



TEST DATA OF MMB50A-2 (100V INPUT)

Regulated DC Power Supply

Date : Feb. 16. 1999

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コーセル株式会社
COSEL CO., LTD.

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—2—

COSEL

| | | | | |
|--------|--|--|--|--|
| Model | | | MMB50A-2 | |
| Item | | | Power Factor (by Input Voltage) 力率 (入力電圧特性) | |
| Object | | | | |

1. Graph

load 50%

load 100%

Power Factor

Input Voltage [V]

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

| Input Voltage [V] | load 50% | load 100% |
|-------------------|--------------|--------------|
| | Power Factor | Power Factor |
| 75 | 0.59 | 0.63 |
| 80 | 0.59 | 0.61 |
| 85 | 0.58 | 0.60 |
| 90 | 0.57 | 0.59 |
| 100 | 0.56 | 0.58 |
| 110 | 0.55 | 0.56 |
| 120 | 0.54 | 0.55 |
| 132 | 0.53 | 0.54 |
| 140 | 0.52 | 0.53 |

COSEL

| | | | |
|--------|--|---------------------|--|
| Model | | MMB50A-2 | |
| Item | | Hold-Up Time 出力保持時間 | |
| Object | | +5.0V5A | |

1. Graph

—△— Load 50%

- -□- - Load 100%

[mS]

1000

100

10

1

Hold-Up Time

0 80 90 100 110 120 130 140 150

Input Voltage [V]

2. Values

| Input Voltage [V] | Load 50% | Load 100% |
|-------------------|-------------------|-------------------|
| | Hold-Up Time [mS] | Hold-Up Time [mS] |
| 75 | 48 | 20 |
| 80 | 55 | 25 |
| 85 | 62 | 30 |
| 90 | 69 | 36 |
| 100 | 85 | 48 |
| 110 | 104 | 62 |
| 120 | 123 | 76 |
| 132 | 149 | 96 |
| 140 | 168 | 110 |

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

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

出力保持時間とは、入力電圧断から出力電圧が、定電圧精度の規格範囲を保持しているところまでの時間。

(注) 斜線は定格入力電圧範囲を示す。

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| Model | | MMB50A-2 | | Temperature | | 25℃ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------|---------------------|--|--|--|----------|--|-------------------|----------|-----------|-------------------|-------------------|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|-----|
| Item | | Hold-Up Time 出力保持時間 | | Testing Circuitry | | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +12.0V2.1A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>—△— Load 50%</div><div>- -□- - Load 100%</div></div> <div><p>[mS]</p><p>Hold-Up Time</p><p>Input Voltage [V]</p></div> <div><p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p><p>Note: Slanted line shows the range of the rated input voltage.</p><p>出力保持時間とは、入力電圧断から出力電圧が、定電圧精度の規格範囲を保持しているところまでの時間。</p><p>(注)斜線は定格入力電圧範囲を示す。</p></div> | | | | <table><tr><th rowspan="2">Input Voltage [V]</th><th>Load 50%</th><th>Load 100%</th></tr><tr><th>Hold-Up Time [mS]</th><th>Hold-Up Time [mS]</th></tr><tr><td>75</td><td>49</td><td>22</td></tr><tr><td>80</td><td>56</td><td>27</td></tr><tr><td>85</td><td>62</td><td>32</td></tr><tr><td>90</td><td>70</td><td>37</td></tr><tr><td>100</td><td>85</td><td>50</td></tr><tr><td>110</td><td>103</td><td>63</td></tr><tr><td>120</td><td>122</td><td>78</td></tr><tr><td>132</td><td>147</td><td>98</td></tr><tr><td>140</td><td>165</td><td>112</td></tr></table> | | | | Input Voltage [V] | Load 50% | Load 100% | Hold-Up Time [mS] | Hold-Up Time [mS] | 75 | 49 | 22 | 80 | 56 | 27 | 85 | 62 | 32 | 90 | 70 | 37 | 100 | 85 | 50 | 110 | 103 | 63 | 120 | 122 | 78 | 132 | 147 | 98 | 140 | 165 | 112 |
| Input Voltage [V] | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Hold-Up Time [mS] | Hold-Up Time [mS] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 49 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | 56 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 62 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 70 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 85 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | 103 | 63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 122 | 78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 132 | 147 | 98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 140 | 165 | 112 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

COSEL

| | | | |
|--------|--|---|--|
| Model | | MMB50A-2 | |
| Item | | Instantaneous Interruption Compensation 瞬時停電保障 | |
| Object | | +5.0V5.00A | |

1. Graph

△

—

Input Volt. 85V

□

Input Volt. 100V

○

Input Volt. 132V

[mS]

10000

1000

100

10

1

Instantaneous Compensation Time

0

2

4

6

[A]

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

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

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。

(注)斜線は定格負荷電流範囲を示す。

| | | | |
|------------------|-------------------|--------------------|--------------------|
| Load Current [A] | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| | Time [mS] | | |
| 0.0 | — | — | — |
| 0.8 | 93 | 124 | 205 |
| 1.6 | 73 | 100 | 173 |
| 2.4 | 57 | 82 | 168 |
| 3.2 | 45 | 76 | 137 |
| 4.0 | 32 | 59 | 120 |
| 4.8 | 23 | 45 | 90 |
| 5.0 | 20 | 39 | 87 |
| 5.5 | 14 | 29 | 73 |
| — | — | — | — |
| — | — | — | — |

2. Values

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

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

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。

(注) 斜線は定格負荷電流範囲を示す。

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| | |
|--------|---|
| Model | MMB50A-2 |
| Item | Instantaneous Interruption Compensation 瞬時停電保障 |
| Object | +12.0V2.10A |

1. Graph

△

Input Volt. 85V

□

Input Volt. 100V

○

Input Volt. 132V

Instantaneous Compensation Time

[mS]

10000

1000

100

10

1

0

0.5

1

1.5

2

2.5

Load Current

[A]

Testing Circuitry Figure A

2. Values

| Load Current [A] | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|------------------|-------------------|--------------------|--------------------|
| | Time [mS] | | |
| 0.0 | — | — | — |
| 0.40 | 93 | 123 | 196 |
| 0.80 | 67 | 98 | 176 |
| 1.20 | 54 | 83 | 161 |
| 1.60 | 38 | 72 | 140 |
| 2.00 | 24 | 50 | 108 |
| 2.10 | 22 | 45 | 92 |
| 2.31 | 17 | 35 | 86 |
| — | — | — | — |
| — | — | — | — |
| — | — | — | — |

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

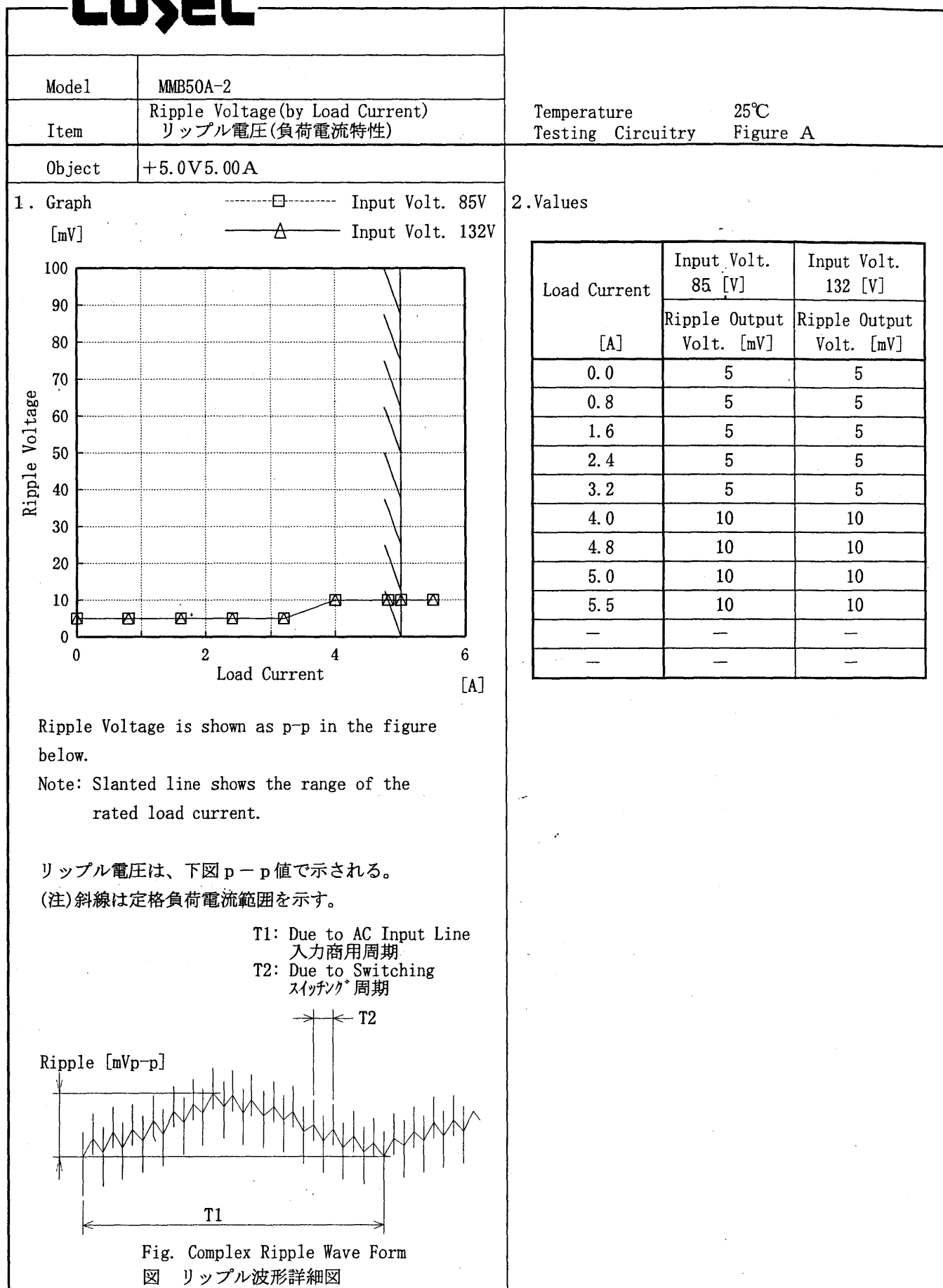
Note:Slanted line shows the range of the rated load current.

