COSEL

参考資料

TEST DATA OF LFA150F-5-Y

Regulated DC Power Supply
November 11, 2010

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COSEL CO.,LTD.

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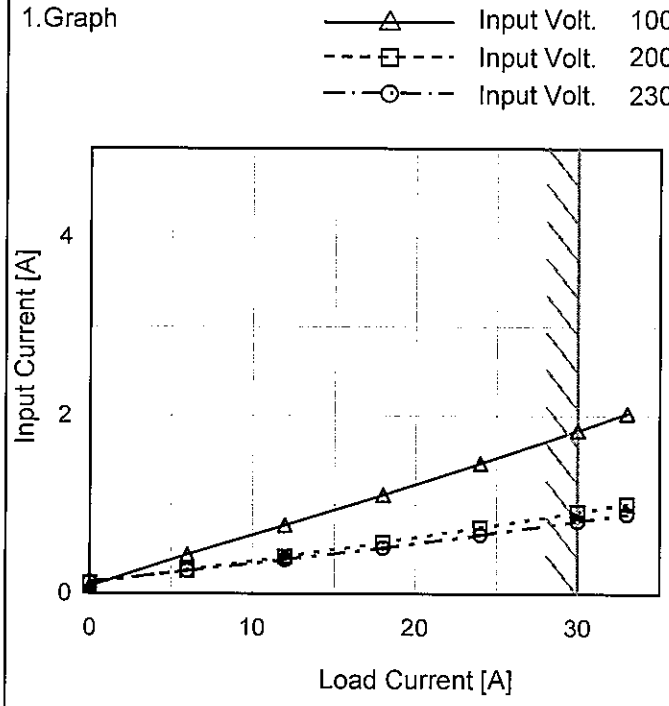
Model	LFA150F-5-Y
Item	Input Current (by Load Current)
Object	———————

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	0.081	0.116	0.128
6	0.439	0.263	0.257
12	0.770	0.413	0.379
18	1.110	0.573	0.515
24	1.465	0.743	0.662
30	1.834	0.919	0.815
33	2.028	1.010	0.893
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-10482

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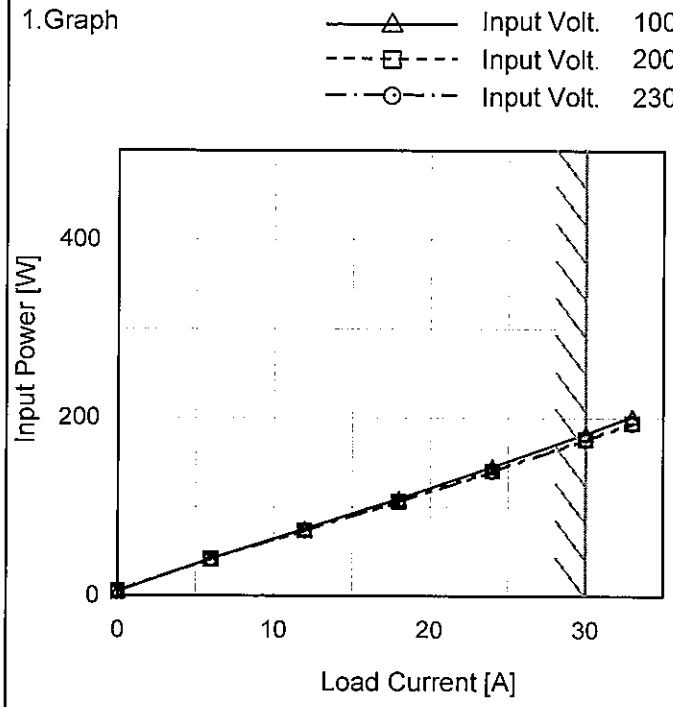
Model	LFA150F-5-Y
Item	Input Power (by Load Current)
Object	———————

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	4.7	5.2	5.2
6	41.8	41.2	41.3
12	75.1	73.1	72.8
18	109.3	105.8	105.5
24	145.1	140.3	139.7
30	182.4	176.2	175.2
33	201.9	194.2	193.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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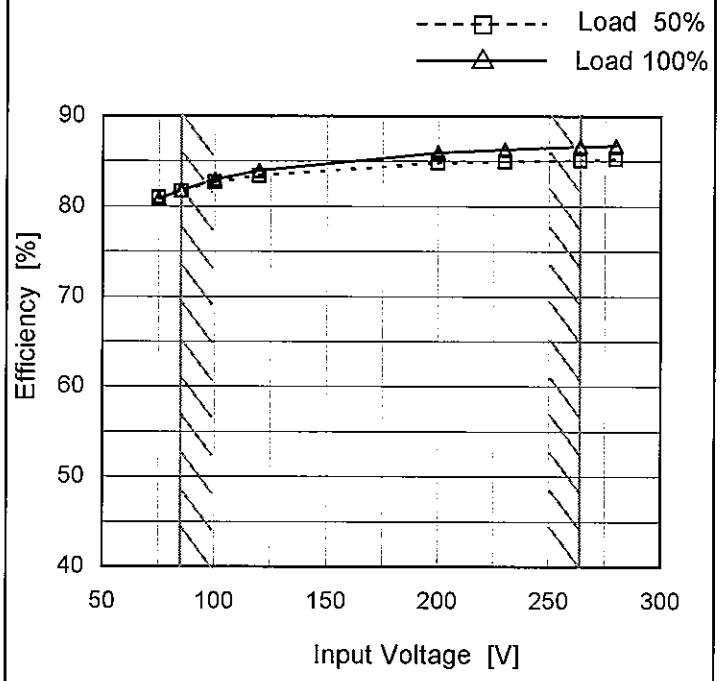
Model	LFA150F-5-Y
Item	Efficiency (by Input Voltage)
Object	———————————

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	81.0	80.9
85	81.7	81.8
100	82.7	83.0
120	83.4	84.0
200	84.8	85.9
230	84.9	86.3
264	85.1	86.7
280	85.2	86.7
--	-	-

