



# TEST DATA OF RMB15A-1 (100V INPUT)

Regulated DC Power Supply

Sep. 16, 1999

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Design Manager

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**コーセル株式会社**  
**COSEL CO., LTD.**



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Model		RMB15A-1		Temperature 25℃																																	
Item		Line Regulation 静的入力変動		Testing Circuitry Figure A																																	
Object		+5.0V0.8A																																			
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# COSEL

COSEL

Model	RMB15A-1
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5.0V0.8A

Temperature
25℃

Testing Circuitry
Figure A

1. Graph

—△—

Input Volt. 85 V

—□—

Input Volt. 100 V

—○—

Input Volt. 132 V

Instantaneous Compensation Time [mS]

Load Current [A]

2. Values

Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.15	31	46	82
0.30	29	40	76
0.45	26	38	71
0.60	23	35	65
0.75	21	31	61
0.80	20	31	60
0.88	19	30	57
—	—	—	—
—	—	—	—
—	—	—	—

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。



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<div><div>[mS]</div><div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>Instantaneous Compensation Time</div><div></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><div>Load Current</div><div>[A]</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 load current.</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>0.0</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.2</td><td>48</td><td>70</td><td>129</td></tr><tr><td>0.4</td><td>34</td><td>51</td><td>98</td></tr><tr><td>0.6</td><td>23</td><td>40</td><td>78</td></tr><tr><td>0.8</td><td>20</td><td>31</td><td>65</td></tr><tr><td>1.0</td><td>14</td><td>23</td><td>54</td></tr><tr><td>1.1</td><td>13</td><td>23</td><td>48</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><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]	0.0	—	—	—	0.2	48	70	129	0.4	34	51	98	0.6	23	40	78	0.8	20	31	65	1.0	14	23	54	1.1	13	23	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																							
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]																																																					
0.0	—	—	—																																																					
0.2	48	70	129																																																					
0.4	34	51	98																																																					
0.6	23	40	78																																																					
0.8	20	31	65																																																					
1.0	14	23	54																																																					
1.1	13	23	48																																																					
—	—	—	—																																																					
—	—	—	—																																																					
—	—	—	—																																																					
—	—	—	—																																																					
<div><div>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。</div><div>(注)斜線は定格負荷電流範囲を示す。</div></div>																																																								



# COSEL

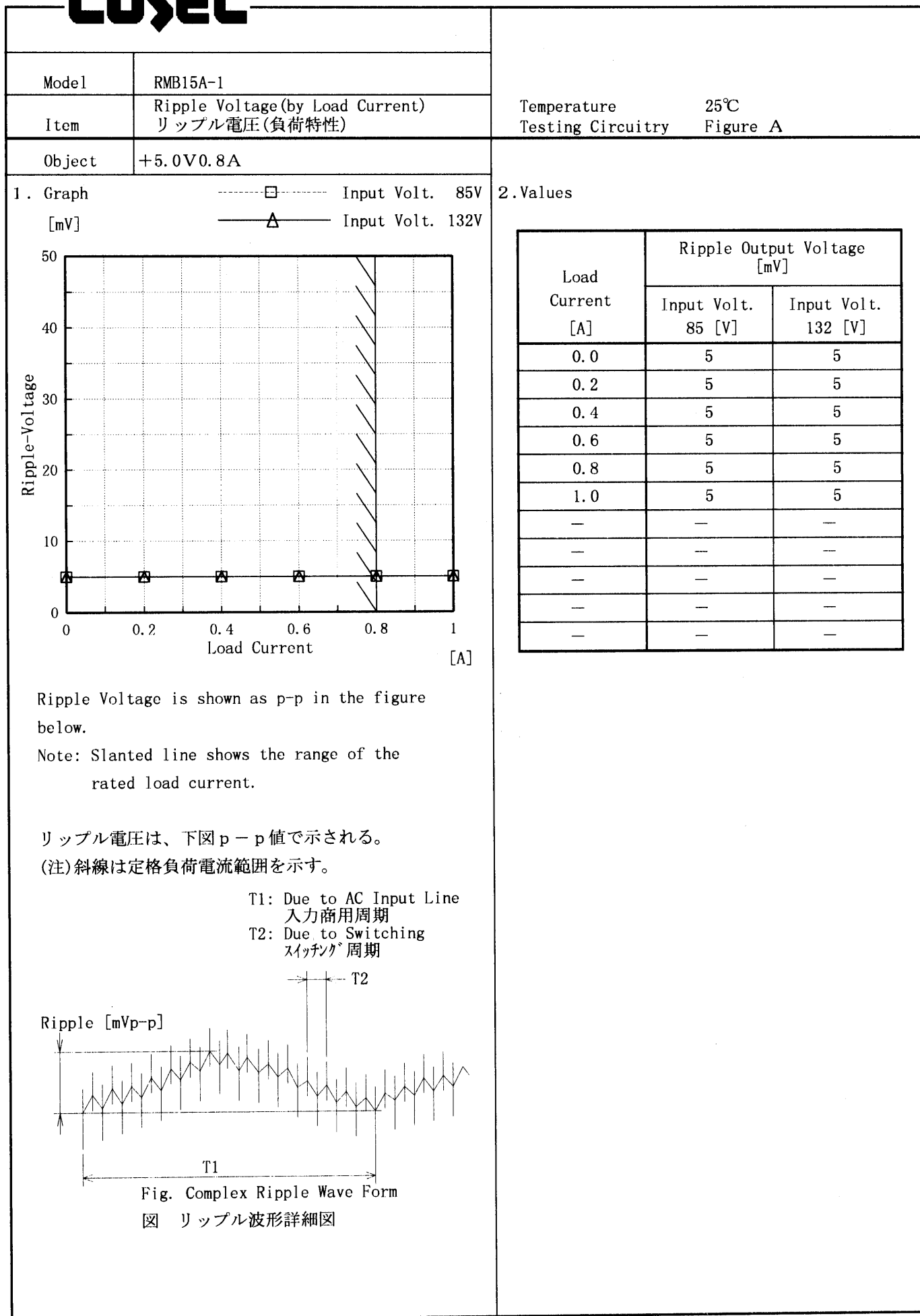
Model		RMB15A-1	Temperature		25°C
Item		Load Regulation 静的負荷変動	Testing Circuitry		Figure A
Object		+5.0V0.8A	2. Values		
1. Graph		<div> <div>—△—</div>Input Volt. 85 V <div>---□---</div>Input Volt. 100 V <div>---○---</div>Input Volt. 132 V </div>			
Object		+12.0V1A	2. Values		
1. Graph		<div> <div>—△—</div>Input Volt. 85 V <div>---□---</div>Input Volt. 100 V <div>---○---</div>Input Volt. 132 V </div>			
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]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	5.097	5.097	5.097
0.15	5.094	5.094	5.094
0.30	5.093	5.093	5.093
0.45	5.093	5.093	5.093
0.60	5.092	5.092	5.092
0.75	5.092	5.092	5.092
0.80	5.092	5.092	5.092
0.88	5.092	5.092	5.092
—	—	—	—
—	—	—	—

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	12.037	12.037	12.037
0.2	12.037	12.037	12.037
0.4	12.036	12.036	12.036
0.6	12.036	12.036	12.036
0.8	12.035	12.035	12.035
1.0	12.035	12.035	12.034
1.1	12.034	12.034	12.034
—	—	—	—
—	—	—	—
—	—	—	—



