

# TEST DATA OF LFA300F-30-TY

Regulated DC Power Supply  
December 20, 2010

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Yoshiaki Shimizu Design Manager

Prepared by : *Tomoyuki Mukaiyama*  
Tomoyuki Mukaiyama Design Engineer

**COSEL CO.,LTD.**

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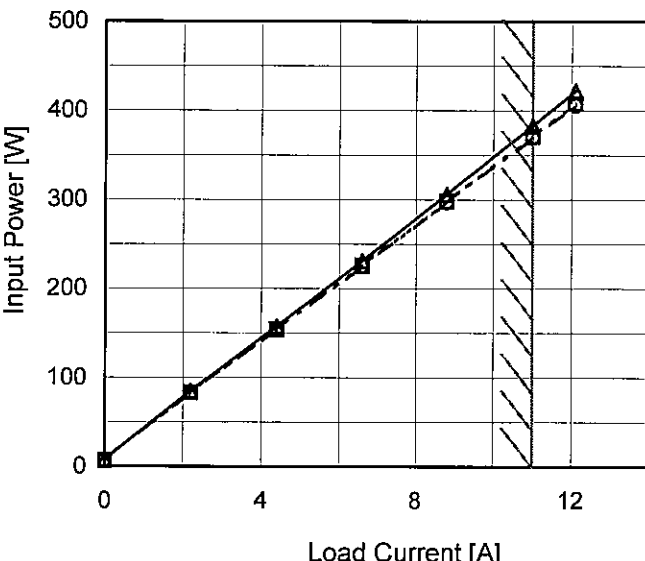
# COSEL

Model		LFA300F-30-TY																																																				
Item		Input Current (by Load Current)																																																				
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1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>---□---</div><div>-○-</div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div> <p>Input Current [A]</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>0.148</td><td>0.204</td><td>0.228</td></tr><tr><td>2.2</td><td>0.895</td><td>0.536</td><td>0.496</td></tr><tr><td>4.4</td><td>1.607</td><td>0.849</td><td>0.786</td></tr><tr><td>6.6</td><td>2.342</td><td>1.202</td><td>1.062</td></tr><tr><td>8.8</td><td>3.098</td><td>1.554</td><td>1.366</td></tr><tr><td>11.0</td><td>3.870</td><td>1.914</td><td>1.678</td></tr><tr><td>12.1</td><td>4.260</td><td>2.096</td><td>1.834</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]	Input Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	0.148	0.204	0.228	2.2	0.895	0.536	0.496	4.4	1.607	0.849	0.786	6.6	2.342	1.202	1.062	8.8	3.098	1.554	1.366	11.0	3.870	1.914	1.678	12.1	4.260	2.096	1.834	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		LFA300F-30-TY		Temperature 25°C																																																				
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																				
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1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div> <div></div>		2.Values																																																				
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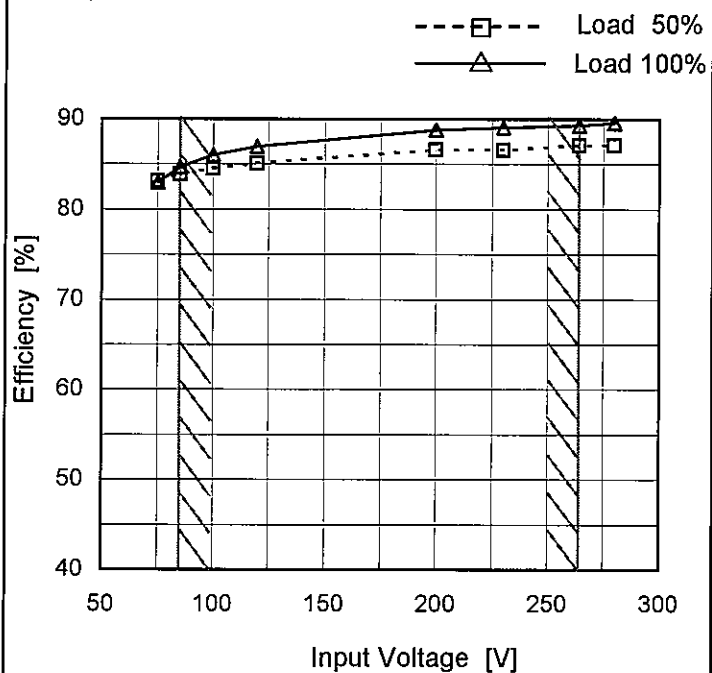
Model LFA300F-30-TY

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	83.1	83.0
85	83.9	84.7
100	84.5	86.1
120	85.1	87.0
200	86.6	88.8
230	86.6	89.1
264	87.1	89.3
280	87.1	89.5
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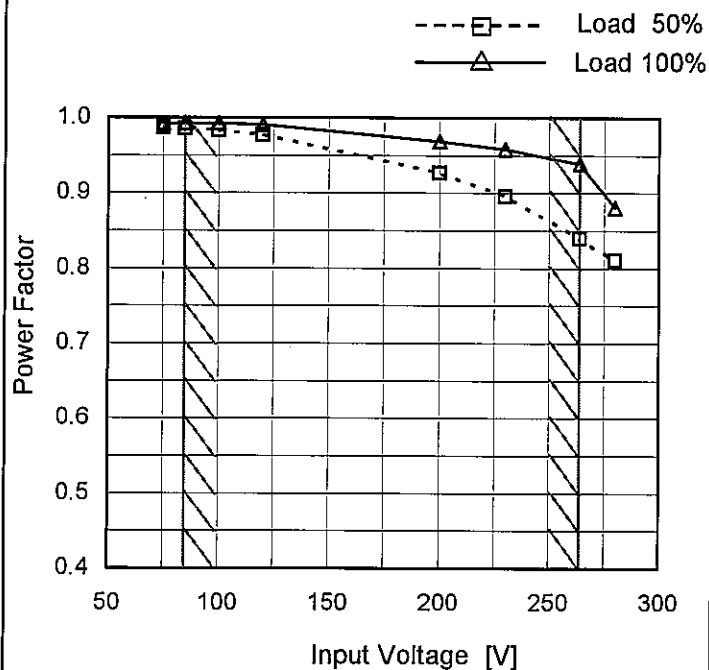
Model LFA300F-30-TY