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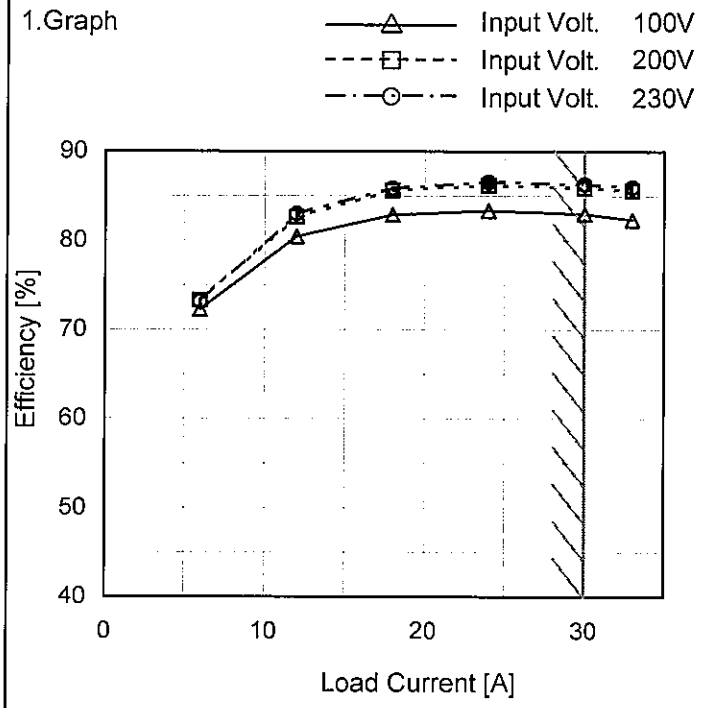
Model	LFA150F-5-Y
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
6	72.3	73.3	73.1
12	80.4	82.6	83.0
18	82.9	85.6	85.9
24	83.3	86.2	86.6
30	83.0	85.9	86.3
33	82.3	85.6	86.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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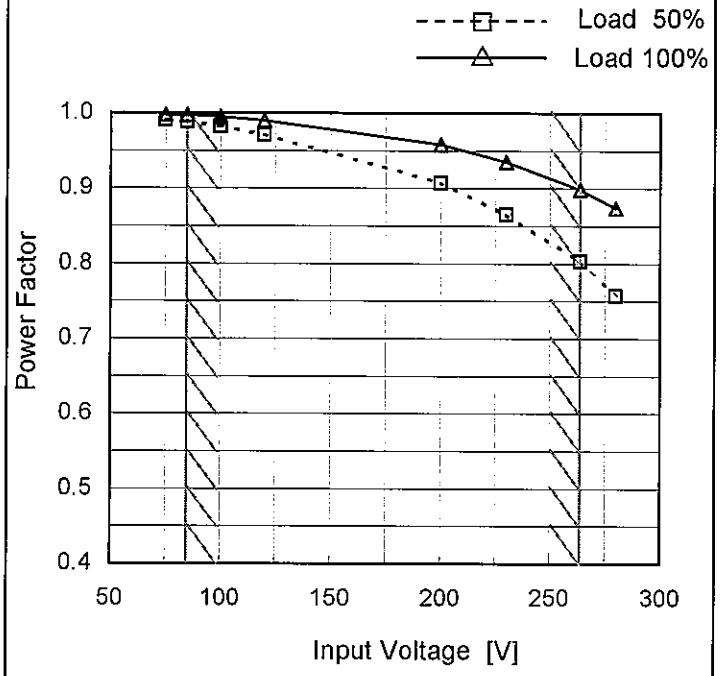
Model	LFA150F-5-Y
Item	Power Factor (by Input Voltage)
Object	———————

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	0.990	0.997
85	0.988	0.997
100	0.982	0.995
120	0.971	0.990
200	0.907	0.958
230	0.866	0.935
264	0.803	0.899
280	0.757	0.874
--	-	-

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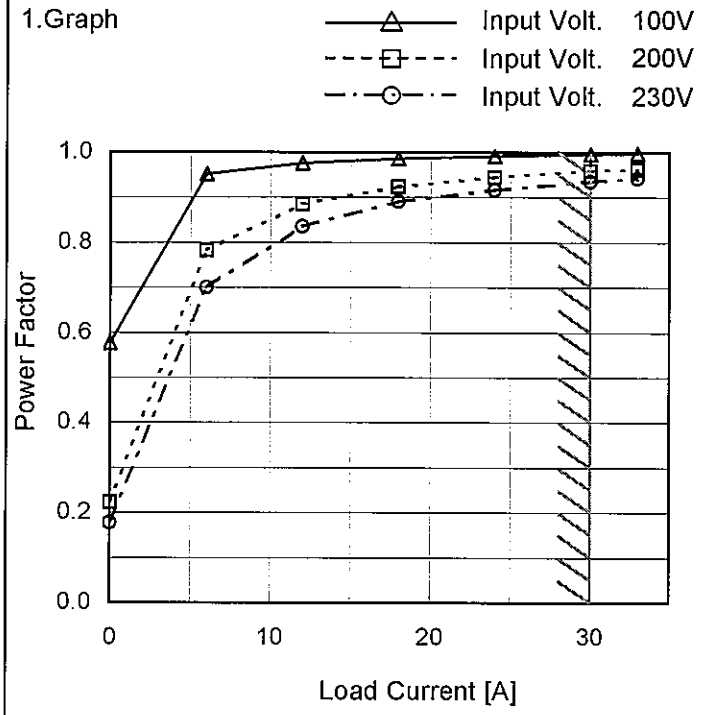
Model	LFA150F-5-Y
Item	Power Factor (by Load Current)
Object	————————

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	0.577	0.223	0.177
6	0.952	0.783	0.700
12	0.975	0.885	0.836
18	0.986	0.924	0.890
24	0.991	0.944	0.917
30	0.995	0.958	0.935
33	0.997	0.961	0.942
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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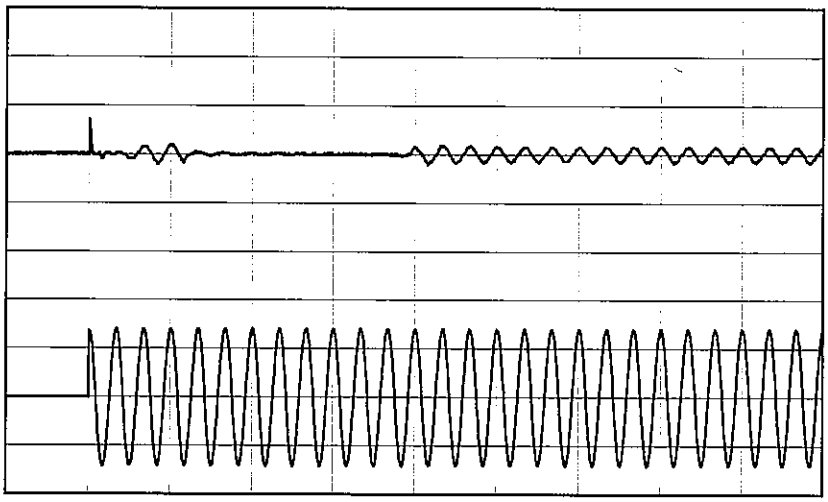
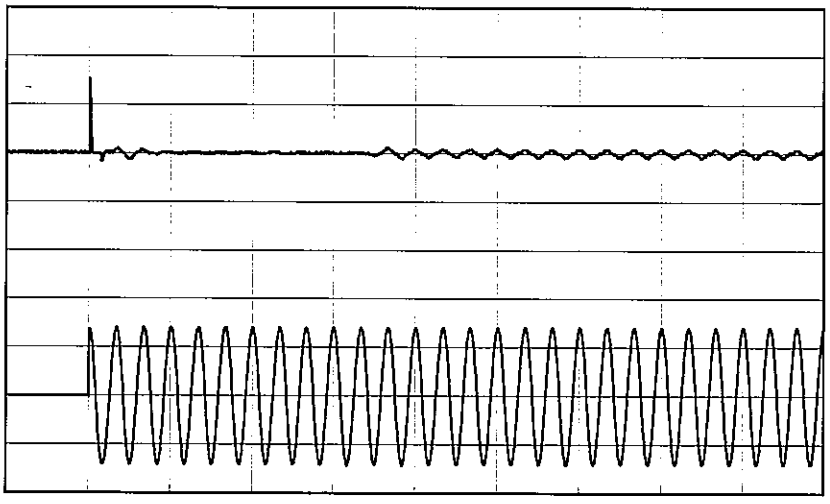
Model	LFA150F-5-Y
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



