



TEST DATA OF LFP300F-36-TY

Regulated DC Power Supply
November 8, 2011

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COSEL CO.,LTD.

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(Final Page 25)

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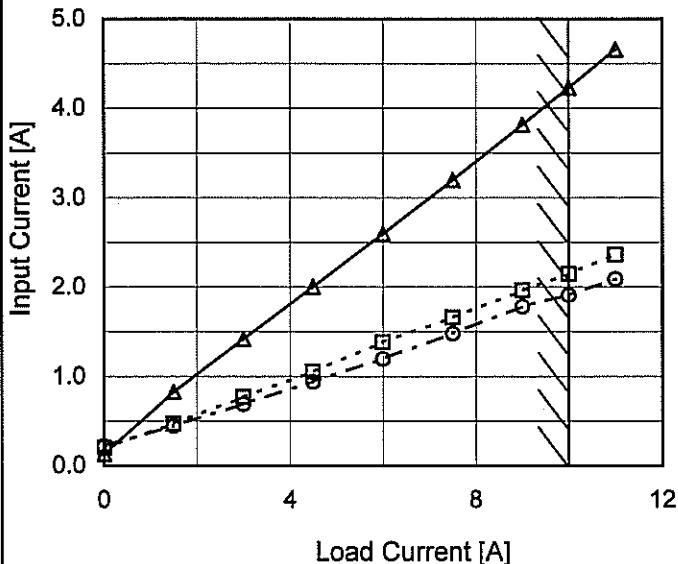
Model LFP300F-36-TY

Item Input Current (by Load Current)

Object _____

1. Graph

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



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

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

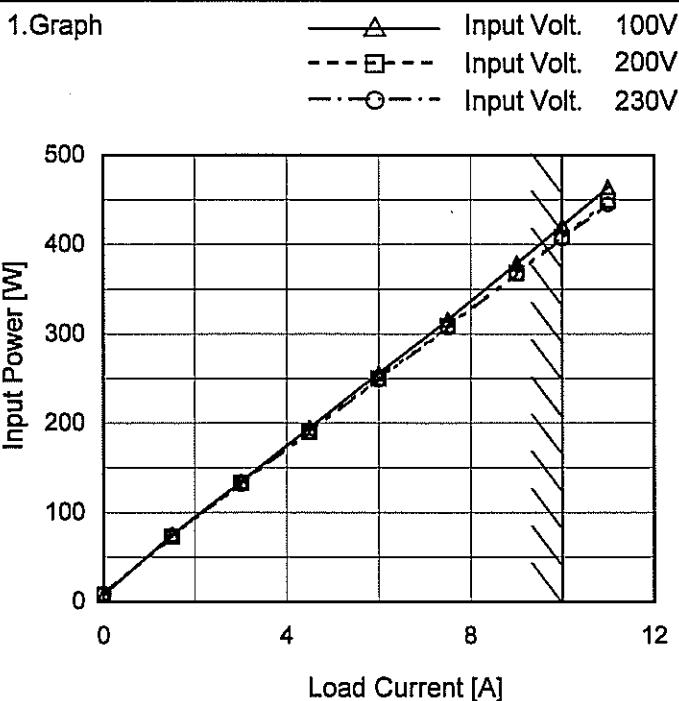
Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.132	0.200	0.223
1.5	0.826	0.472	0.446
3.0	1.420	0.770	0.691
4.5	2.003	1.054	0.940
6.0	2.596	1.384	1.197
7.5	3.202	1.658	1.480
9.0	3.820	1.963	1.782
10.0	4.230	2.148	1.910
11.0	4.660	2.364	2.090
--	-	-	-
--	-	-	-

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Model LFP300F-36-TY

Item Input Power (by Load Current)

Object _____

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	7.8	8.0	9.0
1.5	75.0	73.0	74.0
3.0	134.7	133.0	132.0
4.5	194.7	190.0	190.0
6.0	255.6	250.0	249.0
7.5	315.9	309.0	307.0
9.0	379.0	368.0	367.0
10.0	421.0	408.0	407.0
11.0	464.0	449.0	445.0
--	-	-	-
--	-	-	-

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

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Model	LFP300F-36-TY																																	
Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
Object																																		
1. Graph																																		
<p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line with squares), Load 100% (solid line with triangles)</p>																																		
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																		
2. Values																																		
<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>75</td> <td>83.1</td> <td>82.3</td> </tr> <tr> <td>85</td> <td>83.9</td> <td>84.0</td> </tr> <tr> <td>100</td> <td>84.4</td> <td>86.0</td> </tr> <tr> <td>120</td> <td>85.0</td> <td>87.2</td> </tr> <tr> <td>200</td> <td>86.2</td> <td>88.9</td> </tr> <tr> <td>230</td> <td>86.6</td> <td>89.4</td> </tr> <tr> <td>264</td> <td>87.0</td> <td>89.6</td> </tr> <tr> <td>280</td> <td>87.0</td> <td>89.8</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	83.1	82.3	85	83.9	84.0	100	84.4	86.0	120	85.0	87.2	200	86.2	88.9	230	86.6	89.4	264	87.0	89.6	280	87.0	89.8	--	-	-
Input Voltage [V]	Efficiency [%]																																	
	Load 50%	Load 100%																																
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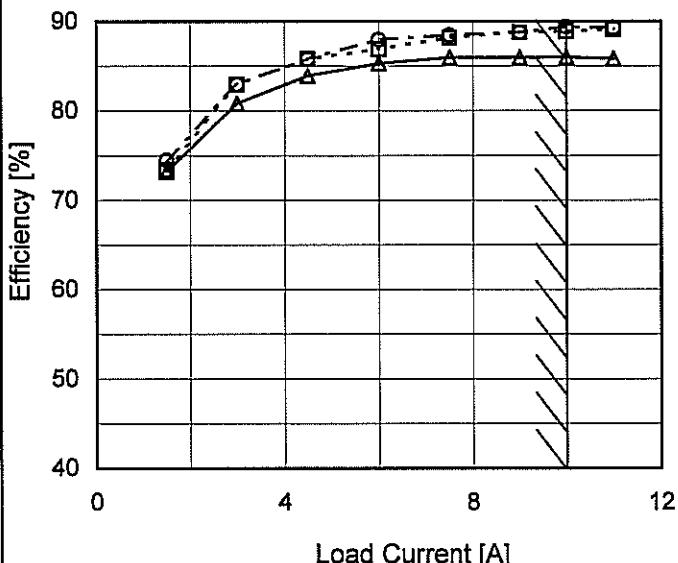
Model LFP300F-36-TY

Item Efficiency (by Load Current)

