



TEST DATA OF VAA1012  
(100V INPUT)

Regulated DC Power Supply

Date : June 2. 1998

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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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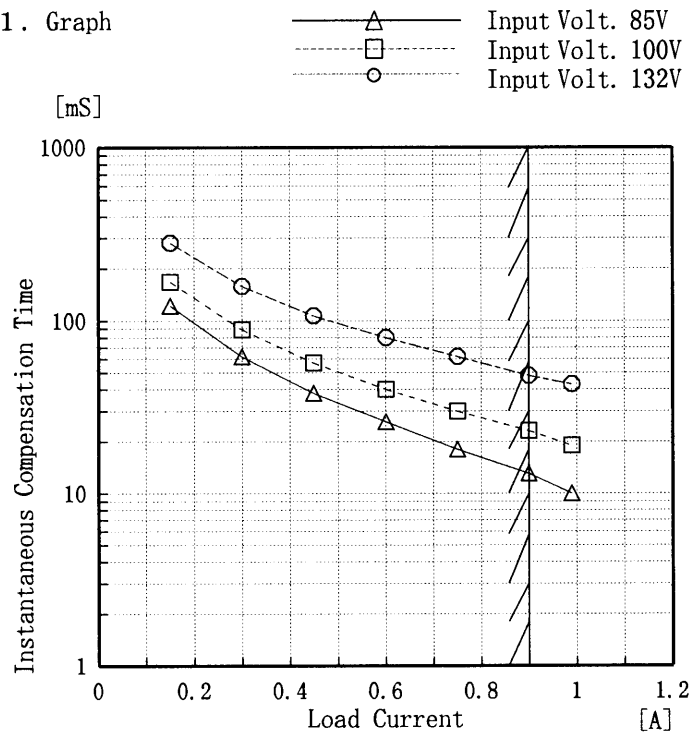
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Item		Hold-Up Time 出力保持時間	Testing Circuitry		Figure A																																
Object		+12.0V0.90A																																			
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Input Voltage [V]	Load 50%	Load 100%																																			
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<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>																																					



Model	VAA1012
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12.0V0.90A

Testing Circuitry Figure A

1. Graph



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。

2. Values

Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Time [mS]		
0.0	—	—	—
0.15	122	168	282
0.30	62	89	159
0.45	38	57	107
0.60	26	40	80
0.75	18	30	62
0.90	13	23	48
0.99	10	19	43
—	—	—	—
—	—	—	—
—	—	—	—