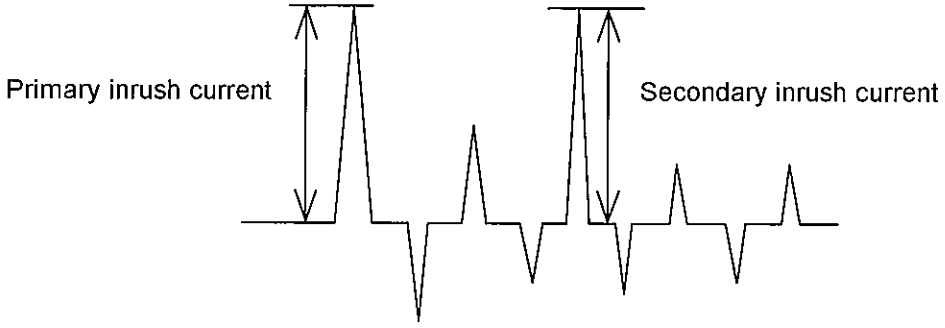
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
14.4 A
Secondary inrush current :
4.4 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
30.4 A
Secondary inrush current :
2.4 A



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Model	LFA150F-5-Y	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	――――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.27	0.40	0.44	Operation
	One of phases	0.23	0.51	0.60	Stand by
IEC60950-1	Both phases	0.16	0.35	0.41	Operation
	One of phases	0.24	0.52	0.61	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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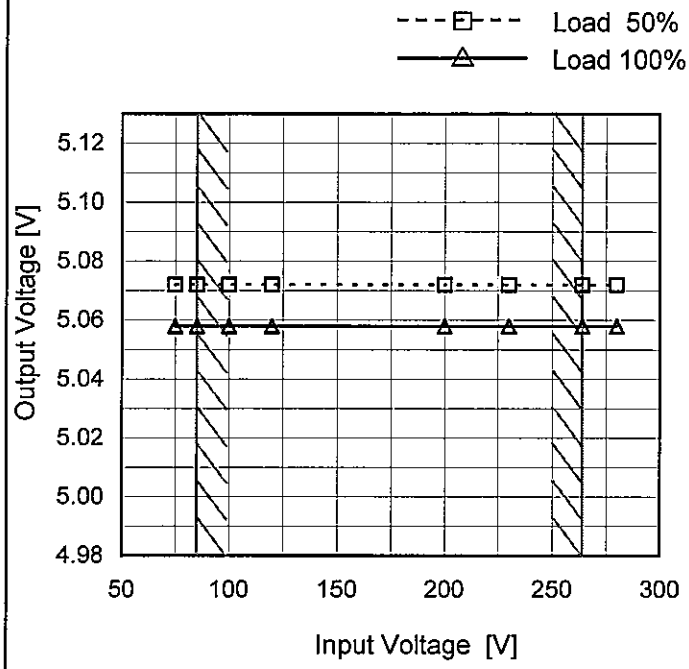
Model	LFA150F-5-Y
Item	Line Regulation
Object	+5V30A

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	5.072	5.058
85	5.072	5.058
100	5.072	5.058
120	5.072	5.058
200	5.072	5.058
230	5.072	5.058
264	5.072	5.058
280	5.072	5.058
--	-	-

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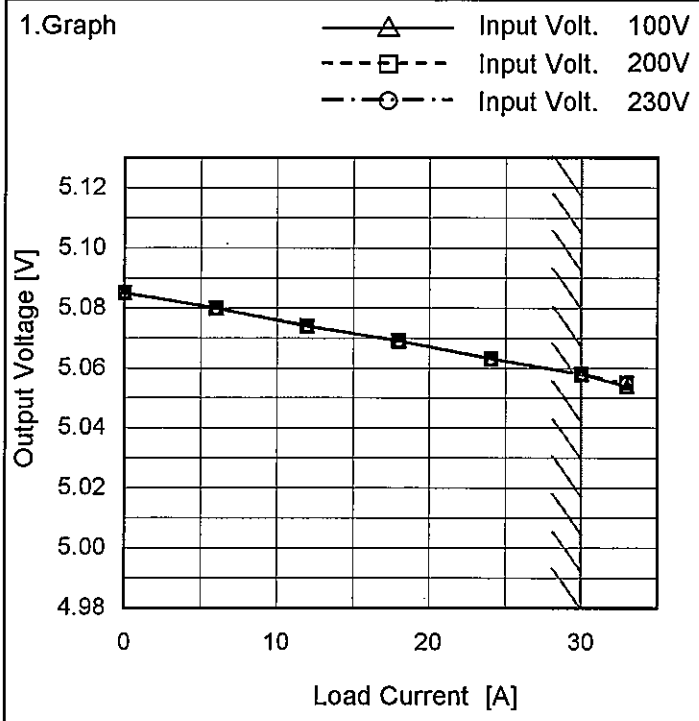
Model	LFA150F-5-Y
Item	Load Regulation
Object	+5V30A

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	5.085	5.085	5.085
6	5.080	5.080	5.080
12	5.074	5.074	5.074
18	5.069	5.069	5.069
24	5.063	5.063	5.063
30	5.058	5.058	5.058
33	5.054	5.055	5.055
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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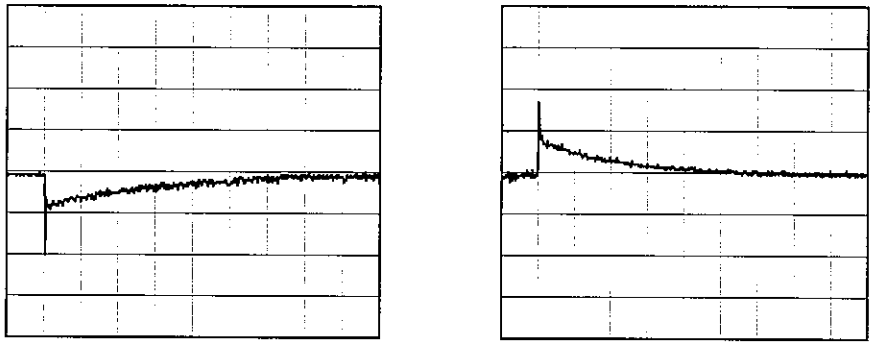
Model	LFA150F-5-Y		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+5V30A		

