



TEST DATA OF VAF503

(100V INPUT)

Regulated DC Power Supply

Nov. 9, 1999

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Design Manager

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Design Engineer

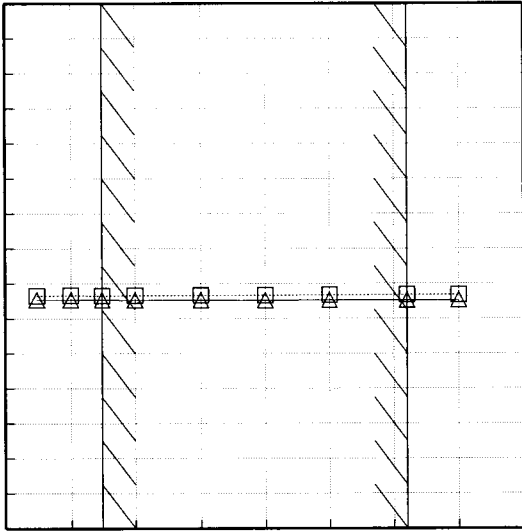
コーセル株式会社
COSEL CO., LTD.

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COSEL

Model		VAF503		Temperature		25°C																																	
Item		Line Regulation 静的入力変動		Testing Circuitry		Figure A																																	
Object		+3.3V1A																																					
1. Graph				2. Values																																			
<div><div><div>□</div><div>Load 50%</div></div><div><div>△</div><div>Load 100%</div></div></div> <div><div>Output Voltage</div><div>[V]</div><div><div>3.400</div><div>3.380</div><div>3.360</div><div>3.340</div><div>3.320</div><div>3.300</div><div>3.280</div><div>3.260</div></div><div><div>70</div><div>80</div><div>90</div><div>100</div><div>110</div><div>120</div><div>130</div><div>140</div><div>150</div></div><div><div>Input Voltage</div><div>[V]</div></div></div> <div><div>Note: Slanted line shows the range of the rated input voltage.</div><div>(注)斜線は定格入力電圧範囲を示す。</div></div>				<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>3.327</td><td>3.325</td></tr><tr><td>80</td><td>3.327</td><td>3.325</td></tr><tr><td>85</td><td>3.327</td><td>3.325</td></tr><tr><td>90</td><td>3.327</td><td>3.325</td></tr><tr><td>100</td><td>3.327</td><td>3.325</td></tr><tr><td>110</td><td>3.327</td><td>3.325</td></tr><tr><td>120</td><td>3.327</td><td>3.325</td></tr><tr><td>132</td><td>3.327</td><td>3.325</td></tr><tr><td>140</td><td>3.327</td><td>3.325</td></tr></table>				Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	3.327	3.325	80	3.327	3.325	85	3.327	3.325	90	3.327	3.325	100	3.327	3.325	110	3.327	3.325	120	3.327	3.325	132	3.327	3.325	140	3.327	3.325
Input Voltage [V]	Output Voltage [V]																																						
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COSEL

Model		VAF503	
Item		Input Current (by Load Current) 入力電流 (負荷特性)	
Object			
1. Graph		2. Values	

—△—

—□—

—○—

Input Volt. 85V

Input Volt. 100V

Input Volt. 132V

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。

Load Current [A]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.014	0.014	0.013
0.2	0.036	0.033	0.027
0.4	0.055	0.048	0.042
0.6	0.073	0.067	0.056
0.8	0.091	0.081	0.069
1.0	0.109	0.098	0.081
1.1	0.118	0.106	0.088
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model		VAF503		Temperature		25℃	
Item		Input Power (by Load Current) 入力電力（負荷特性）		Testing Circuitry		Figure A	
Object							
1. Graph				2. Values			

△

Input Volt. 85V

□

Input Volt. 100V

○

Input Volt. 132V

Input Power [W]

10

8

6

4

2

0

0

0.2

0.4

0.6

0.8

1

1.2

Load Current [A]

Load Current [A]	85V [W]	100V [W]	132V [W]
0.0	0.42	0.47	0.55
0.2	1.27	1.29	1.30
0.4	2.12	2.08	2.17
0.6	2.99	3.05	3.05
0.8	3.94	3.87	3.98
1.0	4.90	4.89	4.80
1.1	5.37	5.34	5.29