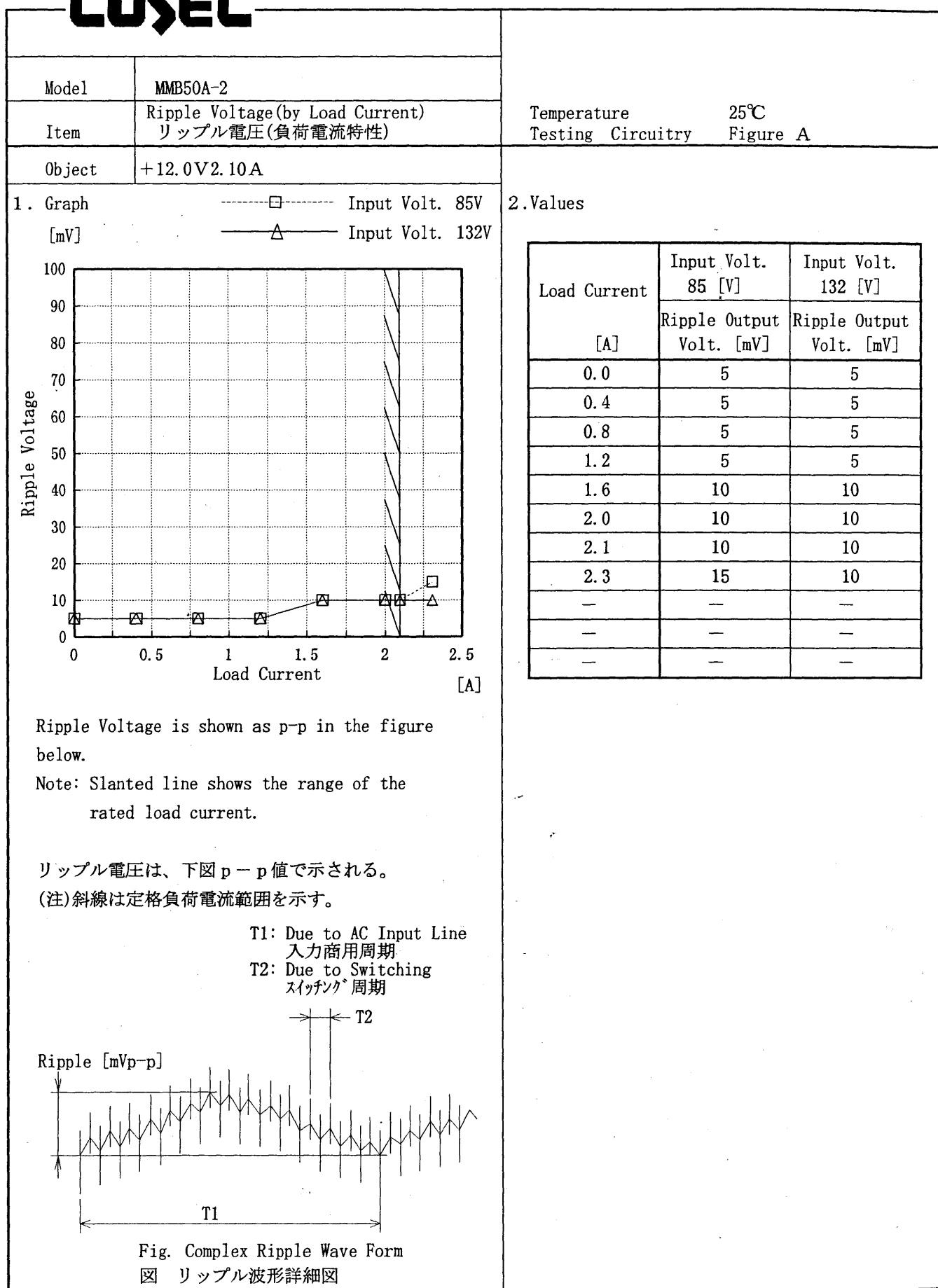
瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。