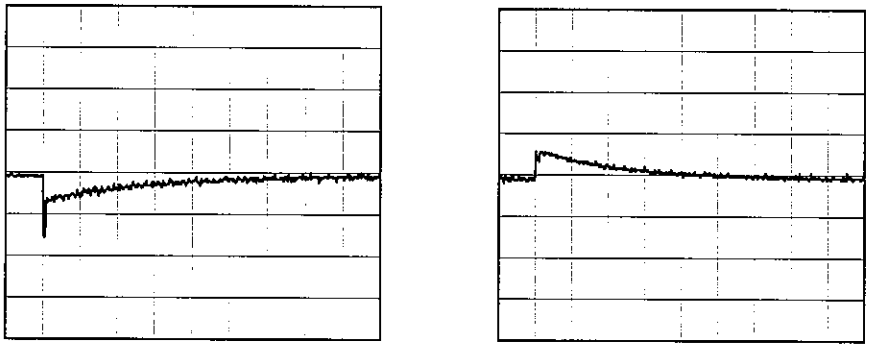
Input Volt. 100 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ⟷
Load 100% (30A)



Min. Load (0A) ⟷
Load 50% (15A)



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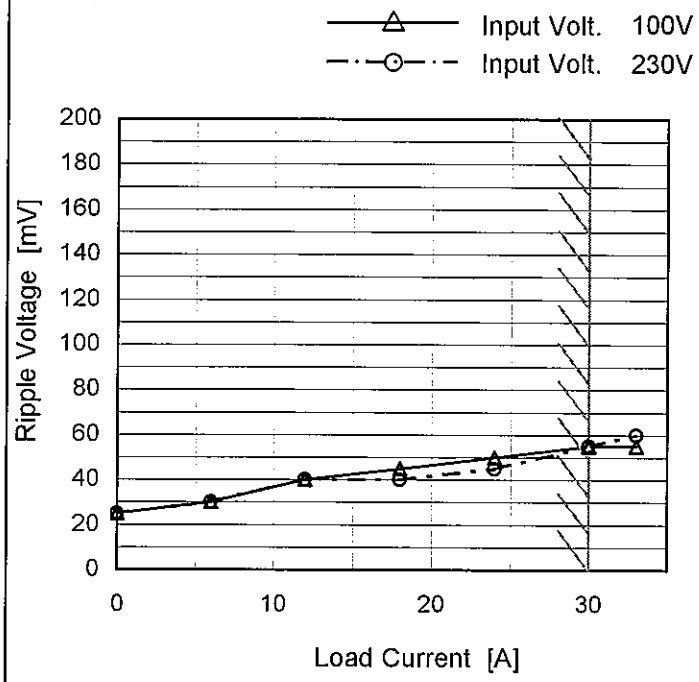
Model	LFA150F-5-Y
Item	Ripple Voltage (by Load Current)
Object	+5V30A

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	25	25
6	30	30
12	40	40
18	45	40
24	50	45
30	55	55
33	55	60
--	-	-
--	-	-
--	-	-
--	-	-

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

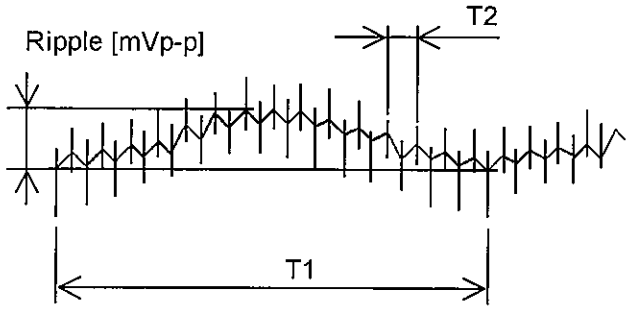


Fig. Complex Ripple Wave Form

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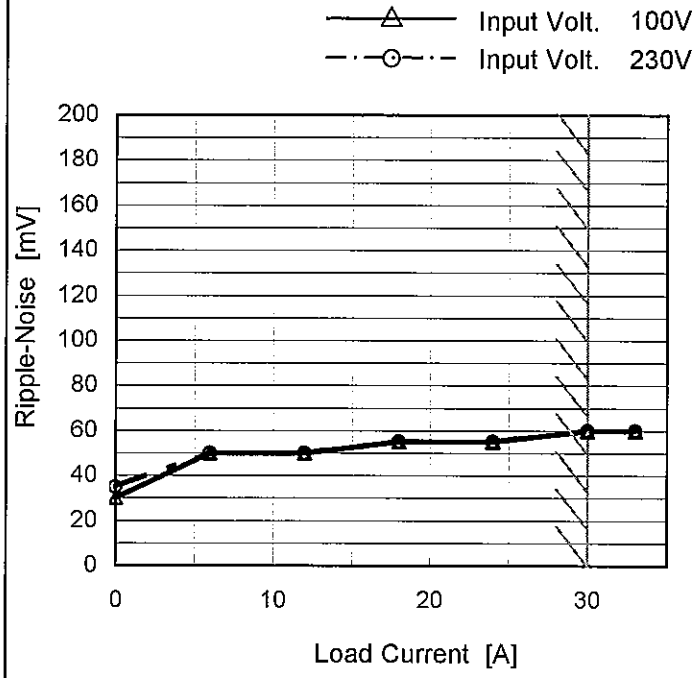
Model	LFA150F-5-Y
Item	Ripple-Noise
Object	+5V30A

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.

