



TEST DATA OF ZUS100512

(5.0V INPUT)

Regulated DC Power Supply

Date : Sep 21. 1996

Approved by : T. Sugimori
Design Manager

Prepared by : M. Takashima
Design Engineer

コーセル株式会社

COSEL CO., LTD.

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Model ZUS100512

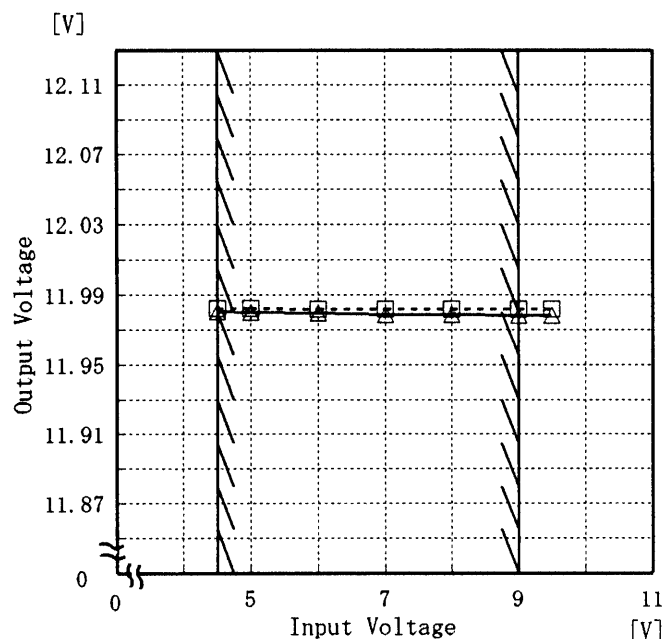
Item Line Regulation 静的入力変動

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.7A

1. Graph

-----□----- Load 50%
 -----△----- Load 100%



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%
	Output Volt. [V]	Output Volt. [V]
4.5	11.982	11.980
5.0	11.982	11.980
6.0	11.982	11.979
7.0	11.982	11.979
8.0	11.982	11.978
9.0	11.982	11.978
9.5	11.982	11.978
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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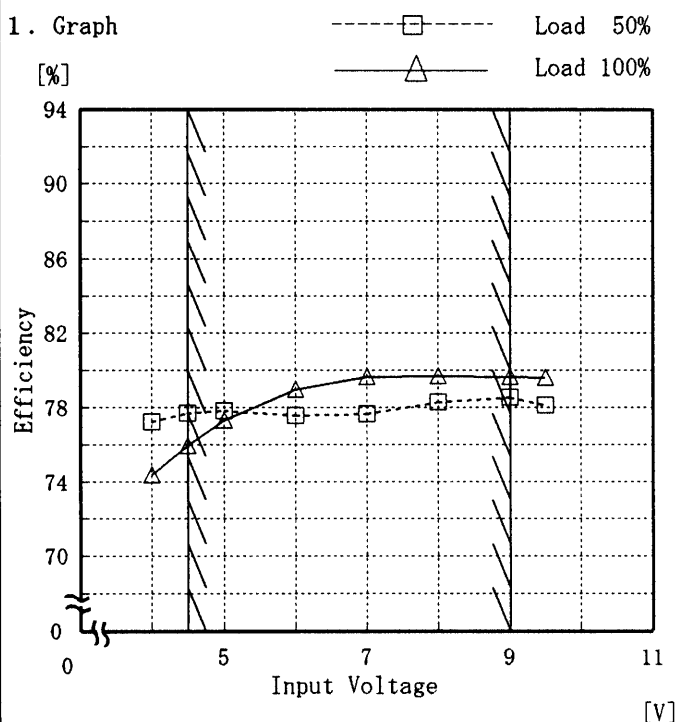
Model ZUS100512

Item Efficiency 効率

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph



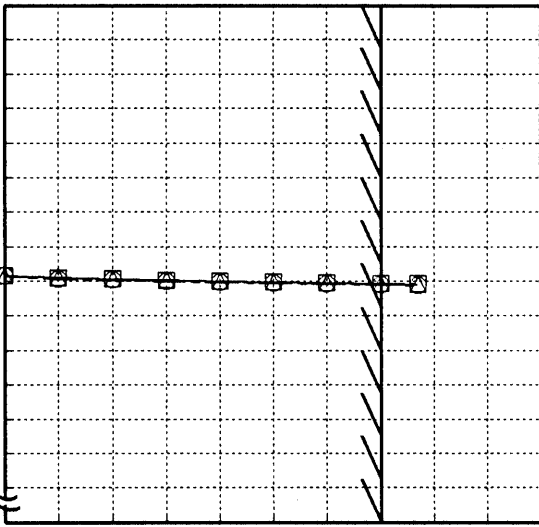
Note: Slanted line shows the range of the rated input voltage.

