参考資料

COSEL

TEST DATA OF LFA75F-36

Regulated DC Power Supply
August 10, 2009

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COSEL CO.,LTD.

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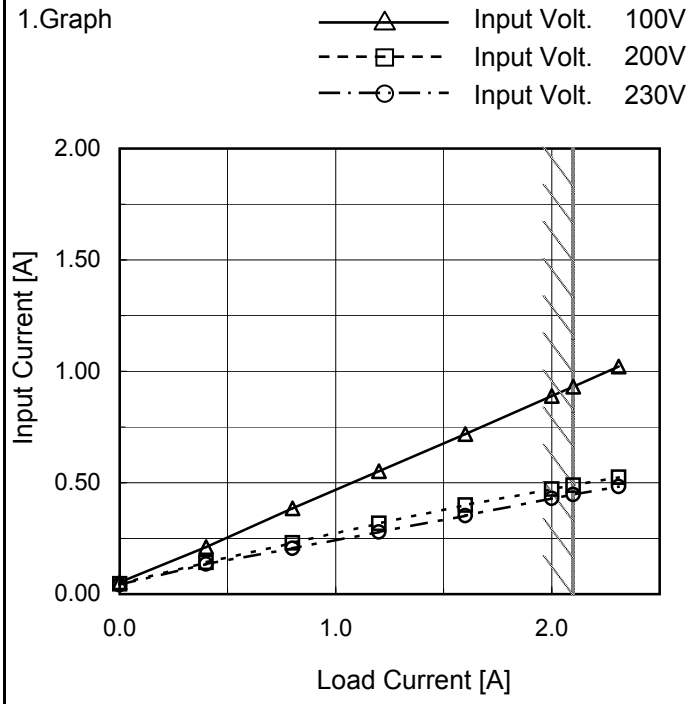
COSEL

Model	LFA75F-36
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]
0.00	0.054	0.046	0.041
0.40	0.212	0.142	0.135
0.80	0.385	0.230	0.206
1.20	0.552	0.317	0.279
1.60	0.718	0.399	0.352
2.00	0.889	0.471	0.430
2.10	0.931	0.489	0.447
2.31	1.022	0.524	0.483
--	-	-	-
--	-	-	-
--	-	-	-

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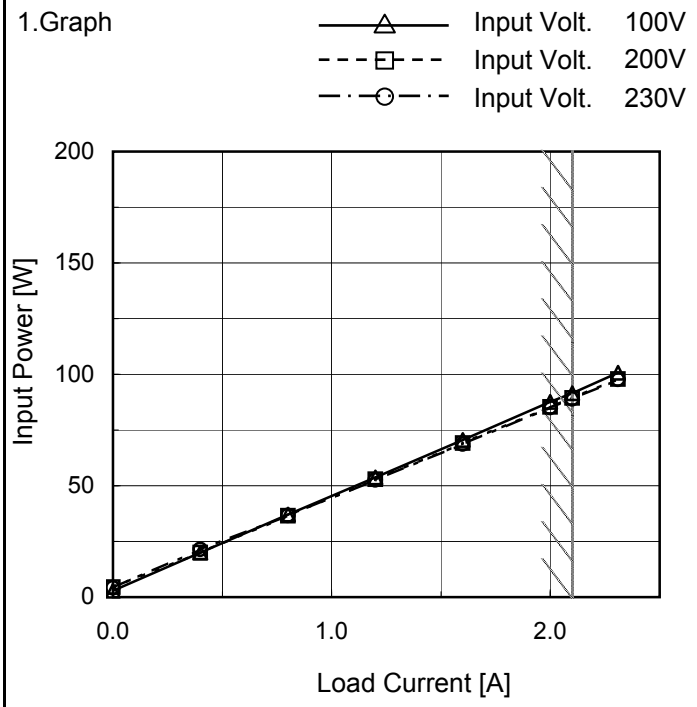
Model	LFA75F-36
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

