



# TEST DATA OF LDA10F-5 (100V INPUT)

Regulated DC Power Supply

Date : June 18. 1999

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**コーセル株式会社**

**COSEL CO., LTD.**

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(Final Page 25 )

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Model LDA10F-5		Temperature 25°C Testing Circuitry Figure A																																
Item	Line Regulation 静的入力変動																																	
Object	+5.0V2A																																	
<p>1. Graph</p> <p>-----□----- Load 50%          -----△----- Load 100%</p> <p>[V]</p> <p>Output Voltage [V]</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">Output Voltage [V]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>75</td><td>5.148</td><td>5.142</td></tr> <tr><td>80</td><td>5.149</td><td>5.143</td></tr> <tr><td>85</td><td>5.149</td><td>5.144</td></tr> <tr><td>90</td><td>5.149</td><td>5.144</td></tr> <tr><td>100</td><td>5.149</td><td>5.145</td></tr> <tr><td>110</td><td>5.150</td><td>5.145</td></tr> <tr><td>120</td><td>5.150</td><td>5.145</td></tr> <tr><td>132</td><td>5.150</td><td>5.145</td></tr> <tr><td>140</td><td>5.150</td><td>5.146</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	5.148	5.142	80	5.149	5.143	85	5.149	5.144	90	5.149	5.144	100	5.149	5.145	110	5.150	5.145	120	5.150	5.145	132	5.150	5.145	140	5.150	5.146
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Model		LDA10F-5		Temperature		25°C																																																								
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# COSEL

Model	LDA10F-5	Temperature	25°C
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]

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]
0.4	62.8	60.3	54.6
0.8	69.3	68.6	66.2
1.2	70.2	70.8	70.0
1.6	69.5	70.6	71.3
2.0	68.1	69.8	71.3
2.2	67.3	69.3	71.2
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

BC-4034



# COSEL

Model		LDA10F-5	
Item		Instantaneous Interruption Compensation 瞬時停電保障	
Object		+5.0V2A	

1. Graph

△

□

○

Input Volt. 85 V

Input Volt. 100 V

Input Volt. 132 V

Instantaneous Compensation Time [mS]

1000

100

10

1

0

0.5

1

1.5

2

2.5

Load Current [A]

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]
0.0	—	—	—
0.4	98	140	244
0.8	47	65	123
1.2	23	38	72
1.6	13	22	47
2.0	5	14	35
2.2	4	10	30
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

**COSEL**

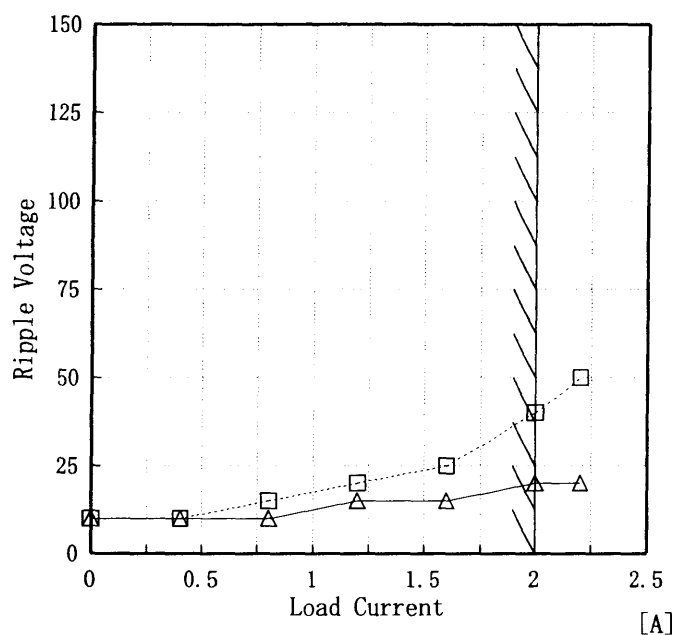
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# COSEL

Model	LDA10F-5
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷電流特性)
Object	+5.0V2A

Temperature 25°C  
Testing Circuitry Figure A

1. Graph  
[mV]  
□ 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

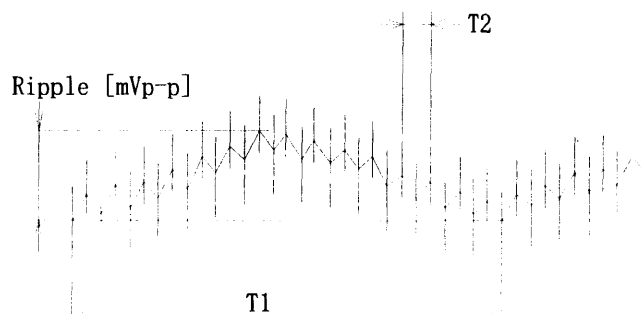


Fig. Complex Ripple Wave Form  
図 リップル波形詳細図

2. Values

Load Current [A]	Input Volt. 85 [V]	Input Volt. 132 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.00	10	10
0.40	10	10
0.80	15	10
1.20	20	15
1.60	25	15
2.00	40	20
2.20	50	20
—	—	—
—	—	—
—	—	—
—	—	—

