



TEST DATA OF LCA10S-5  
(100V INPUT)

Regulated DC Power Supply

Date : June 16. 1999

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コーセル株式会社

COSEL CO., LTD.



# CONTENTS

1. Line Regulation . . . . .	1
静的入力変動	
2. Input Current (by Load Current) . . . . .	2
入力電流 (負荷特性)	
3. Input Power (by Load Current) . . . . .	3
入力電力 (負荷特性)	
4. Efficiency (by Input Voltage) . . . . .	4
効率 (入力電圧特性)	
5. Efficiency (by Load Current) . . . . .	5
効率 (負荷特性)	
6. Hold-Up Time . . . . .	6
出力保持時間	
7. Instantaneous Interruption Compensation . . . . .	7
瞬時停電保障	
8. Load Regulation . . . . .	8
静的負荷変動	
9. Ripple Voltage (by Load Current) . . . . .	9
リップル電圧 (負荷特性)	
10. Ripple-Noise . . . . .	10
リップルノイズ	
11. Overcurrent Protection . . . . .	11
過電流保護	
12. Inrush Current . . . . .	12
突入電流	
13. Dynamic Load Responce . . . . .	13
動的負荷変動	
14. Rise and Fall Time . . . . .	14
立上り、立下がり時間	
15. Ambient Temperature Drift . . . . .	15
周囲温度変動	
16. Minimum Input Voltage for Regulated Output Voltage . . . . .	16
最低レギュレーション電圧	
17. Ripple Voltage (by Ambient Temperature) . . . . .	17
リップル電圧 (周囲温度特性)	
18. Time Lapse Drift . . . . .	18
経時ドリフト	
19. Output Voltage Accuracy . . . . .	19
定電圧精度	
20. Condensation . . . . .	20
結露特性	
21. Leakage Current . . . . .	21
漏洩電流	
22. Line Noise Tolerance . . . . .	22
入力雑音耐量	
23. Conducted Emission . . . . .	23
雑音端子電圧	
24. Figure of Testing Circuitry . . . . .	24
測定回路図	

(Final Page 25 )



Model		LCA10S-5		Temperature		25°C																																	
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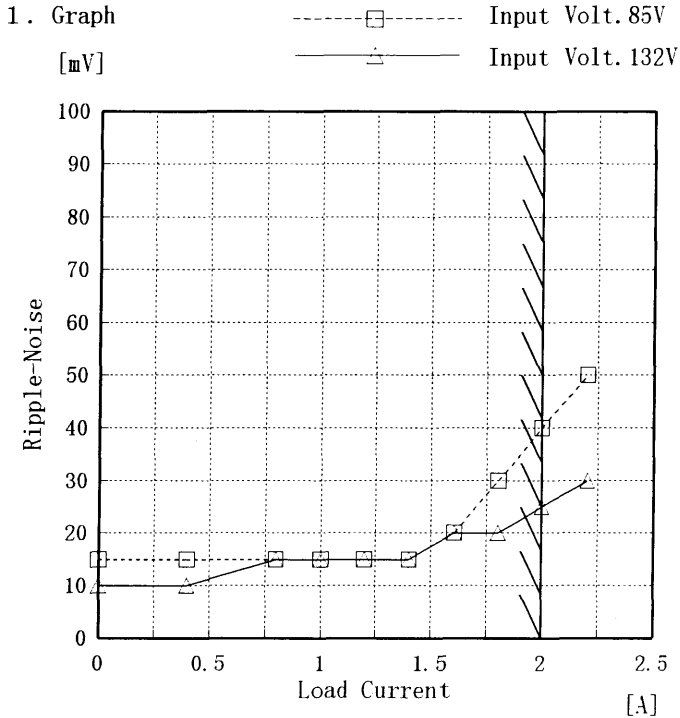


<p>Model LCA10S-5</p> <p>Item Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)</p> <p>Object +5.0V2A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																						
<p>1. Graph</p> <p>[mV]</p> <p>-----□----- Input Volt. 85V</p> <p>-----△----- Input Volt. 132V</p> <p>Ripple Voltage</p> <p>Load Current [A]</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> <tr> <th>Ripple Output Volt. [mV]</th> <th>Ripple Output Volt. [mV]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>10</td><td>5</td></tr> <tr><td>0.40</td><td>10</td><td>5</td></tr> <tr><td>0.80</td><td>10</td><td>10</td></tr> <tr><td>1.00</td><td>10</td><td>10</td></tr> <tr><td>1.20</td><td>10</td><td>10</td></tr> <tr><td>1.40</td><td>10</td><td>10</td></tr> <tr><td>1.60</td><td>15</td><td>15</td></tr> <tr><td>1.80</td><td>15</td><td>15</td></tr> <tr><td>2.00</td><td>20</td><td>15</td></tr> <tr><td>2.20</td><td>25</td><td>15</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Load Current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]	0.00	10	5	0.40	10	5	0.80	10	10	1.00	10	10	1.20	10	10	1.40	10	10	1.60	15	15	1.80	15	15	2.00	20	15	2.20	25	15	—	—	—
Load Current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]																																						
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<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>リップル電圧は、下図 p-p 値で示される。</p> <p>(注)斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期</p> <p>T2: Due to Switching スイッチング周期</p> <p>Ripple [mVp-p]</p> <p>T1</p> <p>T2</p>																																								
<p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																								