Object _____

1. Graph

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



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

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.5	73.2	73.5	74.5
3.0	80.8	82.9	82.9
4.5	83.9	85.8	85.8
6.0	85.3	86.9	88.0
7.5	86.0	88.2	88.5
9.0	86.0	88.8	88.8
10.0	86.0	88.9	89.4
11.0	85.8	89.1	89.3
--	-	-	-
--	-	-	-

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Model	LFP300F-36-TY																																	
Item	Power Factor (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
Object	—	—																																
1. Graph																																		
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Input Voltage [V]	Power Factor																																	
	Load 50%	Load 100%																																
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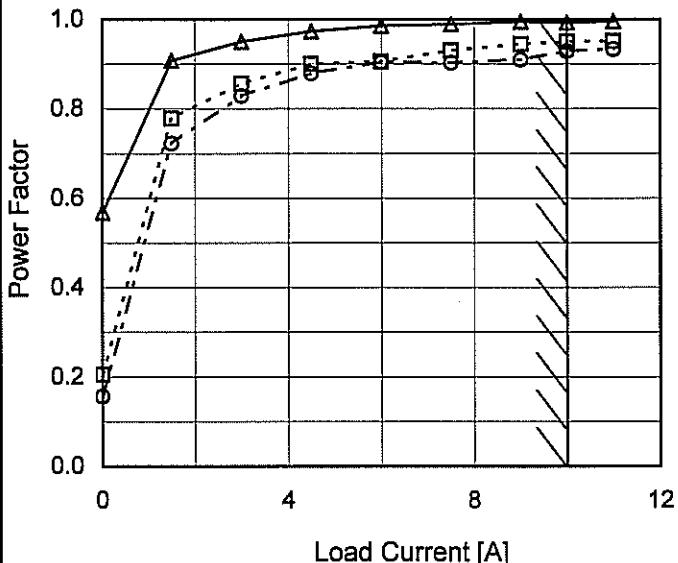
Model LFP300F-36-TY

Item Power Factor (by Load Current)

Object _____

1. Graph

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



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

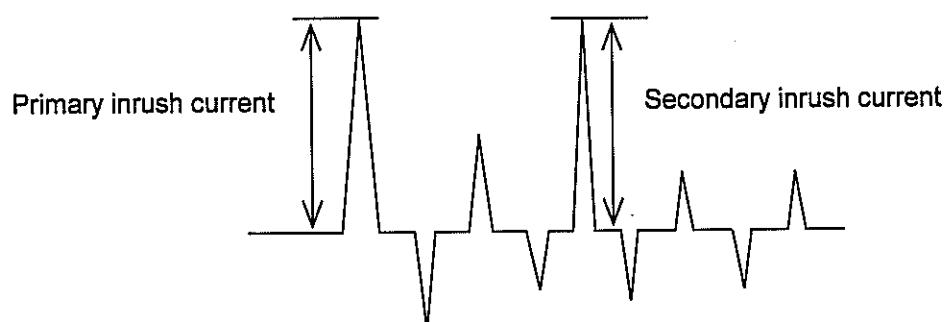
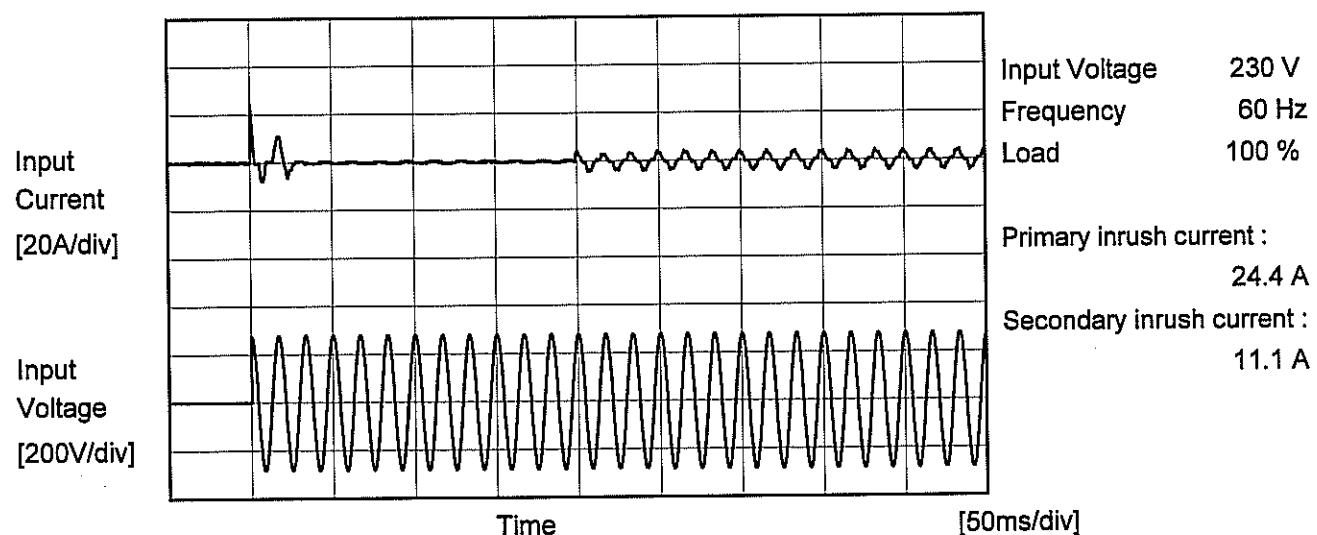
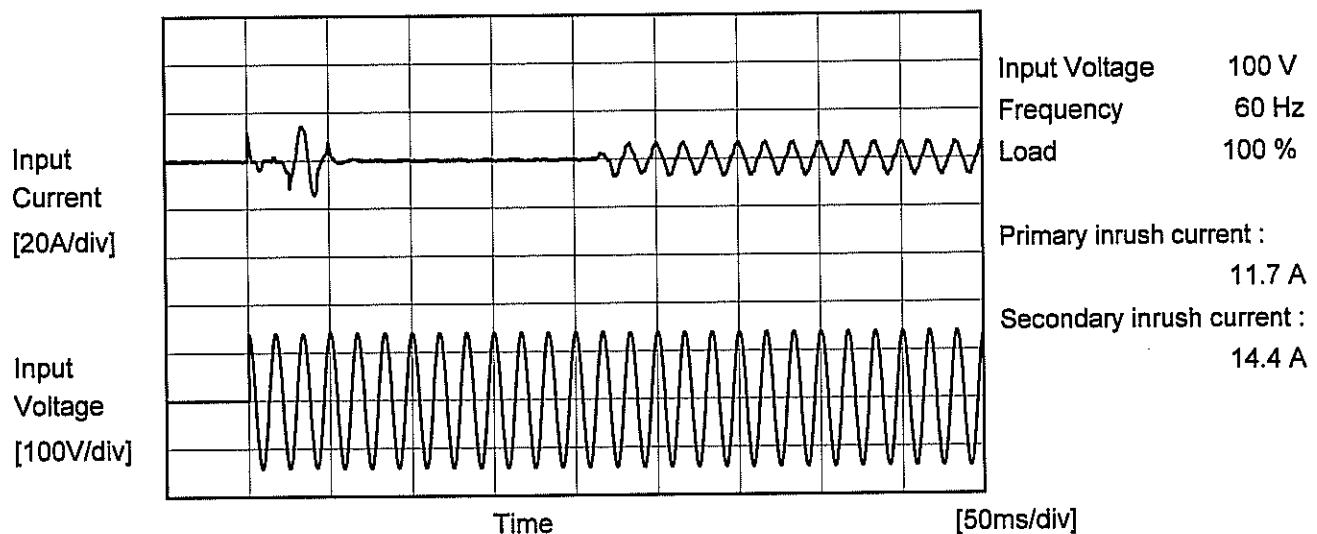
 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.568	0.205	0.157
1.5	0.908	0.779	0.723
3.0	0.950	0.856	0.829
4.5	0.973	0.900	0.880
6.0	0.986	0.906	0.905
7.5	0.989	0.931	0.903
9.0	0.995	0.945	0.910
10.0	0.993	0.950	0.929
11.0	0.996	0.951	0.933
--	-	-	-
--	-	-	-

