

COSEL

TEST DATA OF LDA75F-12
(100V INPUT)

Regulated DC Power Supply

Date : Aug. 20. 1999

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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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Model	LDA75F-12	Temperature Testing Circuitry	25°C Figure A																															
Item	Line Regulation 静的入力変動																																	
Object	+12.0V 6.3A																																	
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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。

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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。

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Model LDA75F-12

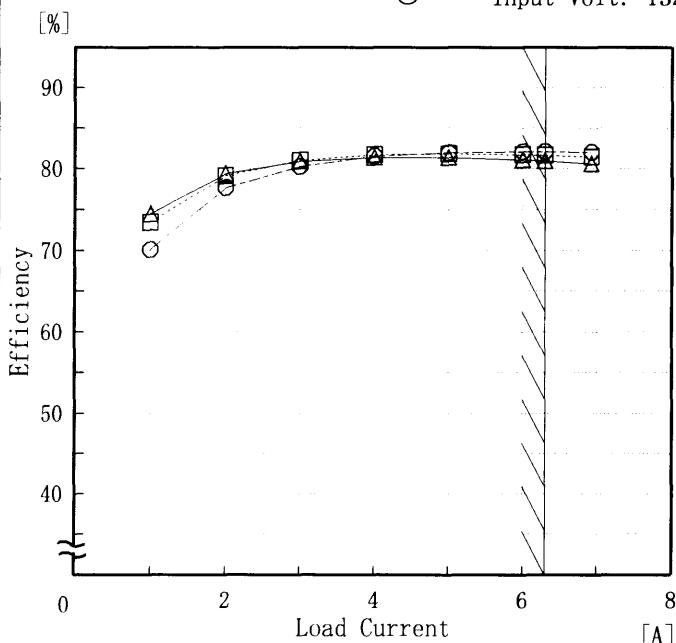
Item Efficiency (by Load Current)
効率(負荷電流特性)

Output

Temperature 25°C
Testing Circuitry Figure A

1. Graph

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



2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
1.00	74.5	73.4	70.1
2.00	79.4	79.2	77.6
3.00	80.9	81.1	80.3
4.00	81.4	81.7	81.5
5.00	81.4	81.8	82.0
6.00	81.1	81.7	82.1
6.30	81.0	81.7	82.1
6.93	80.6	81.4	82.1
—	—	—	—
—	—	—	—
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Note: Slanted line shows the range of the rated load current

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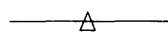
Model LDA75F-12

Item Hold-Up Time 出力保持時間

Object +12.0V 6.3A

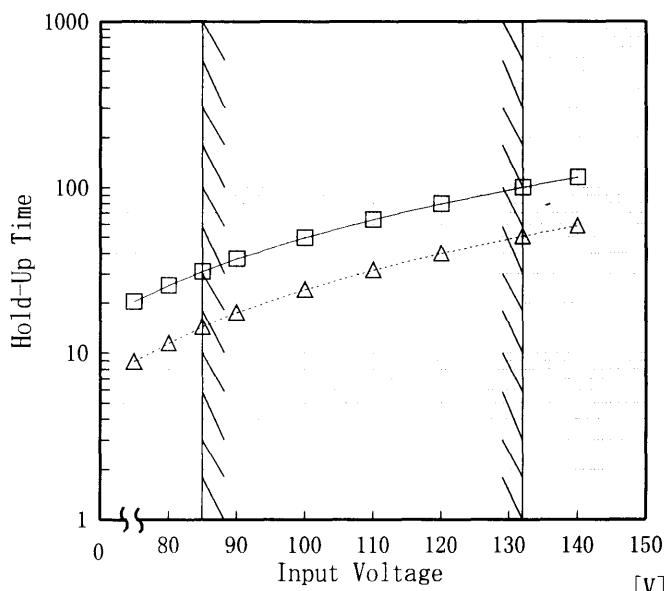
1. Graph

□ Load 50%



Load 100%

[mS]

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	20	9
80	26	12
85	31	14
90	37	17
100	50	24
110	64	32
120	80	40
132	101	51
140	115	58

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。

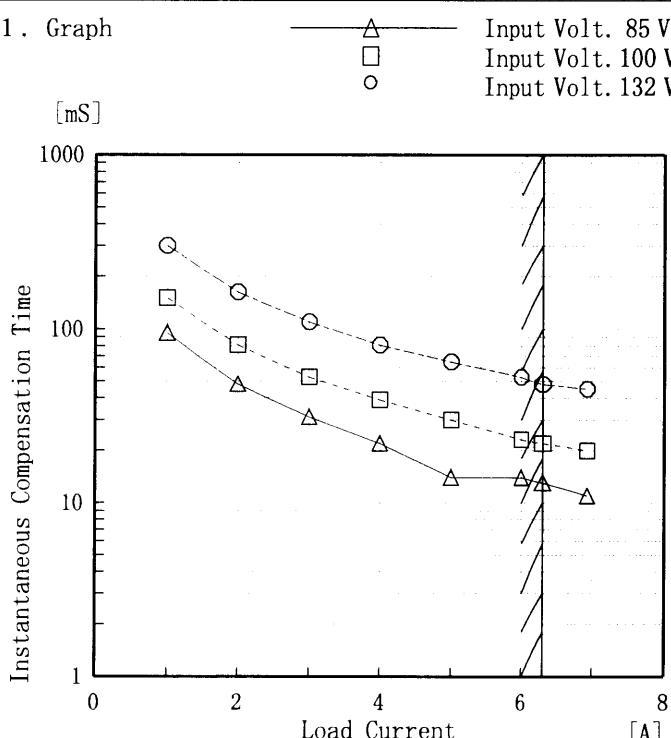
(注)斜線は定格入力電圧範囲を示す。

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Model	LDA75F-12
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12.0V 6.3A

