



TEST DATA OF VAF1012

(100V INPUT)

Regulated DC Power Supply

Date : May 28. 1999

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コーセル株式会社
COSEL CO., LTD.

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Model		VAF1012		Temperature		25℃																																	
Item		Line Regulation 静的入力変動		Testing Circuitry		Figure A																																	
Object		+12.0V0.9A																																					
1. Graph				2. Values																																			
<div><div><div><div>□</div><div>Load 50%</div></div><div><div>△</div><div>Load 100%</div></div></div><div><div>Output Voltage [V]</div><div><div>Input Voltage [V]</div></div></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>12.172</td><td>12.172</td></tr><tr><td>80</td><td>12.173</td><td>12.172</td></tr><tr><td>85</td><td>12.173</td><td>12.172</td></tr><tr><td>90</td><td>12.173</td><td>12.172</td></tr><tr><td>100</td><td>12.173</td><td>12.172</td></tr><tr><td>110</td><td>12.173</td><td>12.172</td></tr><tr><td>120</td><td>12.173</td><td>12.172</td></tr><tr><td>132</td><td>12.173</td><td>12.172</td></tr><tr><td>140</td><td>12.173</td><td>12.172</td></tr></table>				Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	12.172	12.172	80	12.173	12.172	85	12.173	12.172	90	12.173	12.172	100	12.173	12.172	110	12.173	12.172	120	12.173	12.172	132	12.173	12.172	140	12.173	12.172
Input Voltage [V]	Output Voltage [V]																																						
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Model		VAF1012	Temperature		25℃
Item		Input Current (by Load Current) 入力電流（負荷特性）	Testing Circuitry		Figure A
Output					

1. Graph

—△—

Input Volt. 85V

—□—

Input Volt. 100V

—○—

Input Volt. 132V

Input Current

[A]

0.5

0.4

0.3

0.2

0.1

0

0

0.2

0.4

0.6

0.8

1

1.2

Load Current

[A]

Load Current [A]	Input Current 85V [A]	Input Current 100V [A]	Input Current 132V [A]
0.00	0.014	0.015	0.016
0.15	0.064	0.057	0.050
0.30	0.108	0.097	0.083
0.45	0.149	0.135	0.113
0.60	0.192	0.171	0.142
0.75	0.233	0.206	0.170
0.90	0.274	0.241	0.199
0.99	0.300	0.263	0.215
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	0.014	0.015	0.016
0.15	0.064	0.057	0.050
0.30	0.108	0.097	0.083
0.45	0.149	0.135	0.113
0.60	0.192	0.171	0.142
0.75	0.233	0.206	0.170
0.90	0.274	0.241	0.199
0.99	0.300	0.263	0.215
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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Model		VAF1012	Temperature		25℃
Item		Input Power (by Load Current) 入力電力（負荷特性）	Testing Circuitry		Figure A
Output		_____			

1. Graph

—△—

Input Volt. 85V

—□—

Input Volt. 100V

—○—

Input Volt. 132V

[W]

20

15

10

5

0

Input Power

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]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	0.41	0.49	0.67
0.15	2.49	2.47	2.58
0.30	4.67	4.63	4.79
0.45	6.88	6.89	6.91
0.60	9.27	9.16	9.09
0.75	11.66	11.52	11.38
0.90	14.14	13.90	13.70
0.99	15.72	15.39	15.11
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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Model VAF1012		Temperature 25°C Testing Circuitry Figure A																																
Item	Efficiency 効率																																	
Object																																		
<p>1. Graph</p> <p>□ Load 50% △ Load 100%</p> <p>Efficiency [%]</p> <p>Input Voltage [V]</p> <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>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>75</td><td>78.7</td><td>75.9</td></tr> <tr><td>80</td><td>79.4</td><td>76.8</td></tr> <tr><td>85</td><td>79.8</td><td>77.5</td></tr> <tr><td>90</td><td>80.0</td><td>78.0</td></tr> <tr><td>100</td><td>79.6</td><td>78.8</td></tr> <tr><td>110</td><td>79.1</td><td>79.4</td></tr> <tr><td>120</td><td>78.9</td><td>79.8</td></tr> <tr><td>132</td><td>79.4</td><td>80.1</td></tr> <tr><td>140</td><td>79.7</td><td>80.1</td></tr> </tbody> </table>	Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	78.7	75.9	80	79.4	76.8	85	79.8	77.5	90	80.0	78.0	100	79.6	78.8	110	79.1	79.4	120	78.9	79.8	132	79.4	80.1	140	79.7	80.1
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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>																																							

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Object		+12.0V0.9A																																																								
1. Graph				2. Values																																																						
<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>Instantaneous Compensation Time [mS]</div><div><div>1000</div><div>100</div><div>10</div><div>1</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><div>Load Current [A]</div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [mS]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.15</td><td>68</td><td>94</td><td>193</td></tr><tr><td>0.30</td><td>27</td><td>43</td><td>90</td></tr><tr><td>0.45</td><td>19</td><td>27</td><td>52</td></tr><tr><td>0.60</td><td>15</td><td>26</td><td>43</td></tr><tr><td>0.75</td><td>11</td><td>18</td><td>40</td></tr><tr><td>0.90</td><td>6</td><td>15</td><td>27</td></tr><tr><td>0.99</td><td>6</td><td>11</td><td>26</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]	Time [mS]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.00	—	—	—	0.15	68	94	193	0.30	27	43	90	0.45	19	27	52	0.60	15	26	43	0.75	11	18	40	0.90	6	15	27	0.99	6	11	26	—	—	—	—	—	—	—	—	—	—	—	—
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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 load current.</p> <p>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。</p> <p>(注)斜線は定格負荷電流範囲を示す。</p>																																																										

COSEL

Model		VAF1012	
Item		Load Regulation 静的負荷変動	
Object		+12.0V0.9A	

1. Graph

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Input Volt. 85 V

Input Volt. 100 V

Input Volt. 132 V

[V]