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。

Load Current [A]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.42	0.47	0.55
0.2	1.27	1.29	1.30
0.4	2.12	2.08	2.17
0.6	2.99	3.05	3.05
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1.0	4.90	4.89	4.80
1.1	5.37	5.34	5.29
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model		VAR503		Temperature		25℃																																	
Item		Efficiency (by Input Voltage) 効率（入力電圧特性）		Testing Circuitry		Figure A																																	
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<div><div><div>□</div><div>Load 50%</div></div><div><div>△</div><div>Load 100%</div></div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>75</td><td>64.4</td><td>67.0</td></tr><tr><td>80</td><td>63.9</td><td>67.3</td></tr><tr><td>85</td><td>63.6</td><td>67.4</td></tr><tr><td>90</td><td>63.6</td><td>67.5</td></tr><tr><td>100</td><td>63.9</td><td>67.6</td></tr><tr><td>110</td><td>64.4</td><td>68.0</td></tr><tr><td>120</td><td>64.7</td><td>68.5</td></tr><tr><td>132</td><td>64.7</td><td>68.8</td></tr><tr><td>140</td><td>64.4</td><td>68.8</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p>				Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	64.4	67.0	80	63.9	67.3	85	63.6	67.4	90	63.6	67.5	100	63.9	67.6	110	64.4	68.0	120	64.7	68.5	132	64.7	68.8	140	64.4	68.8				
Input Voltage [V]	Efficiency [%]																																						
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COSEL

Model	VAF503	Temperature	25°C
Item	Efficiency (by Load Current) 効率 (負荷特性)	Testing Circuitry	Figure A
Object	—		

1. Graph

—△— Input Volt. 85V
—□— Input Volt. 100V
—○— Input Volt. 132V

Efficiency [%]

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

Load Current [A]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.2	52.0	51.2	51.0
0.4	62.5	63.7	61.1
0.6	66.0	64.8	64.8
0.8	67.0	68.2	66.3
1.0	67.4	67.6	68.8
1.1	67.4	67.8	68.5
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model		VAF503	Temperature		25℃																																
Item		Power Factor (by Input Voltage) 力率（入力電圧特性）	Testing Circuitry		Figure A																																
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<div><div><div>□</div><div>Load 50%</div></div><div><div>△</div><div>Load 100%</div></div></div> <div><div>[mS]</div><div>1000</div><div>100</div><div>10</div><div>1</div></div> <div><div>Hold-Up Time</div><div>70</div><div>80</div><div>90</div><div>100</div><div>110</div><div>120</div><div>130</div><div>140</div><div>150</div></div> <div><div>Input Voltage</div><div>[V]</div></div> <div><div>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</div><div>Note: Slanted line shows the range of the rated input voltage.</div><div><div>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。</div><div>(注)斜線は定格入力電圧範囲を示す。</div></div></div>				<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [mS]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>35</td><td>15</td></tr><tr><td>80</td><td>42</td><td>18</td></tr><tr><td>85</td><td>48</td><td>22</td></tr><tr><td>90</td><td>56</td><td>26</td></tr><tr><td>100</td><td>72</td><td>34</td></tr><tr><td>110</td><td>89</td><td>43</td></tr><tr><td>120</td><td>109</td><td>53</td></tr><tr><td>132</td><td>135</td><td>67</td></tr><tr><td>140</td><td>154</td><td>76</td></tr></table>				Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	35	15	80	42	18	85	48	22	90	56	26	100	72	34	110	89	43	120	109	53	132	135	67	140	154	76
Input Voltage [V]	Hold-Up Time [mS]																																						
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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。

COSEL

Model

VAF503

Item

Instantaneous Interruption Compensation
瞬時停電保障

Object

+3.3V1A

1. Graph

△

—

Input Volt. 85 V

□

- - -

Input Volt. 100 V

○

- - -

Input Volt. 132 V

[mS]