Model	LCA10S-5
Item	Ripple-Noise リップルノイズ
Object	+5.0V2A

Temperature 25°C  
Testing Circuitry Figure A



2. Values

Load current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.00	15	10
0.40	15	10
0.80	15	15
1.00	15	15
1.20	15	15
1.40	15	15
1.60	20	20
1.80	30	20
2.00	40	25
2.20	50	30
—	—	—

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

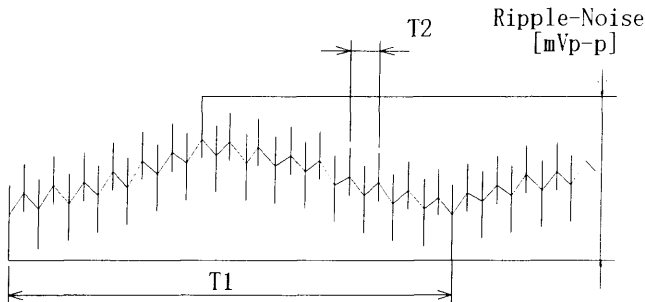
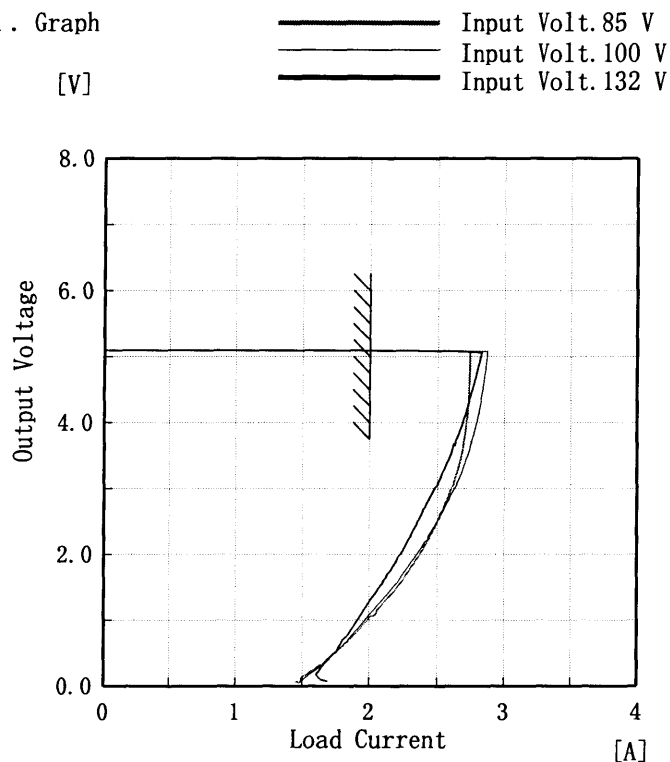


Fig. Complex Ripple Wave Form  
図 リップル波形詳細図



Model	LCA10S-5	Temperature	25°C
Item	Overcurrent Protection 過電流保護	Testing Circuitry	Figure A
Object	+5.0V2A		

1. Graph



Note: Slanted line shows the range of the rated load current.

