参考資料

COSEL

TEST DATA OF LFA100F-5-Y

Regulated DC Power Supply
November 18, 2010

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COSEL CO.,LTD.

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Item	Input Current (by Load Current)
Object	———————

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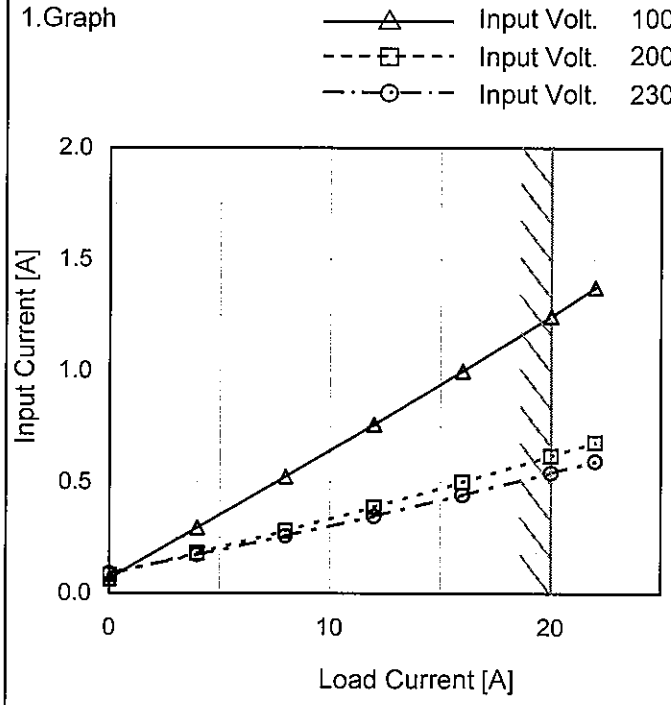
Testing Circuitry Figure A

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	0.065	0.082	0.089
4	0.295	0.180	0.172
8	0.524	0.280	0.258
12	0.759	0.388	0.347
16	0.998	0.500	0.443
20	1.244	0.618	0.542
22	1.373	0.678	0.594
--	-	-	-
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--	-	-	-
--	-	-	-

BC-10475

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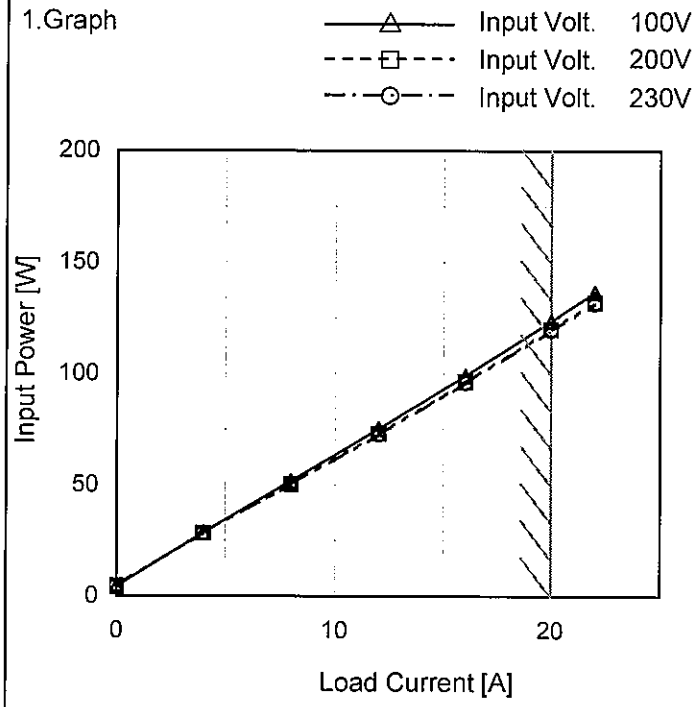
Model	LFA100F-5-Y
Item	Input Power (by Load Current)
Object	————————

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	4.2	4.4	4.5
4	28.5	28.3	28.3
8	51.7	50.3	50.3
12	75.2	73.0	72.5
16	99.0	96.1	95.8
20	123.6	119.9	119.4
22	136.5	132.1	131.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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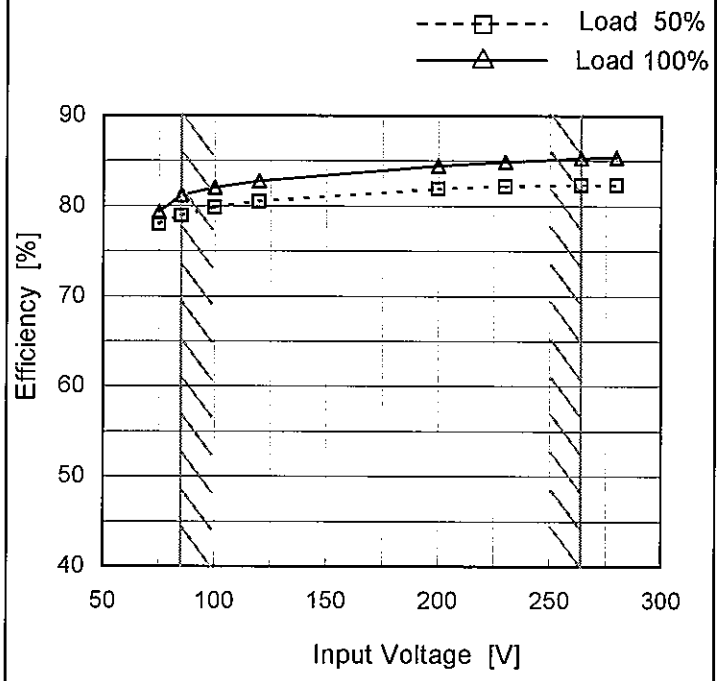
Model	LFA100F-5-Y
Item	Efficiency (by Input Voltage)
Object	———————————

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	78.0	79.3
85	79.0	81.2
100	79.8	82.0
120	80.5	82.7
200	81.9	84.5
230	82.2	84.9
264	82.3	85.3
280	82.3	85.4
--	-	-