# COSEL



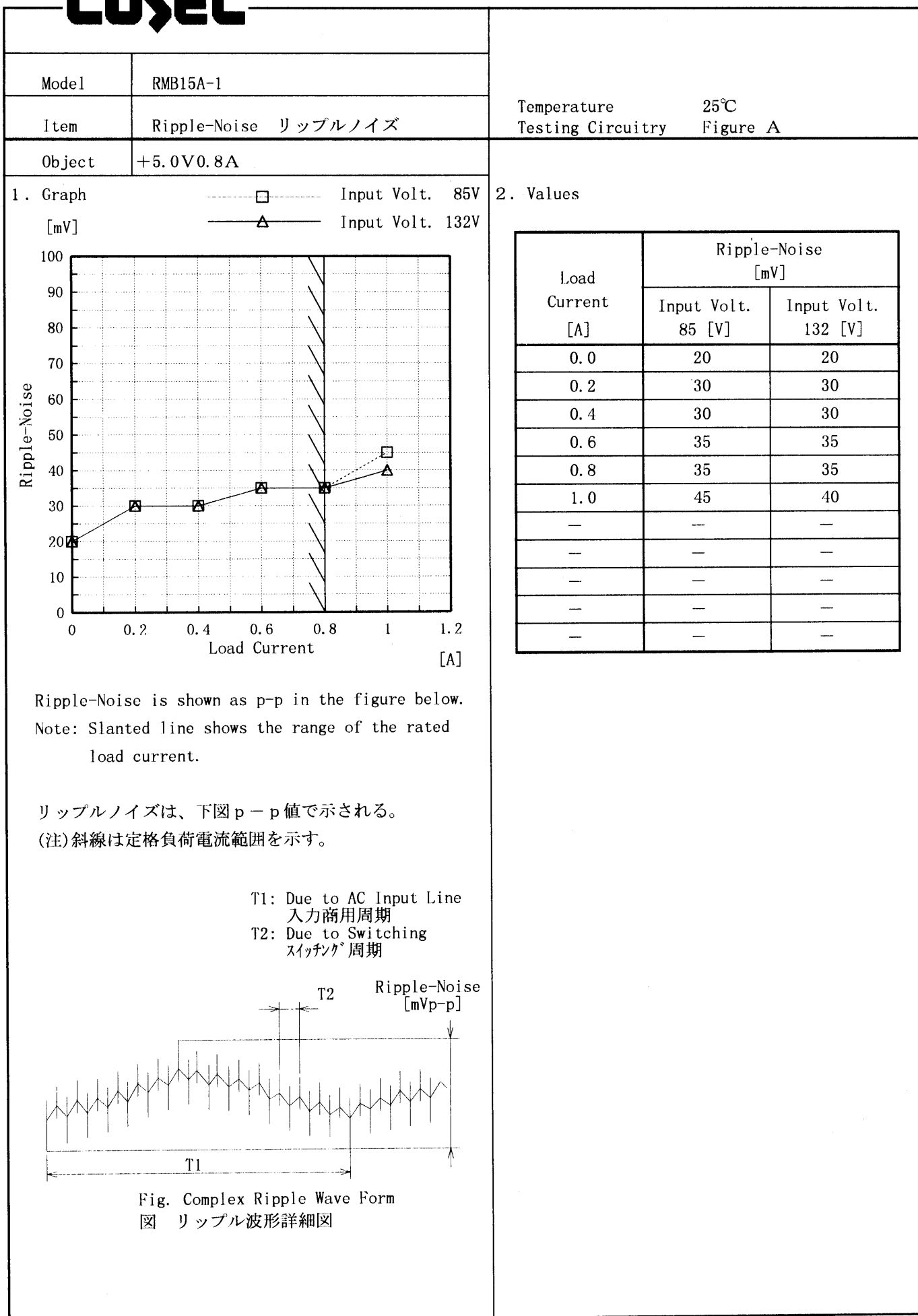


# COSEL

Model		RMB15A-1	Temperature		25℃
Item		Ripple Voltage (by Load Current) リップル電圧 (負荷特性)	Testing Circuitry		Figure A
Object		+12.0V1A			
1. Graph		2.Values			
[mV]					
50					
40					
30					
20					
10					
0					
0					
0.5					
1					
1.5					
Load Current		[A]			
-----□-----		Input Volt. 85V			
-----△-----		Input Volt. 132V			
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					
T2					
Ripple [mVp-p]					
T1					
Fig. Complex Ripple Wave Form					
図 リップル波形詳細図					



# COSEL



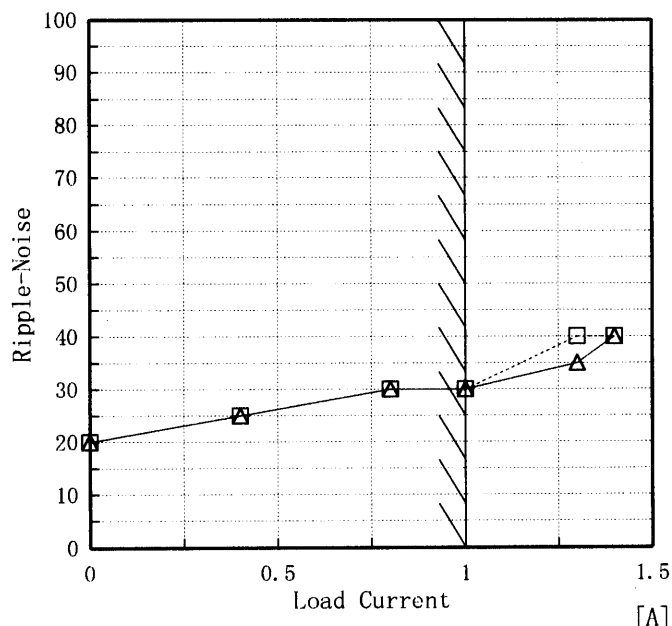


# COSEL

Model	RMB15A-1
Item	Ripple-Noise リップルノイズ
Object	+12.0V1A

Temperature 25°C  
Testing Circuitry Figure A

1. Graph
- Input Volt. 85V  
△ Input Volt. 132V



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

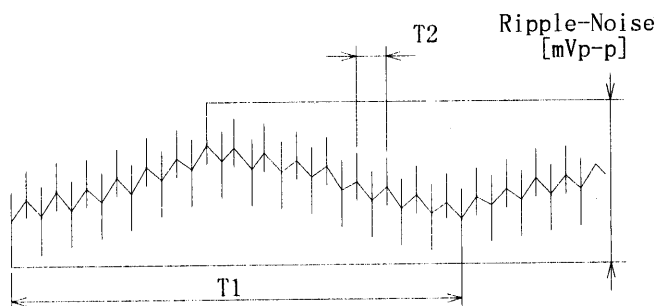


Fig. Complex Ripple Wave Form  
図 リップル波形詳細図

## 2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	20	20
0.4	25	25
0.8	30	30
1.0	30	30
1.3	40	35
1.4	40	40
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—