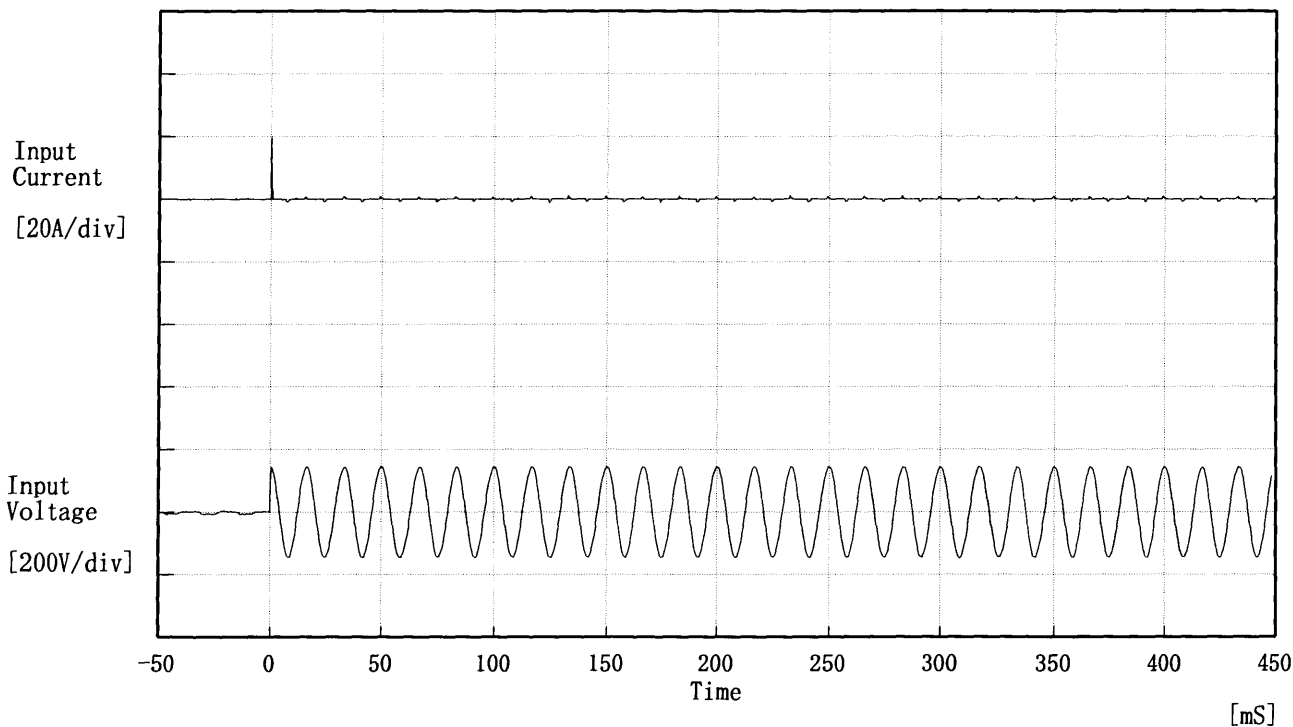
(注)斜線は定格負荷電流範囲を示す。

2. Values

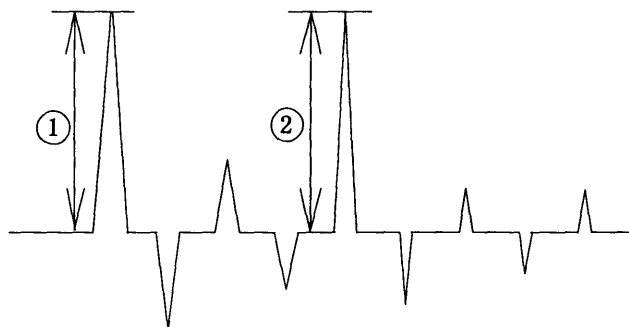
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
5.00	2.74	2.87	2.82
4.75	2.74	2.85	2.79
4.50	2.73	2.84	2.76
4.00	2.71	2.79	2.69
3.50	2.67	2.72	2.59
3.00	2.60	2.62	2.48
2.50	2.50	2.50	2.35
2.00	2.37	2.35	2.23
1.50	2.20	2.17	2.07
1.00	1.99	1.97	1.91
0.50	1.74	1.74	1.73
0.00	1.44	1.48	1.69



Model	LCA10S-5	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 19.61 [A]  
 ② 1.21 [A]



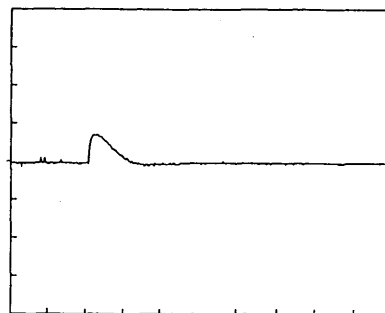
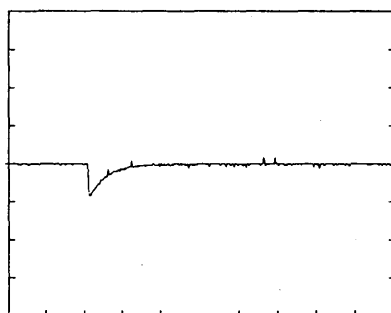


Model	LCA10S-5	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+5.0V2A		

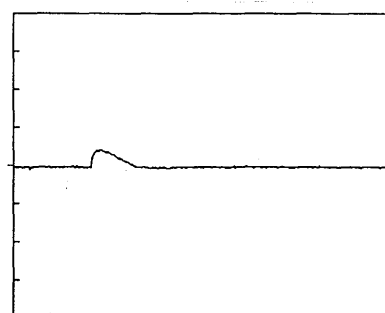
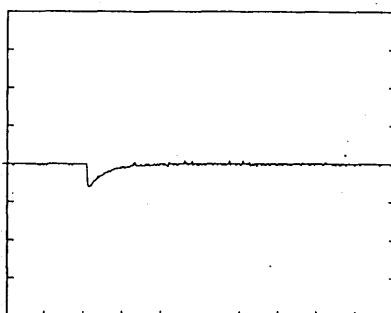
Input Volt. 100 V  
Cycle 1000 mS



