COSEL

参考資料

TEST DATA OF LFA300F-48-TY

Regulated DC Power Supply
December 20, 2010

Approved by : Yoshiaki Shimizu
Yoshiaki Shimizu Design Manager

Prepared by : Tomoyuki Mukaiyama
Tomoyuki Mukaiyama Design Engineer

COSEL CO.,LTD.

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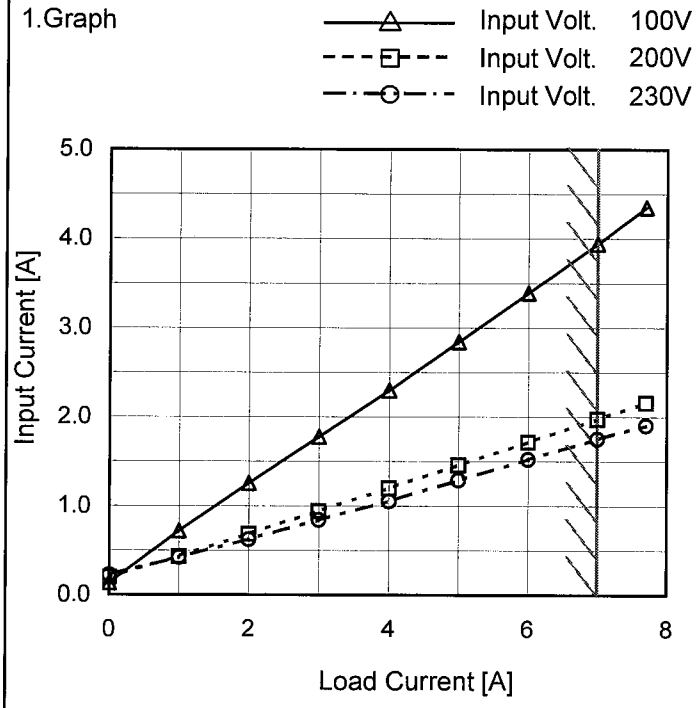
Model	LFA300F-48-TY
Item	Input Current (by Load Current)
Object	———————

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]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.132	0.198	0.222
1.0	0.718	0.430	0.420
2.0	1.254	0.684	0.620
3.0	1.774	0.940	0.840
4.0	2.294	1.200	1.052
5.0	2.842	1.460	1.288
6.0	3.390	1.718	1.522
7.0	3.940	1.976	1.752
7.7	4.350	2.160	1.904
--	-	-	-
--	-	-	-

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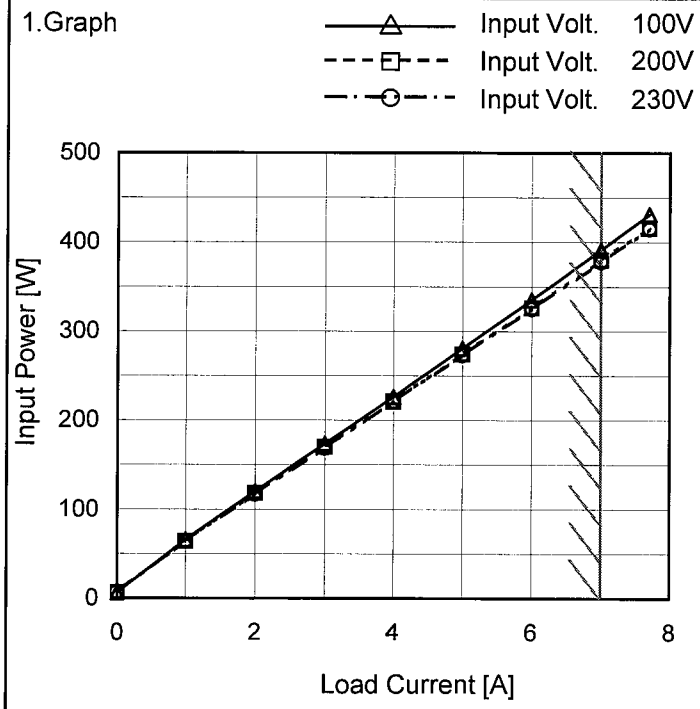
Model	LFA300F-48-TY
Item	Input Power (by Load Current)
Object	————————

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]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	6.0	6.0	7.0
1.0	65.6	64.0	64.0
2.0	120.1	118.0	117.0
3.0	173.4	170.0	169.0
4.0	225.9	221.0	221.0
5.0	280.5	274.0	273.0
6.0	335.1	326.0	325.0
7.0	391.0	380.0	378.0
7.7	431.0	416.0	415.0
--	-	-	-
--	-	-	-

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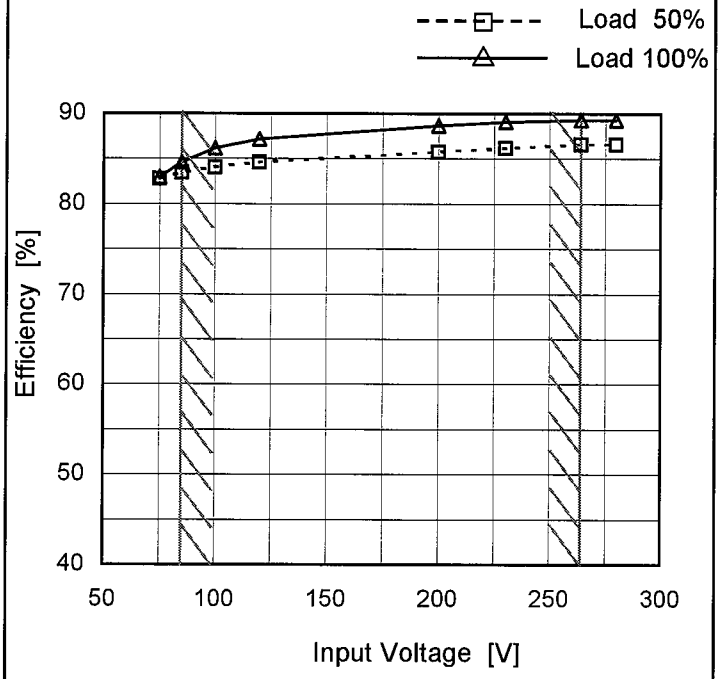
Model	LFA300F-48-TY
Item	Efficiency (by Input Voltage)
Object	———————————

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	82.7	82.9
85	83.5	84.6
100	84.0	86.2
120	84.6	87.1
200	85.7	88.6
230	86.1	89.1
264	86.6	89.3
280	86.6	89.3
--	-	-