Instantaneous Compensation Time

10000

1000

100

10

1

0

0.2

0.4

0.6

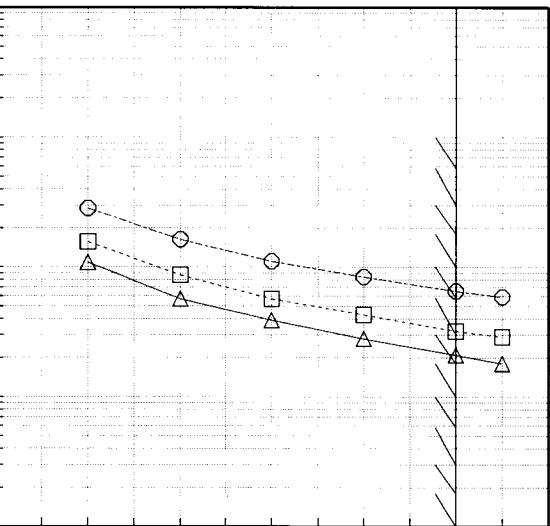
0.8

1

1.2

Load Current

[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。

Temperature

25℃

Testing Circuitry

Figure A

2. Values

Load Current [A]	Time [mS]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
0.0	—	—	—
0.2	109	157	284
0.4	57	87	164
0.6	39	57	111
0.8	28	43	84
1.0	21	32	65
1.1	18	29	59
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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<div><div><div>△</div><div>Input Volt. 85 V</div></div><div><div>□</div><div>Input Volt. 100 V</div></div><div><div>○</div><div>Input Volt. 132 V</div></div></div> <div><div><div>[V]</div><div><div>3.400</div><div>3.380</div><div>3.360</div><div>3.340</div><div>3.320</div><div>3.300</div><div>3.280</div><div>3.260</div></div><div>Output Voltage</div></div><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>1.2</div></div><div>Load Current</div><div>[A]</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 colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>0.0</td><td>3.328</td><td>3.328</td><td>3.328</td></tr><tr><td>0.2</td><td>3.327</td><td>3.328</td><td>3.328</td></tr><tr><td>0.4</td><td>3.327</td><td>3.327</td><td>3.327</td></tr><tr><td>0.6</td><td>3.326</td><td>3.326</td><td>3.326</td></tr><tr><td>0.8</td><td>3.326</td><td>3.326</td><td>3.326</td></tr><tr><td>1.0</td><td>3.325</td><td>3.325</td><td>3.325</td></tr><tr><td>1.1</td><td>3.325</td><td>3.325</td><td>3.325</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>			Load Current [A]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.0	3.328	3.328	3.328	0.2	3.327	3.328	3.328	0.4	3.327	3.327	3.327	0.6	3.326	3.326	3.326	0.8	3.326	3.326	3.326	1.0	3.325	3.325	3.325	1.1	3.325	3.325	3.325	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Output Voltage [V]																																																			
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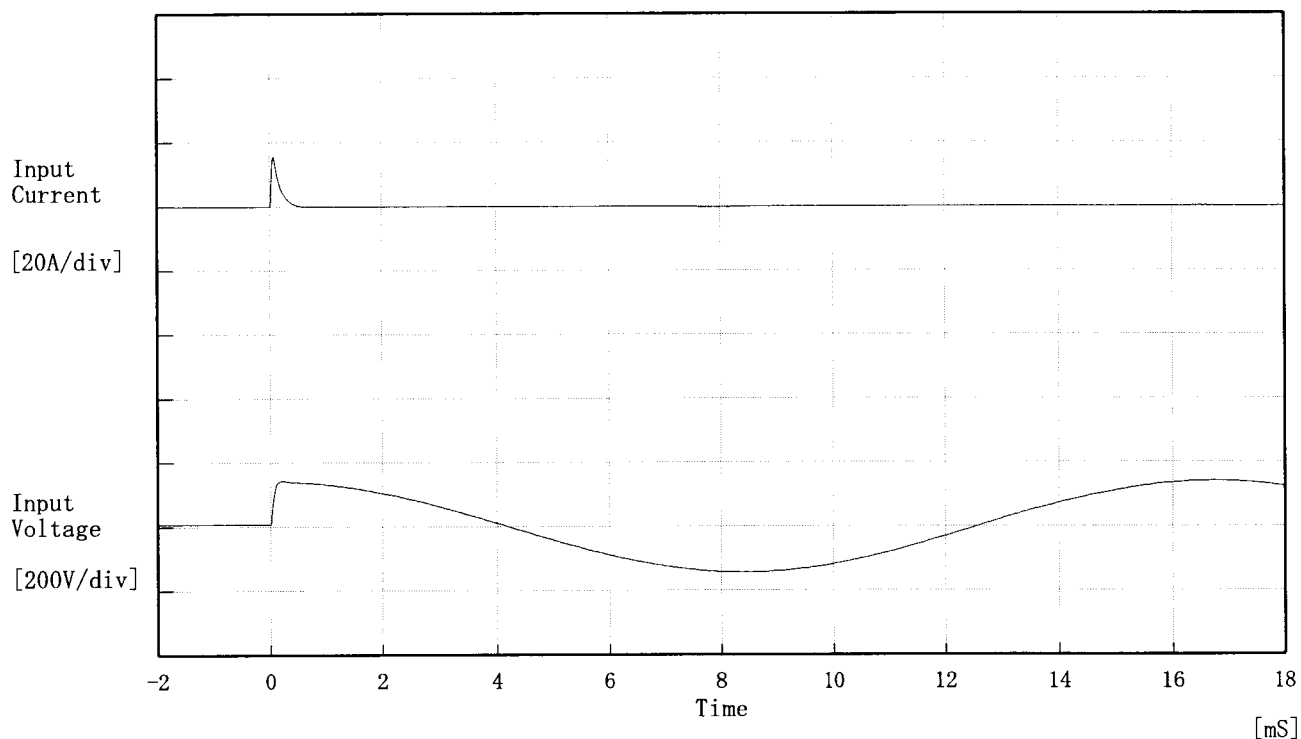
BC-3306