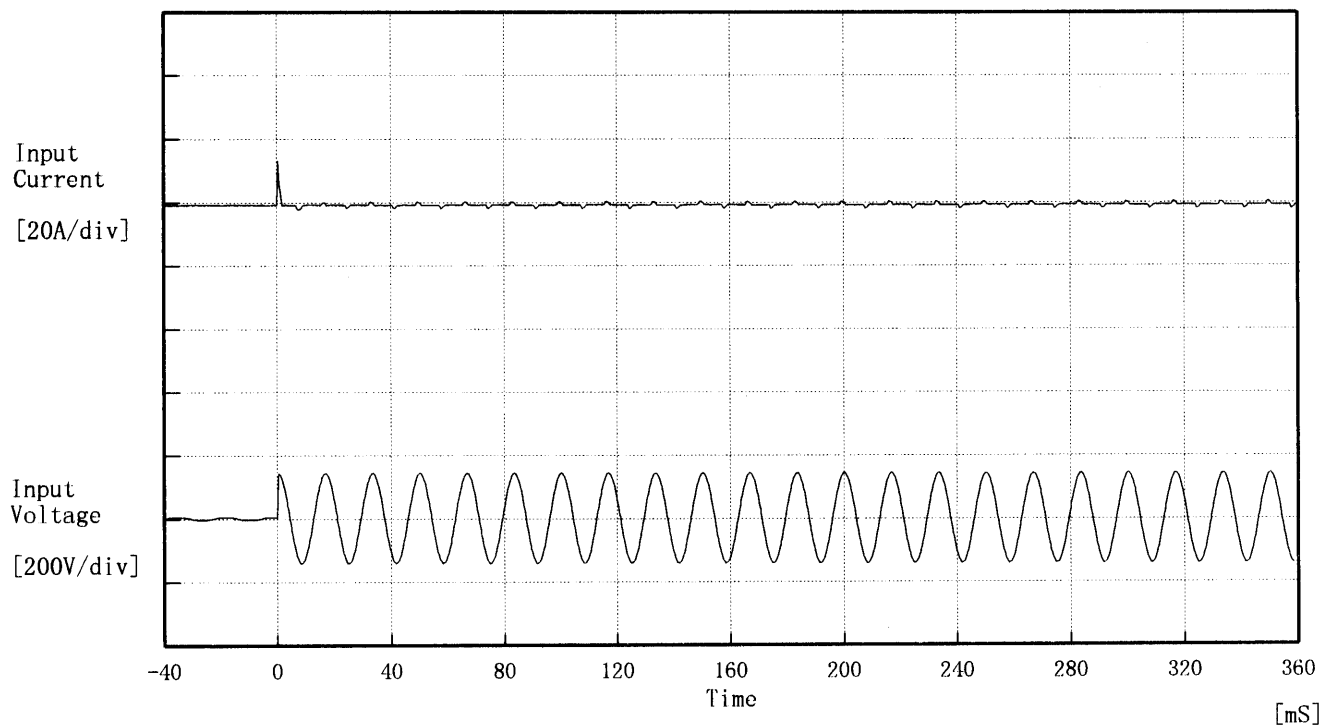
# COSEL

Model		RMB15A-1		Temperature		25℃	
Item		Overcurrent Protection 過電流保護		Testing Circuitry		Figure A	
Object		+5.0V0.8A					
1. Graph				2. Values			
		<div><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>					
[V]							
8.0							
6.0							
4.0							
2.0							
0.0							
Output Voltage							
0		0.5 1 1.5 2					
		Load Current					
		[A]					



# COSEL

Model	RMB15A-1	Temperature	25℃
Item	Inrush Current 突入電流	Testing Circuitry	Figure A
Object	_____		



Input Voltage 100 V

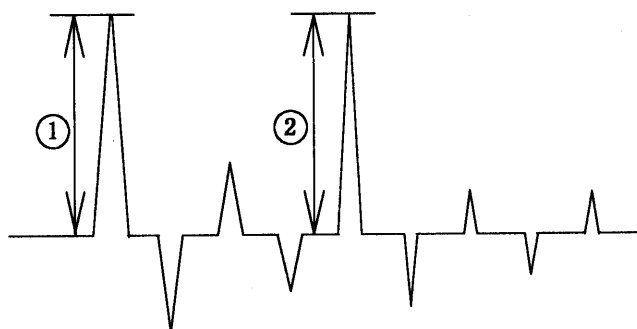
Frequency 60 Hz

Load 100 %

Inrush Current

① 13.09 [A]

② 1.95 [A]





# COSEL

Model	RMB15A-1		
Item	Dynamic Load Responce 動的負荷変動	Temperature	25℃
Object	+5.0V0.8A	Testing Circuitry	Figure A

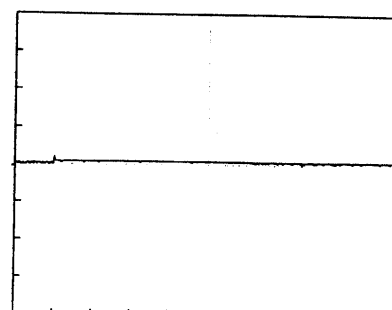
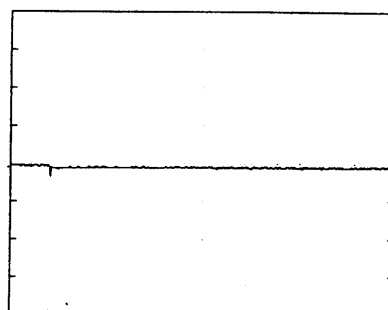
Input Volt. 100 V

Cycle 1000 mS

Load Current

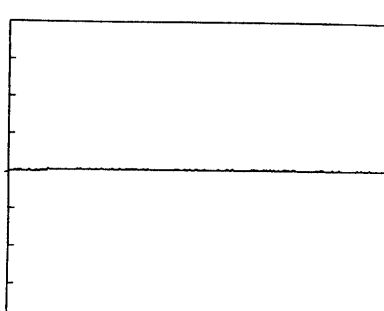
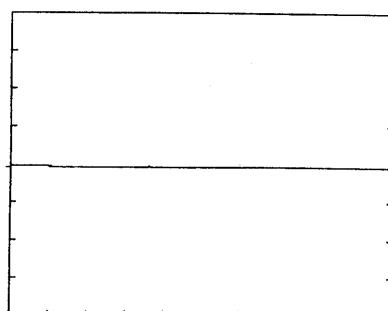
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

10 mS/div



# COSEL

Model	RMB15A-1	Temperature 25℃ Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+12.0V1A	

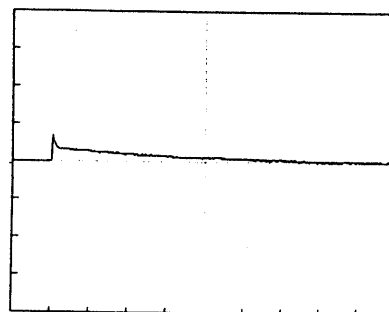
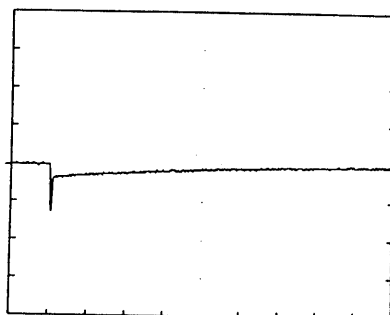
Input Volt. 100 V

Cycle 1000 mS

Load Current

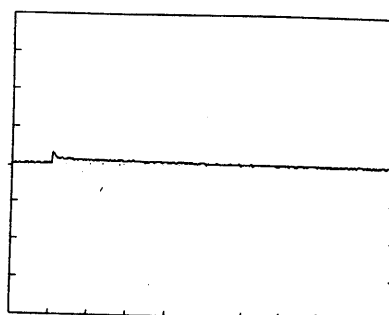
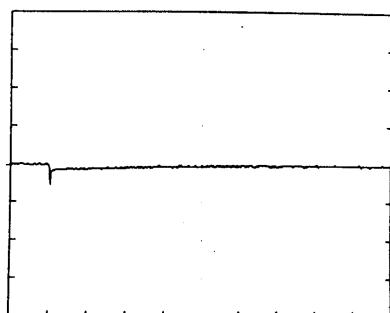
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