Temperature 25°C
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]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
1.00	95	151	301
2.00	48	81	163
3.00	31	53	110
4.00	22	39	81
5.00	14	30	65
6.00	14	23	53
6.30	13	22	48
6.93	11	20	45
—	—	—	—
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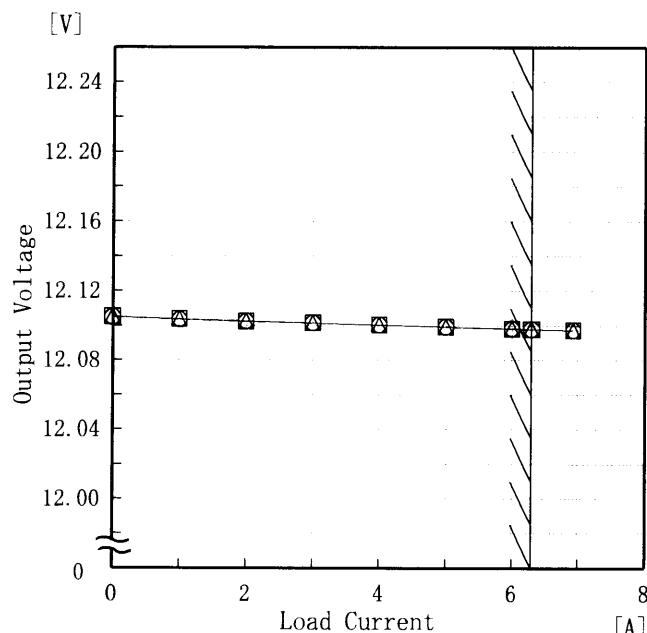
Model LDA75F-12

Item Load Regulation 静的負荷変動

Object +12.0V 6.3A

1. Graph

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



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°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	12.105	12.105	12.105
1.00	12.104	12.104	12.104
2.00	12.103	12.103	12.103
3.00	12.102	12.102	12.102
4.00	12.101	12.100	12.100
5.00	12.100	12.099	12.099
6.00	12.098	12.098	12.098
6.30	12.098	12.098	12.098
6.93	12.097	12.097	12.097
—	—	—	—

COSEL

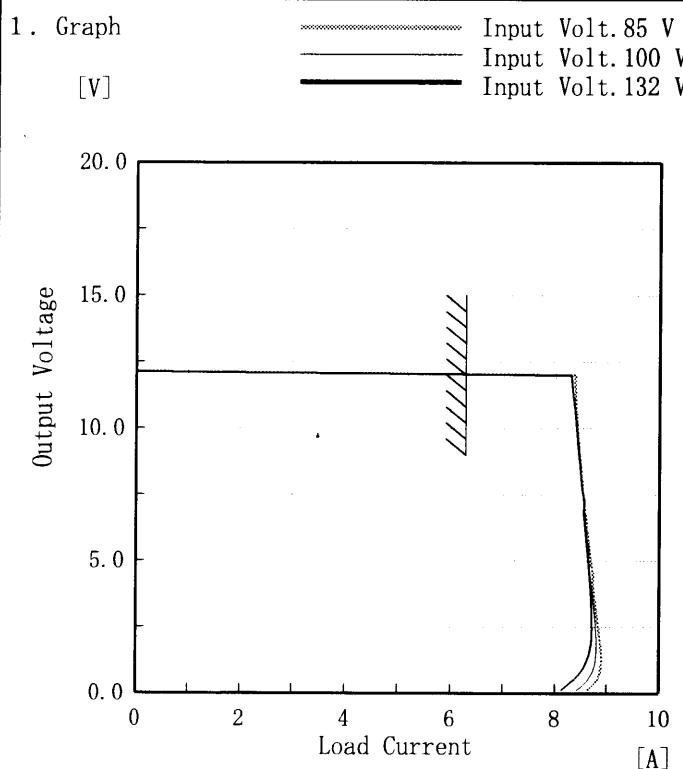
Model	LDA75F-12	Temperature	25°C																																						
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)	Testing Circuitry	Figure A																																						
Object	$+12.0V 6.3A$																																								
1. Graph	<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 150 mV, and the X-axis ranges from 0 to 8 A. Two sets of data points are shown: Input Volt. 85V (squares) and Input Volt. 132V (triangles). A dashed line connects the data points. A slanted line indicates the rated load current range.</p>																																								
2. Values	<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>10</td></tr> <tr><td>0.70</td><td>20</td><td>20</td></tr> <tr><td>1.40</td><td>20</td><td>20</td></tr> <tr><td>2.10</td><td>20</td><td>20</td></tr> <tr><td>2.80</td><td>20</td><td>20</td></tr> <tr><td>3.50</td><td>25</td><td>20</td></tr> <tr><td>4.20</td><td>25</td><td>20</td></tr> <tr><td>4.90</td><td>25</td><td>20</td></tr> <tr><td>5.60</td><td>25</td><td>20</td></tr> <tr><td>6.30</td><td>30</td><td>20</td></tr> <tr><td>6.93</td><td>30</td><td>20</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	10	0.70	20	20	1.40	20	20	2.10	20	20	2.80	20	20	3.50	25	20	4.20	25	20	4.90	25	20	5.60	25	20	6.30	30	20	6.93	30	20
Load Current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]																																							
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]																																							
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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。 (注)斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																									

COSEL

Model	LDA75F-12	Temperature Testing Circuitry	25°C Figure A																																							
Item	Ripple-Noise リップルノイズ																																									
Object	+12.0V 6.3A																																									
1. Graph	□ Input Volt. 85V [mV]	△ Input Volt. 132V	2. Values																																							
<p>The graph shows two data series: one for Input Volt. 85V (represented by squares) and another for Input Volt. 132V (represented by triangles). Both series show an increase in Ripple-Noise as Load Current increases. A slanted line is drawn through the data points, indicating the range of the rated load current.</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-Noise [mV]</th> <th>Ripple-Noise [mV]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>20</td><td>20</td></tr> <tr><td>0.70</td><td>30</td><td>30</td></tr> <tr><td>1.40</td><td>30</td><td>30</td></tr> <tr><td>2.10</td><td>35</td><td>35</td></tr> <tr><td>2.80</td><td>40</td><td>35</td></tr> <tr><td>3.50</td><td>45</td><td>40</td></tr> <tr><td>4.20</td><td>50</td><td>45</td></tr> <tr><td>4.90</td><td>50</td><td>45</td></tr> <tr><td>5.60</td><td>55</td><td>45</td></tr> <tr><td>6.30</td><td>55</td><td>50</td></tr> <tr><td>6.93</td><td>60</td><td>55</td></tr> </tbody> </table>	Load current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]	Ripple-Noise [mV]	Ripple-Noise [mV]	0.00	20	20	0.70	30	30	1.40	30	30	2.10	35	35	2.80	40	35	3.50	45	40	4.20	50	45	4.90	50	45	5.60	55	45	6.30	55	50	6.93	60	55	
Load current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]																																								
	Ripple-Noise [mV]	Ripple-Noise [mV]																																								
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<p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>The detailed view shows a complex, high-frequency oscillation. The vertical axis is labeled "Ripple-Noise [mVp-p]" and the horizontal axis is labeled "T1". A vertical line is drawn across the waveform at a specific time point, labeled "T2".</p>																																										
<p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																										

