

TEST DATA OF LFA100F-36

Regulated DC Power Supply
November 18, 2010

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COSEL CO.,LTD.

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COSEL

Model LFA100F-36

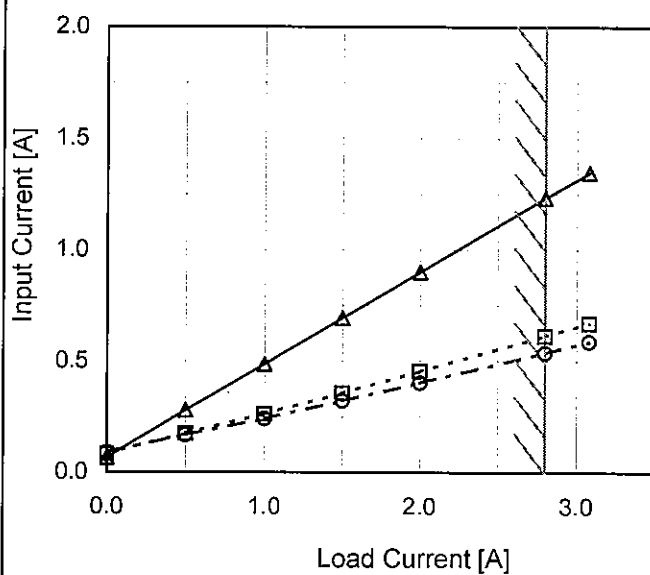
Item Input Current (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
---□--- Input Volt. 200V
- -○- - Input Volt. 230V



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

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.065	0.082	0.089
0.50	0.279	0.173	0.167
1.00	0.485	0.262	0.240
1.50	0.692	0.356	0.320
2.00	0.900	0.454	0.403
2.80	1.233	0.614	0.538
3.08	1.346	0.671	0.587
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--	-	-	-

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Model LFA100F-36

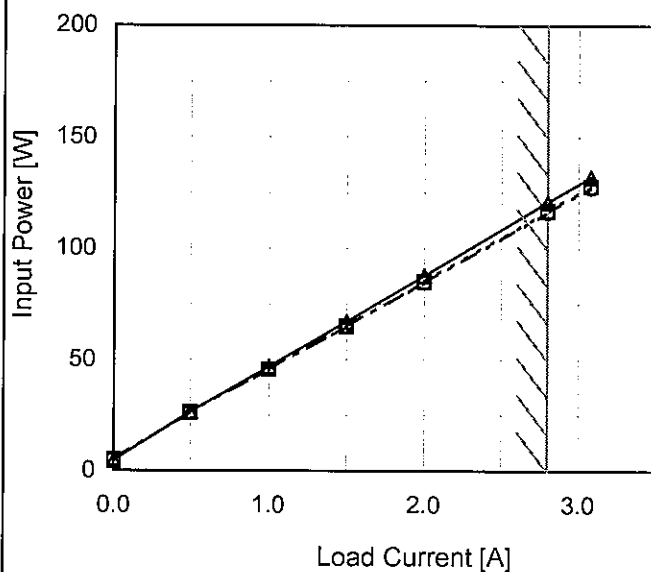
Item Input Power (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 -·-○-·- Input Volt. 230V



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

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	4.5	4.9	4.9
0.50	26.4	26.1	26.3
1.00	46.7	45.5	45.5
1.50	67.0	65.0	64.9
2.00	87.6	85.0	84.6
2.80	120.8	116.8	116.3
3.08	132.0	127.9	127.3
--	-	-	-
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--	-	-	-

COSEL

Model

LFA100F-36

Item

Efficiency (by Input Voltage)

Object

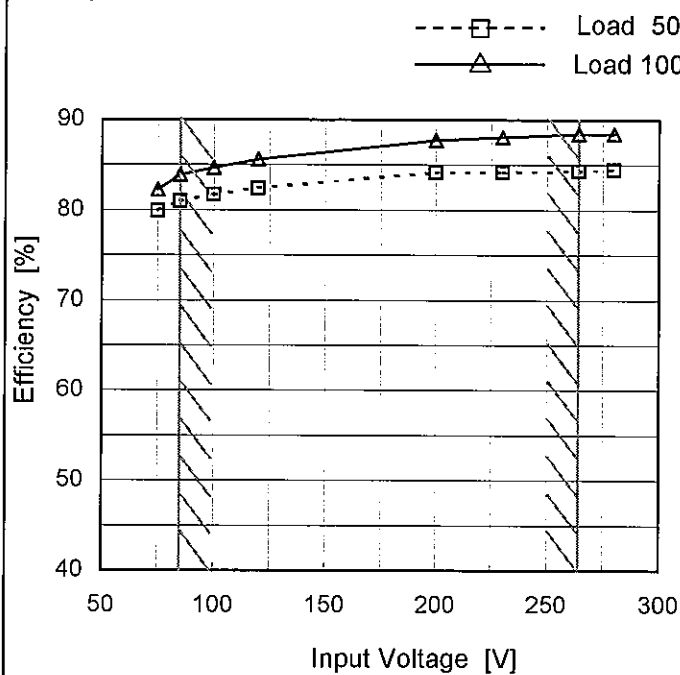
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



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

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	79.9	82.2
85	80.9	83.9
100	81.7	84.7
120	82.4	85.6
200	84.2	87.8
230	84.2	88.0
264	84.3	88.4
280	84.5	88.4
--	-	-

COSEL

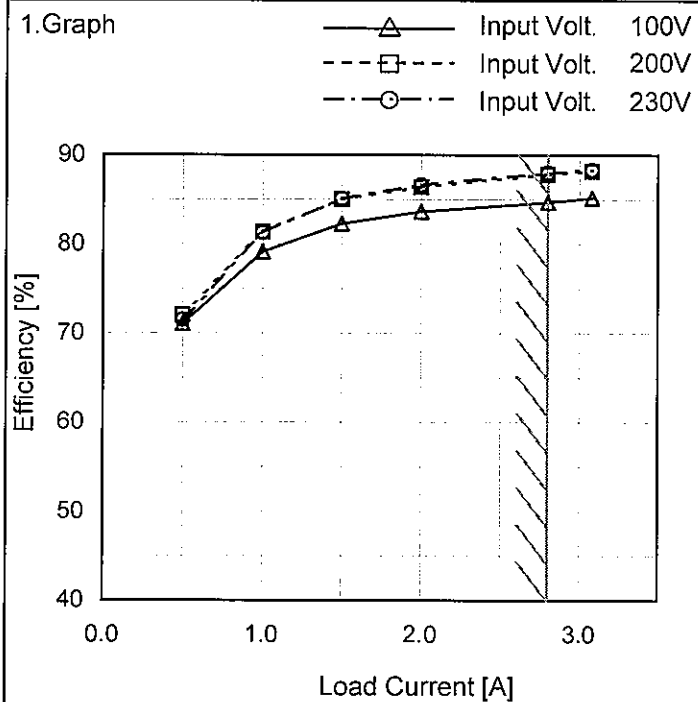
Model LFA100F-36

Item Efficiency (by Load Current)