(注)斜線は定格負荷電流範囲を示す。

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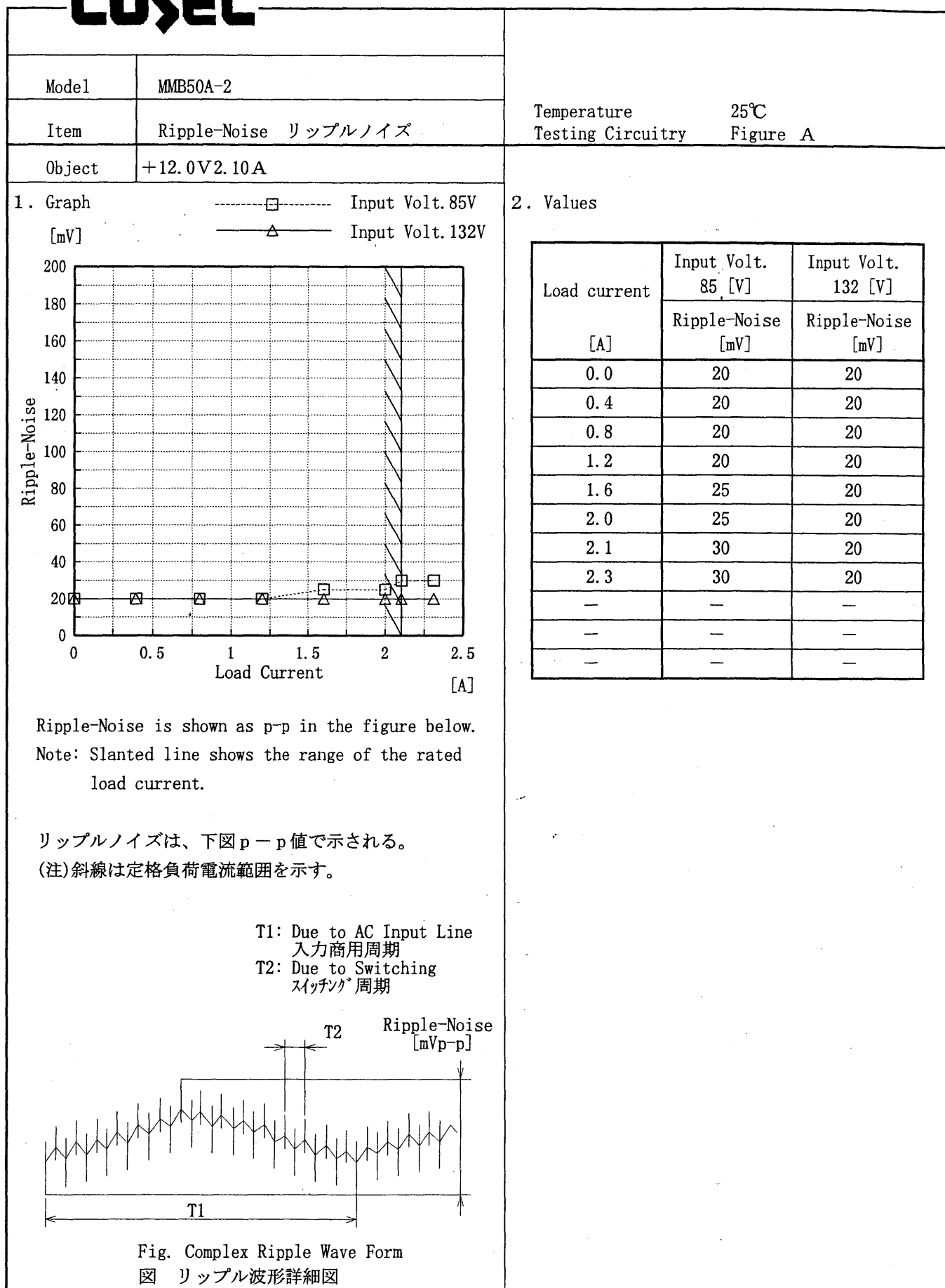
| Model | | MMB50A-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|---|-------------------------|---------------------|------------------------|-------------------------|-------------------------|---------------------|---------------------|---------------------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|-------|---|---|---|---|
| Item | | Load Regulation 静的負荷変動 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +5.0V5.00A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | —△— Input Volt. 85V - - -□- - - Input Volt. 100V —○— Input Volt. 132V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2. Values <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th><th>Input Volt. 85.0[V]</th><th>Input Volt. 100.0[V]</th><th>Input Volt. 132.0[V]</th></tr> <tr> <th>Output Volt. [V]</th><th>Output Volt. [V]</th><th>Output Volt. [V]</th></tr> </thead> <tbody> <tr><td>0.000</td><td>5.091</td><td>5.092</td><td>5.092</td></tr> <tr><td>0.800</td><td>5.089</td><td>5.089</td><td>5.089</td></tr> <tr><td>1.600</td><td>5.087</td><td>5.087</td><td>5.088</td></tr> <tr><td>2.400</td><td>5.086</td><td>5.086</td><td>5.086</td></tr> <tr><td>3.200</td><td>5.084</td><td>5.084</td><td>5.084</td></tr> <tr><td>4.000</td><td>5.082</td><td>5.082</td><td>5.082</td></tr> <tr><td>4.800</td><td>5.080</td><td>5.081</td><td>5.081</td></tr> <tr><td>5.000</td><td>5.080</td><td>5.080</td><td>5.080</td></tr> <tr><td>5.500</td><td>5.079</td><td>5.079</td><td>5.079</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table> | | Load Current [A] | Input Volt. 85.0[V] | Input Volt. 100.0[V] | Input Volt. 132.0[V] | Output Volt. [V] | Output Volt. [V] | Output Volt. [V] | 0.000 | 5.091 | 5.092 | 5.092 | 0.800 | 5.089 | 5.089 | 5.089 | 1.600 | 5.087 | 5.087 | 5.088 | 2.400 | 5.086 | 5.086 | 5.086 | 3.200 | 5.084 | 5.084 | 5.084 | 4.000 | 5.082 | 5.082 | 5.082 | 4.800 | 5.080 | 5.081 | 5.081 | 5.000 | 5.080 | 5.080 | 5.080 | 5.500 | 5.079 | 5.079 | 5.079 | — | — | — | — |
| Load Current [A] | Input Volt. 85.0[V] | Input Volt. 100.0[V] | Input Volt. 132.0[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Output Volt. [V] | Output Volt. [V] | Output Volt. [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.000 | 5.091 | 5.092 | 5.092 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.800 | 5.089 | 5.089 | 5.089 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.600 | 5.087 | 5.087 | 5.088 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.400 | 5.086 | 5.086 | 5.086 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.200 | 5.084 | 5.084 | 5.084 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 | 5.082 | 5.082 | 5.082 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.800 | 5.080 | 5.081 | 5.081 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.000 | 5.080 | 5.080 | 5.080 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.500 | 5.079 | 5.079 | 5.079 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +12V2.10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | —△— Input Volt. 85V - - -□- - - Input Volt. 100V —○— Input Volt. 132V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 2. Values <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th><th>Input Volt. 85.0[V]</th><th>Input Volt. 100.0[V]</th><th>Input Volt. 132.0[V]</th></tr> <tr> <th>Output Volt. [V]</th><th>Output Volt. [V]</th><th>Output Volt. [V]</th></tr> </thead> <tbody> <tr><td>0.000</td><td>12.056</td><td>12.056</td><td>12.056</td></tr> <tr><td>0.400</td><td>12.053</td><td>12.053</td><td>12.053</td></tr> <tr><td>0.800</td><td>12.051</td><td>12.051</td><td>12.052</td></tr> <tr><td>1.200</td><td>12.050</td><td>12.050</td><td>12.050</td></tr> <tr><td>1.600</td><td>12.049</td><td>12.049</td><td>12.049</td></tr> <tr><td>2.000</td><td>12.047</td><td>12.047</td><td>12.047</td></tr> <tr><td>2.100</td><td>12.047</td><td>12.047</td><td>12.047</td></tr> <tr><td>2.310</td><td>12.046</td><td>12.046</td><td>12.046</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 Volt. 85.0[V] | Input Volt. 100.0[V] | Input Volt. 132.0[V] | Output Volt. [V] | Output Volt. [V] | Output Volt. [V] | 0.000 | 12.056 | 12.056 | 12.056 | 0.400 | 12.053 | 12.053 | 12.053 | 0.800 | 12.051 | 12.051 | 12.052 | 1.200 | 12.050 | 12.050 | 12.050 | 1.600 | 12.049 | 12.049 | 12.049 | 2.000 | 12.047 | 12.047 | 12.047 | 2.100 | 12.047 | 12.047 | 12.047 | 2.310 | 12.046 | 12.046 | 12.046 | — | — | — | — | — | — | — | — |
| Load Current [A] | Input Volt. 85.0[V] | Input Volt. 100.0[V] | Input Volt. 132.0[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Output Volt. [V] | Output Volt. [V] | Output Volt. [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.000 | 12.056 | 12.056 | 12.056 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.400 | 12.053 | 12.053 | 12.053 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.800 | 12.051 | 12.051 | 12.052 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.200 | 12.050 | 12.050 | 12.050 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.600 | 12.049 | 12.049 | 12.049 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.000 | 12.047 | 12.047 | 12.047 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.100 | 12.047 | 12.047 | 12.047 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.310 | 12.046 | 12.046 | 12.046 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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

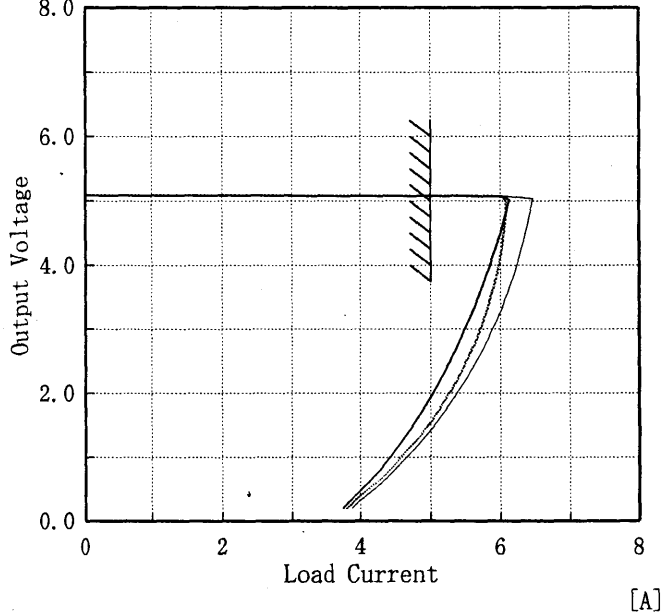
COSEL

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COSEL



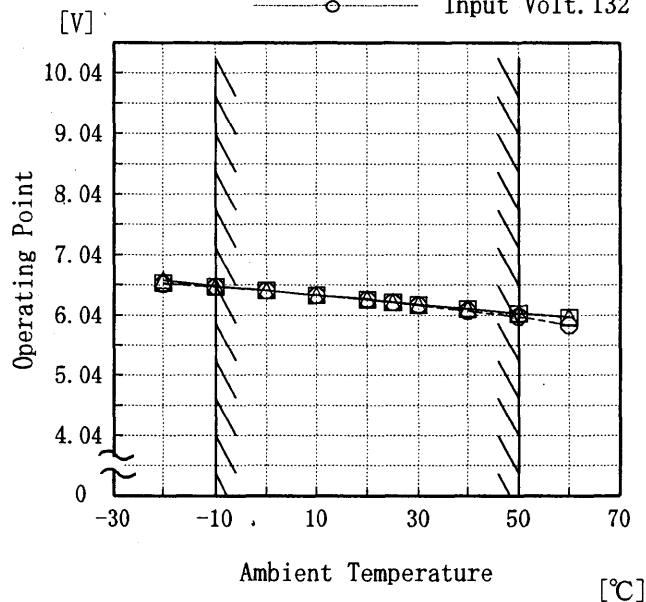
COSEL

| | | | | | |
|----------------|--|--|--|----------------------------|--|
| Model | | MMB50A-2 | | Temperature 25°C | |
| Item | | Overcurrent Protection 過電流保護 | | Testing Circuitry Figure A | |
| Object | | +5.0V5.00A | | 2. Values | |
| 1. Graph | | <div><div></div>Input Volt. 85.0 V</div> <div><div></div>Input Volt. 100.0 V</div> <div><div></div>Input Volt. 132.0 V</div> | | | |
| [V] | |  | | | |
| Output Voltage | | Load Current | | | |
| [V] | | [A] | | | |
| 8.0 | | 6.0 | | | |
| 6.0 | | 4.0 | | | |
| 4.0 | | 2.0 | | | |
| 2.0 | | 0.0 | | | |
| 0.0 | | 0 | | | |
| | | 2 | | | |
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COSEL

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|--------|---------------------------------|
| Model | MMB50A-2 |
| Item | Overvoltage Protection 過電圧保護 |
| Object | +5.0V5.00A |