COSEL

Model		VAF503		Temperature		25℃																																																								
Item		Overcurrent Protection 過電流保護		Testing Circuitry		Figure A																																																								
Object		+3.3V1A																																																												
1. Graph				2. Values																																																										
<div><div><div></div><div></div><div></div></div><div>Input Volt. 85 V</div><div>Input Volt. 100 V</div><div>Input Volt. 132 V</div></div> <div><div>[V]</div><div>5.0</div><div>4.0</div><div>3.0</div><div>2.0</div><div>1.0</div><div>0.0</div></div> <div><div>Output Voltage</div><div>0</div><div>2</div><div>4</div><div>6</div></div> <div><div>[A]</div><div>Load Current</div></div>				<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>3.30</td><td>3.01</td><td>3.41</td><td>3.94</td></tr><tr><td>3.13</td><td>3.06</td><td>3.40</td><td>3.94</td></tr><tr><td>2.97</td><td>3.09</td><td>3.42</td><td>3.98</td></tr><tr><td>2.64</td><td>3.32</td><td>3.59</td><td>4.08</td></tr><tr><td>2.31</td><td>3.51</td><td>3.85</td><td>4.35</td></tr><tr><td>1.98</td><td>3.72</td><td>4.05</td><td>4.50</td></tr><tr><td>1.65</td><td>3.89</td><td>4.29</td><td>4.71</td></tr><tr><td>1.32</td><td>4.16</td><td>4.46</td><td>4.89</td></tr><tr><td>0.99</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.66</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.33</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr></table>				Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	3.30	3.01	3.41	3.94	3.13	3.06	3.40	3.94	2.97	3.09	3.42	3.98	2.64	3.32	3.59	4.08	2.31	3.51	3.85	4.35	1.98	3.72	4.05	4.50	1.65	3.89	4.29	4.71	1.32	4.16	4.46	4.89	0.99	—	—	—	0.66	—	—	—	0.33	—	—	—	0.00	—	—	—
Output Voltage [V]	Load Current [A]																																																													
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0.00	—	—	—																																																											
<p>Note1: Slanted line shows the range of the rated load current.</p> <p>Note2: The lines shows peak current of intermittent operation of power supply when output voltage drops less than rated voltage value at overcurrent.</p> <p>(注1)斜線は定格負荷電流範囲を示す。</p> <p>(注2)垂下部分は間欠モード時のピーク電流を示す。</p>																																																														

COSEL

Model	VAF503	Temperature	25°C
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object			



Input Voltage 100 V

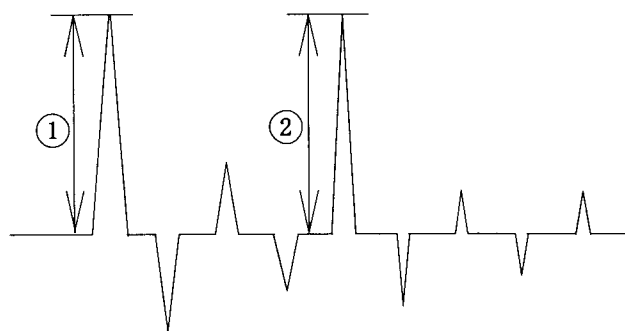
Frequency 60 Hz

Load 100 %

Inrush Current

① 15.53 [A]

② 0.39 [A]