(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Load 50%	Load 100%
	Efficiency [%]	Efficiency [%]
4.0	77.2	74.4
4.5	77.7	75.9
5.0	77.8	77.3
6.0	77.5	79.0
7.0	77.6	79.7
8.0	78.3	79.7
9.0	78.5	79.7
9.5	78.1	79.6
—	—	—
—	—	—
—	—	—
—	—	—

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Model		ZUS100512	Temperature25℃																																																
Item		Load Regulation 静的負荷変動	Testing CircuitryFigure A																																																
Object		+12V0.700A																																																	
1. Graph		2. Values																																																	
<div><div><div>—△—</div><div>Input Volt. 4.5V</div></div><div><div>- - -□- - -</div><div>Input Volt. 5.0V</div></div><div><div>- - -○- - -</div><div>Input Volt. 9.0V</div></div></div> <div><div>Output Voltage [V]</div><div><div>12.12</div><div>12.08</div><div>12.04</div><div>12.00</div><div>11.96</div><div>11.92</div><div>11.88</div><div>0</div></div></div> <div><div>Load Current [A]</div><div><div>0</div><div>0.2</div><div>0.4</div><div>0.6</div><div>0.8</div><div>1</div></div></div>  <div>Note: Slanted line shows the range of the rated load current.</div> <div>(注)斜線は定格負荷電流範囲を示す。</div>		<table><tr><th rowspan="2">Load Current [A]</th><th>Input Volt. 4.5[V]</th><th>Input Volt. 5.0[V]</th><th>Input Volt. 9.0[V]</th></tr><tr><th>Output Volt. [V]</th><th>Output Volt. [V]</th><th>Output Volt. [V]</th></tr><tr><td>0.00</td><td>11.983</td><td>11.983</td><td>11.983</td></tr><tr><td>0.10</td><td>11.982</td><td>11.982</td><td>11.982</td></tr><tr><td>0.20</td><td>11.981</td><td>11.981</td><td>11.981</td></tr><tr><td>0.30</td><td>11.981</td><td>11.981</td><td>11.980</td></tr><tr><td>0.40</td><td>11.980</td><td>11.980</td><td>11.980</td></tr><tr><td>0.50</td><td>11.980</td><td>11.979</td><td>11.979</td></tr><tr><td>0.60</td><td>11.979</td><td>11.979</td><td>11.979</td></tr><tr><td>0.70</td><td>11.979</td><td>11.979</td><td>11.978</td></tr><tr><td>0.77</td><td>11.978</td><td>11.978</td><td>11.978</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>			Load Current [A]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]	0.00	11.983	11.983	11.983	0.10	11.982	11.982	11.982	0.20	11.981	11.981	11.981	0.30	11.981	11.981	11.980	0.40	11.980	11.980	11.980	0.50	11.980	11.979	11.979	0.60	11.979	11.979	11.979	0.70	11.979	11.979	11.978	0.77	11.978	11.978	11.978	—	—	—	—
Load Current [A]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]																																																
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—	—	—	—																																																

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Model		ZUS100512	
Item		Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)	
Object		+12V0.7A	

1. Graph

-----□-----

Input Volt. 4.5V

-----△-----

Input Volt. 9.0V

100

80

60

40

20

0

Ripple Voltage

0

0.2

0.4

0.6

0.8

1

Load Current

[A]

Ripple Voltage is shown as p-p in the figure below.

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

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。

T1: Due to AC Input Line
入力商用周期

T2: Due to Switching
スイッチング周期

Ripple [mVp-p]

T2

T1

Fig. Complex Ripple Wave Form

図 リップル波形詳細図

Load Current	Input Volt.	Input Volt.
	4.5 [V]	9.0 [V]
[A]	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.00	5	5
0.10	5	5
0.20	5	5
0.30	5	5
0.40	5	8
0.50	5	8
0.60	8	8
0.70	10	10
0.77	10	10
—	—	—
—	—	—

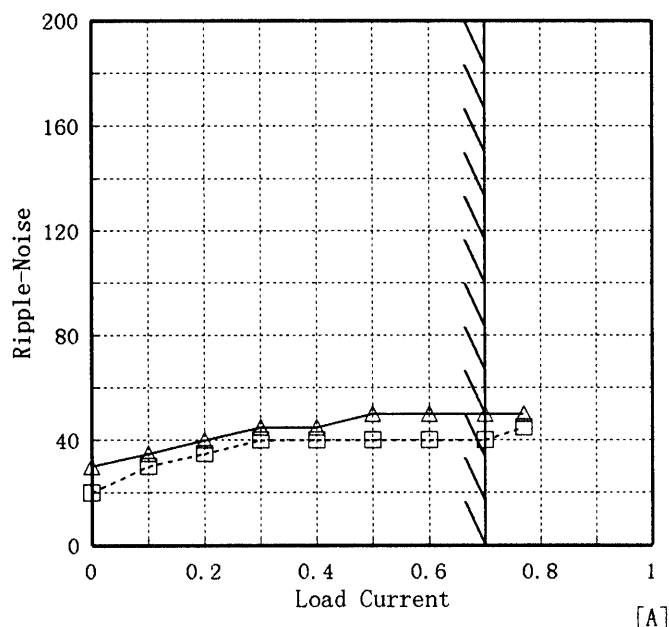
2. Values

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Model	ZUS100512
Item	Ripple-Noise リップルノイズ
Object	+12V0.700A

