage [mV] (Input Volt. 76V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.7 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.1 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Output Voltage [mV]</th> </tr> <tr> <th>Input Volt. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5</td><td>5</td></tr> <tr><td>2.7</td><td>10</td><td>15</td></tr> <tr><td>5.4</td><td>10</td><td>15</td></tr> <tr><td>8.0</td><td>10</td><td>15</td></tr> <tr><td>10.7</td><td>10</td><td>15</td></tr> <tr><td>13.4</td><td>10</td><td>15</td></tr> <tr><td>16.1</td><td>10</td><td>15</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> </tbody> </table> | | | Load Current [A] | Ripple Output Voltage [mV] | | Input Volt. 36 [V] | Input Volt. 76 [V] | 0.0 | 5 | 5 | 2.7 | 10 | 15 | 5.4 | 10 | 15 | 8.0 | 10 | 15 | 10.7 | 10 | 15 | 13.4 | 10 | 15 | 16.1 | 10 | 15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Load Current [A] | Ripple Output Voltage [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36 [V] | Input Volt. 76 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.7 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.1 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>リップル電圧は、下図 p – p 値で示される。 (注) 斜線は定格負荷電流範囲を示す。</p> <p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形図</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------------|-------------------------------------|-------------------------------------|--------------------|--------------------|-----|-----|----|-----|-----|----|-----|-----|----|-----|------|----|------|------|----|------|------|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| Item | Ripple-Noise リップルノイズ | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p style="text-align: center;"> —△— Input Volt. 36V ---○--- Input Volt. 76V </p> <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Ripple-Noise [mV] (Input Volt. 36V)</th> <th>Ripple-Noise [mV] (Input Volt. 76V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>20</td><td>30</td></tr> <tr><td>2.7</td><td>35</td><td>45</td></tr> <tr><td>5.4</td><td>45</td><td>45</td></tr> <tr><td>8.0</td><td>55</td><td>45</td></tr> <tr><td>10.7</td><td>75</td><td>50</td></tr> <tr><td>13.4</td><td>85</td><td>65</td></tr> <tr><td>16.1</td><td>85</td><td>75</td></tr> </tbody> </table> | Load Current [A] | Ripple-Noise [mV] (Input Volt. 36V) | Ripple-Noise [mV] (Input Volt. 76V) | 0.0 | 20 | 30 | 2.7 | 35 | 45 | 5.4 | 45 | 45 | 8.0 | 55 | 45 | 10.7 | 75 | 50 | 13.4 | 85 | 65 | 16.1 | 85 | 75 | | | | | | | | | | | | | | | | |
| Load Current [A] | Ripple-Noise [mV] (Input Volt. 36V) | Ripple-Noise [mV] (Input Volt. 76V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 20 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 35 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 55 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.7 | 75 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 85 | 65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.1 | 85 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>20</td><td>30</td></tr> <tr><td>2.7</td><td>35</td><td>45</td></tr> <tr><td>5.4</td><td>45</td><td>45</td></tr> <tr><td>8.0</td><td>55</td><td>45</td></tr> <tr><td>10.7</td><td>75</td><td>50</td></tr> <tr><td>13.4</td><td>85</td><td>65</td></tr> <tr><td>16.1</td><td>85</td><td>75</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td></tr> </tbody> </table> | Load Current [A] | Ripple-Noise [mV] | | Input Volt. 36 [V] | Input Volt. 76 [V] | 0.0 | 20 | 30 | 2.7 | 35 | 45 | 5.4 | 45 | 45 | 8.0 | 55 | 45 | 10.7 | 75 | 50 | 13.4 | 85 | 65 | 16.1 | 85 | 75 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| Load Current [A] | Ripple-Noise [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36 [V] | Input Volt. 76 [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 20 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 35 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4 | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 55 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.7 | 75 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.4 | 85 | 65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16.1 | 85 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| リップルノイズは、下図 p - p 値で示される。 (注) 斜線は定格負荷電流範囲を示す。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fig. Complex Ripple Noise Wave Form 図 リップルノイズ波形 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--|-------------------|-------------------|--------------------|------------------|--|--|-------------------|-------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Item | Overcurrent Protection 過電流保護 | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>The graph plots Output Voltage [V] on the Y-axis (0 to 20) against Load Current [A] on the X-axis (0 to 20). Three curves represent different input voltages: 36V (solid line), 48V (dashed line), and 76V (dash-dot line). A diagonal hatched band highlights the range of load current where the output voltage remains constant at approximately 15V.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | <table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>15.00</td><td>14.27</td><td>13.42</td><td>13.43</td></tr> <tr><td>14.25</td><td>17.56</td><td>17.68</td><td>18.24</td></tr> <tr><td>13.50</td><td>17.74</td><td>17.73</td><td>18.39</td></tr> <tr><td>12.00</td><td>17.79</td><td>17.89</td><td>18.61</td></tr> <tr><td>10.50</td><td>17.81</td><td>17.98</td><td>18.84</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> </tbody> </table> | | | Output Voltage [V] | Load Current [A] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | 15.00 | 14.27 | 13.42 | 13.43 | 14.25 | 17.56 | 17.68 | 18.24 | 13.50 | 17.74 | 17.73 | 18.39 | 12.00 | 17.79 | 17.89 | 18.61 | 10.50 | 17.81 | 17.98 | 18.84 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Output Voltage [V] | Load Current [A] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15.00 | 14.27 | 13.42 | 13.43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14.25 | 17.56 | 17.68 | 18.24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.50 | 17.74 | 17.73 | 18.39 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.00 | 17.79 | 17.89 | 18.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.50 | 17.81 | 17.98 | 18.84 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