1. Graph
- △— Input Volt. 85 V
 - -□- - Input Volt. 100 V
 —○— Input Volt. 132 V



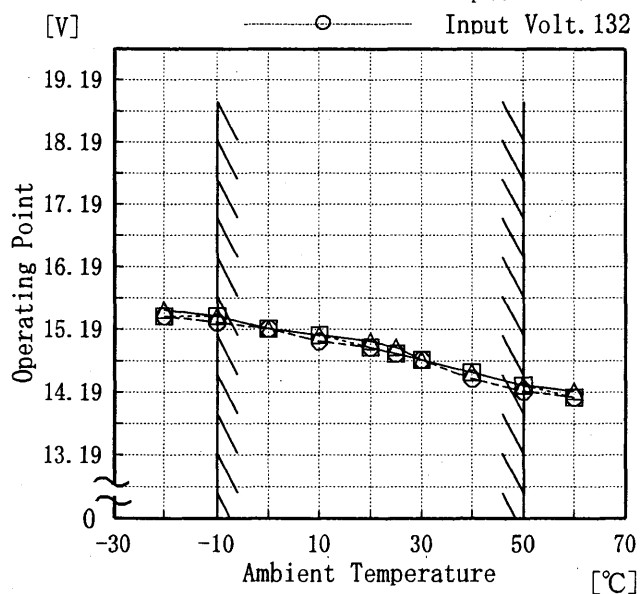
Testing Circuitry Figure A

2. Values

| Ambient Temp. | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|---------------|----------------------|-----------------------|-----------------------|
| [°C] | Operating Point [V] | | |
| -20 | 6.62 | 6.57 | 6.56 |
| -10 | 6.52 | 6.51 | 6.51 |
| 0 | 6.45 | 6.45 | 6.45 |
| 10 | 6.37 | 6.37 | 6.37 |
| 20 | 6.31 | 6.30 | 6.30 |
| 25 | 6.26 | 6.25 | 6.25 |
| 30 | 6.22 | 6.21 | 6.20 |
| 40 | 6.15 | 6.14 | 6.11 |
| 50 | 6.07 | 6.06 | 6.01 |
| 60 | 6.01 | 6.00 | 5.87 |
| - | - | - | - |

| | |
|--------|-----------|
| Object | +12V2.10A |
|--------|-----------|

1. Graph
- △— Input Volt. 85 V
 - -□- - Input Volt. 100 V
 —○— Input Volt. 132 V



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

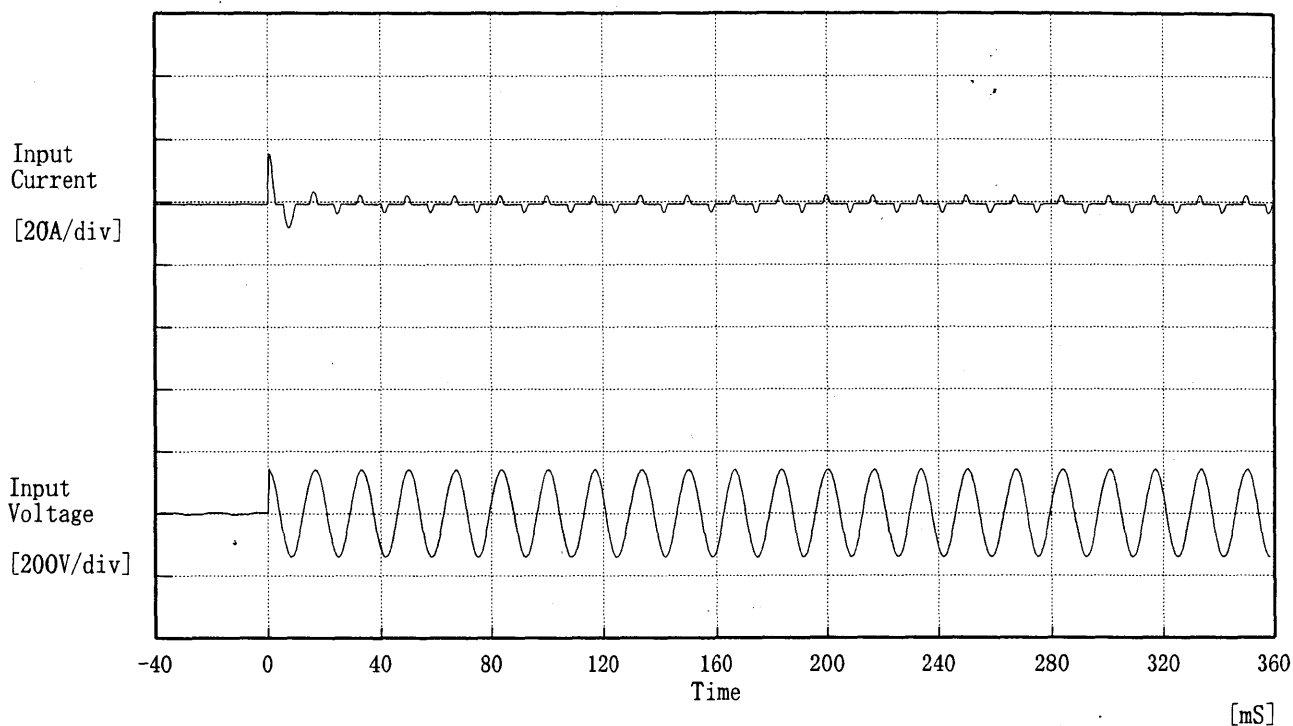
(注) 斜線は定格周囲温度範囲を示す。

2. Values

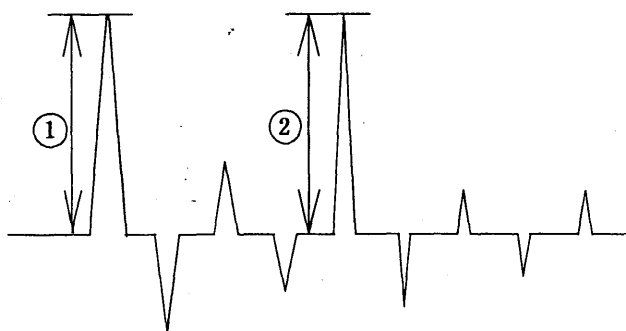
| Ambient Temp. | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|---------------|----------------------|-----------------------|-----------------------|
| [°C] | Operating Point [V] | | |
| -20 | 15.5 | 15.4 | 15.4 |
| -10 | 15.4 | 15.4 | 15.3 |
| 0 | 15.2 | 15.2 | 15.2 |
| 10 | 15.1 | 15.1 | 15.0 |
| 20 | 15.0 | 14.9 | 14.9 |
| 25 | 14.9 | 14.8 | 14.8 |
| 30 | 14.7 | 14.7 | 14.7 |
| 40 | 14.5 | 14.5 | 14.4 |
| 50 | 14.3 | 14.3 | 14.2 |
| 60 | 14.2 | 14.1 | 14.1 |
| - | - | - | - |

COSEL

| | | |
|--------|---------------------|--|
| Model | MMB50A-2 | Temperature 25°C Testing Circuitry Figure A |
| Item | Inrush Current 突入電流 | |
| Object | _____ | |



Input Voltage 100 V
Frequency 60 Hz
Load 100 %
Inrush Current
① 15.33 [A]
② 3.52 [A]



COSEL

| | | |
|--------|---------------------------------|--|
| Model | MMB50A-2 | Temperature 25°C Testing Circuitry Figure A |
| Item | Dynamic Load Response 動的負荷変動 | |
| Object | +5.0V 5.00A | |

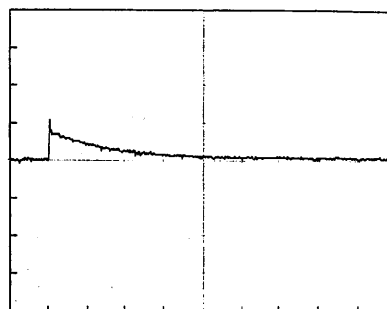
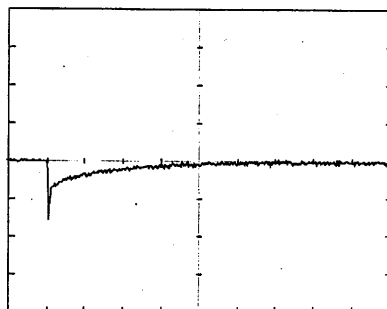
Input Volt. 100 V

Cycle 200 mS

Load Current

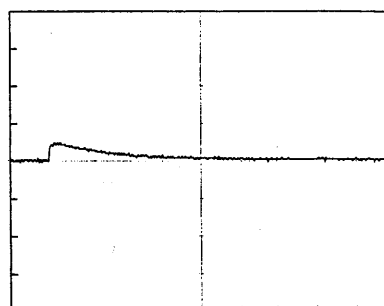
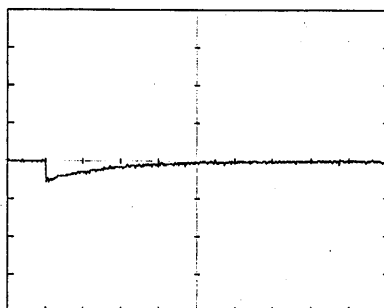
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

10 mS/div

COSEL

| | | | |
|--------|---------------------------------|-------------------|----------|
| Model | MMB50A-2 | Temperature | 25°C |
| Item | Dynamic Load Response 動的負荷変動 | Testing Circuitry | Figure A |
| Object | +12.0V 2.10A | | |