COSEL

Model	LDA75F-12
Item	Overcurrent Protection 過電流保護
Object	+12.0V 6.3A

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	8.39	8.31	8.30
11.40	8.38	8.33	8.33
10.80	8.40	8.35	8.36
9.60	8.44	8.41	8.43
8.40	8.50	8.48	8.48
7.20	8.56	8.54	8.57
6.00	8.63	8.60	8.59
4.80	8.71	8.66	8.65
3.60	8.76	8.73	8.70
2.40	8.85	8.79	8.72
1.20	8.90	8.79	8.63
0.00	8.63	8.41	8.11

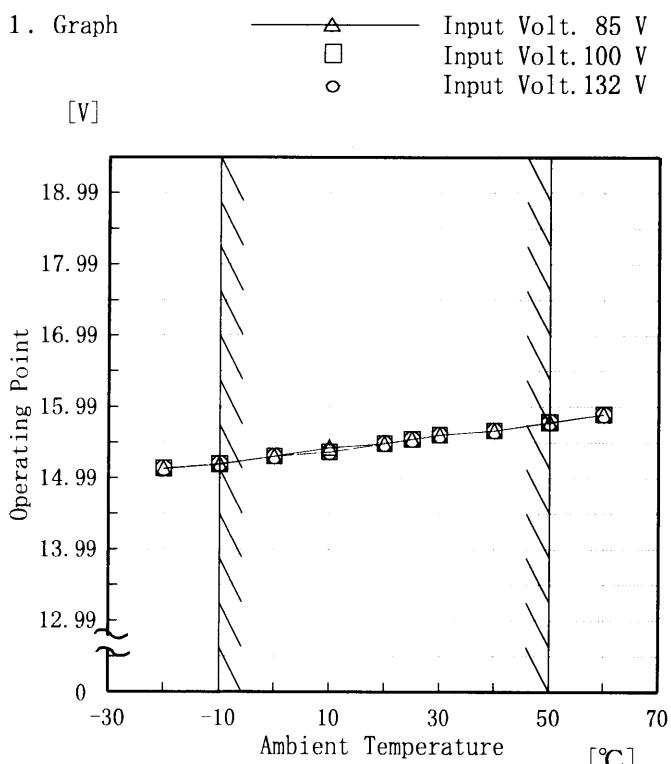
Note: Slanted line shows the range of the rated load current.

(注)斜線は定格負荷電流範囲を示す。

COSSEL

Model	LDA75F-12
Item	Overvoltage Protection 過電圧保護
Object	+12.0V 6.3A

Testing Circuitry Figure A



2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
-20	15.12	15.13	15.13
-10	15.18	15.19	15.19
0	15.30	15.30	15.30
10	15.42	15.36	15.36
20	15.48	15.48	15.48
25	15.54	15.54	15.54
30	15.60	15.60	15.60
40	15.66	15.66	15.66
50	15.77	15.78	15.78
60	15.89	15.89	15.89
—	—	—	—

Note: Slanted line shows the range of the rated ambient temperature.