Object

 Temperature 25°C
 Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.50	71.1	72.0	71.5
1.00	79.1	81.4	81.3
1.50	82.3	85.0	85.1
2.00	83.6	86.4	86.6
2.80	84.7	87.8	88.0
3.08	85.2	88.2	88.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model

LFA100F-36

Item

Power Factor (by Input Voltage)

Object

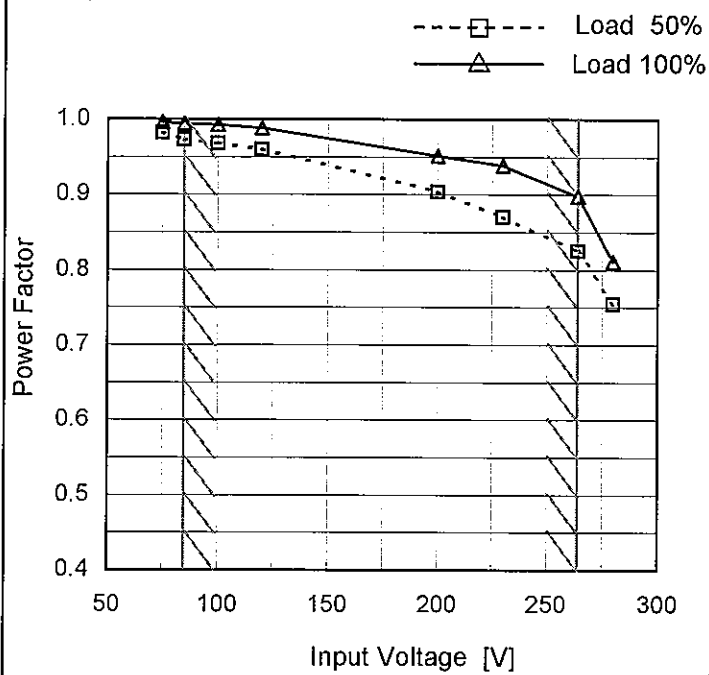
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



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

2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.982	0.996
85	0.972	0.994
100	0.968	0.992
120	0.960	0.988
200	0.904	0.951
230	0.870	0.939
264	0.825	0.897
280	0.754	0.811
--	-	-

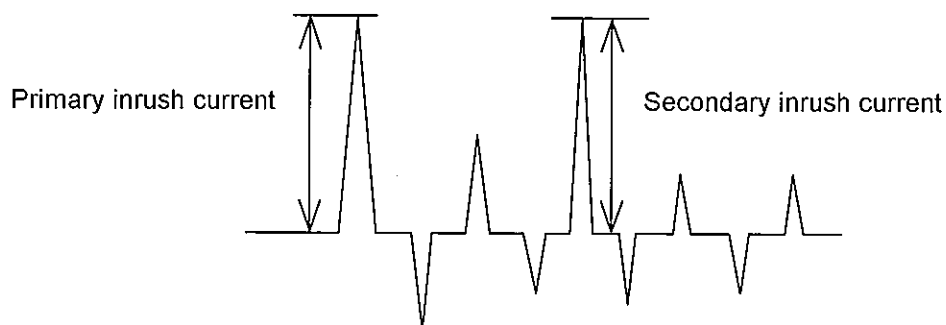
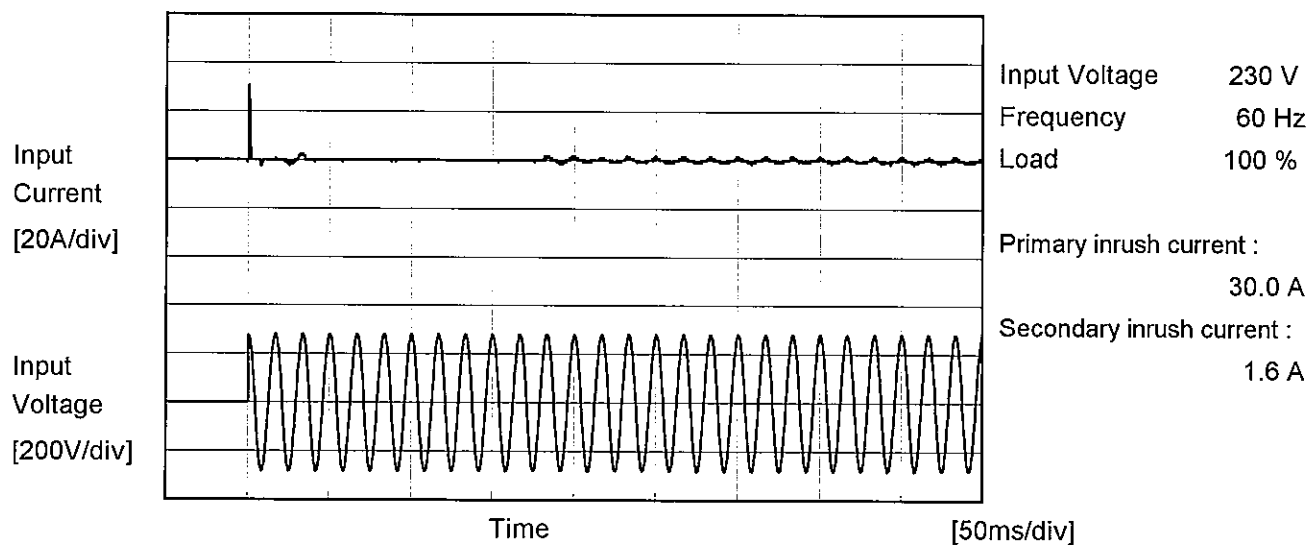
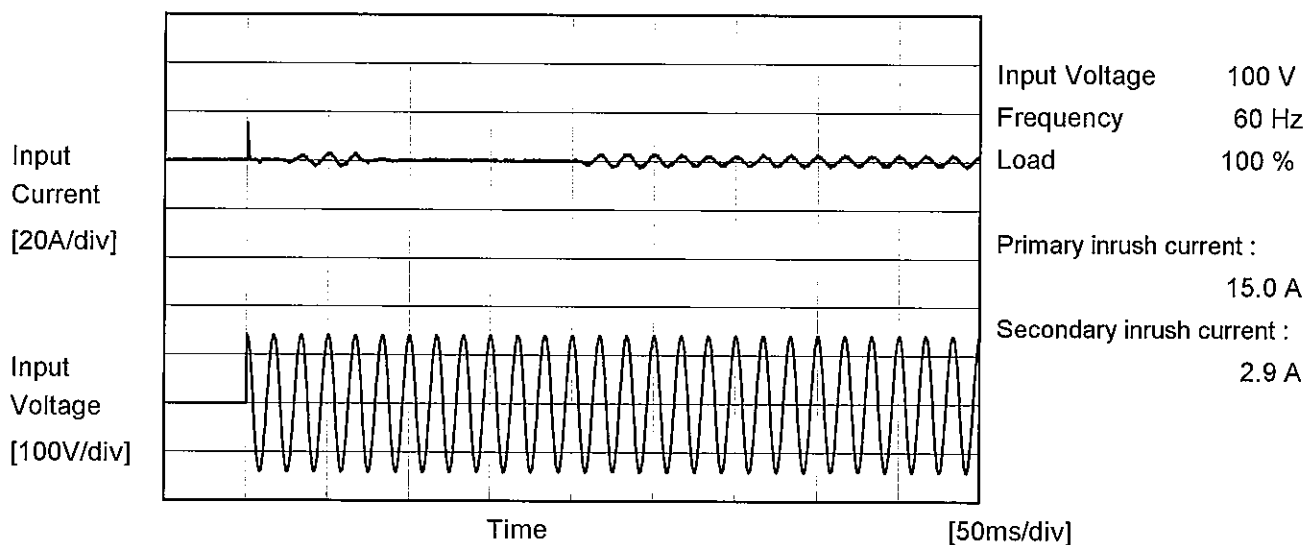
Model		LFA100F-36																																																				
Item		Power Factor (by Load Current)																																																				
Object																																																						
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div><div><div>---○---</div><div>Input Volt. 230V</div></div></div> <div>Note: Slanted line shows the range of the rated load current.</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>0.686</td><td>0.299</td><td>0.240</td></tr><tr><td>0.50</td><td>0.944</td><td>0.752</td><td>0.685</td></tr><tr><td>1.00</td><td>0.963</td><td>0.868</td><td>0.824</td></tr><tr><td>1.50</td><td>0.968</td><td>0.914</td><td>0.881</td></tr><tr><td>2.00</td><td>0.974</td><td>0.935</td><td>0.912</td></tr><tr><td>2.80</td><td>0.992</td><td>0.951</td><td>0.939</td></tr><tr><td>3.08</td><td>0.993</td><td>0.953</td><td>0.943</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]	Power Factor			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	0.686	0.299	0.240	0.50	0.944	0.752	0.685	1.00	0.963	0.868	0.824	1.50	0.968	0.914	0.881	2.00	0.974	0.935	0.912	2.80	0.992	0.951	0.939	3.08	0.993	0.953	0.943	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Power Factor																																																					
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Model	LFA100F-36	Temperature Testing Circuitry	25°C Figure A
Item	Inrush Current		
Object	_____		