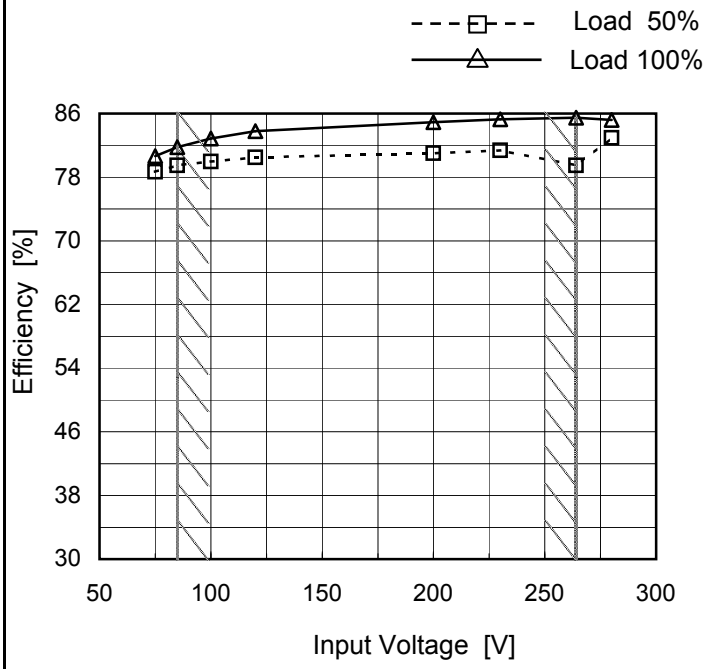
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	2.9	4.4	4.1
0.40	19.9	20.0	21.4
0.80	37.0	36.5	36.6
1.20	53.8	52.9	52.6
1.60	70.5	69.1	68.7
2.00	87.6	85.4	85.1
2.10	91.5	89.4	89.0
2.31	100.7	97.9	97.7
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA75F-36
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	78.7	80.7
85	79.5	81.8
100	80.0	82.9
120	80.5	83.8
200	81.0	84.9
230	81.4	85.3
264	79.5	85.5
280	83.0	85.2
--	-	-

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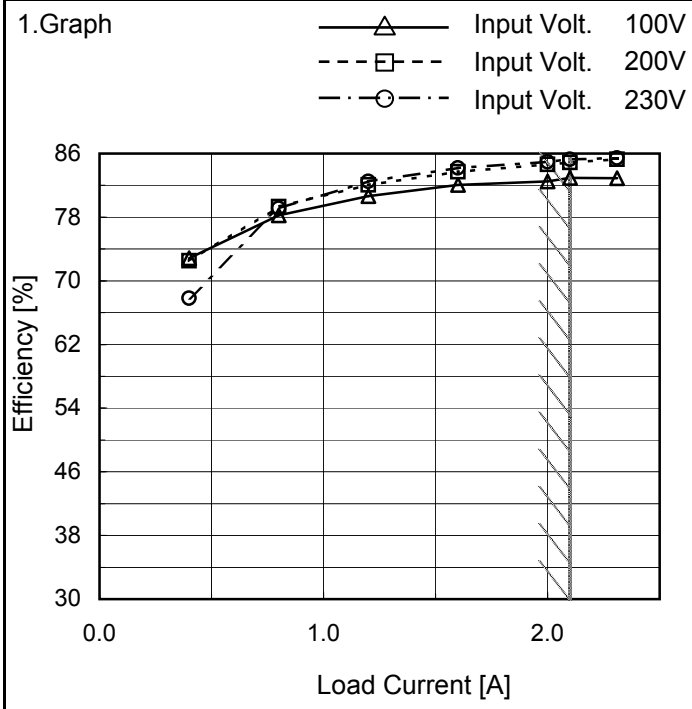
Model	LFA75F-36
Item	Efficiency (by Load Current)
Object	————————

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]
0.00	-	-	-
0.40	72.8	72.5	67.8
0.80	78.3	79.3	79.1
1.20	80.7	82.0	82.5
1.60	82.0	83.7	84.2
2.00	82.5	84.6	84.9
2.10	82.9	84.9	85.3
2.31	82.9	85.3	85.4
--	-	-	-
--	-	-	-
--	-	-	-