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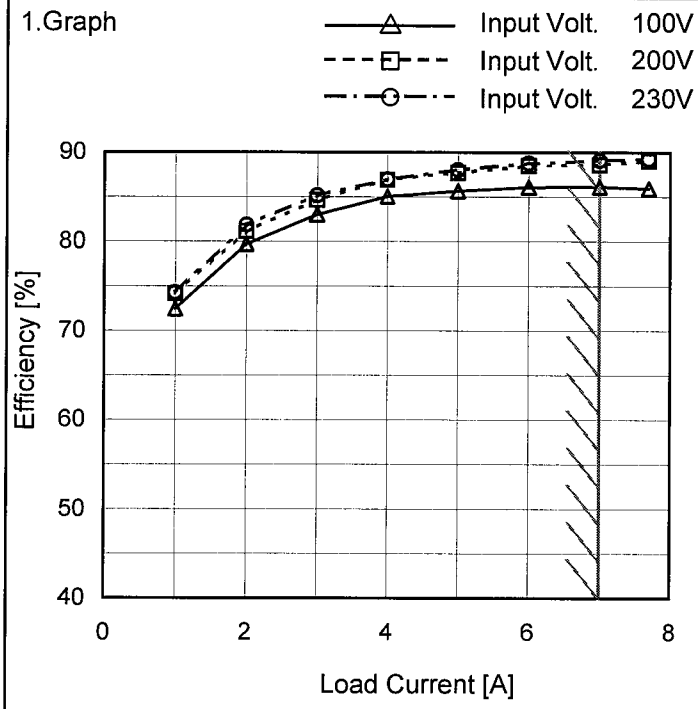
Model	LFA300F-48-TY
Item	Efficiency (by Load Current)
Object	————————

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]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	72.4	74.2	74.3
2.0	79.7	81.1	81.8
3.0	83.0	84.7	85.2
4.0	85.0	86.9	86.9
5.0	85.7	87.7	88.0
6.0	86.1	88.5	88.8
7.0	86.2	88.6	89.1
7.7	86.0	89.0	89.3
--	-	-	-
--	-	-	-

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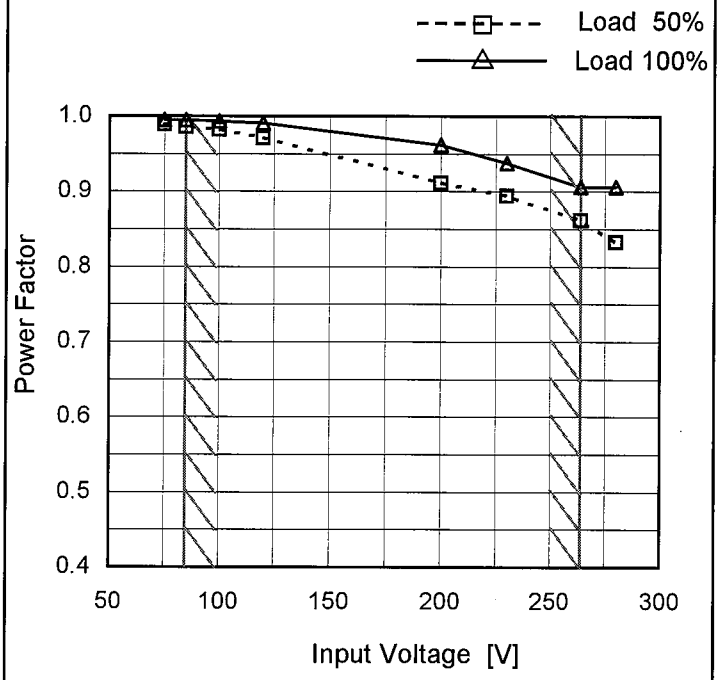
Model	LFA300F-48-TY
Item	Power Factor (by Input Voltage)
Object	———————————

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	0.989	0.995
85	0.986	0.995
100	0.982	0.993
120	0.971	0.991
200	0.912	0.962
230	0.894	0.938
264	0.862	0.906
280	0.833	0.906
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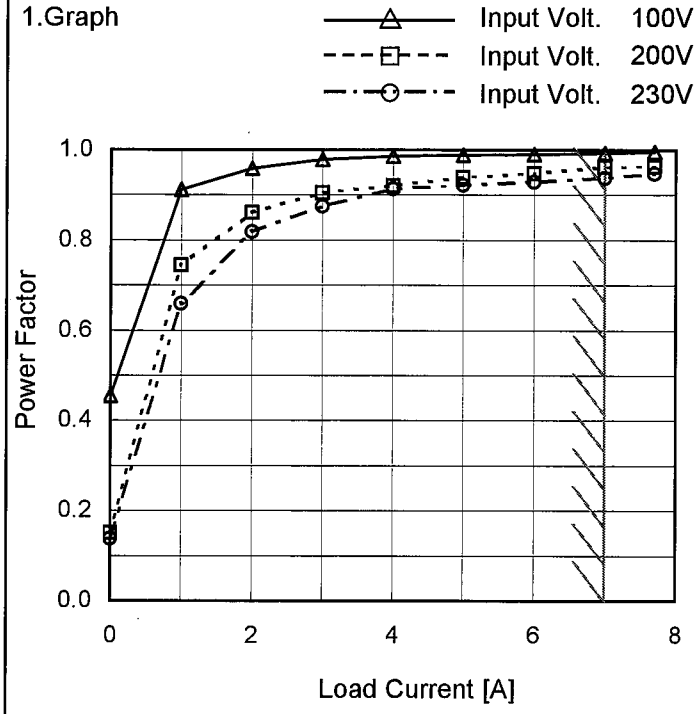
Model	LFA300F-48-TY
Item	Power Factor (by Load Current)
Object	————————

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]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.455	0.150	0.137
1.0	0.912	0.744	0.660
2.0	0.958	0.861	0.818
3.0	0.979	0.904	0.876
4.0	0.986	0.921	0.913
5.0	0.989	0.938	0.922
6.0	0.991	0.948	0.929
7.0	0.993	0.962	0.938
7.7	0.995	0.963	0.947
--	-	-	-
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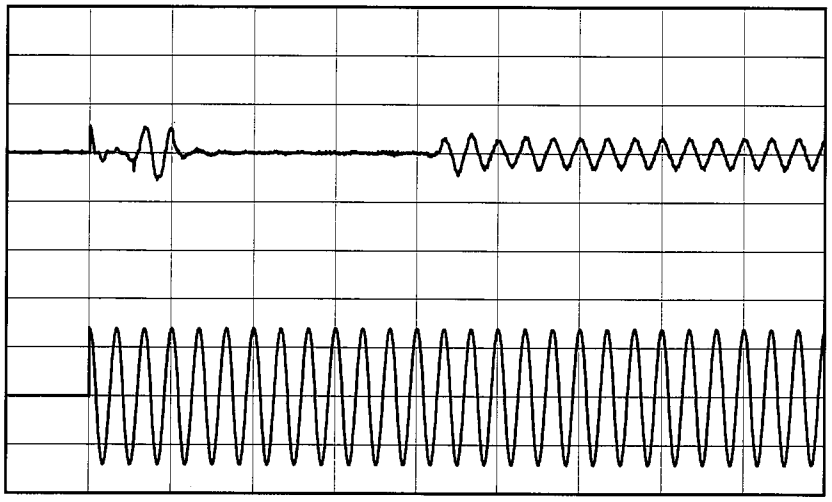
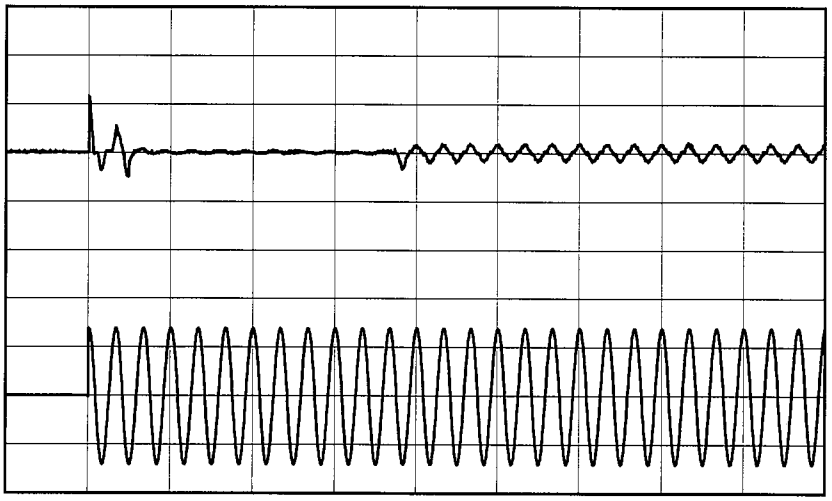
Model	LFA300F-48-TY
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