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	0.987	0.993
85	0.985	0.992
100	0.983	0.992
120	0.977	0.991
200	0.927	0.969
230	0.896	0.959
264	0.840	0.939
280	0.811	0.880
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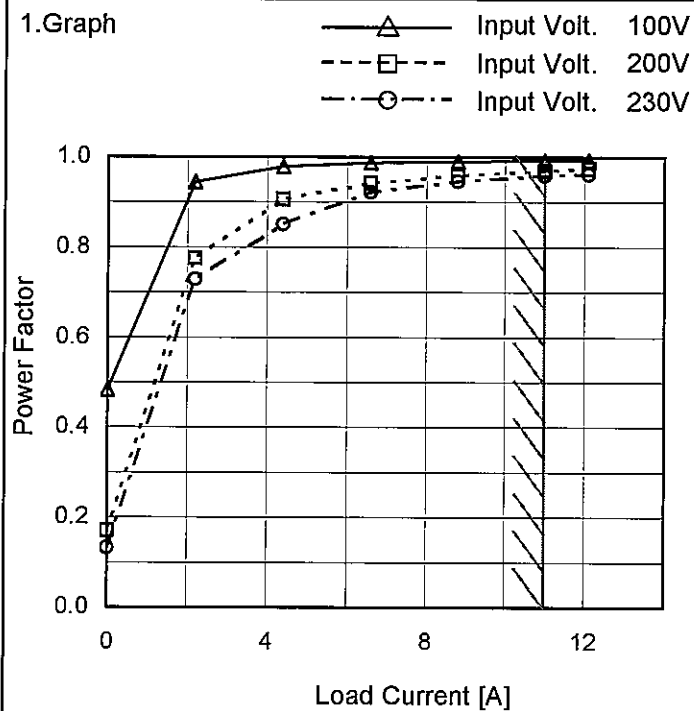
Model LFA300F-30-TY

Item Power Factor (by Load Current)

Object

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



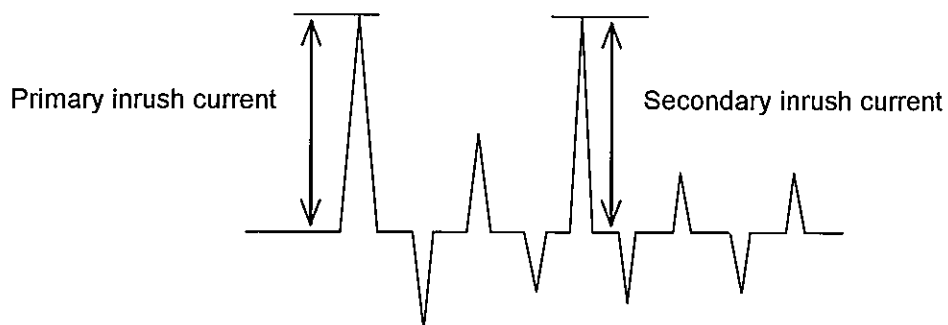
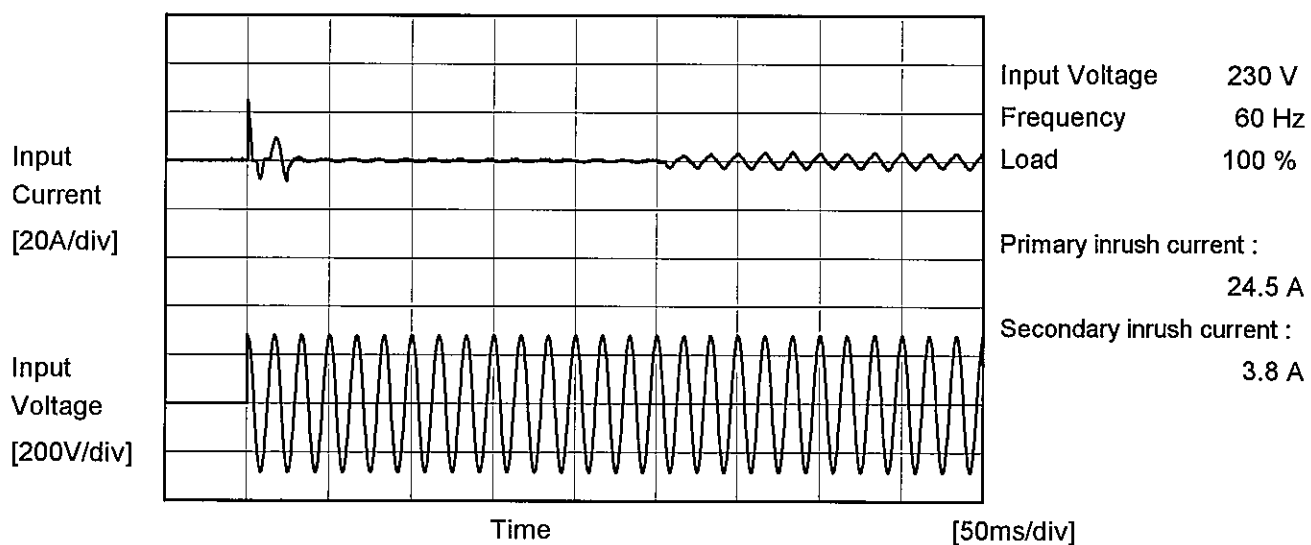
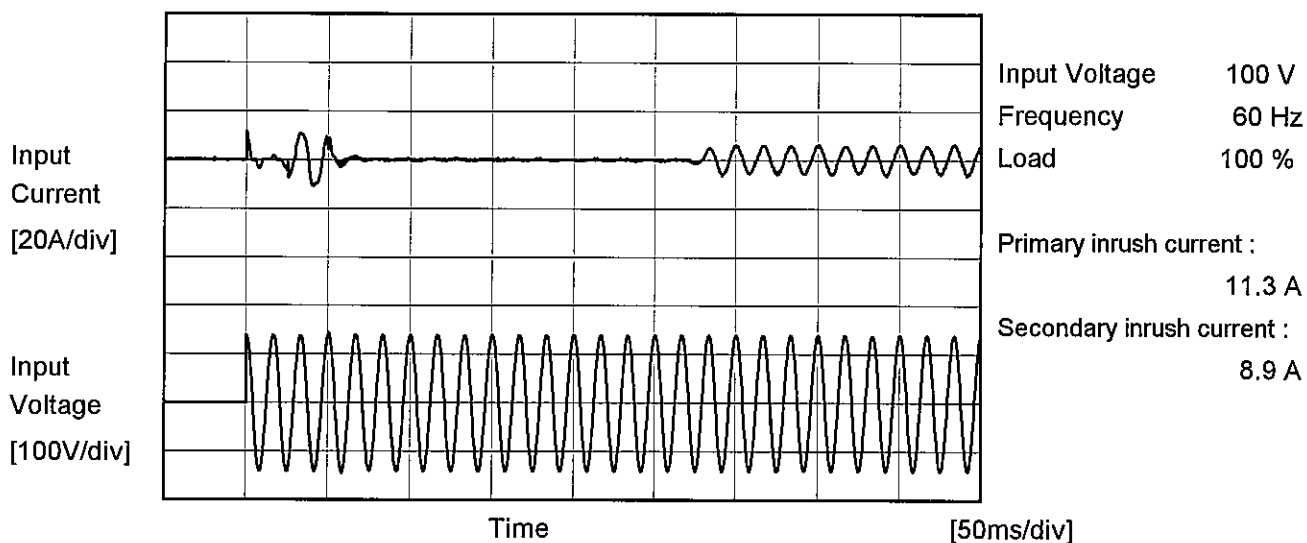
## 2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.483	0.171	0.132
2.2	0.944	0.776	0.728
4.4	0.979	0.906	0.851
6.6	0.988	0.942	0.922
8.8	0.990	0.958	0.946
11.0	0.992	0.969	0.959
12.1	0.993	0.974	0.962
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