12.31

12.27

12.23

12.19

12.15

12.11

12.07

0

Output Voltage

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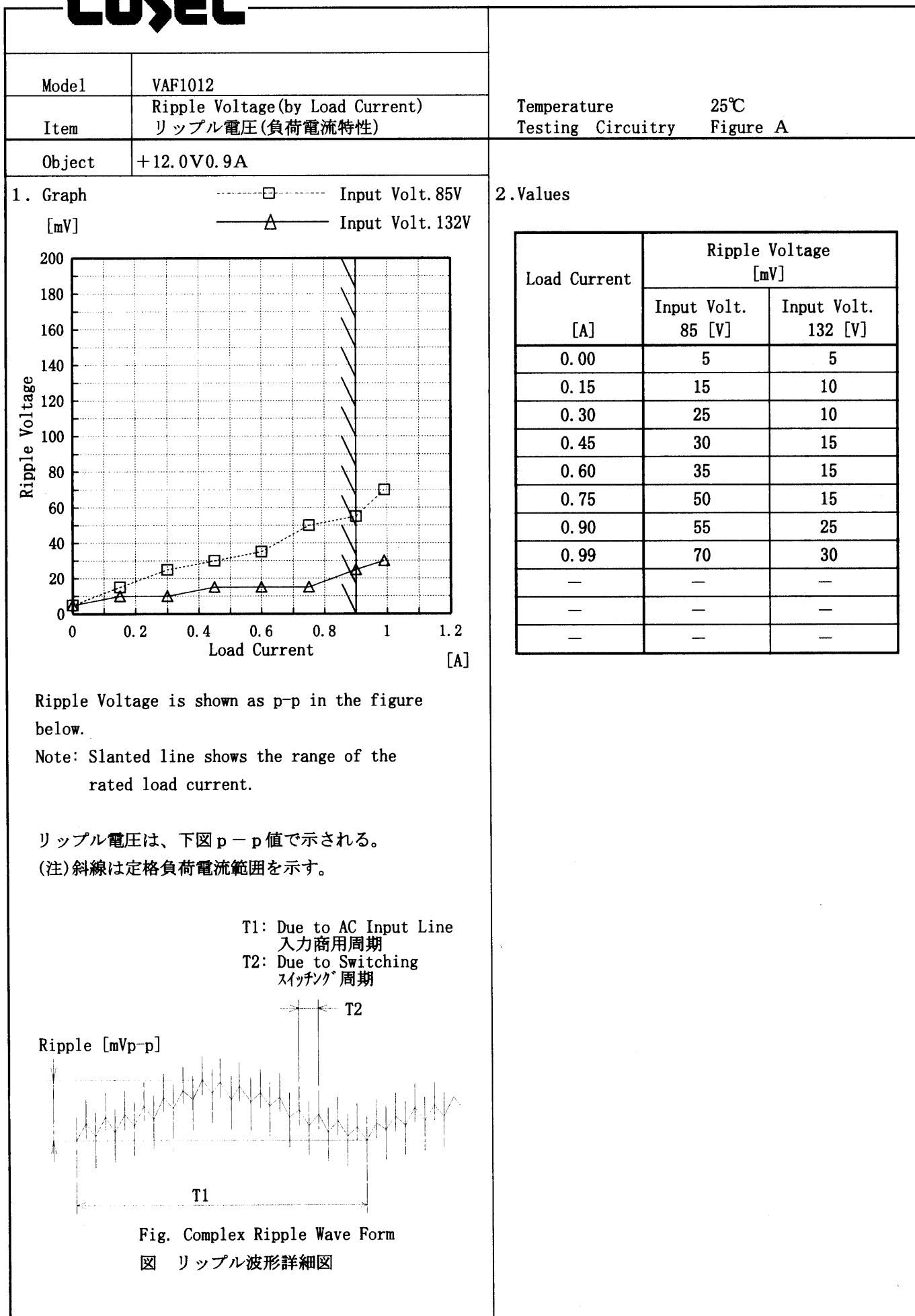
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COSEL



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	5	5
0.15	15	10
0.30	25	10
0.45	30	15
0.60	35	15
0.75	50	15
0.90	55	25
0.99	70	30
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COSEL

Model		VAF1012	
Item		Ripple-Noise リップルノイズ	
Object		+12.0V0.9A	

1. Graph

□ -----

Input Volt. 85V

△ -----

Input Volt. 132V

[mV]

Ripple-Noise

Load Current

[A]

2. Values

Load Current	Ripple-Noise	
	Input Volt. 85 [V]	Input Volt. 132 [V]
[A]		
0.00	10	10
0.15	20	15
0.30	30	15
0.45	45	25
0.60	45	25
0.75	60	35
0.90	70	35
0.99	90	50
—	—	—
—	—	—
—	—	—

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。

T1: Due to AC Input Line

入力商用周期

T2: Due to Switching

スイッチング周期

T2

Ripple-Noise

[mVp-p]