# COSEL

Model		LDA10F-5	
Item		Ripple-Noise リップルノイズ	
Object		+5.0V2A	

1. Graph

□

Input Volt. 85V

—△—

Input Volt. 132V

[mV]

Ripple-Noise

200

180

160

140

120

100

80

60

40

20

0

0

0.5

1

1.5

2

2.5

Load Current

[A]

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

Temperature

25℃

Testing Circuitry

Figure A

2. Values

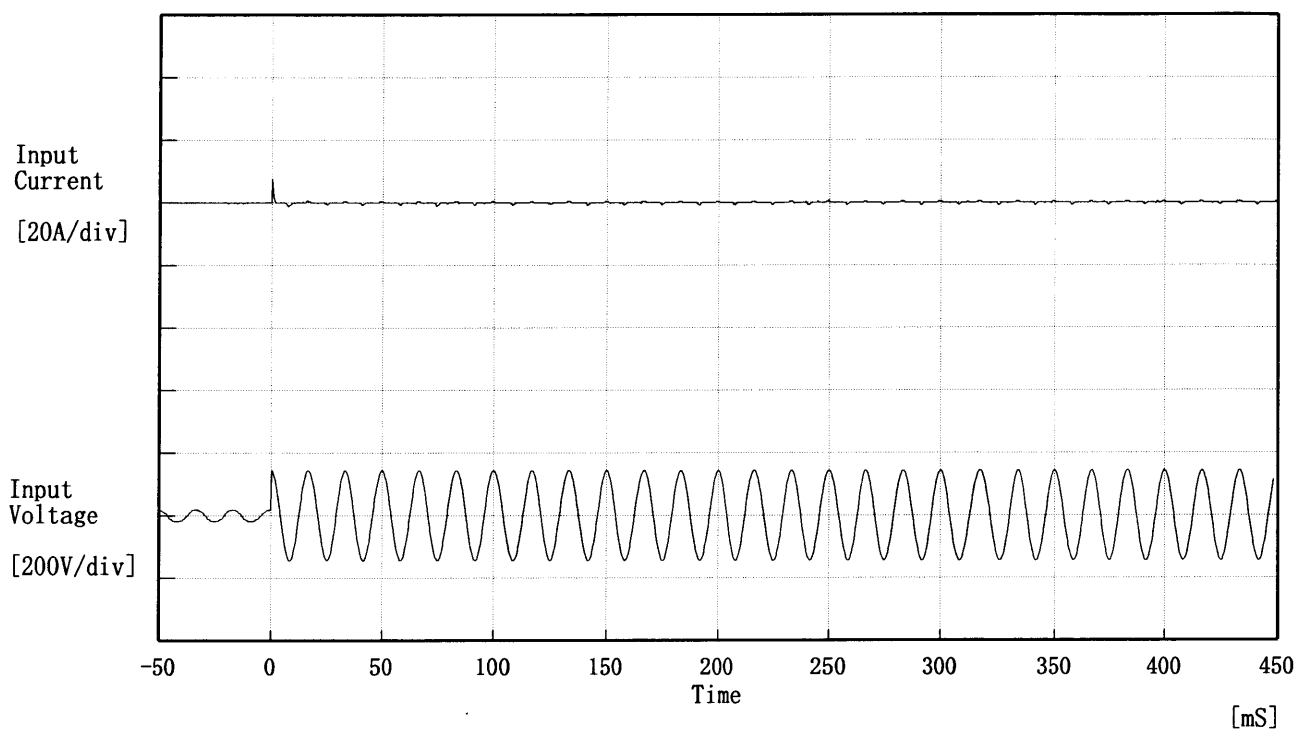
Load current	Input Volt. 85 [V]	Input Volt. 132 [V]
[A]	Ripple-Noise [mV]	Ripple-Noise [mV]
0.00	20	20
0.40	25	30
0.80	25	30
1.20	40	40
1.60	60	40
2.00	80	50
2.20	80	50
—	—	—
—	—	—
—	—	—
—	—	—