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Model	LFA300F-30-TY	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		





		Temperature 25°C Testing Circuitry Figure B
Model	LFA300F-30-TY	
Item	Leakage Current	
Object		

## 1.Results

[mA]

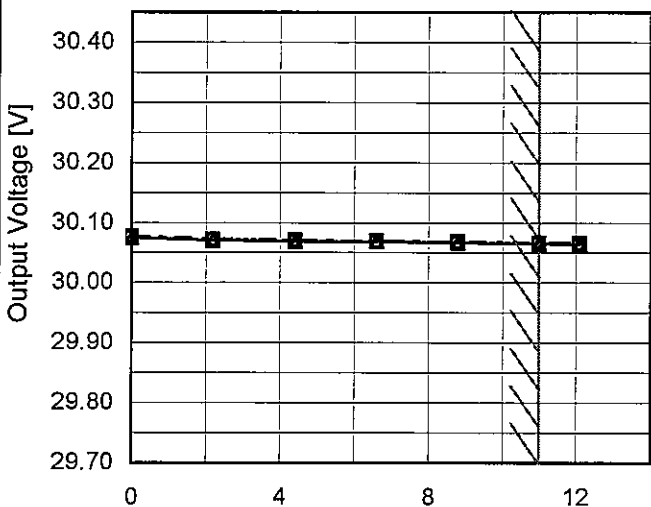
Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.33	0.53	0.60	Operation
	One of phases	0.34	0.70	0.83	Stand by
IEC60950-1	Both phases	0.24	0.50	0.57	Operation
	One of phases	0.32	0.68	0.74	Stand by

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.

Model	LFA300F-30-TY																																
Item	Line Regulation	Temperature	25°C																														
		Testing Circuitry	Figure A																														
Object	+30V11A																																
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<div><div><div>---□---</div><div>Load 50%</div></div><div><div>---△---</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>75</td><td>30.071</td><td>30.067</td></tr><tr><td>85</td><td>30.071</td><td>30.066</td></tr><tr><td>100</td><td>30.070</td><td>30.065</td></tr><tr><td>120</td><td>30.071</td><td>30.065</td></tr><tr><td>200</td><td>30.073</td><td>30.067</td></tr><tr><td>230</td><td>30.074</td><td>30.068</td></tr><tr><td>264</td><td>30.073</td><td>30.068</td></tr><tr><td>280</td><td>30.072</td><td>30.067</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	75	30.071	30.067	85	30.071	30.066	100	30.070	30.065	120	30.071	30.065	200	30.073	30.067	230	30.074	30.068	264	30.073	30.068	280	30.072	30.067	--	-	-		
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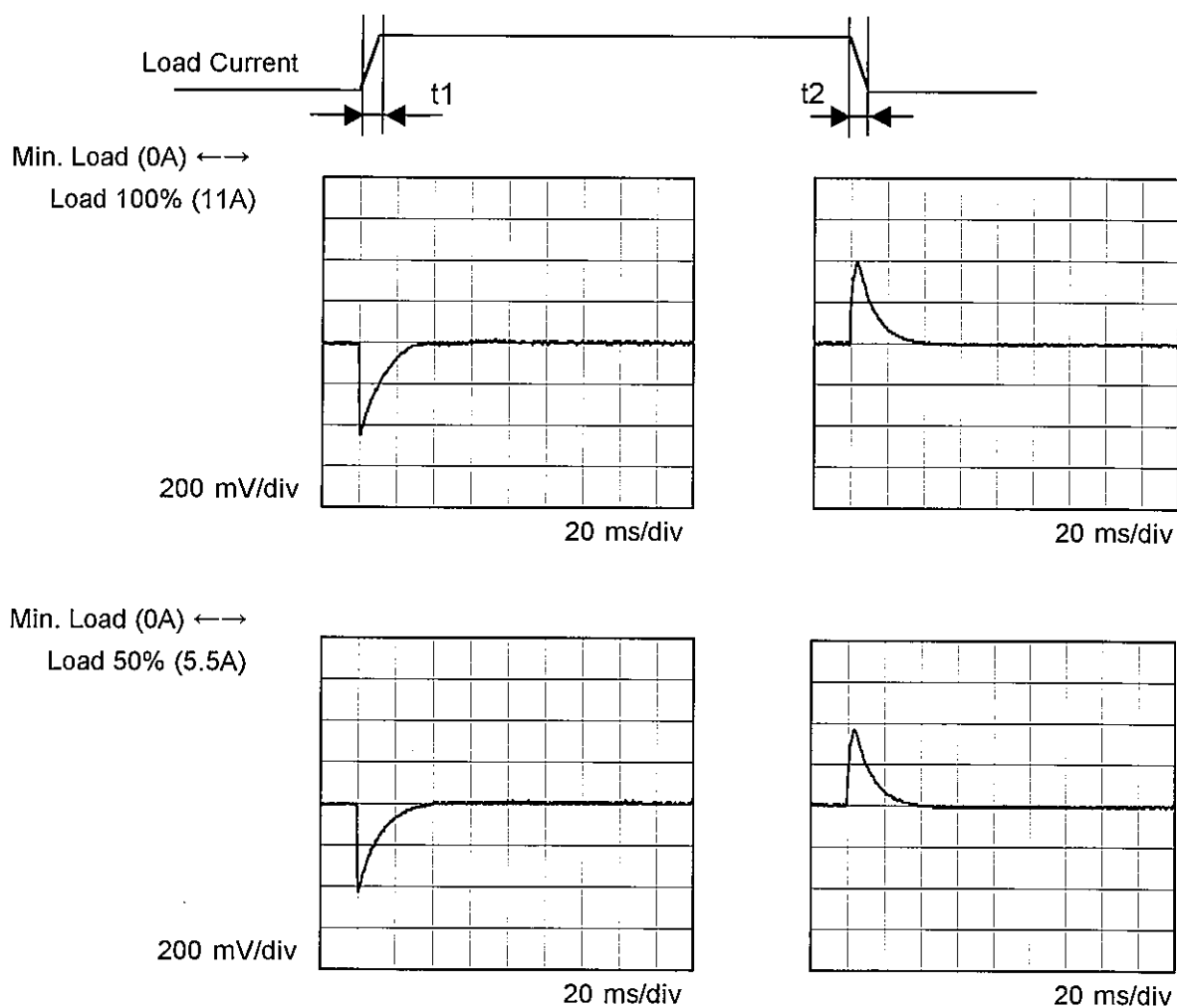
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# COSEL