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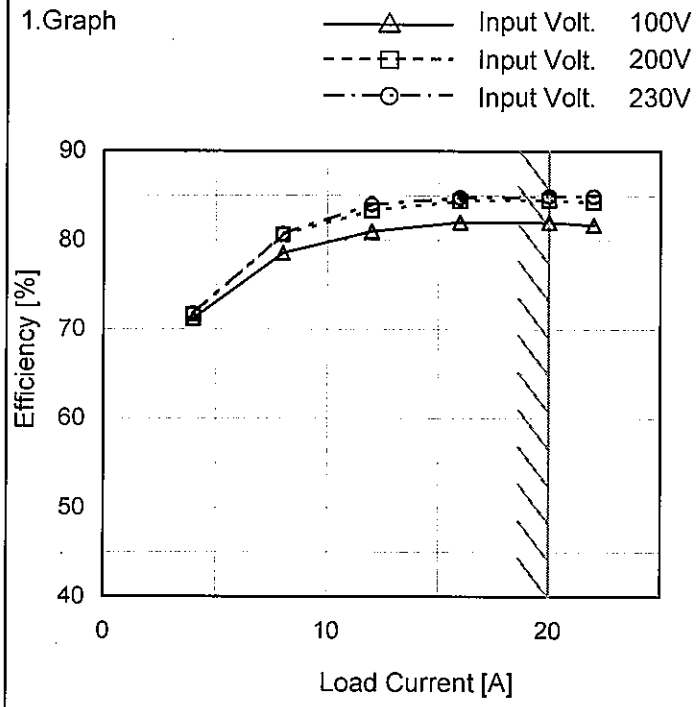
Model	LFA100F-5-Y
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
4	71.2	71.7	71.7
8	78.5	80.6	80.7
12	81.0	83.3	84.0
16	82.0	84.4	84.7
20	82.0	84.5	84.9
22	81.7	84.3	84.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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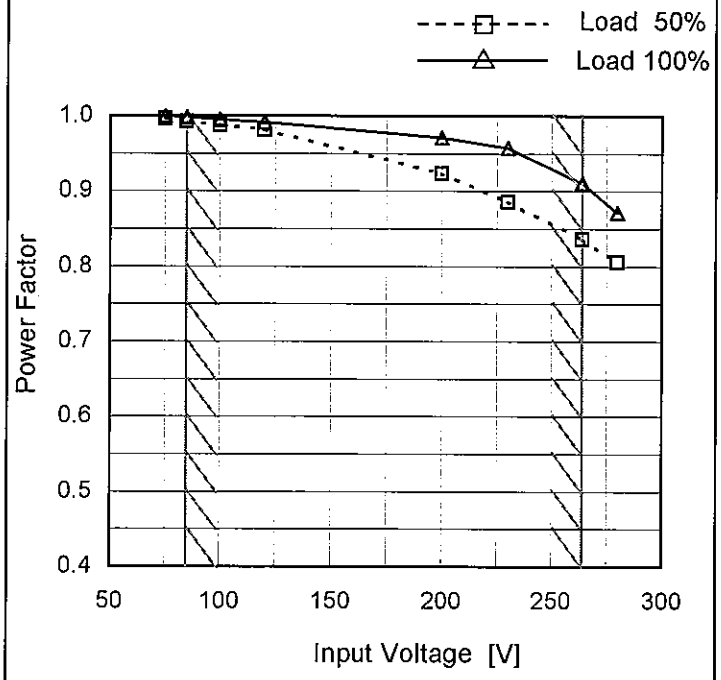
Model	LFA100F-5-Y
Item	Power Factor (by Input Voltage)
Object	———————————

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	0.997	0.999
85	0.992	0.998
100	0.987	0.995
120	0.981	0.991
200	0.923	0.971
230	0.886	0.957
264	0.836	0.910
280	0.805	0.871
--	-	-

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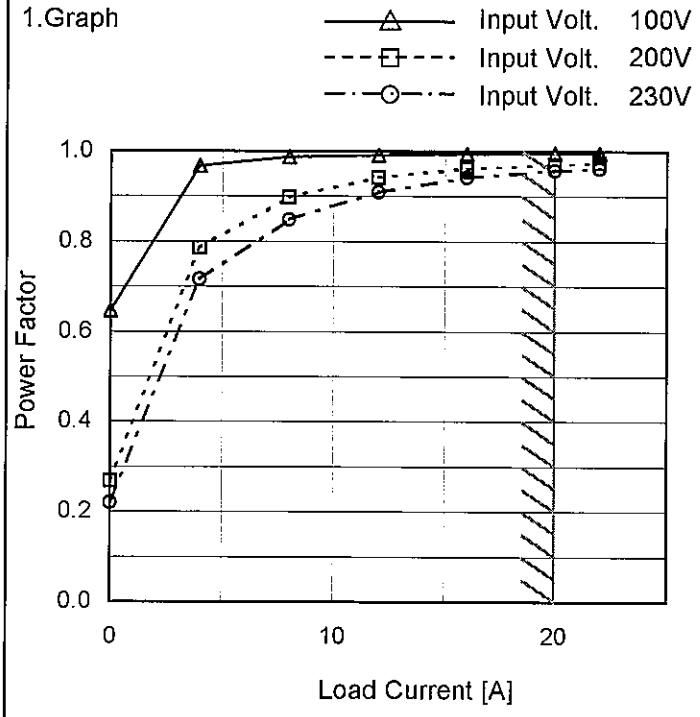
Model	LFA100F-5-Y
Item	Power Factor (by Load Current)
Object	————————

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	0.647	0.268	0.220
4	0.967	0.786	0.716
8	0.987	0.898	0.848
12	0.992	0.942	0.910
16	0.994	0.961	0.941
20	0.995	0.971	0.957
22	0.996	0.975	0.962
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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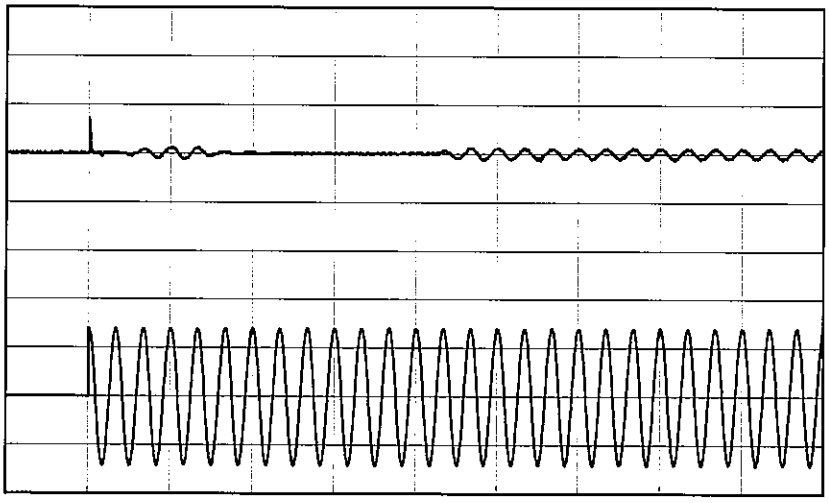
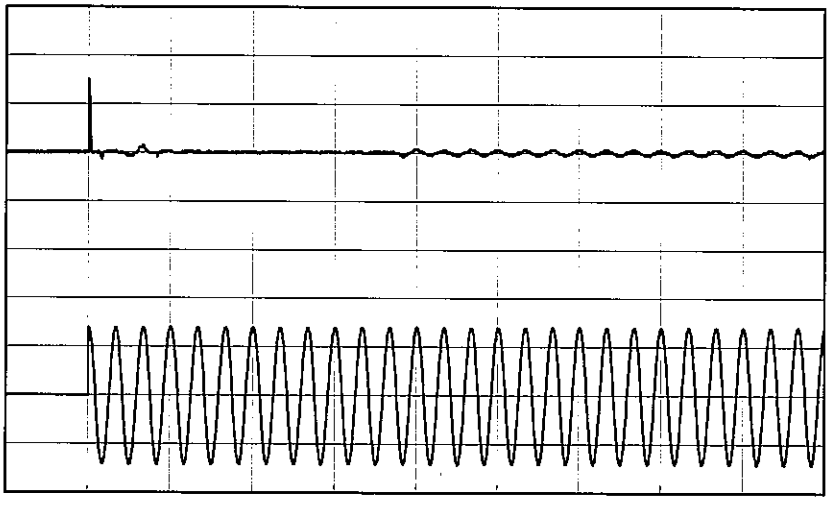
Model	LFA100F-5-Y
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