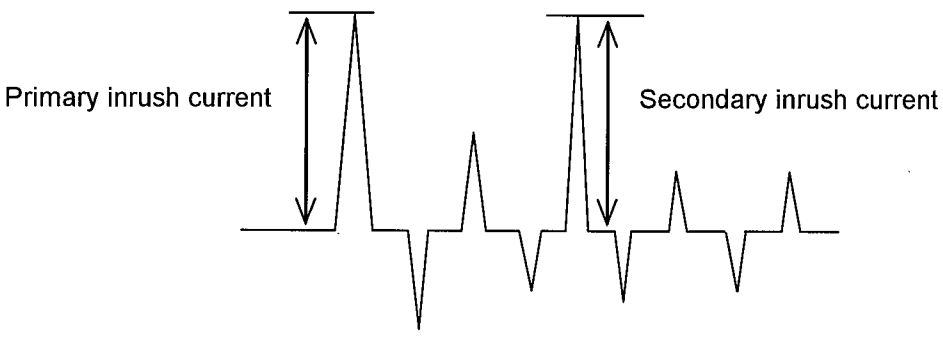
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
11.1 A
Secondary inrush current :
9.6 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
23.1 A
Secondary inrush current :
6.6 A



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Model	LFA300F-48-TY		
Item	Leakage Current	Temperature	25°C
Object	———————————	Testing Circuitry	Figure B

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.

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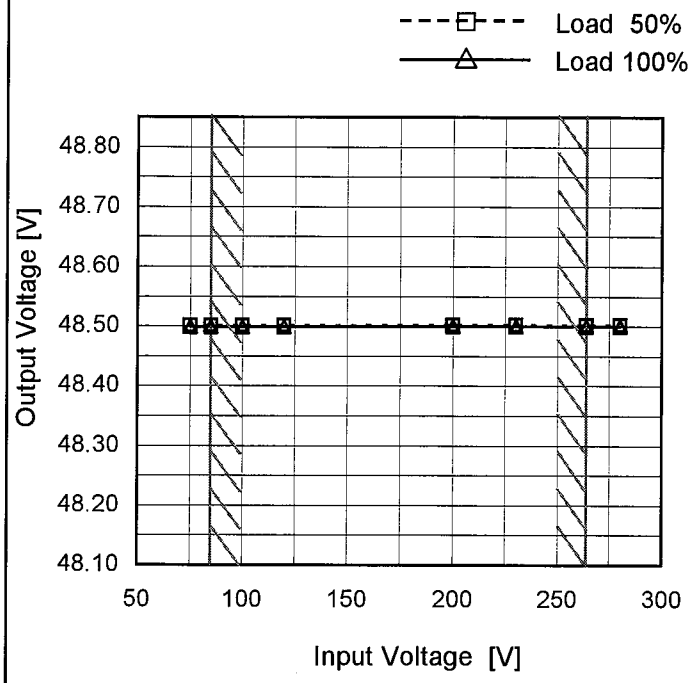
Model	LFA300F-48-TY
Item	Line Regulation
Object	+48V7A

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	48.502	48.500
85	48.501	48.500
100	48.501	48.500
120	48.501	48.500
200	48.502	48.500
230	48.502	48.500
264	48.502	48.500
280	48.502	48.500
--	-	-

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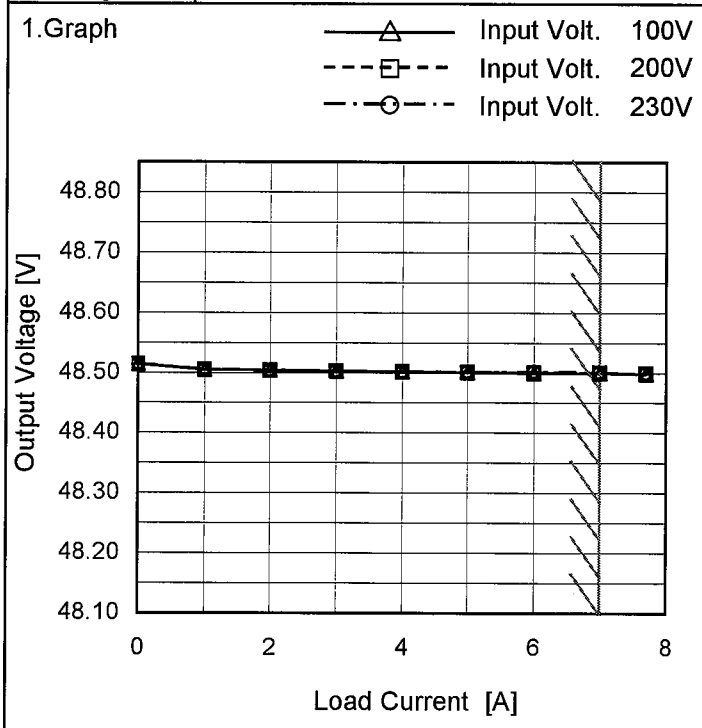
Model	LFA300F-48-TY
Item	Load Regulation
Object	+48V7A

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]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	48.514	48.515	48.514
1.0	48.504	48.505	48.505
2.0	48.504	48.504	48.503
3.0	48.503	48.503	48.503
4.0	48.502	48.502	48.502
5.0	48.501	48.502	48.502
6.0	48.500	48.501	48.501
7.0	48.500	48.500	48.500
7.7	48.499	48.499	48.500
--	-	-	-
--	-	-	-