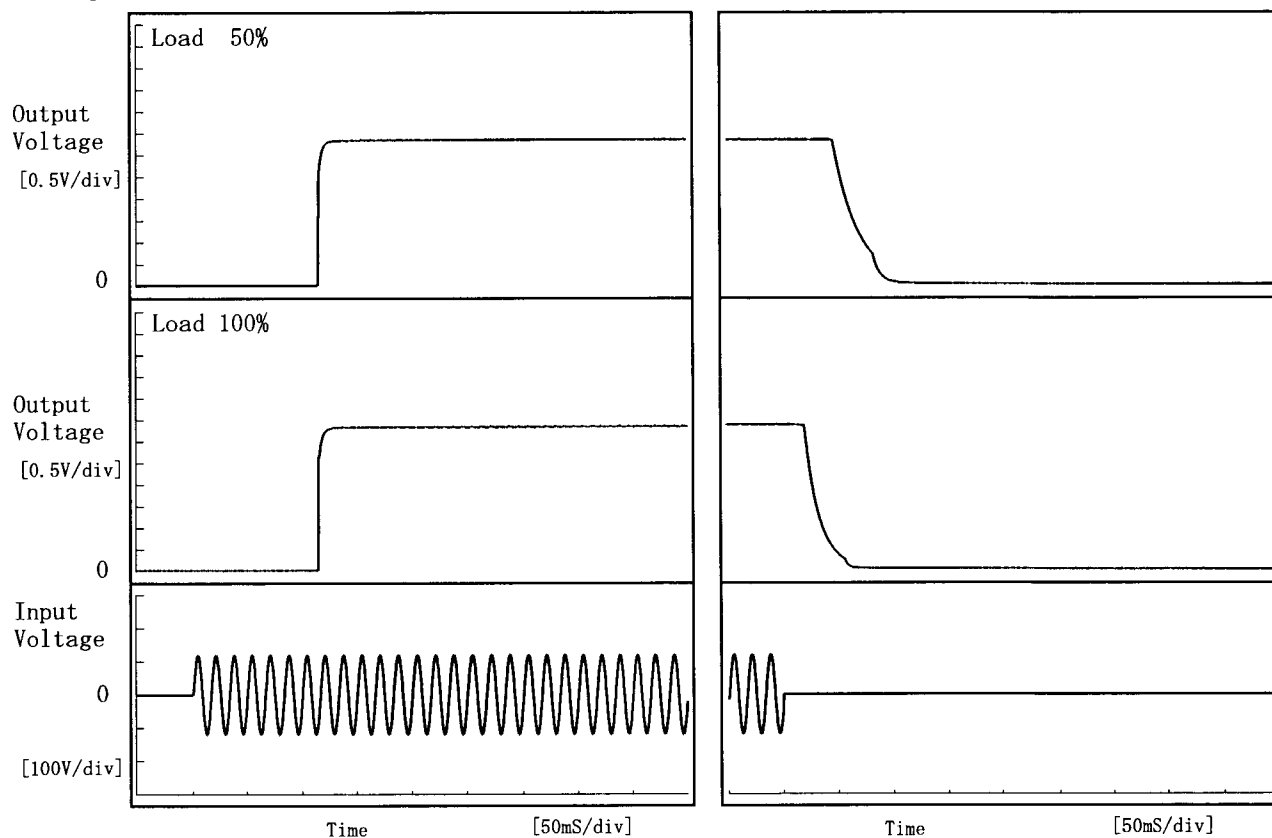


COSEL

Model	VAF503	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+3.3V1A		

1. Graph

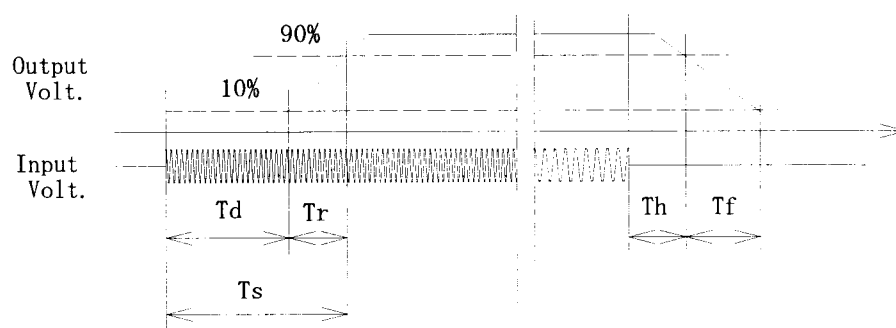
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	115.0	3.0	118.0	49.0	39.0
100 %	115.0	3.3	118.3	22.0	31.5