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

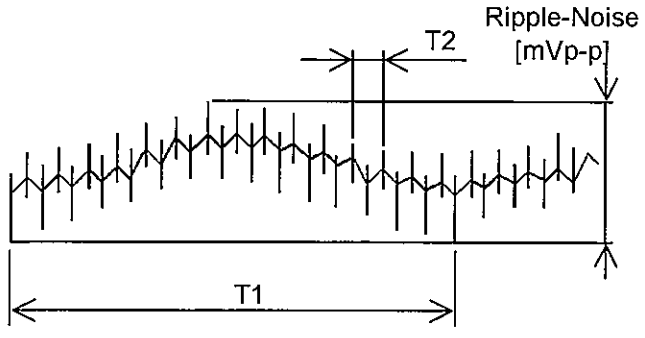


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0	30	35
6	50	50
12	50	50
18	55	55
24	55	55
30	60	60
33	60	60
--	-	-
--	-	-
--	-	-
--	-	-

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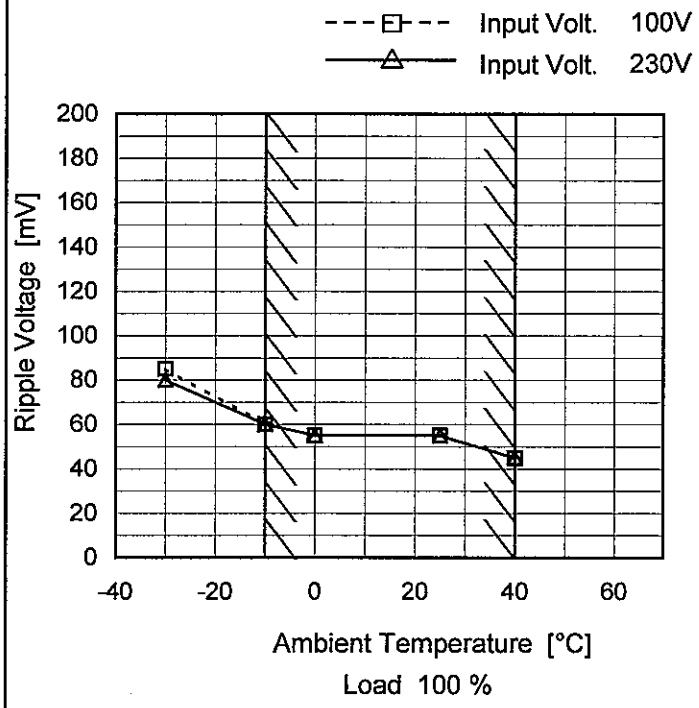
Model	LFA150F-5-Y
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V30A

Testing Circuitry Figure C

1.Graph



Load 100 %

Measured by 20 MHz Oscilloscope.

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

2.Values

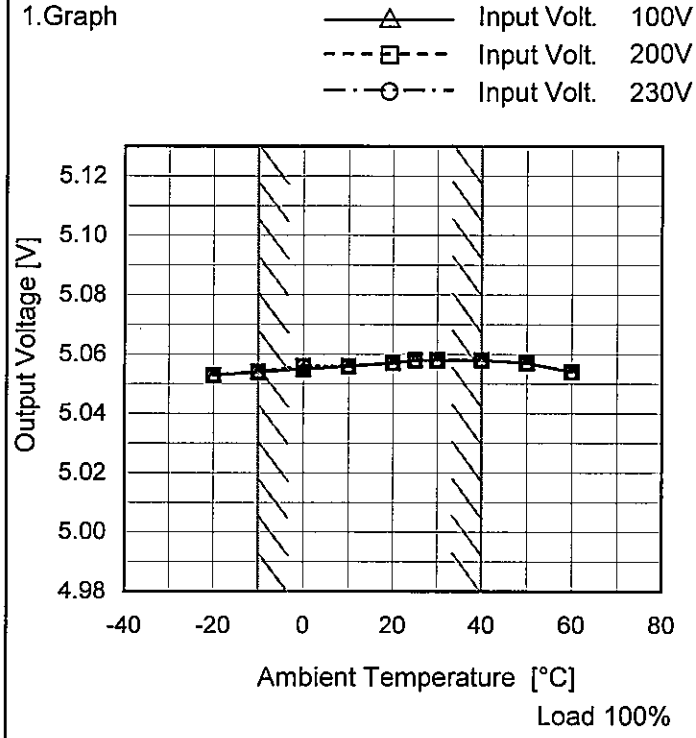
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	85	80
-10	60	60
0	55	55
25	55	55
40	45	45
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-

COSEL

Model	LFA150F-5-Y
Item	Ambient Temperature Drift
Object	+5V30A

Testing Circuitry Figure A

1.Graph



Load 100%

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	5.053	5.053	5.053
-10	5.054	5.054	5.054
0	5.055	5.056	5.056
10	5.056	5.056	5.056
20	5.057	5.057	5.057
25	5.058	5.058	5.058
30	5.058	5.058	5.058
40	5.058	5.058	5.058
50	5.057	5.057	5.057
60	5.054	5.054	5.054
--	-	-	-

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Model	LFA150F-5-Y
Item	Output Voltage Accuracy
Object	+5V30A

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 - 40°C
Input Voltage : 85 - 264V
Load Current : 0 - 30A

* 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	25	85	0	5.085	±16	±0.3
Minimum Voltage	-10	85	30	5.053		

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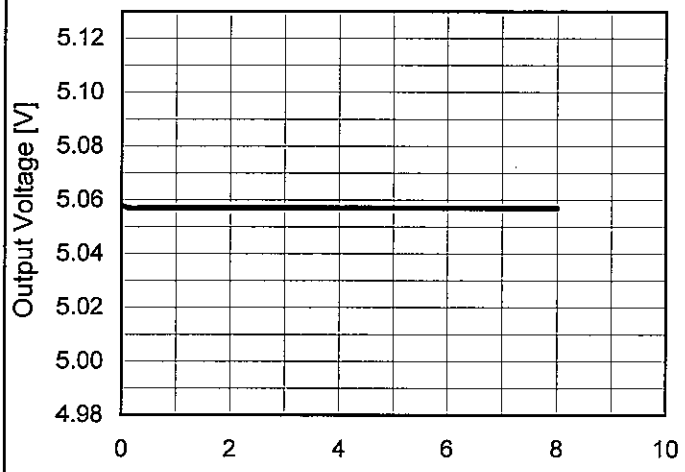
Model	LFA150F-5-Y
Item	Time Lapse Drift
Object	+5V30A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC230V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	5.058
0.5	5.057
1.0	5.057
2.0	5.057
3.0	5.057
4.0	5.057
5.0	5.057
6.0	5.057
7.0	5.057
8.0	5.057

