



TEST DATA OF VAF512

(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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(Final Page 28)

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Model

VAF512

Item

Line Regulation 静的入力変動

Object

+12.0V0.45A

1. Graph

□

Load 50%

△

Load 100%

Output Voltage [V]

12.19

12.17

12.15

12.13

12.11

12.09

12.07

0

0

80

90

100

110

120

130

140

150

Input Voltage [V]

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

(注)斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.122	12.121
80	12.122	12.122
85	12.122	12.122
90	12.122	12.122
100	12.122	12.122
110	12.122	12.122
120	12.122	12.122
132	12.123	12.122
140	12.122	12.122

BC-3232

Model		VAF512	
Item		Input Power (by Load Current) 入力電力（負荷特性）	
Output			

1. Graph

—△—

Input Volt. 85V

—□—

Input Volt. 100V

—○—

Input Volt. 132V

[W]

10

8

6

4

2

0

Input Power

0

0.2

0.4

0.6

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]
0.000	0.36	0.37	0.42
0.080	1.44	1.48	1.54
0.160	2.60	2.61	2.55
0.240	3.73	3.67	3.80
0.320	4.94	4.93	4.84
0.400	6.14	6.10	6.10
0.450	6.93	6.86	6.84
0.495	7.64	7.55	7.50
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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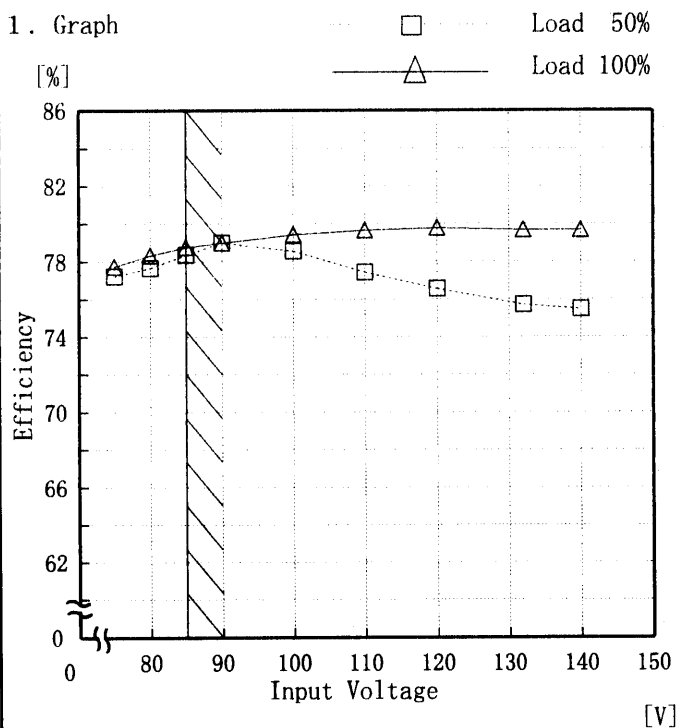
Model VAF512

Item Efficiency 効率

Object

Temperature 25℃
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]	Efficiency [%]	
	Load 50%	Load 100%
75	77.2	77.7
80	77.7	78.3
85	78.3	78.8
90	79.0	79.0
100	78.6	79.4
110	77.4	79.7
120	76.6	79.8
132	75.7	79.7
140	75.5	79.7

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Model		VAF512		Temperature		25℃	
Item		Efficiency (by Load Current) 効率 (負荷電流特性)		Testing Circuitry		Figure A	
Output		_____					

1. Graph

—△—

—□—

—○—

Input Volt. 85V

Input Volt. 100V

Input Volt. 132V

Efficiency [%]

Load Current [A]	85V Efficiency [%]	100V Efficiency [%]	132V Efficiency [%]
0.080	67.4	65.6	63.1
0.160	74.6	74.3	76.0
0.240	78.1	79.3	76.6
0.320	78.5	78.7	80.1
0.400	78.8	79.4	79.3
0.450	78.6	79.4	79.7
0.495	78.5	79.4	79.9
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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]
0.080	67.4	65.6	63.1
0.160	74.6	74.3	76.0
0.240	78.1	79.3	76.6
0.320	78.5	78.7	80.1
0.400	78.8	79.4	79.3
0.450	78.6	79.4	79.7
0.495	78.5	79.4	79.9
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model		VAF512	
Item		Power Factor (by Input Voltage) 力率（入力電圧特性）	
Object			

1. Graph

□

Load 50%

△

Load 100%

Power Factor

0.70

0.60

0.50

0.40

0.30

0.20

0

0

80

90

100

110

120

130

140

150

Input Voltage

[V]

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

(注)斜線は定格入力電圧範囲を示す。

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.52	0.58
80	0.51	0.57
85	0.50	0.56
90	0.49	0.55
100	0.47	0.53
110	0.46	0.51
120	0.44	0.49
132	0.43	0.48
140	0.42	0.47

2. Values

COSEL

Model		VAF512		Temperature		25℃																																																								
Item		Power Factor (by Load Current) 力率 (負荷電流特性)		Testing Circuitry		Figure A																																																								
Output		_____																																																												
1. Graph				2. Values																																																										
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Model		VAF512	Temperature Testing Circuitry	25°C Figure A
Item		Hold-Up Time 出力保持時間		
Object		+12.0V0.45A		

1. Graph

□ Load 50%

△ Load 100%

Hold-Up Time [mS]

Hold-Up Time [mS]

Input Voltage [V]

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。

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	28	12
80	33	15
85	39	17
90	44	20
100	57	27
110	70	34
120	85	41
132	104	51
140	118	59