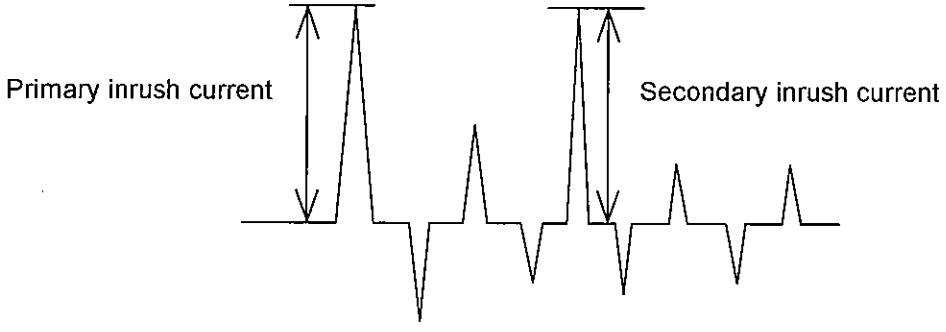
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
14.3 A
Secondary inrush current :
2.9 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
30.0 A
Secondary inrush current :
1.6 A



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Model	LFA100F-5-Y		
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	0.27	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.

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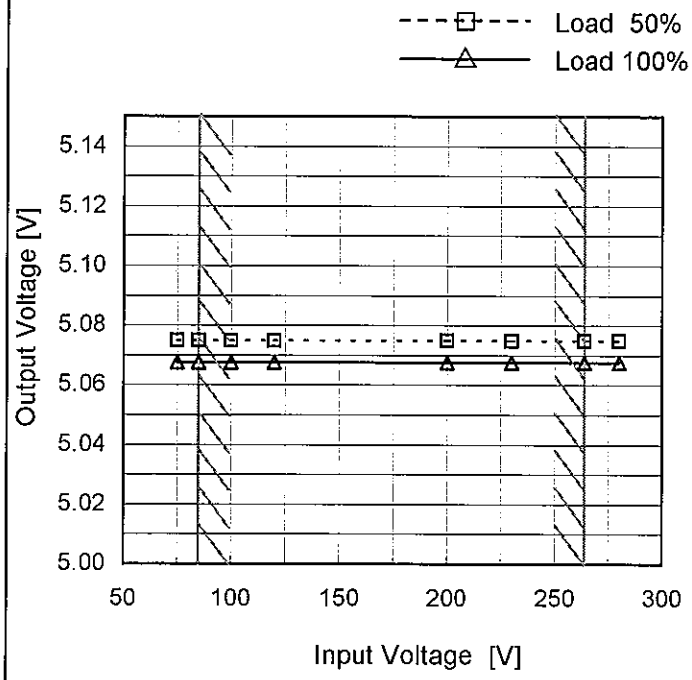
Model	LFA100F-5-Y
Item	Line Regulation
Object	+5V20A

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	5.075	5.068
85	5.075	5.068
100	5.075	5.068
120	5.075	5.068
200	5.075	5.068
230	5.075	5.068
264	5.075	5.068
280	5.075	5.068
--	-	-

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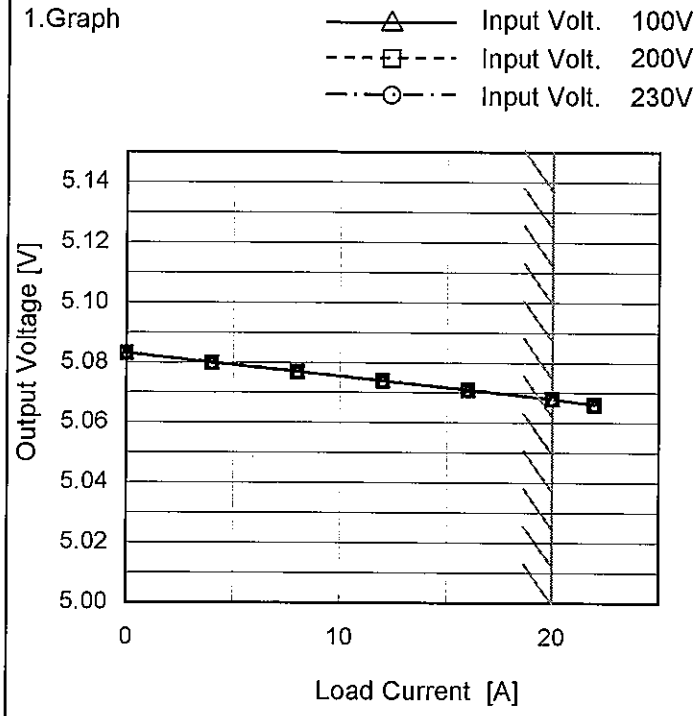
Model	LFA100F-5-Y
Item	Load Regulation
Object	+5V20A

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	5.083	5.083	5.083
4	5.080	5.080	5.080
8	5.077	5.077	5.077
12	5.074	5.074	5.074
16	5.071	5.071	5.071
20	5.068	5.068	5.068
22	5.066	5.066	5.066
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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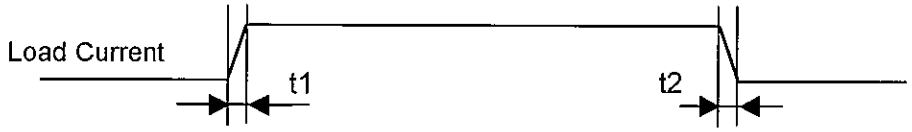
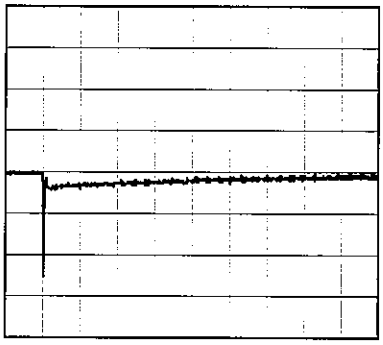
Model	LFA100F-5-Y		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	+5V20A		