Temperature 25°C
Testing Circuitry Figure A

1. Graph
- Input Volt. 4.5V
-----△----- Input Volt. 9.0V



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。

2. Values

Load current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.00	20	30
0.10	30	35
0.20	35	40
0.30	40	45
0.40	40	45
0.50	40	50
0.60	40	50
0.70	40	50
0.77	45	50
—	—	—
—	—	—

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
スイッチング周期

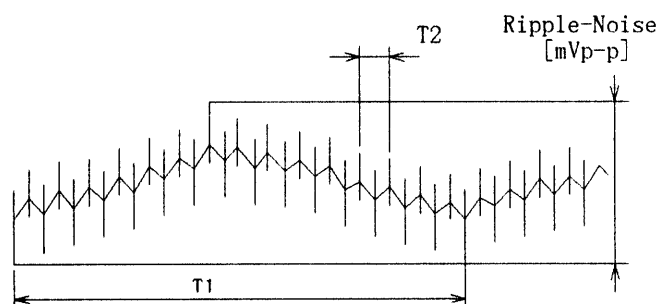


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

COSEL

Model		ZUS100512	Temperature 25℃ Testing Circuitry Figure A	
Item		Overcurrent Protection 過電流保護		
Object		+12V0.7A		

1. Graph

~~~~~ Input Volt. 4.5V

\_\_\_\_\_ Input Volt. 5.0V

———— Input Volt. 9.0V

[V]

Output Voltage [V]

Load Current [A]

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。

2. Values

| Output Voltage [V] | Input Volt. 4.5[V] | Input Volt. 5.0[V] | Input Volt. 9.0[V] |
|--------------------|--------------------|--------------------|--------------------|
|                    | Load Current [A]   | Load Current [A]   | Load Current [A]   |
| 12.00              | 0.00               | 0.00               | 0.00               |
| 11.40              | 0.90               | 0.93               | 0.94               |
| 10.80              | 0.93               | 0.96               | 0.97               |
| 9.60               | 0.98               | 1.01               | 1.03               |
| 8.40               | 1.04               | 1.07               | 1.09               |
| 7.20               | 1.09               | 1.11               | 1.11               |
| 6.00               | 1.12               | 1.13               | 1.09               |
| 4.80               | 1.07               | 1.07               | 0.98               |
| 3.60               | 1.04               | 1.04               | 0.94               |
| 2.40               | 1.01               | 1.04               | 0.95               |
| 1.20               | 1.04               | 1.09               | 1.01               |
| 0.00               | 1.13               | 1.15               | 1.42               |



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|        |                                 |                                                |
|--------|---------------------------------|------------------------------------------------|
| Model  | ZUS100512                       | Temperature 25°C<br>Testing Circuitry Figure A |
| Item   | Dynamic Load Responce<br>動的負荷変動 |                                                |
| Object | +12V0.700A                      |                                                |

Input Volt. 5 V

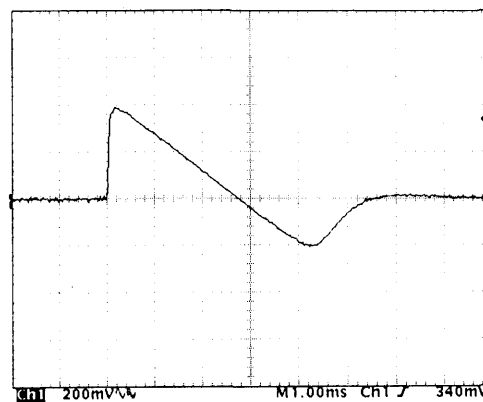
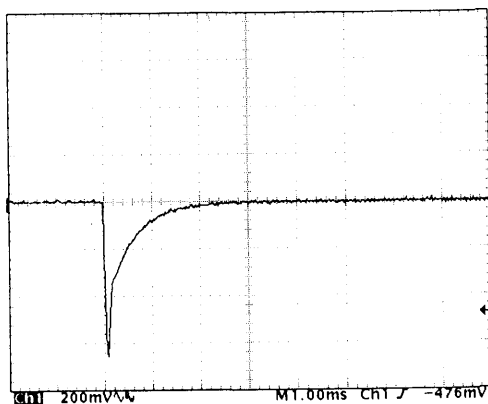
Cycle 100 mS

Load Current

Min. Load ←→

Load 100 %

200 mV/div

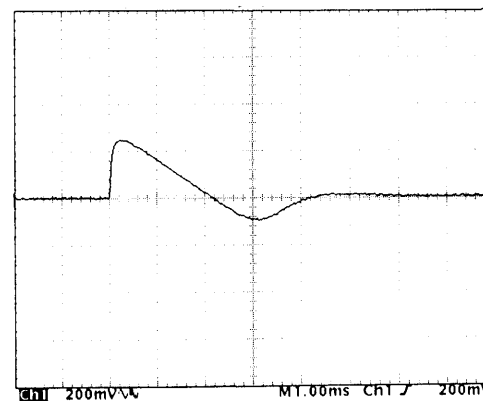
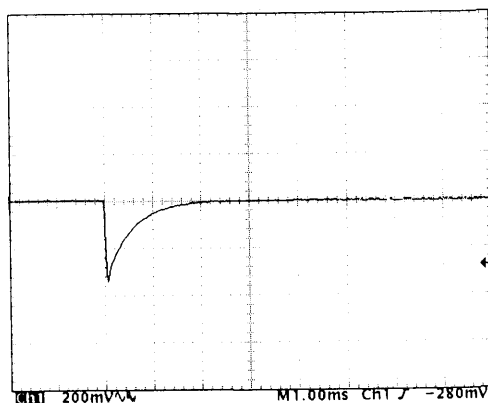


1 ms/div

Min. Load ←→

Load 50 %

200 mV/div

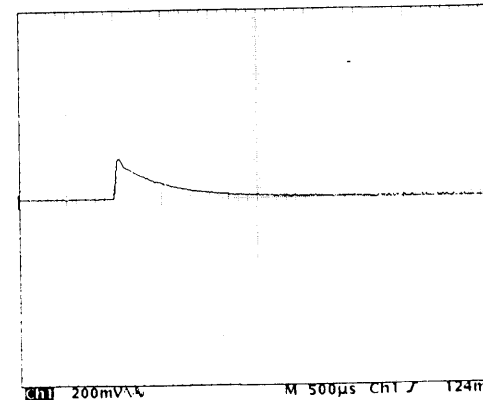
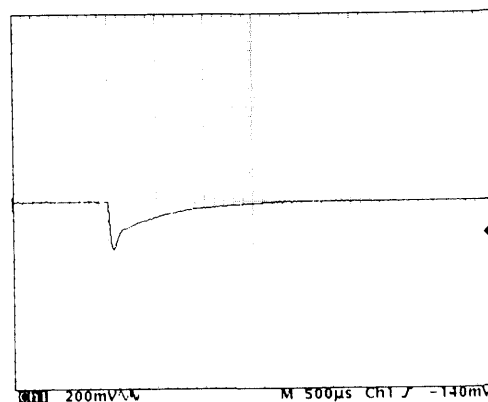


1 ms/div

Load 50% ←→

Load 100 %

200 mV/div



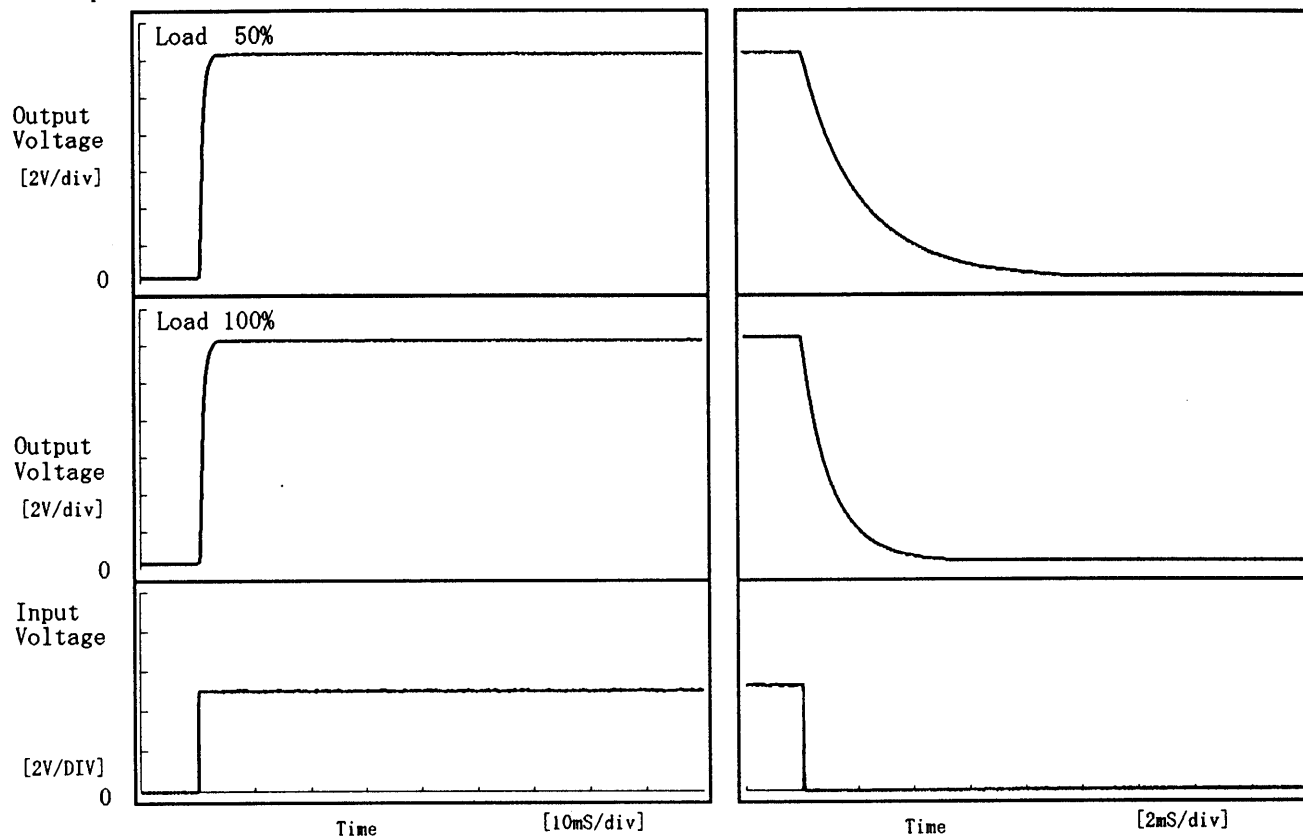
0.5 ms/div

**COSEL**

|        |                              |                   |          |
|--------|------------------------------|-------------------|----------|
| Model  | ZUS100512                    | Temperature       | 25°C     |