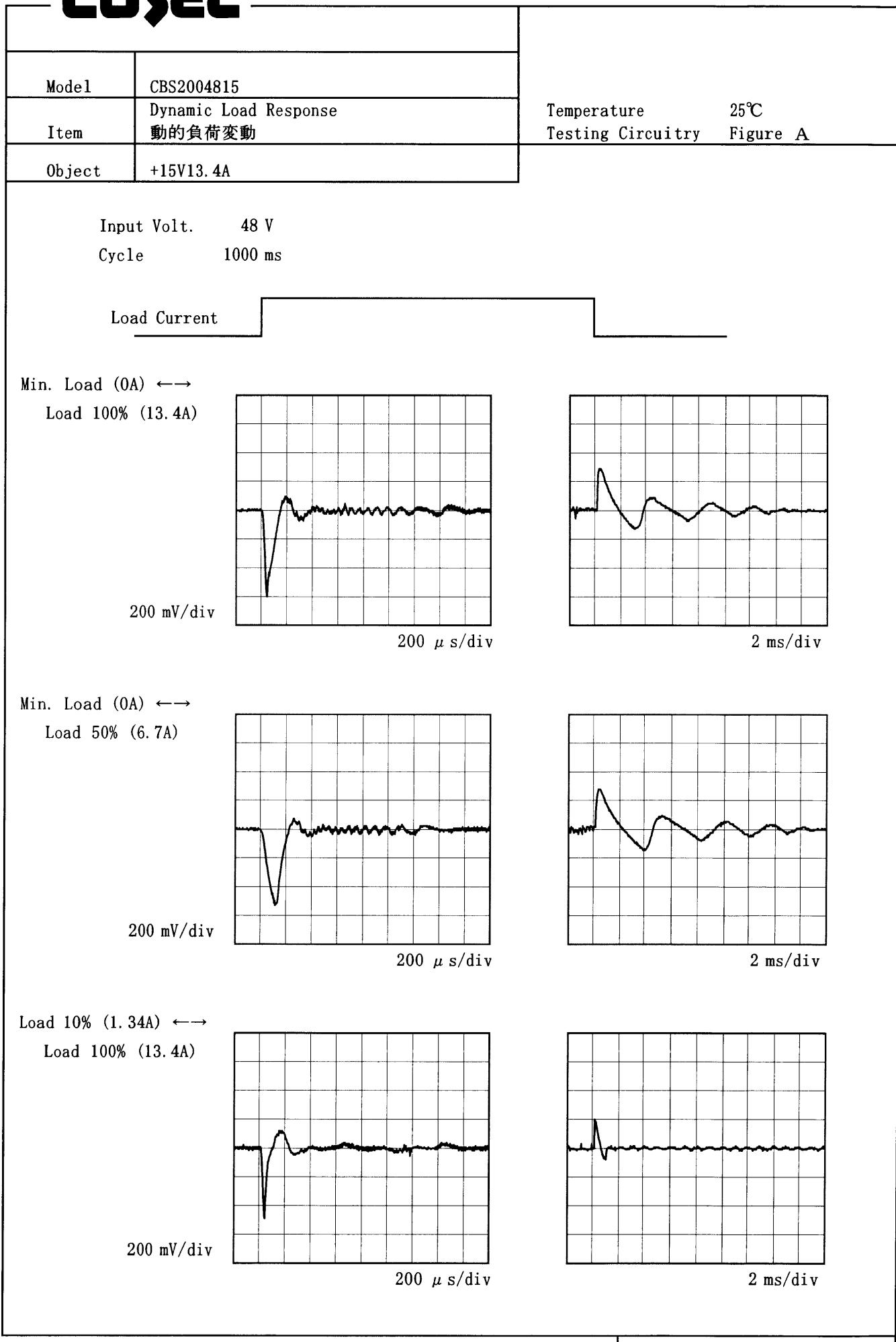
Note: Slanted line shows the range of the rated load current.