		Temperature 25°C Testing Circuitry Figure B
Model	LFA100F-36	
Item	Leakage Current	
Object		

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.27	0.34	0.37	Operation
	One of phase	0.25	0.55	0.67	stand by
IEC60950-1	Both phases	0.13	0.28	0.33	Operation
	One of phase	0.25	0.52	0.64	stand by

The value for "One phase" is the reference value only.

2.Condition

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

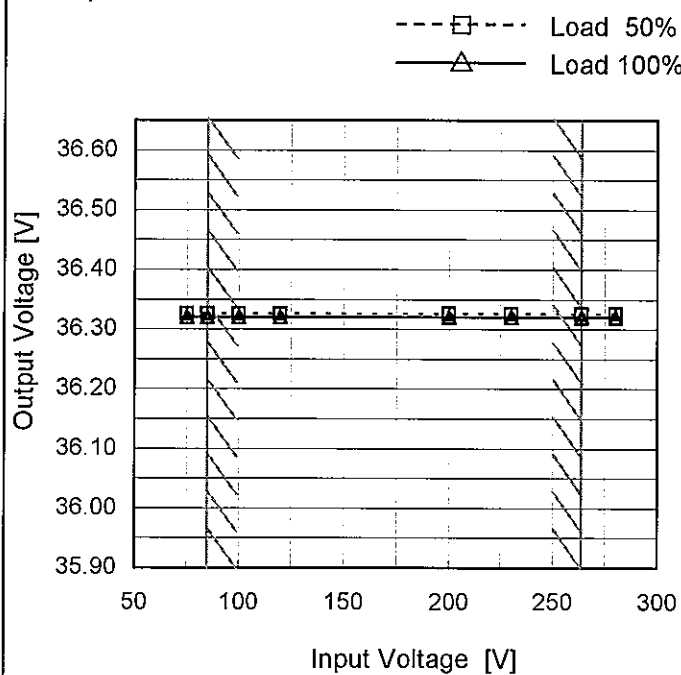
Model LFA100F-36

Item Line Regulation

Object +36V2.8A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	36.326	36.321
85	36.326	36.321
100	36.326	36.321
120	36.326	36.321
200	36.326	36.321
230	36.326	36.321
264	36.326	36.321
280	36.326	36.321
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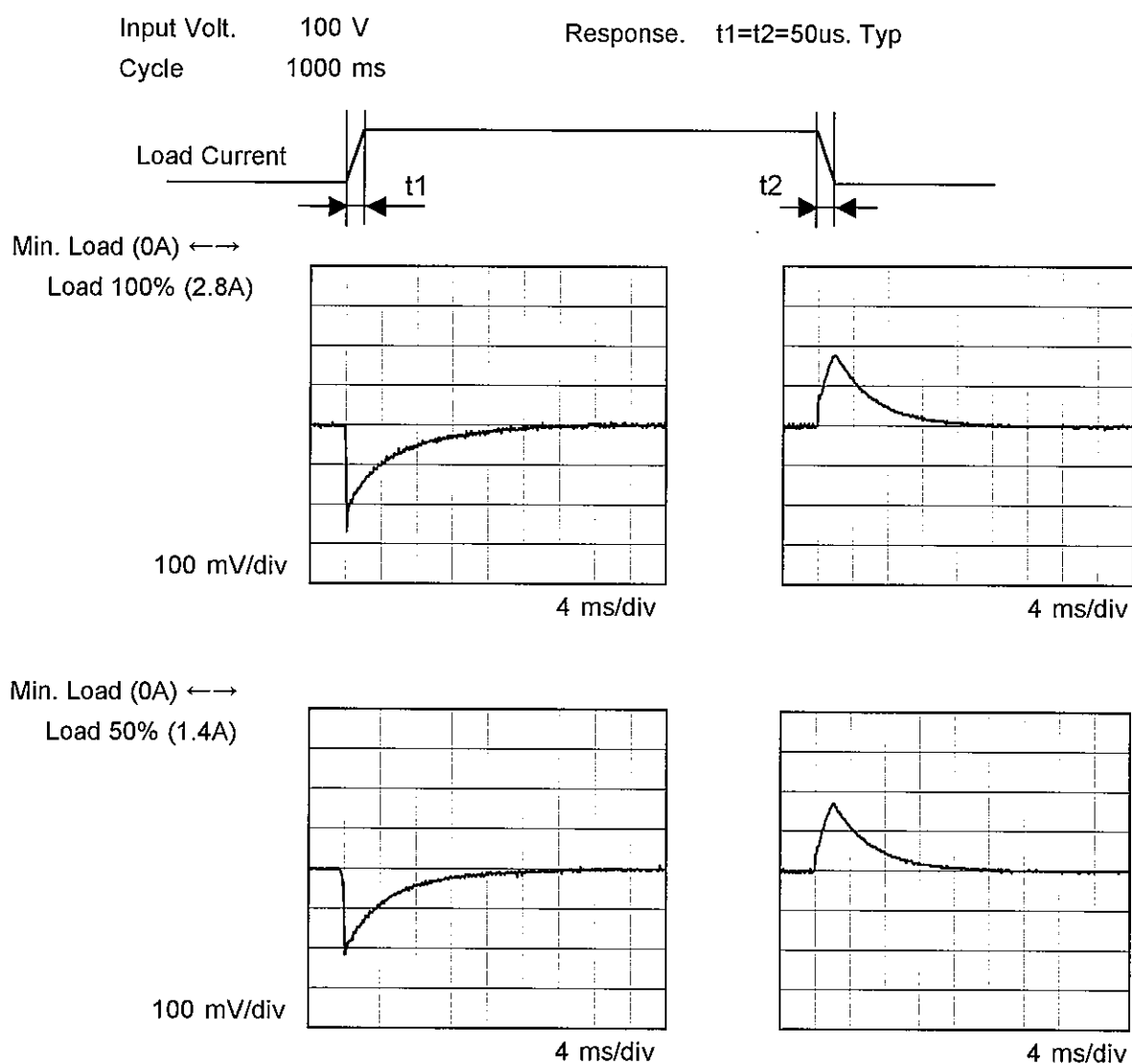
Model	LFA100F-36																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+36V2.8A	Testing Circuitry	Figure A																																																			
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<div><div>—△—</div>Input Volt. 100V</div> <div><div>---□---</div>Input Volt. 200V</div> <div><div>---○---</div>Input Volt. 230V</div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																																						