Model	LFA300F-30-TY	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+30V11A		

Input Volt. 100 V  
Cycle 1000 ms

Response.  $t_1=t_2=50\mu\text{s}$ . Typ



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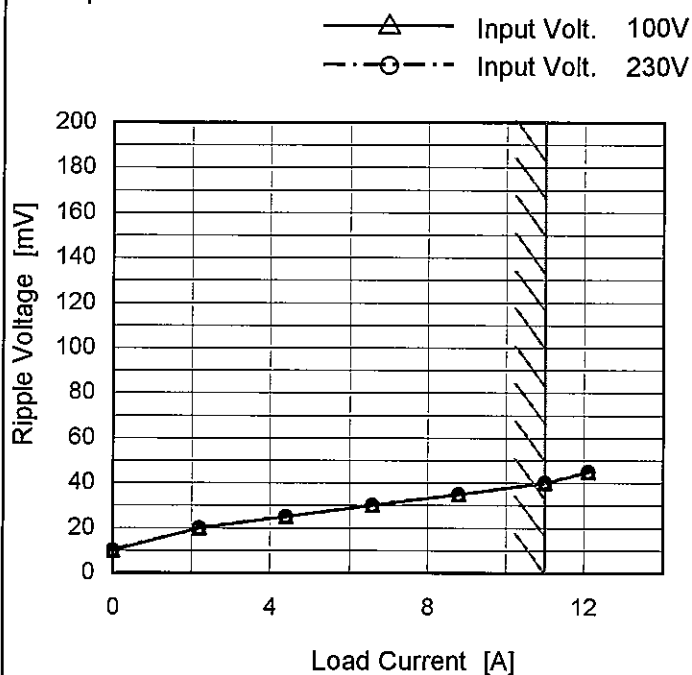
Model LFA300F-30-TY

Item Ripple Voltage (by Load Current)

Object +30V11A

Temperature 25°C  
Testing Circuitry Figure C

## 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.

## 2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0.0	10	10
2.2	20	20
4.4	25	25
6.6	30	30
8.8	35	35
11.0	40	40
12.1	45	45
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--	-	-
--	-	-
--	-	-

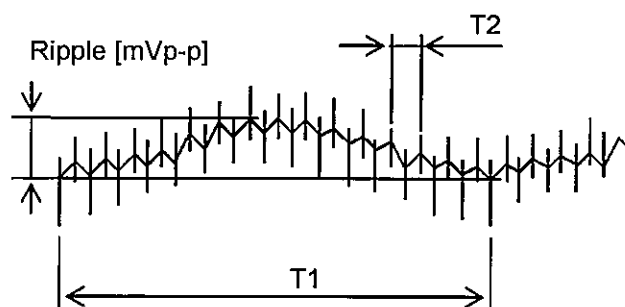
T1: Due to AC Input Line  
T2: Due to Switching

Fig. Complex Ripple Wave Form

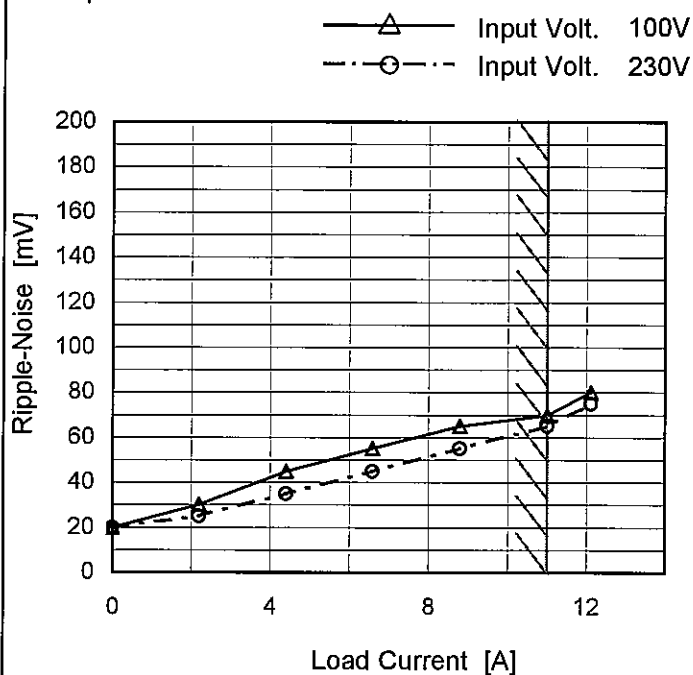
Model LFA300F-30-TY

Item Ripple-Noise

Object +30V11A

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]
0.0	20	20
2.2	30	25
4.4	45	35
6.6	55	45
8.8	65	55
11.0	70	65
12.1	80	75
--	-	-
--	-	-
--	-	-
--	-	-

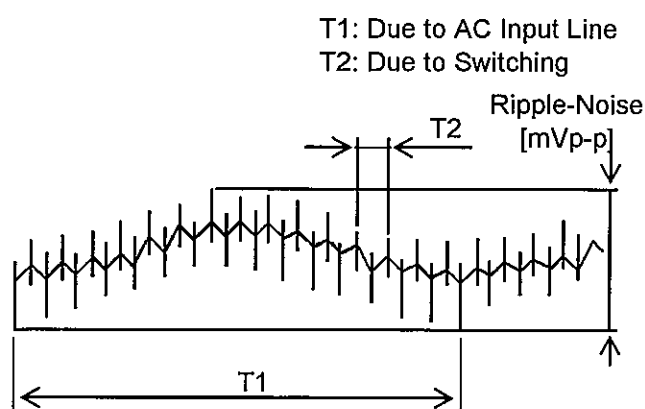


Fig. Complex Ripple Wave Form

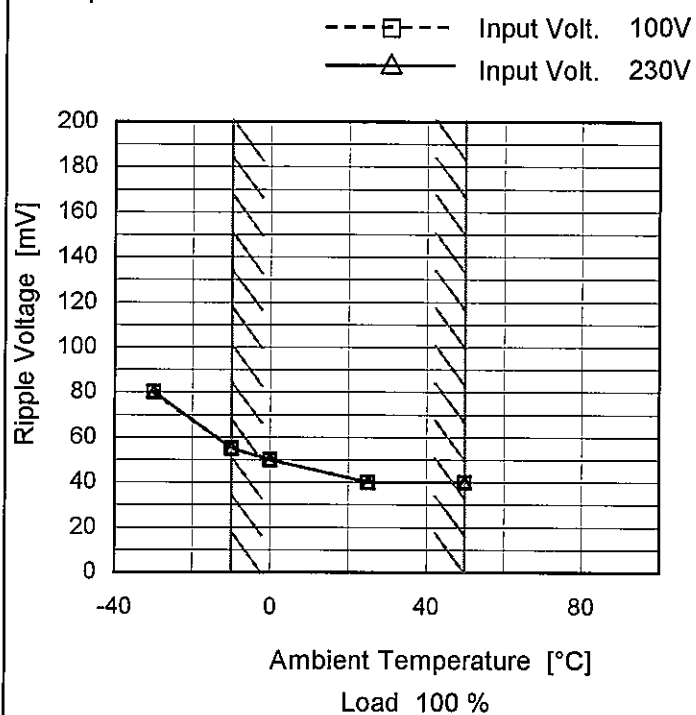
Model LFA300F-30-TY

Item Ripple Voltage (by Ambient Temp.)