(注) 斜線は定格負荷電流範囲を示す。

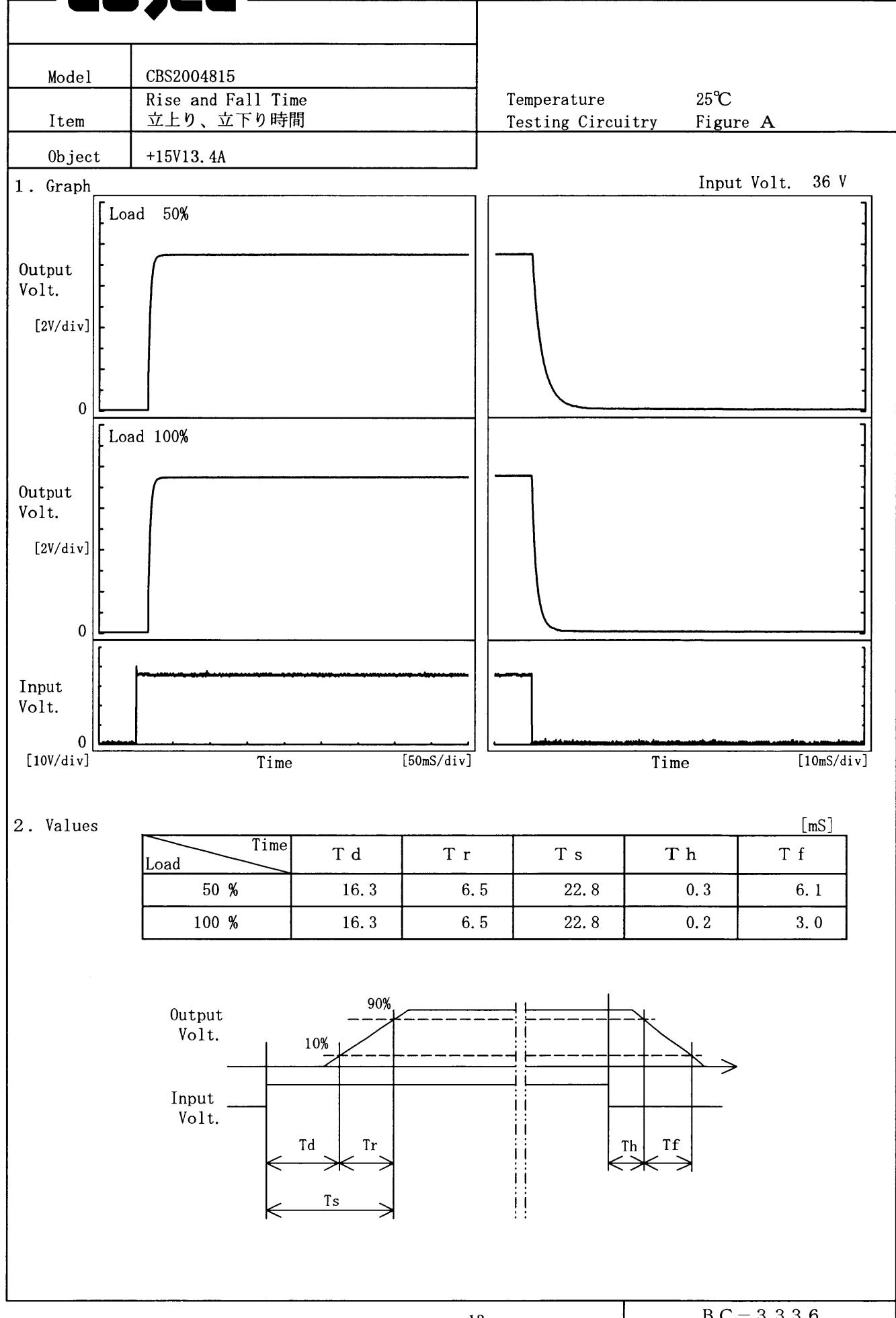
Intermittent operation occurs when the output voltage is from 10V to 0V.
10V～0V間は、間欠モードとなる。