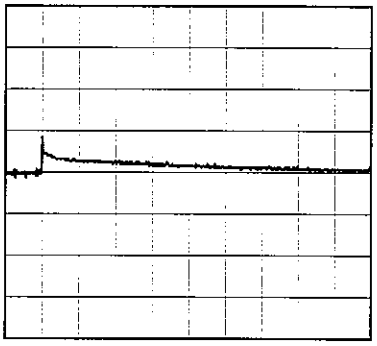
Input Volt. 100 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

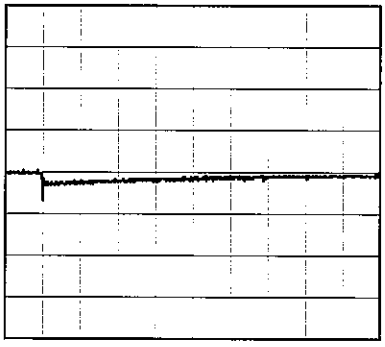


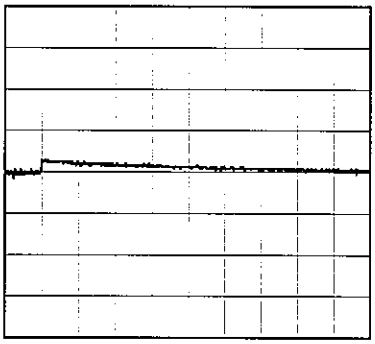
Min. Load (0A) ⟷
Load 100% (20A)





Min. Load (0A) ⟷
Load 50% (10A)





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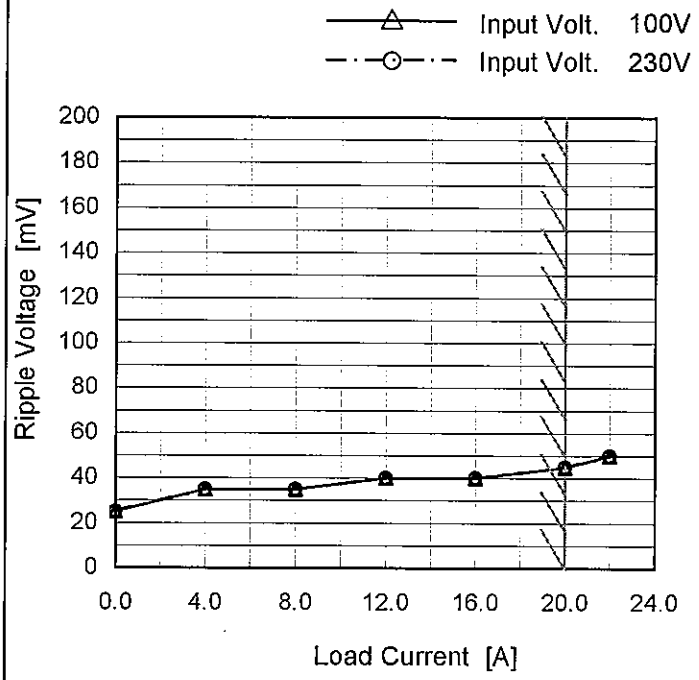
Model	LFA100F-5-Y
Item	Ripple Voltage (by Load Current)
Object	+5V20A

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
4	35	35
8	35	35
12	40	40
16	40	40
20	45	45
22	50	50
--	-	-
--	-	-
--	-	-
--	-	-