Model		VAA1012	Temperature		25°C																																															
Item		Load Regulation 静的負荷変動	Testing Circuitry		Figure A																																															
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Model		VAA1012	Temperature		25°C																																						
Item		Ripple Voltage (by Load Current) リップル電圧(負荷電流特性)	Testing Circuitry		Figure A																																						
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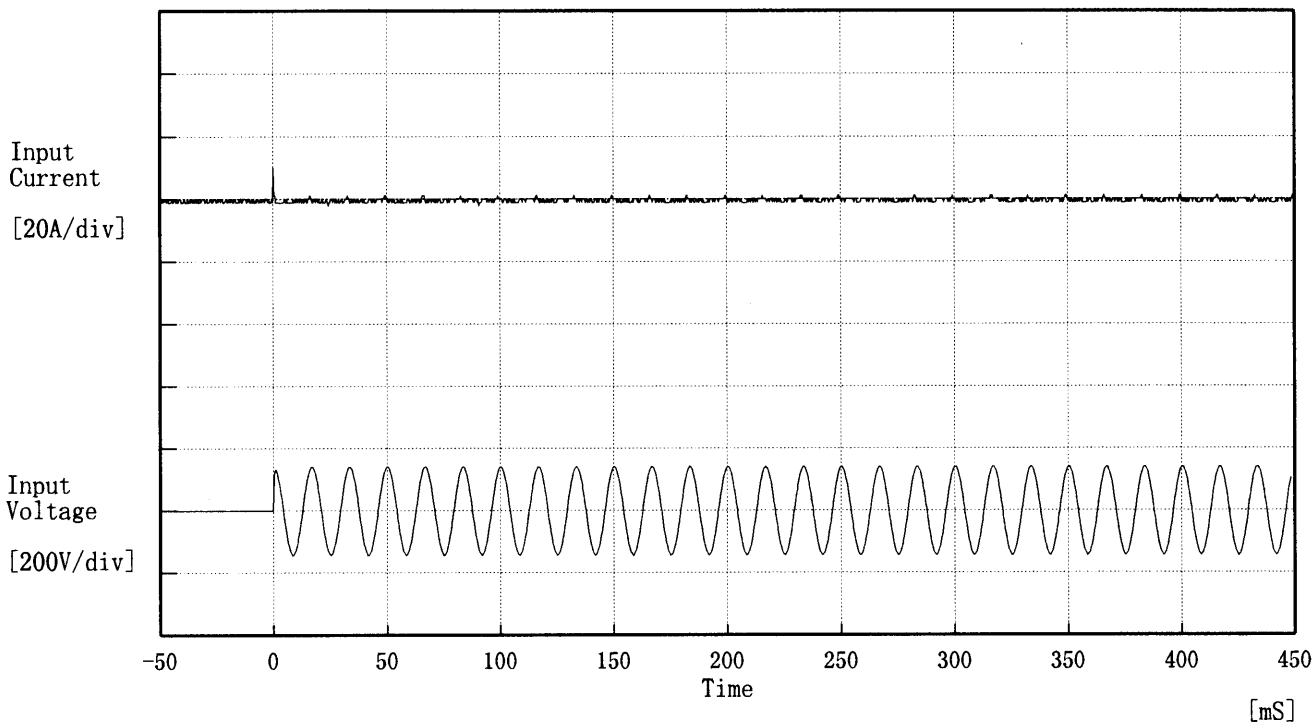
Model		VAA1012	Temperature	25°C																																						
Item		Ripple-Noise リップルノイズ	Testing Circuitry	Figure A																																						
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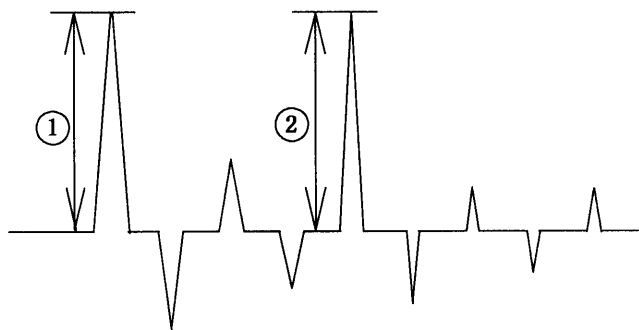
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Model		VAA1012	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current 突入電流	
Object		_____	



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





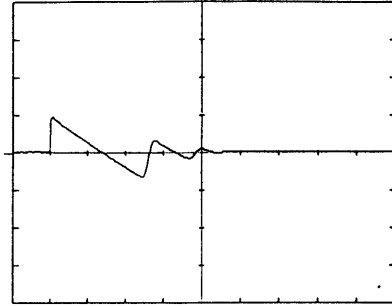
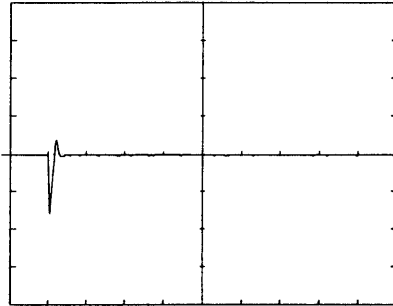


Model	VAA1012	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+12.0V0.90A		

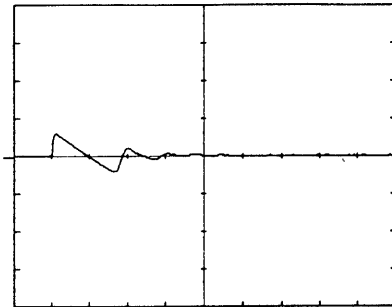
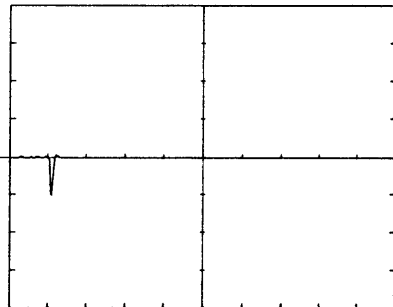
Input Volt. 100 V  
Cycle 1000 mS