| Item   | Rise and Fall Time 立上り、立下り時間 | Testing Circuitry | Figure A |
| Object | +12V0.700A                   |                   |          |

## 1. Graph

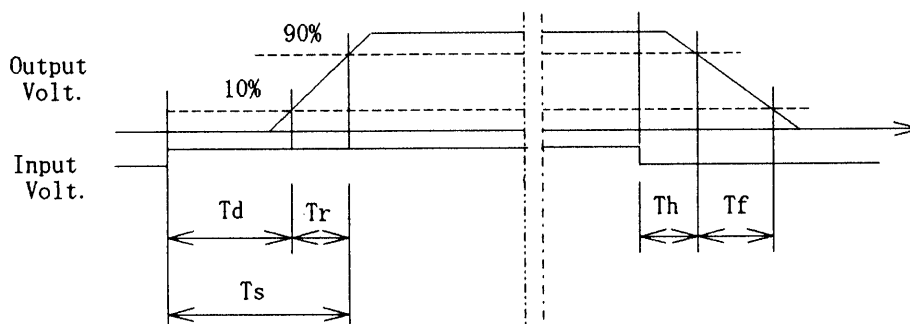
Input Volt. 4.5 V



## 2. Values

[mS]

| Load \ Time | T d  | T r  | T s  | T h  | T f  |
|-------------|------|------|------|------|------|
| 50 %        | 0.45 | 1.30 | 1.75 | 0.29 | 4.70 |
| 100 %       | 0.40 | 1.40 | 1.80 | 0.14 | 2.35 |



**COSEL**

| Model                                                                                                         |                                        | ZUS100512                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Testing Circuitry    Figure A          |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----|--------|--------|--------|-----|--------|--------|--------|-----|--------|--------|--------|---|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|----|--------|--------|--------|---|---|---|---|
| Item                                                                                                          |                                        | Ambient Temperature Drift<br>周囲温度変動                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                        |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| Object                                                                                                        |                                        | +12V0.700A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                        |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 1. Graph                                                                                                      |                                        | <div><div><div>△</div><div>—</div></div><div>Input Volt. 4.5V</div><div><div>□</div><div>- - -</div></div><div>Input Volt. 5.0V</div><div><div>○</div><div>- · -</div></div><div>Input Volt. 9.0V</div></div> <div><div><div>Output Voltage [V]</div><div><div>12.12</div><div>12.08</div><div>12.04</div><div>12.00</div><div>11.96</div><div>11.92</div><div>11.88</div><div>0</div></div><div><div>—</div><div>—</div><div>—</div><div>—</div><div>—</div><div>—</div><div>—</div><div>—</div></div><div><div>-40</div><div>-20</div><div>0</div><div>20</div><div>40</div><div>60</div></div><div>Ambient Temperature [°C]</div></div><div>Load    100%</div></div> <td colspan="2">2. Values</td>                                                                                                                                                                                                                         | 2. Values                              |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| <div>Note: Slanted line shows the range of the rated ambient temperature.</div> <div>(注)斜線は定格周囲温度範囲を示す。