**COSEL**

COSEL																																																									
Model	LDA10F-5	Temperature 25℃ Testing Circuitry Figure A																																																							
Item	Overcurrent Protection 過電流保護																																																								
Object	+5.0V2A																																																								
1. Graph		2. Values																																																							
	<div><div><div></div><div></div><div></div></div><div>Input Volt. 85 V Input Volt. 100 V Input Volt. 132 V</div></div> <div>[V]</div> <div><div>Output Voltage</div><div>Load Current</div><div>[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>5.00</td><td>2.44</td><td>2.67</td><td>2.75</td></tr><tr><td>4.75</td><td>2.49</td><td>2.72</td><td>2.77</td></tr><tr><td>4.50</td><td>2.53</td><td>2.75</td><td>2.80</td></tr><tr><td>4.00</td><td>2.63</td><td>2.83</td><td>2.83</td></tr><tr><td>3.50</td><td>2.73</td><td>2.89</td><td>2.86</td></tr><tr><td>3.00</td><td>2.79</td><td>2.93</td><td>2.86</td></tr><tr><td>2.50</td><td>2.84</td><td>2.94</td><td>2.85</td></tr><tr><td>2.00</td><td>2.87</td><td>2.93</td><td>2.81</td></tr><tr><td>1.50</td><td>2.83</td><td>2.86</td><td>2.72</td></tr><tr><td>1.00</td><td>2.71</td><td>2.70</td><td>2.58</td></tr><tr><td>0.50</td><td>2.45</td><td>2.42</td><td>2.30</td></tr><tr><td>0.00</td><td>2.29</td><td>2.21</td><td>2.16</td></tr></table>	Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	5.00	2.44	2.67	2.75	4.75	2.49	2.72	2.77	4.50	2.53	2.75	2.80	4.00	2.63	2.83	2.83	3.50	2.73	2.89	2.86	3.00	2.79	2.93	2.86	2.50	2.84	2.94	2.85	2.00	2.87	2.93	2.81	1.50	2.83	2.86	2.72	1.00	2.71	2.70	2.58	0.50	2.45	2.42	2.30	0.00	2.29	2.21	2.16
Output Voltage [V]	Load Current [A]																																																								
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(注)斜線は定格負荷電流範囲を示す。																																																									

**COSEL**

Model	LDA10F-5	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current 突入電流	
Object	_____	



Input Voltage 100 V

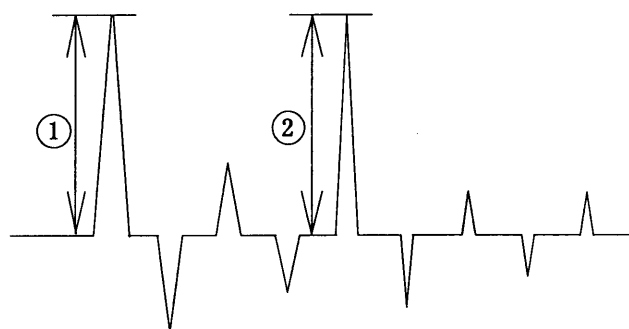
Frequency 60 Hz

Load 100 %

Inrush Current

① 7.61 [A]

② 1.19 [A]



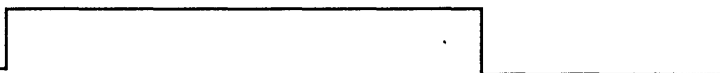
# COSEL

Model	LDA10F-5	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response 動的負荷変動	
Object	+5.0V2A	

Input Volt. 100 V

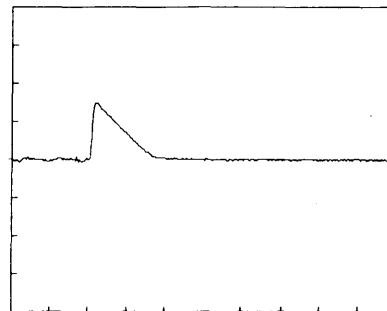
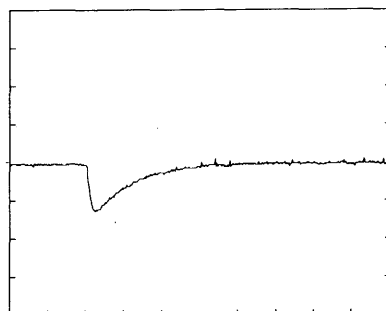
Cycle 1000 mS

Load Current



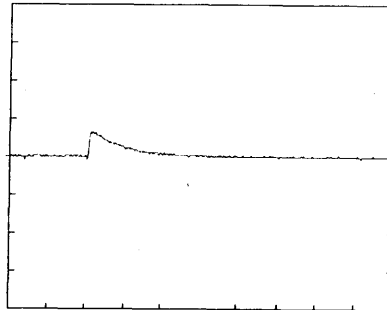
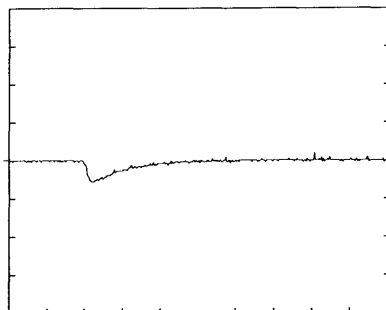
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