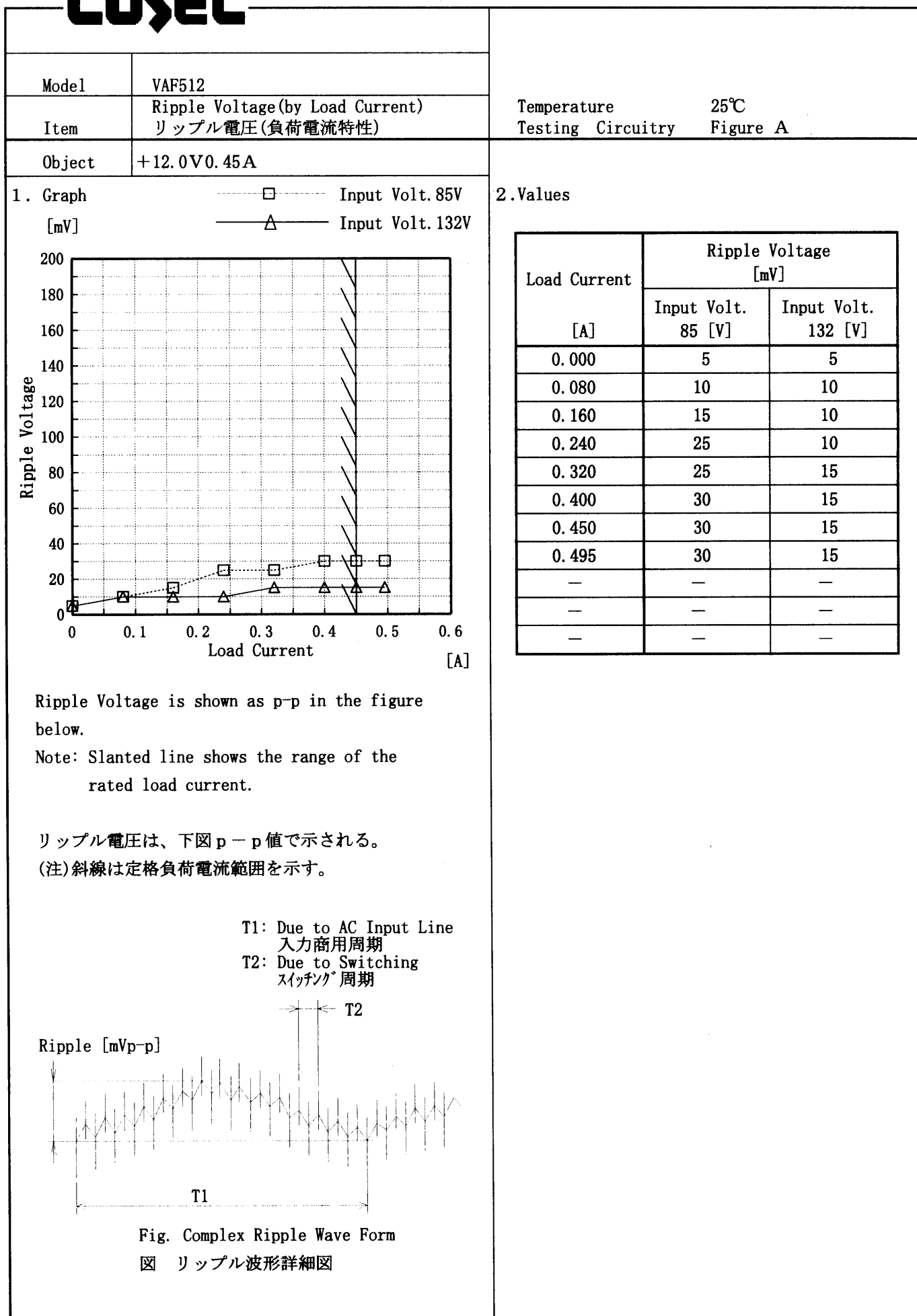
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Model		VAF512		Temperature		25℃																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
Object		+12.0V0.45A																																																								
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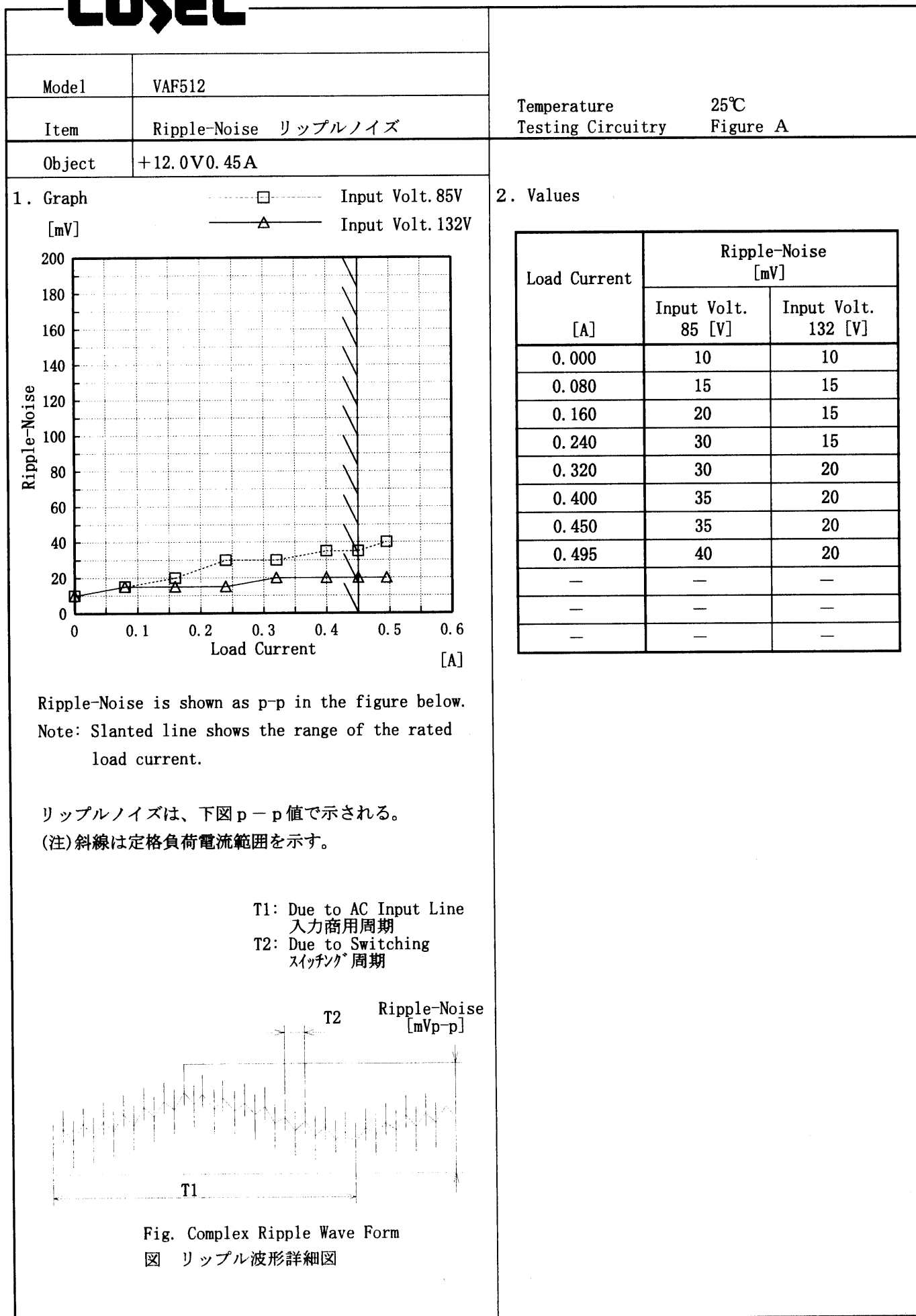
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Load Current	Output Voltage																																																									
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Model		VAF512	Temperature25℃ Testing CircuitryFigure A
Item		Overcurrent Protection 過電流保護	
Object		+12.0V0.45A	