COSEL

Model		VAF503	
Item		Ambient Temperature Drift 周囲温度変動	
Object		+3.3V1A	

1. Graph

—△—

—□—

—○—

Input Volt. 85V

Input Volt. 100V

Input Volt. 132V

[V]

3.380

3.360

3.340

3.320

3.300

3.280

3.260

3.240

Output Voltage

—○—

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COSEL

Model		VAF503	
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧	
Object		+3.3V1A	
1. Graph		2. Values	

Load 50%

Load 100%

Input Voltage [V]

100.0

80.0

60.0

40.0

20.0

0.0

Ambient Temperature [°C]

-40

0

40

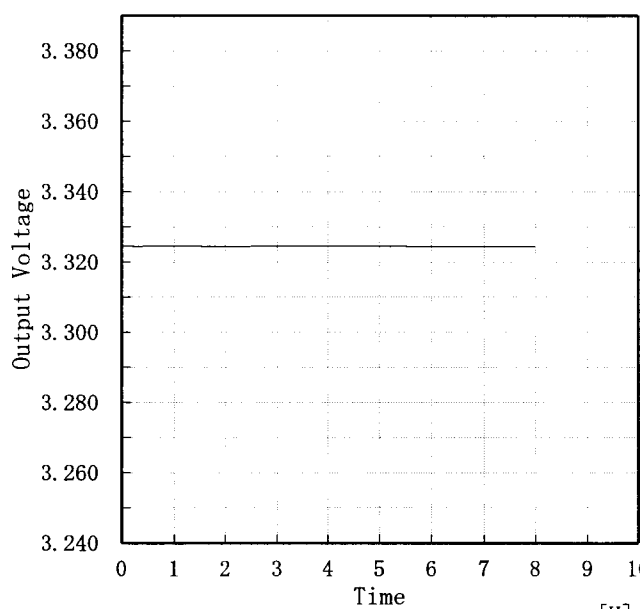
80

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。

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	43	51
-20	41	51
-10	41	50
0	40	48
10	40	49
25	40	49
30	39	49
40	39	48
55	38	49
60	39	48
—	—	—

COSEL

COSEL																									
Model	VAF503																								
Item	Time Lapse Drift 経時ドリフト	Temperature	25℃																						
		Testing Circuitry	Figure A																						
Object	+3.3V1A																								
1. Graph		2.Values																							
<div>[V]</div> <div></div> <div>Output Voltage</div> <div>Time</div> <div>[H]</div> <div>Input Volt. 100V</div> <div>Load 100%</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>3.324</td></tr><tr><td>0.5</td><td>3.324</td></tr><tr><td>1.0</td><td>3.324</td></tr><tr><td>2.0</td><td>3.324</td></tr><tr><td>3.0</td><td>3.325</td></tr><tr><td>4.0</td><td>3.325</td></tr><tr><td>5.0</td><td>3.324</td></tr><tr><td>6.0</td><td>3.324</td></tr><tr><td>7.0</td><td>3.324</td></tr><tr><td>8.0</td><td>3.324</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	3.324	0.5	3.324	1.0	3.324	2.0	3.324	3.0	3.325	4.0	3.325	5.0	3.324	6.0	3.324	7.0	3.324	8.0	3.324
Time since start [H]	Output Voltage [V]																								
0.0	3.324																								
0.5	3.324																								
1.0	3.324																								
2.0	3.324																								
3.0	3.325																								
4.0	3.325																								
5.0	3.324																								
6.0	3.324																								
7.0	3.324																								
8.0	3.324																								

COSEL

Model	VAF503	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
Object	+3.3V1A	

1. Output Voltage Accuracy

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

Temperature : -10~55 °C

Input Voltage : 85~132 V

Load Current : 0~1 A

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

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

1. 定電圧精度

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

周囲温度 -10~55 °C

入力電圧 85~132 V

負荷電流 0~1 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) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	55	100	0	3.329	±3	±0.1
Minimum Voltage	-10	85	1	3.323		