Load 0% ↔  
Load 100 %



Load 0% ↔  
Load 50 %



200 mV/div

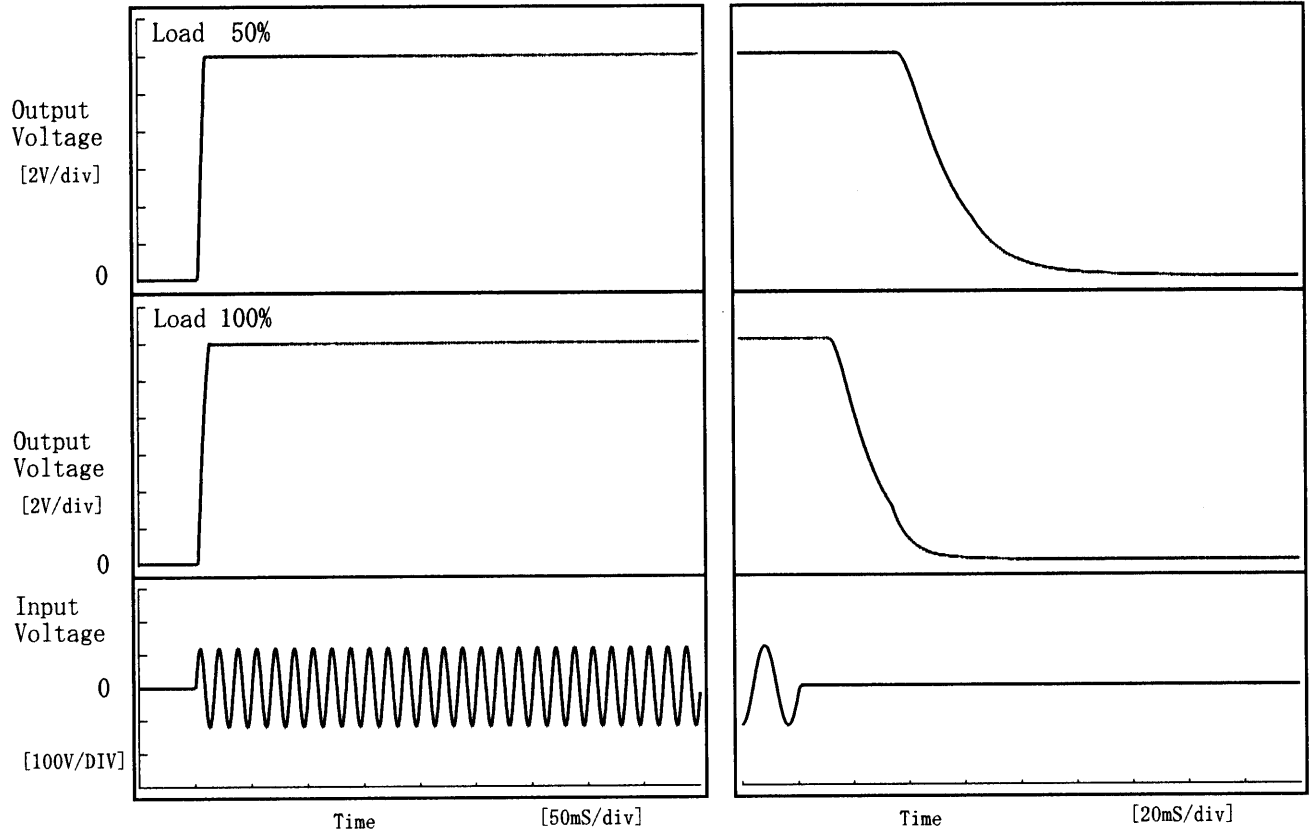
5 mS/div



Model	VAA1012	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V0.90A		

1. Graph

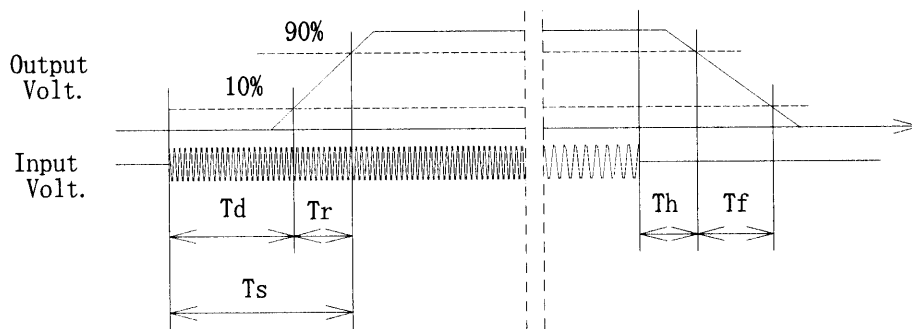
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	3.5	5.8	9.3	41.5	35.8
100 %	3.5	8.3	11.8	16.1	24.9