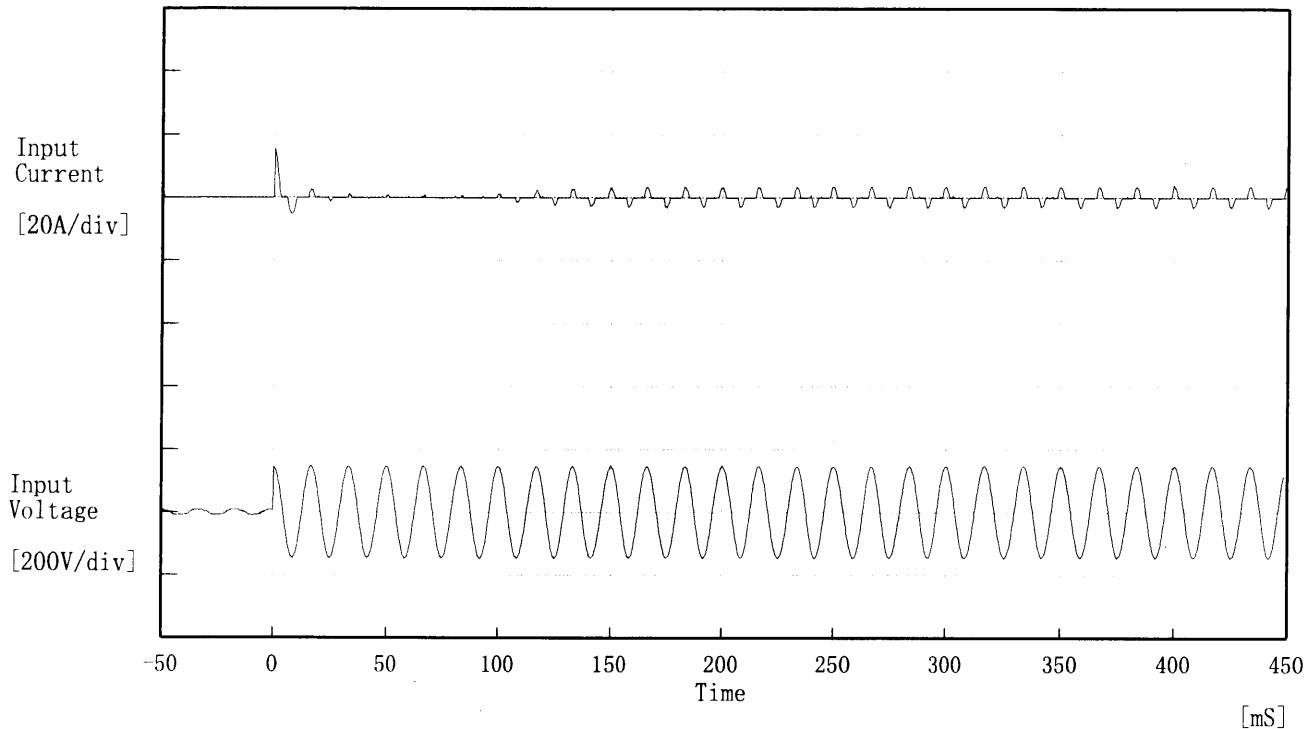
(注)斜線は定格周囲温度範囲を示す。

COSEL

Model LDA75F-12

Item Inrush Current 突入電流

Object

Temperature 25°C
Testing Circuitry Figure A

Input Voltage 100 V

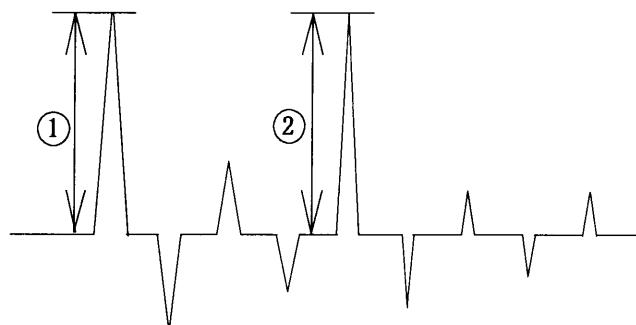
Frequency 60 Hz

Load 100 %

Inrush Current

① 15.51 [A]

② 3.91 [A]



COSEL

Model	LDA75F-12	Temperature Testing Circuitry 25°C Figure A
Item	Dynamic Load Response 動的負荷變動	
Object	+12.0V 6.3A	

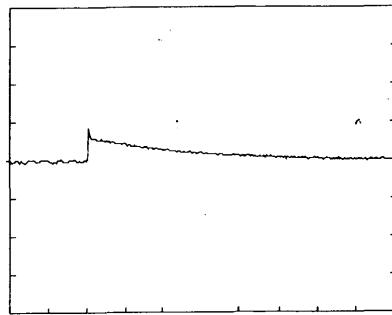
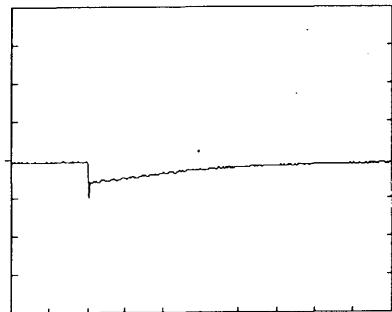
Input Volt. 100 V

Cycle 1000 mS

Load Current

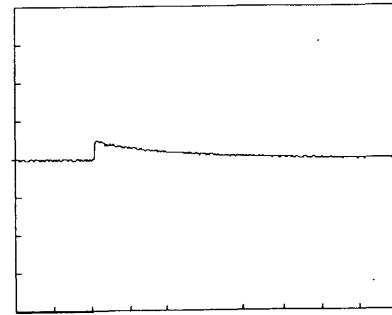
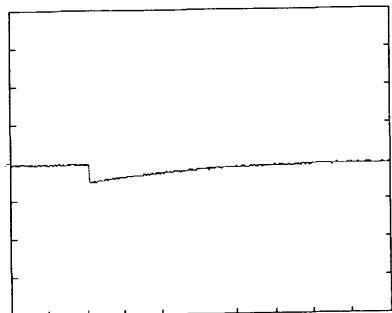
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