T1

Fig. Complex Ripple Wave Form

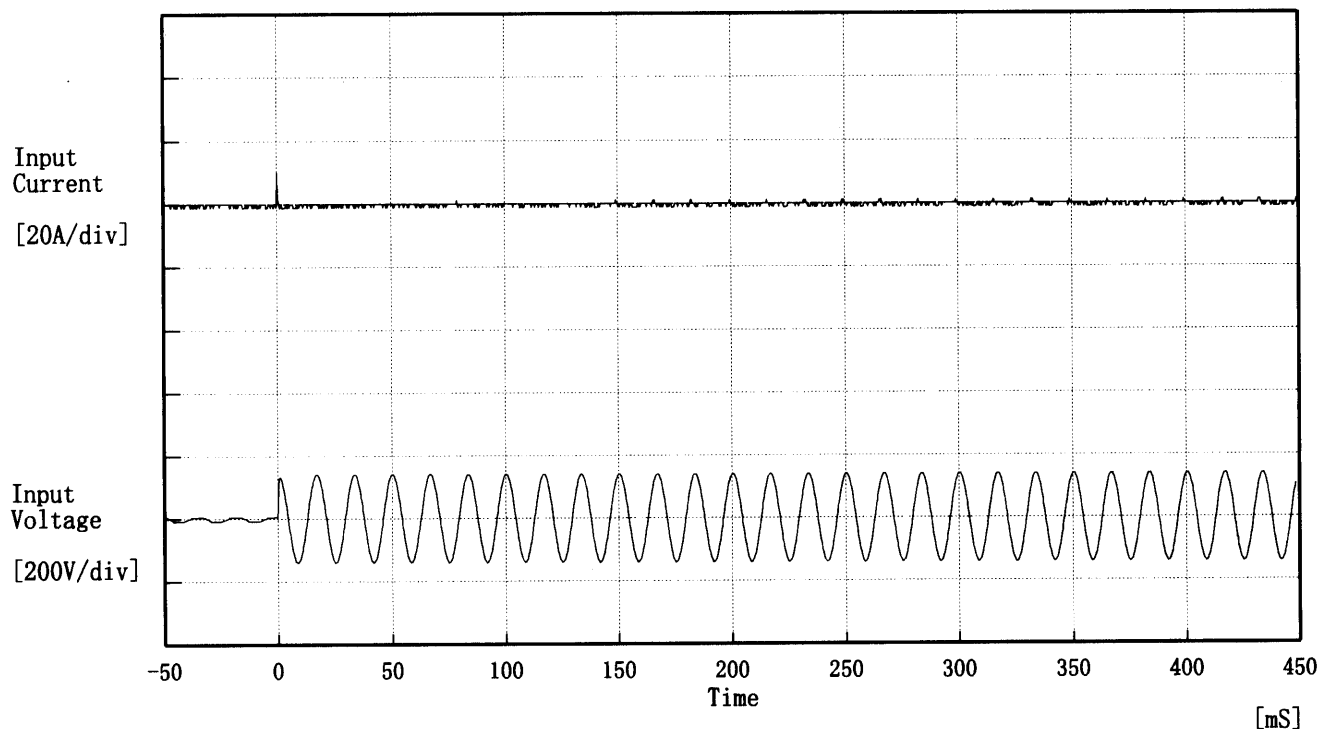
図 リップル波形詳細図

COSEL

Model		VAF1012		Temperature		25℃																																																								
Item		Overcurrent Protection 過電流保護		Testing Circuitry		Figure A																																																								
Object		+12.0V0.9A																																																												
1. Graph				2. Values																																																										
<div><div>-----</div>Input Volt. 85 V</div> <div><div>-----</div>Input Volt. 100 V</div> <div><div>-----</div>Input Volt. 132 V</div> <div><div>Output Voltage [V]</div><div>20.0</div><div>15.0</div><div>10.0</div><div>5.0</div><div>0.0</div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>Load Current [A]</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>12.00</td><td>1.49</td><td>1.58</td><td>1.75</td></tr><tr><td>11.40</td><td>1.50</td><td>1.61</td><td>1.80</td></tr><tr><td>10.80</td><td>1.53</td><td>1.66</td><td>1.88</td></tr><tr><td>9.60</td><td>1.66</td><td>1.80</td><td>2.00</td></tr><tr><td>8.40</td><td>1.79</td><td>1.94</td><td>2.14</td></tr><tr><td>7.20</td><td>1.98</td><td>2.11</td><td>2.32</td></tr><tr><td>6.00</td><td>2.19</td><td>2.29</td><td>2.53</td></tr><tr><td>4.80</td><td>2.35</td><td>2.50</td><td>2.72</td></tr><tr><td>3.60</td><td>2.61</td><td>2.75</td><td>3.21</td></tr><tr><td>2.40</td><td>2.93</td><td>3.01</td><td>3.25</td></tr><tr><td>1.20</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]	12.00	1.49	1.58	1.75	11.40	1.50	1.61	1.80	10.80	1.53	1.66	1.88	9.60	1.66	1.80	2.00	8.40	1.79	1.94	2.14	7.20	1.98	2.11	2.32	6.00	2.19	2.29	2.53	4.80	2.35	2.50	2.72	3.60	2.61	2.75	3.21	2.40	2.93	3.01	3.25	1.20	—	—	—	0.00	—	—	—
Output Voltage [V]	Load Current [A]																																																													
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1.20	—	—	—																																																											
0.00	—	—	—																																																											
Note1: Slanted line shows the range of the rated load current.																																																														
Note2: The lines shows peak current of intermittent operation of power supply when output voltage drops less than rated voltage value at overcurrent.																																																														
(注1) 斜線は定格負荷電流範囲を示す。																																																														
(注2) 垂下部分は間欠モード時のピーク電流を示す。																																																														

COSEL

Model	VAF1012	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current 突入電流	
Object	_____	



Input Voltage 100 V

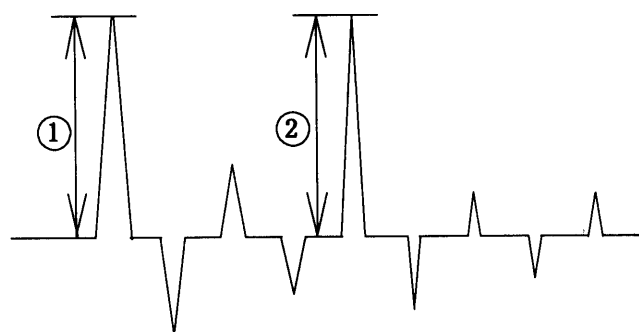
Frequency 60 Hz

Load 100 %

Inrush Current

① 10.16 [A]

② 1.18 [A]