1. Graph

[V]

20.0

15.0

10.0

5.0

0.0

0

0.5

1

1.5

2

2.5

3

Output Voltage

Load Current

[A]

Input Volt. 85 V

Input Volt. 100 V

Input Volt. 132 V

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。

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	1.00	1.14	1.33
11.40	1.10	1.19	1.36
10.80	1.12	1.24	1.40
9.60	1.20	1.31	1.49
8.40	1.29	1.39	1.56
7.20	1.39	1.50	1.65
6.00	1.50	1.61	1.78
4.80	1.70	1.75	1.89
3.60	1.79	1.91	2.04
2.40	1.98	2.06	2.20
1.20	—	—	—
0.00	—	—	—

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Model

VAF512

Item

Inrush Current 突入電流

Temperature

25°C

Testing Circuitry Figure A

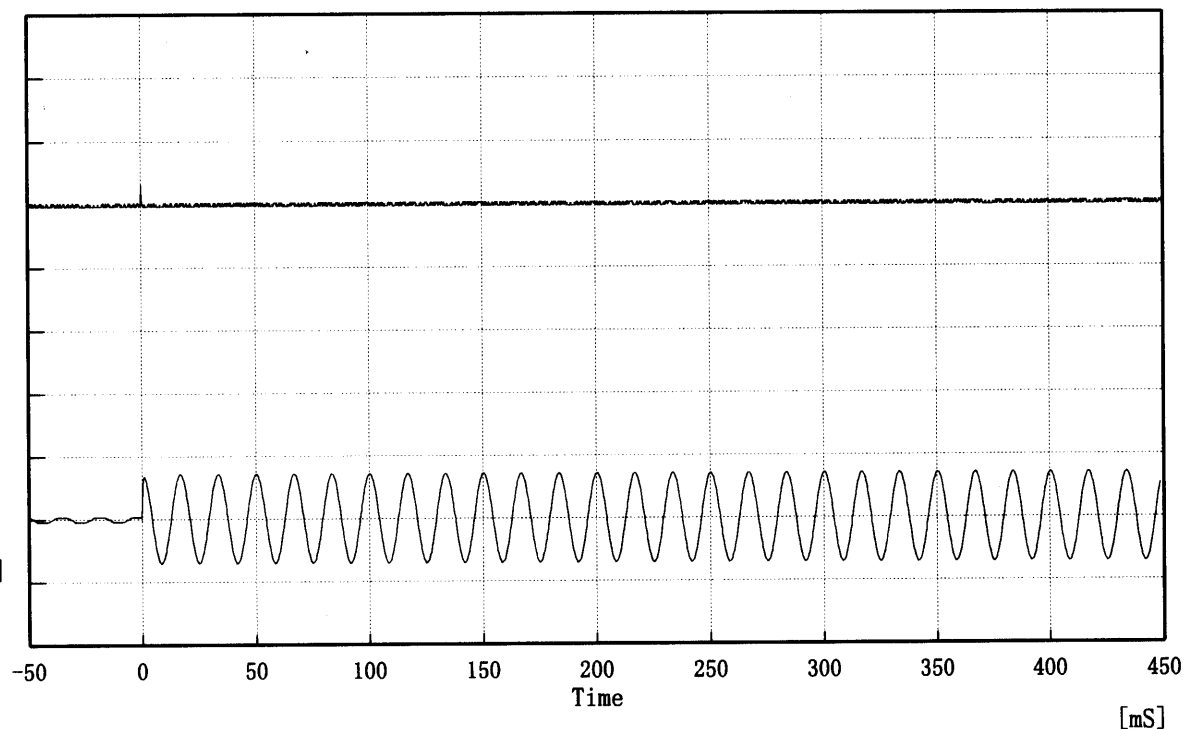
Object

Input
Current

[20A/div]

Input
Voltage

[200V/div]



Input Voltage 100 V

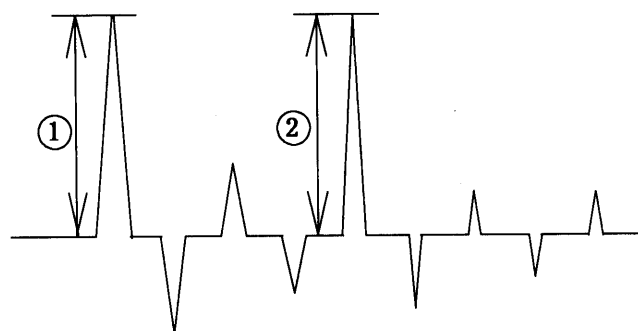
Frequency 60 Hz

Load 100 %

Inrush Current

① 6.14 [A]

② 0.59 [A]



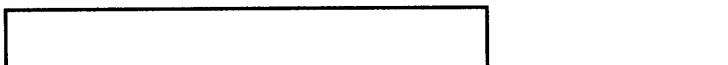
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Model	VAF512	Temperature	25℃
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+12.0V0.45A		