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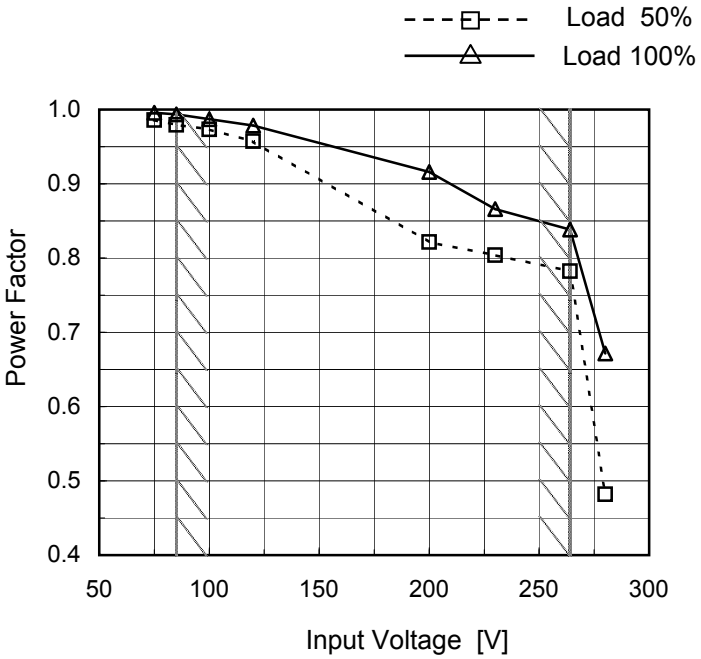
Model	LFA75F-36
Item	Power Factor (by Input Voltage)
Object	————————

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	0.986	0.996
85	0.980	0.994
100	0.973	0.987
120	0.957	0.978
200	0.821	0.916
230	0.804	0.866
264	0.782	0.839
280	0.482	0.671
--	-	-

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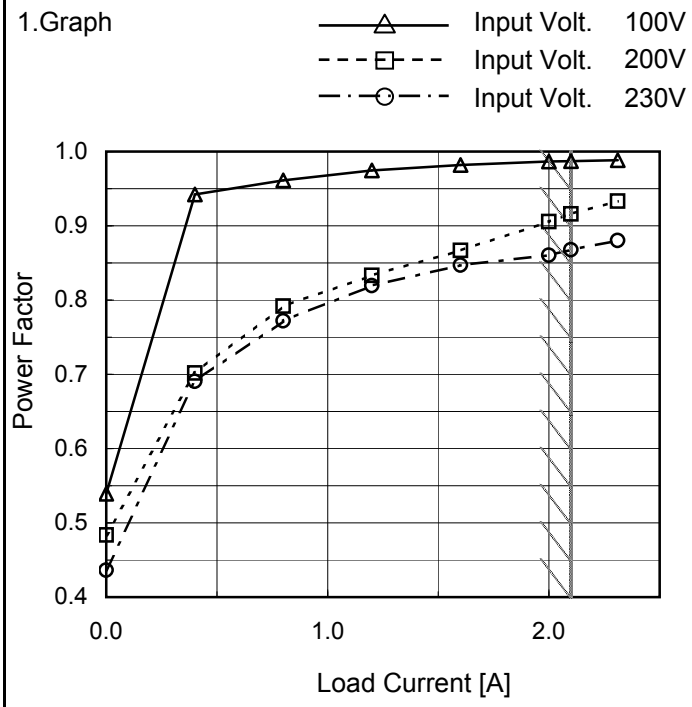
Model	LFA75F-36
Item	Power Factor (by Load Current)
Object	————————

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]
0.00	0.539	0.484	0.436
0.40	0.942	0.702	0.690
0.80	0.961	0.792	0.772
1.20	0.975	0.833	0.819
1.60	0.982	0.867	0.847
2.00	0.986	0.906	0.860
2.10	0.987	0.916	0.868
2.31	0.988	0.933	0.880
--	-	-	-
--	-	-	-
--	-	-	-