Load 0% ↔  
Load 100 %



Load 0% ↔  
Load 50 %



200 mV/div

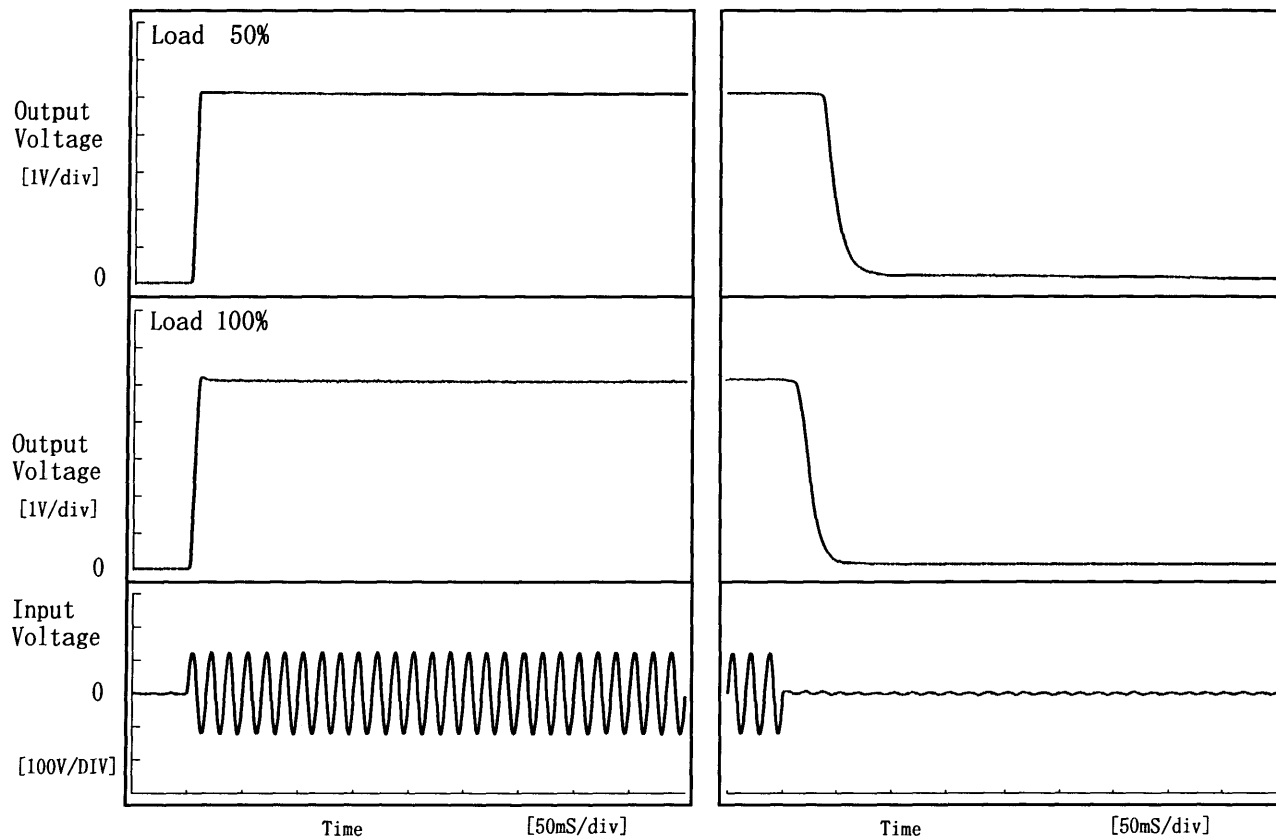
10 mS/div

# COSEL

Model	LCA10S-5	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5.0V2A		

1. Graph

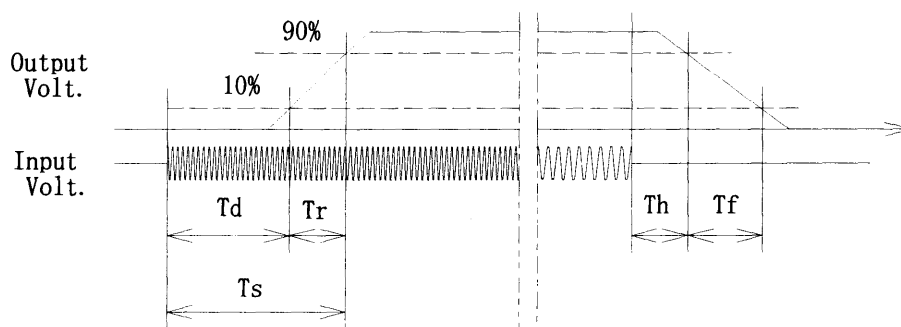
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T <sub>d</sub>	T <sub>r</sub>	T <sub>s</sub>	T <sub>h</sub>	T <sub>f</sub>
50 %	2.5	4.8	7.3	40.3	28.8
100 %	2.5	6.0	8.5	17.8	24.5