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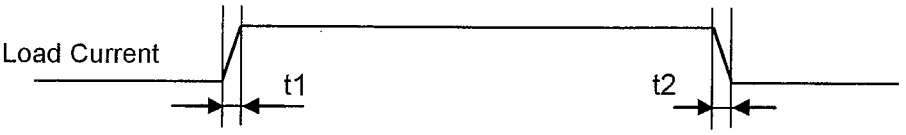
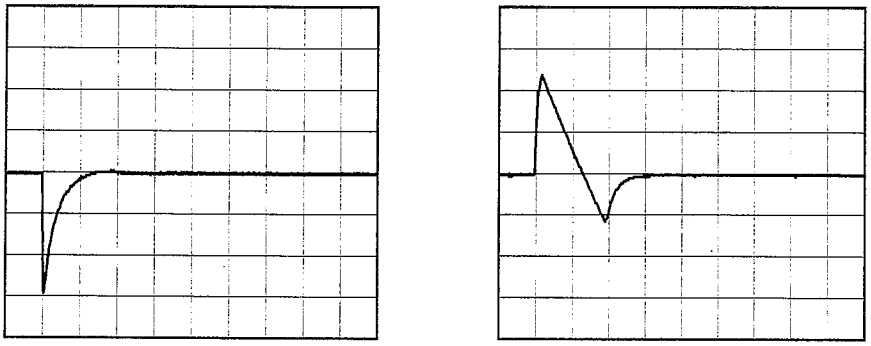
Model	LFA300F-48-TY		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+48V7A		

Input Volt. 100 V
Cycle 1000 ms

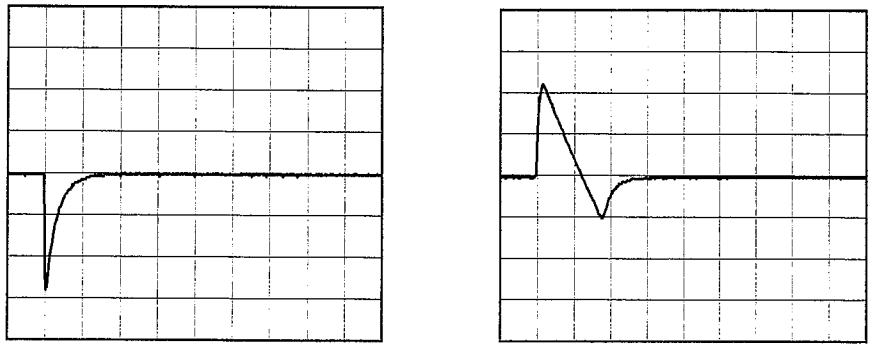
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (7A)



Min. Load (0A) ⟷
Load 50% (3.5A)



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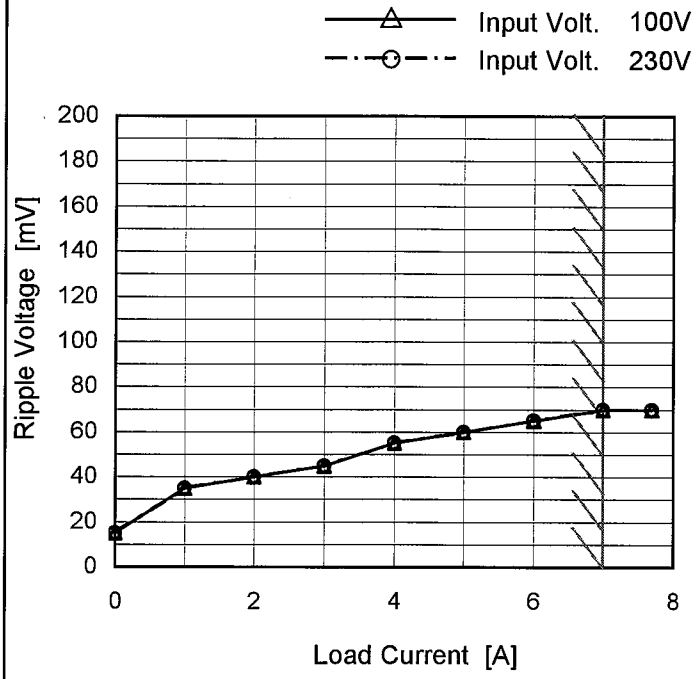
Model	LFA300F-48-TY
Item	Ripple Voltage (by Load Current)
Object	+48V7A

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	15	15
1.0	35	35
2.0	40	40
3.0	45	45
4.0	55	55
5.0	60	60
6.0	65	65
7.0	70	70
7.7	70	70
--	-	-
--	-	-

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

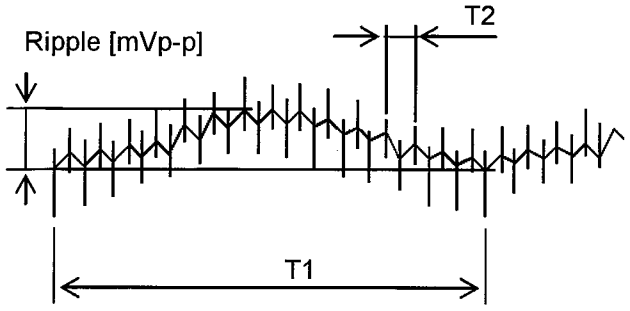


Fig. Complex Ripple Wave Form

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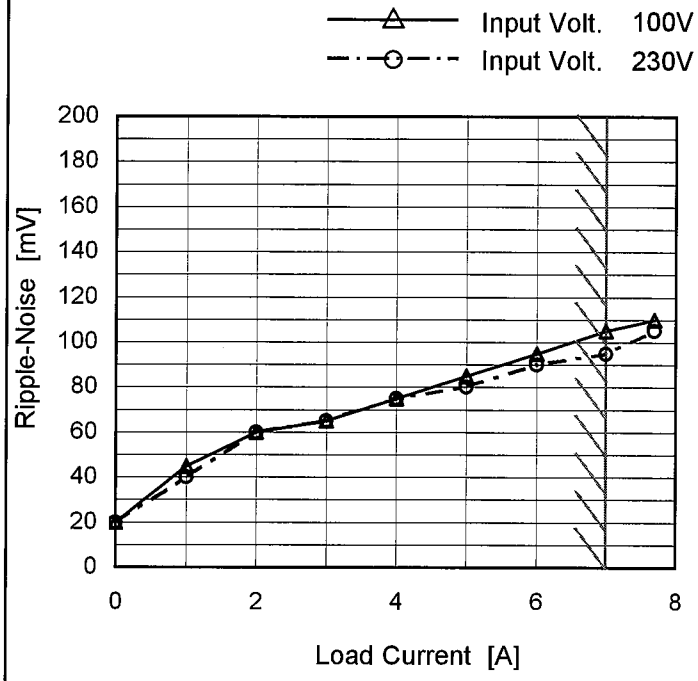
Model	LFA300F-48-TY
Item	Ripple-Noise
Object	+48V7A

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
1.0	45	40
2.0	60	60
3.0	65	65
4.0	75	75
5.0	85	80
6.0	95	90
7.0	105	95
7.7	110	105
--	-	-
--	-	-