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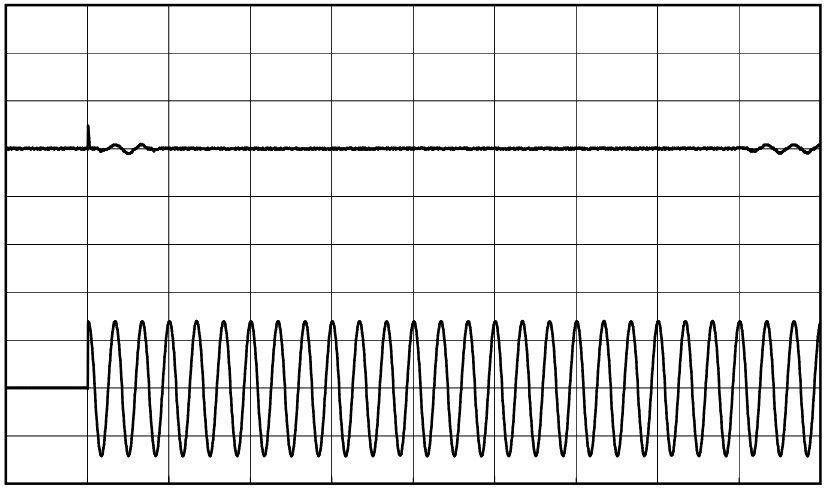
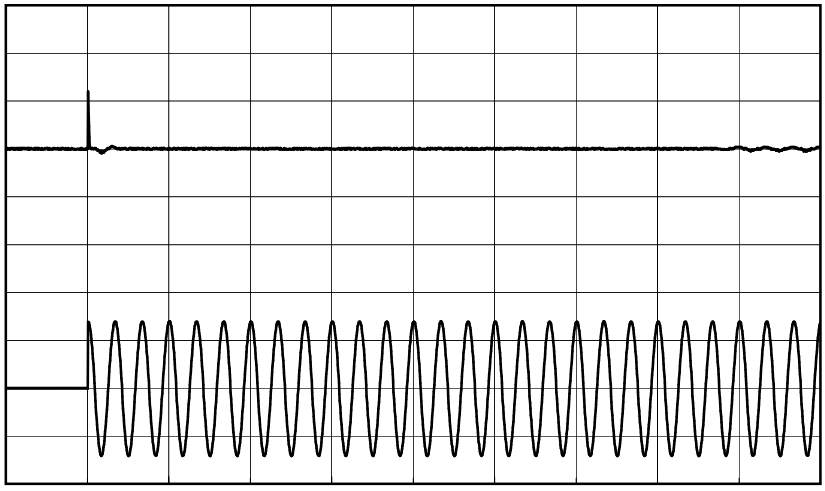
Model	LFA75F-36
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



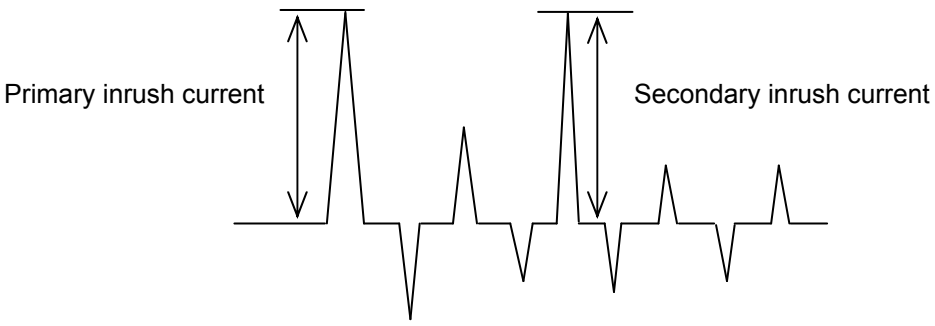
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
9.6 A
Secondary inrush current :
1.6 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
24.0 A
Secondary inrush current :
1.2 A



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Model	LFA75F-36	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	――――――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.13	0.26	0.32	Operation
	One of phases	0.22	0.45	0.57	Stand by
IEC60950	Both phases	0.14	0.30	0.38	Operation
	One of phases	0.22	0.44	0.54	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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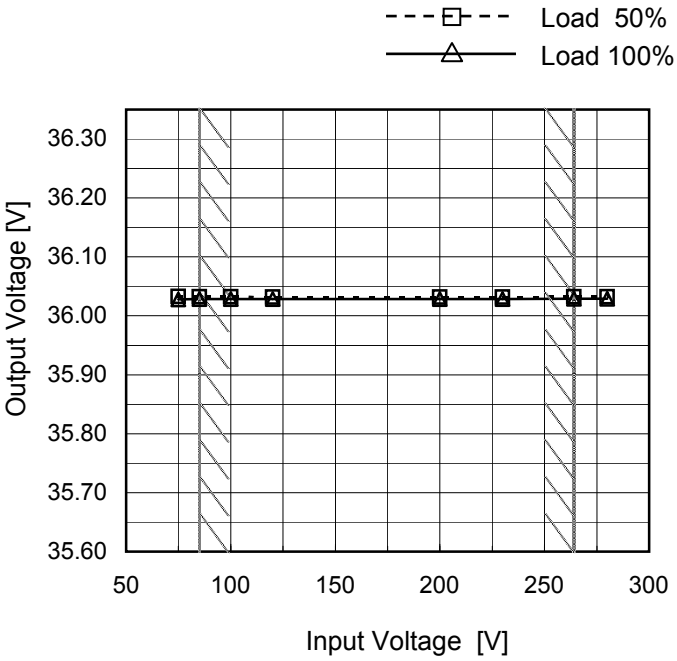
Model	LFA75F-36
Item	Line Regulation
Object	+36V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