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

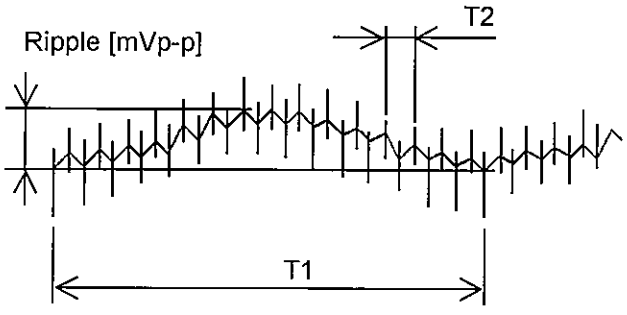


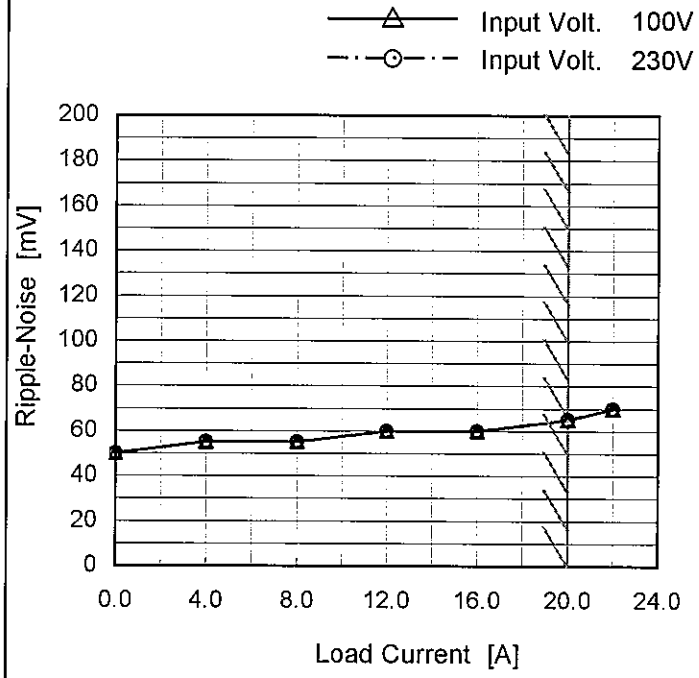
Fig. Complex Ripple Wave Form

COSEL

Model	LFA100F-5-Y
Item	Ripple-Noise
Object	+5V20A

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

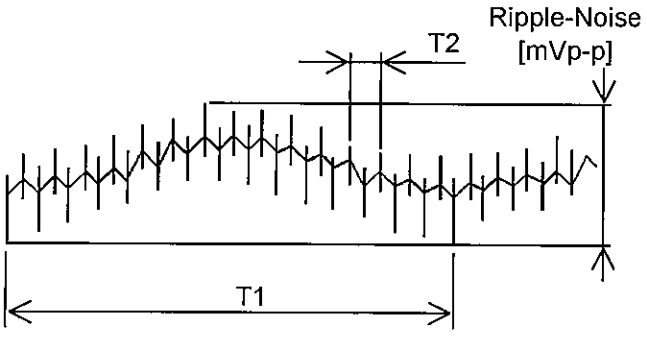


Fig. Complex Ripple Wave Form

2.Values

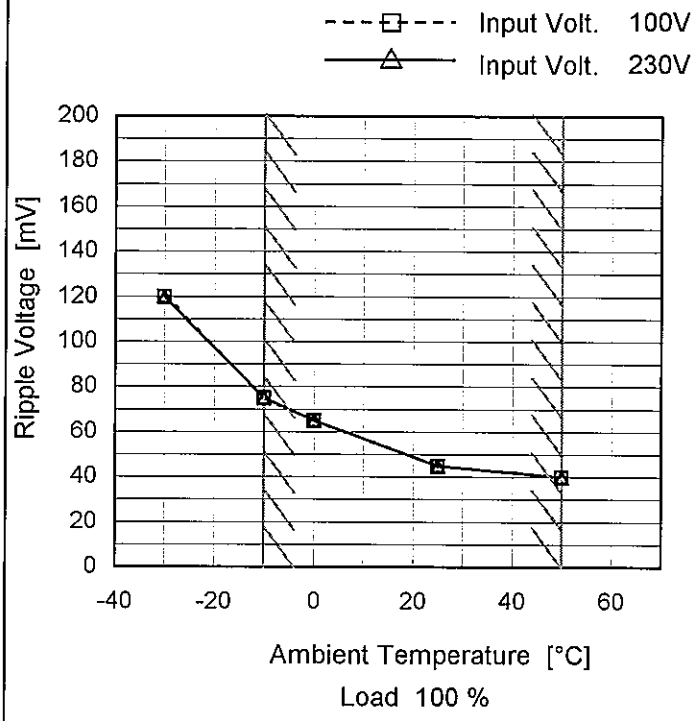
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
0	50	50
4	55	55
8	55	55
12	60	60
16	60	60
20	65	65
22	70	70
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA100F-5-Y
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V20A

Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

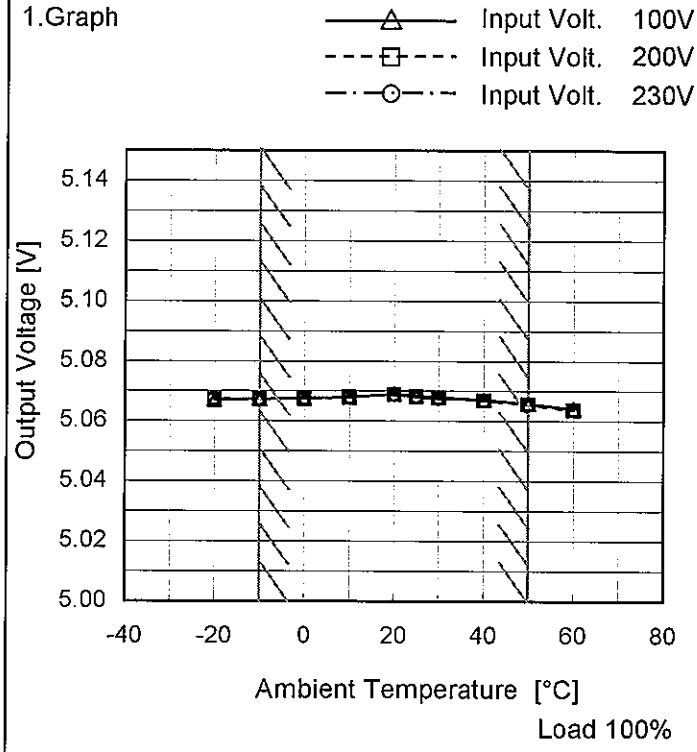
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 230 [V]
-30	120	120
-10	75	75
0	65	65
25	45	45
50	40	40
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA100F-5-Y
Item	Ambient Temperature Drift
Object	+5V20A

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	5.067	5.067	5.067
-10	5.067	5.067	5.067
0	5.068	5.068	5.068
10	5.068	5.068	5.068
20	5.069	5.069	5.069
25	5.068	5.068	5.068
30	5.068	5.068	5.068
40	5.067	5.067	5.067
50	5.066	5.066	5.066
60	5.064	5.064	5.064
--	-	-	-

COSEL

Model	LFA100F-5-Y	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V20A	

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 - 20A

* 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	20	264	0	5.083	±9	±0.2
Minimum Voltage	50	264	20	5.066		

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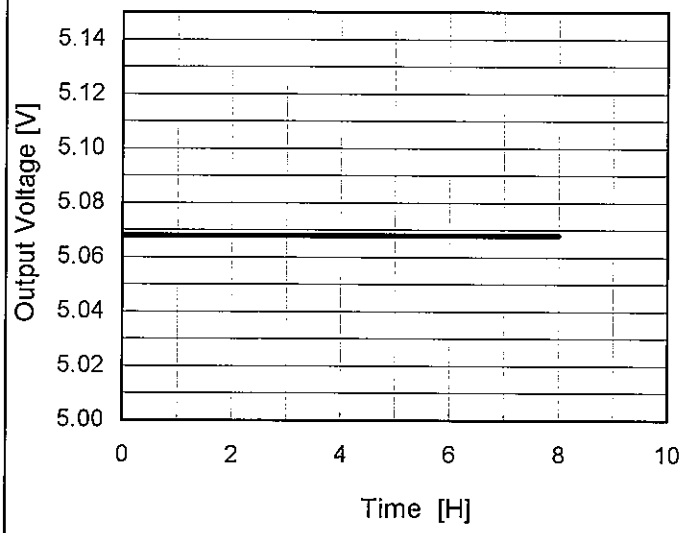
Model	LFA100F-5-Y
Item	Time Lapse Drift
Object	+5V20A

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	5.068
0.5	5.068
1.0	5.068
2.0	5.068
3.0	5.068
4.0	5.068
5.0	5.068
6.0	5.068
7.0	5.068
8.0	5.068