10 mS/div

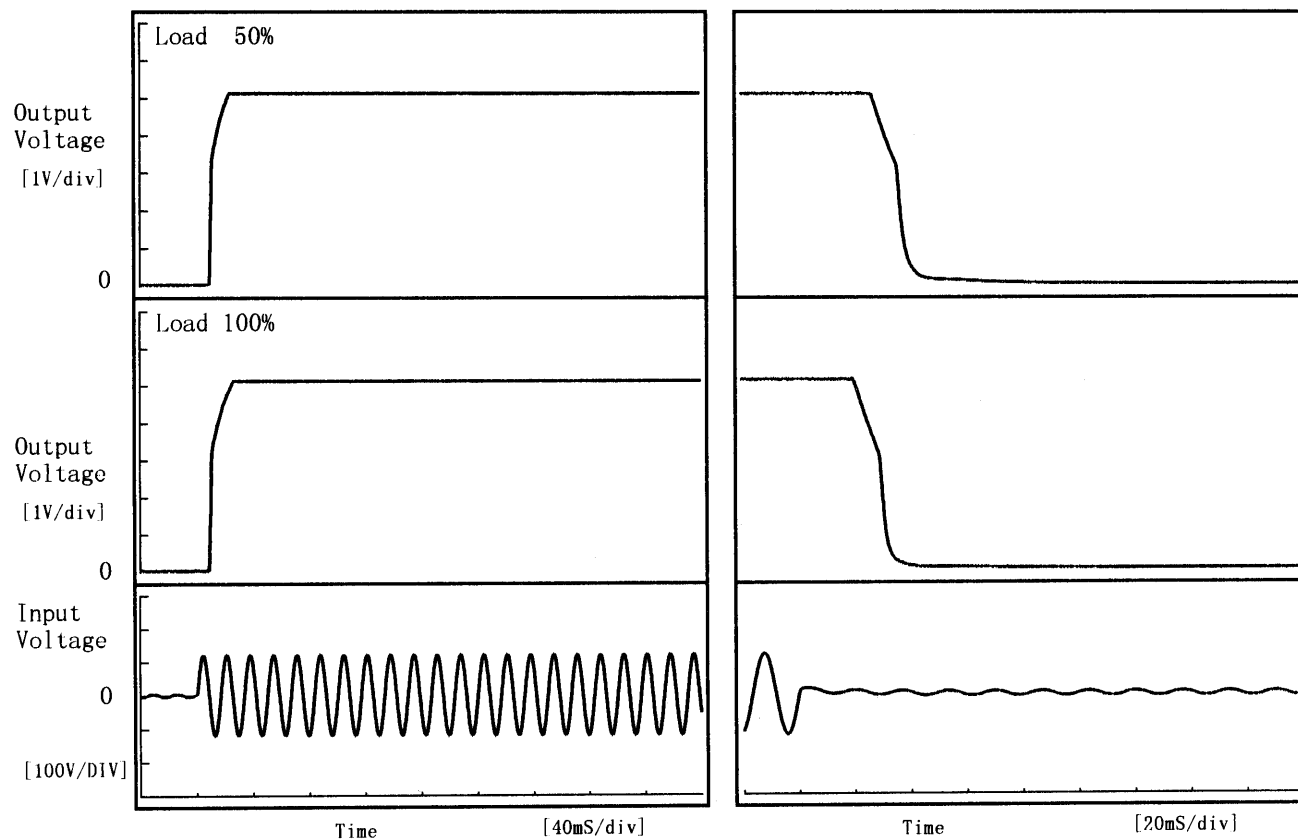


**COSEL**

Model	RMB15A-1	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5.0V0.8A		

## 1. Graph

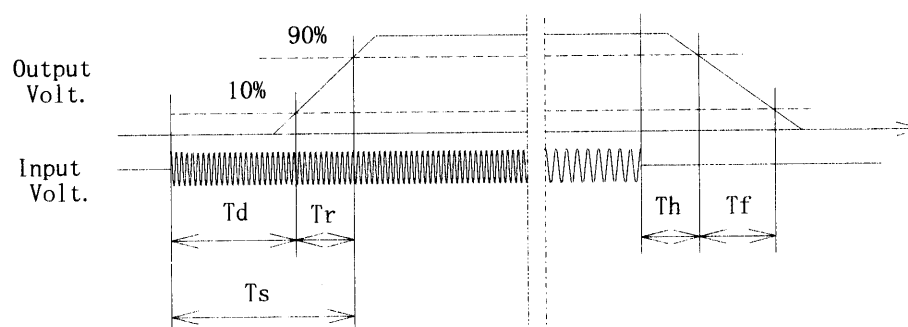
Input Volt. 85 V



## 2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	9.2	8.6	17.8	28.7	11.9
100 %	9.0	10.4	19.4	22.4	10.8



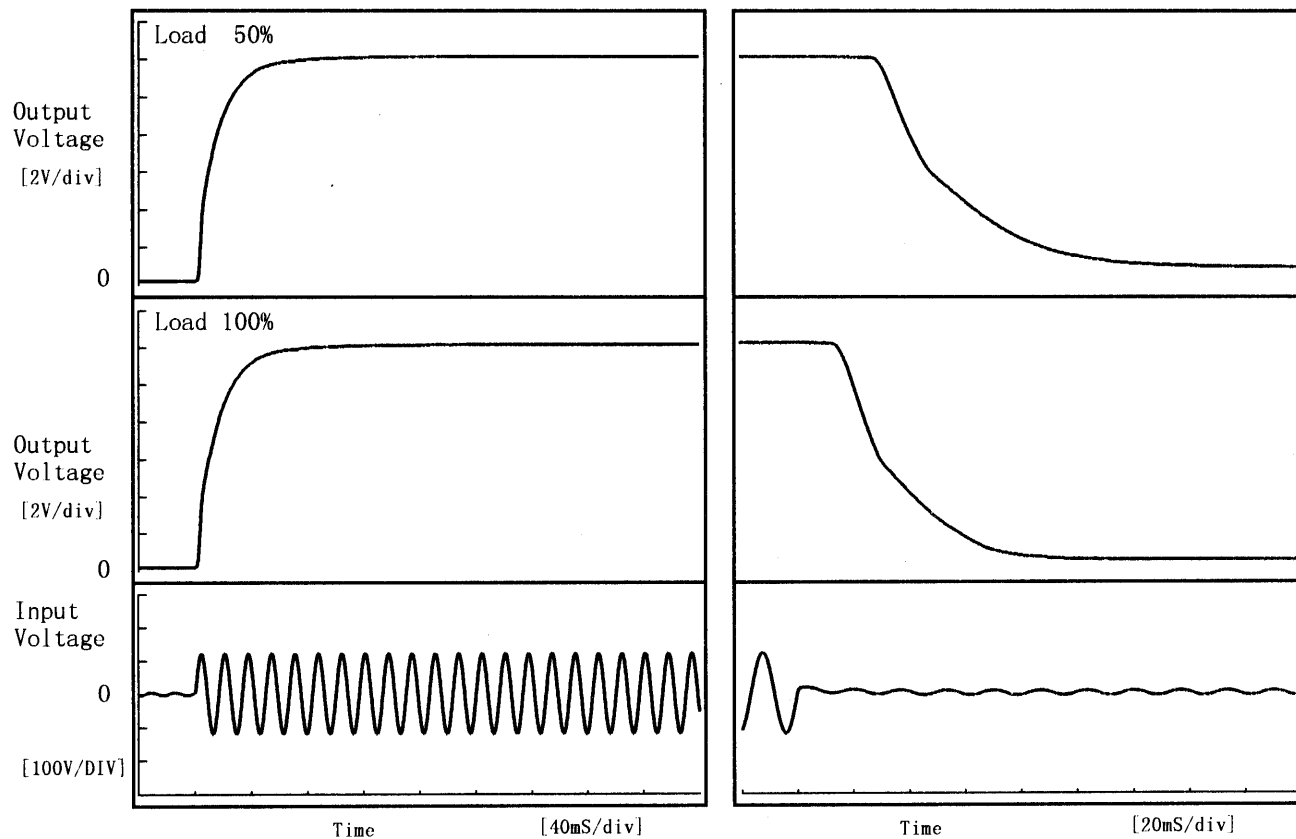


**COSEL**

Model	RMB15A-1	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V1A		

## 1. Graph

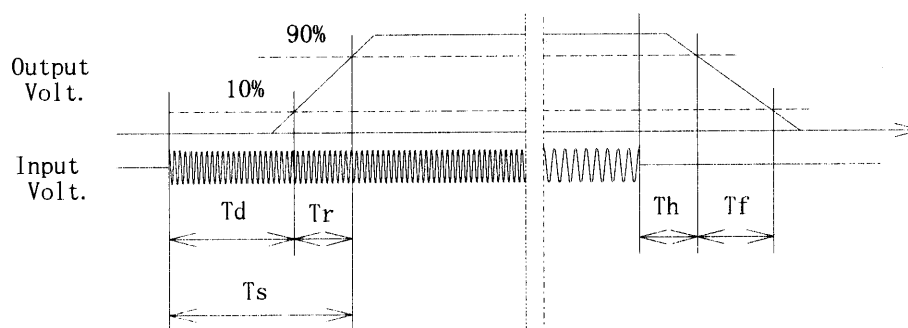
Input Volt. 85 V



## 2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	2.6	32.0	34.6	32.7	79.5
100 %	2.6	33.0	35.6	18.2	48.9





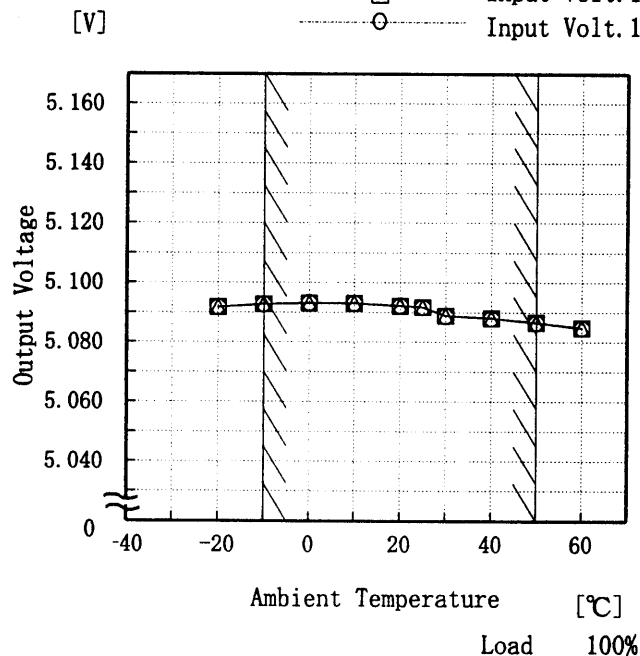
**COSEL**

Model	RMB15A-1
Item	Ambient Temperature Drift 周囲温度変動
Object	+5.0V0.8A

Testing Circuitry Figure A