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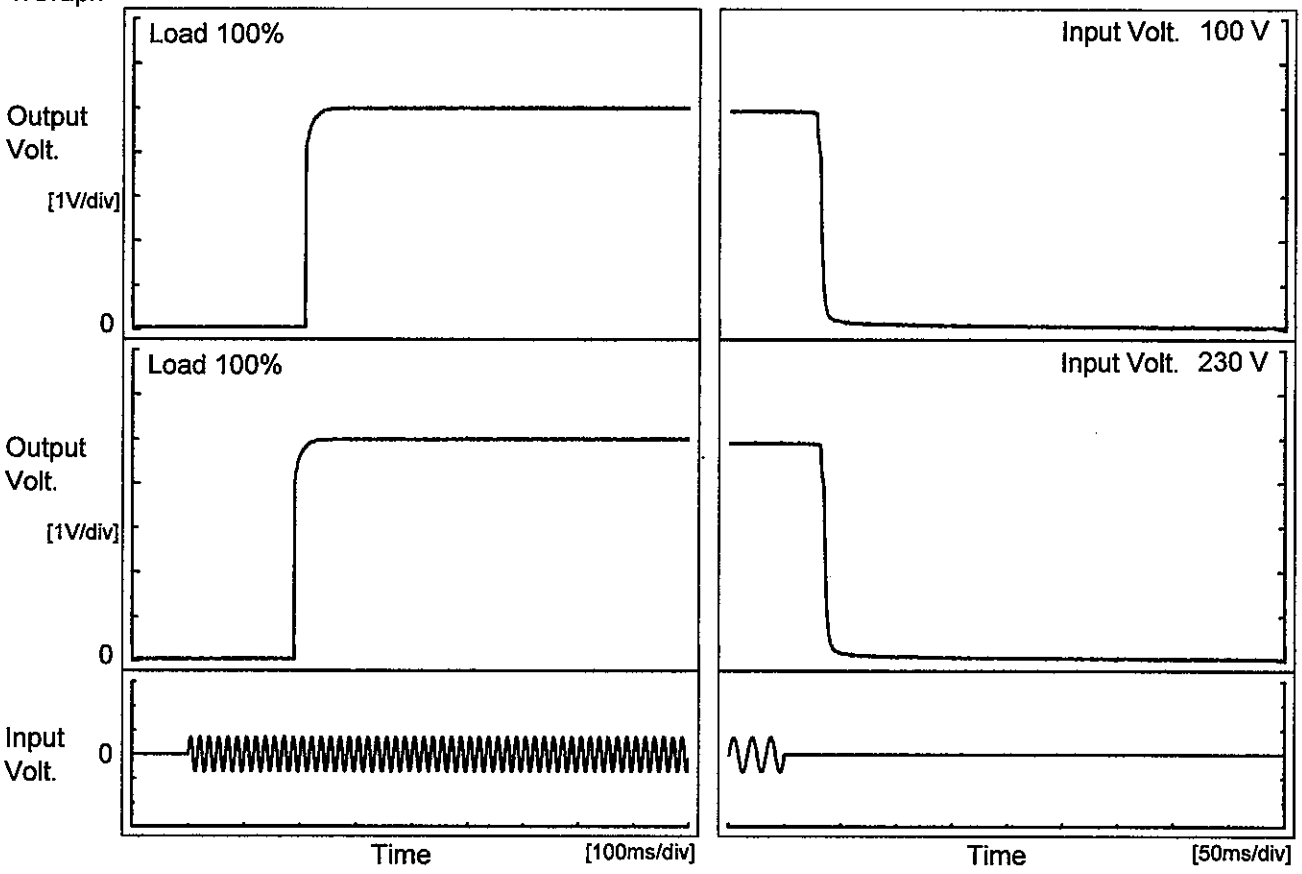
Model	LFA150F-5-Y	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+5V30A	

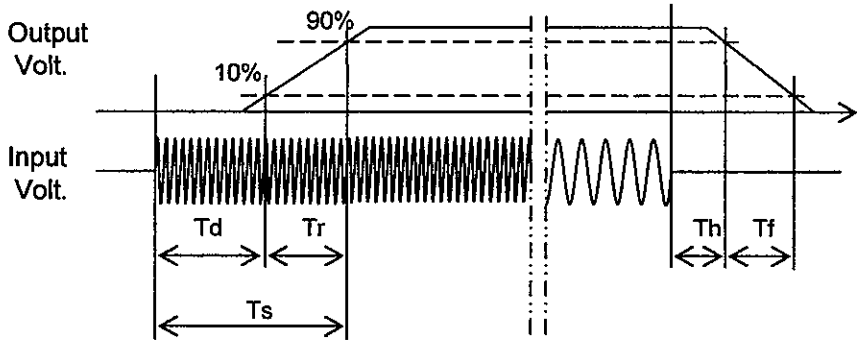
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	208.0	8.0	216.0	28.5	8.3
230 V	189.0	8.5	197.5	32.6	8.3



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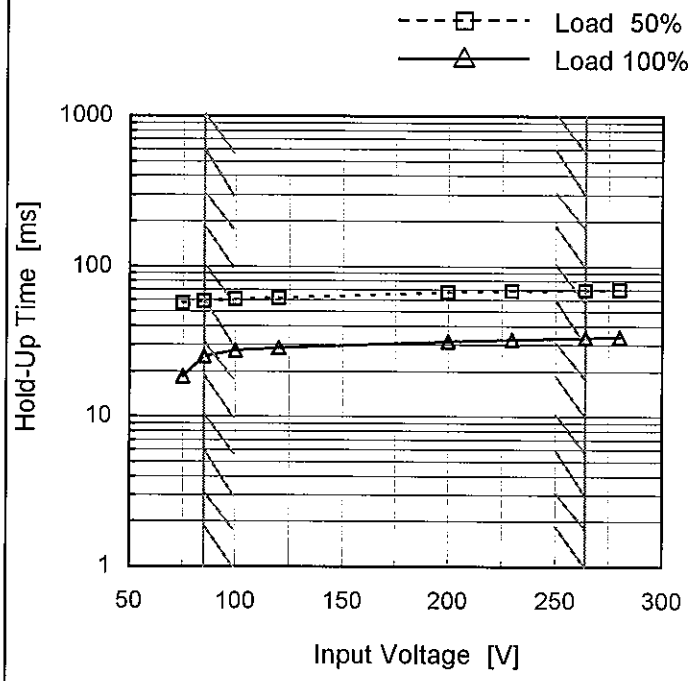
Model	LFA150F-5-Y
Item	Hold-Up Time
Object	+5V30A

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	19
85	59	25
100	61	28
120	62	29
200	67	32
230	68	33
264	70	33
280	70	34
--	-	-

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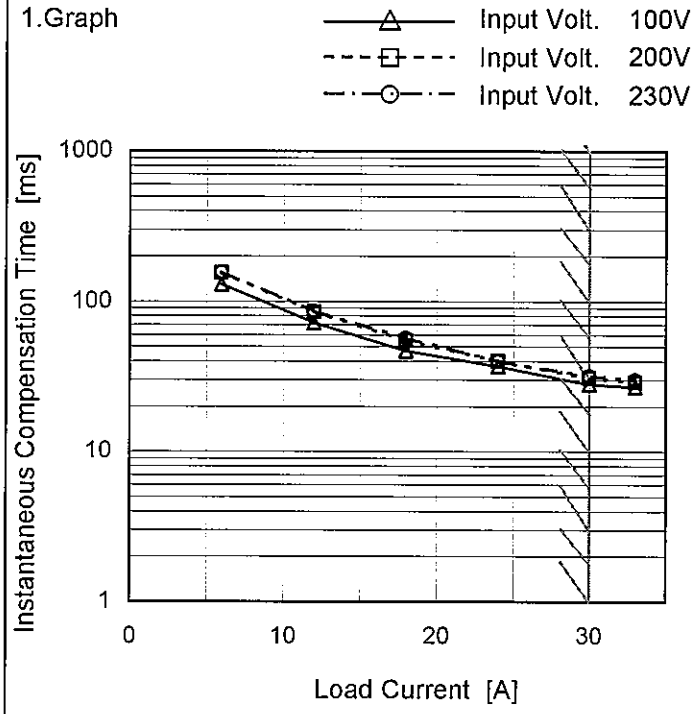
Model	LFA150F-5-Y
Item	Instantaneous Interruption Compensation
Object	+5V30A