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>36.331</td><td>36.331</td><td>36.331</td></tr><tr><td>0.50</td><td>36.329</td><td>36.329</td><td>36.329</td></tr><tr><td>1.00</td><td>36.327</td><td>36.327</td><td>36.327</td></tr><tr><td>1.50</td><td>36.325</td><td>36.325</td><td>36.325</td></tr><tr><td>2.00</td><td>36.323</td><td>36.323</td><td>36.323</td></tr><tr><td>2.80</td><td>36.321</td><td>36.321</td><td>36.321</td></tr><tr><td>3.08</td><td>36.320</td><td>36.320</td><td>36.320</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]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	36.331	36.331	36.331	0.50	36.329	36.329	36.329	1.00	36.327	36.327	36.327	1.50	36.325	36.325	36.325	2.00	36.323	36.323	36.323	2.80	36.321	36.321	36.321	3.08	36.320	36.320	36.320	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
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0.50	36.329	36.329	36.329																																																			
1.00	36.327	36.327	36.327																																																			
1.50	36.325	36.325	36.325																																																			
2.00	36.323	36.323	36.323																																																			
2.80	36.321	36.321	36.321																																																			
3.08	36.320	36.320	36.320																																																			
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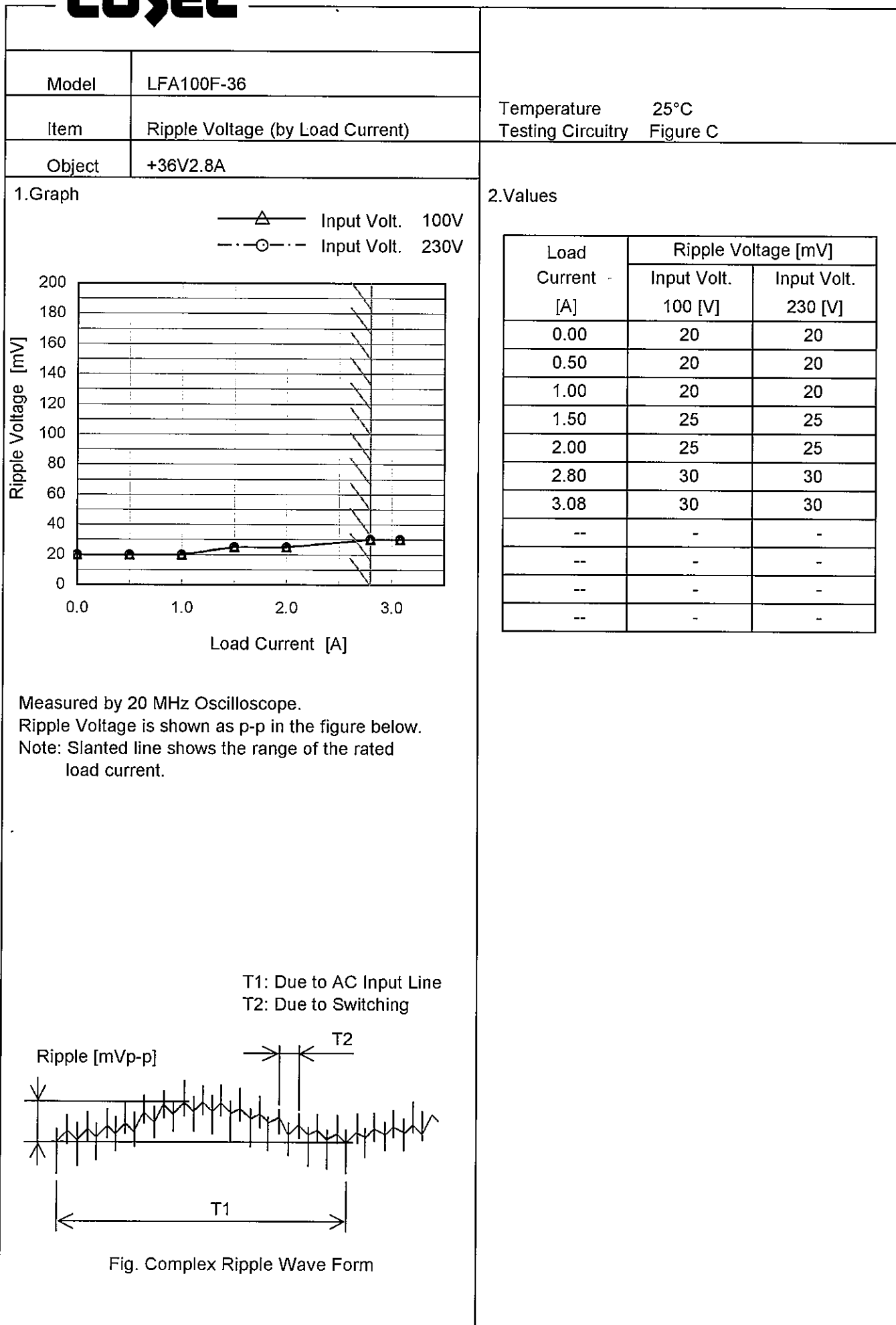
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Model	LFA100F-36	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+36V2.8A		