200 mV/div

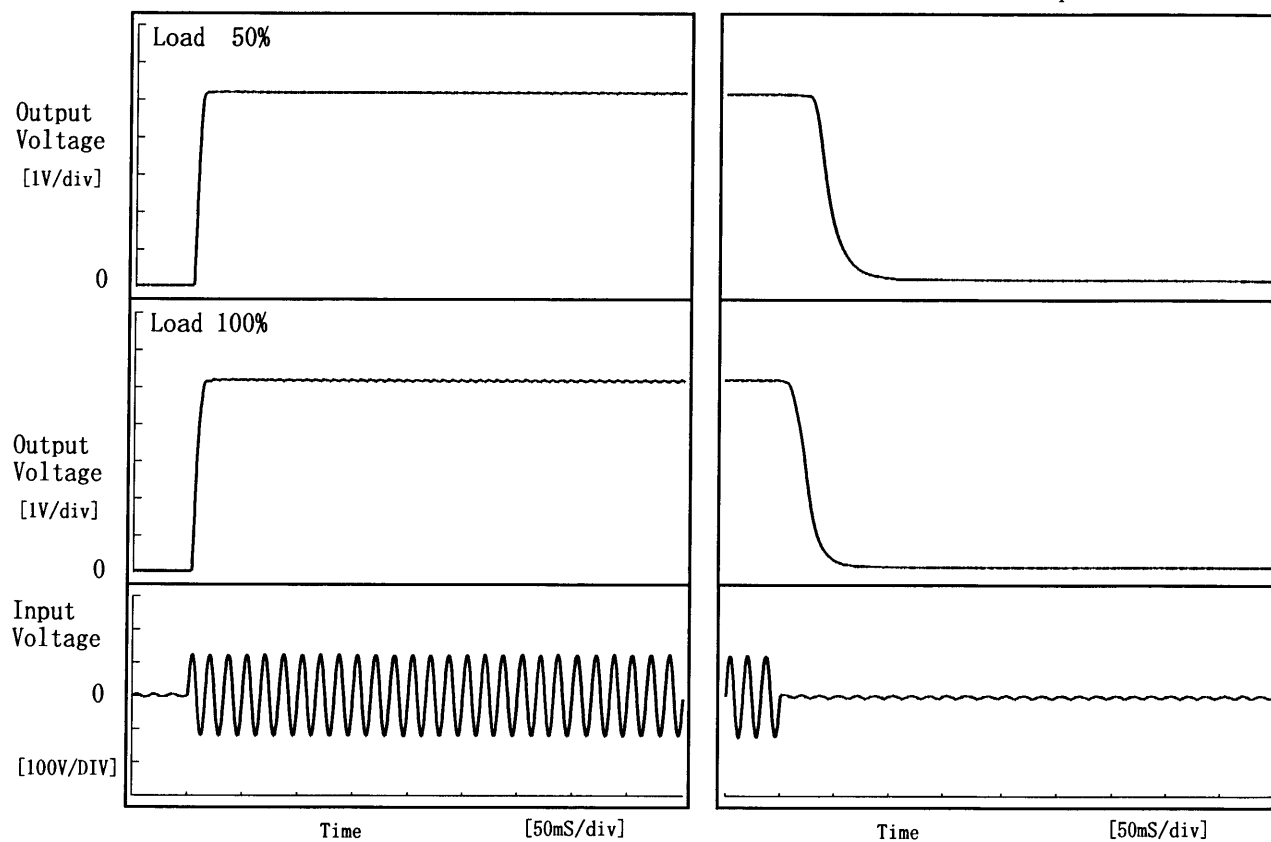
10 mS/div

# COSEL

Model	LDA10F-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

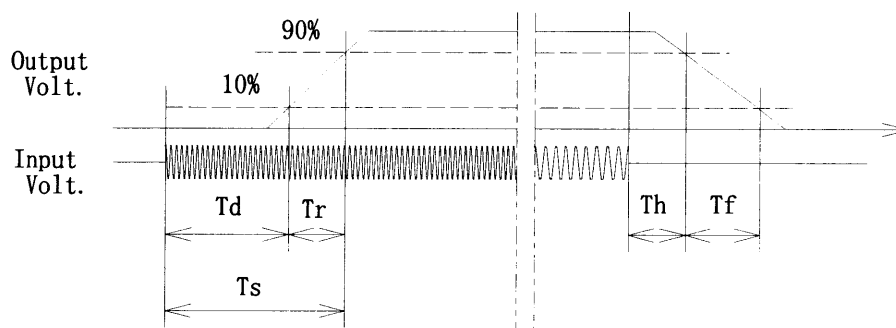
Input Volt. 85 V



## 2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	3.5	6.5	10.0	34.3	36.3
100 %	3.5	8.0	11.5	14.5	29.5





**COSEL**

Model		LDA10F-5
Item	Ambient Temperature Drift 周囲温度変動	
Object	+5.0V2A	

1. Graph

△

Input Volt. 85V

□

Input Volt. 100V

○

Input Volt. 132V

Output Voltage

[V]