Model		VAA1012																																																			
Item		Ambient Temperature Drift 周囲温度変動		Testing Circuitry Figure A																																																	
Object		+12.0V0.90A																																																			
1. Graph		<p> <input type="checkbox"/>—△— Input Volt. 85V  <input type="checkbox"/>- - -□- - - Input Volt. 100V  <input type="checkbox"/>- - -○- - - Input Volt. 132V                 </p>		2. Values																																																	
<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>		<table border="1"> <thead> <tr> <th>Temperature [°C]</th> <th>Input Volt. 85[V] Output Volt. [V]</th> <th>Input Volt. 100[V] Output Volt. [V]</th> <th>Input Volt. 132[V] Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>12.027</td><td>12.027</td><td>12.027</td></tr> <tr><td>-20</td><td>12.027</td><td>12.027</td><td>12.027</td></tr> <tr><td>-10</td><td>12.025</td><td>12.025</td><td>12.026</td></tr> <tr><td>0</td><td>12.023</td><td>12.023</td><td>12.023</td></tr> <tr><td>10</td><td>12.020</td><td>12.020</td><td>12.020</td></tr> <tr><td>25</td><td>12.017</td><td>12.017</td><td>12.017</td></tr> <tr><td>30</td><td>12.016</td><td>12.016</td><td>12.016</td></tr> <tr><td>40</td><td>12.012</td><td>12.012</td><td>12.012</td></tr> <tr><td>55</td><td>12.006</td><td>12.006</td><td>12.006</td></tr> <tr><td>60</td><td>12.003</td><td>12.003</td><td>12.003</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>				Temperature [°C]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]	-30	12.027	12.027	12.027	-20	12.027	12.027	12.027	-10	12.025	12.025	12.026	0	12.023	12.023	12.023	10	12.020	12.020	12.020	25	12.017	12.017	12.017	30	12.016	12.016	12.016	40	12.012	12.012	12.012	55	12.006	12.006	12.006	60	12.003	12.003	12.003	—	—	—	—
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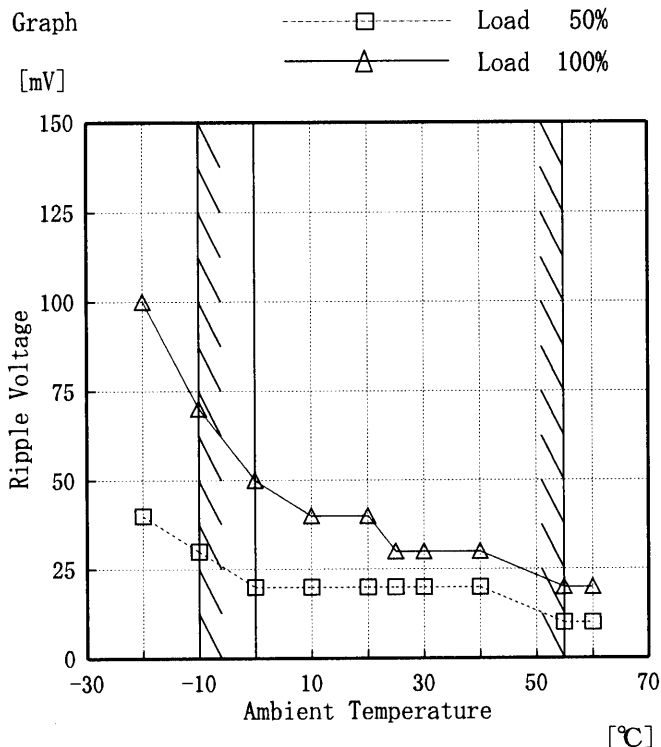
Model		VAA1012																																							
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧		Testing Circuitry Figure A																																						
Object	+12.0V0.90A																																								
1. Graph		2. Values																																							
<p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. [°C]</th> <th>Load 50%</th> <th>Load 100%</th> </tr> <tr> <th>Input Volt. [V]</th> <th>Input Volt. [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>46</td><td>63</td></tr> <tr><td>-20</td><td>44</td><td>61</td></tr> <tr><td>-10</td><td>43</td><td>59</td></tr> <tr><td>0</td><td>42</td><td>58</td></tr> <tr><td>10</td><td>40</td><td>58</td></tr> <tr><td>25</td><td>39</td><td>58</td></tr> <tr><td>30</td><td>38</td><td>57</td></tr> <tr><td>40</td><td>38</td><td>57</td></tr> <tr><td>55</td><td>38</td><td>58</td></tr> <tr><td>60</td><td>38</td><td>58</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Ambient Temp. [°C]	Load 50%	Load 100%	Input Volt. [V]	Input Volt. [V]	-30	46	63	-20	44	61	-10	43	59	0	42	58	10	40	58	25	39	58	30	38	57	40	38	57	55	38	58	60	38	58	—	—	—
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—	—	—																																							