Object +30V11A

Testing Circuitry Figure C

## 1. Graph



Measured by 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	80	80
-10	55	55
0	50	50
25	40	40
50	40	40
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-



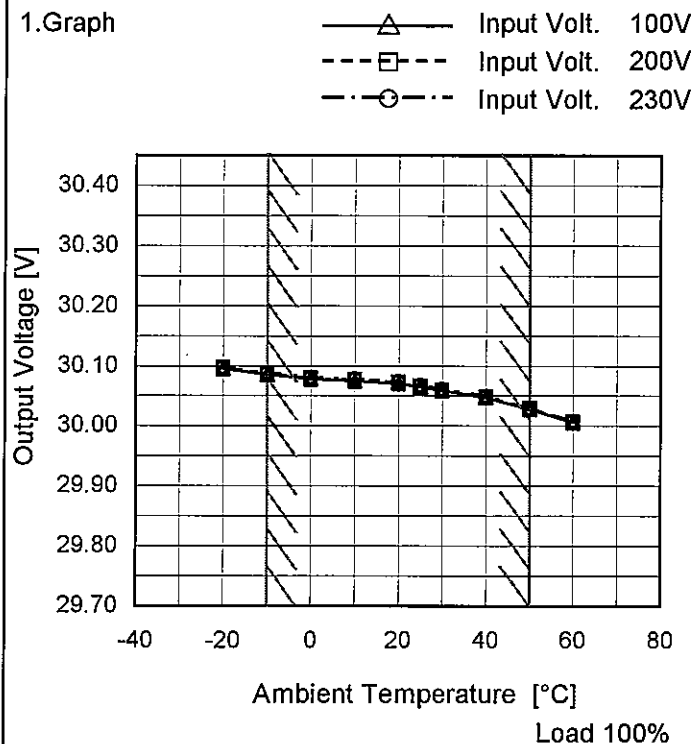
Model LFA300F-30-TY

Item Ambient Temperature Drift

Object +30V11A

Testing Circuitry Figure A

## 1. Graph



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	30.095	30.097	30.098
-10	30.086	30.087	30.088
0	30.078	30.080	30.081
10	30.075	30.077	30.078
20	30.071	30.073	30.074
25	30.065	30.067	30.068
30	30.059	30.060	30.061
40	30.047	30.049	30.049
50	30.028	30.029	30.029
60	30.006	30.007	30.008
--	-	-	-

		Testing Circuitry Figure A
Model	LFA300F-30-TY	
Item	Output Voltage Accuracy	
Object	+30V11A	

### 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 - 11A

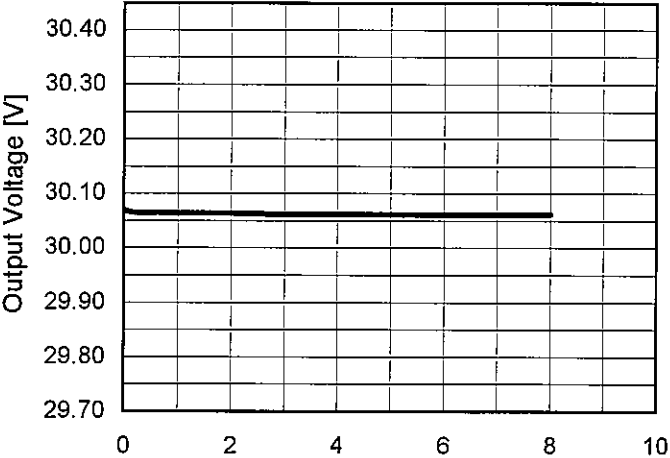
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	85	0	30.119	±34	±0.1
Minimum Voltage	50	264	11	30.051		