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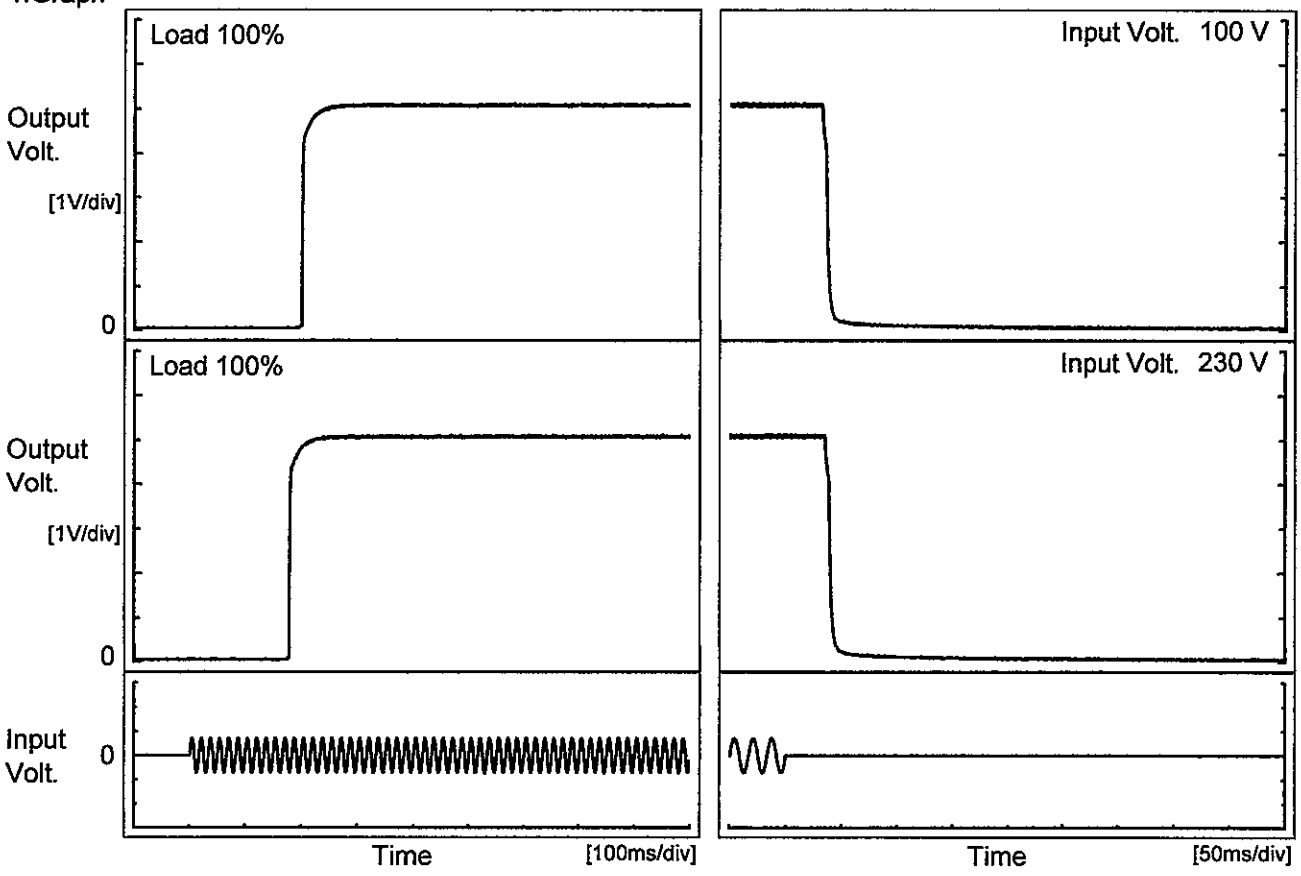
Model	LFA100F-5-Y
Item	Rise and Fall Time
Object	+5V20A

Temperature 25°C
Testing Circuitry Figure A

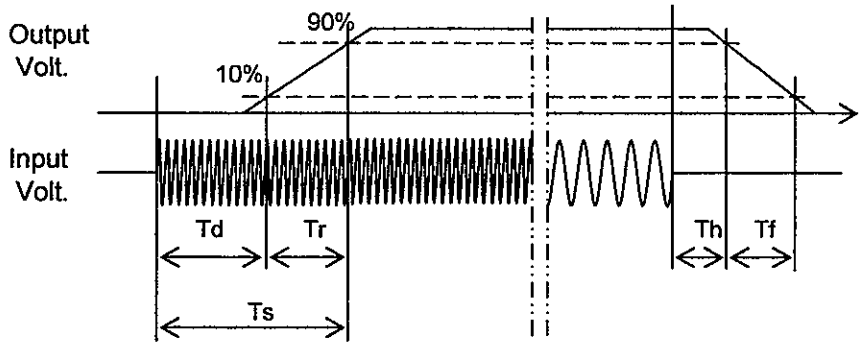
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	201.0	8.5	209.5	33.3	7.5
230 V	179.0	9.5	188.5	36.3	7.5



BC-10475

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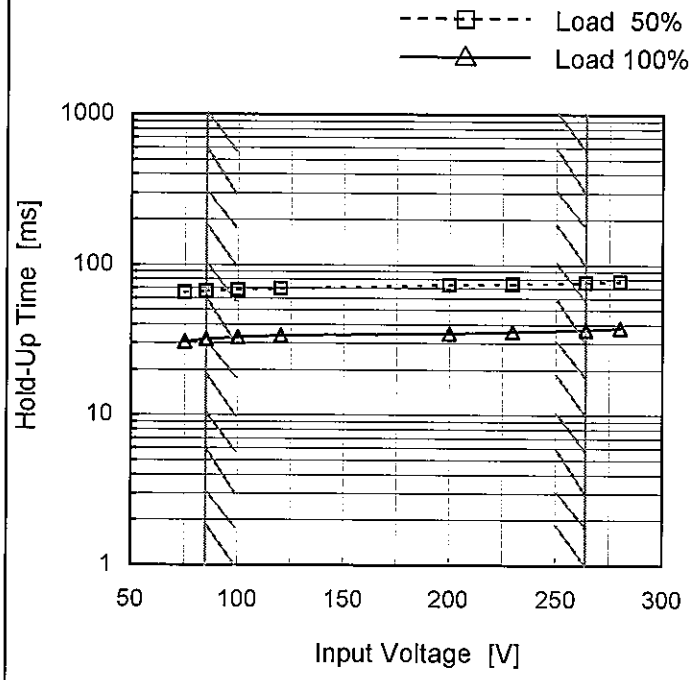
Model	LFA100F-5-Y
Item	Hold-Up Time
Object	+5V20A

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	65	31
85	67	32
100	68	33
120	70	34
200	73	35
230	74	36
264	77	37
280	77	38
--	-	-

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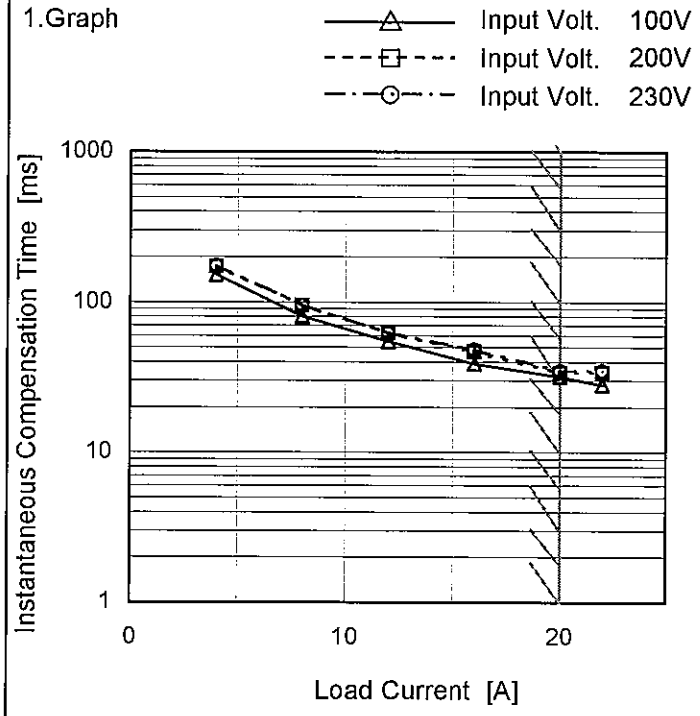
Model	LFA100F-5-Y
Item	Instantaneous Interruption Compensation
Object	+5V20A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