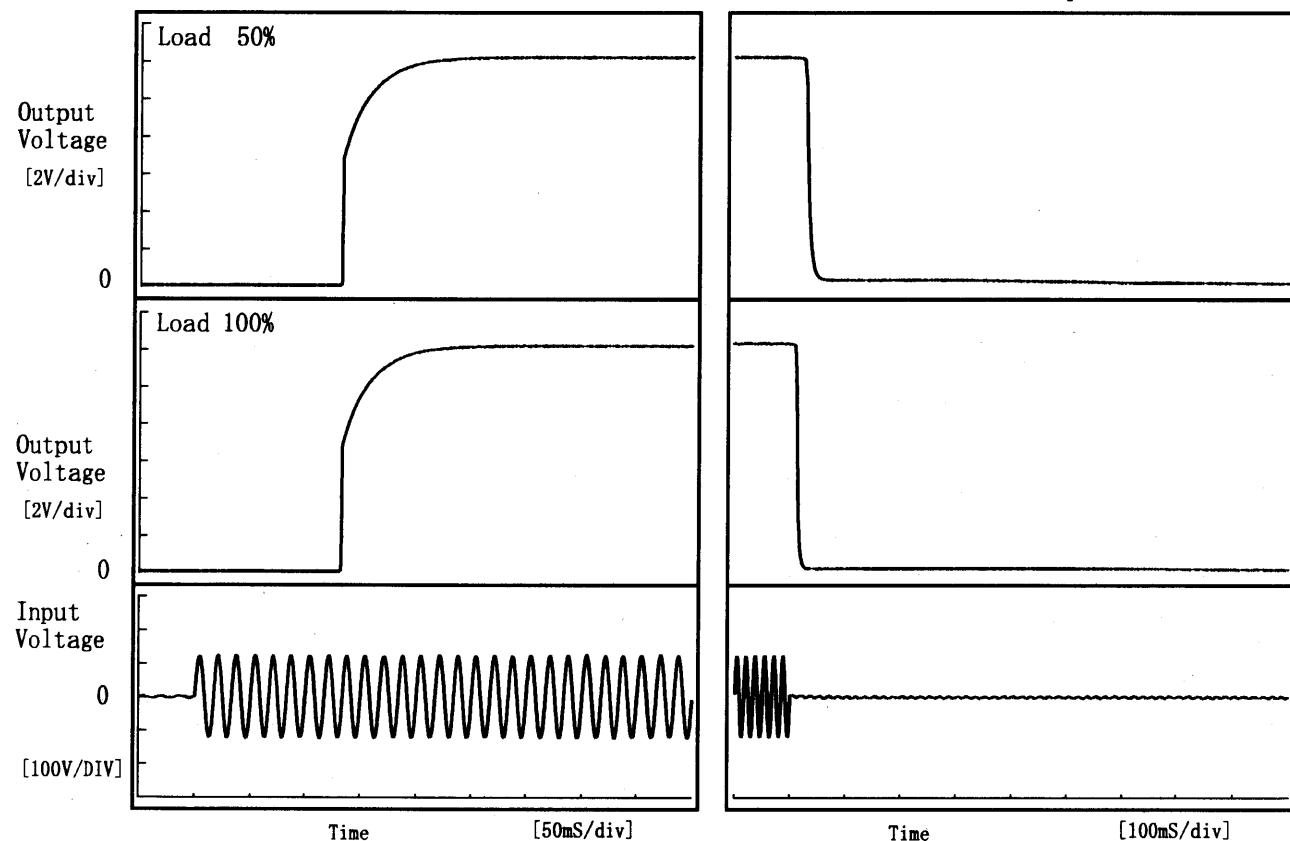
10 mS/div

COSEL

Model	LDA75F-12
Item	Rise and Fall Time 立上り、立下り時間
Object	+12.0V 6.3A

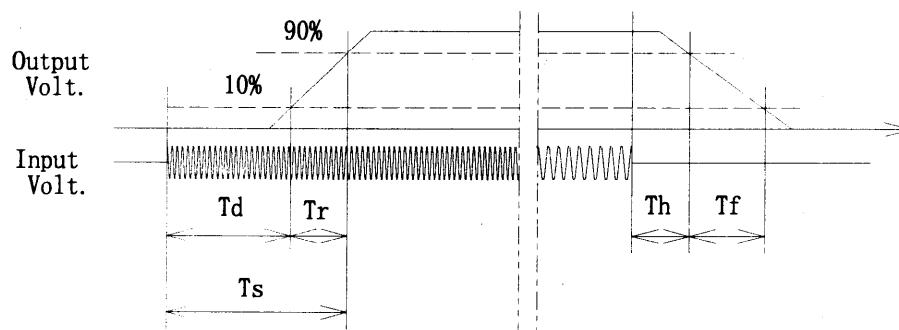
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	T _d	T _r	T _s	T _h	T _f	[mS]
50 %		131.5	35.3	166.8	31.0	13.0	
100 %		131.5	36.0	167.5	14.5	7.0	

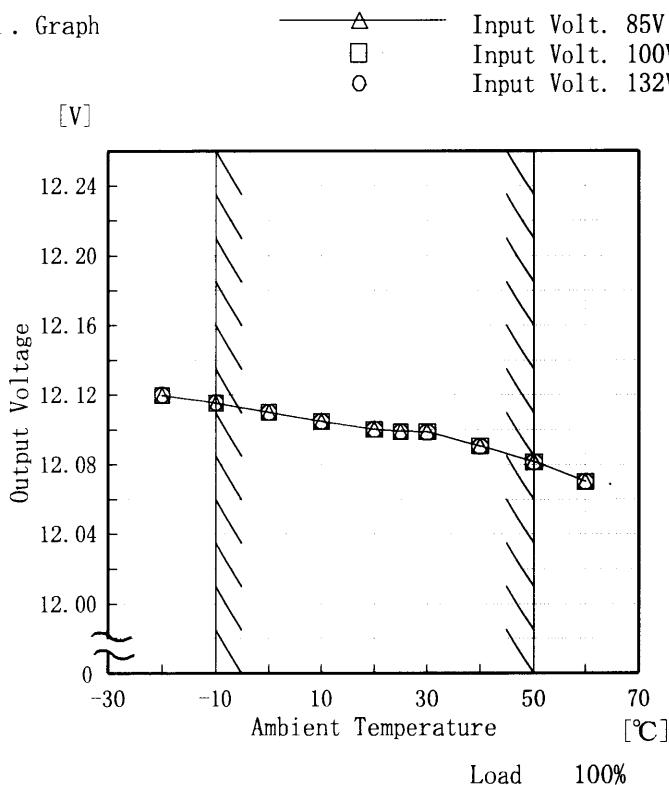


COSSEL

Model	LDA75F-12
Item	Ambient Temperature Drift 周囲温度変動
Object	+12.0V 6.3A

Testing Circuitry Figure A

1. Graph



Load 100%

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]
-20	12.120	12.120	12.120
-10	12.116	12.115	12.116
0	12.110	12.110	12.110
10	12.105	12.105	12.105
20	12.100	12.100	12.100
25	12.099	12.099	12.099
30	12.099	12.099	12.099
40	12.091	12.091	12.091
50	12.082	12.081	12.081
60	12.070	12.070	12.070
—	—	—	—

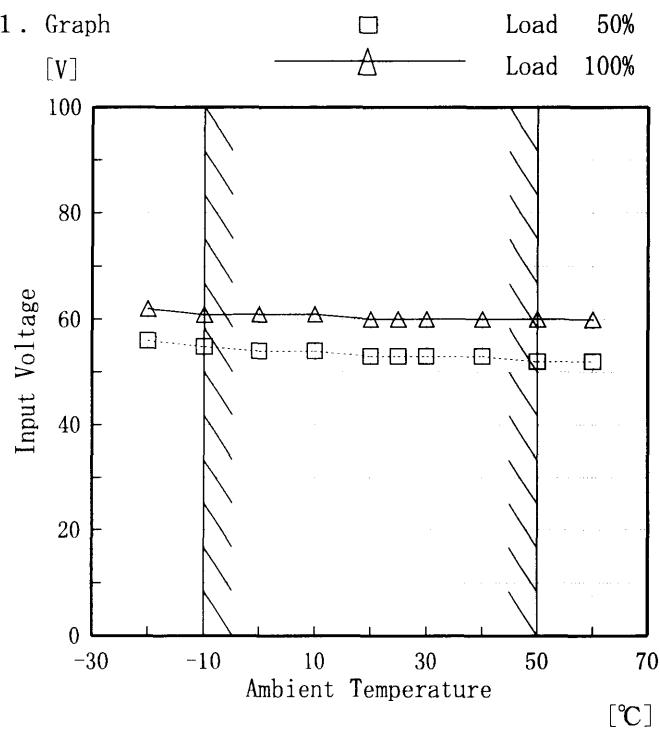
COSEL

Model LDA75F-12

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

Object +12.0V 6.3A

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。

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	56	62
-10	55	61
0	54	61
10	54	61
20	53	60
25	53	60
30	53	60
40	53	60
50	52	60
60	52	60
—	—	—