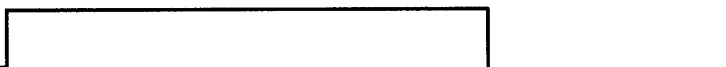
COSEL

Model	VAF1012	Temperature 25℃ Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+12.0V0.9A	

Input Volt. 100 V

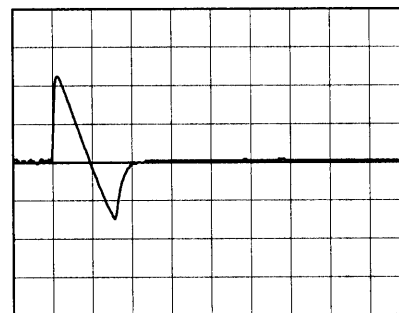
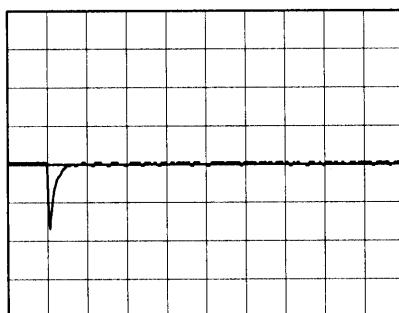
Cycle 1000 mS

Load Current



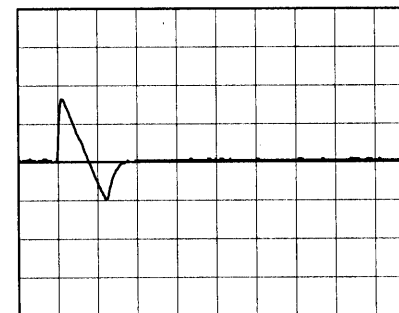
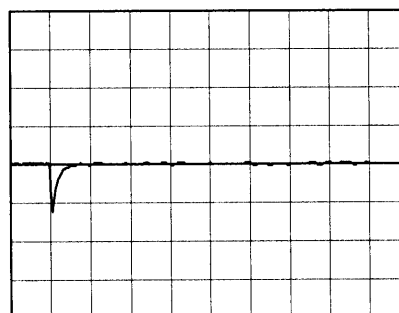
Min. Load ↔