COSSEL

| <p>Model CBS2004815</p> <p>Item Overvoltage Protection 過電圧保護</p> <p>Object +15V13.4A</p> | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------------|-------------------|--------------------------|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|---|---|
| | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>-50</td><td>19.50</td><td>19.50</td><td>19.50</td></tr> <tr> <td>-40</td><td>19.49</td><td>19.49</td><td>19.49</td></tr> <tr> <td>-20</td><td>19.56</td><td>19.56</td><td>19.56</td></tr> <tr> <td>0</td><td>19.56</td><td>19.56</td><td>19.56</td></tr> <tr> <td>25</td><td>19.55</td><td>19.55</td><td>19.55</td></tr> <tr> <td>40</td><td>19.55</td><td>19.55</td><td>19.55</td></tr> <tr> <td>60</td><td>19.49</td><td>19.49</td><td>19.49</td></tr> <tr> <td>85</td><td>19.48</td><td>19.48</td><td>19.48</td></tr> <tr> <td>100</td><td>19.48</td><td>19.48</td><td>19.48</td></tr> <tr> <td>105</td><td>19.42</td><td>19.42</td><td>19.42</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table> | | | Ambient Temperature [°C] | Operating Point [V] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | -50 | 19.50 | 19.50 | 19.50 | -40 | 19.49 | 19.49 | 19.49 | -20 | 19.56 | 19.56 | 19.56 | 0 | 19.56 | 19.56 | 19.56 | 25 | 19.55 | 19.55 | 19.55 | 40 | 19.55 | 19.55 | 19.55 | 60 | 19.49 | 19.49 | 19.49 | 85 | 19.48 | 19.48 | 19.48 | 100 | 19.48 | 19.48 | 19.48 | 105 | 19.42 | 19.42 | 19.42 | -- | - | - |
| Ambient Temperature [°C] | Operating Point [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -50 | 19.50 | 19.50 | 19.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40 | 19.49 | 19.49 | 19.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 19.56 | 19.56 | 19.56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 19.56 | 19.56 | 19.56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 19.55 | 19.55 | 19.55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 19.55 | 19.55 | 19.55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 19.49 | 19.49 | 19.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 19.48 | 19.48 | 19.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 19.48 | 19.48 | 19.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 105 | 19.42 | 19.42 | 19.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | <p>The graph plots the operating point in Volts (V) against ambient temperature in degrees Celsius (°C). The Y-axis ranges from 14.6 to 21.6 V, and the X-axis ranges from -60 to 100 °C. Three horizontal lines represent the operating point for Input Voltages of 36V, 48V, and 76V. Slanted lines indicate the range of ambient temperature for each input voltage.</p> <table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>-50</td> <td>19.50</td> <td>19.50</td> <td>19.50</td> </tr> <tr> <td>-40</td> <td>19.49</td> <td>19.49</td> <td>19.49</td> </tr> <tr> <td>-20</td> <td>19.56</td> <td>19.56</td> <td>19.56</td> </tr> <tr> <td>0</td> <td>19.56</td> <td>19.56</td> <td>19.56</td> </tr> <tr> <td>25</td> <td>19.55</td> <td>19.55</td> <td>19.55</td> </tr> <tr> <td>40</td> <td>19.55</td> <td>19.55</td> <td>19.55</td> </tr> <tr> <td>60</td> <td>19.49</td> <td>19.49</td> <td>19.49</td> </tr> <tr> <td>85</td> <td>19.48</td> <td>19.48</td> <td>19.48</td> </tr> <tr> <td>100</td> <td>19.48</td> <td>19.48</td> <td>19.48</td> </tr> <tr> <td>105</td> <td>19.42</td> <td>19.42</td> <td>19.42</td> </tr> </tbody> </table> | | | Ambient Temperature [°C] | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | -50 | 19.50 | 19.50 | 19.50 | -40 | 19.49 | 19.49 | 19.49 | -20 | 19.56 | 19.56 | 19.56 | 0 | 19.56 | 19.56 | 19.56 | 25 | 19.55 | 19.55 | 19.55 | 40 | 19.55 | 19.55 | 19.55 | 60 | 19.49 | 19.49 | 19.49 | 85 | 19.48 | 19.48 | 19.48 | 100 | 19.48 | 19.48 | 19.48 | 105 | 19.42 | 19.42 | 19.42 | | | | | | |
| Ambient Temperature [°C] | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -50 | 19.50 | 19.50 | 19.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40 | 19.49 | 19.49 | 19.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 19.56 | 19.56 | 19.56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 19.56 | 19.56 | 19.56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 19.55 | 19.55 | 19.55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 19.55 | 19.55 | 19.55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 19.49 | 19.49 | 19.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 19.48 | 19.48 | 19.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 19.48 | 19.48 | 19.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 105 | 19.42 | 19.42 | 19.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated ambient temperature. | (注) 斜線は定格周囲温度範囲を示す。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