## 1. Graph

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



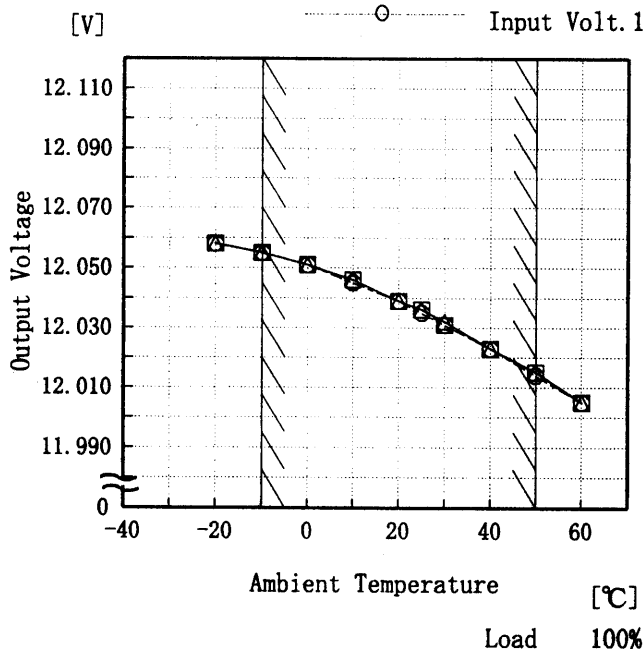
## 2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.092	5.092	5.092
-10	5.093	5.093	5.093
0	5.093	5.093	5.093
10	5.093	5.093	5.093
20	5.092	5.092	5.092
25	5.092	5.092	5.092
30	5.089	5.089	5.089
40	5.088	5.088	5.088
50	5.087	5.087	5.087
60	5.085	5.085	5.085
—	—	—	—

Object	+12.0V1A
--------	----------

## 1. Graph

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



## 2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	12.058	12.058	12.058
-10	12.055	12.055	12.055
0	12.051	12.051	12.051
10	12.046	12.046	12.045
20	12.039	12.039	12.039
25	12.036	12.036	12.035
30	12.032	12.031	12.031
40	12.023	12.023	12.023
50	12.015	12.015	12.014
60	12.005	12.005	12.005
—	—	—	—