Model	VAA1012
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+12.0V0.90A

Testing Circuitry Figure A

1. Graph



Input Volt. 100 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. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-20	40	100
-10	30	70
0	20	50
10	20	40
20	20	40
25	20	30
30	20	30
40	20	30
55	10	20
60	10	20
—	—	—



<p>Model VAA1012</p>		<p>Temperature 25 °C Testing Circuitry Figure A</p>																						
<p>Item</p>	<p>Time Lapse Drift 経時ドリフト</p>																							
<p>Object</p>	<p>+12.0V0.90A</p>																							
<p>1. Graph</p>		<p>2. Values</p>																						
<p>[V]</p> <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>		<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.020</td></tr> <tr><td>0.5</td><td>12.017</td></tr> <tr><td>1.0</td><td>12.017</td></tr> <tr><td>2.0</td><td>12.017</td></tr> <tr><td>3.0</td><td>12.017</td></tr> <tr><td>4.0</td><td>12.017</td></tr> <tr><td>5.0</td><td>12.017</td></tr> <tr><td>6.0</td><td>12.017</td></tr> <tr><td>7.0</td><td>12.017</td></tr> <tr><td>8.0</td><td>12.017</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.020	0.5	12.017	1.0	12.017	2.0	12.017	3.0	12.017	4.0	12.017	5.0	12.017	6.0	12.017	7.0	12.017	8.0	12.017
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7.0	12.017																							
8.0	12.017																							



Model		VAA1012	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+12.0V0.90A	

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 : 0.00~0.90 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 -10~55 °C
- 入力電圧 85~132 V
- 負荷電流 0.00~0.90 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	-10	132	0.00	12.030	±12	±0.1
Minimum Voltage	55	132	0.90	12.006		



Model		VAA1012	Temperature		25°C																																																			
Item		Oscillator Frequency 発振周波数	Testing Circuitry		Figure A																																																			
Object		+12.0V0.90A																																																						
1. Graph			2. Values																																																					
<p> <input type="checkbox"/> —△— Input Volt. 85 V  <input type="checkbox"/> - - - □ - - - Input Volt. 100 V  <input type="checkbox"/> - - - ○ - - - Input Volt. 132 V                 </p> <p>                     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。                 </p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> <tr> <th colspan="3">Oscillator Frequency [KHz]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>560</td><td>563</td><td>566</td></tr> <tr><td>0.09</td><td>400</td><td>415</td><td>433</td></tr> <tr><td>0.18</td><td>310</td><td>325</td><td>350</td></tr> <tr><td>0.36</td><td>214</td><td>230</td><td>254</td></tr> <tr><td>0.45</td><td>190</td><td>202</td><td>225</td></tr> <tr><td>0.72</td><td>132</td><td>147</td><td>166</td></tr> <tr><td>0.90</td><td>106</td><td>124</td><td>140</td></tr> <tr><td>1.00</td><td>96</td><td>112</td><td>130</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>			Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	Oscillator Frequency [KHz]			0.00	560	563	566	0.09	400	415	433	0.18	310	325	350	0.36	214	230	254	0.45	190	202	225	0.72	132	147	166	0.90	106	124	140	1.00	96	112	130	—	—	—	—	—	—	—	—	—	—	—	—
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Model		VAA1012	Testing Circuitry Figure A
Item		Condensation 結露特性	
Object		+12.0V0.90A	

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C for an hour with the input off.
- ② Taking it out of the tank and dewing itself in a room where the temperature is 25°C and the humidity is 40%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.
- 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°Cに冷却しておき、約1時間後に恒温槽から取り出し、室温25°C、湿度40%RHの状態におき結露させ、その電気的特性の測定を3度行い、異常のないことを確認する。

2. Values

	Times	Output Voltage [V]	Ripple Voltage [mV]	Ripple Noise [mV]
Load 50 %	1	12.019	20	30
	2	12.019	20	30
	3	12.019	20	30
Load 100 %	1	12.018	30	40
	2	12.018	30	40
	3	12.018	30	40

Input Volt. 100 V

# COSEL

Model		VAA1012	Testing Circuitry	Figure B
Item		Leakage Current 漏洩電流		
Object		_____		