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

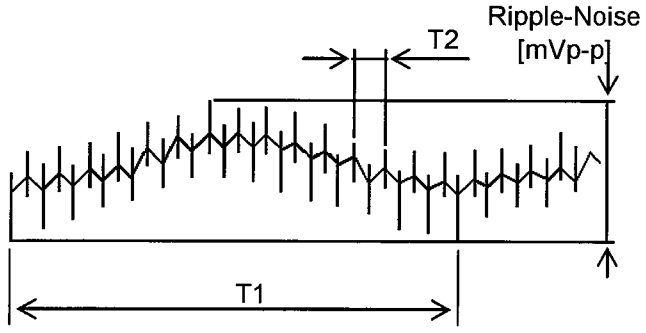


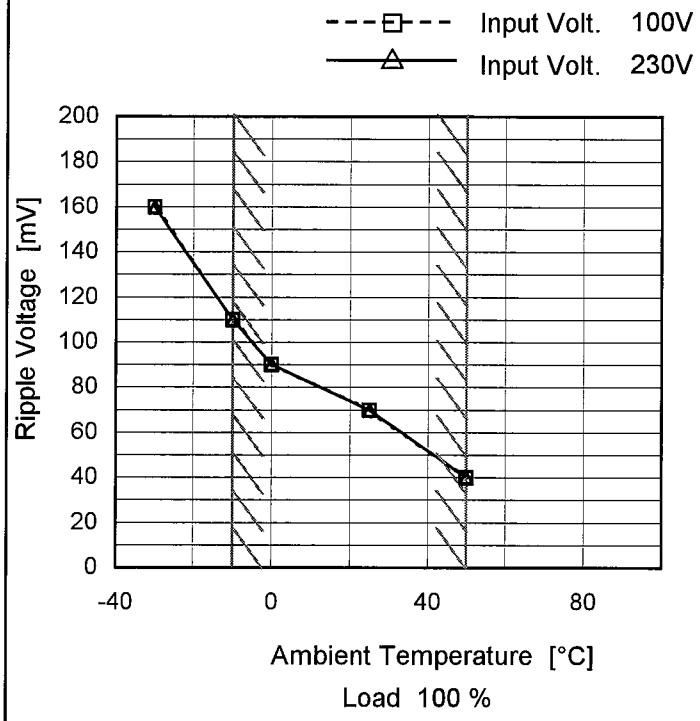
Fig. Complex Ripple Wave Form

COSEL

Model	LFA300F-48-TY
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V7A

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	160	160
-10	110	110
0	90	90
25	70	70
50	40	40
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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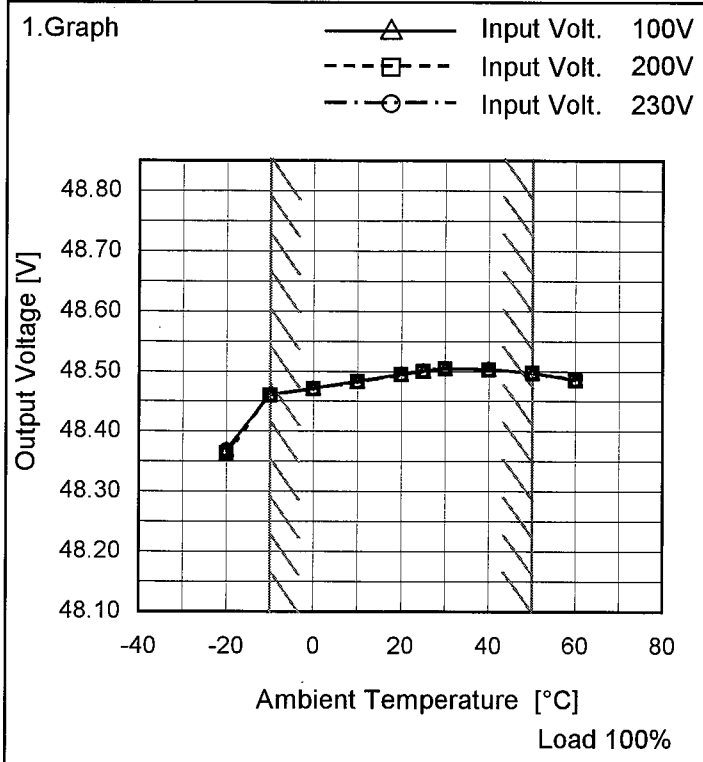
Model	LFA300F-48-TY
Item	Ambient Temperature Drift
Object	+48V7A

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	48.369	48.363	48.369
-10	48.461	48.460	48.460
0	48.471	48.470	48.471
10	48.483	48.483	48.482
20	48.495	48.494	48.495
25	48.500	48.500	48.500
30	48.504	48.504	48.504
40	48.504	48.503	48.503
50	48.498	48.497	48.497
60	48.486	48.486	48.486
--	-	-	-

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Model	LFA300F-48-TY	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V7A	

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 - 7A

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

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	264	0	48.520	±30	±0.1
Minimum Voltage	-10	85	7	48.460		

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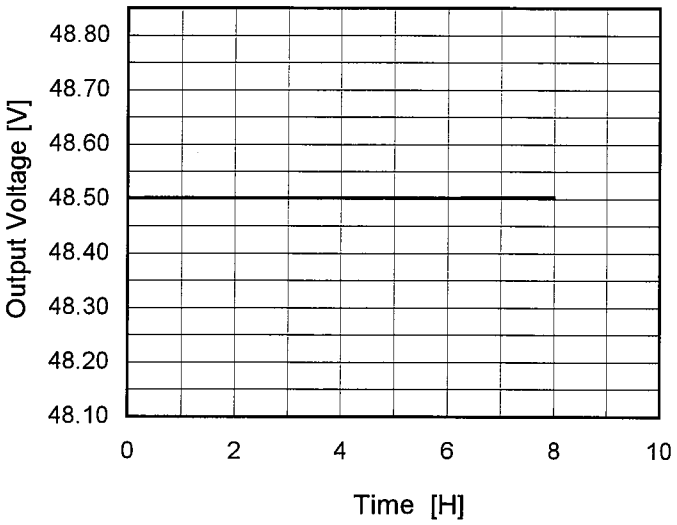
Model	LFA300F-48-TY
Item	Time Lapse Drift
Object	+48V7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC100V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	48.500
0.5	48.500
1.0	48.500
2.0	48.500
3.0	48.500
4.0	48.500
5.0	48.500
6.0	48.500
7.0	48.501
8.0	48.501