Input Volt. 100 V

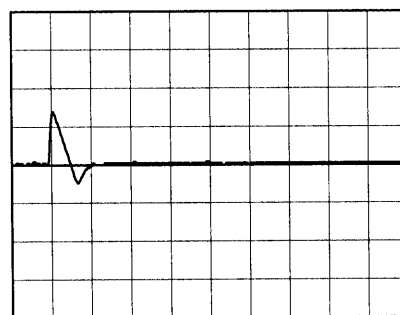
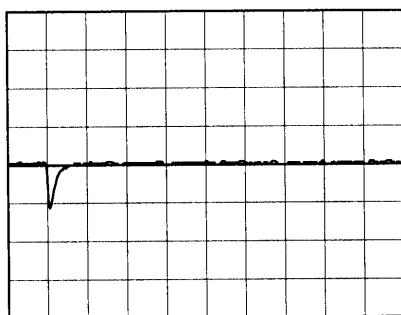
Cycle 1000 mS

Load Current



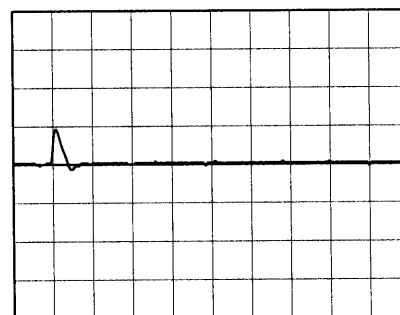
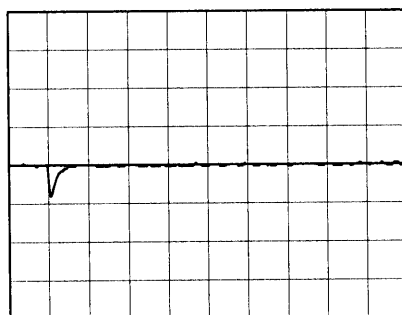
Min. Load ↔

Load 100 %



Min. Load ↔

Load 50 %



100 mV/div

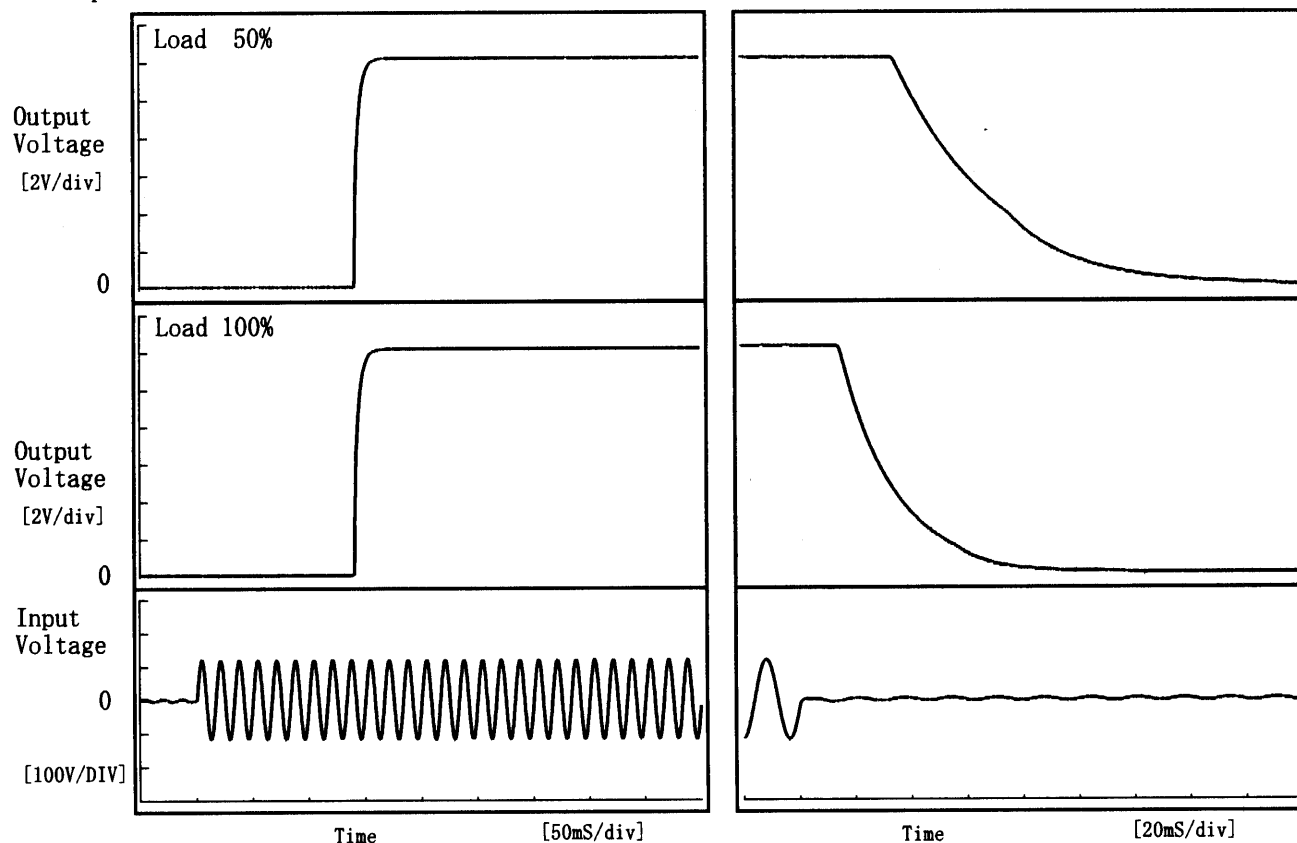
20 mS/div

COSEL

Model	VAF512	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V0.45A		

1. Graph

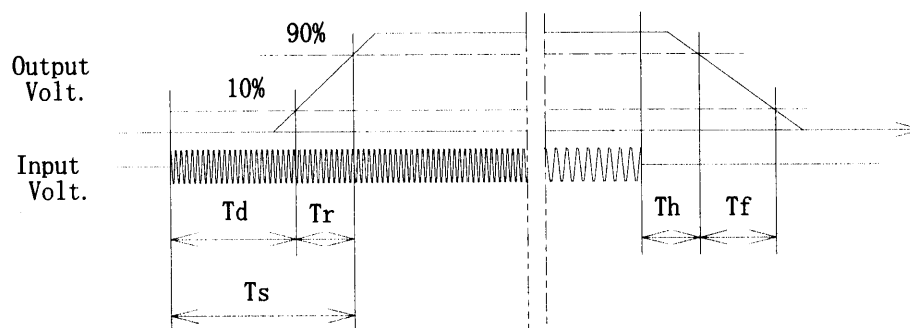
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	141.0	7.5	148.5	38.6	68.6
100 %	140.8	7.5	148.3	17.4	42.4