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Model	LFP300F-36-TY	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





Model	LFP300F-36-TY	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.33	0.53	0.60	Operation
	One of phases	0.34	0.70	0.83	Stand by
IEC60950-1	Both phases	0.24	0.50	0.57	Operation
	One of phases	0.32	0.68	0.74	Stand by

The value for "One of phases" 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.

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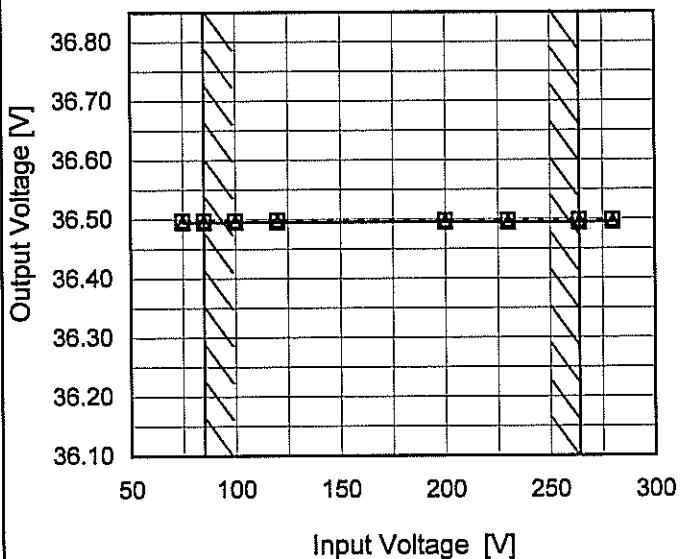
Model LFP300F-36-TY

Item Line Regulation

Object +36V10A

1. Graph

---□--- Load 50%
 —△— Load 100%



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

Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	36.498	36.495
85	36.498	36.496
100	36.498	36.496
120	36.498	36.495
200	36.498	36.495
230	36.498	36.495
264	36.498	36.495
280	36.498	36.495
--	-	-

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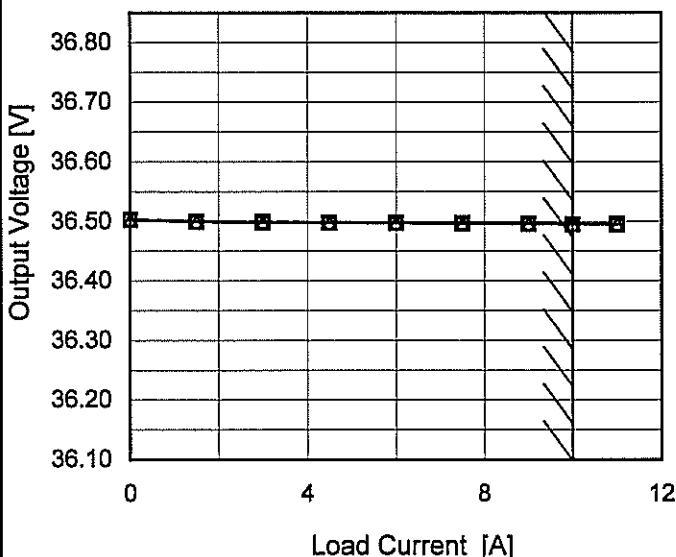
Model LFP300F-36-TY