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。

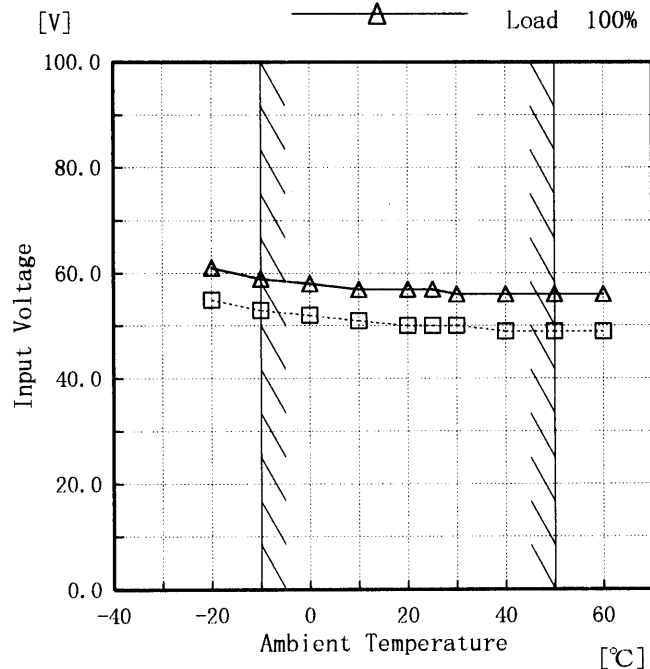


# COSEL

Model	RMB15A-1
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5.0V0.8A

1. Graph

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

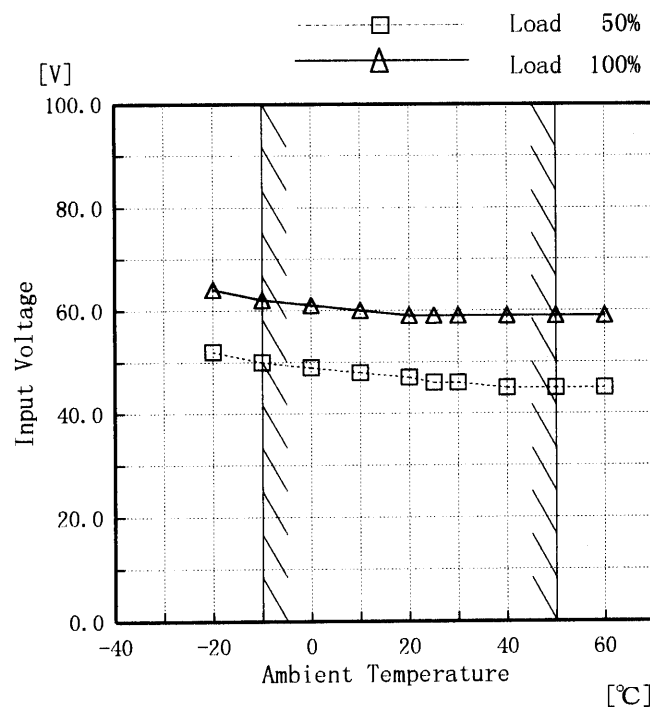


Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	55	61
-10	53	59
0	52	58
10	51	57
20	50	57
25	50	57
30	50	56
40	49	56
50	49	56
60	49	56
—	—	—

Object	+12.0V1A
--------	----------



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	52	64
-10	50	62
0	49	61
10	48	60
20	47	59
25	46	59
30	46	59
40	45	59
50	45	59
60	45	59
—	—	—

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。

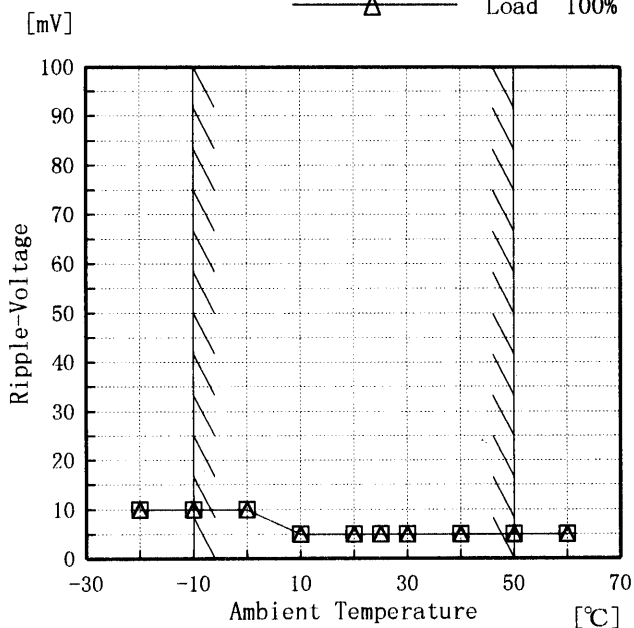


# COSEL

Model	RMB15A-1
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+5.0V0.8A

## 1. Graph

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



## Testing Circuitry Figure A

## 2. Values

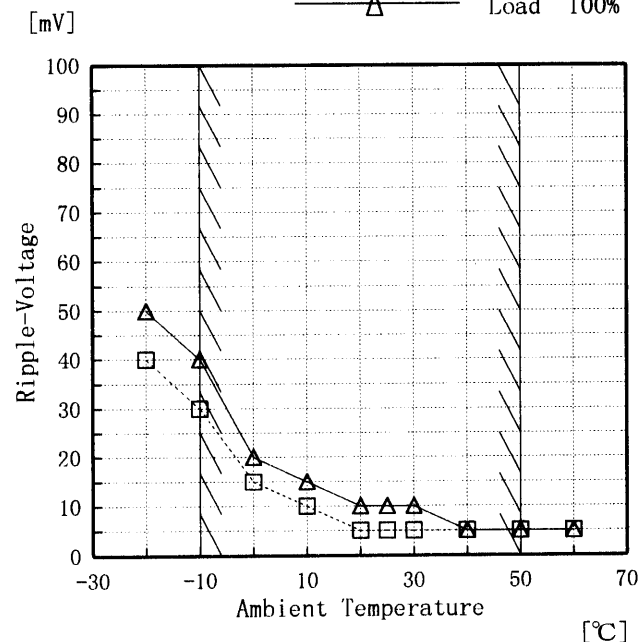
Ambient Temperature [°C]	Ripple Output Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	5	5
20	5	5
25	5	5
30	5	5
40	5	5
50	5	5
60	5	5
—	—	—

## Object

+12.0V1A

## 1. Graph

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



## 2. Values

Ambient Temperature [°C]	Ripple Output Voltage [mV]	
	Load 50%	Load 100%
-20	40	50
-10	30	40
0	15	20
10	10	15
20	5	10
25	5	10
30	5	10
40	5	5
50	5	5
60	5	5
—	—	—

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。



# COSEL

COSEL																									
Model	RMB15A-1	Temperature 25℃ Testing Circuitry Figure A																							
Item	Time Lapse Drift 経時ドリフト																								
Object	+5.0V0.8A																								
1. Graph		2.Values																							
<div><div><div>[V]</div><div><div>5.150</div><div>5.130</div><div>5.110</div><div>5.090</div><div>5.070</div><div>5.050</div><div>5.030</div><div>0</div></div><div><div>Output Voltage</div></div></div><div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div></div><div><div>Time</div><div>[H]</div></div></div><div><div>Input Volt. 100V</div><div>Load 100%</div></div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.084</td></tr><tr><td>0.5</td><td>5.082</td></tr><tr><td>1.0</td><td>5.082</td></tr><tr><td>2.0</td><td>5.082</td></tr><tr><td>3.0</td><td>5.082</td></tr><tr><td>4.0</td><td>5.082</td></tr><tr><td>5.0</td><td>5.082</td></tr><tr><td>6.0</td><td>5.082</td></tr><tr><td>7.0</td><td>5.082</td></tr><tr><td>8.0</td><td>5.082</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.084	0.5	5.082	1.0	5.082	2.0	5.082	3.0	5.082	4.0	5.082	5.0	5.082	6.0	5.082	7.0	5.082	8.0	5.082
Time since start [H]	Output Voltage [V]																								
0.0	5.084																								
0.5	5.082																								
1.0	5.082																								
2.0	5.082																								
3.0	5.082																								
4.0	5.082																								
5.0	5.082																								
6.0	5.082																								
7.0	5.082																								
8.0	5.082																								
Object +12.0V1A		2.Values																							
<div><div><div>[V]</div><div><div>12.230</div><div>12.210</div><div>12.190</div><div>12.170</div><div>12.150</div><div>12.130</div><div>12.110</div><div>0</div></div><div><div>Output Voltage</div></div></div><div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div></div><div><div>Time</div><div>[H]</div></div></div><div><div>Input Volt. 100V</div><div>Load 100%</div></div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>12.156</td></tr><tr><td>0.5</td><td>12.154</td></tr><tr><td>1.0</td><td>12.154</td></tr><tr><td>2.0</td><td>12.154</td></tr><tr><td>3.0</td><td>12.154</td></tr><tr><td>4.0</td><td>12.154</td></tr><tr><td>5.0</td><td>12.154</td></tr><tr><td>6.0</td><td>12.154</td></tr><tr><td>7.0</td><td>12.154</td></tr><tr><td>8.0</td><td>12.154</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	12.156	0.5	12.154	1.0	12.154	2.0	12.154	3.0	12.154	4.0	12.154	5.0	12.154	6.0	12.154	7.0	12.154	8.0	12.154
Time since start [H]	Output Voltage [V]																								
0.0	12.156																								
0.5	12.154																								
1.0	12.154																								
2.0	12.154																								
3.0	12.154																								
4.0	12.154																								
5.0	12.154																								
6.0	12.154																								
7.0	12.154																								
8.0	12.154																								