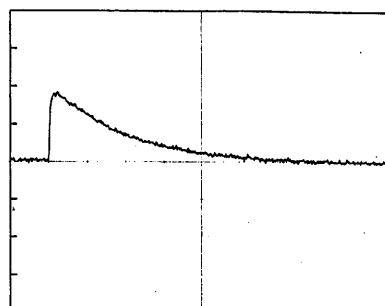
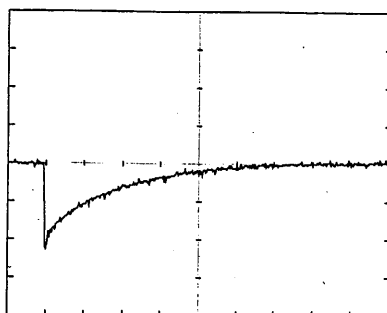
Input Volt. 100 V

Cycle 200 mS

Load Current

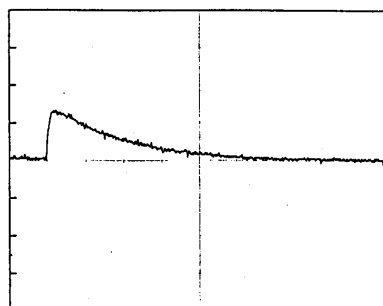
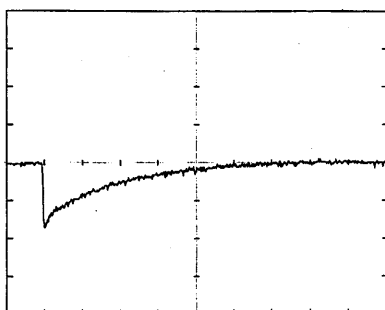
Load 0% ↔

Load 100 %



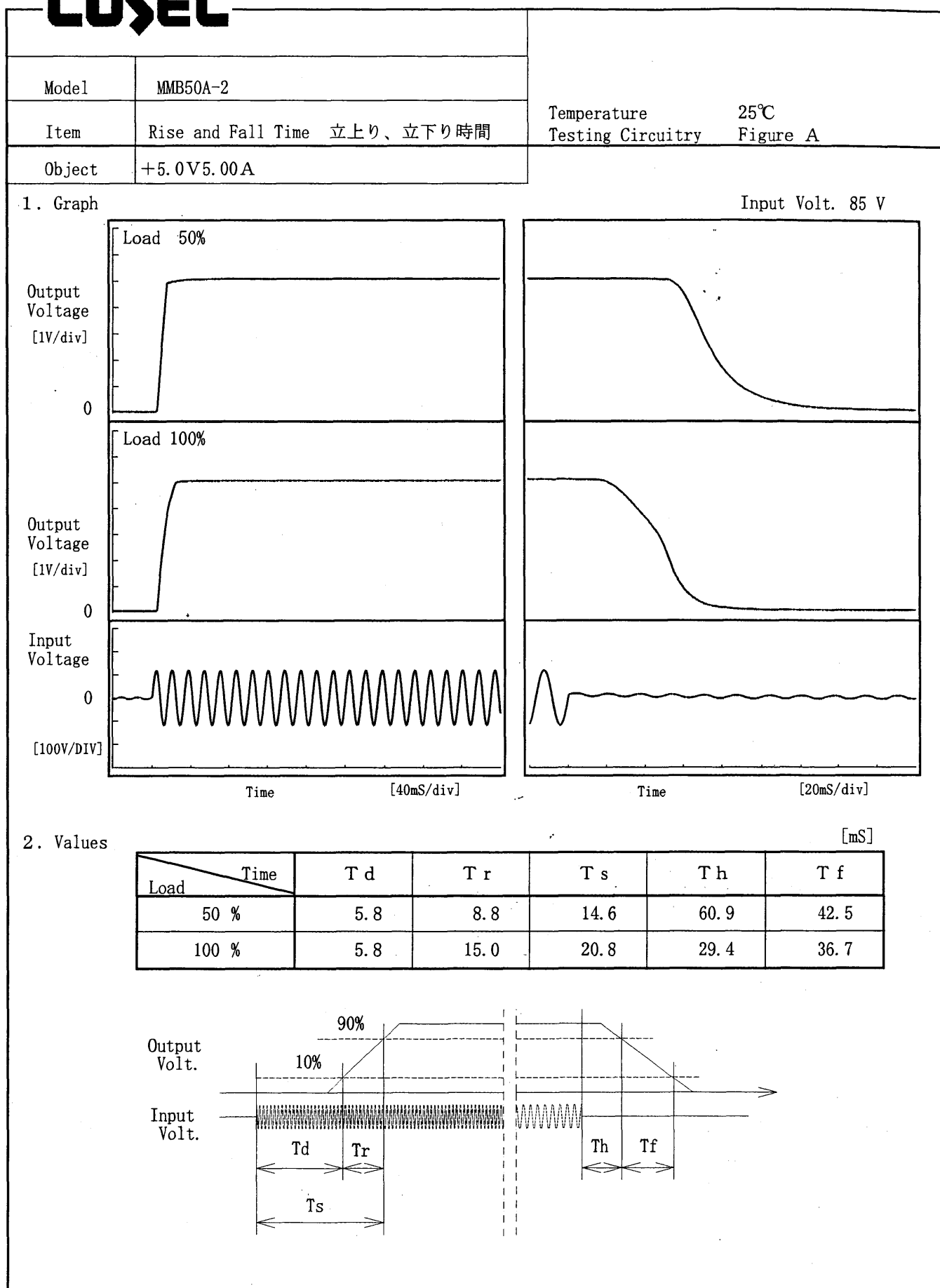
Load 0% ↔

Load 50 %



100 mV/div

10 mS/div

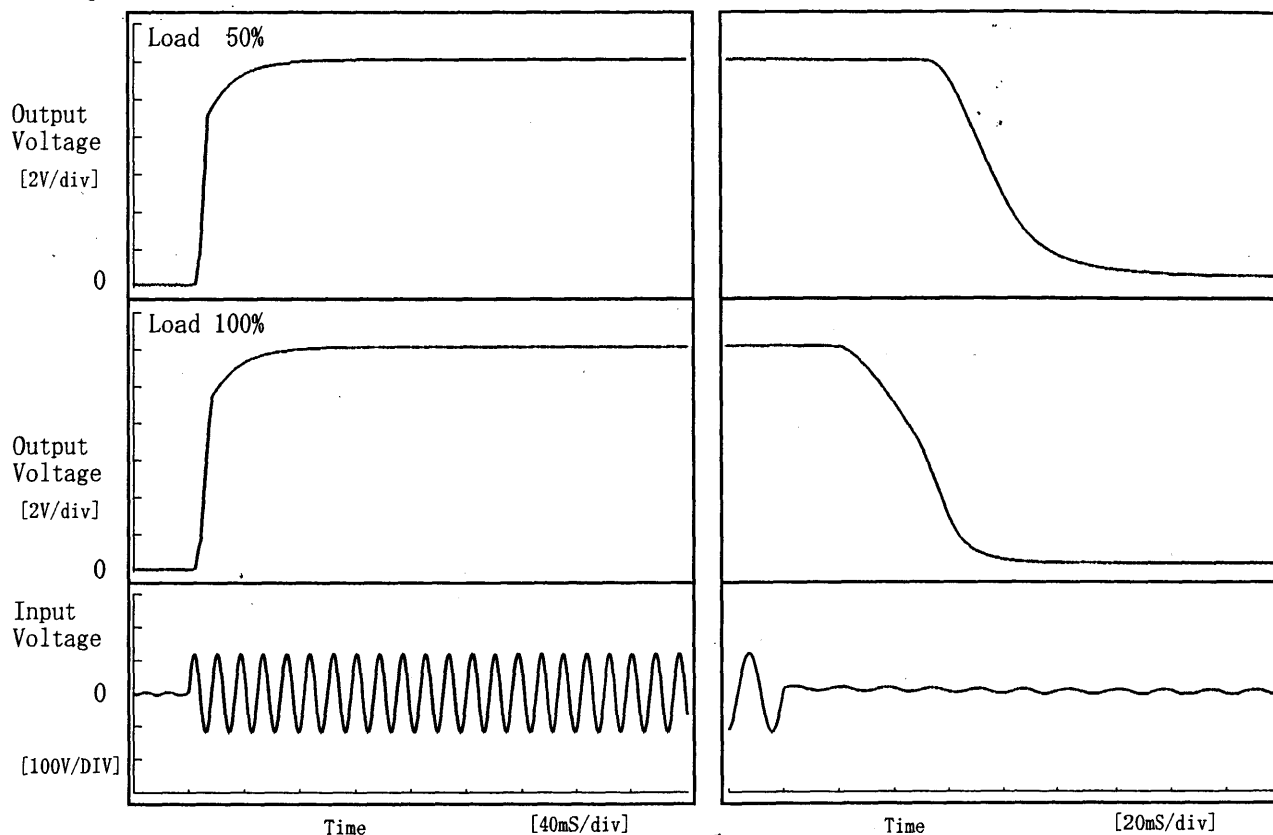
COSEL

COSEL

| | | | |
|--------|------------------------------|-------------------|----------|
| Model | MMB50A-2 | Temperature | 25°C |
| Item | Rise and Fall Time 立上り、立下り時間 | Testing Circuitry | Figure A |
| Object | +12.0V 2.10A | | |