## 1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.09	0.10	0.13
(B) U L	0.09	0.10	0.13
(C) C S A	0.09	0.10	0.13

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 220 [V]	Input Volt. 264 [V]
(D) V D E	—	—	—

## 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。



Model		VAA1012	Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+12.0V0.90A	

1. Results

Pulse Width [n S]	MODE	Operating Point of Overvoltage Protection [V] 過電圧保護動作値	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON		no regulation
	NORMAL		no regulation
1000	COMMON		no regulation
	NORMAL		no regulation

Conditions

Input Voltage :100 V  
 Pulse Voltage :2000 V  
 Pulse Cycle :10 mS  
 Pulse Input Duration:1 min. or more  
 Load :100 %

# COSEL

Model	VAA1012	Testing Circuitry Figure D
Item	Conducted Emission 雑音端子電圧	
Object	_____	

1. Graph

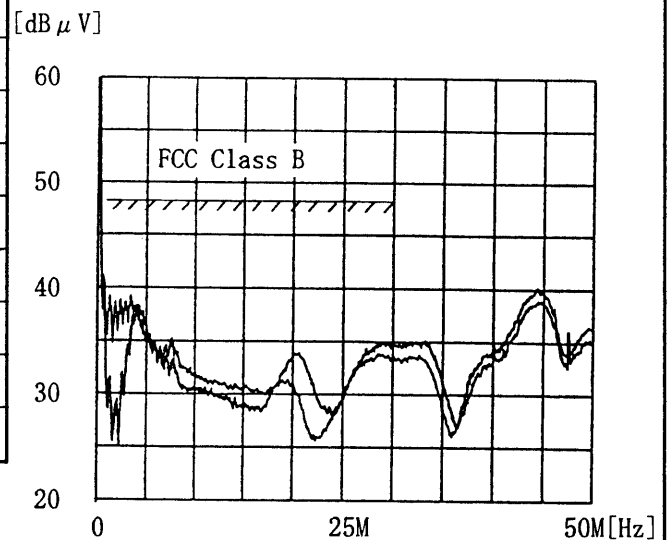
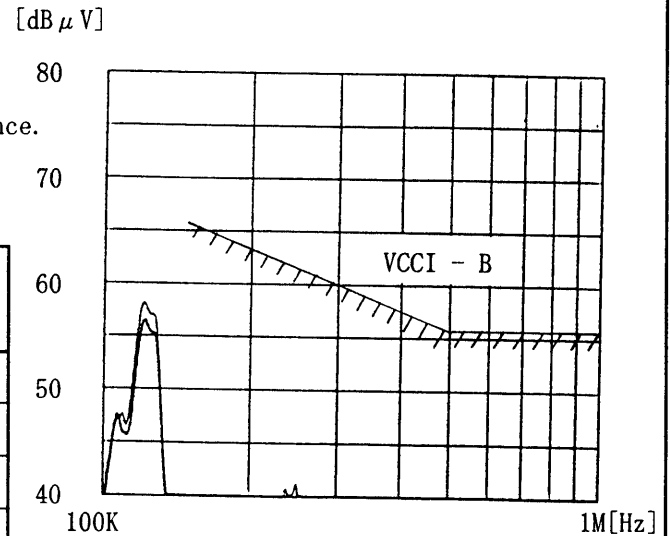
Remarks

Input Volt.      100 V (VCCI class B)  
                          120 V (FCC class B)      [dB $\mu$ V]  
 Load              100 %                              80

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 $\mu$ V]
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



注：図1に示すように、外付けコンデンサーを取り付けて測定する。(C=0.47 $\mu$ F)