**COSEL**

Model LDA10F-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																																							
<p>1. Graph</p> <p>[V]</p> <p>Input Voltage</p> <p>Ambient Temperature [°C]</p> <p>Load 50% (□)</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>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>-20</td><td>42</td><td>67</td></tr> <tr><td>-10</td><td>42</td><td>68</td></tr> <tr><td>0</td><td>42</td><td>68</td></tr> <tr><td>10</td><td>42</td><td>69</td></tr> <tr><td>20</td><td>42</td><td>69</td></tr> <tr><td>25</td><td>42</td><td>70</td></tr> <tr><td>30</td><td>42</td><td>70</td></tr> <tr><td>40</td><td>43</td><td>71</td></tr> <tr><td>50</td><td>43</td><td>72</td></tr> <tr><td>60</td><td>44</td><td>73</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	42	67	-10	42	68	0	42	68	10	42	69	20	42	69	25	42	70	30	42	70	40	43	71	50	43	72	60	44	73	—	—	—
Ambient Temperature [°C]	Input Voltage [V]																																							
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-20	42	67																																						
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30	42	70																																						
40	43	71																																						
50	43	72																																						
60	44	73																																						
—	—	—																																						

# COSEL

Model		LDA10F-5
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)	
Object	+5.0V2A	

1. Graph

□ Load 50%

—△— Load 100%

[mV]

150

125

100

75

50

25

0

Ripple Voltage

-30

-10

10

30

50

70

Ambient Temperature

[°C]

Input Volt. 100 V

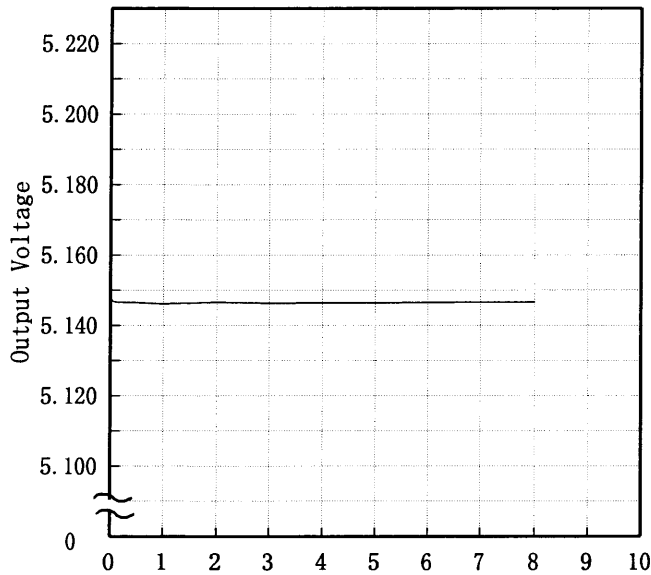
Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-20	30	60
-10	20	40
0	20	40
10	10	40
20	10	35
25	10	35
30	10	30
40	10	30
50	10	25
60	10	25
—	—	—

**COSEL**

COSEL																									
Model	LDA10F-5																								
Item	Time Lapse Drift 経時ドリフト	Temperature	25℃																						
Object	+5.0V2A	Testing Circuitry	Figure A																						
1. Graph		2.Values																							
<div>[V]</div> <div></div> <div>Output Voltage [V]</div> <div>Time [H]</div> <div>Input Volt. 100V</div> <div>Load 100%</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.149</td></tr><tr><td>0.5</td><td>5.146</td></tr><tr><td>1.0</td><td>5.146</td></tr><tr><td>2.0</td><td>5.147</td></tr><tr><td>3.0</td><td>5.146</td></tr><tr><td>4.0</td><td>5.146</td></tr><tr><td>5.0</td><td>5.146</td></tr><tr><td>6.0</td><td>5.146</td></tr><tr><td>7.0</td><td>5.147</td></tr><tr><td>8.0</td><td>5.147</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.149	0.5	5.146	1.0	5.146	2.0	5.147	3.0	5.146	4.0	5.146	5.0	5.146	6.0	5.146	7.0	5.147	8.0	5.147
Time since start [H]	Output Voltage [V]																								
0.0	5.149																								
0.5	5.146																								
1.0	5.146																								
2.0	5.147																								
3.0	5.146																								
4.0	5.146																								
5.0	5.146																								
6.0	5.146																								
7.0	5.147																								
8.0	5.147																								

# COSEL

Model	LDA10F-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	50	132	0	5.155	±7	±0.2
Minimum Voltage	-10	85	2	5.142		

# COSEL

LOVEL

Model	LDA10F-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℃ 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- 1 0℃に冷却しておき、約1時間後に恒温槽から取り出し、室温2 5℃、湿度4 0 %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]	5.144	Input Volt. : 100V, Load Current:2A	
Line Regulation [mV]	8	Input Volt. : 85~132V, Load Current:2A	
Load Regulation [mV]	10	Input Volt. : 100V, Load Current:0~2A	

<

**COSEL**

Model	LDA10F-5	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	0.11	0.14	0.17
(B) IEC60950	0.12	0.14	0.18

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.