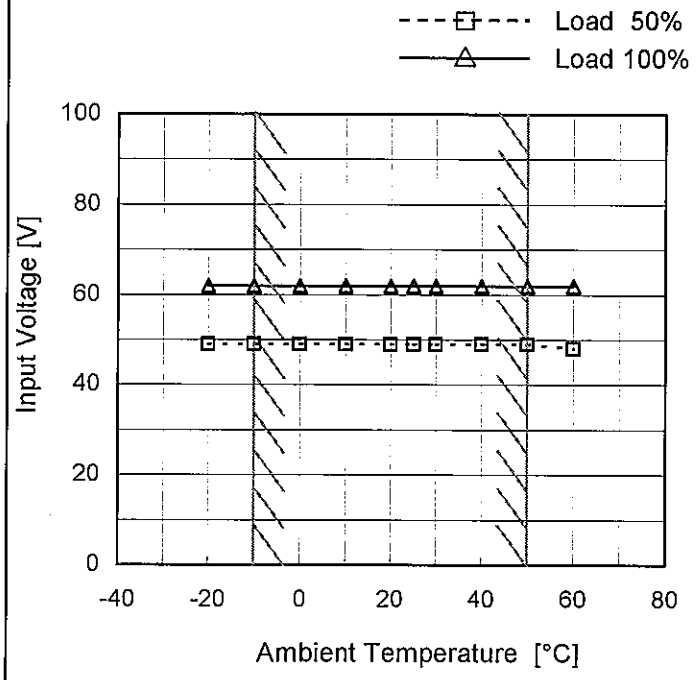
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0	-	-	-
4	152	172	175
8	80	95	95
12	55	62	62
16	39	47	48
20	32	34	35
22	28	34	35
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA100F-5-Y
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V20A

Testing Circuitry Figure A

1.Graph



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

2.Values

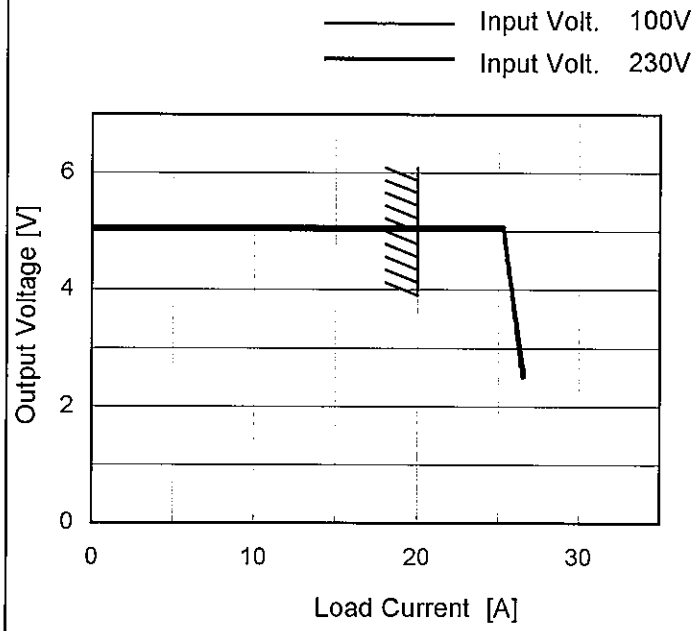
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	49	62
-10	49	62
0	49	62
10	49	62
20	49	62
25	49	62
30	49	62
40	49	62
50	49	62
60	48	62
--	-	-

COSEL

Model	LFA100F-5-Y
Item	Overcurrent Protection
Object	+5V20A

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

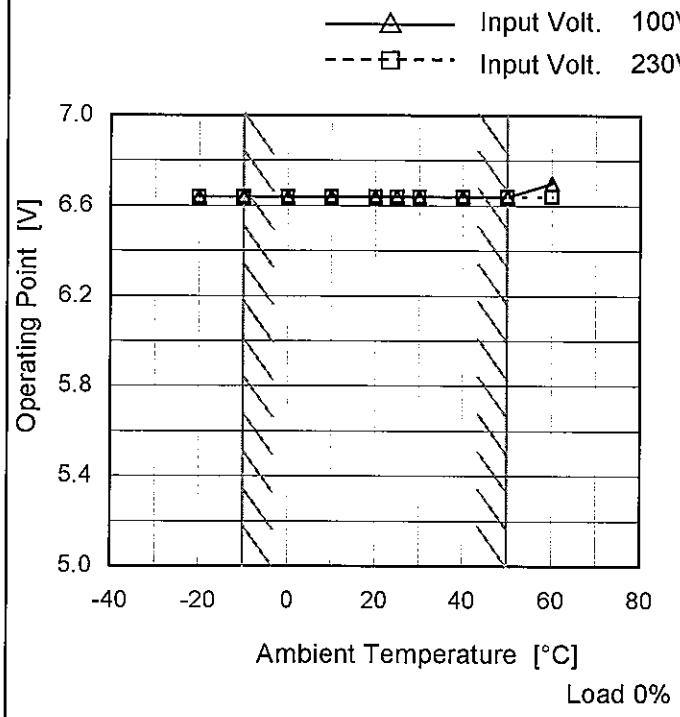
Output Voltage [V]	Load Current [A] Input Volt. 100[V]	Load Current [A] Input Volt. 230[V]
5.00	25.34	25.31
4.75	25.50	25.48
4.50	25.63	25.58
4.00	25.91	25.83
3.50	26.18	26.08
3.00	26.43	26.32
2.50	26.67	26.54
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA100F-5-Y
Item	Overvoltage Protection
Object	+5V20A

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	6.64	6.64
-10	6.64	6.64
0	6.64	6.64
10	6.64	6.64
20	6.64	6.64
25	6.64	6.64
30	6.64	6.64
40	6.64	6.64
50	6.64	6.64
60	6.70	6.64
--	-	-