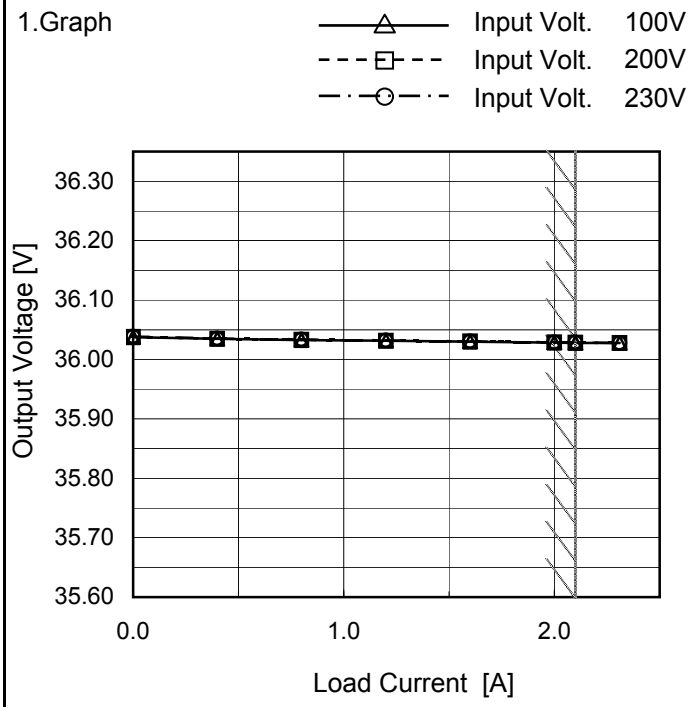
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	36.033	36.028
85	36.032	36.029
100	36.032	36.028
120	36.032	36.029
200	36.032	36.028
230	36.032	36.029
264	36.032	36.029
280	36.032	36.029
--	-	-

COSEL

Model	LFA75F-36
Item	Load Regulation
Object	+36V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

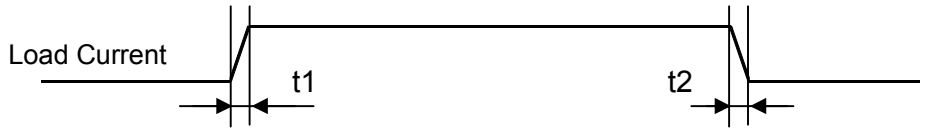
Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	36.038	36.038	36.039
0.40	36.035	36.035	36.035
0.80	36.033	36.033	36.034
1.20	36.032	36.032	36.032
1.60	36.030	36.030	36.031
2.00	36.029	36.029	36.029
2.10	36.028	36.028	36.029
2.31	36.028	36.028	36.028
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

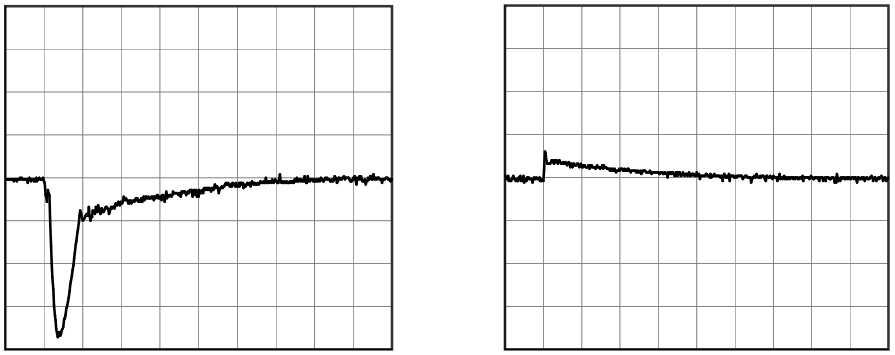
Model	LFA75F-36		
Item	Dynamic Load Response	Temperature Testing Circuitry	25℃ Figure A
Object	+36V2.1A		