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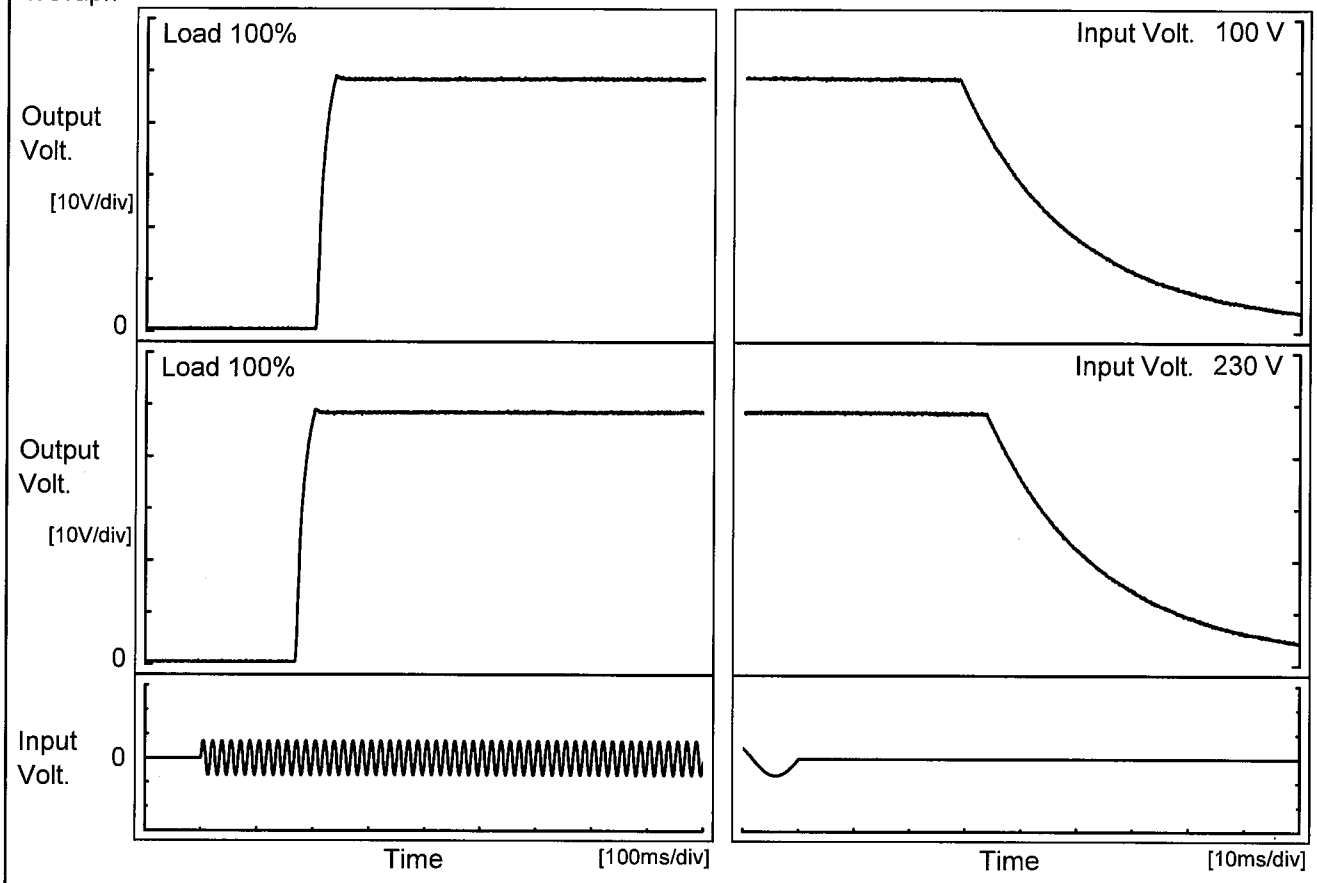
Model	LFA300F-48-TY	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+48V7A	

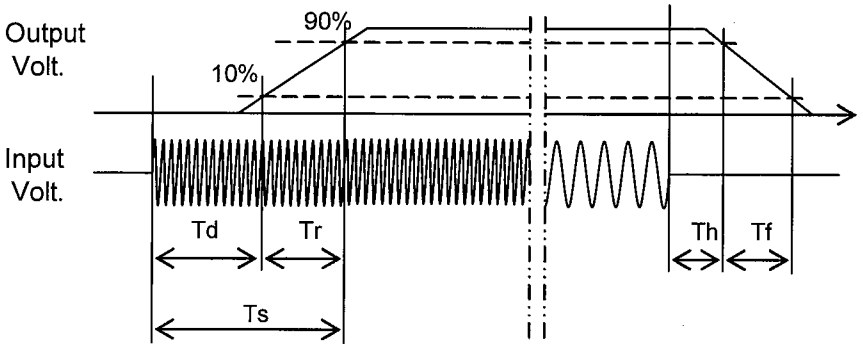
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	205.0	21.5	226.5	30.4	50.7
230 V	171.0	22.0	193.0	36.0	49.2



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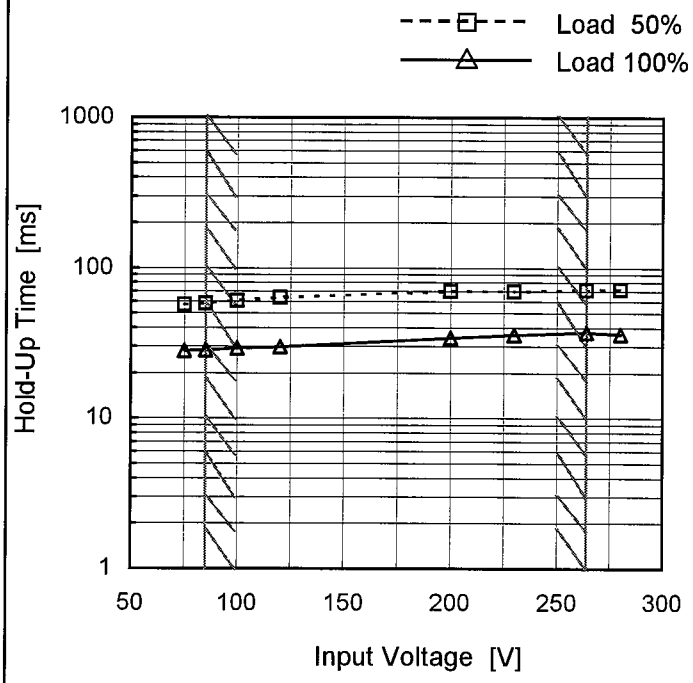
Model	LFA300F-48-TY
Item	Hold-Up Time
Object	+48V7A

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

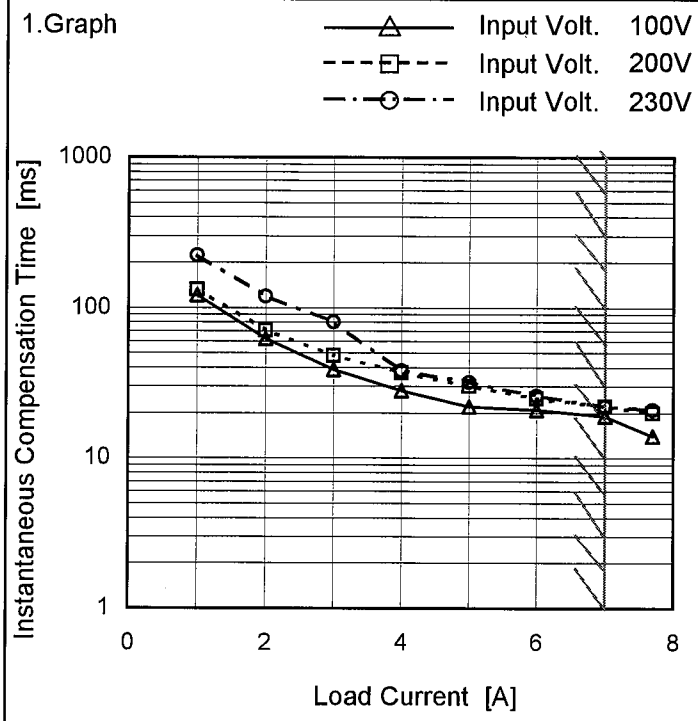
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	57	28
85	58	28
100	60	30
120	63	30
200	70	34
230	70	36
264	72	38
280	72	36
--	-	-