Load 100 %



Min. Load ↔

Load 50 %



100 mV/div

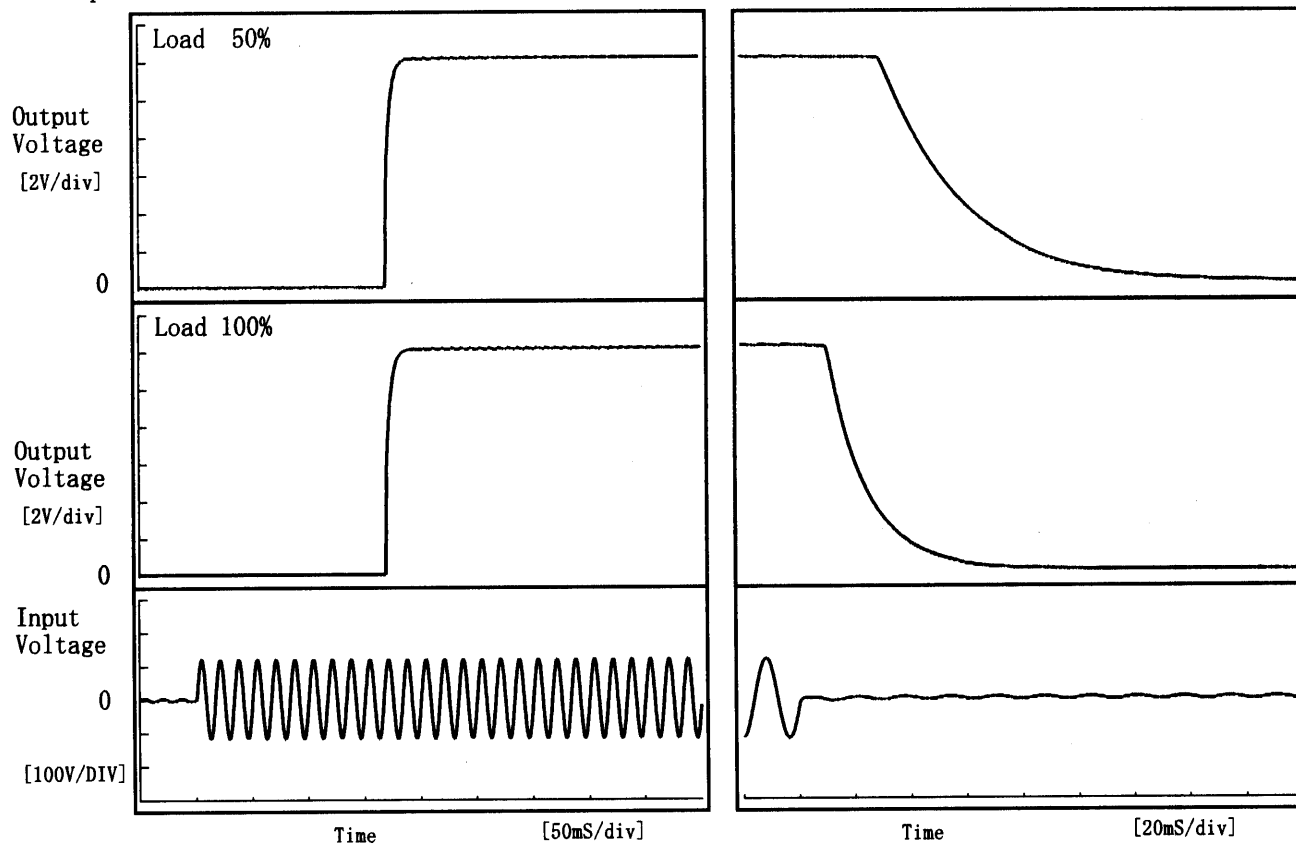
20 mS/div

COSEL

Model	VAF1012	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V0.9A		

1. Graph

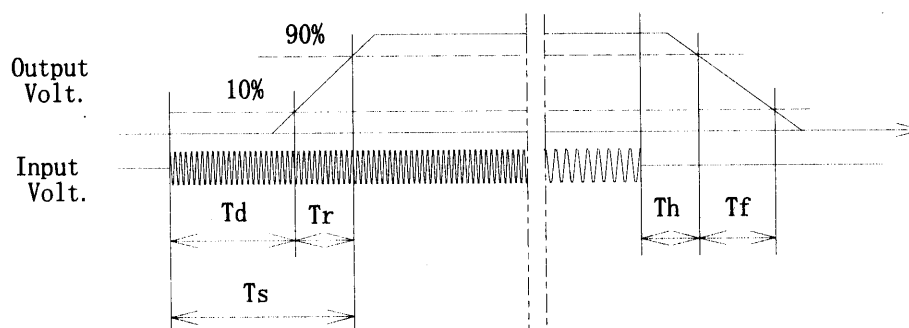
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	169.3	7.3	176.5	33.3	64.3
100 %	169.3	7.3	176.5	12.4	33.4

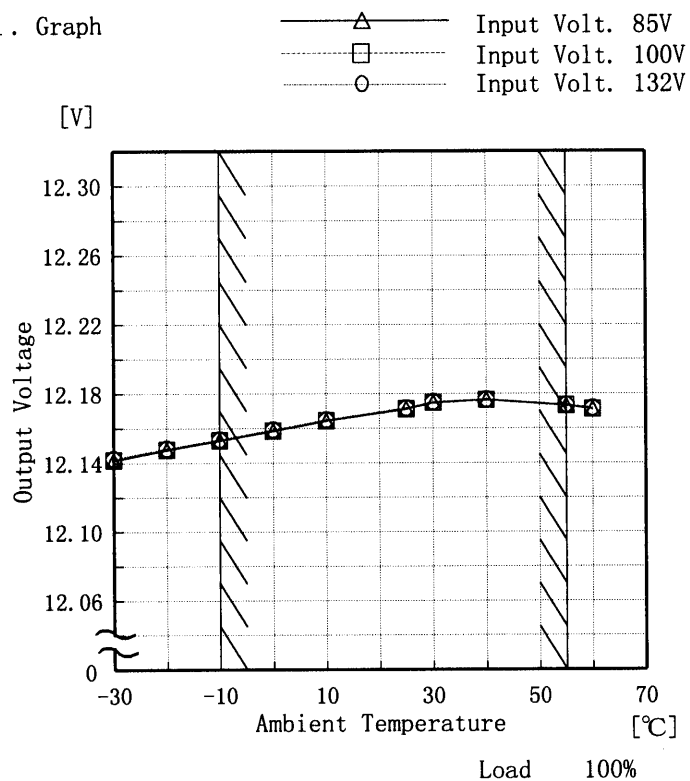


COSEL

Model	VAF1012
Item	Ambient Temperature Drift 周囲温度変動
Object	+12.0V0.9A

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

Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-30	12.141	12.142	12.143
-20	12.148	12.148	12.149
-10	12.153	12.153	12.154
0	12.158	12.159	12.159
10	12.164	12.165	12.165
25	12.171	12.171	12.172
30	12.175	12.175	12.175
40	12.176	12.176	12.177
55	12.173	12.173	12.174
60	12.171	12.171	12.172
—	—	—	—

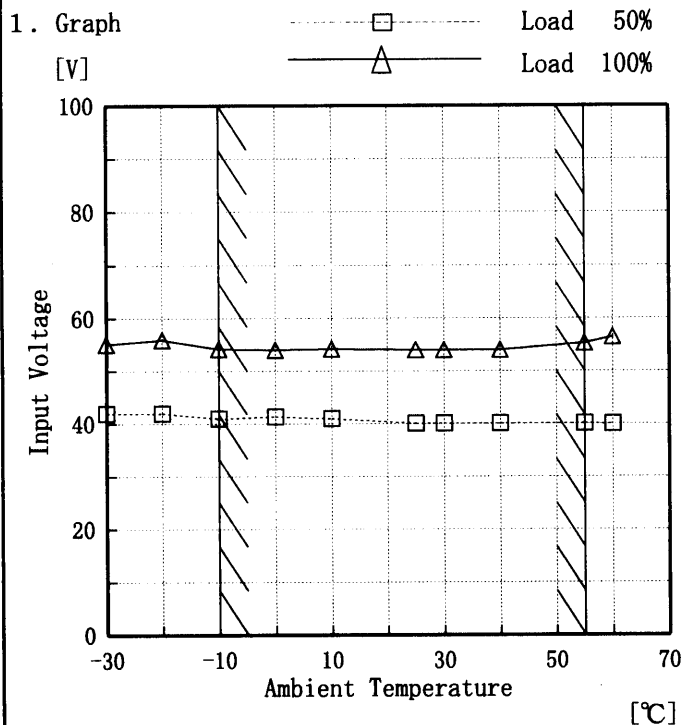
COSEL

Model VAF1012

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

Object +12.0V0.9A

Testing Circuitry Figure A



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 Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	42	55
-20	42	56
-10	41	54
0	41	54
10	41	54
25	40	54
30	40	54
40	40	54
55	40	55
60	40	56
—	—	—

COSEL

Model		VAF1012
Item		Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object		+12.0V0.9A

1. Graph

□

Load 50%

△

Load 100%

[mV]

200

180

160

140

120

100

80

60

40

20

0

Ripple Voltage

-30

-10

10

30

50

70

Ambient Temperature

[°C]

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 Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	40	55
-10	30	40
0	25	40
10	25	40
20	25	40
25	25	40
30	20	35
40	20	35
50	20	35
60	20	35
—	—	—