COSEL

Model		VAF512	Testing Circuitry Figure A																																																			
Item		Ambient Temperature Drift 周囲温度変動																																																				
Object		+12.0V0.45A																																																				
1. Graph		<div><div><div>△</div>Input Volt. 85V</div><div><div>□</div>Input Volt. 100V</div><div><div>○</div>Input Volt. 132V</div></div> <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>	2. Values																																																			
		<table><tr><th rowspan="2">Temperature [°C]</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>-30</td><td>12.094</td><td>12.094</td><td>12.094</td></tr><tr><td>-20</td><td>12.098</td><td>12.098</td><td>12.099</td></tr><tr><td>-10</td><td>12.102</td><td>12.102</td><td>12.102</td></tr><tr><td>0</td><td>12.106</td><td>12.106</td><td>12.107</td></tr><tr><td>10</td><td>12.111</td><td>12.111</td><td>12.112</td></tr><tr><td>25</td><td>12.120</td><td>12.120</td><td>12.120</td></tr><tr><td>30</td><td>12.123</td><td>12.123</td><td>12.124</td></tr><tr><td>40</td><td>12.126</td><td>12.127</td><td>12.127</td></tr><tr><td>55</td><td>12.128</td><td>12.128</td><td>12.128</td></tr><tr><td>60</td><td>12.126</td><td>12.127</td><td>12.127</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>	Temperature [°C]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	-30	12.094	12.094	12.094	-20	12.098	12.098	12.099	-10	12.102	12.102	12.102	0	12.106	12.106	12.107	10	12.111	12.111	12.112	25	12.120	12.120	12.120	30	12.123	12.123	12.124	40	12.126	12.127	12.127	55	12.128	12.128	12.128	60	12.126	12.127	12.127	—	—	—	—	
Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																			
-30	12.094	12.094	12.094																																																			
-20	12.098	12.098	12.099																																																			
-10	12.102	12.102	12.102																																																			
0	12.106	12.106	12.107																																																			
10	12.111	12.111	12.112																																																			
25	12.120	12.120	12.120																																																			
30	12.123	12.123	12.124																																																			
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60	12.126	12.127	12.127																																																			
—	—	—	—																																																			

COSEL

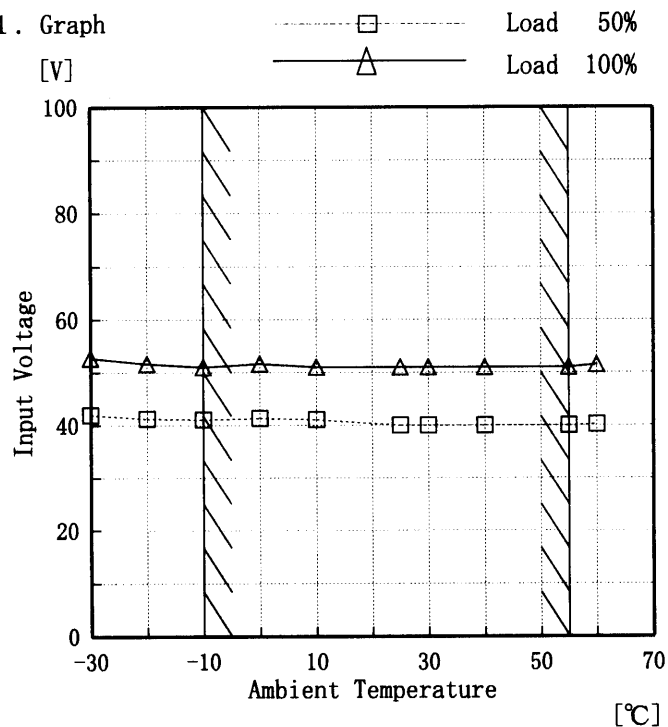
Model VAF512

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

Object +12.0V0.45A

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 Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	42	53
-20	41	52
-10	41	51
0	41	52
10	41	51
25	40	51
30	40	51
40	40	51
55	40	51
60	40	51
—	—	—

COSEL

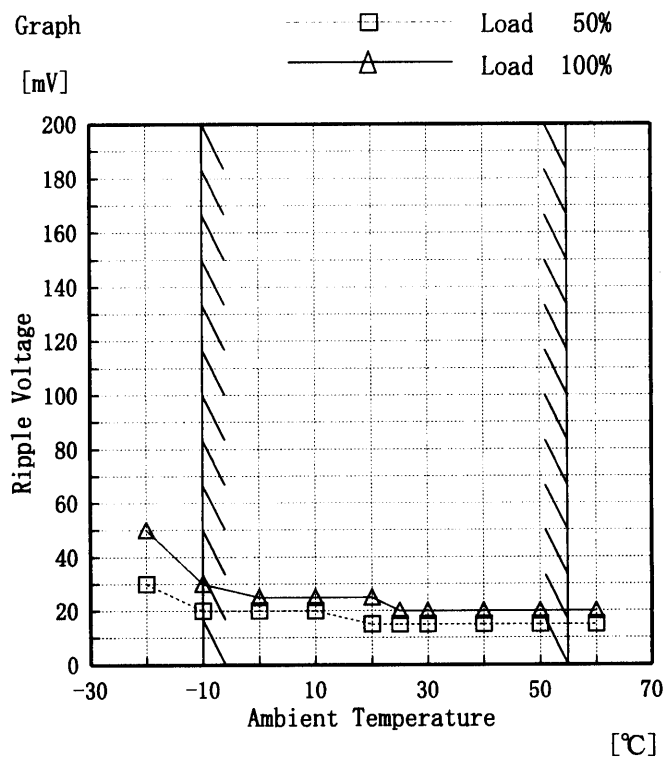
Model VAF512

Item Ripple Voltage (by Ambient Temp.)
リップル電圧 (周囲温度特性)