</div> |                                        | <table><tr><th>Temperature [°C]</th><th>Input Volt. 4.5[V]<br/>Output Volt. [V]</th><th>Input Volt. 5.0[V]<br/>Output Volt. [V]</th><th>Input Volt. 9.0[V]<br/>Output Volt. [V]</th></tr><tr><td>-30</td><td>11.992</td><td>11.991</td><td>11.991</td></tr><tr><td>-20</td><td>11.990</td><td>11.989</td><td>11.989</td></tr><tr><td>-10</td><td>11.987</td><td>11.987</td><td>11.986</td></tr><tr><td>0</td><td>11.985</td><td>11.985</td><td>11.984</td></tr><tr><td>10</td><td>11.984</td><td>11.983</td><td>11.983</td></tr><tr><td>25</td><td>11.979</td><td>11.979</td><td>11.978</td></tr><tr><td>30</td><td>11.978</td><td>11.978</td><td>11.976</td></tr><tr><td>40</td><td>11.972</td><td>11.972</td><td>11.970</td></tr><tr><td>55</td><td>11.959</td><td>11.959</td><td>11.957</td></tr><tr><td>60</td><td>11.953</td><td>11.952</td><td>11.950</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table> |                                        | Temperature [°C] | Input Volt. 4.5[V]<br>Output Volt. [V] | Input Volt. 5.0[V]<br>Output Volt. [V] | Input Volt. 9.0[V]<br>Output Volt. [V] | -30 | 11.992 | 11.991 | 11.991 | -20 | 11.990 | 11.989 | 11.989 | -10 | 11.987 | 11.987 | 11.986 | 0 | 11.985 | 11.985 | 11.984 | 10 | 11.984 | 11.983 | 11.983 | 25 | 11.979 | 11.979 | 11.978 | 30 | 11.978 | 11.978 | 11.976 | 40 | 11.972 | 11.972 | 11.970 | 55 | 11.959 | 11.959 | 11.957 | 60 | 11.953 | 11.952 | 11.950 | — | — | — | — |
| Temperature [°C]                                                                                              | Input Volt. 4.5[V]<br>Output Volt. [V] | Input Volt. 5.0[V]<br>Output Volt. [V]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Input Volt. 9.0[V]<br>Output Volt. [V] |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| -30                                                                                                           | 11.992                                 | 11.991                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.991                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| -20                                                                                                           | 11.990                                 | 11.989                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.989                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| -10                                                                                                           | 11.987                                 | 11.987                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.986                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 0                                                                                                             | 11.985                                 | 11.985                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.984                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 10                                                                                                            | 11.984                                 | 11.983                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.983                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 25                                                                                                            | 11.979                                 | 11.979                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.978                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 30                                                                                                            | 11.978                                 | 11.978                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.976                