COSEL

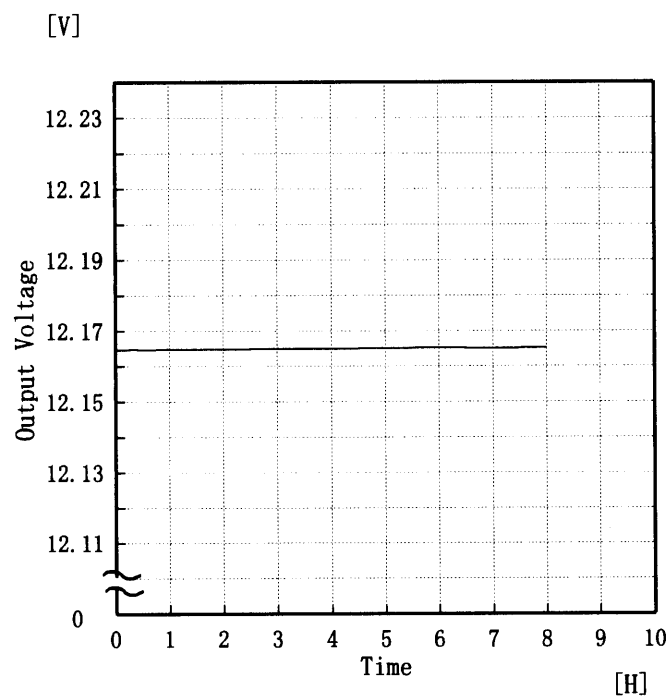
Model VAF1012

Item Time Lapse Drift 経時ドリフト

Object +12.0V0.9A

Temperature 25 °C
Testing Circuitry Figure A

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	12.165
0.5	12.165
1.0	12.165
2.0	12.165
3.0	12.165
4.0	12.165
5.0	12.165
6.0	12.165
7.0	12.165
8.0	12.165

COSEL

Model	VAF1012	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
Object	+12.0V0.9A	

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 : 0.0~0.9A

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

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

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 : 0.0~0.9A

* 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	55	132	0.0	12.174	±11	±0.1
Minimum Voltage	-10	85	0.9	12.153		

COSEL

Model	VAF1012	Temperature	25°C
Item	Oscillator Frequency 発振周波数	Testing Circuitry	Figure A
Object	+12.0V0.9A		

1. Graph

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

[KHz]

Oscillator Frequency

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]	Oscillator Frequency [KHz]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	100	101	101
0.15	100	101	101
0.30	100	101	101
0.45	100	101	101
0.60	100	101	101
0.75	100	101	101
0.90	100	101	101
0.99	100	101	101
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

LOREL

		Testing Circuitry Figure A
Model	VAF1012	
Item	Condensation 結露特性	
Object	+12.0V0.9A	

1. Condensation test

Testing procedure is as follows.

① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off.

② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH.

③ Testing electrical characteristics of the unit to confirm there be no fault.

1. 結露特性試験

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

2. Values

Item	Data	Testing Conditions
Output Voltage [V]	12.002	Input Volt.: 100V, Load Current:0.9A
Line Regulation [mV]	2	Input Volt.: 85～132V, Load Current:0.9A
Load Regulation [mV]	4	Input Volt.: 100V, Load Current:0.0～0.9A

COSEL

COSEL

Model	VAF1012	Temperature Testing Circuitry	25°C Figure C
Item	Line Noise Tolerance 入力雑音耐量		
Object	+12.0V0.9A		

1. Results

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

2. Conditions

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

COSEL

Model	VAF1012	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object			

1. Graph

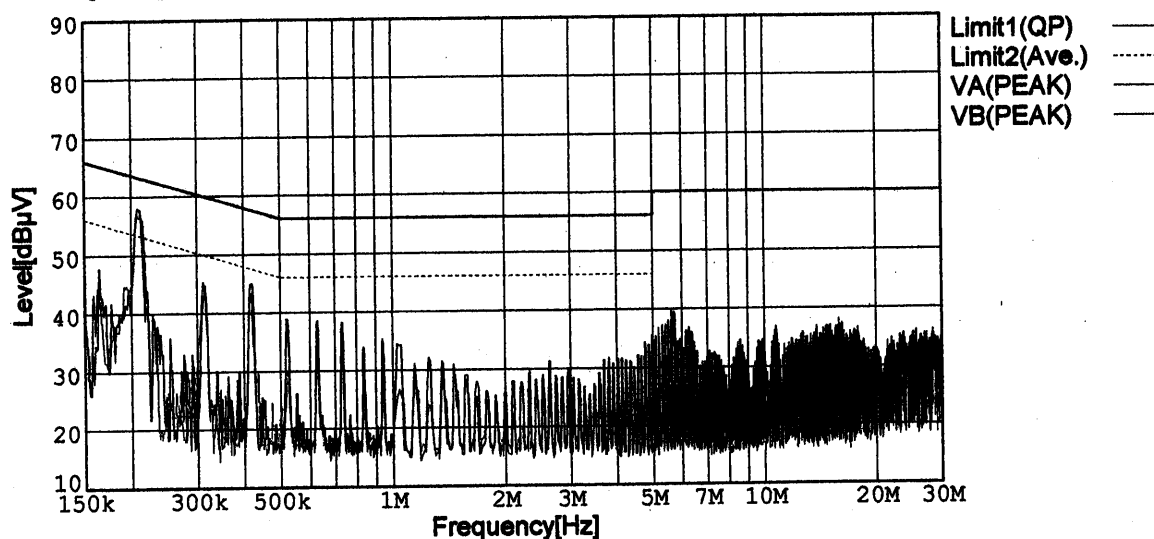
Remarks

Input Volt. 100 V (VCCI Class B)
120 V (FCC Class B)