Object +12.0V0.45A

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 Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	30	50
-10	20	30
0	20	25
10	20	25
20	15	25
25	15	20
30	15	20
40	15	20
50	15	20
60	15	20
—	—	—

COSEL

Model

VAF512

Item

Time Lapse Drift 経時ドリフト

Object

+12.0V0.45A

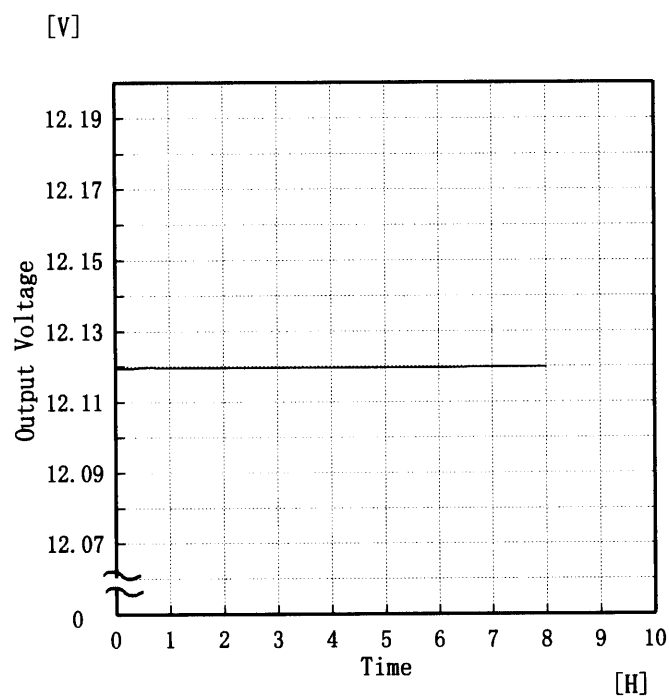
Temperature

25 °C

Testing Circuitry

Figure A

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	12.120
0.5	12.120
1.0	12.120
2.0	12.120
3.0	12.120
4.0	12.120
5.0	12.120
6.0	12.120
7.0	12.120
8.0	12.120

COSEL

Model	VAF512	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
Object	+12.0V0.45A	

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 : 0.00~0.45A

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

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

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 0.00~0.45A

* 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 (Ratio) [%]
Maximum Voltage	55	132	0.00	12.129	±14	±0.2
Minimum Voltage	-10	85	0.45	12.102		

COSEL

Model

VAF512

Item

Oscillator Frequency 発振周波数

Object

+12.0V0.45A

1. Graph

—△—

Input Volt. 85 V

- - - □ - - -

Input Volt. 100 V

- - - ○ - - -

Input Volt. 132 V

[KHz]

1000

100

10

0

0.1

0.2

0.3

0.4

0.5

0.6

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。

Temperature

25℃

Testing Circuitry

Figure A

2. Values

Load Current [A]	Oscillator Frequency [KHz]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.000	100	101	101
0.080	101	101	101
0.160	101	101	101
0.240	101	101	101
0.320	101	101	101
0.400	101	101	101
0.450	101	101	101
0.495	101	101	101
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

LOREL

		Testing Circuitry Figure A
Model	VAF512	
Item	Condensation 結露特性	
Object	+12.0V0.45A	

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]	12.031	Input Volt.: 100V, Load Current:0.45A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:0.45A
Load Regulation [mV]	3	Input Volt.: 100V, Load Current:0.00～0.45A

COSEL

Model		VAF512		Temperature 25℃ Testing Circuitry Figure B
Item		Leakage Current 漏洩電流		
Object		_____		

1. Results

Standards	Leakage Current [mA]		
	Input Volt.	Input Volt.	Input Volt.
	85 [V]	100 [V]	132 [V]
(A) DENTORI	0.08	0.09	0.12
(B) IEC60950	0.08	0.09	0.12

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

2. Condition

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

交流入力の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。

-24-

BC-3232

COSEL

Model	VAF512		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25°C Figure C
Object	+12.0V 0.45A		

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	VAF512	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object			

1. Graph

Remarks

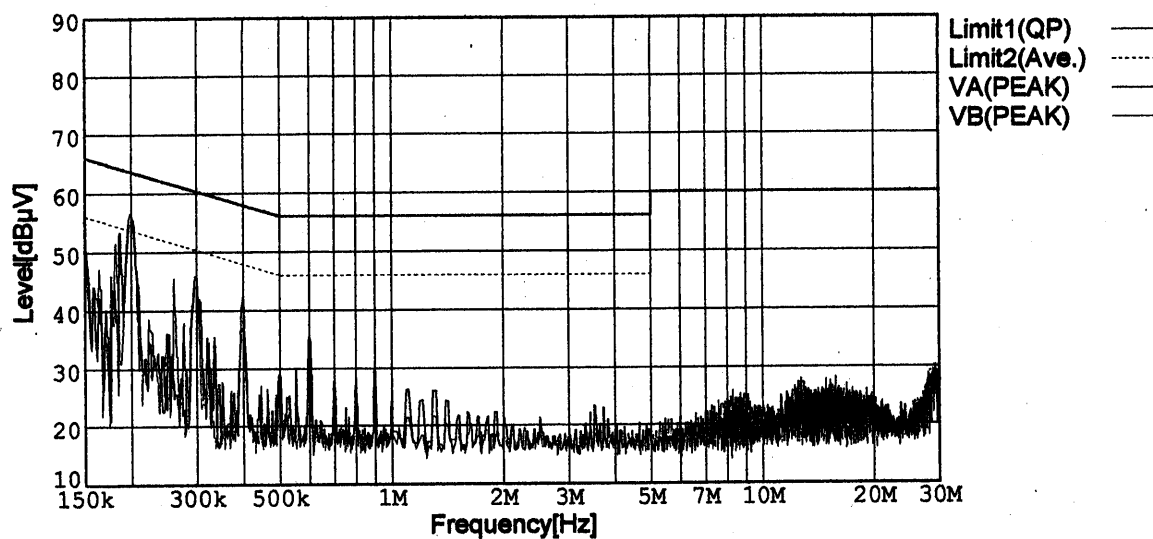
Input Volt. 100 V (VCCI Class B)