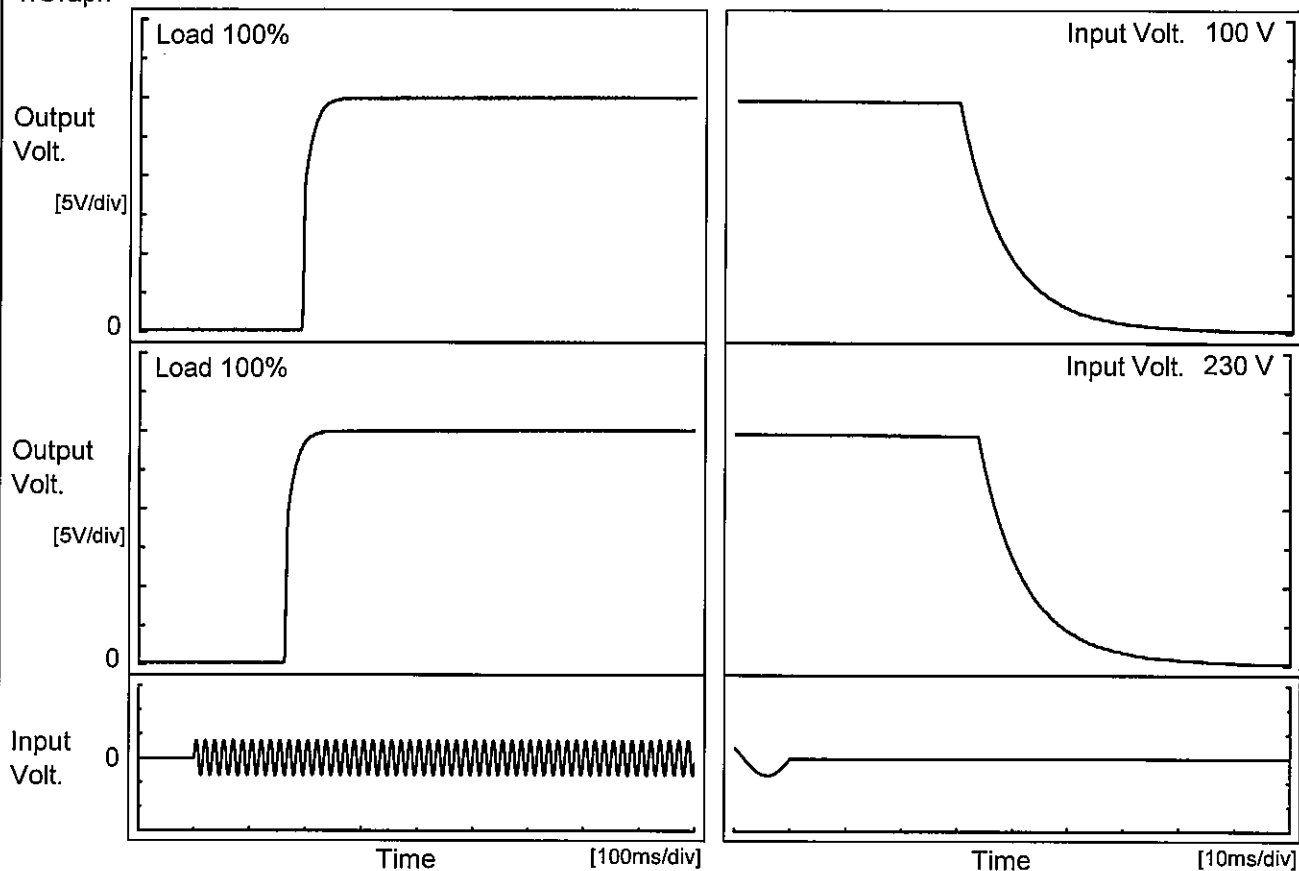
**COSEL**

Model	LFA300F-30-TY																								
Item	Time Lapse Drift	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+30V11A																								
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><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>30.070</td></tr><tr><td>0.5</td><td>30.065</td></tr><tr><td>1.0</td><td>30.064</td></tr><tr><td>2.0</td><td>30.064</td></tr><tr><td>3.0</td><td>30.062</td></tr><tr><td>4.0</td><td>30.061</td></tr><tr><td>5.0</td><td>30.061</td></tr><tr><td>6.0</td><td>30.061</td></tr><tr><td>7.0</td><td>30.061</td></tr><tr><td>8.0</td><td>30.061</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	30.070	0.5	30.065	1.0	30.064	2.0	30.064	3.0	30.062	4.0	30.061	5.0	30.061	6.0	30.061	7.0	30.061	8.0	30.061
Time since start [H]	Output Voltage [V]																								
0.0	30.070																								
0.5	30.065																								
1.0	30.064																								
2.0	30.064																								
3.0	30.062																								
4.0	30.061																								
5.0	30.061																								
6.0	30.061																								
7.0	30.061																								
8.0	30.061																								
* The characteristic of AC230V is equal.																									



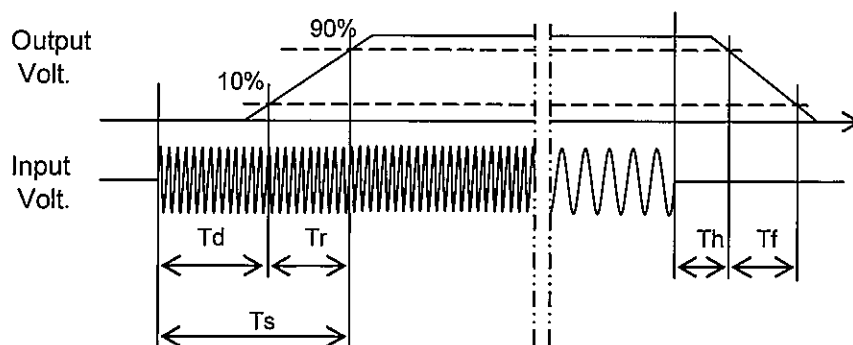
Model	LFA300F-30-TY	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+30V11A		

### 1. Graph



### 2. Values

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	193.0	26.0	219.0	30.4	20.1
230 V	164.5	25.5	190.0	34.5	20.3



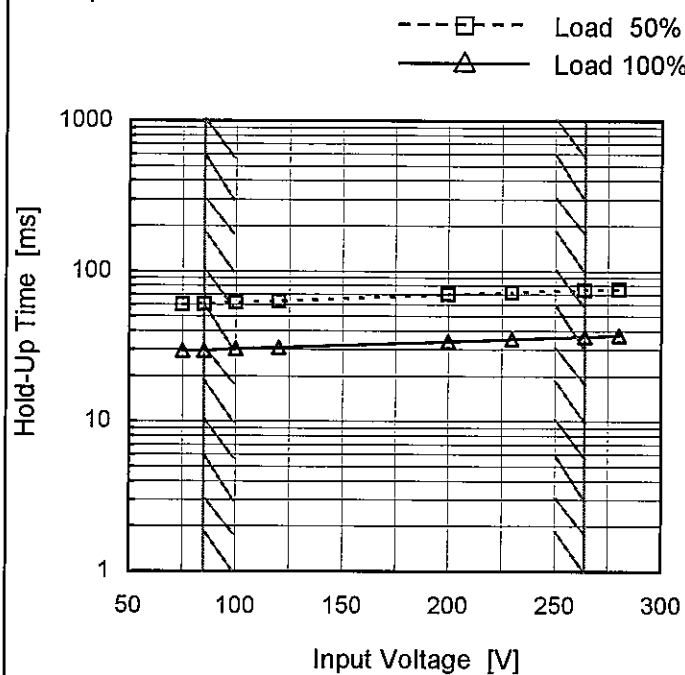
Model LFA300F-30-TY

Item Hold-Up Time

Object +30V11A

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	60	29
85	61	30
100	62	30
120	63	31
200	70	34
230	72	35
264	75	37
280	76	37
--	-	-

Model LFA300F-30-TY

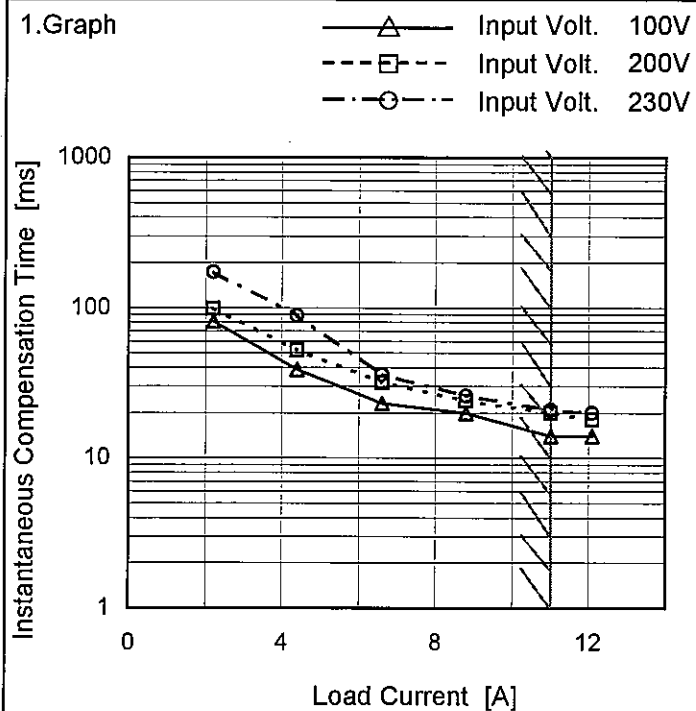
Item Instantaneous Interruption Compensation