COSEL



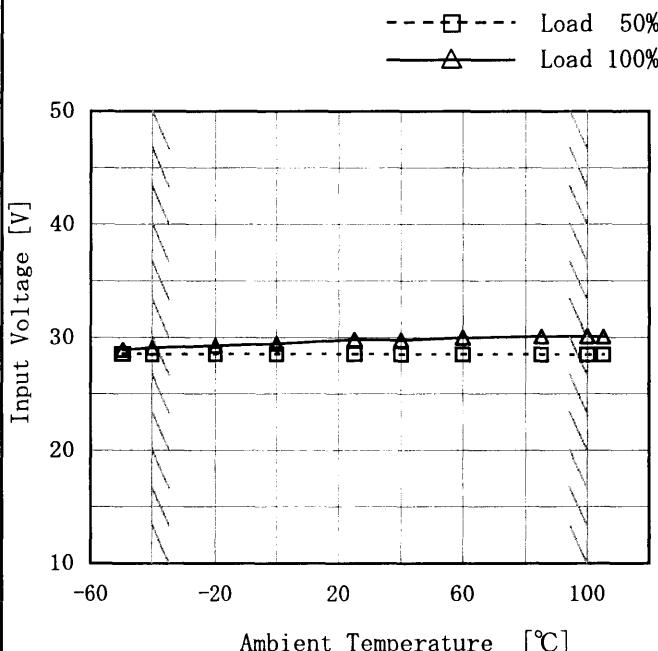
COSEL

| <p>Model CBS2004815</p> <p>Item Ambient Temperature Drift 周囲温度変動</p> <p>Object +15V13.4A</p> | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|----------------------|----------------------|--------------------------------|--------------------|--|--|----------------------|----------------------|----------------------|-----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|---|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|----|---|---|
| | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>-50</td><td>15.093</td><td>15.093</td><td>15.094</td></tr> <tr> <td>-40</td><td>15.097</td><td>15.097</td><td>15.098</td></tr> <tr> <td>-20</td><td>15.105</td><td>15.106</td><td>15.106</td></tr> <tr> <td>0</td><td>15.114</td><td>15.114</td><td>15.115</td></tr> <tr> <td>25</td><td>15.112</td><td>15.112</td><td>15.112</td></tr> <tr> <td>40</td><td>15.102</td><td>15.102</td><td>15.103</td></tr> <tr> <td>60</td><td>15.086</td><td>15.085</td><td>15.086</td></tr> <tr> <td>85</td><td>15.060</td><td>15.059</td><td>15.059</td></tr> <tr> <td>100</td><td>15.040</td><td>15.040</td><td>15.039</td></tr> <tr> <td>105</td><td>15.030</td><td>15.030</td><td>15.030</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table> | | | Ambient Temperature [°C] | Output Voltage [V] | | | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | -50 | 15.093 | 15.093 | 15.094 | -40 | 15.097 | 15.097 | 15.098 | -20 | 15.105 | 15.106 | 15.106 | 0 | 15.114 | 15.114 | 15.115 | 25 | 15.112 | 15.112 | 15.112 | 40 | 15.102 | 15.102 | 15.103 | 60 | 15.086 | 15.085 | 15.086 | 85 | 15.060 | 15.059 | 15.059 | 100 | 15.040 | 15.040 | 15.039 | 105 | 15.030 | 15.030 | 15.030 | -- | - | - |
| Ambient Temperature [°C] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -50 | 15.093 | 15.093 | 15.094 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40 | 15.097 | 15.097 | 15.098 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 15.105 | 15.106 | 15.106 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 15.114 | 15.114 | 15.115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 15.112 | 15.112 | 15.112 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 15.102 | 15.102 | 15.103 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 15.086 | 15.085 | 15.086 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 15.060 | 15.059 | 15.059 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 15.040 | 15.040 | 15.039 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 105 | 15.030 | 15.030 | 15.030 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1. Graph</p> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注) 斜線は定格周囲温度範囲を示す。</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSSEL

| | |
|--------|--|
| Model | CBS2004815 |
| Item | Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧 |
| Object | +15V13.4A |