COSEL

Model	LDA75F-12																																							
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																							
Object	+12.0V 6.3A																																							
1. Graph																																								
<p style="text-align: center;">□ Load 50%</p>		<p style="text-align: center;">—△— Load 100%</p>																																						
<p style="text-align: center;">[mV]</p>		<p style="text-align: center;">Ripple Voltage [mV]</p>																																						
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COSEL

Model	LDA75F-12	Temperature Testing Circuitry	25°C Figure A																									
Item	Time Lapse Drift 経時ドリフト																											
Object	+12.0V 6.3A																											
1. Graph																												
<p>[V]</p> <table border="1"> <caption>Data points from Figure A graph</caption> <thead> <tr> <th>Time [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.04</td></tr> <tr><td>0.5</td><td>12.09</td></tr> <tr><td>1.0</td><td>12.09</td></tr> <tr><td>2.0</td><td>12.09</td></tr> <tr><td>3.0</td><td>12.09</td></tr> <tr><td>4.0</td><td>12.09</td></tr> <tr><td>5.0</td><td>12.09</td></tr> <tr><td>6.0</td><td>12.09</td></tr> <tr><td>7.0</td><td>12.09</td></tr> <tr><td>8.0</td><td>12.09</td></tr> <tr><td>9.0</td><td>12.09</td></tr> <tr><td>10.0</td><td>12.09</td></tr> </tbody> </table>			Time [H]	Output Voltage [V]	0.0	12.04	0.5	12.09	1.0	12.09	2.0	12.09	3.0	12.09	4.0	12.09	5.0	12.09	6.0	12.09	7.0	12.09	8.0	12.09	9.0	12.09	10.0	12.09
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<p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V</p> <p>Load 100%</p>			2. Values																									
<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>12.101</td></tr> <tr><td>0.5</td><td>12.091</td></tr> <tr><td>1.0</td><td>12.091</td></tr> <tr><td>2.0</td><td>12.091</td></tr> <tr><td>3.0</td><td>12.091</td></tr> <tr><td>4.0</td><td>12.091</td></tr> <tr><td>5.0</td><td>12.091</td></tr> <tr><td>6.0</td><td>12.091</td></tr> <tr><td>7.0</td><td>12.091</td></tr> <tr><td>8.0</td><td>12.091</td></tr> </tbody> </table>				Time since start [H]	Output Voltage [V]	0.0	12.101	0.5	12.091	1.0	12.091	2.0	12.091	3.0	12.091	4.0	12.091	5.0	12.091	6.0	12.091	7.0	12.091	8.0	12.091			
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6.0	12.091																											
7.0	12.091																											
8.0	12.091																											



Model	LDA75F-12	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
Object	+12.0V 6.3A	

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 : 0~6.3 A

* Output Voltage Accuracy = ±(Maximum of Output Voltage — Minimum of Output Voltage) / 2

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

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 0~6.3 A

* 定電圧精度(変動値) = ±(出力電圧の最高値—出力電圧の最低値) / 2

$$* \text{ 定電圧精度(変動率)} = \frac{\text{変動値}}{\text{定格出力電圧}} \times 100$$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	-10	85	0.0	12.122		
Minimum Voltage	50	132	6.3	12.079	±22	±0.2



Model	LDA75F-12		
Item	Condensation 結露特性	Testing Circuitry	Figure A
Object	+12.0V 6.3A		

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°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行い、異常のないことを確認する。

2. Values

Item	Data	Testing Conditions
Output Voltage [V]	12.1	Input Volt.: 100V, Load Current:6.3A
Line Regulation [mV]	5	Input Volt.: 85~132V, Load Current:6.3A
Load Regulation [mV]	9	Input Volt.: 100V, Load Current:0.0~6.3A



Model	LDA75F-12	Temperature	25°C
Item	Leakage Current 漏洩電流	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.14	0.17	0.22
(B) IEC60950	0.14	0.16	0.20

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。

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



Model	LDA75F-12	Temperature	25°C
Item	Line Noise Tolerance 入力雑音耐量	Testing Circuitry	Figure C
Object	+12.0V 6.3A		

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	LDA75F-12	Temperature Testing Circuitry	25°C Figure D
Item	Conducted Emission 雜音端子電圧		
Object	_____		