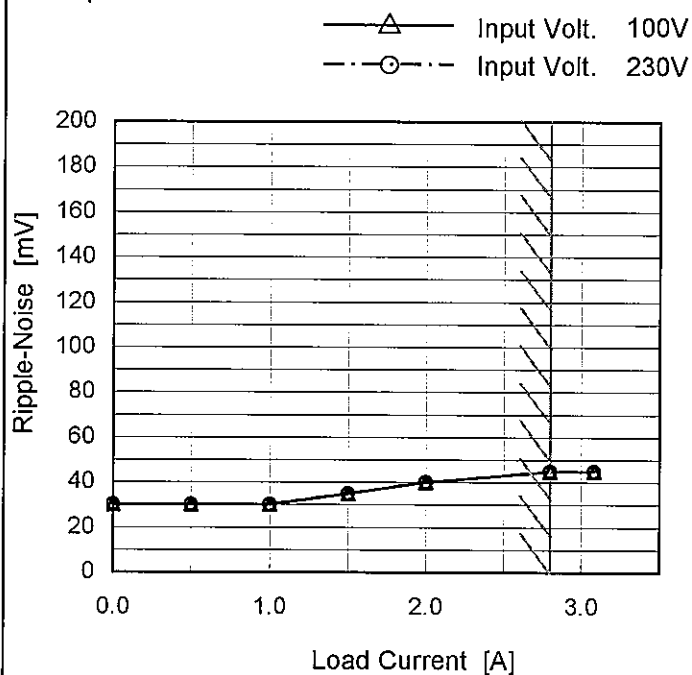
Model LFA100F-36

Item Ripple-Noise

Object +36V2.8A

Temperature 25°C
Testing Circuitry Figure C

1. Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0.00	30	30
0.50	30	30
1.00	30	30
1.50	35	35
2.00	40	40
2.80	45	45
3.08	45	45
--	-	-
--	-	-
--	-	-
--	-	-

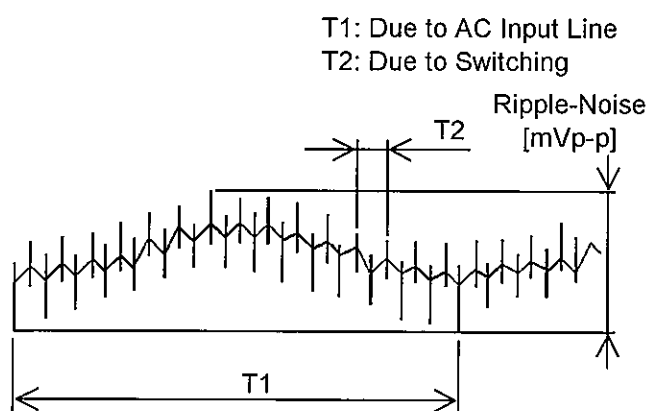


Fig. Complex Ripple Wave Form

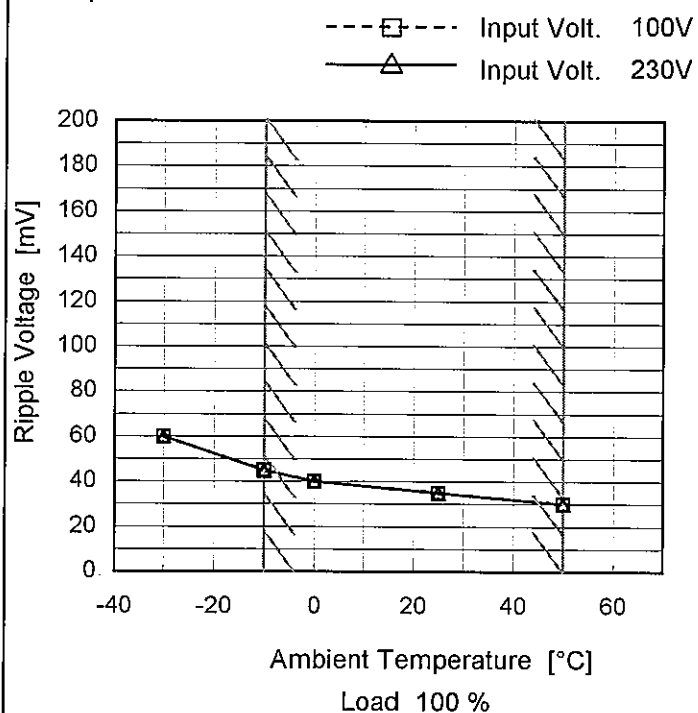
Model LFA100F-36

Item Ripple Voltage (by Ambient Temp.)

Object +36V2.8A

Testing Circuitry Figure C

1. Graph



Measured by 20 MHz Oscilloscope.

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

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	60	60
-10	45	45
0	40	40
25	35	35
50	30	30
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Model LFA100F-36

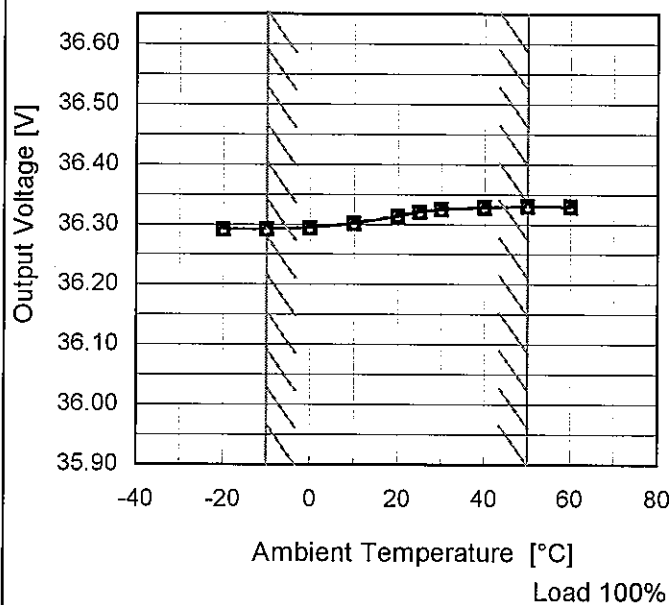
Item Ambient Temperature Drift

Object +36V2.8A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 ---○--- Input Volt. 230V



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

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	36.292	36.292	36.292
-10	36.292	36.292	36.292
0	36.294	36.295	36.294
10	36.302	36.302	36.302
20	36.314	36.314	36.314
25	36.321	36.321	36.321
30	36.325	36.325	36.325
40	36.329	36.329	36.329
50	36.330	36.331	36.331
60	36.330	36.330	36.330
--	-	-	-



		Testing Circuitry Figure A
Model	LFA100F-36	
Item	Output Voltage Accuracy	
Object	+36V2.8A	

1. 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 - 264V

Load Current : 0 - 2.8A

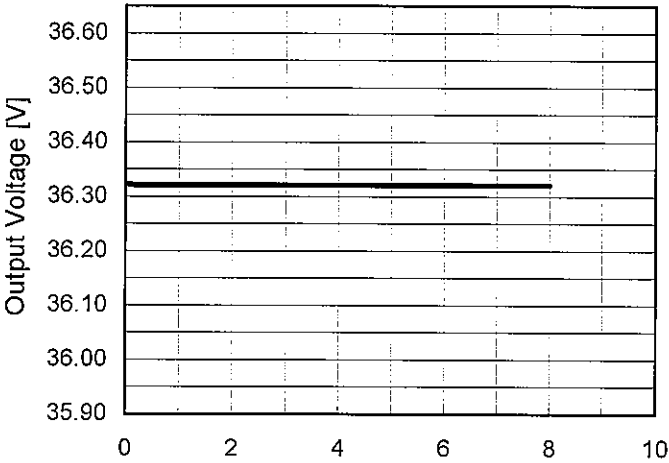
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	85	0	36.337	±23	±0.1
Minimum Voltage	-10	85	2.8	36.292		