1. Graph



Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。

Testing Circuitry Figure A

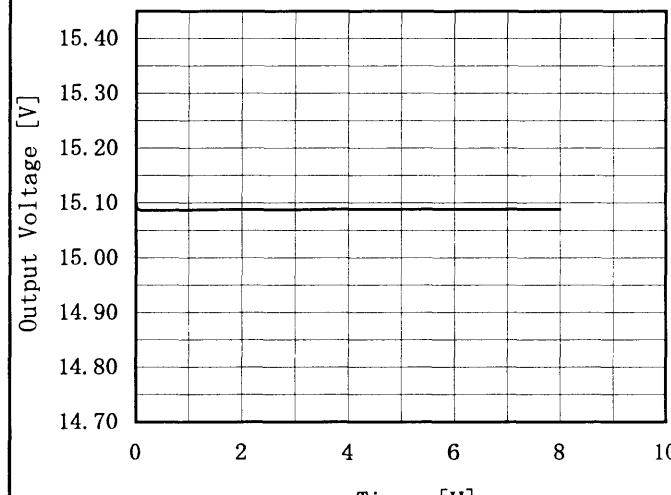
2. Values

| Ambient Temperature [°C] | Input Voltage [V] | |
|--------------------------|-------------------|-----------|
| | Load 50% | Load 100% |
| -50 | 28.5 | 28.9 |
| -40 | 28.5 | 29.1 |
| -20 | 28.5 | 29.3 |
| 0 | 28.5 | 29.4 |
| 25 | 28.5 | 29.8 |
| 40 | 28.5 | 29.8 |
| 60 | 28.5 | 30.0 |
| 85 | 28.5 | 30.1 |
| 100 | 28.5 | 30.1 |
| 105 | 28.5 | 30.1 |
| -- | - | - |

COSEL

| Model | CBS2004815 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--------------------------|---------------------|--|----------|-----------|-----|-----|-----|-----|-----|-----|-----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|-----|----|----|----|---|---|
| Item | Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性) | Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>--- □ --- Load 50%</p> <p>— △ — Load 100%</p> <p>Ambient Temperature [°C]</p> <p>Ripple Voltage [mV]</p> <p>-60 -20 20 60 100</p> <p>Input Volt. 48V</p> | | <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>-50</td> <td>110</td> <td>115</td> </tr> <tr> <td>-40</td> <td>115</td> <td>110</td> </tr> <tr> <td>-20</td> <td>75</td> <td>75</td> </tr> <tr> <td>0</td> <td>40</td> <td>35</td> </tr> <tr> <td>25</td> <td>15</td> <td>15</td> </tr> <tr> <td>40</td> <td>15</td> <td>15</td> </tr> <tr> <td>60</td> <td>15</td> <td>15</td> </tr> <tr> <td>85</td> <td>25</td> <td>25</td> </tr> <tr> <td>100</td> <td>35</td> <td>35</td> </tr> <tr> <td>105</td> <td>45</td> <td>40</td> </tr> <tr> <td>--</td> <td>—</td> <td>—</td> </tr> </tbody> </table> | | Ambient Temperature [°C] | Ripple Voltage [mV] | | Load 50% | Load 100% | -50 | 110 | 115 | -40 | 115 | 110 | -20 | 75 | 75 | 0 | 40 | 35 | 25 | 15 | 15 | 40 | 15 | 15 | 60 | 15 | 15 | 85 | 25 | 25 | 100 | 35 | 35 | 105 | 45 | 40 | -- | — | — |
| Ambient Temperature [°C] | Ripple Voltage [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -50 | 110 | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40 | 115 | 110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 75 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 40 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 15 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 25 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 35 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 105 | 45 | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| Model | CBS2004815 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------------------|-------------------|--|----------------------|--------------------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| Item | Time Lapse Drift 経時ドリフト | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V13.4A | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | 2. Values | | | | | | | | | | | | | | | | | | | | | | |
|  <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 48V</p> <p>Load 100%</p> | | | <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>15.098</td></tr> <tr><td>0.5</td><td>15.087</td></tr> <tr><td>1.0</td><td>15.087</td></tr> <tr><td>2.0</td><td>15.088</td></tr> <tr><td>3.0</td><td>15.088</td></tr> <tr><td>4.0</td><td>15.088</td></tr> <tr><td>5.0</td><td>15.088</td></tr> <tr><td>6.0</td><td>15.089</td></tr> <tr><td>7.0</td><td>15.089</td></tr> <tr><td>8.0</td><td>15.089</td></tr> </tbody> </table> | Time since start [H] | Output Voltage [V] | 0.0 | 15.098 | 0.5 | 15.087 | 1.0 | 15.087 | 2.0 | 15.088 | 3.0 | 15.088 | 4.0 | 15.088 | 5.0 | 15.088 | 6.0 | 15.089 | 7.0 | 15.089 | 8.0 | 15.089 |
| Time since start [H] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.0 | 15.098 | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 | 15.087 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | 15.087 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.0 | 15.088 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.0 | 15.088 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.0 | 15.088 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.0 | 15.088 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 15.089 | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.0 | 15.089 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.0 | 15.089 | | | | | | | | | | | | | | | | | | | | | | | | |