Input Volt. 100 V
Cycle 1000 ms

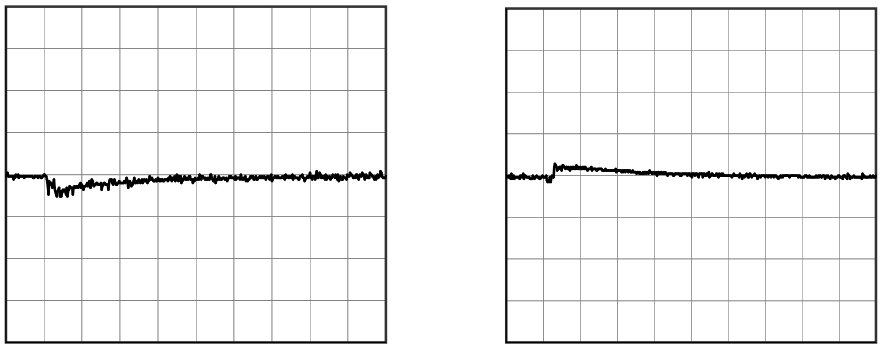
Response. t1=t2=50us. Typ



Min. Load (0A) ←→
Load 100% (2.1A)



Min. Load (0A) ←→
Load 50% (1.05A)



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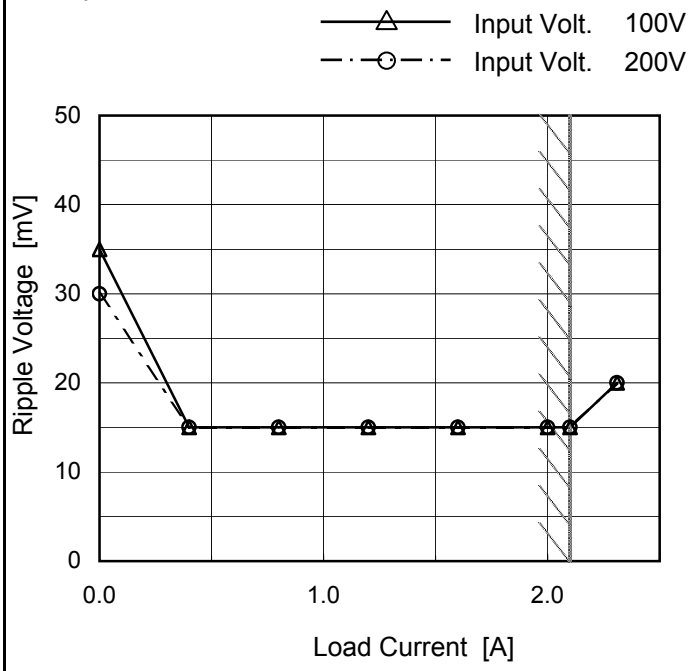
Model	LFA75F-36
Item	Ripple Voltage (by Load Current)
Object	+36V2.1A

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.