Object +30V11A

Temperature 25°C

Testing Circuitry Figure A

## 1. Graph



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

## 2. Values

Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
2.2	81	99	172
4.4	39	52	89
6.6	23	32	36
8.8	20	24	26
11.0	14	20	21
12.1	14	18	20
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model

LFA300F-30-TY

Item

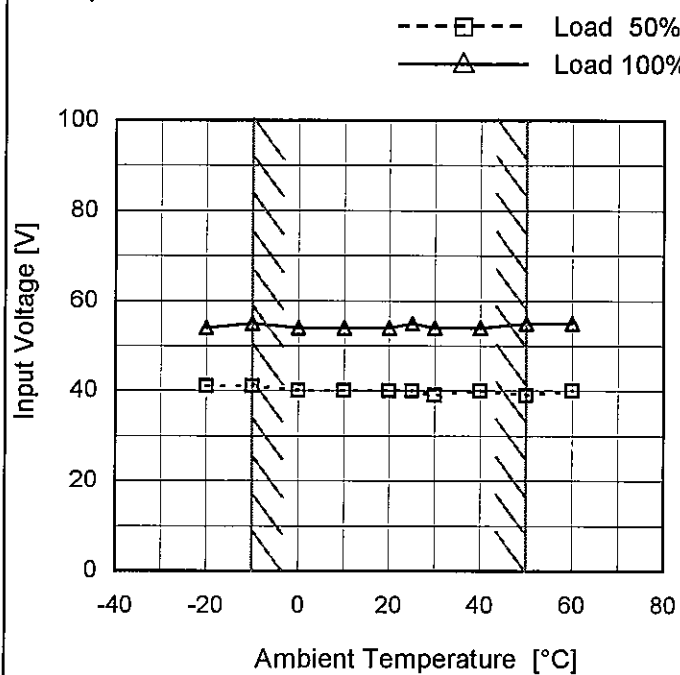
Minimum Input Voltage  
for Regulated Output Voltage

Object

+30V11A

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	41	54
-10	41	55
0	40	54
10	40	54
20	40	54
25	40	55
30	39	54
40	40	54
50	39	55
60	40	55
--	-	-

**COSEL**

Model

LFA300F-30-TY

Item

Overcurrent Protection

Object

+30V11A

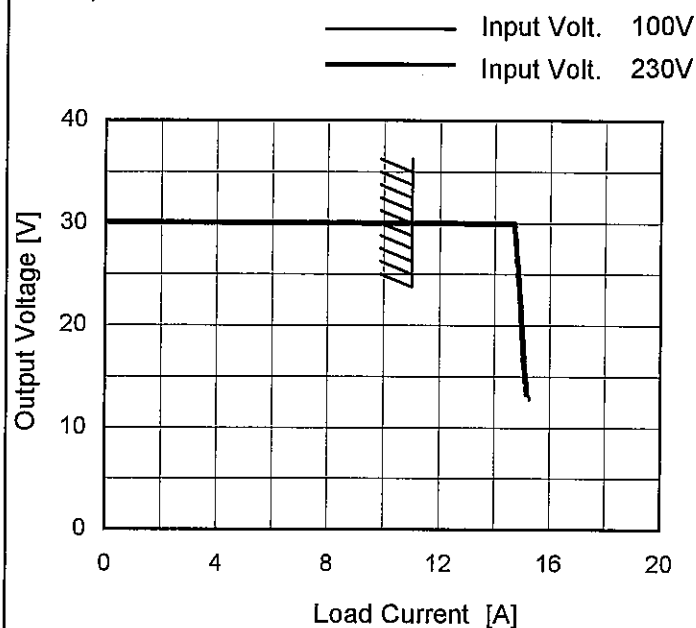
Temperature

25°C

Testing Circuitry

Figure A

## 1. Graph



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

Intermittent operation occurs when the output voltage is from 10V to 0V.

## 2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
30.0	14.75	14.73
28.5	14.80	14.77
27.0	14.84	14.81
24.0	14.94	14.89
21.0	15.01	14.97
18.0	15.09	15.02
15.0	15.16	15.10
12.0	15.27	15.18
--	-	-
--	-	-
--	-	-
--	-	-



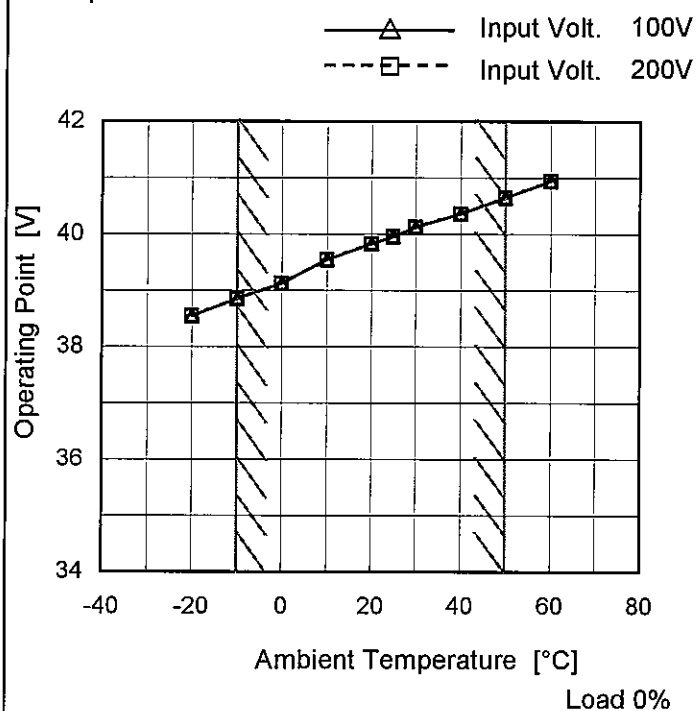
Model	LFA300F-30-TY
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Item	Overvoltage Protection
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Object	+30V11A
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Testing Circuitry Figure A

## 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. 200[V]
-20	38.55	38.55
-10	38.85	38.85
0	39.13	39.13
10	39.54	39.54
20	39.83	39.83
25	39.95	39.95
30	40.13	40.12
40	40.36	40.36
50	40.65	40.65
60	40.94	40.94
--	-	-