Item Load Regulation

Object +36V10A

1.Graph

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

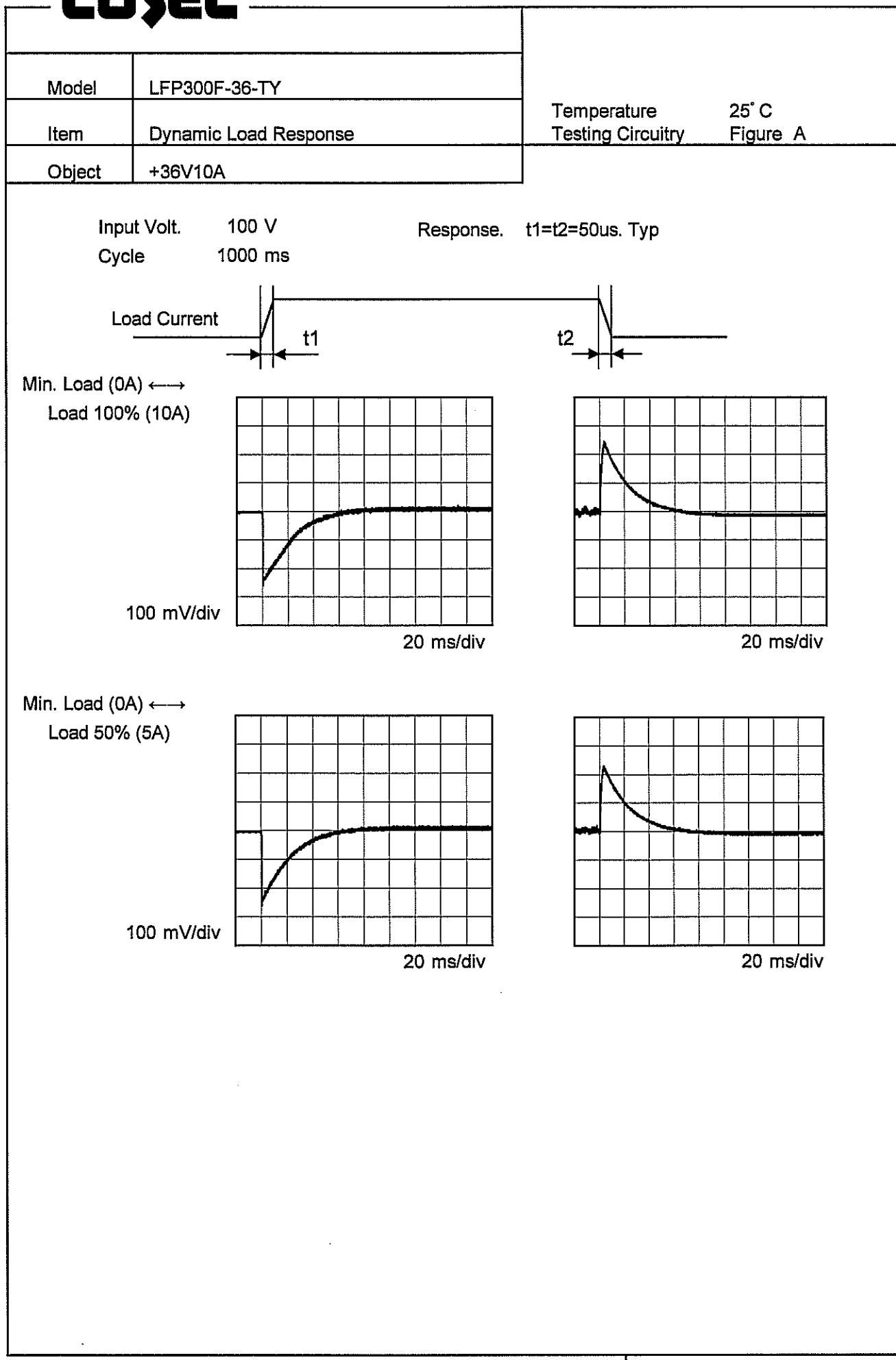


Note: Slanted line shows the range of the rated load current.

 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	36.503	36.503	36.503
1.5	36.500	36.500	36.500
3.0	36.499	36.499	36.499
4.5	36.498	36.498	36.498
6.0	36.497	36.498	36.498
7.5	36.497	36.497	36.497
9.0	36.496	36.497	36.497
10.0	36.496	36.495	36.495
11.0	36.495	36.495	36.496
--	-	-	-
--	-	-	-

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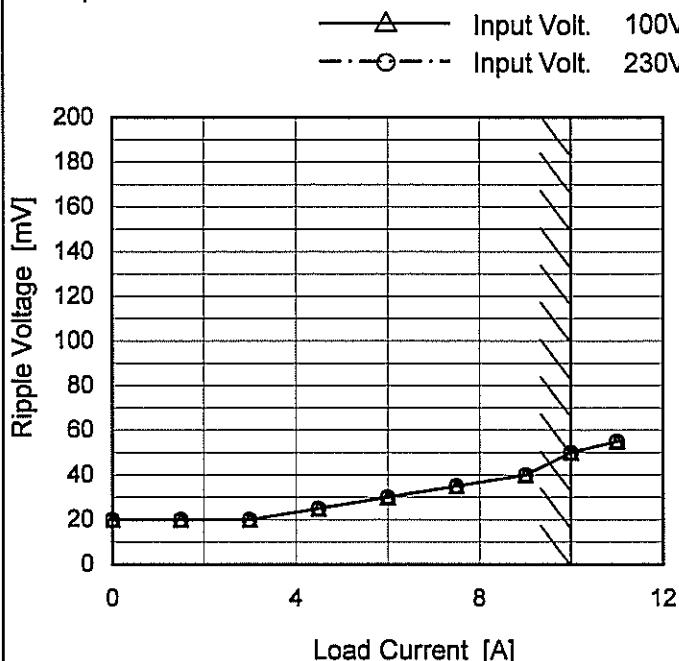
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Model LFP300F-36-TY

Item Ripple Voltage (by Load Current)

Object +36V10A

1. Graph



Measured by 20 MHz Oscilloscope.

Ripple Voltage is shown as p-p in the figure below.

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

Temperature 25°C
Testing Circuitry Figure C

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0.0	20	20
1.5	20	20
3.0	20	20
4.5	25	25
6.0	30	30
7.5	35	35
9.0	40	40
10.0	50	50
11.0	55	55
--	-	-
--	-	-

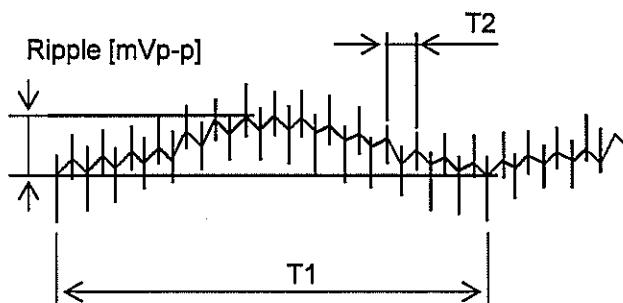
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

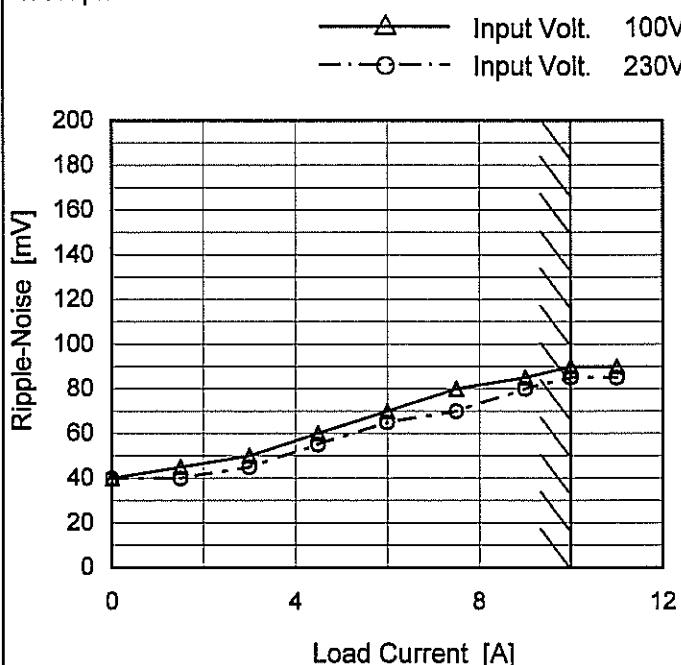
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Model LFP300F-36-TY

Item Ripple-Noise

Object +36V10A

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.