交流入力の一相について測定し、その大きい方を漏洩電流測定値とする。

**COSEL**

Model	LDA10F-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 %



# COSEL

Model	LDA10F-5	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object			

## 1. Graph

## Remarks

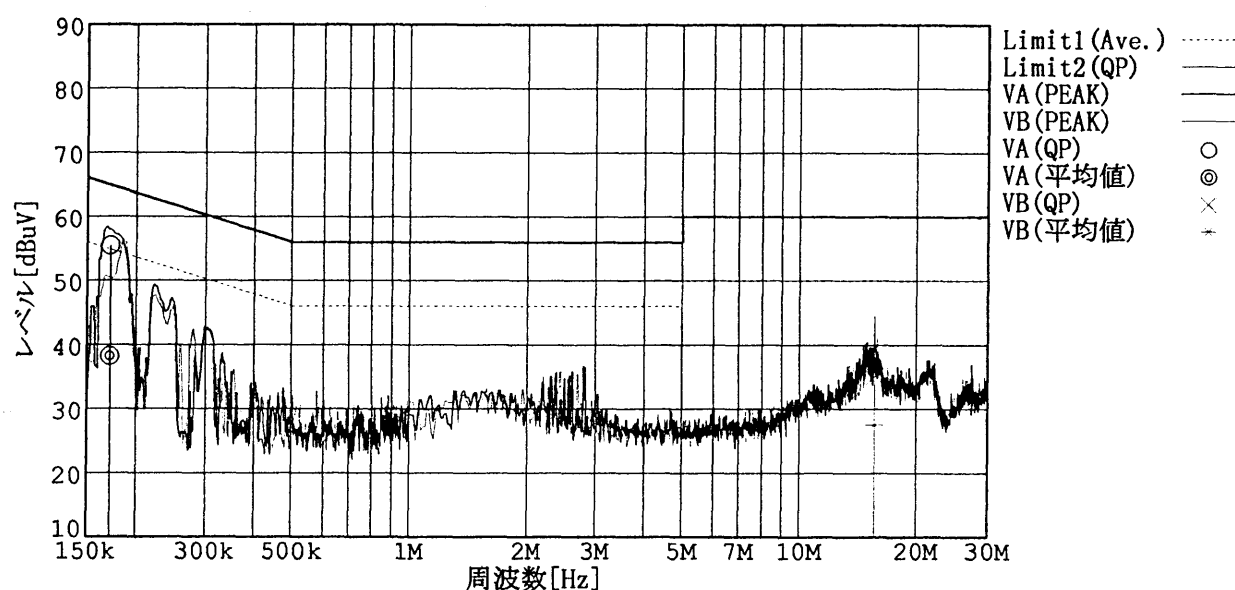
Input Volt. 100 V (VCCI Class B)