120 V (FCC Class B)

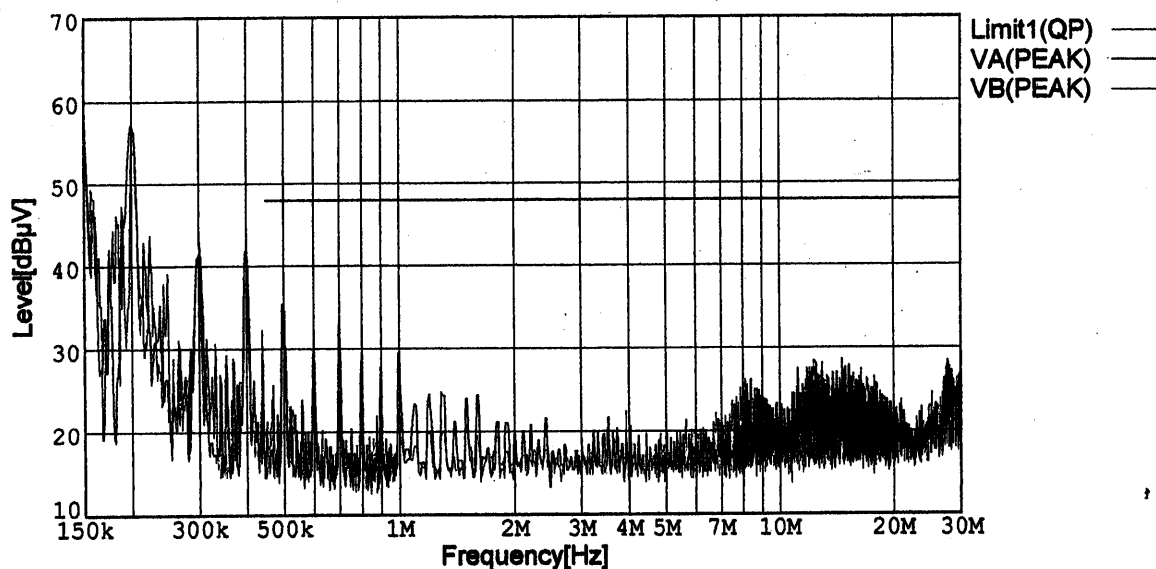
Load 100 %

Limit1: [VCCI] Class B(QP)

Limit2: [VCCI] Class B(Ave.)



Limit1: [FCC Part15] Class B



COSEL

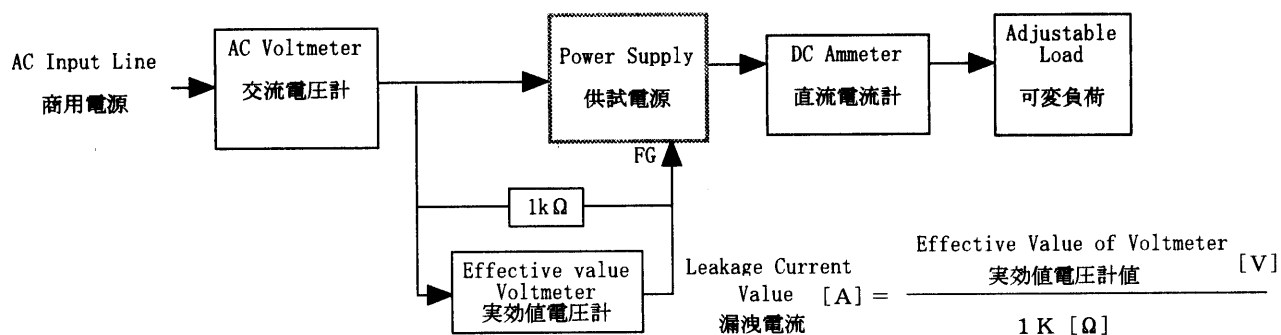
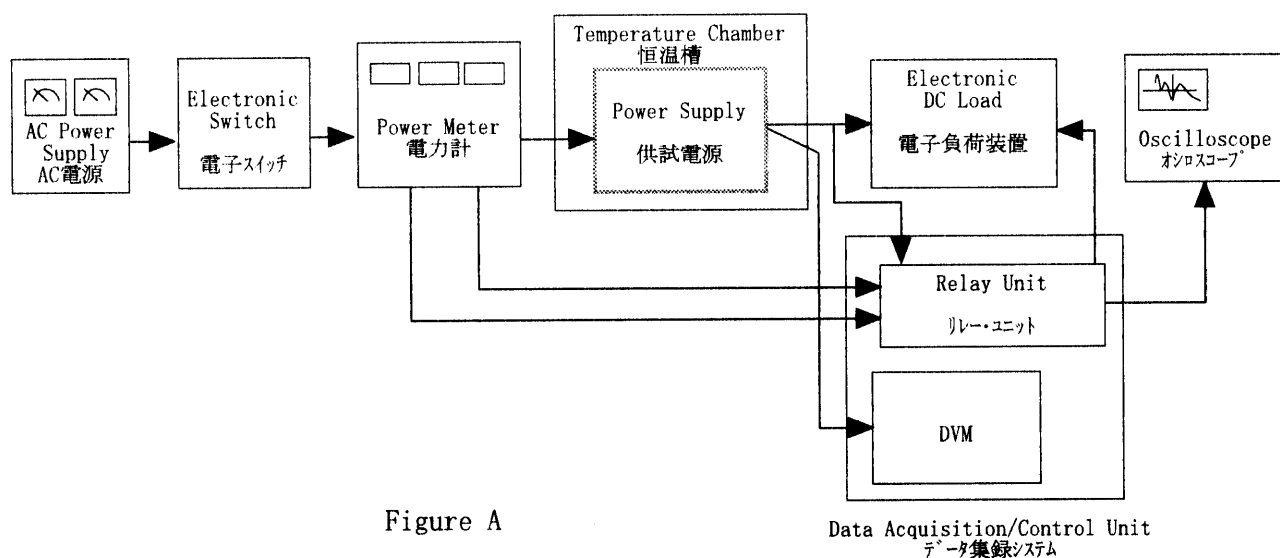