Temperature 25°C
Testing Circuitry Figure C

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0.0	40	40
1.5	45	40
3.0	50	45
4.5	60	55
6.0	70	65
7.5	80	70
9.0	85	80
10.0	90	85
11.0	90	85
--	-	-
--	-	-

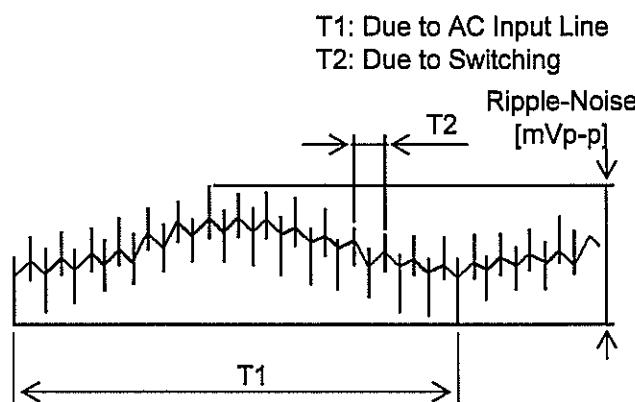
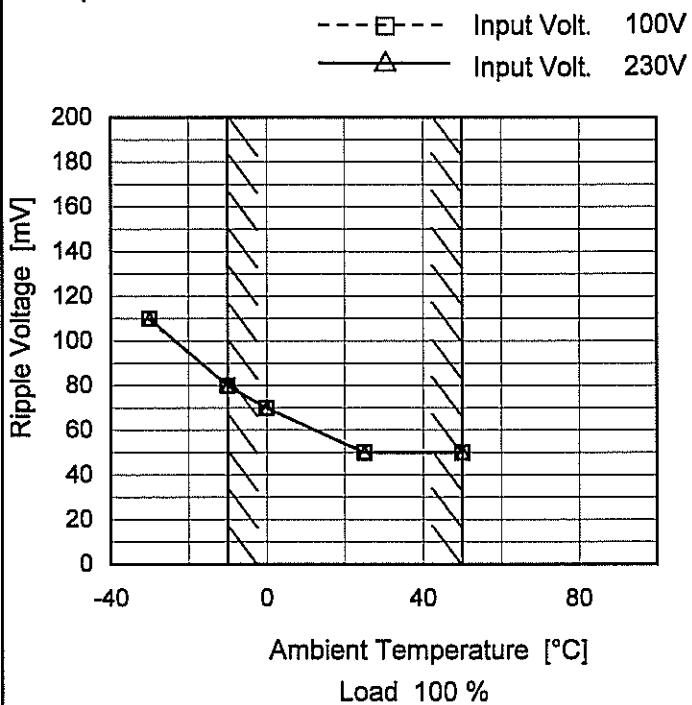


Fig. Complex Ripple Wave Form

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Model	LFP300F-36-TY
Item	Ripple Voltage (by Ambient Temp.)
Object	+36V10A

1. Graph



Measured by MHz Oscilloscope.

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

Testing Circuitry Figure C

2. Values

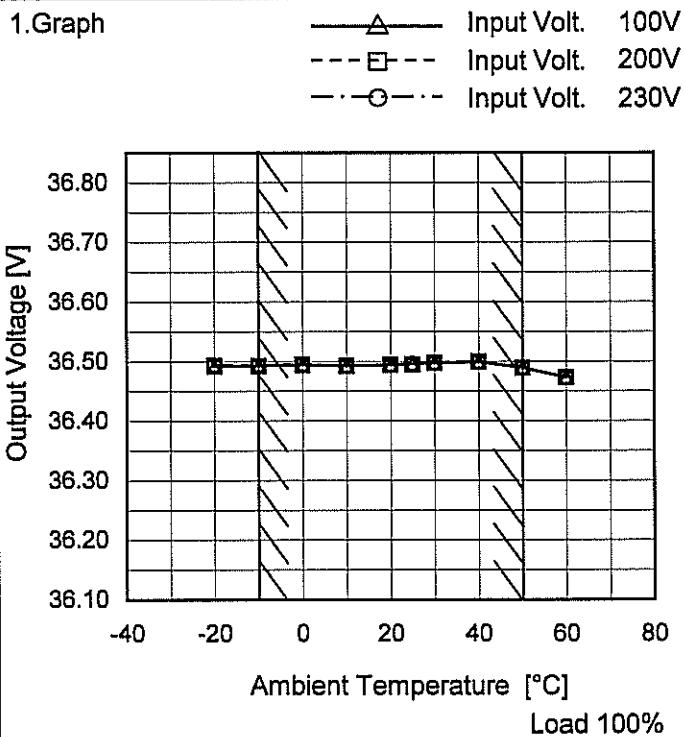
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	110	110
-10	80	80
0	70	70
25	50	50
50	50	50
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model LFP300F-36-TY

Item Ambient Temperature Drift

Object +36V10A



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	36.492	36.493	36.494
-10	36.493	36.493	36.493
0	36.495	36.495	36.495
10	36.493	36.493	36.493
20	36.494	36.495	36.494
25	36.496	36.495	36.496
30	36.498	36.498	36.498
40	36.499	36.500	36.499
50	36.489	36.489	36.489
60	36.473	36.473	36.473
--	-	-	-

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



Model	LFP300F-36-TY
Item	Output Voltage Accuracy
Object	+36V10A

Testing Circuitry Figure A

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 - 10A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	40	264	0	36.502	±9	±0.1
Minimum Voltage	50	200	10	36.484		

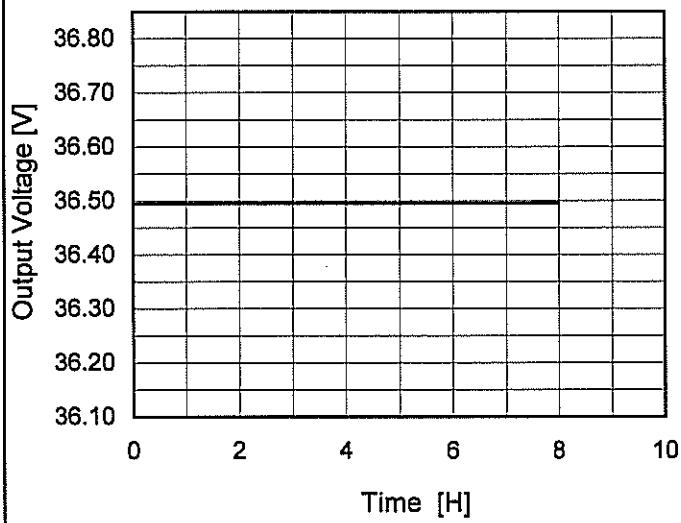
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Model	LFP300F-36-TY
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Item	Time Lapse Drift
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Object	+36V10A
--------	---------