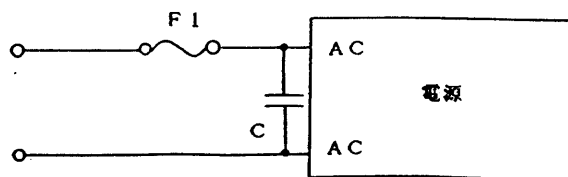


図1

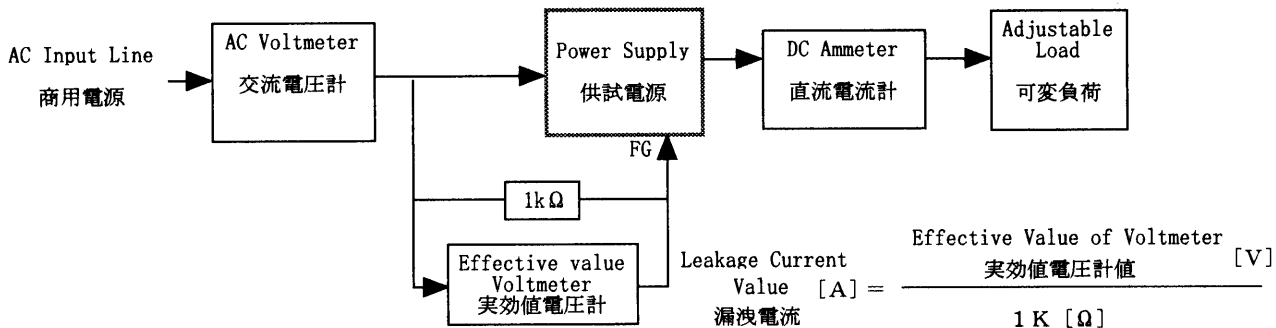
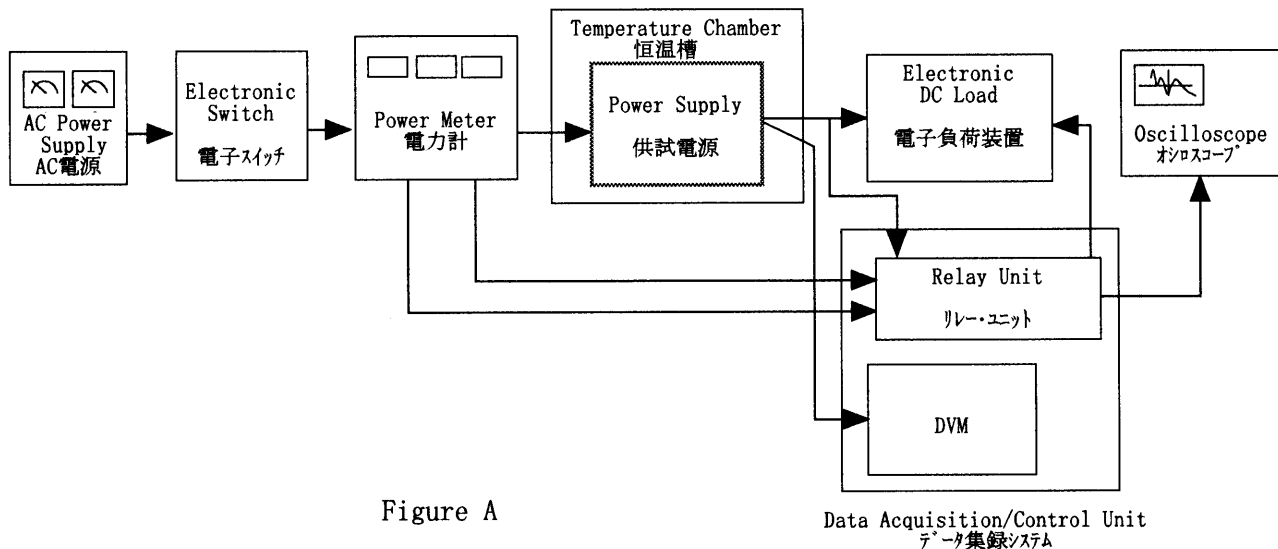


Figure B (DENTORI)