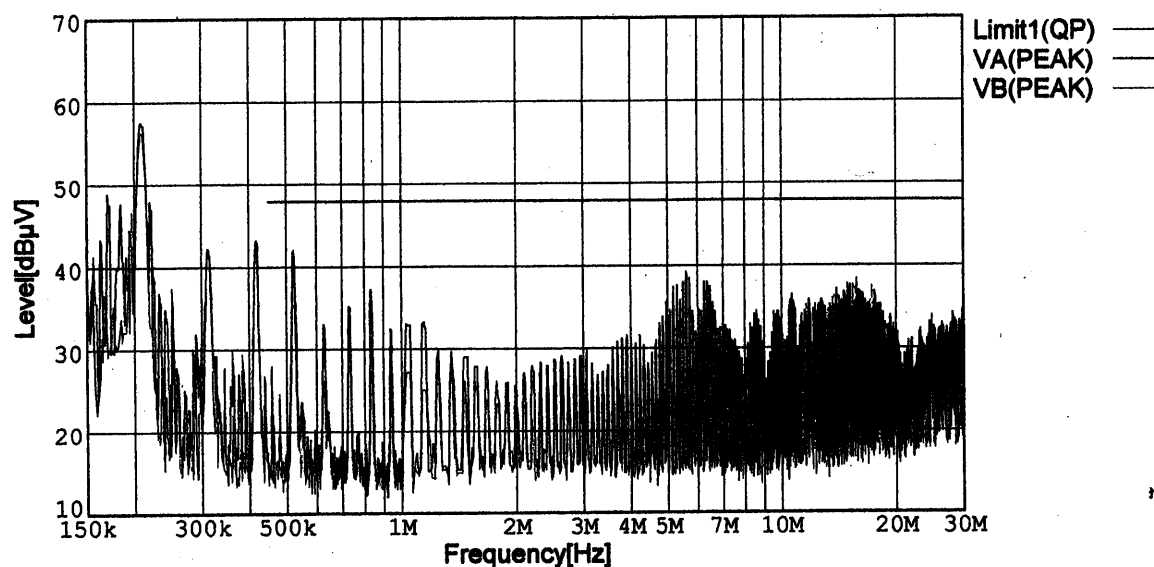
Load 100 %

Limit1: [VCCI] Class B(QP)

Limit2: [VCCI] Class B(Ave.)



Limit1: [FCC Part15] Class B



COSEL

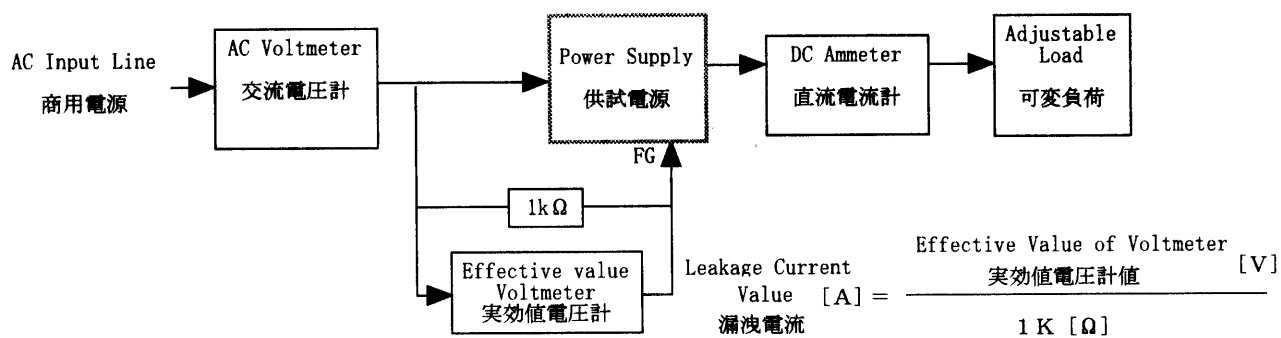
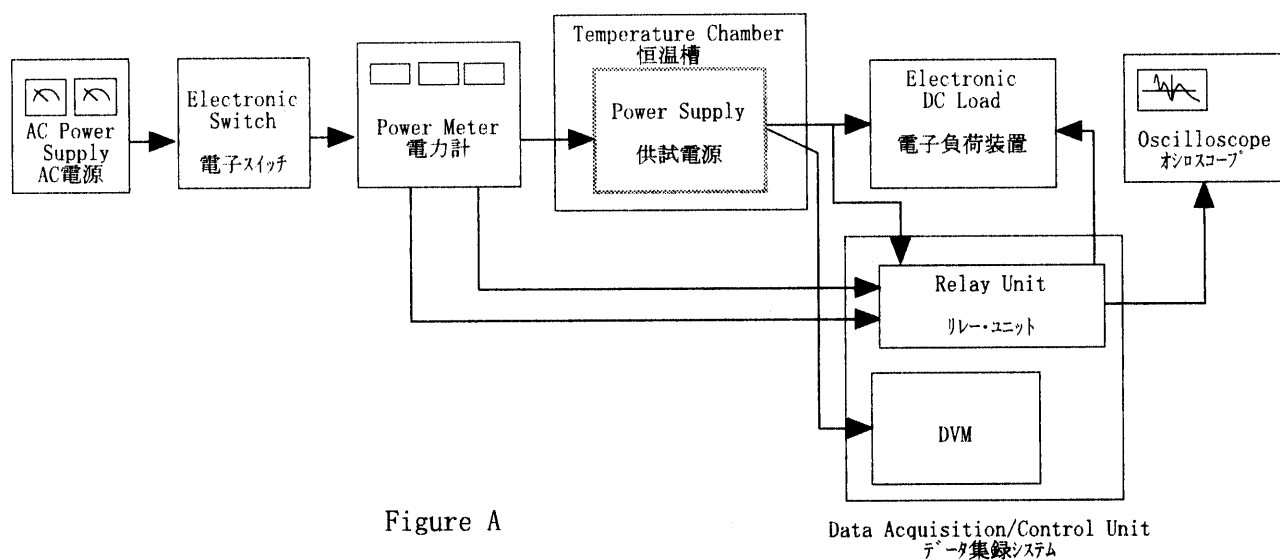