Figure B (DENTORI)

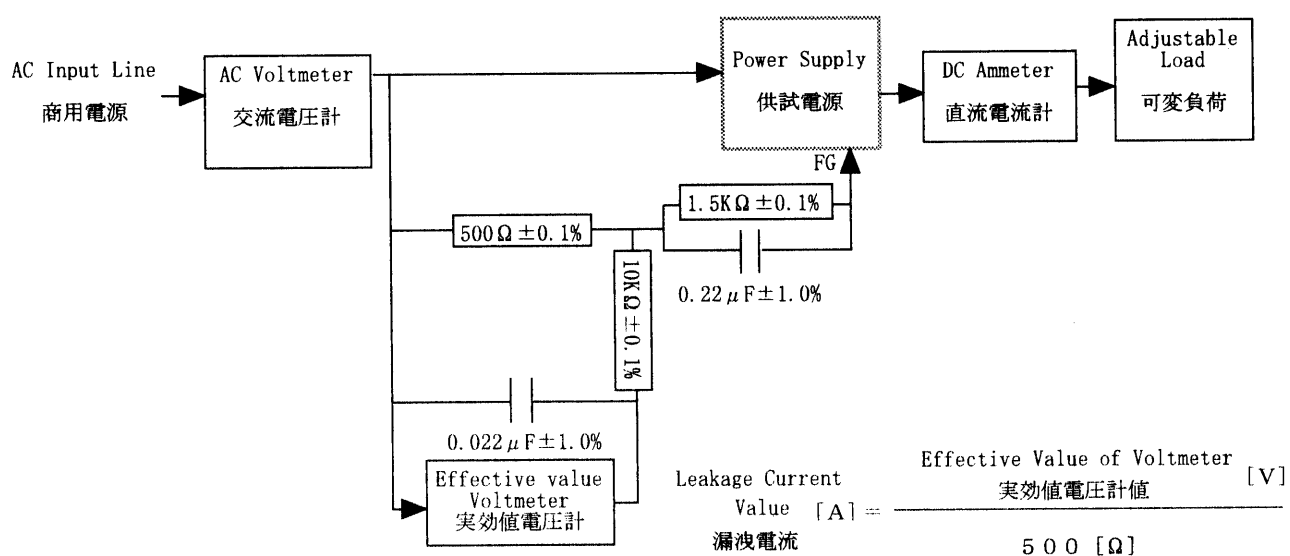


Figure B (IEC 60950)

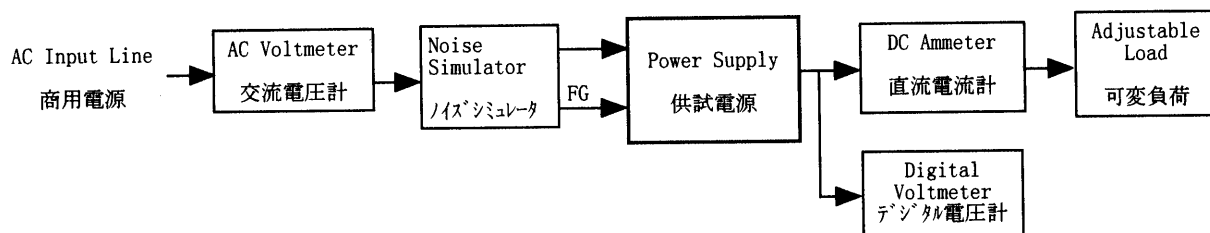


Figure C

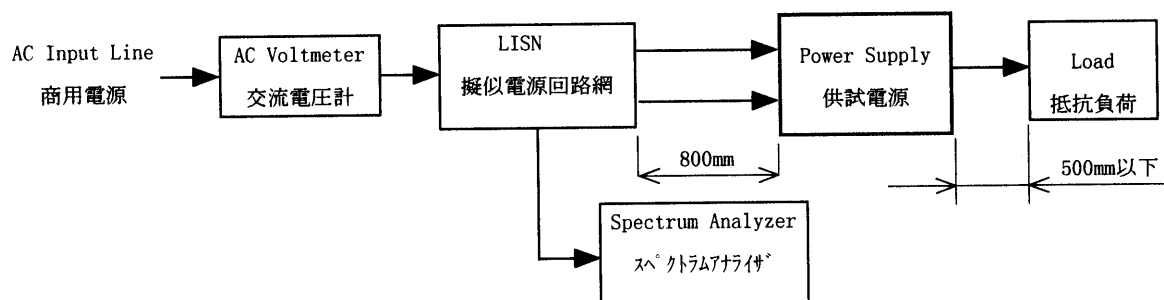


Figure D

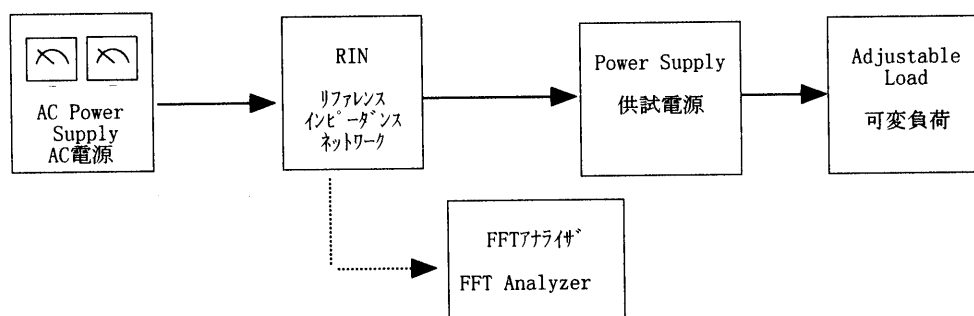


Figure E