1. Graph



Temperature 25°C
Testing Circuitry Figure A

2. Values

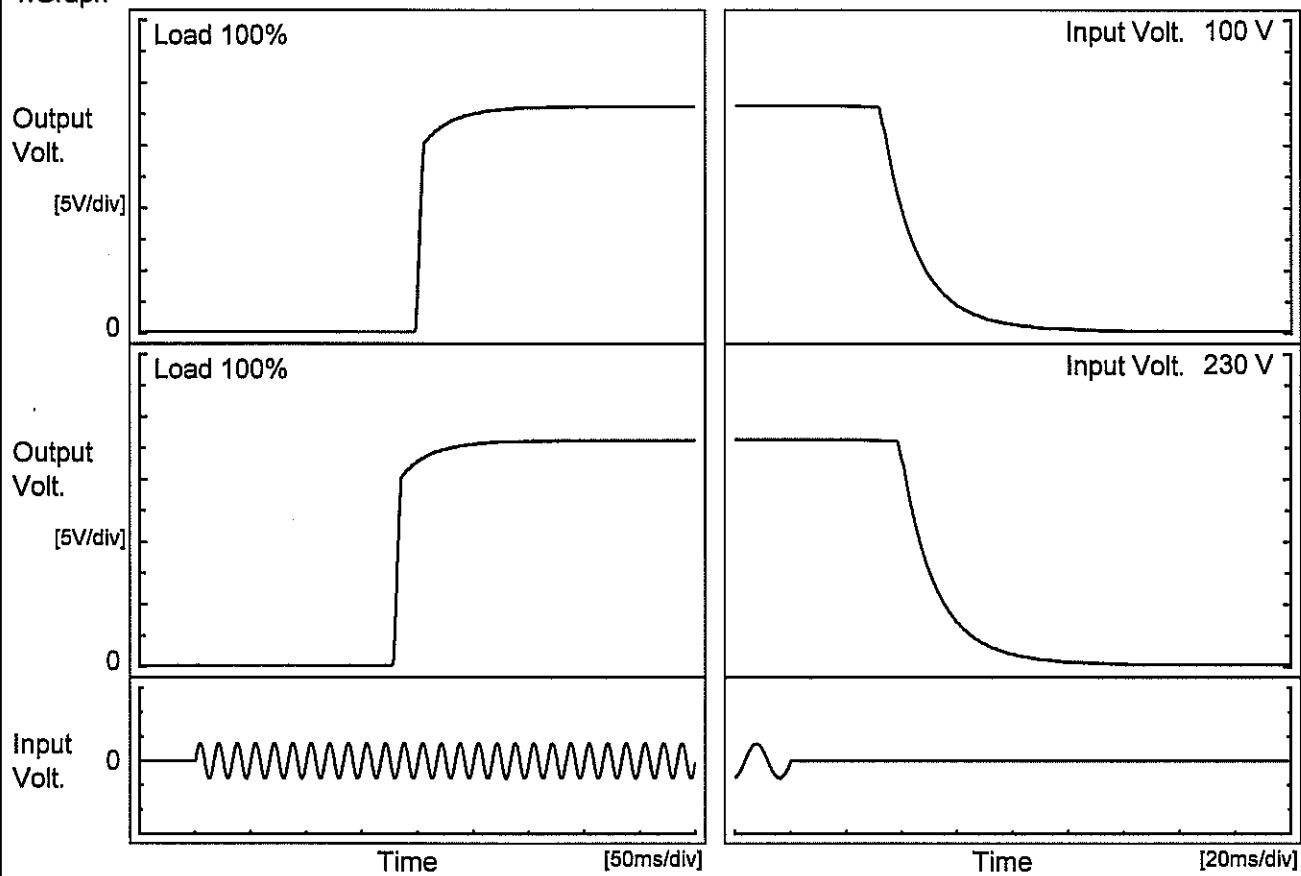
Time since start [H]	Output Voltage [V]
0.0	36.495
0.5	36.495
1.0	36.495
2.0	36.495
3.0	36.495
4.0	36.495
5.0	36.495
6.0	36.495
7.0	36.495
8.0	36.496

* The characteristic of AC230V is equal.

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Model	LFP300F-36-TY	Temperature Testing Circuitry Figure A	25°C
Item	Rise and Fall Time		Figure A
Object	+36V10A		

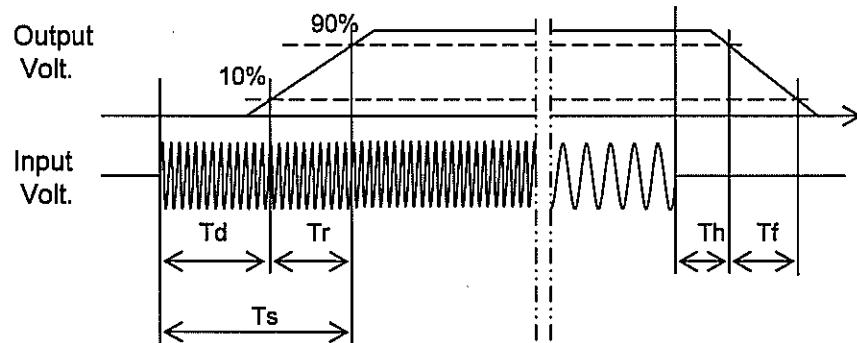
1. Graph



2. Values

[ms]

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		199.3	20.0	219.3	30.4	28.8
230 V		179.0	19.8	198.8	34.3	28.9



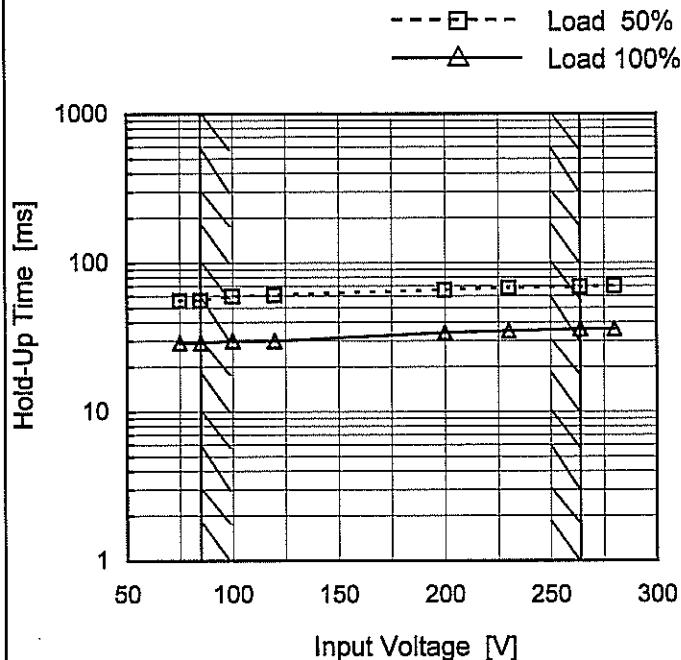
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Model LFP300F-36-TY