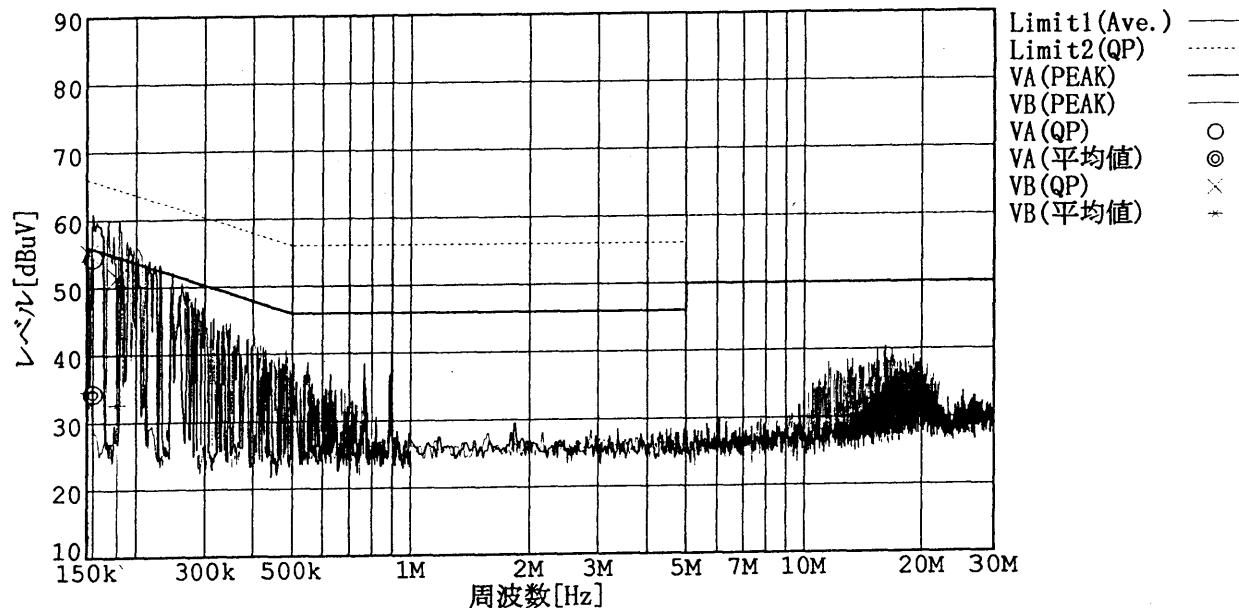
1. Graph

Remarks

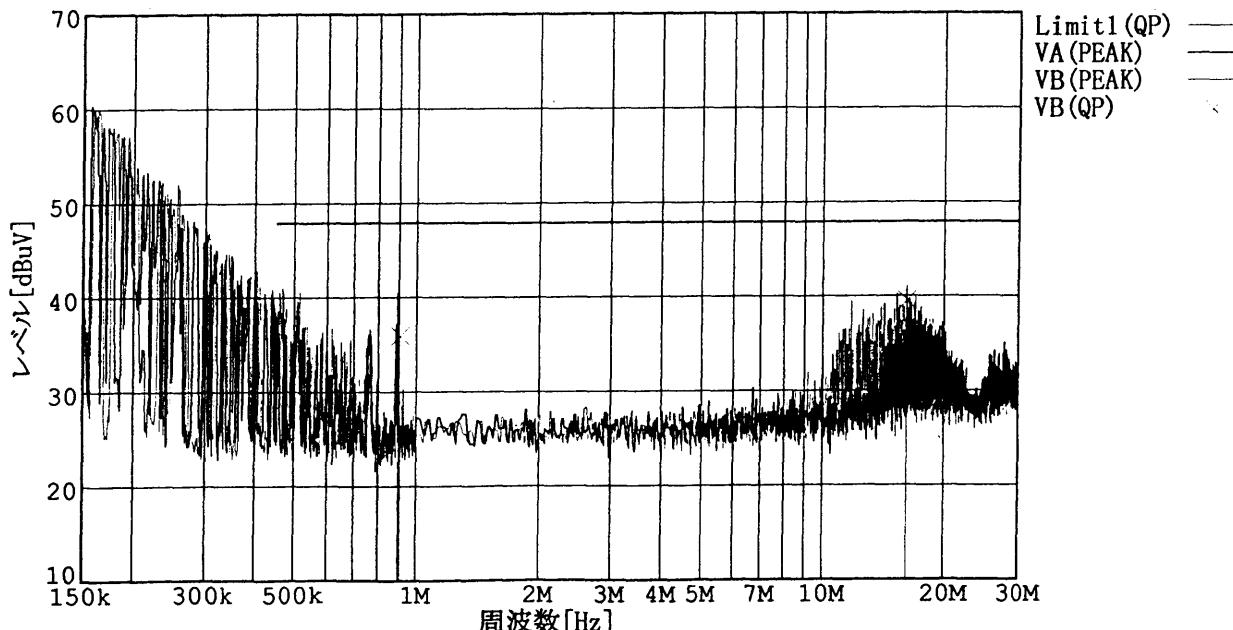
Input Volt. 100 V (VCCI Class B)
120 V (FCC Class B)

Load 100 %

規格 1: [VCCI] Class B(平均値)
規格 2: [VCCI] Class B(QP)



規格 1: [FCC Part15] Class B



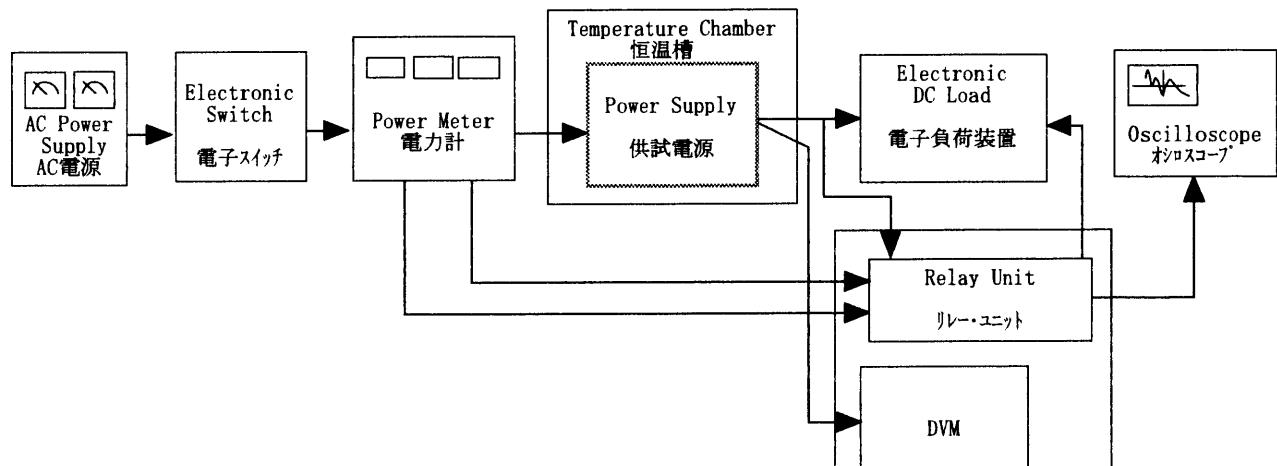


Figure A

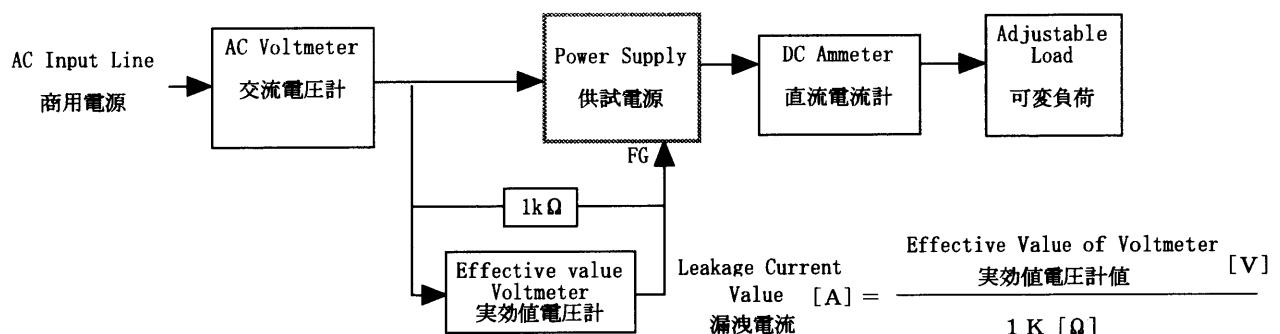
Data Acquisition/Control Unit
データ集録システム

Figure B (DENTORI)