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 40                                                                                                            | 11.972                                 | 11.972                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.970                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 55                                                                                                            | 11.959                                 | 11.959                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.957                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| 60                                                                                                            | 11.953                                 | 11.952                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11.950                                 |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |
| —                                                                                                             | —                                      | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | —                                      |                  |                                        |                                        |                                        |     |        |        |        |     |        |        |        |     |        |        |        |   |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |    |        |        |        |   |   |   |   |

**COSEL**

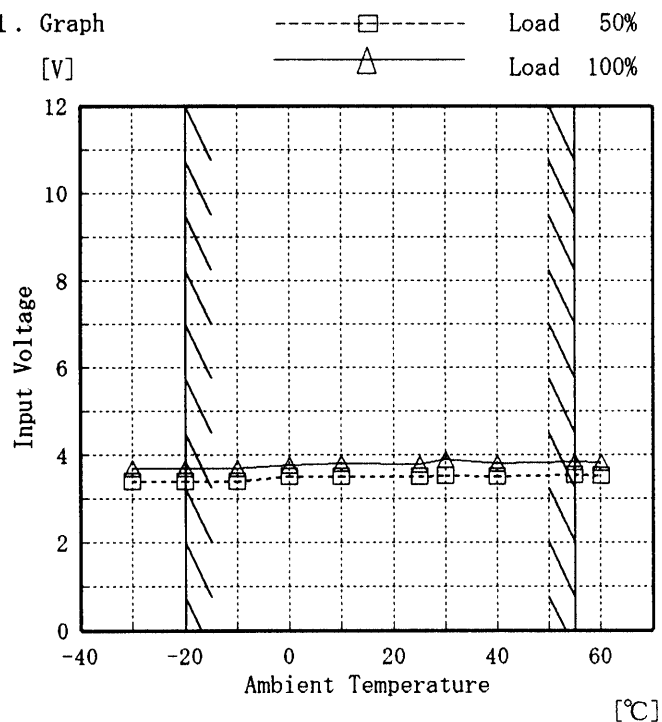
Model ZUS100512

Item Minimum Input Voltage for Regulated Output Voltage  
最低レギュレーション電圧

Object +12V0.700A

Testing Circuitry Figure A

## 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。

## 2. Values

| Ambient Temp. | Load 50%    | Load 100%   |
|---------------|-------------|-------------|
| Input Volt.   | Input Volt. | Input Volt. |
| [°C]          | [V]         | [V]         |
| -30           | 3.4         | 3.7         |
| -20           | 3.4         | 3.7         |
| -10           | 3.4         | 3.7         |
| 0             | 3.5         | 3.8         |
| 10            | 3.5         | 3.8         |
| 25            | 3.5         | 3.8         |
| 30            | 3.5         | 3.9         |
| 40            | 3.5         | 3.8         |
| 55            | 3.5         | 3.8         |
| 60            | 3.5         | 3.8         |
| —             | —           | —           |

# COSEL

| Model              |                                      | ZUS100512                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Testing Circuitry  | Figure A                             |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
|--------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------|---------------------------------------|-----|----|----|-----|----|----|-----|---|----|---|---|----|----|---|----|----|---|----|----|---|----|----|---|----|----|---|----|----|---|----|---|---|---|