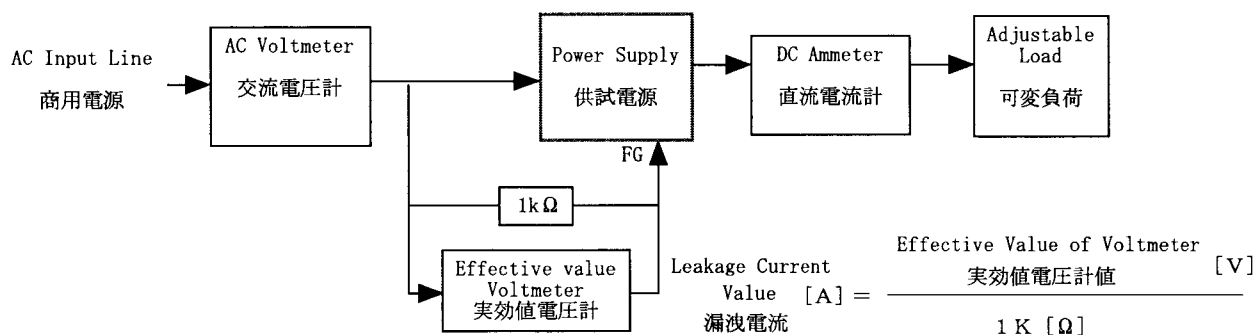
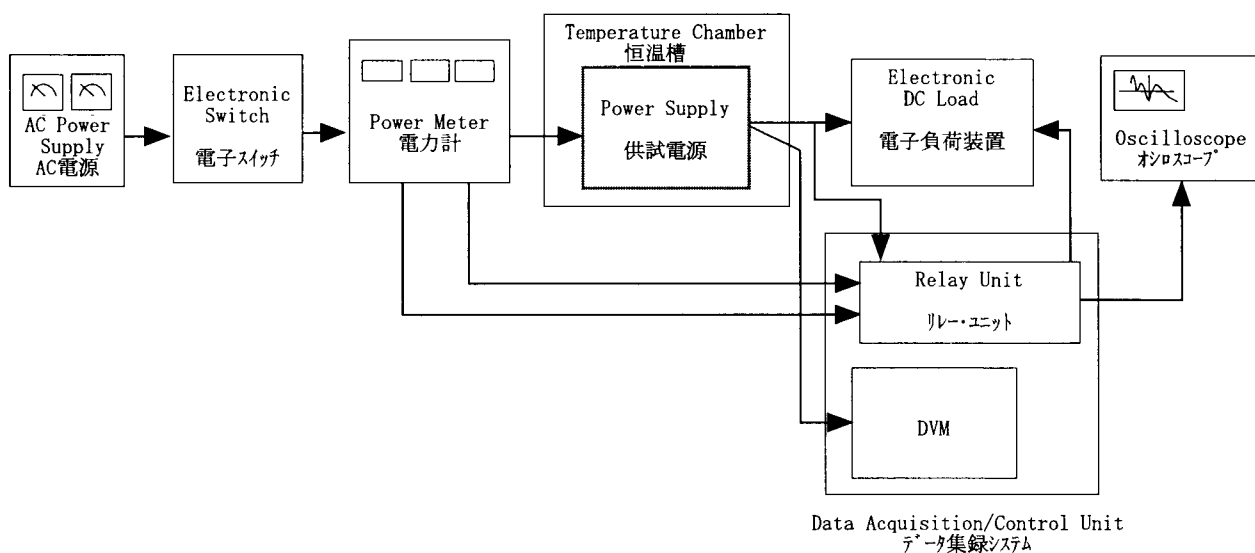


Figure B (DENTORI)