Item Hold-Up Time

Object +36V10A

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	56	29
85	56	29
100	60	30
120	61	30
200	66	34
230	68	35
264	69	36
280	70	36
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Model	LFP300F-36-TY	Temperature Testing Circuitry Figure A																																																			
Item	Instantaneous Interruption Compensation																																																				
Object	+36V10A																																																				
1. Graph	<p>—△— Input Volt. 100V - -□--- Input Volt. 200V - -○--- Input Volt. 230V</p> <table border="1"> <caption>Data points estimated from Graph 1</caption> <thead> <tr> <th>Load Current [A]</th> <th>100V [ms]</th> <th>200V [ms]</th> <th>230V [ms]</th> </tr> </thead> <tbody> <tr><td>2.0</td><td>150</td><td>250</td><td>350</td></tr> <tr><td>4.0</td><td>50</td><td>80</td><td>120</td></tr> <tr><td>6.0</td><td>30</td><td>50</td><td>70</td></tr> <tr><td>8.0</td><td>20</td><td>35</td><td>50</td></tr> <tr><td>10.0</td><td>15</td><td>25</td><td>35</td></tr> <tr><td>12.0</td><td>15</td><td>25</td><td>35</td></tr> </tbody> </table>	Load Current [A]	100V [ms]	200V [ms]	230V [ms]	2.0	150	250	350	4.0	50	80	120	6.0	30	50	70	8.0	20	35	50	10.0	15	25	35	12.0	15	25	35	2.Values																							
Load Current [A]	100V [ms]	200V [ms]	230V [ms]																																																		
2.0	150	250	350																																																		
4.0	50	80	120																																																		
6.0	30	50	70																																																		
8.0	20	35	50																																																		
10.0	15	25	35																																																		
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Note: Slanted line shows the range of the rated load current.

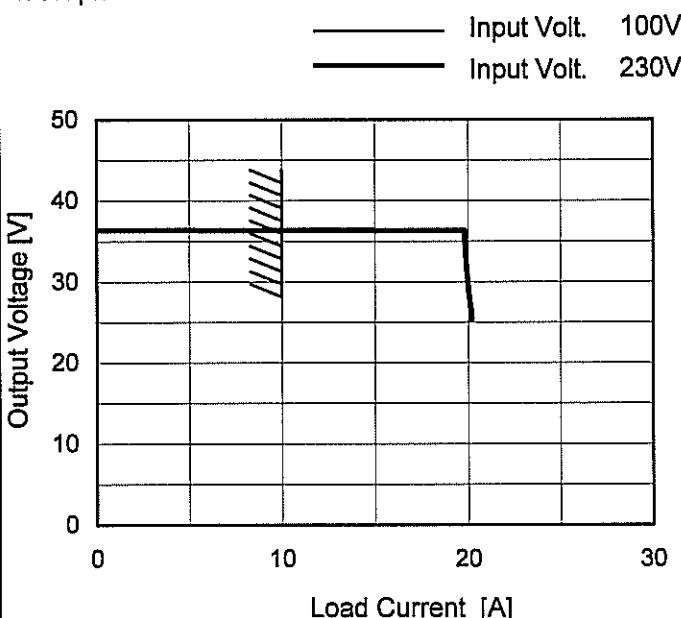
COSEL

Model	LFP300F-36-TY																																							
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Object	+36V10A																																							
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COSEL

Model	LFP300F-36-TY
Item	Overcurrent Protection
Object	+36V10A

1. Graph



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

Intermittent operation occurs when the output voltage is from 25V to 0V.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
36.0	19.79	19.82
34.2	19.83	19.85
32.4	19.86	19.90
28.8	19.98	20.03
25.2	20.14	20.21
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

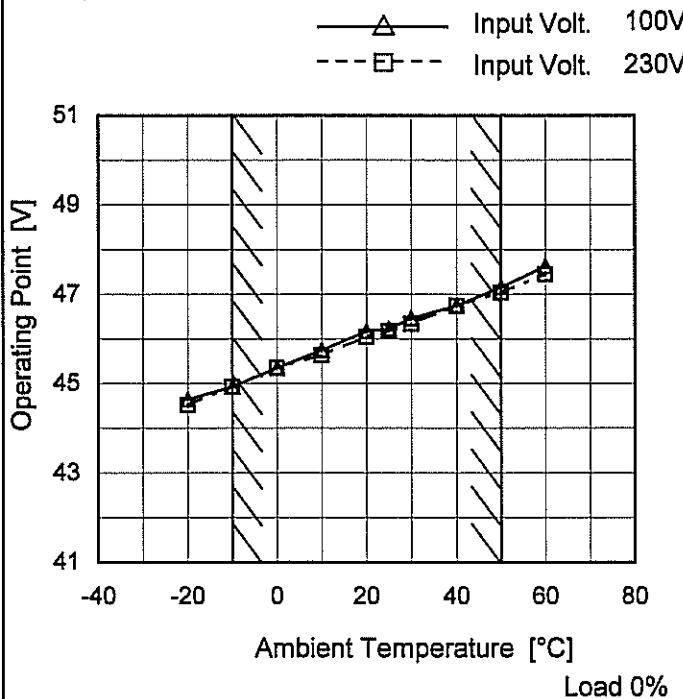
COSEL

Model LFP300F-36-TY

Item Overvoltage Protection

Object +36V10A

1. Graph



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

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-20	44.64	44.52
-10	44.93	44.93
0	45.35	45.35
10	45.75	45.64
20	46.17	46.05
25	46.23	46.17
30	46.46	46.34
40	46.75	46.75
50	47.16	47.04
60	47.63	47.45
—	-	-