| Item               |                                      | Ripple Voltage (by Ambient Temp.)<br>リップル電圧 (周囲温度特性)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| Object             |                                      | + 1 2 V 0 . 7 0 0 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 1. Graph           |                                      | <div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div></div> <div><p>[mV]</p><p>Ambient Temperature [°C]</p><p>Input Volt. 4.5 V</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></div>                                                                                                                                                                                                                                                                                                                                                          | 2. Values          |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
|                    |                                      | <table><tr><th>Ambient Temp. [°C]</th><th>Load 50%<br/>Ripple Output Volt. [mV]</th><th>Load 100%<br/>Ripple Output Volt. [mV]</th></tr><tr><td>-30</td><td>10</td><td>20</td></tr><tr><td>-20</td><td>10</td><td>15</td></tr><tr><td>-10</td><td>5</td><td>15</td></tr><tr><td>0</td><td>5</td><td>10</td></tr><tr><td>10</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>55</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%<br>Ripple Output Volt. [mV] | Load 100%<br>Ripple Output Volt. [mV] | -30 | 10 | 20 | -20 | 10 | 15 | -10 | 5 | 15 | 0 | 5 | 10 | 10 | 5 | 10 | 25 | 5 | 10 | 30 | 5 | 10 | 40 | 5 | 10 | 55 | 5 | 10 | 60 | 5 | 10 | — | — | — |
| Ambient Temp. [°C] | Load 50%<br>Ripple Output Volt. [mV] | Load 100%<br>Ripple Output Volt. [mV]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| -30                | 10                                   | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| -20                | 10                                   | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| -10                | 5                                    | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 0                  | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 10                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 25                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 30                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 40                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 55                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| 60                 | 5                                    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
| —                  | —                                    | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |
|                    |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                                      |                                       |     |    |    |     |    |    |     |   |    |   |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |    |   |    |   |   |   |

**COSEL**

Model

ZUS100512

Item

Time Lapse Drift 経時ドリフト

Temperature

25 °C

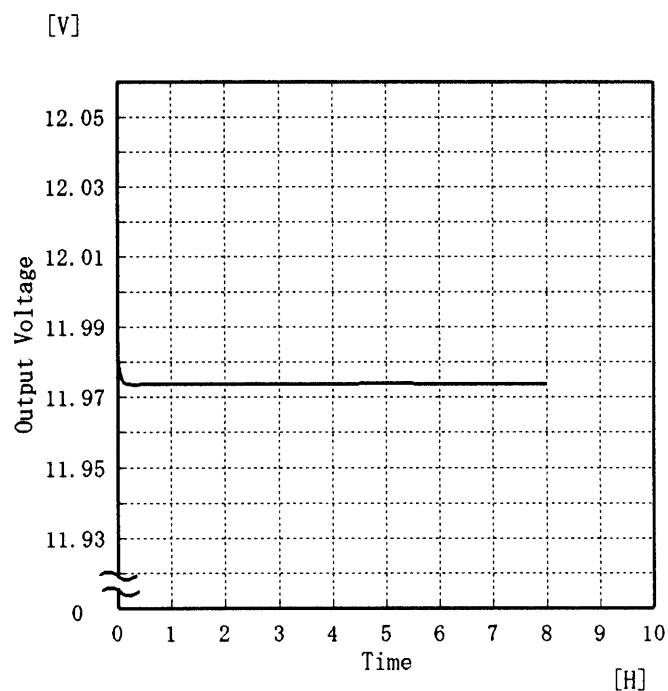
Testing Circuitry

Figure A

Object

+12V0.700A

## 1. Graph



Input Volt.

5V

Load

100%

## 2. Values

| Time since<br>start<br>[H] | Output<br>Voltage<br>[V] |
|----------------------------|--------------------------|
| 0.0                        | 11.982                   |
| 0.5                        | 11.974                   |
| 1.0                        | 11.974                   |