| | | |
|--------|----------------------------------|-------------------------------|
| Model | CBS2004815 | Testing Circuitry Figure A |
| Item | Output Voltage Accuracy 定電圧精度 | |
| Object | +15V 13.4A | |

1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -40 ~ 100°C

Input Voltage : 36 ~ 76V

Load Current : 0 ~ 13.4A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

$$* \text{ Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 : -40 ~ 100°C

入力電圧 : 36 ~ 76V

負荷電流 : 0 ~ 13.4A

* 定電圧精度(変動値) = ±(出力電圧の最高値 - 出力電圧の最低値) / 2

$$* \text{ 定電圧精度(変動率)} = \frac{\text{変動値}}{\text{定格出力電圧}} \times 100$$

2. Values

| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
|-----------------|---------------------|---------------------|------------|------------|-------------------------|------------|
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 25 | 36 | 13.4 | 15.109 | ±38 | ±0.3 |
| Minimum Voltage | 100 | 76 | 13.4 | 15.033 | | |



| | | |
|--------|------------------|---------------------------------|
| Model | CBS2004815 | |
| Item | Condense 結露特性 | Testing Circuitry Figure A |
| Object | +15V13.4A | |

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C for an hour with the input off.
- ② Taking it out of the tank and dewing itself in a room where the temperature is 25°C and the humidity is 40%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.

1. 結露特性試験

入力を切った状態で、恒温槽で-10°Cに冷却しておき、約1時間後に恒温槽から取り出し、室温25°C、湿度40%RHの状態におき結露させ、その電気的特性の測定を行い異常がないことを確認する。

2. Values

| Item | Data | Testing Conditions |
|----------------------|--------|---|
| Output Voltage [V] | 15.124 | Input Volt.:48V, Load Current.:13.4A |
| Line Regulation [mV] | 1 | Input Volt.:36~76V, Load Current.:13.4A |
| Load Regulation [mV] | 1 | Input Volt.:48V, Load Current.:0~13.4A |

COSSEL

| | | | |
|--------|--------------------------------|-------------------|----------|
| Model | CBS2004815 | Temperature | 25°C |
| Item | Line Noise Tolerance 入力雑音耐量 | Testing Circuitry | Figure B |
| Object | +15V13.4A | | |

1. Conditions

- Input Voltage : 48 V
- Pulse Input Duration : 1 min. or more
- Pulse Voltage : 2000 V
- Load : 100 %
- Pulse Cycle : 16.7 ms

2. Results

| Pulse Width [ns] | MODE | No protection failure should occur | | DC-like Regulation of Output Voltage 出力電圧の直流的変動 |
|---------------------|--------|---------------------------------------|-------------|---|
| | | POLARITY | 保護回路の誤動作がない | |
| 50 | COMMON | + | OK | no fluctuation |
| | | - | OK | no fluctuation |
| | NORMAL | + | OK | no fluctuation |
| | | - | OK | no fluctuation |
| 1000 | COMMON | + | OK | no fluctuation |
| | | - | OK | no fluctuation |
| | NORMAL | + | OK | no fluctuation |
| | | - | OK | no fluctuation |