# COSEL

Model		RMB15A-1	
Item		Condensation 結露特性	Testing Circuitry Figure A

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

Object	+5.0V0.8A
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Item	Data	Testing Conditions
Output Voltage [V]	5.089	Input Volt.: 100V, Load Current:0.8A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:0.8A
Load Regulation [mV]	7	Input Volt.: 100V, Load Current:0~0.8A

Object	+12.0V1A
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Item	Data	Testing Conditions
Output Voltage [V]	12.135	Input Volt.: 100V, Load Current:1A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:1A
Load Regulation [mV]	3	Input Volt.: 100V, Load Current:0~1A



**COSEL**

Model		RMB15A-1		Temperature 25℃	
Item		Leakage Current 漏洩電流		Testing Circuitry Figure B	
Object					

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.09	0.11	0.14
(B) IEC60950	0.09	0.11	0.14

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 230 [V]	Input Volt. 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。



# COSEL

Model	RMB15A-1
Item	Conducted Emission 雑音端子電圧
Object	

Testing Circuitry Figure D

## 1. Graph

## Remarks

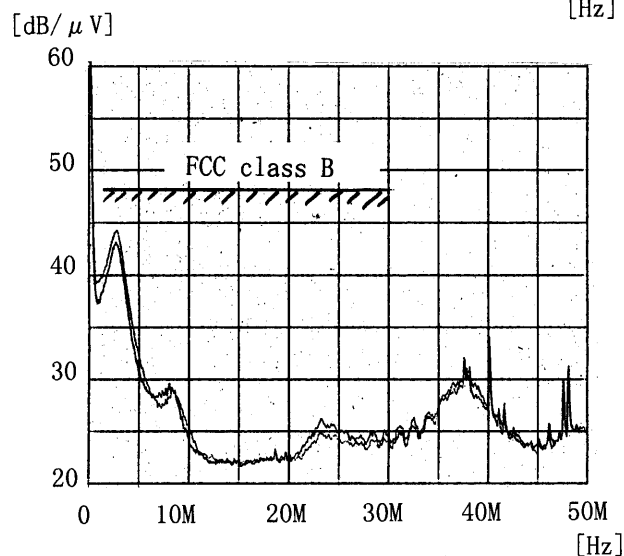
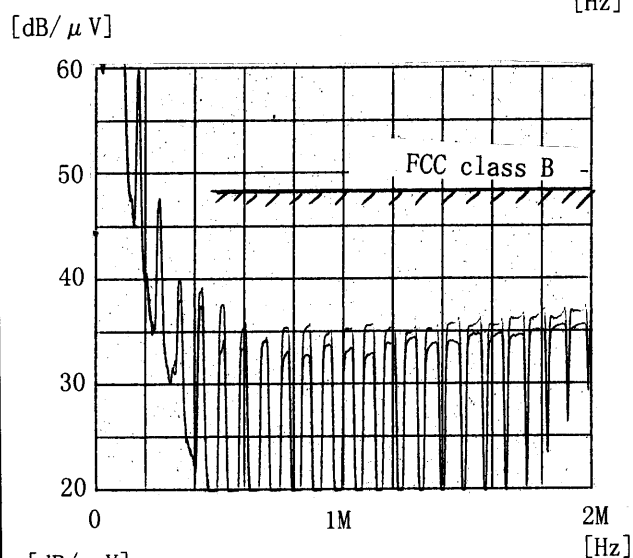
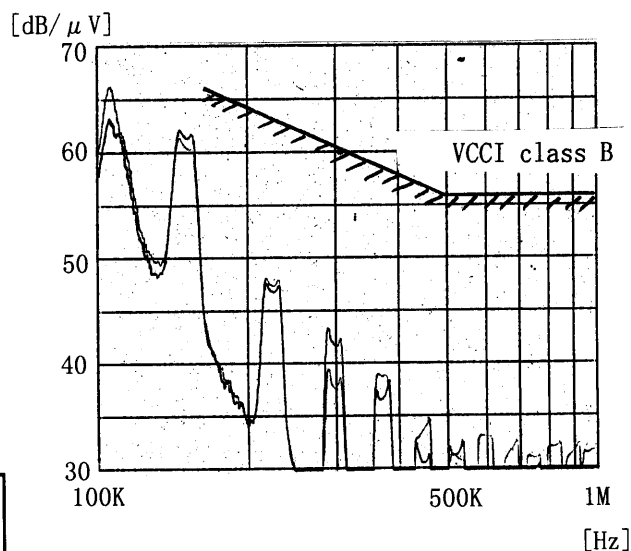
Input Volt. 120 V (VCCI:100V)