| 2.0                        | 11.974                   |
| 3.0                        | 11.974                   |
| 4.0                        | 11.974                   |
| 5.0                        | 11.974                   |
| 6.0                        | 11.974                   |
| 7.0                        | 11.974                   |
| 8.0                        | 11.974                   |

**COSEL**

|        |                               |                            |
|--------|-------------------------------|----------------------------|
| Model  | ZUS100512                     | Testing Circuitry Figure A |
| Item   | Output Voltage Accuracy 定電圧精度 |                            |
| Object | +12V0.700A                    |                            |

## 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 : -20~55 °C

Input Voltage : 4.5~9.0 V

Load Current : 0.000~0.700 A

\* Output Voltage Accuracy =  $\pm (\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* 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 : -20~55 °C

入力電圧 : 4.5~9.0 V

負荷電流 : 0.000~0.700 A

\* 定電圧精度(変動値) =  $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

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

| Item            | Temperature [°C] | Input Voltage [V] | Output Current [A] | Output Voltage [V] | Output Voltage Accuracy [mV] | Output Voltage Accuracy (Ration) [%] |
|-----------------|------------------|-------------------|--------------------|--------------------|------------------------------|--------------------------------------|
| Maximum Voltage | -20              | 9.0               | 0.000              | 11.994             | ±22                          | ±0.2                                 |
| Minimum Voltage | 55               | 5.0               | 0.700              | 11.951             |                              |                                      |

# COSEL

|        |                   |                                 |
|--------|-------------------|---------------------------------|
| Model  | ZUS100512         | Testing Circuitry      Figure A |
| Item   | Condensation 結露特性 |                                 |
| Object | +12V0.700A        |                                 |

## 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.
- ④ Repeating ①, ② and ③ three times.

## 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3度行い、異常のないことを確認する。

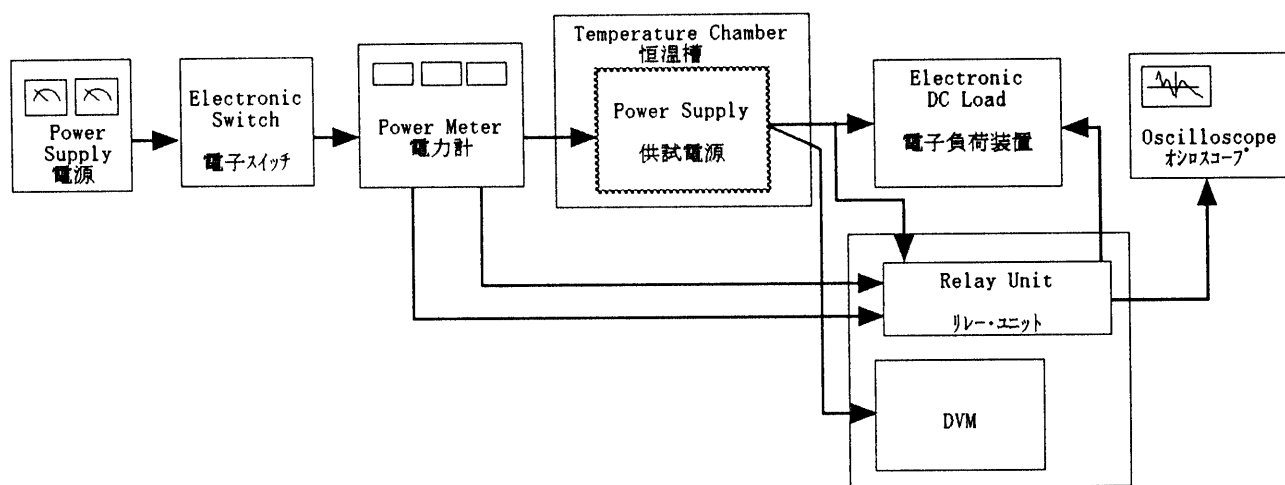
## 2. Values

|                  | Times | Output Voltage<br>[V] | Ripple Voltage<br>[mV] | Ripple Noise<br>[mV] |
|------------------|-------|-----------------------|------------------------|----------------------|
| Load<br>50<br>%  | 1     | 11.983                | 10                     | 35                   |
|                  | 2     | 11.975                | 10                     | 35                   |
|                  | 3     | 11.979                | 10                     | 35                   |
| Load<br>100<br>% | 1     | 11.982                | 15                     | 35                   |
|                  | 2     | 11.974                | 15                     | 40                   |
|                  | 3     | 11.978                | 15                     | 35                   |

Input Volt. 5.0 V



COSEL



Data Acquisition/Control Unit  
データ集録システム

Figure A