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	-	-	-
6	130	155	156
12	72	85	86
18	47	55	57
24	37	40	40
30	28	31	32
33	27	29	30
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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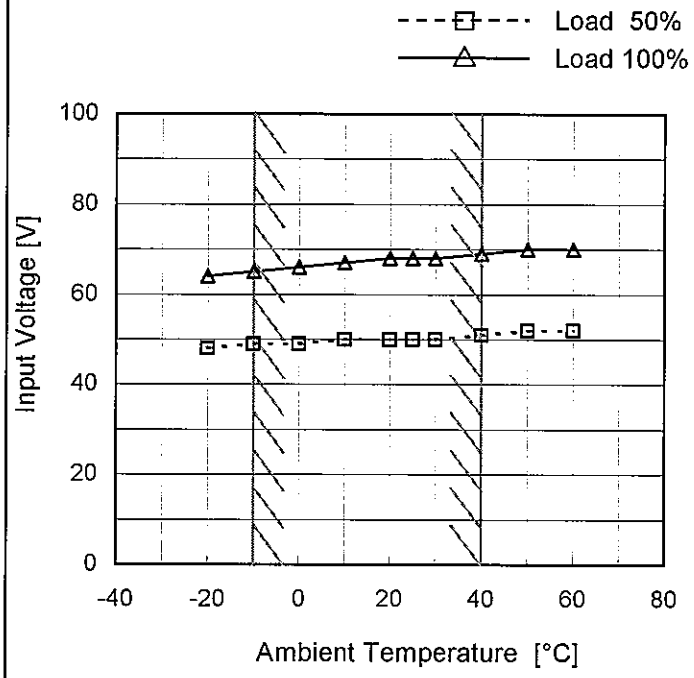
Model	LFA150F-5-Y
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V30A

Testing Circuitry Figure A

1.Graph



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

2.Values

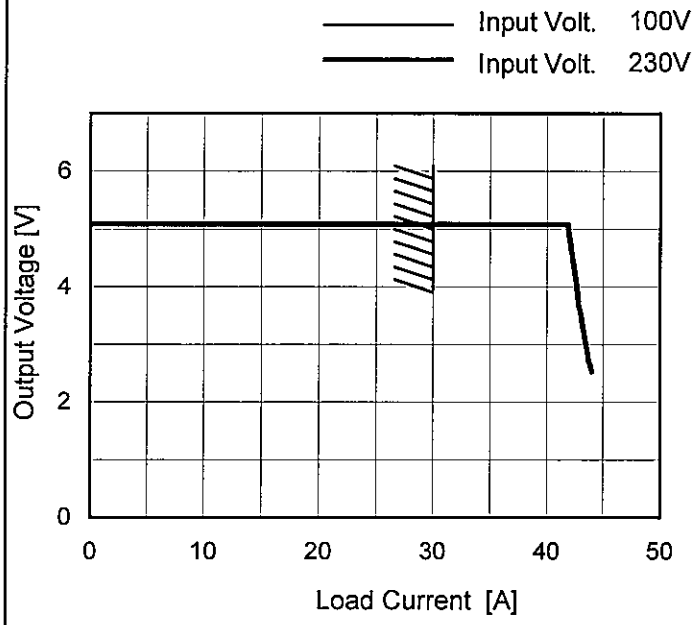
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	48	64
-10	49	65
0	49	66
10	50	67
20	50	68
25	50	68
30	50	68
40	51	69
50	52	70
60	52	70
--	-	-

COSEL

Model	LFA150F-5-Y
Item	Overcurrent Protection
Object	+5V30A

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 2.5V to 0V.

2.Values

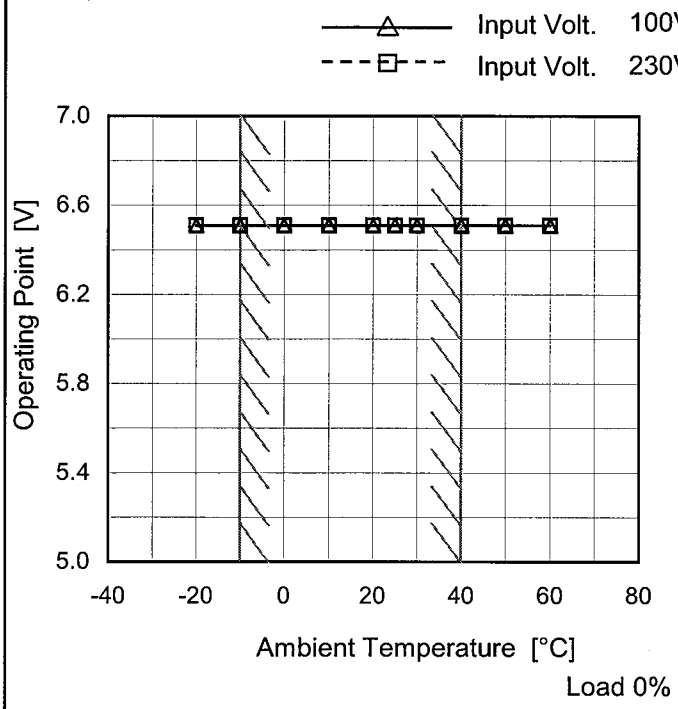
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 230[V]
5.00	31.73	31.49
4.75	42.19	42.13
4.50	42.31	42.26
4.00	42.68	42.63
3.50	43.02	43.03
3.00	43.47	43.43
2.50	43.95	43.97
2.00	-	-
1.50	-	-
1.00	-	-
0.50	-	-
0.00	-	-

COSEL

Model	LFA150F-5-Y
Item	Overvoltage Protection
Object	+5V30A

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	6.51	6.51
-10	6.51	6.51
0	6.51	6.51
10	6.51	6.51
20	6.51	6.51
25	6.51	6.51
30	6.51	6.51
40	6.51	6.51
50	6.51	6.51
60	6.51	6.51
--	-	-