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LFA100F-36																									
Model	LFA100F-36	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+36V2.8A																								
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 100V</p><p>Load 100%</p></div>		<table><thead><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr></thead><tbody><tr><td>0.0</td><td>36.324</td></tr><tr><td>0.5</td><td>36.321</td></tr><tr><td>1.0</td><td>36.321</td></tr><tr><td>2.0</td><td>36.321</td></tr><tr><td>3.0</td><td>36.321</td></tr><tr><td>4.0</td><td>36.321</td></tr><tr><td>5.0</td><td>36.321</td></tr><tr><td>6.0</td><td>36.321</td></tr><tr><td>7.0</td><td>36.321</td></tr><tr><td>8.0</td><td>36.321</td></tr></tbody></table>		Time since start [H]	Output Voltage [V]	0.0	36.324	0.5	36.321	1.0	36.321	2.0	36.321	3.0	36.321	4.0	36.321	5.0	36.321	6.0	36.321	7.0	36.321	8.0	36.321
Time since start [H]	Output Voltage [V]																								
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7.0	36.321																								
8.0	36.321																								
* The characteristic of AC230V is equal.																									

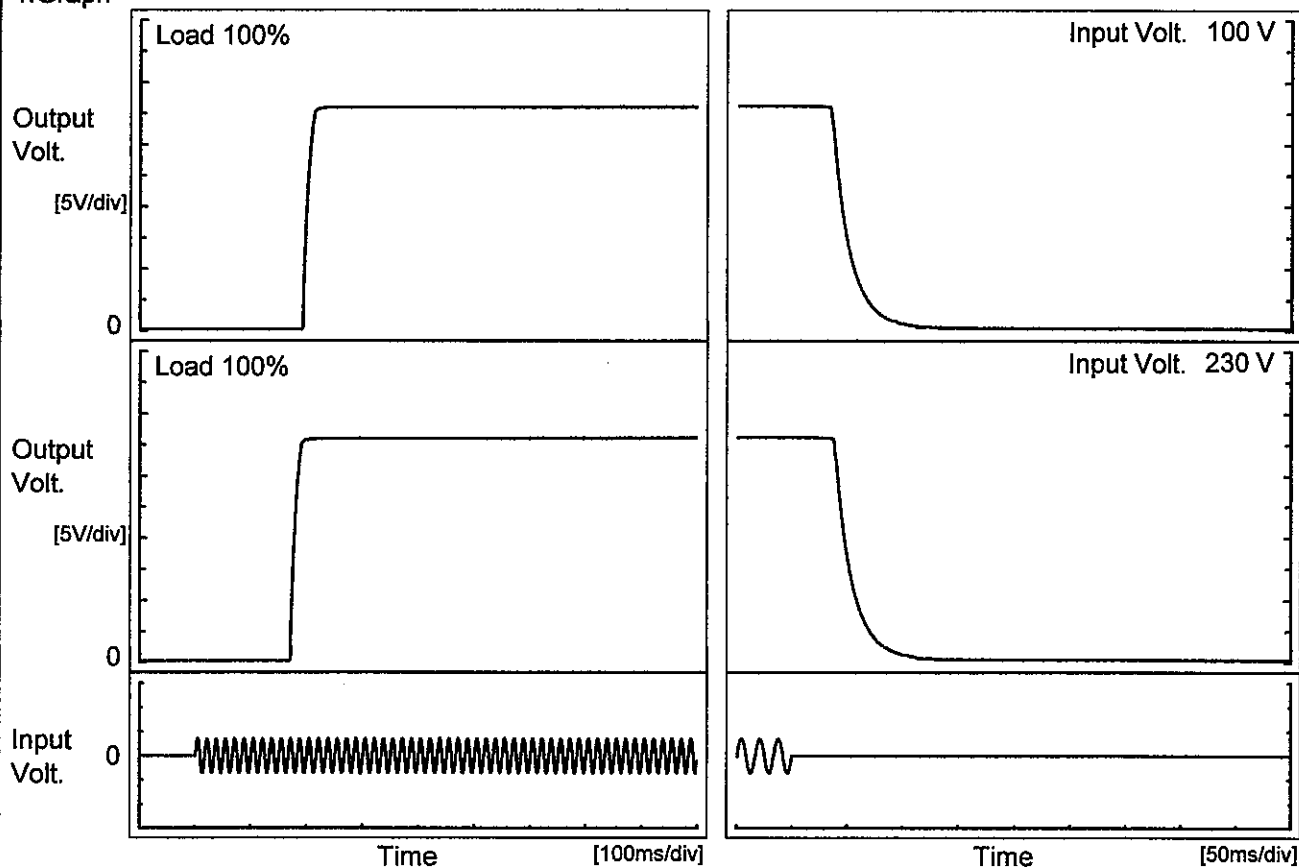
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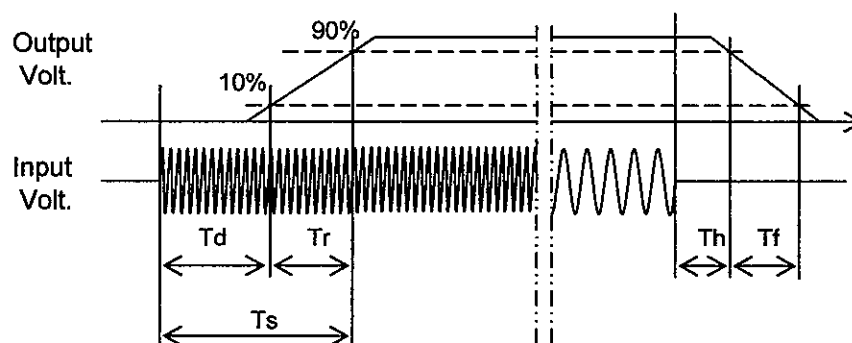
Model	LFA100F-36	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+36V2.8A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		193.5	15.5	209.0	36.8	36.5
230 V		171.5	16.0	187.5	40.0	36.5



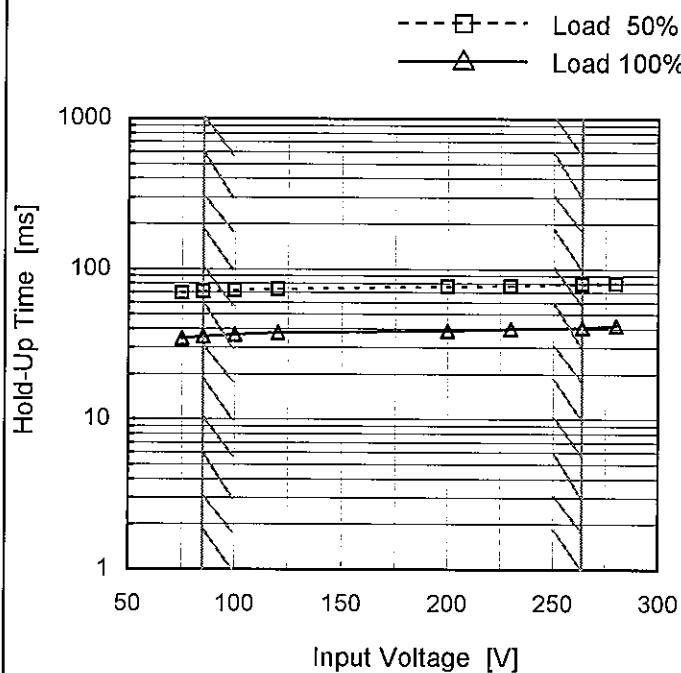
Model LFA100F-36

Item Hold-Up Time

Object +36V2.8A

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 input voltage.

2. Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	69	34
85	71	36
100	72	37
120	74	38
200	76	39
230	77	40
264	80	41
280	80	42
--	-	-

Model		LFA100F-36																																																				
Item		Instantaneous Interruption Compensation																																																				
Object		+36V2.8A																																																				
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div><div><div>---○---</div><div>Input Volt. 230V</div></div></div> <div>Instantaneous Compensation Time [ms]</div> <div>Load Current [A]</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.50</td><td>170</td><td>167</td><td>158</td></tr><tr><td>1.00</td><td>84</td><td>86</td><td>87</td></tr><tr><td>1.50</td><td>55</td><td>56</td><td>57</td></tr><tr><td>2.00</td><td>46</td><td>48</td><td>49</td></tr><tr><td>2.80</td><td>37</td><td>39</td><td>40</td></tr><tr><td>3.08</td><td>37</td><td>39</td><td>40</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. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	0.50	170	167	158	1.00	84	86	87	1.50	55	56	57	2.00	46	48	49	2.80	37	39	40	3.08	37	39	40	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
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Note: Slanted line shows the range of the rated load current.																																																						

Model

LFA100F-36

Item

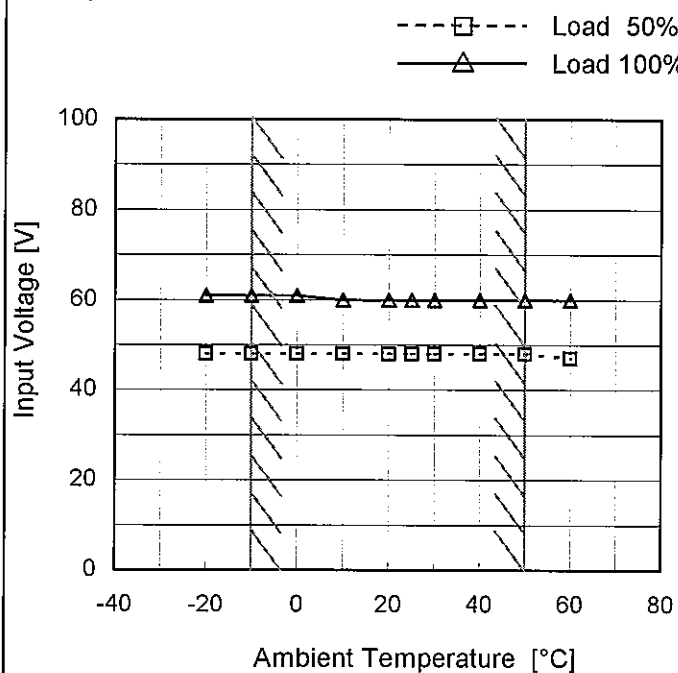
Minimum Input Voltage
for Regulated Output Voltage

Object

+36V2.8A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	48	61
-10	48	61
0	48	61
10	48	60
20	48	60
25	48	60
30	48	60
40	48	60
50	48	60
60	47	60
--	-	-

Model	LFA100F-36																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+36V2.8A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div>— Input Volt. 100V</div><div>— Input Volt. 230V</div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>36.0</td><td>3.63</td><td>3.65</td></tr><tr><td>34.2</td><td>3.65</td><td>3.66</td></tr><tr><td>32.4</td><td>3.63</td><td>3.65</td></tr><tr><td>28.8</td><td>3.73</td><td>3.74</td></tr><tr><td>25.2</td><td>3.79</td><td>3.80</td></tr><tr><td>21.6</td><td>3.85</td><td>3.86</td></tr><tr><td>18.0</td><td>3.85</td><td>3.87</td></tr><tr><td>14.4</td><td>3.93</td><td>4.00</td></tr><tr><td>10.8</td><td>4.01</td><td>4.00</td></tr><tr><td>7.2</td><td>3.93</td><td>3.96</td></tr><tr><td>3.6</td><td>3.90</td><td>3.95</td></tr><tr><td>0.0</td><td>5.34</td><td>5.66</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 230[V]	36.0	3.63	3.65	34.2	3.65	3.66	32.4	3.63	3.65	28.8	3.73	3.74	25.2	3.79	3.80	21.6	3.85	3.86	18.0	3.85	3.87	14.4	3.93	4.00	10.8	4.01	4.00	7.2	3.93	3.96	3.6	3.90	3.95	0.0	5.34	5.66
Output Voltage [V]	Load Current [A]																																											
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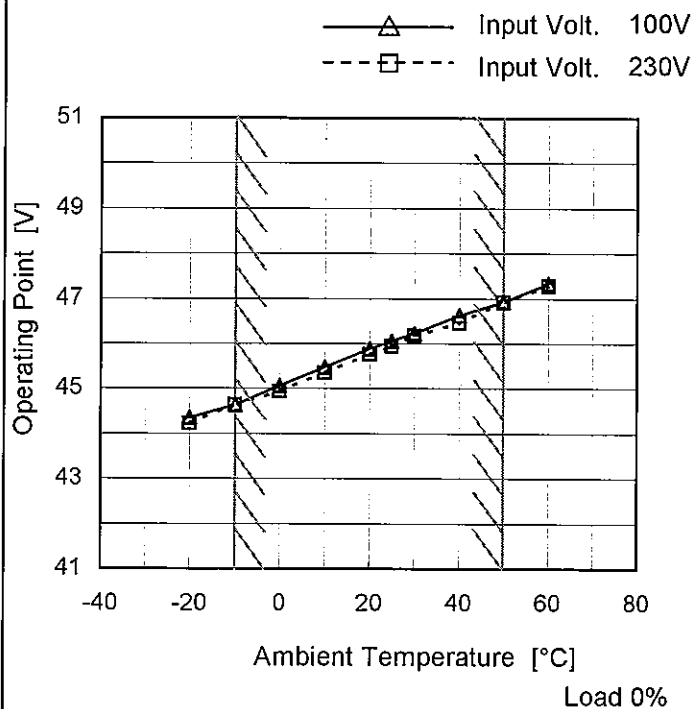
Model LFA100F-36