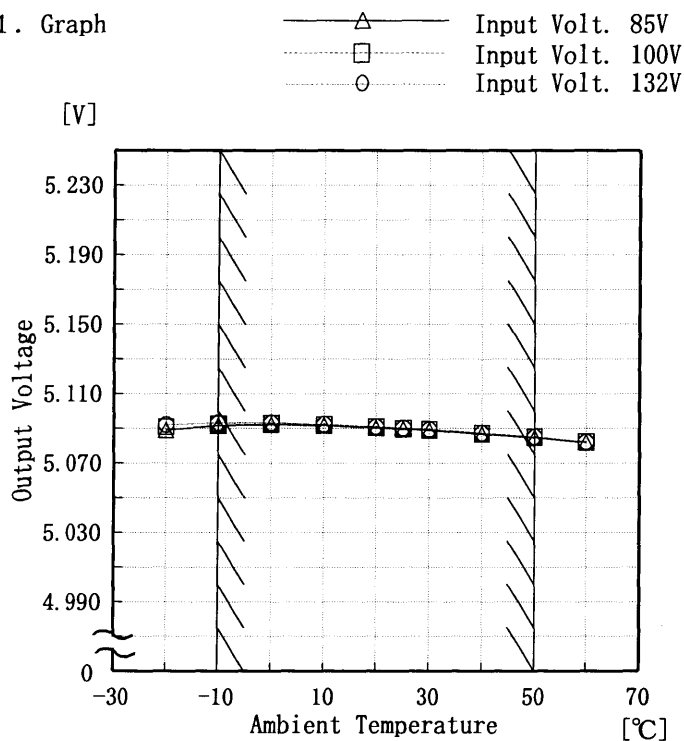




Model	LCA10S-5
Item	Ambient Temperature Drift 周囲温度変動
Object	+5.0V2A

Testing Circuitry Figure A

1. Graph



2. Values

Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.089	5.091	5.092
-10	5.092	5.093	5.093
0	5.092	5.093	5.093
10	5.092	5.092	5.092
20	5.090	5.091	5.091
25	5.090	5.090	5.090
30	5.089	5.089	5.089
40	5.087	5.087	5.087
50	5.085	5.085	5.085
60	5.082	5.082	5.082
—	—	—	—

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。



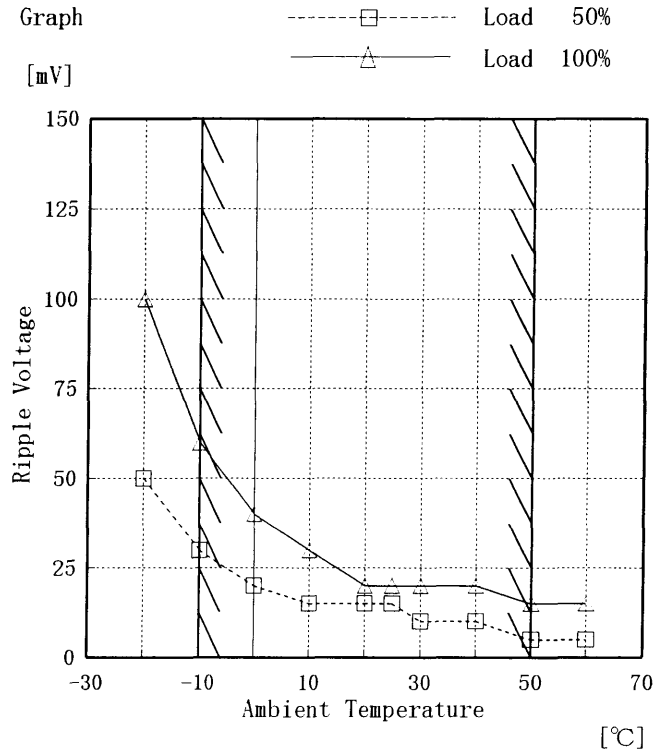
Model		LCA10S-5		Testing Circuitry Figure A																																						
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧																																								
Object		+5.0V2A																																								
1. Graph			□ Load 50% △ Load 100%	2. Values																																						
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Ambient Temperature [°C]	Input Voltage [V]																																									
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Model	LCA10S-5	Testing Circuitry	Figure A
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)		

Object +5.0V2A

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 Temp. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-20	50	100
-10	30	60
0	20	40
10	15	30
20	15	20
25	15	20
30	10	20
40	10	20
50	5	15
60	5	15
—	—	—



<b>COSEL</b>																									
Model	LCA10S-5	Temperature	25°C																						
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A																						
Object	+5.0V2A																								
1. Graph		2. Values																							
<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>5.092</td></tr> <tr><td>0.5</td><td>5.091</td></tr> <tr><td>1.0</td><td>5.091</td></tr> <tr><td>2.0</td><td>5.091</td></tr> <tr><td>3.0</td><td>5.091</td></tr> <tr><td>4.0</td><td>5.091</td></tr> <tr><td>5.0</td><td>5.091</td></tr> <tr><td>6.0</td><td>5.091</td></tr> <tr><td>7.0</td><td>5.091</td></tr> <tr><td>8.0</td><td>5.091</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	5.092	0.5	5.091	1.0	5.091	2.0	5.091	3.0	5.091	4.0	5.091	5.0	5.091	6.0	5.091	7.0	5.091	8.0	5.091
Time since start [H]	Output Voltage [V]																								
0.0	5.092																								
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4.0	5.091																								
5.0	5.091																								
6.0	5.091																								
7.0	5.091																								
8.0	5.091																								



Model		LCA10S-5	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+5.0V2A	

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 -10~50 °C

Input Voltage : 85~132 V

Load Current : 0~2 A

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

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

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 -10~50 °C

入力電圧 85~132 V

負荷電流 0~2 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	5.097	±6	±0.2
Minimum Voltage	50	132	2	5.085		



<b>COSEL</b>		
Model	LCA10S-5	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+5.0V2A	

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.