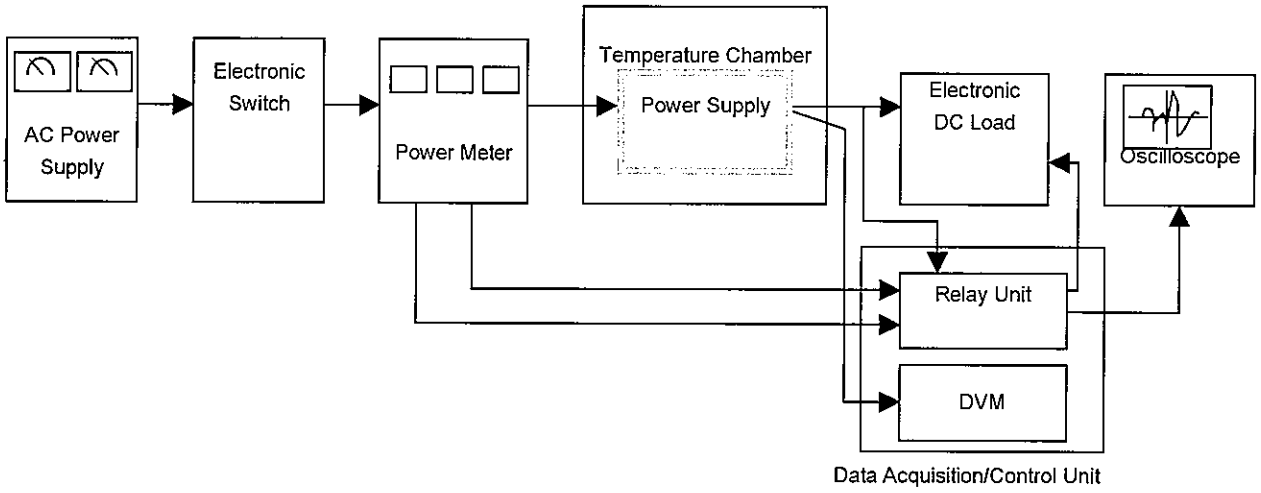


Figure A

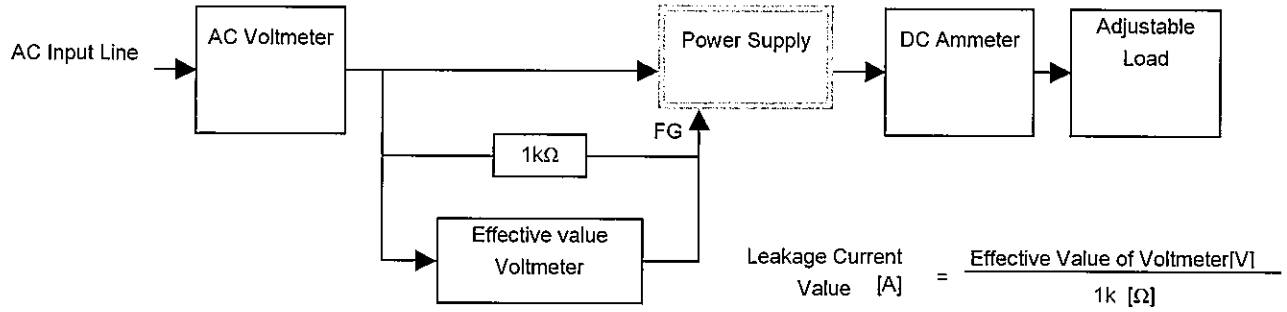


Figure B (DEN-AN)

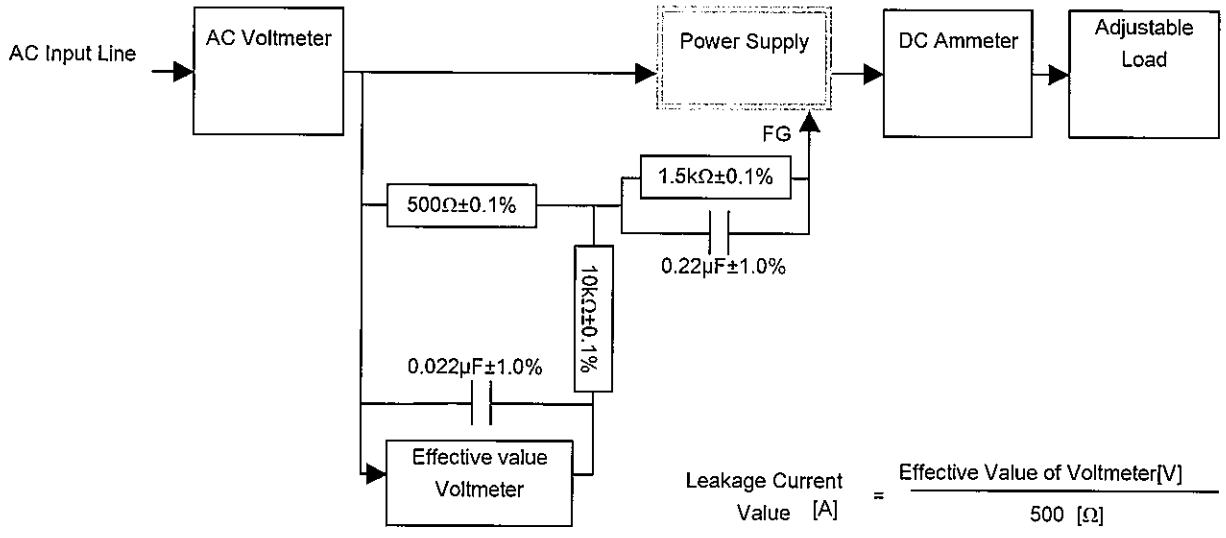


Figure B (IEC60950-1)

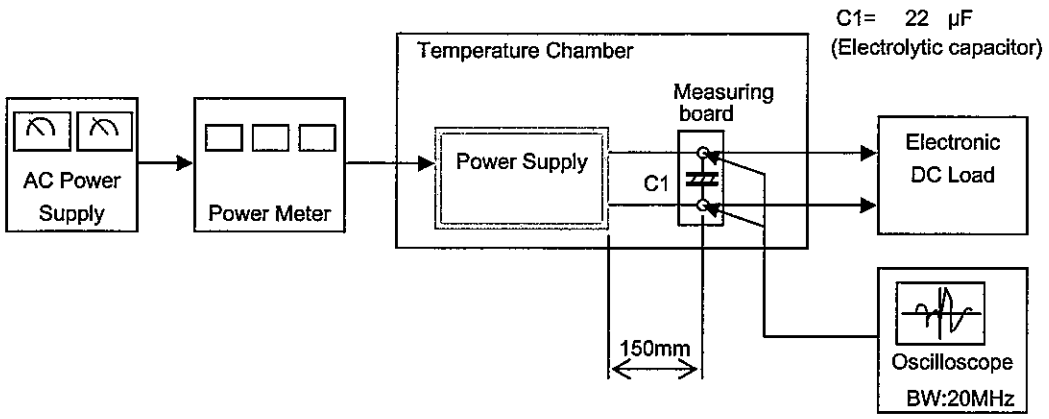

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C