1. Graph

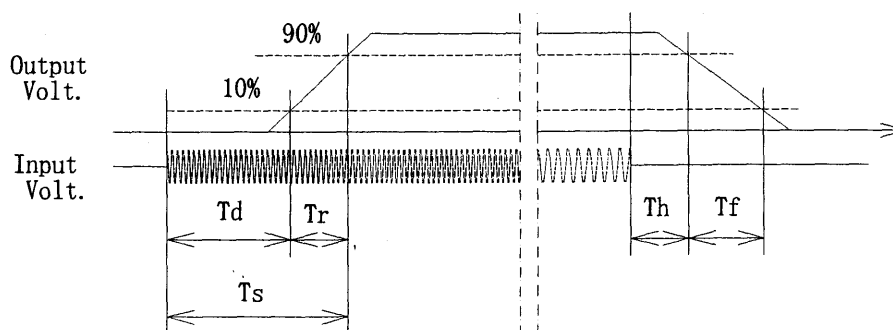
Input Volt. 85 V



2. Values

[mS]

| Load \ Time | T d | T r | T s | T h | T f |
|-------------|-----|------|------|------|------|
| 50 % | 6.8 | 24.4 | 31.2 | 61.4 | 46.4 |
| 100 % | 7.2 | 25.0 | 32.2 | 31.1 | 37.5 |



COSEL

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|--|--|-------------------------------------|--|
| Model | | MMB50A-2 | |
| Item | | Ambient Temperature Drift 周囲温度変動 | |
| Object | | +5.0V5.00A | |
| 1. Graph | | 2. Values | |
| <div><div><div>△</div><div>□</div><div>○</div></div><div><div>Input Volt. 85.0V</div><div>Input Volt. 100.0V</div><div>Input Volt. 132.0V</div></div></div> <div><div><div>Output Voltage [V]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><di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v><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></</div></div></div></div> | | | |

COSEL

| Model | | MMB50A-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|-----------------------|--------------------------------|---------------------------------|-----|------|------|-----|------|------|---|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|----|------|------|---|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +5.0V5.00A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div></div> | | <table><tr><th>Ambient Temp. [°C]</th><th>Load 50% Input Volt. [V]</th><th>Load 100% Input Volt. [V]</th></tr><tr><td>-20</td><td>33.5</td><td>64.5</td></tr><tr><td>-10</td><td>32.5</td><td>64.5</td></tr><tr><td>0</td><td>33.5</td><td>64.4</td></tr><tr><td>10</td><td>33.6</td><td>65.4</td></tr><tr><td>20</td><td>33.5</td><td>65.5</td></tr><tr><td>25</td><td>33.6</td><td>65.5</td></tr><tr><td>30</td><td>33.6</td><td>65.5</td></tr><tr><td>40</td><td>33.6</td><td>66.5</td></tr><tr><td>50</td><td>33.6</td><td>66.5</td></tr><tr><td>60</td><td>33.6</td><td>66.5</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table> | | Ambient Temp. [°C] | Load 50% Input Volt. [V] | Load 100% Input Volt. [V] | -20 | 33.5 | 64.5 | -10 | 32.5 | 64.5 | 0 | 33.5 | 64.4 | 10 | 33.6 | 65.4 | 20 | 33.5 | 65.5 | 25 | 33.6 | 65.5 | 30 | 33.6 | 65.5 | 40 | 33.6 | 66.5 | 50 | 33.6 | 66.5 | 60 | 33.6 | 66.5 | — | — | — |
| Ambient Temp. [°C] | Load 50% Input Volt. [V] | Load 100% Input Volt. [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 33.5 | 64.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 32.5 | 64.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 33.5 | 64.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 33.6 | 65.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 33.5 | 65.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 33.6 | 65.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 33.6 | 65.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 33.6 | 66.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 33.6 | 66.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 33.6 | 66.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +12V2.10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div></div> | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table><tr><th>Ambient Temp. [°C]</th><th>Load 50% Input Volt. [V]</th><th>Load 100% Input Volt. [V]</th></tr><tr><td>-20</td><td>31.7</td><td>59.6</td></tr><tr><td>-10</td><td>31.6</td><td>58.4</td></tr><tr><td>0</td><td>31.7</td><td>59.7</td></tr><tr><td>10</td><td>31.5</td><td>59.6</td></tr><tr><td>20</td><td>31.6</td><td>60.5</td></tr><tr><td>25</td><td>31.6</td><td>61.6</td></tr><tr><td>30</td><td>31.7</td><td>61.5</td></tr><tr><td>40</td><td>32.5</td><td>61.6</td></tr><tr><td>50</td><td>32.5</td><td>61.6</td></tr><tr><td>60</td><td>32.7</td><td>62.6</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table> | | Ambient Temp. [°C] | Load 50% Input Volt. [V] | Load 100% Input Volt. [V] | -20 | 31.7 | 59.6 | -10 | 31.6 | 58.4 | 0 | 31.7 | 59.7 | 10 | 31.5 | 59.6 | 20 | 31.6 | 60.5 | 25 | 31.6 | 61.6 | 30 | 31.7 | 61.5 | 40 | 32.5 | 61.6 | 50 | 32.5 | 61.6 | 60 | 32.7 | 62.6 | — | — | — |
| Ambient Temp. [°C] | Load 50% Input Volt. [V] | Load 100% Input Volt. [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 31.7 | 59.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 31.6 | 58.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 31.7 | 59.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 31.5 | 59.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 31.6 | 60.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 31.6 | 61.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 31.7 | 61.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 32.5 | 61.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 32.5 | 61.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 32.7 | 62.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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

| Model | | MMB50A-2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------------|--|--|--------------------|--------------------------------------|---------------------------------------|-----|----|----|-----|----|----|---|---|----|----|---|----|----|---|----|----|---|----|----|---|----|----|---|----|----|---|----|----|---|----|---|---|---|
| Item | | Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +5.0V5.00A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div><p>Input Volt. 100 V</p></div> | | <table><tr><th>Ambient Temp. [°C]</th><th>Load 50% Ripple Output Volt. [mV]</th><th>Load 100% Ripple Output Volt. [mV]</th></tr><tr><td>-20</td><td>10</td><td>20</td></tr><tr><td>-10</td><td>5</td><td>20</td></tr><tr><td>0</td><td>5</td><td>15</td></tr><tr><td>10</td><td>5</td><td>15</td></tr><tr><td>20</td><td>5</td><td>10</td></tr><tr><td>25</td><td>5</td><td>10</td></tr><tr><td>30</td><td>5</td><td>10</td></tr><tr><td>40</td><td>5</td><td>10</td></tr><tr><td>50</td><td>5</td><td>10</td></tr><tr><td>60</td><td>5</td><td>10</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table> | | Ambient Temp. [°C] | Load 50% Ripple Output Volt. [mV] | Load 100% Ripple Output Volt. [mV] | -20 | 10 | 20 | -10 | 5 | 20 | 0 | 5 | 15 | 10 | 5 | 15 | 20 | 5 | 10 | 25 | 5 | 10 | 30 | 5 | 10 | 40 | 5 | 10 | 50 | 5 | 10 | 60 | 5 | 10 | — | — | — |
| Ambient Temp. [°C] | Load 50% Ripple Output Volt. [mV] | Load 100% Ripple Output Volt. [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 10 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 5 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 5 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 5 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | | +12V2.10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div><p>Input Volt. 100 V</p></div> | | <table><tr><th>Ambient Temp. [°C]</th><th>Load 50% Ripple Output Volt. [mV]</th><th>Load 100% Ripple Output Volt. [mV]</th></tr><tr><td>-20</td><td>10</td><td>15</td></tr><tr><td>-10</td><td>10</td><td>15</td></tr><tr><td>0</td><td>5</td><td>15</td></tr><tr><td>10</td><td>5</td><td>15</td></tr><tr><td>20</td><td>5</td><td>10</td></tr><tr><td>25</td><td>5</td><td>10</td></tr><tr><td>30</td><td>5</td><td>10</td></tr><tr><td>40</td><td>5</td><td>10</td></tr><tr><td>50</td><td>5</td><td>10</td></tr><tr><td>60</td><td>5</td><td>10</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table> | | Ambient Temp. [°C] | Load 50% Ripple Output Volt. [mV] | Load 100% Ripple Output Volt. [mV] | -20 | 10 | 15 | -10 | 10 | 15 | 0 | 5 | 15 | 10 | 5 | 15 | 20 | 5 | 10 | 25 | 5 | 10 | 30 | 5 | 10 | 40 | 5 | 10 | 50 | 5 | 10 | 60 | 5 | 10 | — | — | — |
| Ambient Temp. [°C] | Load 50% Ripple Output Volt. [mV] | Load 100% Ripple Output Volt. [mV] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 10 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 5 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 5 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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

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|--|-------------------------|----------------------------|--|
| COSEL | | | |
| Model | MMB50A-2 | Temperature 25℃ | |
| Item | Time Lapse Drift 経時ドリフト | Testing Circuitry Figure A | |
| Object | +5.0V5.00A | | |
| 1. Graph | | 2.Values | |
| <div><div><div>Output Voltage [V]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><di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| | | |

COSEL

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|-------|----------------------------------|----------|--|-------------------------------|--|
| Model | | MMB50A-2 | | Testing Circuitry Figure A | |
| Item | Output Voltage Accuracy 定電圧精度 | | | | |