COSEL

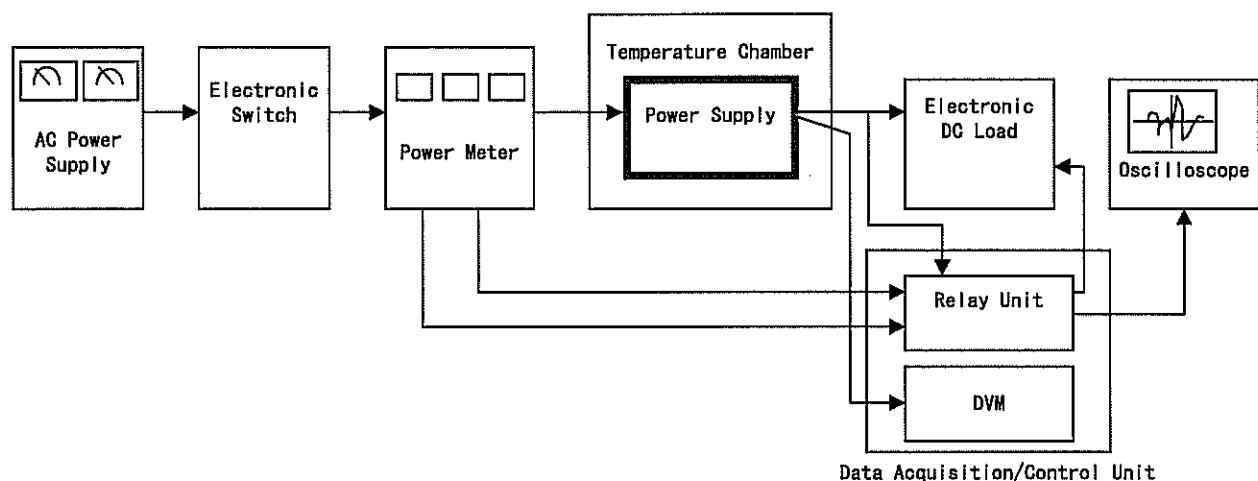


Figure A

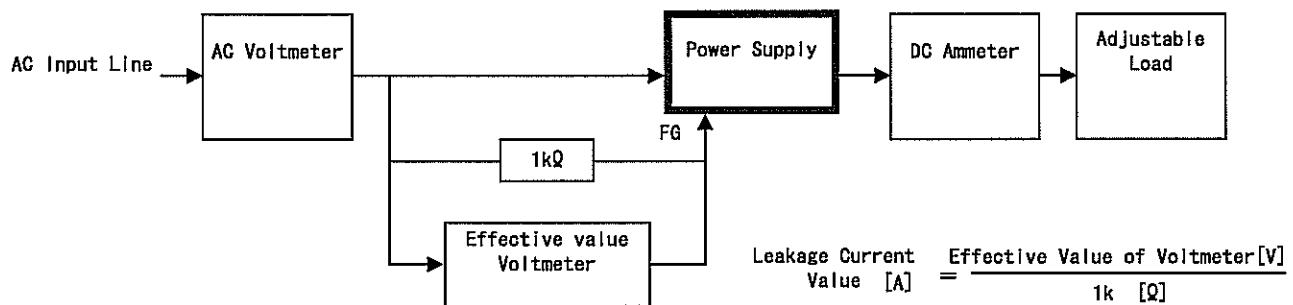


Figure B (DEN-AN)

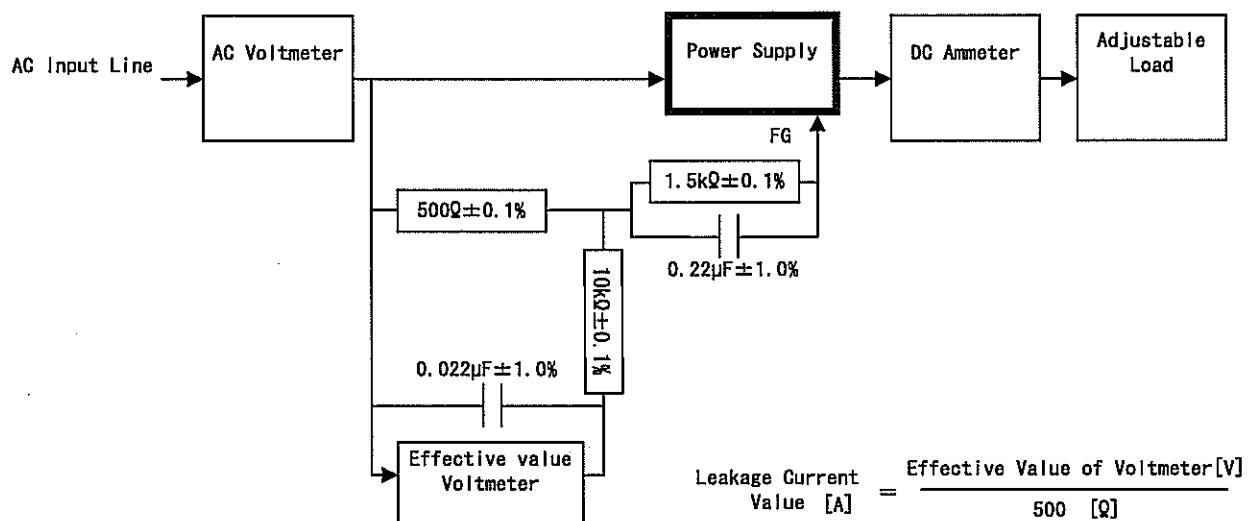


Figure B (IEC60950-1)

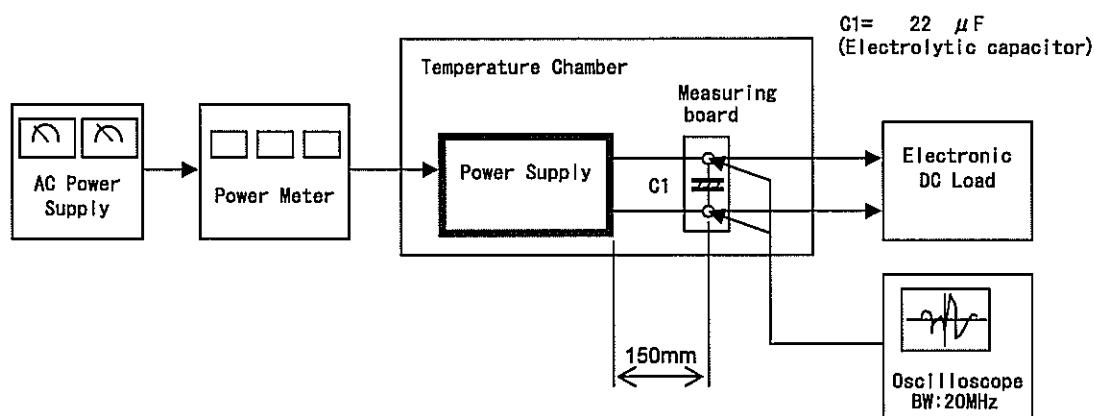
COSEL

Figure C