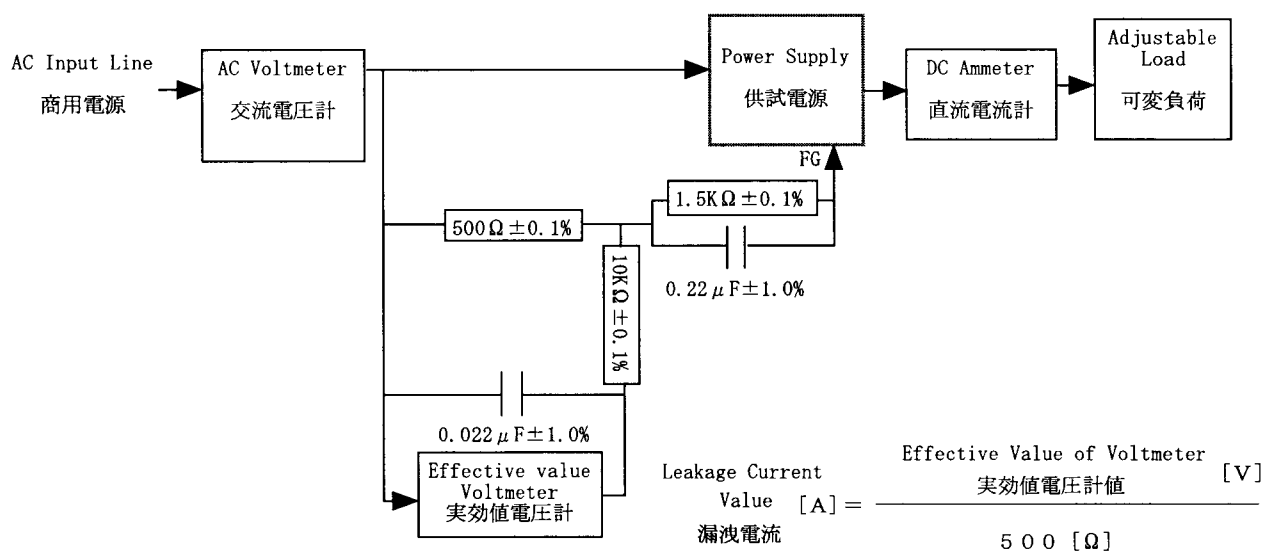


Figure B (IEC60950)

COSEL

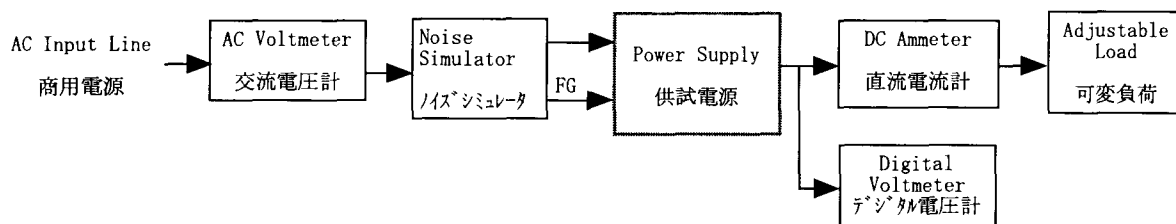


Figure C

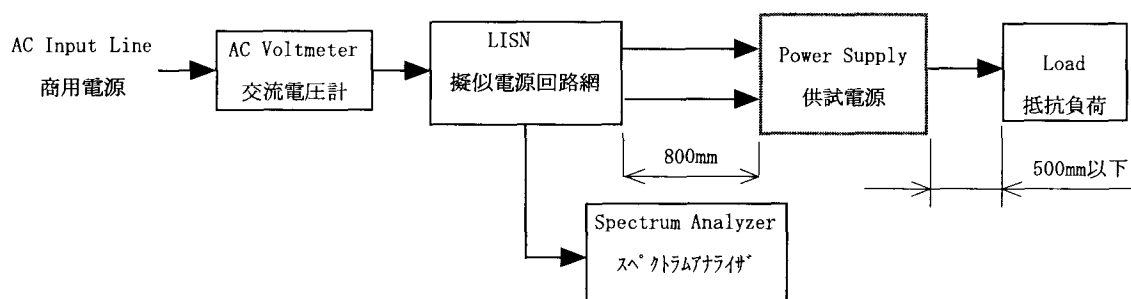


Figure D

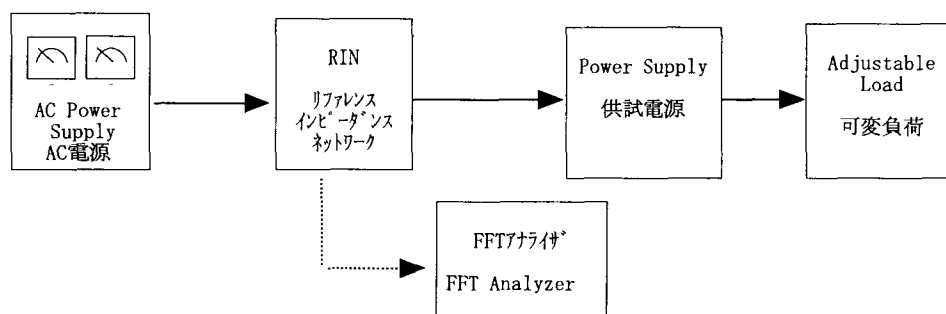


Figure E