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 : -10~50 °C

Input Voltage : 85.0~132.0 V

Load Current (AVR 1) : 0.00~5.00 A

 (AVR 2) : 0.00~2.10 A

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

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

定電圧精度

周囲温度、入力電圧、負荷を下記仕様内で、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 -10~50 °C

入力電圧 85.0~132.0 V

負荷電流 (AVR 1) 0.00~5.00 A

 (AVR 2) 0.00~2.10 A

* 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

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

| | | | | | | |
|--------|------------|--|--|--|--|--|
| Object | +5.0V5.00A | | | | | |
|--------|------------|--|--|--|--|--|

| | | | | | | |
|-----------------|---------------------|----------------------|-----------------------|-----------------------|---------------------------------|--|
| Item | Temperature [°C] | Input Voltage [V] | Output Current [A] | Output Voltage [V] | Output Voltage Accuracy [mV] | Output Voltage Accuracy(Ration) [%] |
| Maximum Voltage | -10 | 132.0 | 0.00 | 5.098 | ±14 | ±0.3 |
| Minimum Voltage | 50 | 132.0 | 5.00 | 5.070 | | |

| | | | | | | |
|--------|-------------|--|--|--|--|--|
| Object | +12.0V2.10A | | | | | |
|--------|-------------|--|--|--|--|--|

| | | | | | | |
|-----------------|---------------------|----------------------|-----------------------|-----------------------|---------------------------------|--|
| Item | Temperature [°C] | Input Voltage [V] | Output Current [A] | Output Voltage [V] | Output Voltage Accuracy [mV] | Output Voltage Accuracy(Ration) [%] |
| Maximum Voltage | -10 | 100.0 | 0.00 | 12.072 | ±22 | ±0.2 |
| Minimum Voltage | 50 | 85.0 | 2.10 | 12.028 | | |

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|--------|-------------------|-------------------|----------|
| | | | |
| Model | MMB50A-2 | | |
| Item | Condensation 結露特性 | Testing Circuitry | Figure A |
| Object | +5.0V5A | | |

1. Condensation test

Testing procedure is as follows.

① Keeping and cooling the unit in a tank at -10℃ 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℃ 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℃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℃、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、異常のないことを確認する。

2. Values

| Item | Data | Testing Conditions |
|----------------------|-------|---------------------------------------|
| Output Voltage [V] | 5.085 | Input Volt.: 100V, Load Current:5A |
| Line Regulation [mV] | 1 | Input Volt.: 85～132V, Load Current:5A |
| Load Regulation [mV] | 7 | Input Volt.: 100V, Load Current:0～5A |

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| Model | MMB50A-2 | | | | | | | | | | | | | | |
|--|-------------------|---|---------------------------------|------|------|--------------------|--------------------|-------|--------------------------------------|----------------------|---|--|----------------------|---|---|
| Item | Condensation 結露特性 | | Testing Circuitry Figure A | | | | | | | | | | | | |
| Object | +12.0V2.1A | | | | | | | | | | | | | | |
| <div>1. Condensation test</div> <div>Testing procedure is as follows.</div> <div>① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off.</div> <div>② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH.</div> <div>③ Testing electrical characteristics of the unit to confirm there be no fault.</div> | | | | | | | | | | | | | | | |
| <div>1. 結露特性試験</div> <div>入力を切った状態で、恒温槽で－10℃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℃、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、異常のないことを確認する。</div> | | | | | | | | | | | | | | | |
| <div>2. Values</div> <table><tr><th>Item</th><th>Data</th><th>Testing Conditions</th></tr><tr><td>Output Voltage [V]</td><td>12.05</td><td>Input Volt.: 100V, Load Current:2.1A</td></tr><tr><td>Line Regulation [mV]</td><td>1</td><td>Input Volt. : 85～132V, Load Current:2.1A</td></tr><tr><td>Load Regulation [mV]</td><td>8</td><td>Input Volt. : 100V, Load Current:0.0～2.1A</td></tr></table> | | | | Item | Data | Testing Conditions | Output Voltage [V] | 12.05 | Input Volt.: 100V, Load Current:2.1A | Line Regulation [mV] | 1 | Input Volt. : 85～132V, Load Current:2.1A | Load Regulation [mV] | 8 | Input Volt. : 100V, Load Current:0.0～2.1A |
| Item | Data | Testing Conditions | | | | | | | | | | | | | |
| Output Voltage [V] | 12.05 | Input Volt.: 100V, Load Current:2.1A | | | | | | | | | | | | | |
| Line Regulation [mV] | 1 | Input Volt. : 85～132V, Load Current:2.1A | | | | | | | | | | | | | |
| Load Regulation [mV] | 8 | Input Volt. : 100V, Load Current:0.0～2.1A | | | | | | | | | | | | | |

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BC-3210

COSEL

| | | | |
|--------|----------------------|-------------------|----------|
| Model | MMB50A-2 | Temperature | 25°C |
| Item | Leakage Current 漏洩電流 | Testing Circuitry | Figure A |
| Object | _____ | | |

1. Results

| Standards | Leakage Current [mA] | | |
|--------------|-----------------------|------------------------|------------------------|
| | Input Volt. 85 [V] | Input Volt. 100 [V] | Input Volt. 132 [V] |
| (A) DENTORI | 0.12 | 0.14 | 0.18 |
| (B) IEC60950 | 0.11 | 0.14 | 0.18 |

| Standards | Leakage Current [mA] | | |
|--------------|------------------------|------------------------|------------------------|
| | Input Volt. 170 [V] | Input Volt. 230 [V] | Input Volt. 264 [V] |
| (B) IEC60950 | — | — | — |

2. Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

交流入力 of 両相について測定し、その大きい方を漏洩電流測定値とする。

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| | | | |
|--------|------------------------------|-------------------|----------|
| Model | MMB50A-2 | Testing Circuitry | Figure D |
| Item | Conducted Emission 雑音端子電圧 | | |
| Object | | | |

1. Graph

Remarks

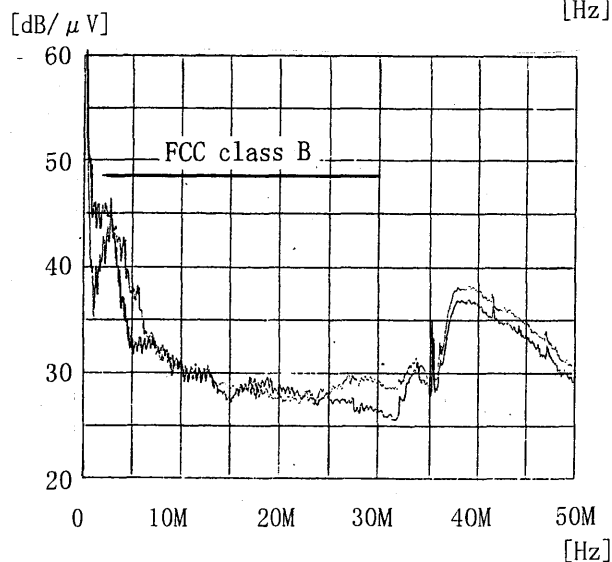
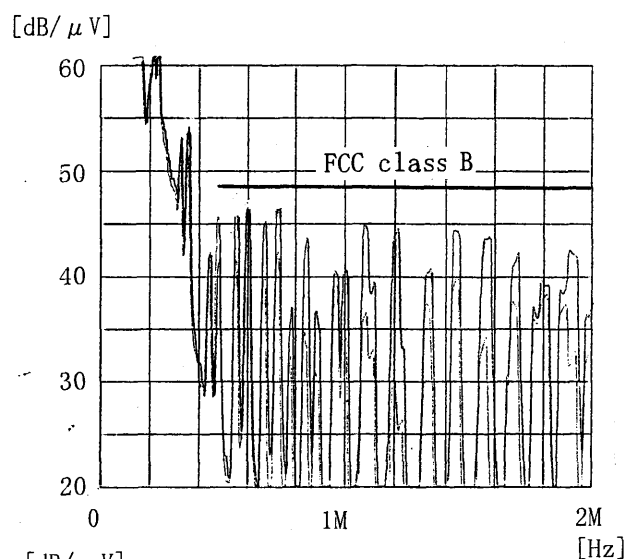
Input Volt. 120 V

Load 100 %

Note: Slanted line shows the range of Tolerance.