120 V (FCC Class B)

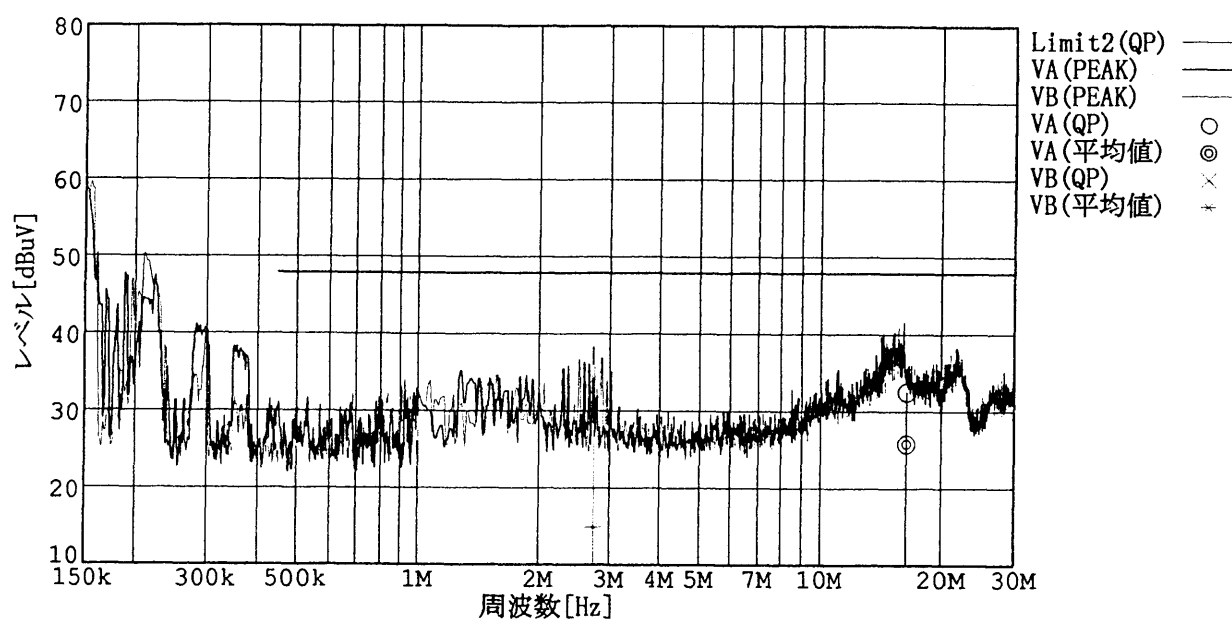
Load 100 %

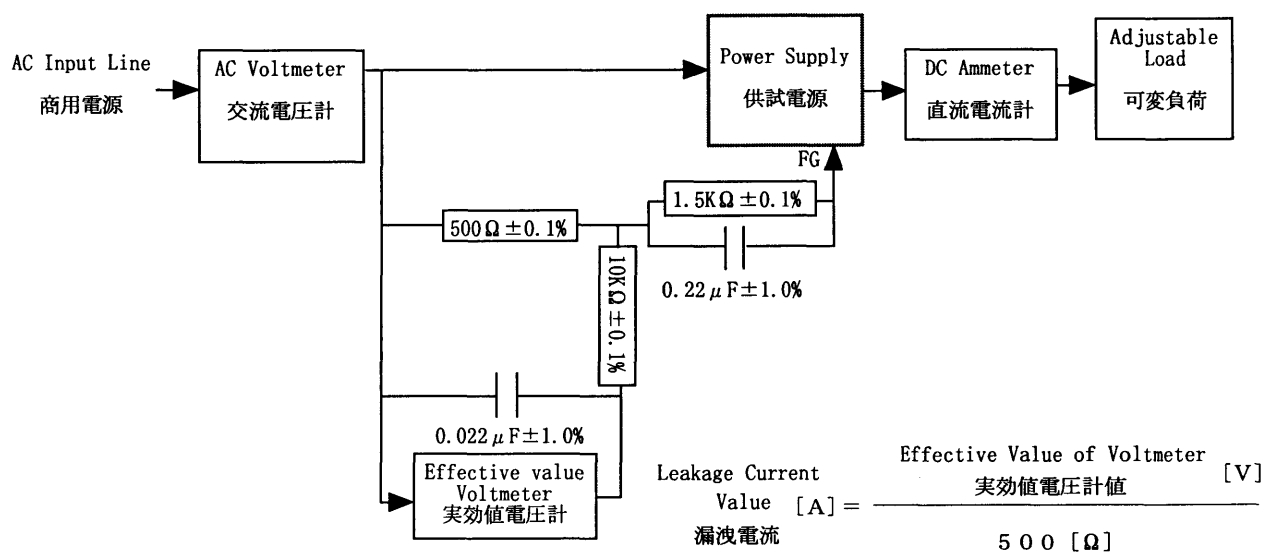
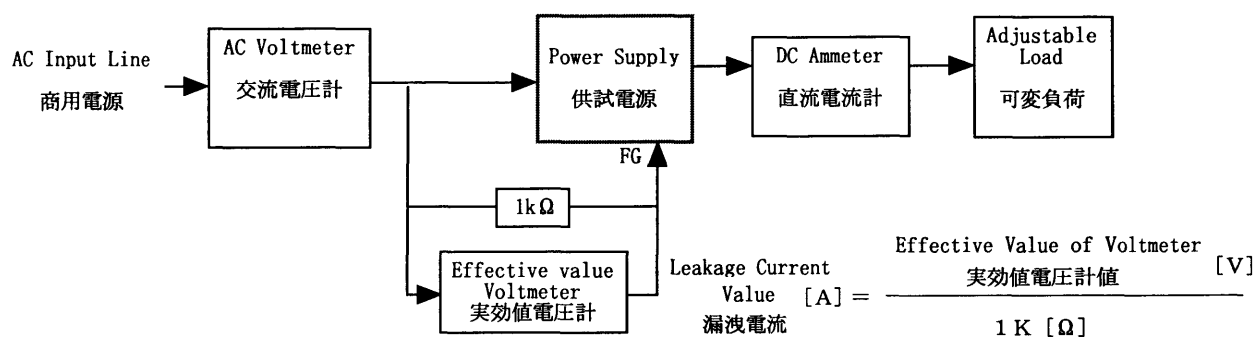
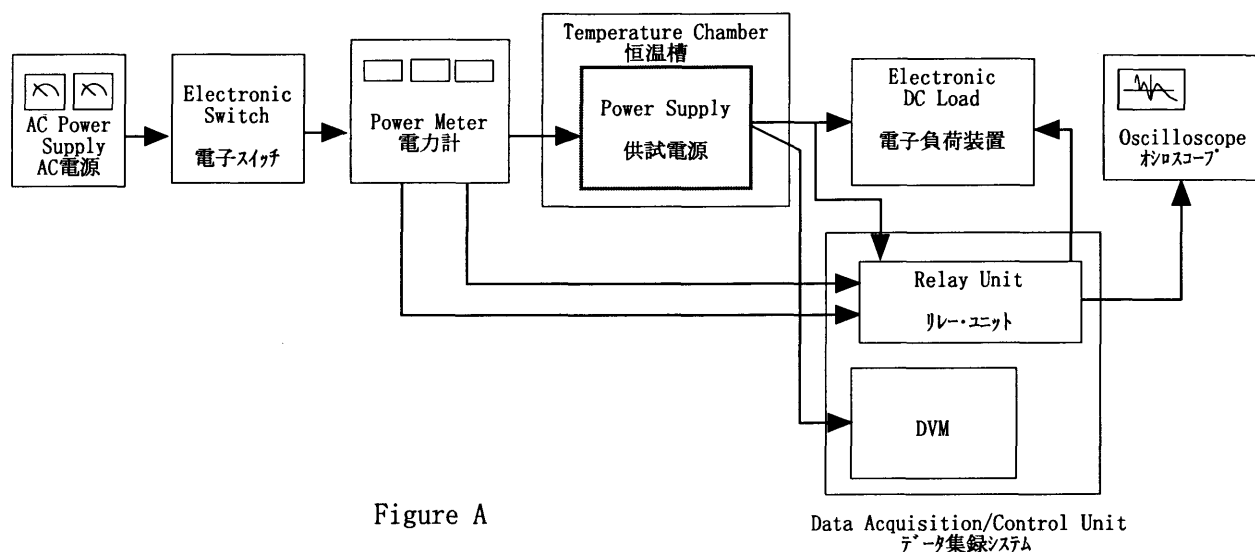
規格 1: [VCCI] Class B(平均値)