COSEL

Model	LFA300F-48-TY
Item	Instantaneous Interruption Compensation
Object	+48V7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

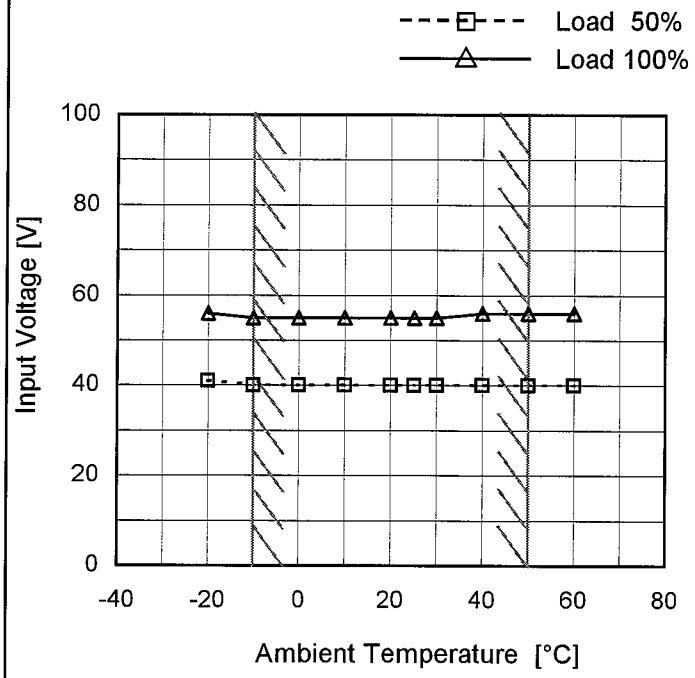
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	121	132	222
2.0	62	71	119
3.0	39	48	80
4.0	28	37	38
5.0	22	30	32
6.0	21	25	26
7.0	19	22	22
7.7	14	20	21
--	-	-	-
--	-	-	-

COSEL

Model	LFA300F-48-TY
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V7A

Testing Circuitry Figure A

1.Graph



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

2.Values

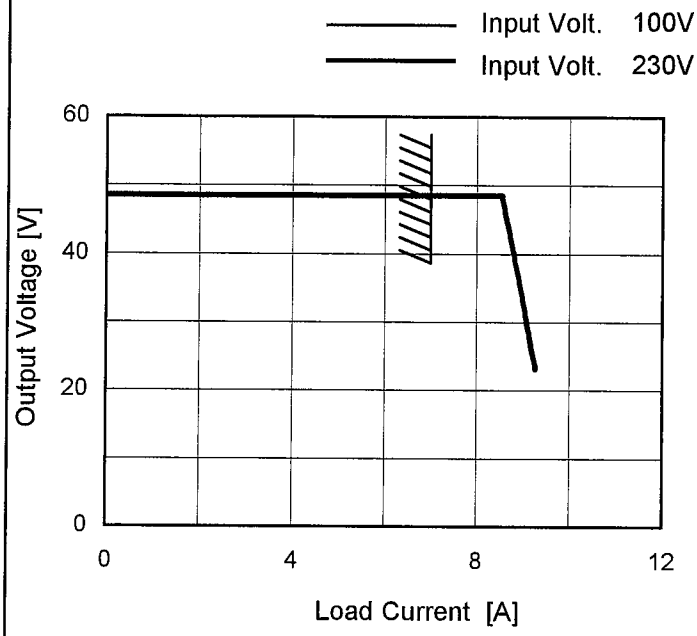
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	41	56
-10	40	55
0	40	55
10	40	55
20	40	55
25	40	55
30	40	55
40	40	56
50	40	56
60	40	56
--	-	-

COSEL

Model	LFA300F-48-TY
Item	Overcurrent Protection
Object	+48V7A

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 23V to 0V.

2.Values

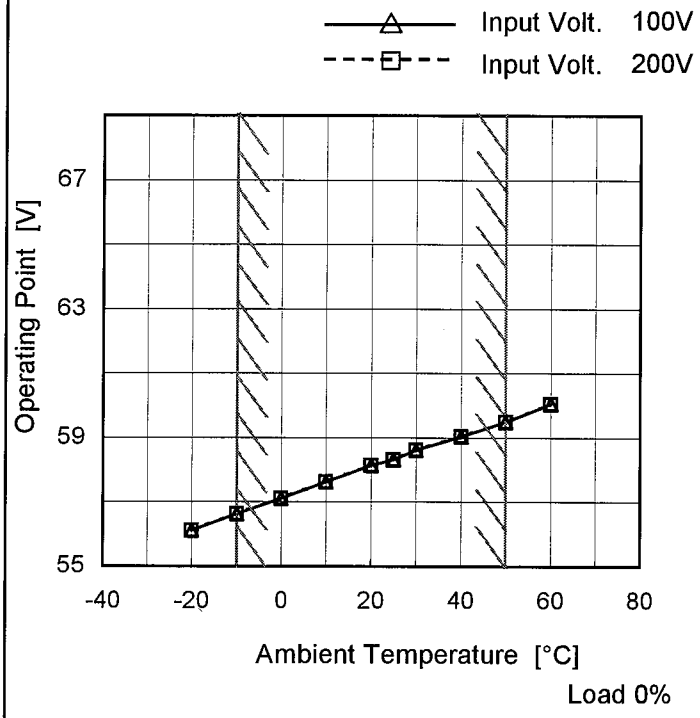
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
48.0	8.57	8.56
45.6	8.64	8.62
43.2	8.71	8.70
38.4	8.85	8.84
33.6	8.99	8.99
28.8	9.12	9.12
24.0	9.24	9.24
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA300F-48-TY
Item	Overvoltage Protection
Object	+48V7A

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	56.11	56.11
-10	56.63	56.63
0	57.10	57.10
10	57.63	57.63
20	58.15	58.15
25	58.33	58.33
30	58.62	58.62
40	59.03	59.03
50	59.50	59.50
60	60.05	60.05
--	-	-