COSEL

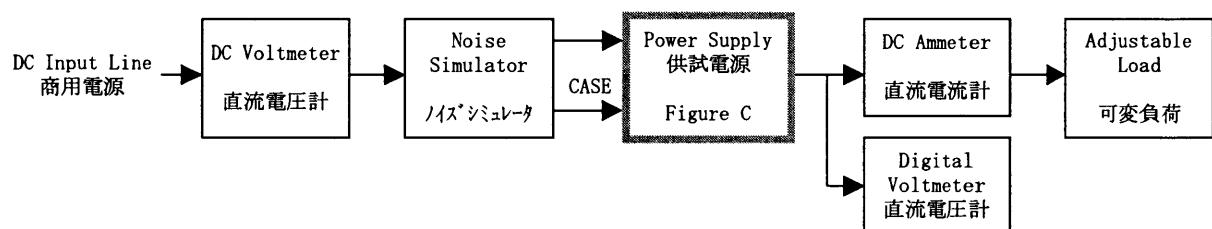
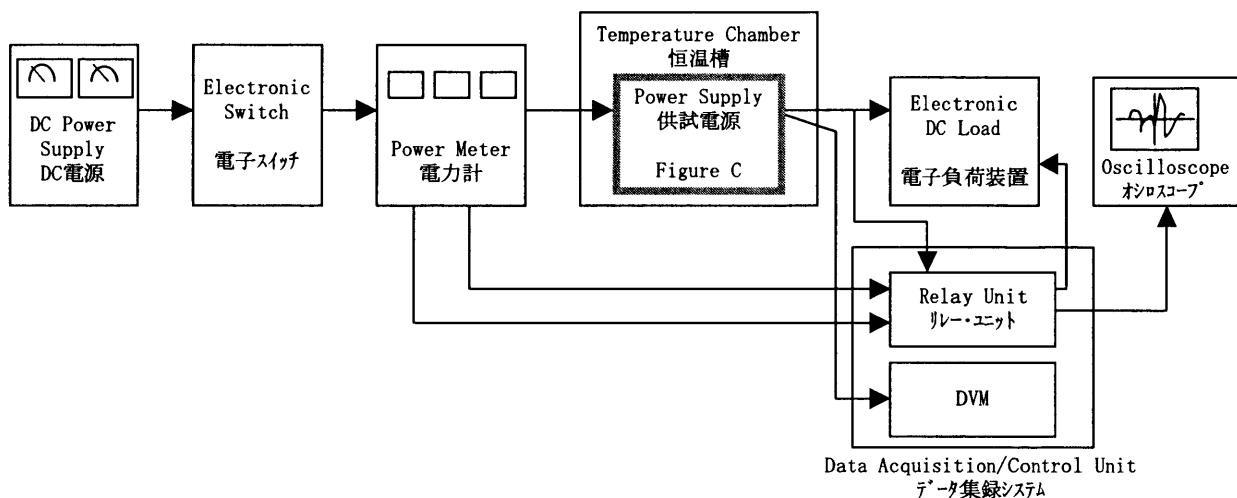


Figure B

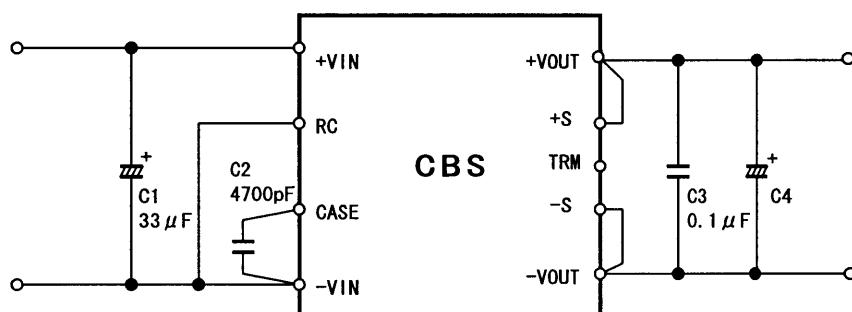


Figure C

C1 : 100V 33 μ F

C2 : 4700pF

C3 : 50V 0.1 μ F(-40°C ≤ T_B ≤ -20°C)

| | |
|---------------------|----------------------|
| C4 : CBS2004803, 05 | 10V 2200 μ F × 2 |
| CBS2004812, 15 | 25V 1000 μ F × 2 |
| CBS2004824, 28 | 35V 470 μ F × 2 |

(-20°C < T_B ≤ 100°C)

| | |
|---------------------|------------------|
| C4 : CBS2004803, 05 | 10V 2200 μ F |
| CBS2004812, 15 | 25V 1000 μ F |
| CBS2004824, 28 | 35V 470 μ F |

T_B:Base Plate Temp.