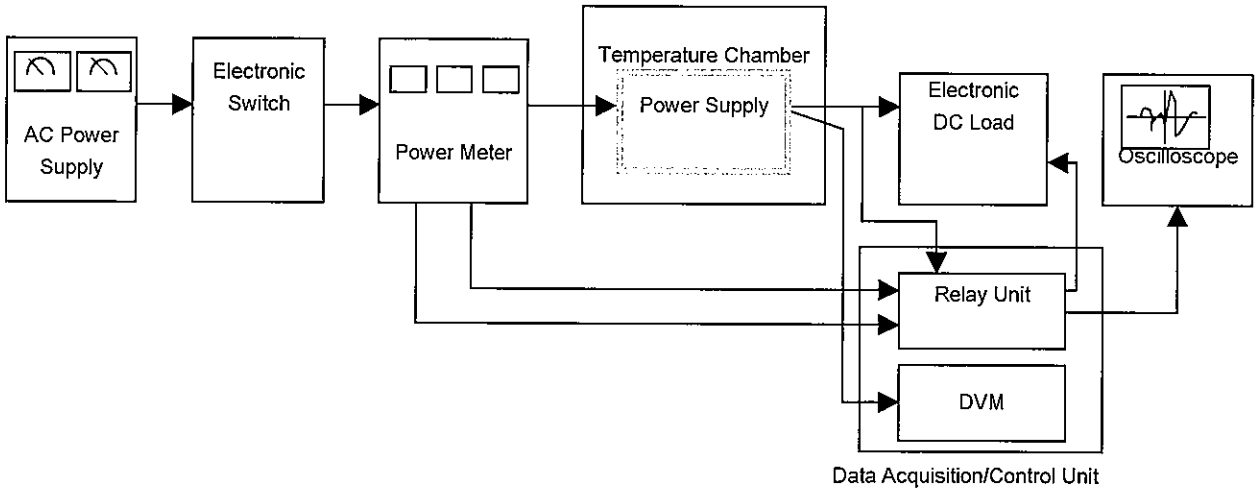


Figure A

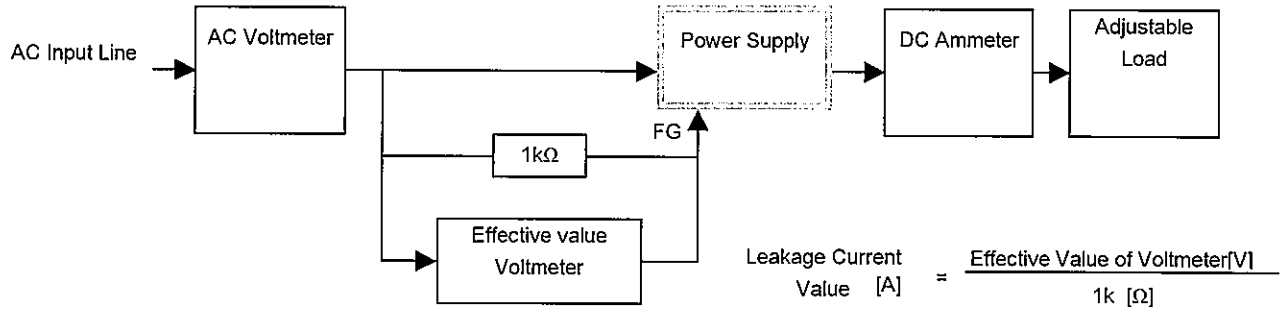


Figure B (DEN-AN)

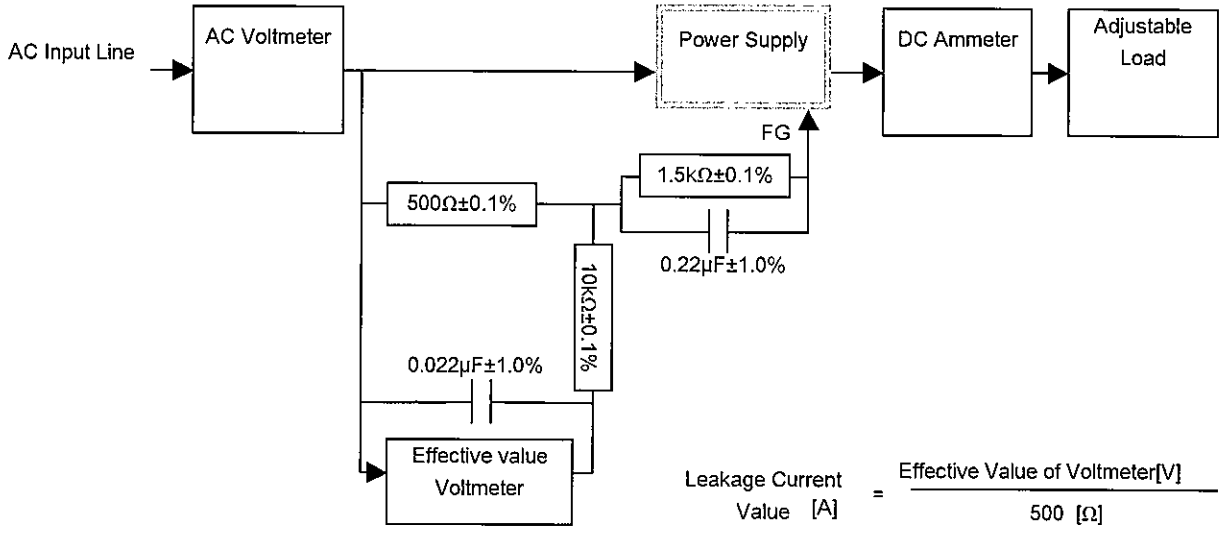


Figure B (IEC60950-1)

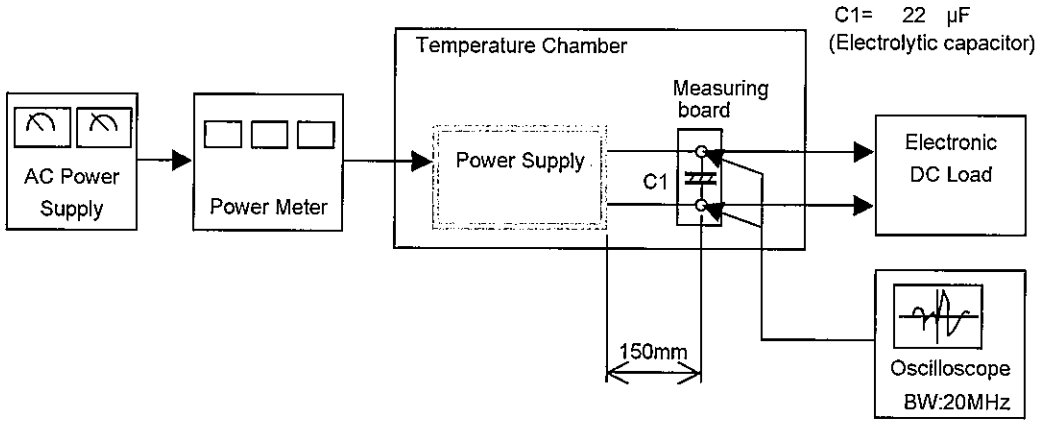

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C