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]	5.091	Input Volt.:100V, Load Current:2A
Line Regulation [mV]	2	Input Volt.:85~132V, Load Current:2A
Load Regulation [mV]	6	Input Volt.:100V, Load Current:0~2A



Model		LCA10S-5	Temperature 25°C 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	0.07	0.08	0.10
(B) IEC60950	0.07	0.08	0.10

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 of 兩相について測定し、その大きい方を漏洩電流測定値とする。



Model		LCA10S-5	Temperature 25°C Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+5.0V2A	

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 %





Model	LCA10S-5	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object	_____		

1. Graph

Remarks

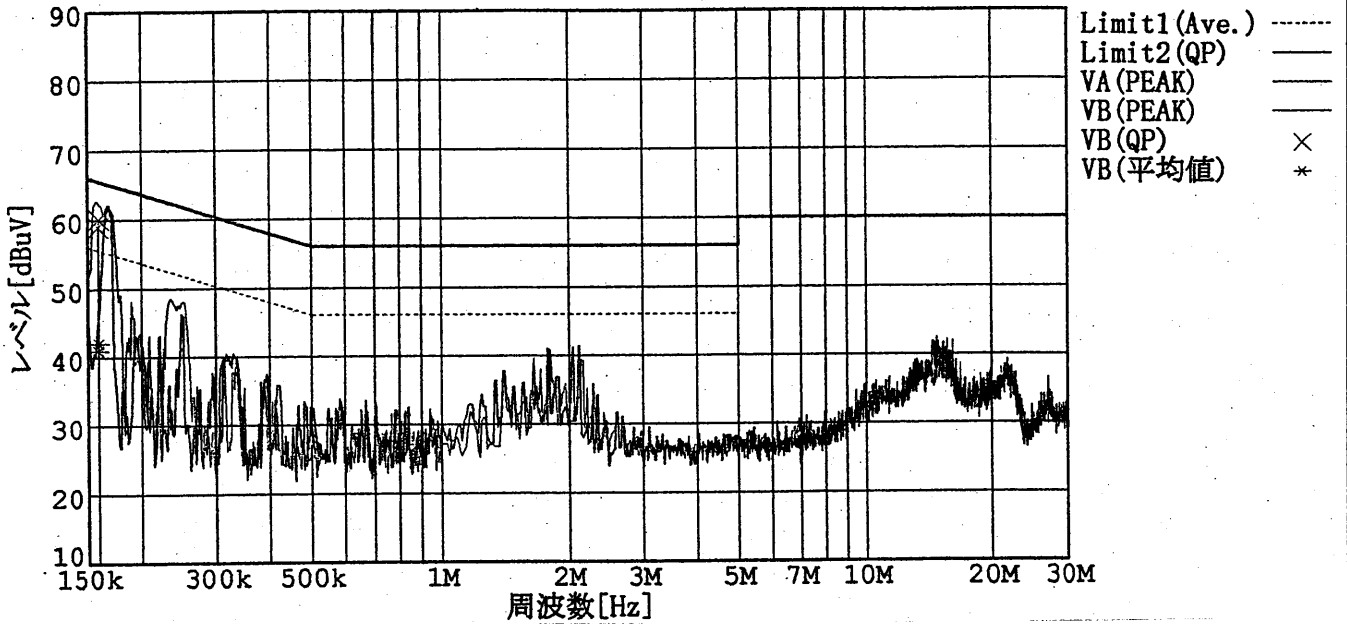
Input Volt. 100 V (VCCI Class B)