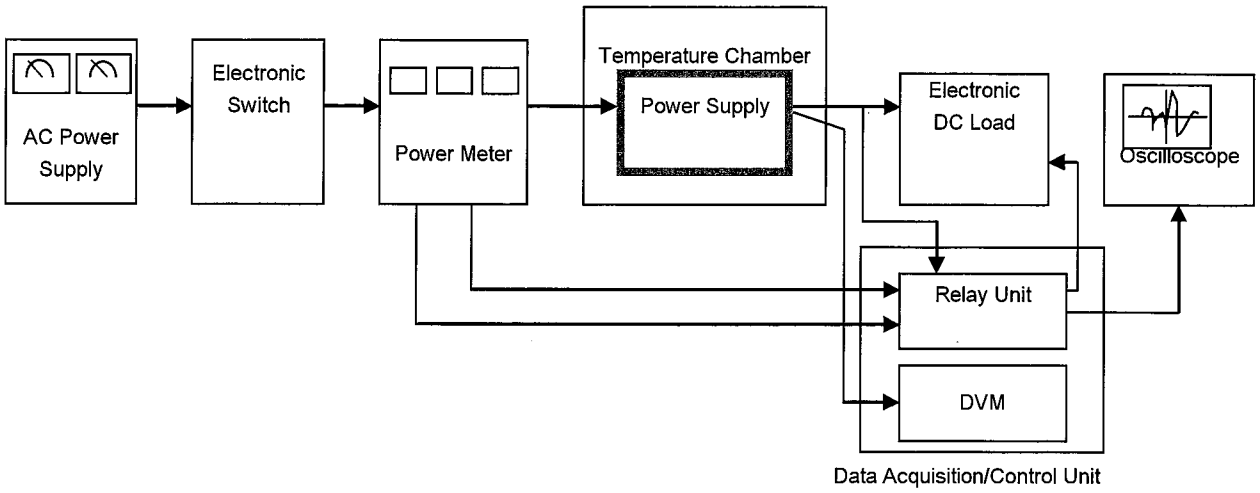


Figure A

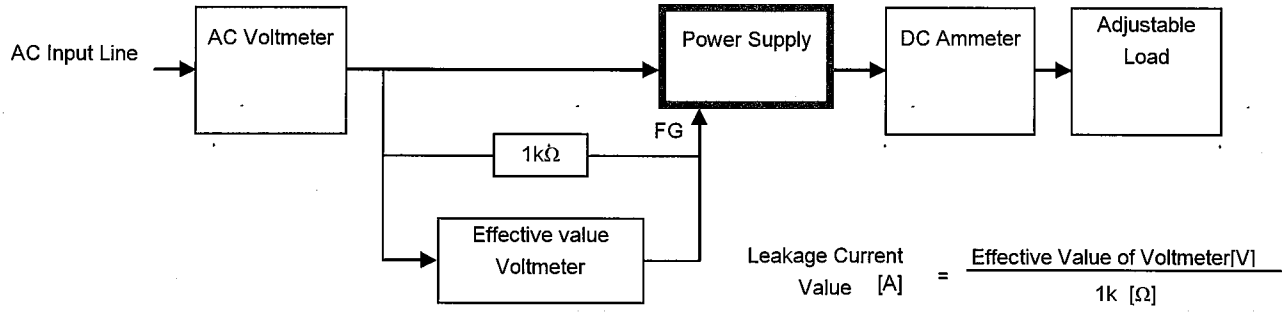


Figure B (DEN-AN)

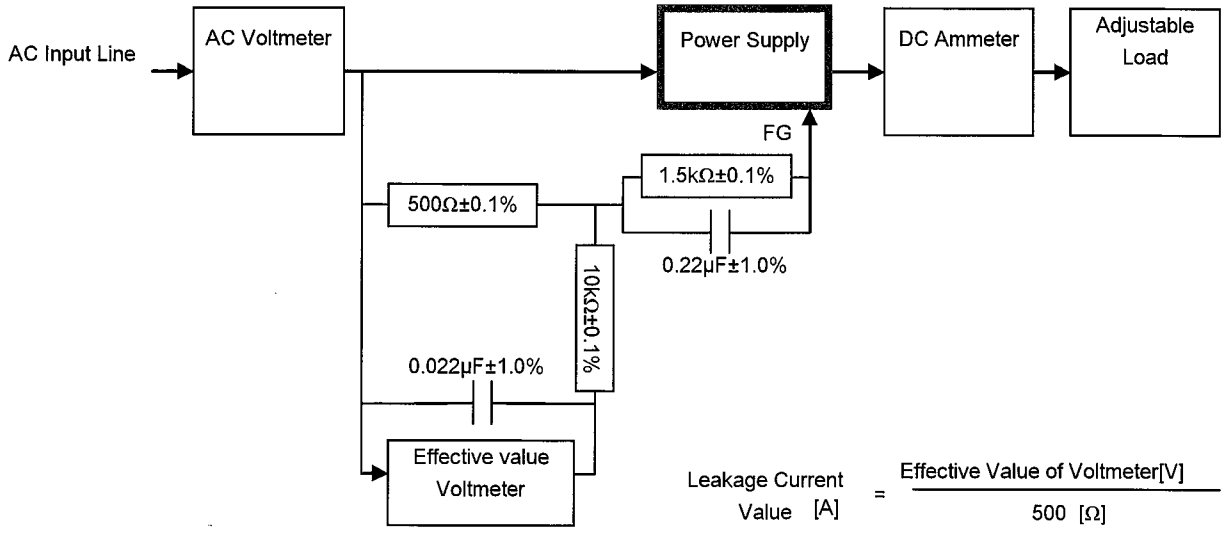


Figure B (IEC60950-1)

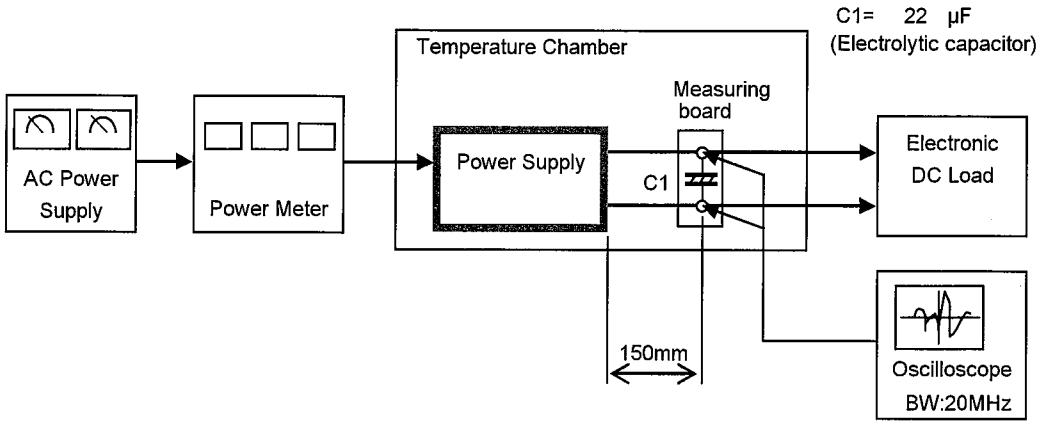

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C