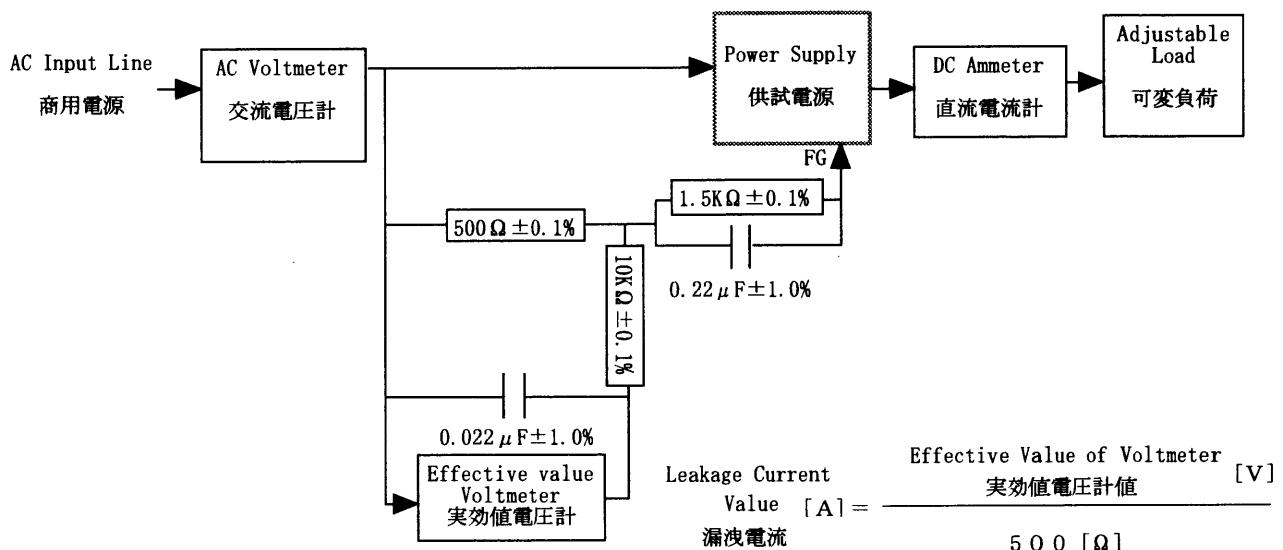


Figure B (IEC 60950)

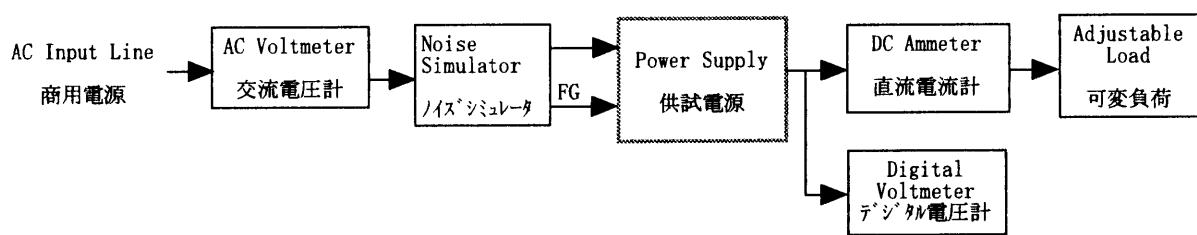


Figure C

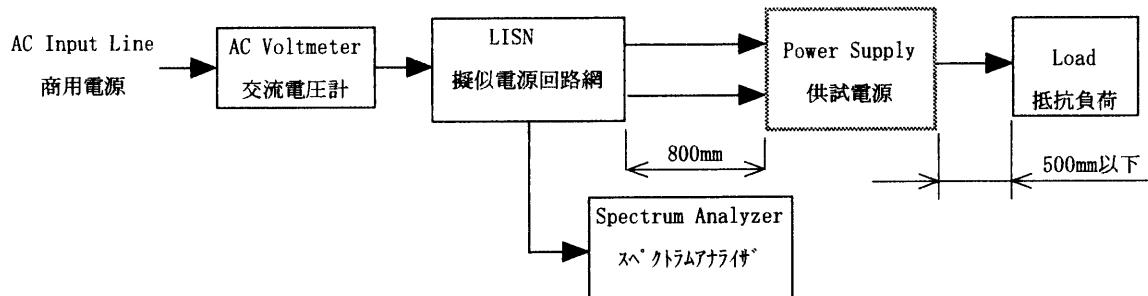


Figure D

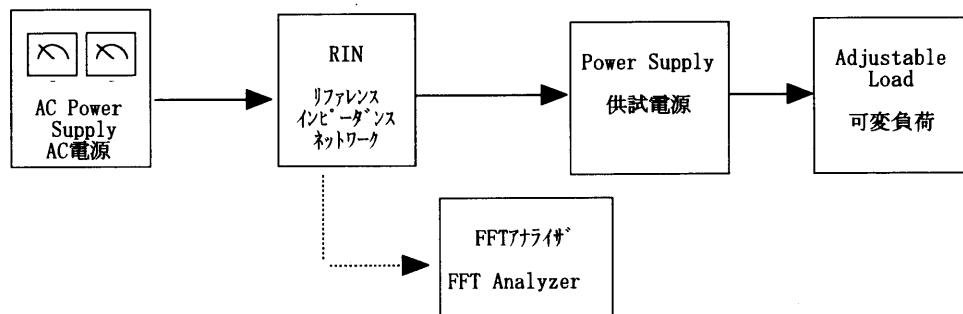


Figure E