120 V (FCC Class B)

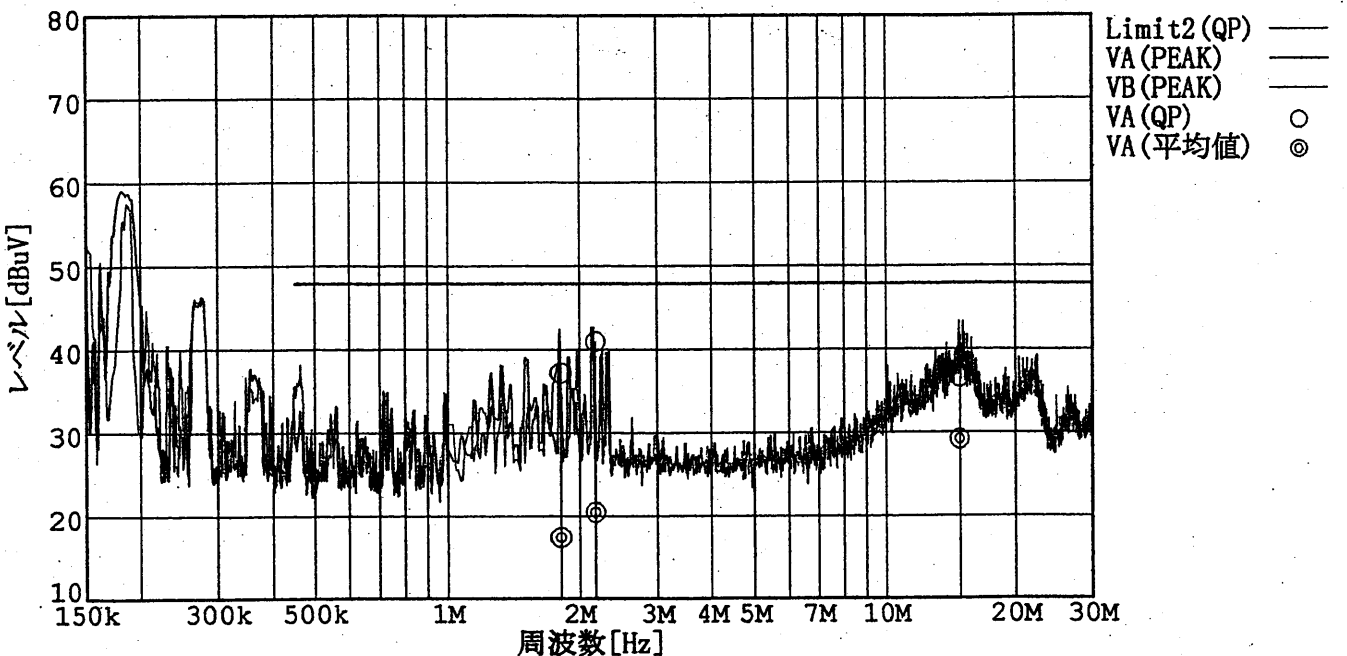
Load 100 %

規格 1: [VCCI] Class B (平均値)

規格 2: [VCCI] Class B (QP)



規格 2: [FCC Part15] Class B



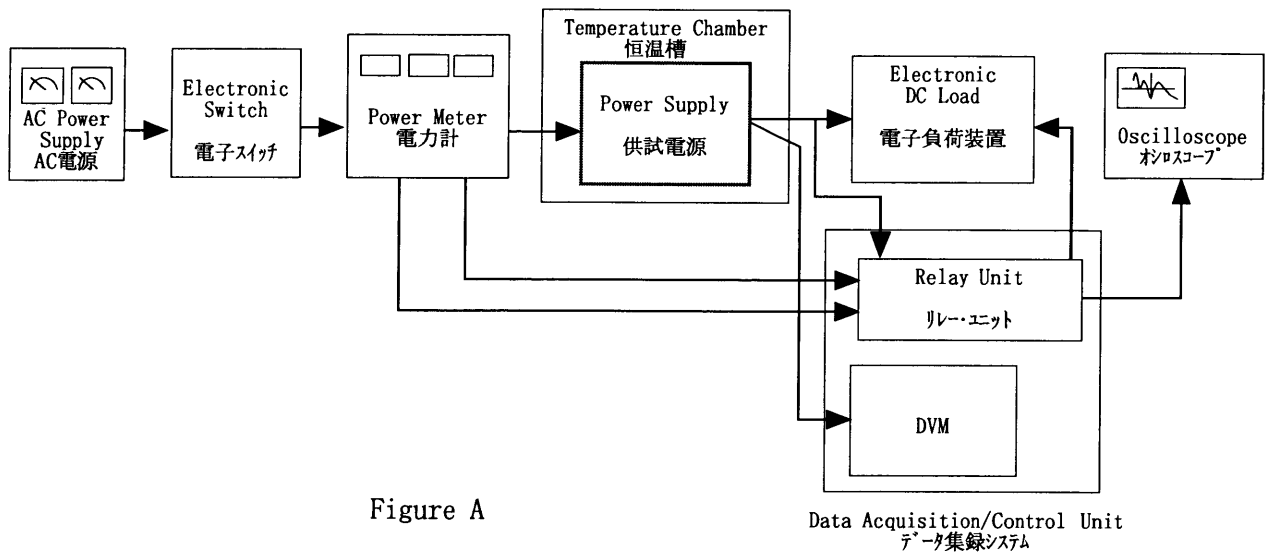


Figure A

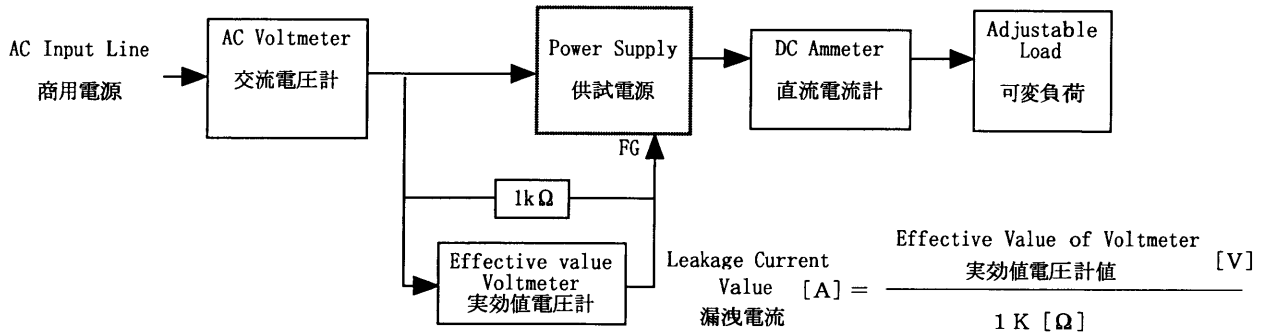


Figure B (DENTORI)