規格 2: [VCCI] Class B(QP)



規格 2: [FCC Part15] Class B





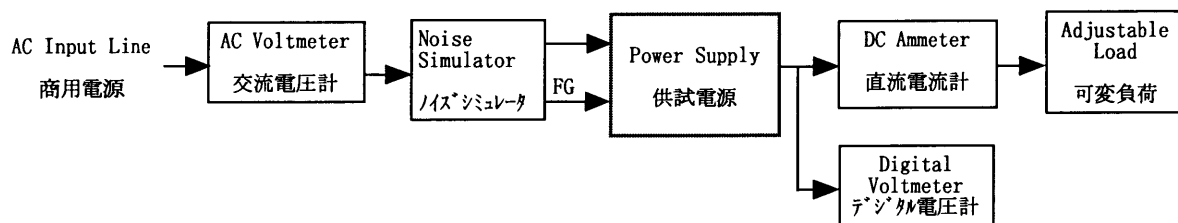


Figure C

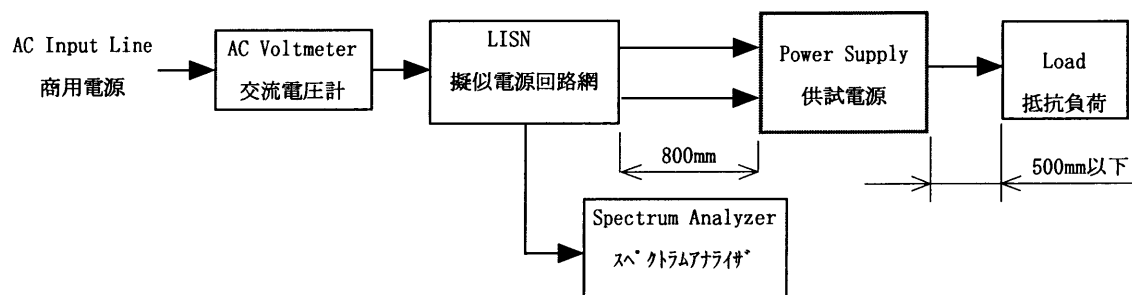


Figure D

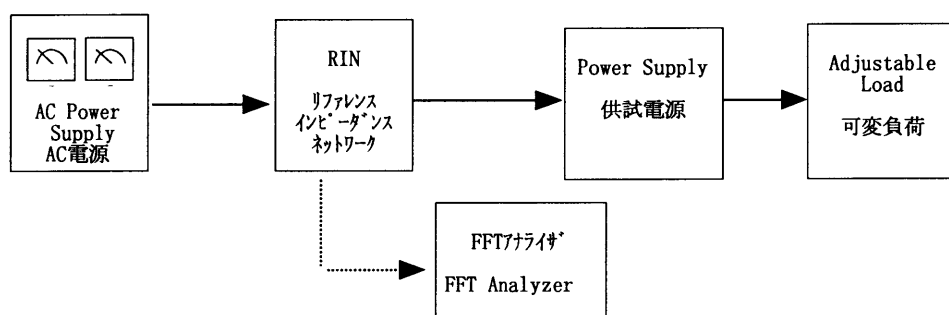


Figure E