Load 100 %

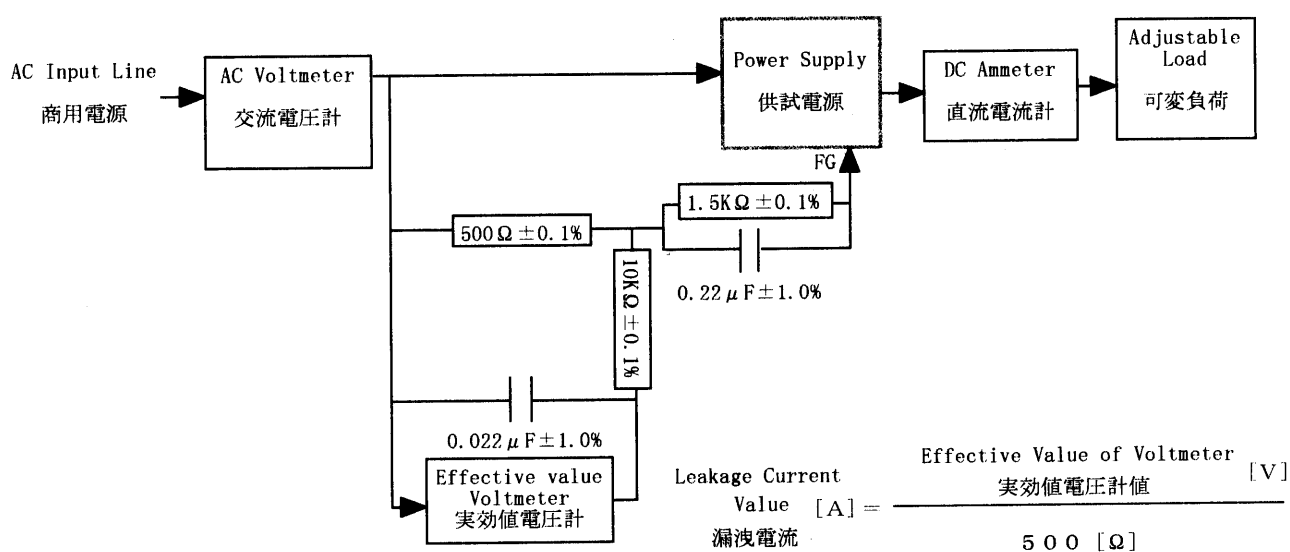
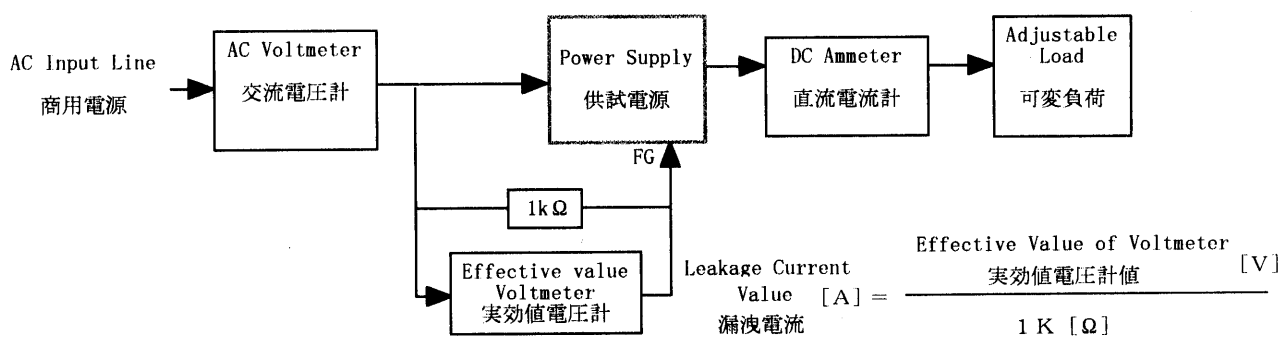
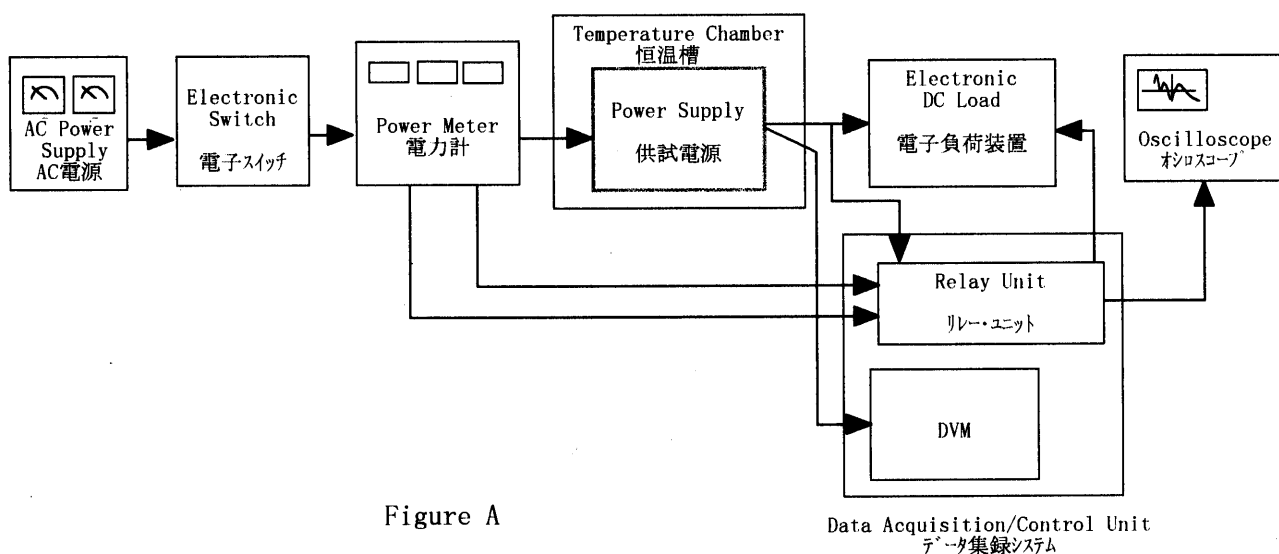
Note: Slanted line shows the range of Tolerance.

(注) 斜線は許容値を示す。

NO	Standards	Standards Complied	Frequency [MHz]	Tolerance [dB/μV]
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









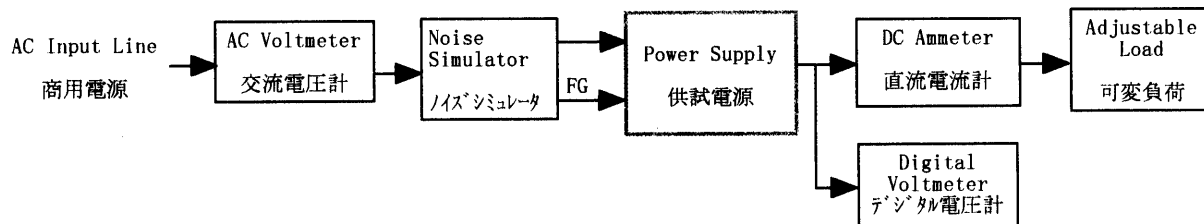


Figure C

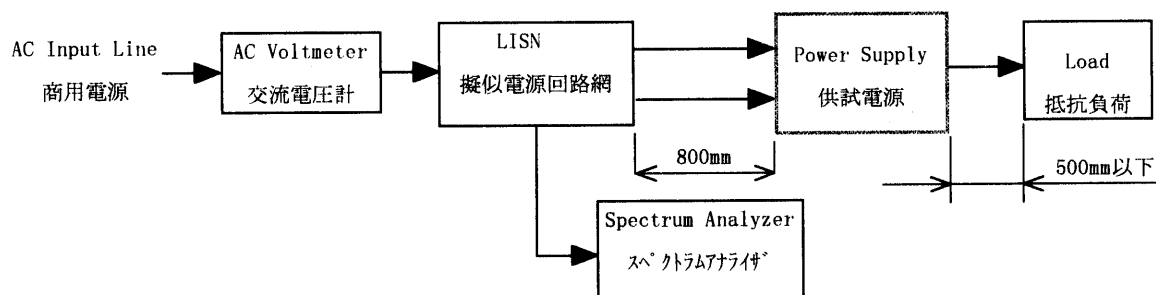


Figure D

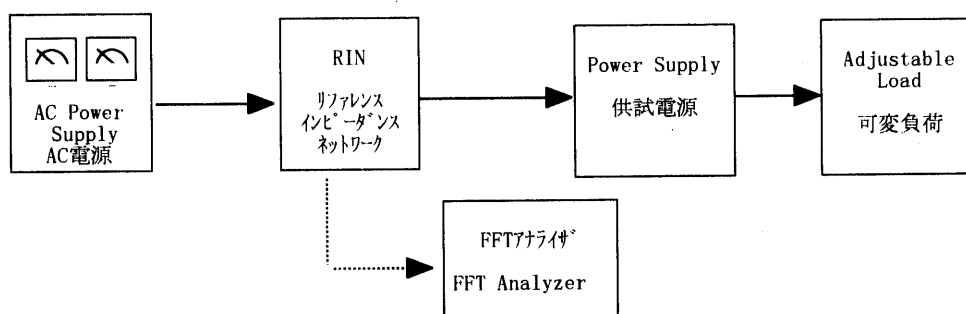


Figure E