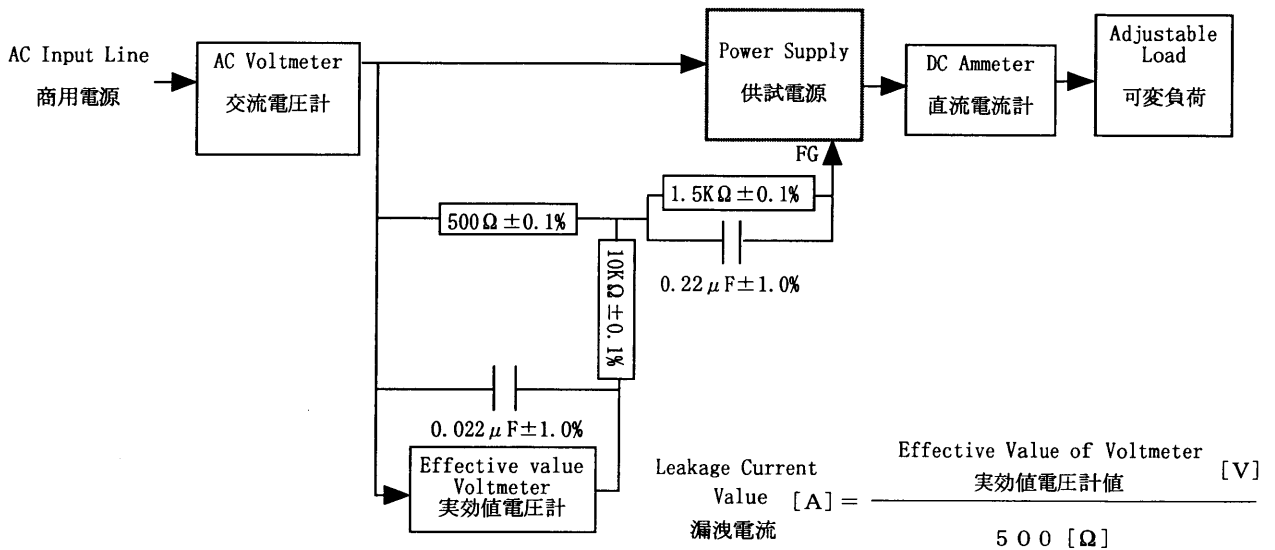


Figure B (IEC 60950)

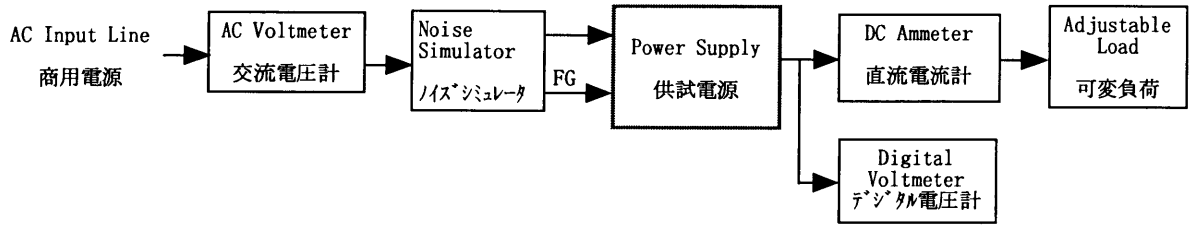


Figure C

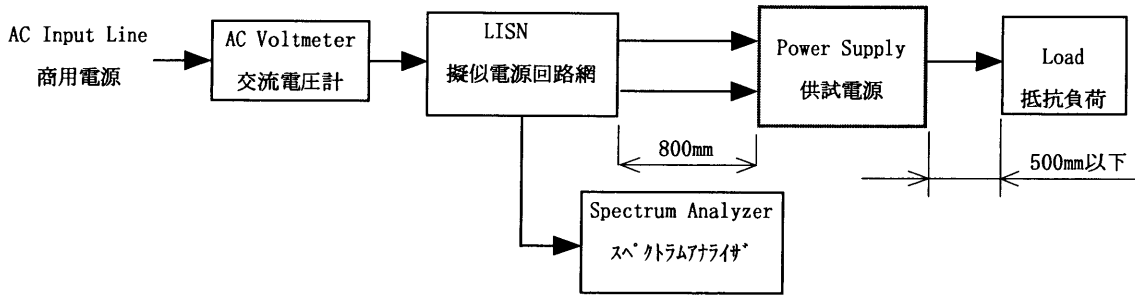


Figure D

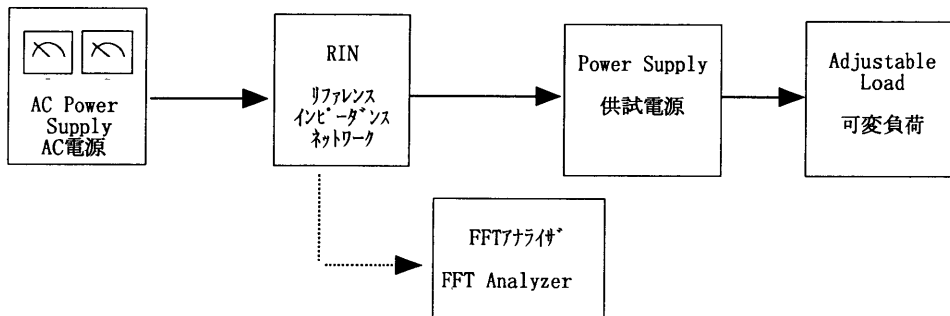


Figure E