Figure B (DENTORI)

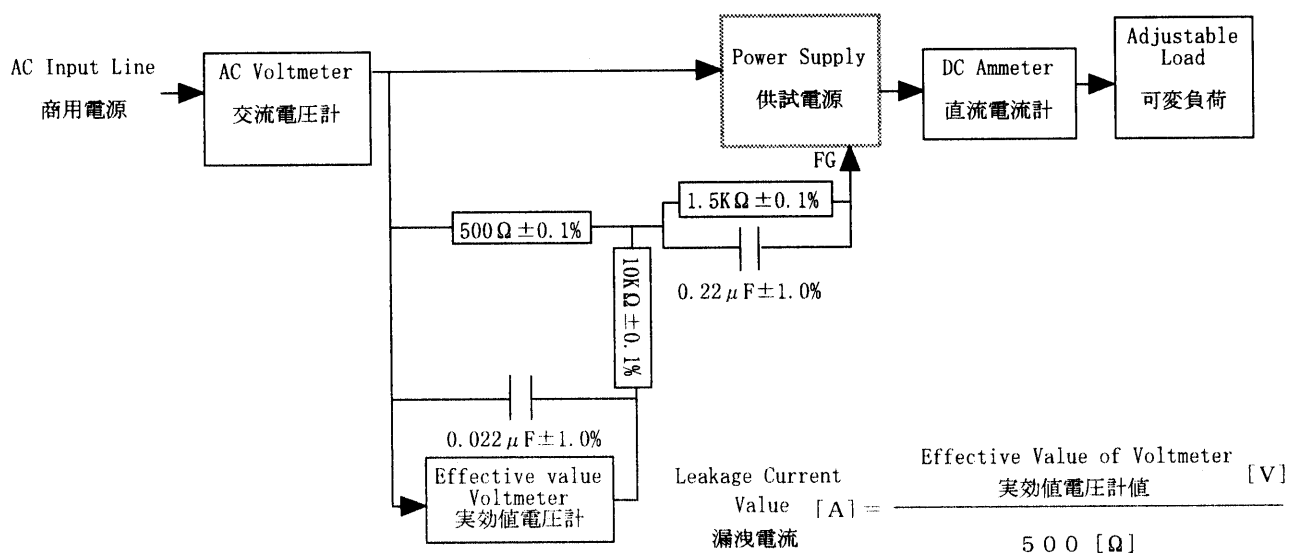


Figure B (I E C 6 0 9 5 0)

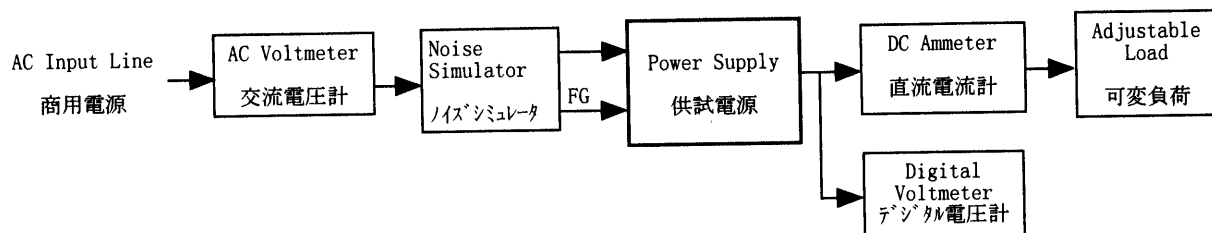


Figure C

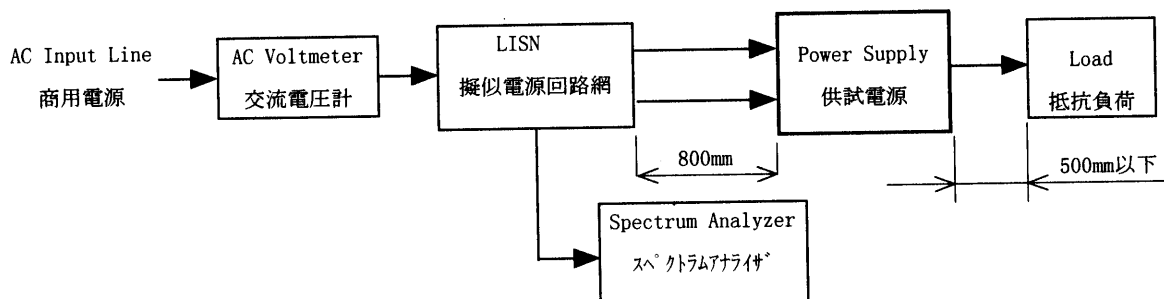


Figure D

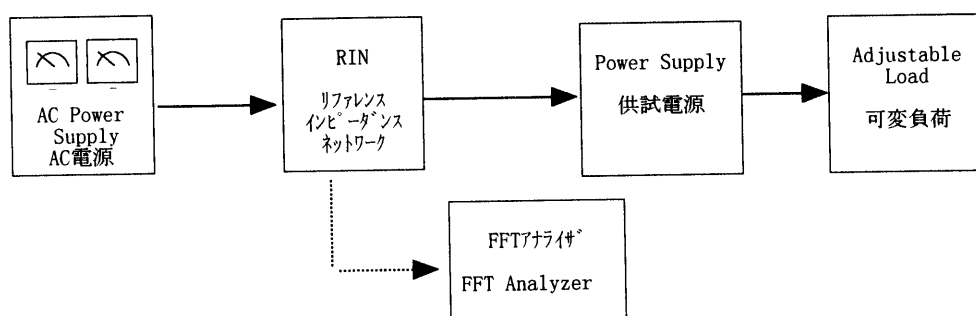


Figure E