(注)斜線は許容値を示す。

| NO | Standards | Standards Complied | Frequency [MHz] | Tolerance [dB/μV] |
|----|---------------------------------------|-----------------------|--------------------|----------------------|
| 1 | FCC class A | | 0.45~1.6 | 60 |
| | | | 1.6~30 | 69.5 |
| 2 | FCC class B | ○ | 0.45~30 | 48 |
| 3 | VCCI class A | | 0.15~0.5 | 79 |
| | | | 0.5~30 | 73 |
| 4 | VCCI class B | | 0.15~0.5 | 66~56 |
| | | | 0.5~5 | 56 |
| | | | 5~30 | 60 |
| 5 | CISPR Pub. 22 class A (EN55022) | | 0.15~0.5 | 79 |
| | | | 0.5~30 | 73 |
| | | | | |
| 6 | CISPR Pub. 22 class B (EN55022) | | 0.15~0.5 | 66~56 |
| | | | 0.5~5 | 56 |
| | | | 5~30 | 60 |



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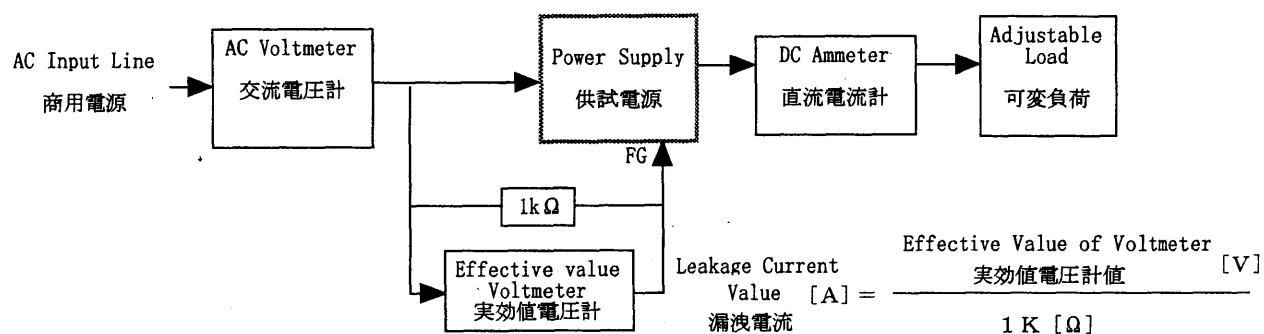
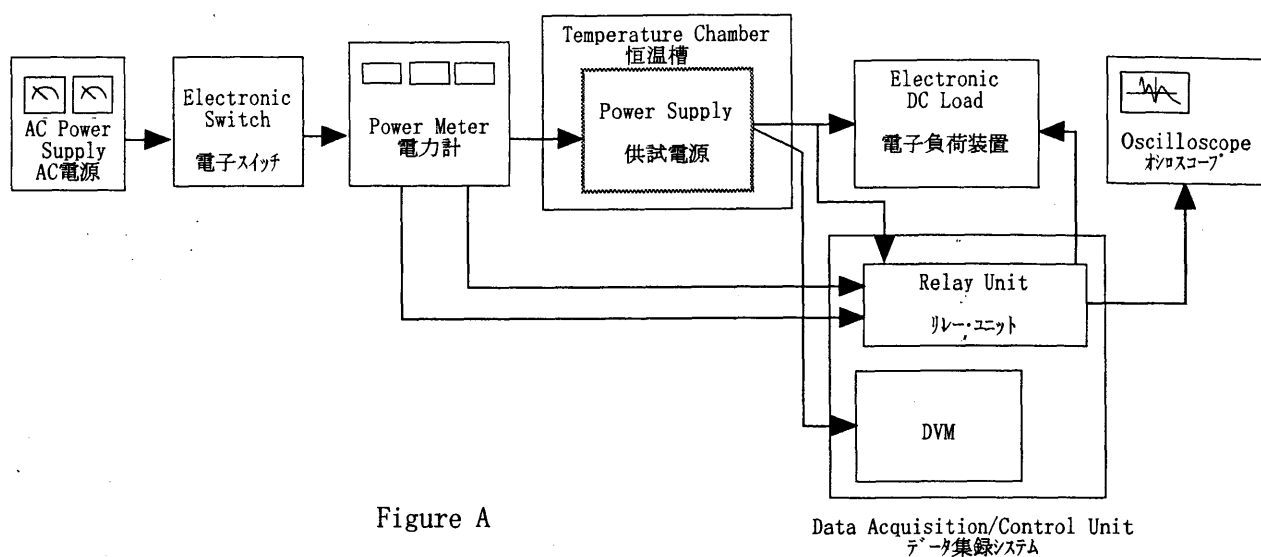


Figure B (DENTORI)

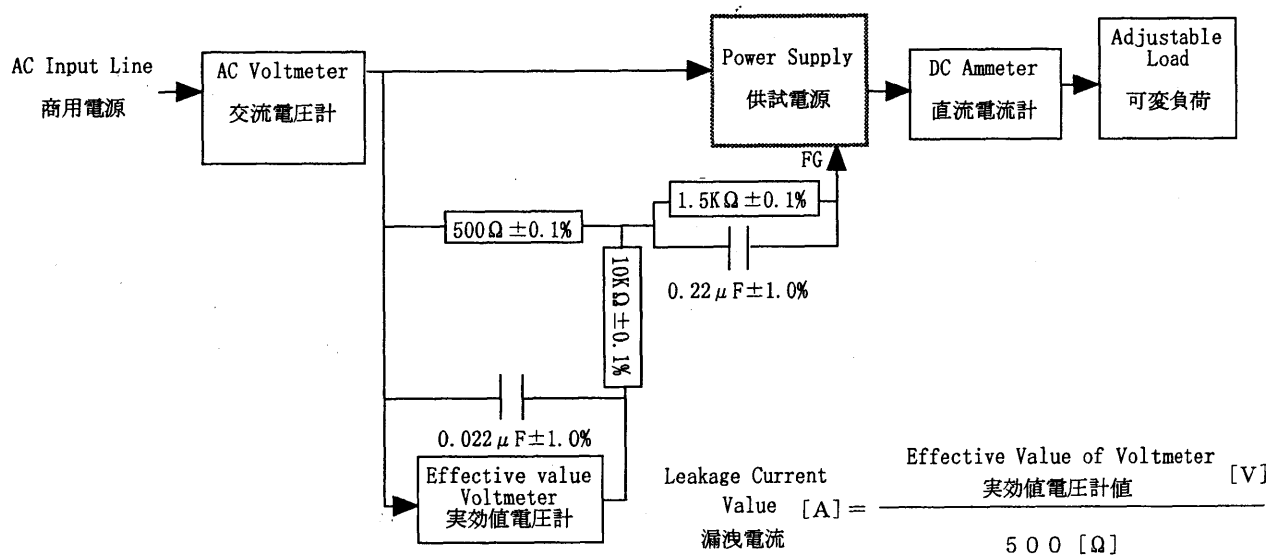


Figure B (IEC 60950)

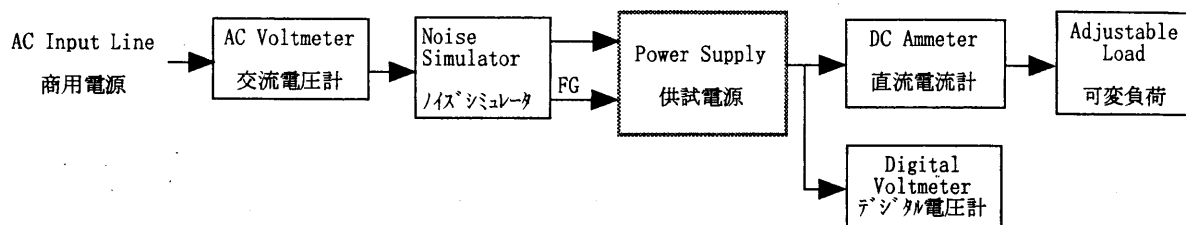


Figure C

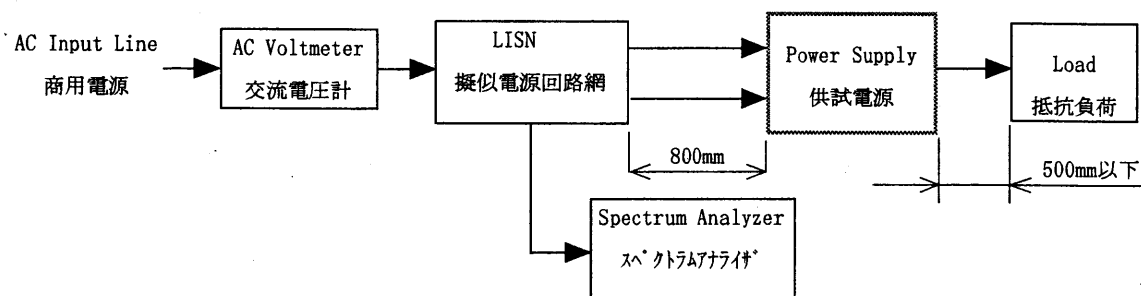


Figure D

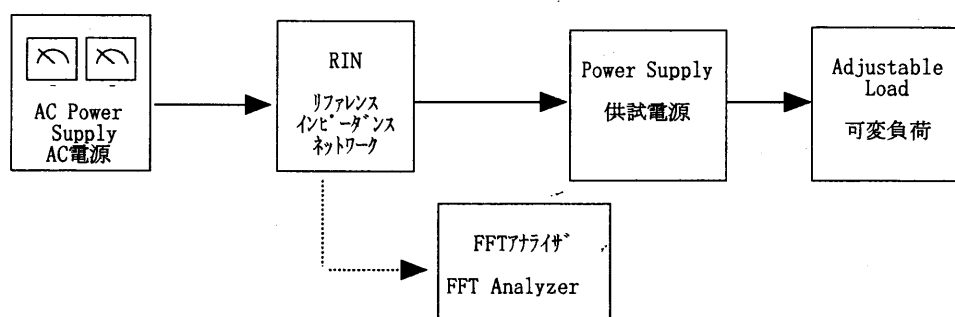


Figure E