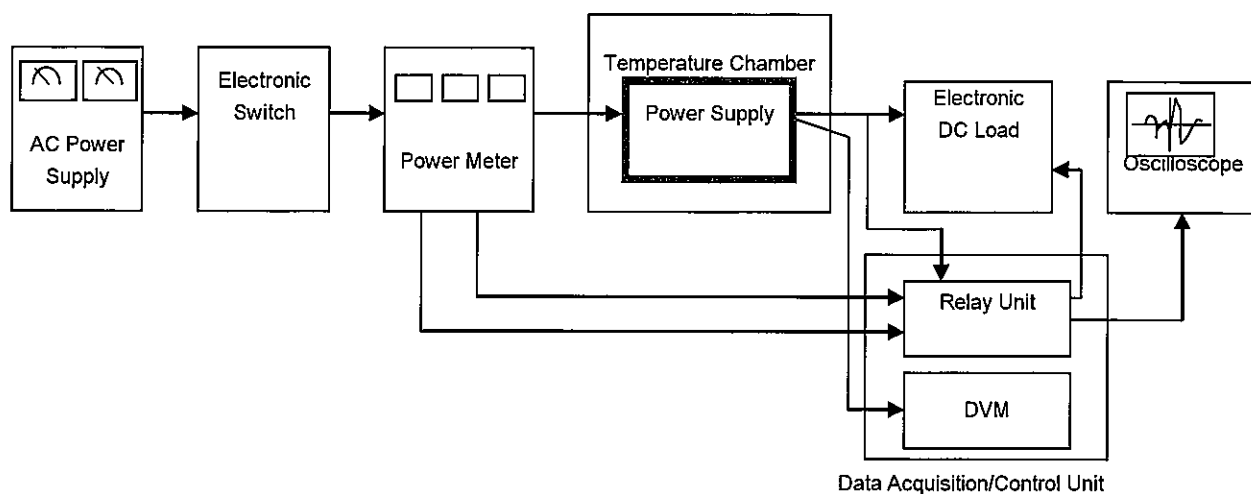


Figure A

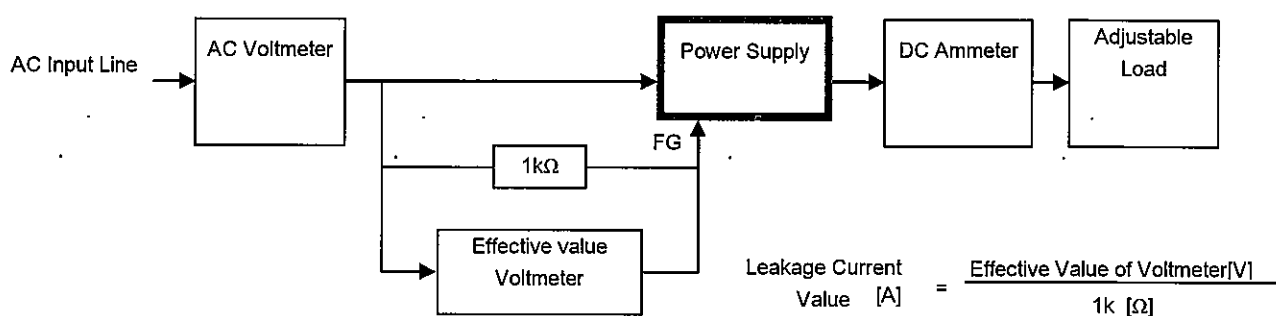


Figure B ( DEN-AN )

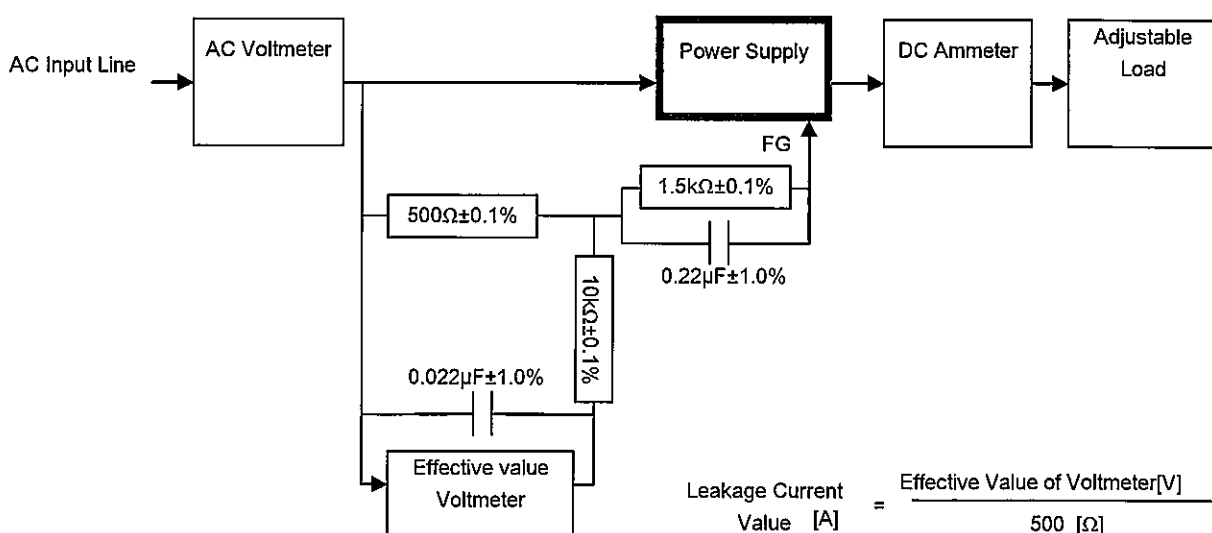


Figure B ( IEC60950-1 )

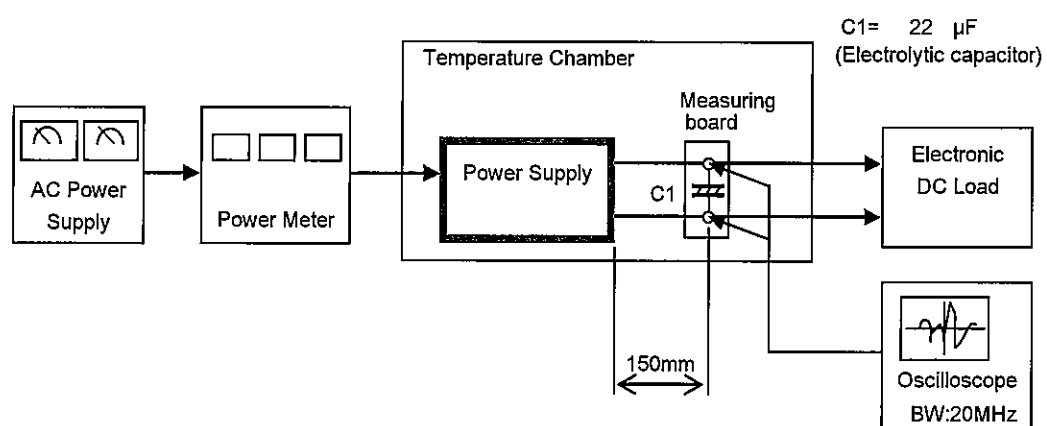


Figure C