Item Overvoltage Protection

Object +36V2.8A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-20	44.35	44.23
-10	44.64	44.64
0	45.06	44.93
10	45.47	45.35
20	45.88	45.76
25	46.05	45.94
30	46.23	46.17
40	46.63	46.46
50	46.93	46.93
60	47.34	47.28
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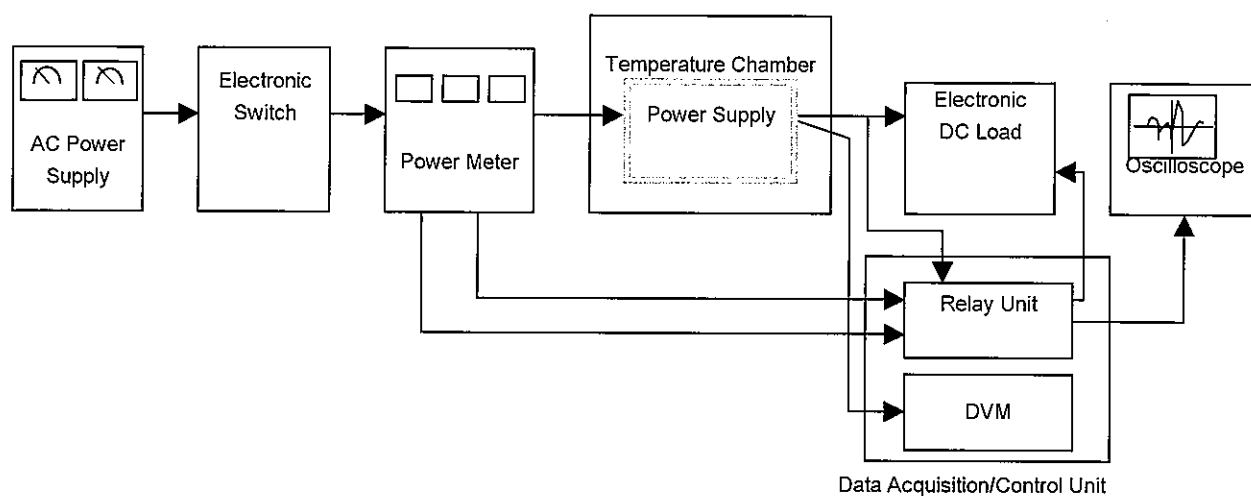


Figure A

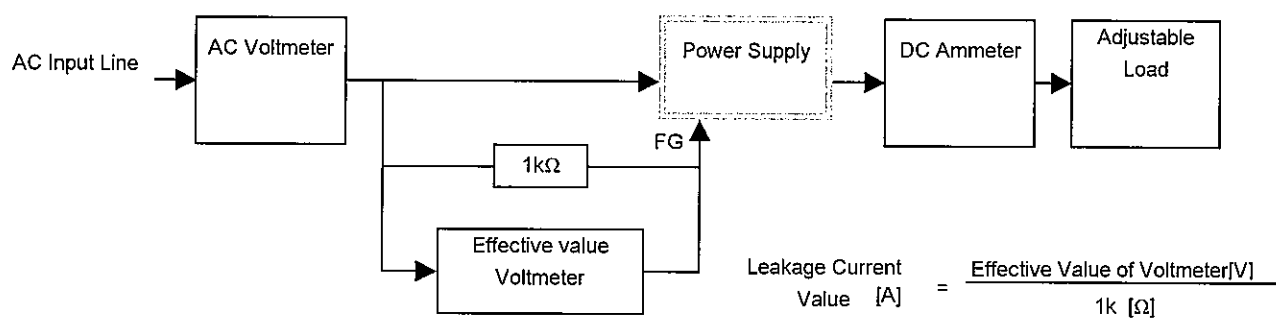


Figure B (DEN-AN)

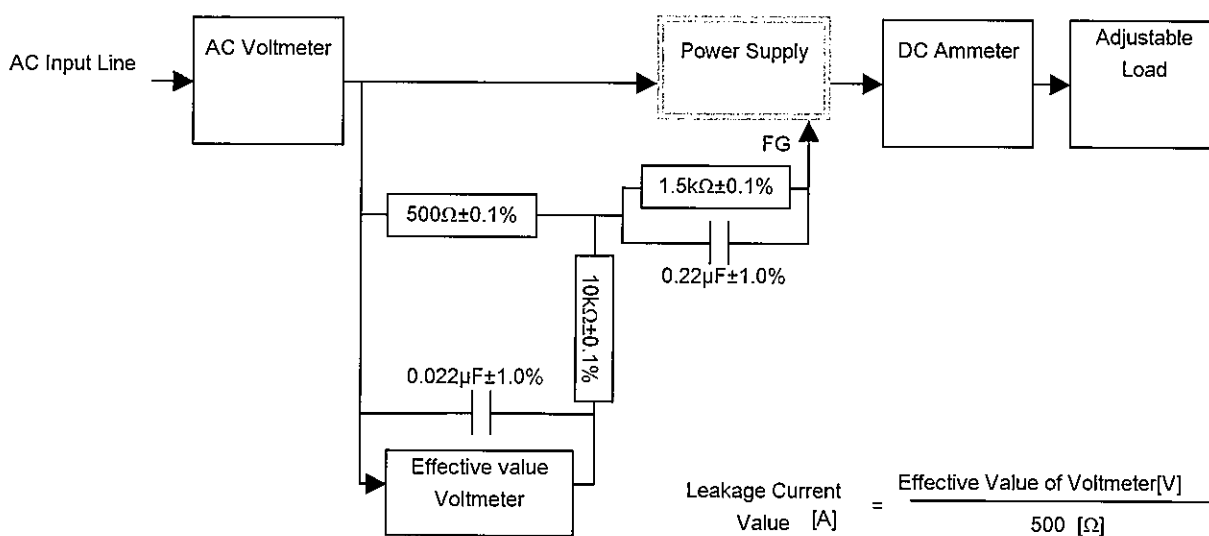


Figure B (IEC60950-1)

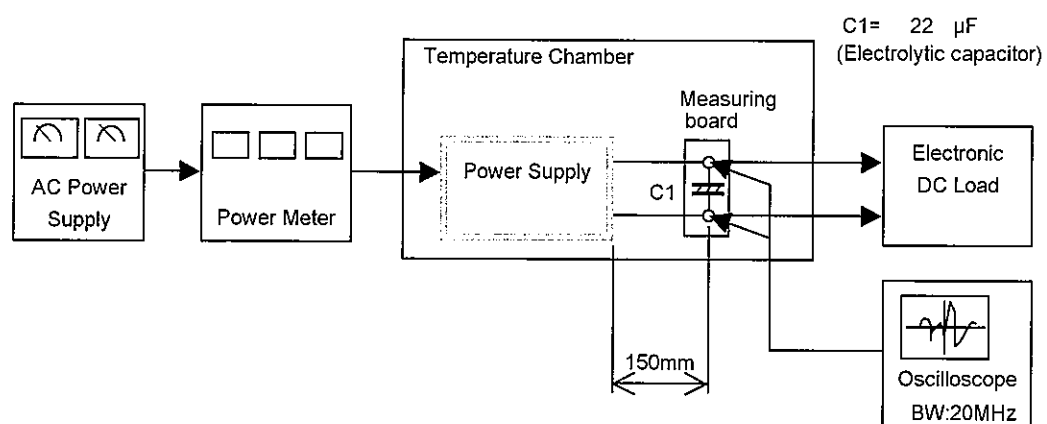


Figure C