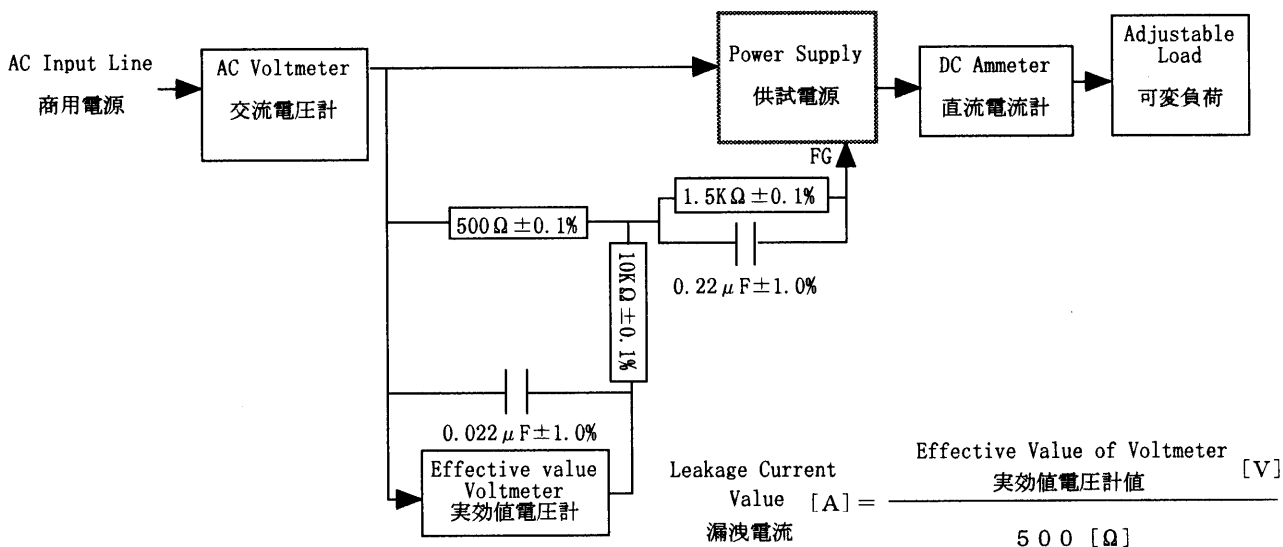


Figure B (UL, CSA, VDE)

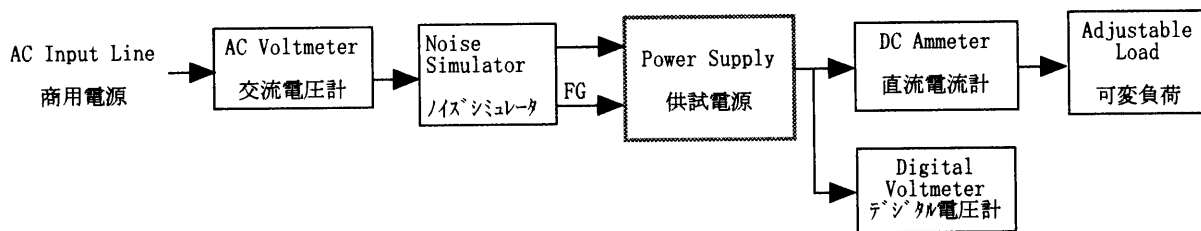


Figure C

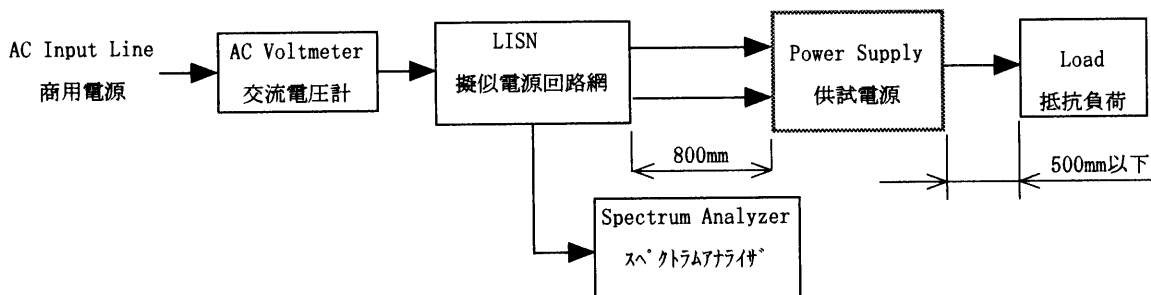


Figure D

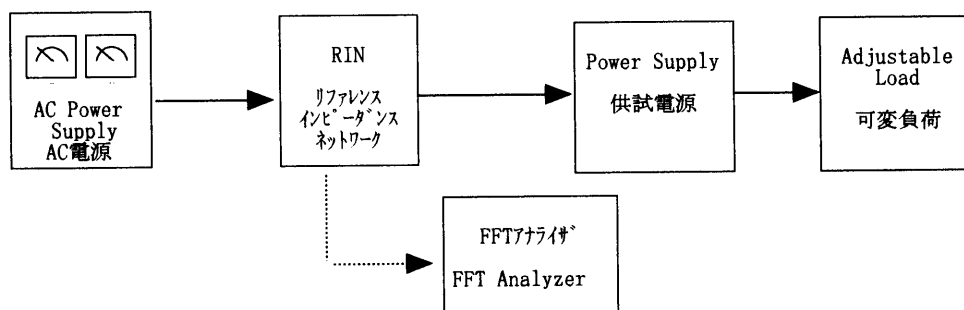


Figure E