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

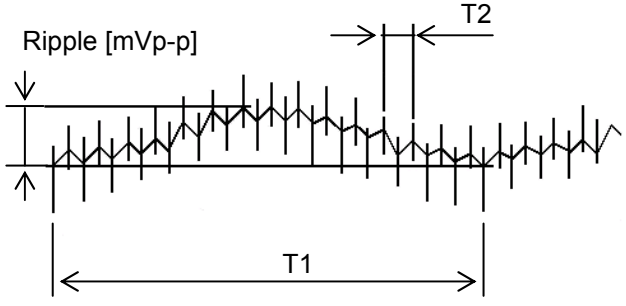


Fig. Complex Ripple Wave Form

2.Values

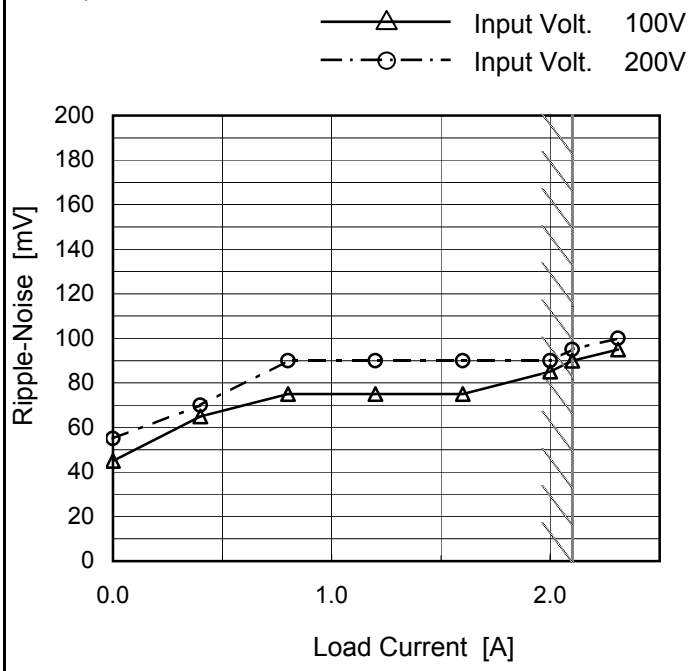
Load Current [A]	Ripple Voltage [mV] Input Volt. 100 [V]	Ripple Voltage [mV] Input Volt. 200 [V]
0.00	35	30
0.40	15	15
0.80	15	15
1.20	15	15
1.60	15	15
2.00	15	15
2.10	15	15
2.31	20	20
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-36
Item	Ripple-Noise
Object	+36V2.1A

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

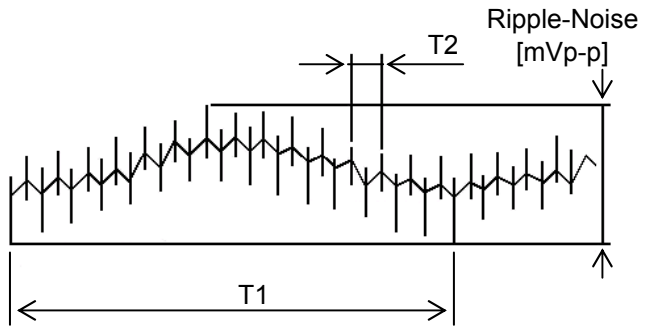


Fig. Complex Ripple Wave Form

2.Values

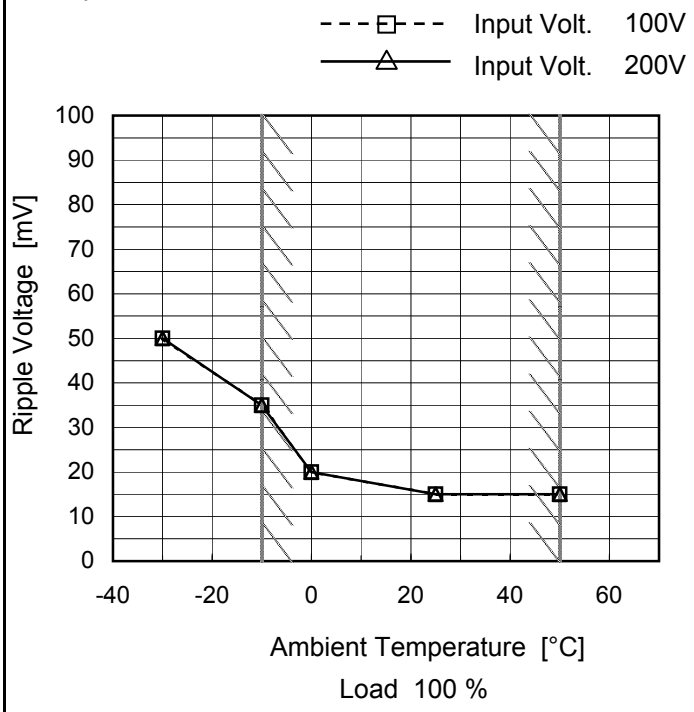
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	45	55
0.40	65	70
0.80	75	90
1.20	75	90
1.60	75	90
2.00	85	90
2.10	90	95
2.31	95	100
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-36
Item	Ripple Voltage (by Ambient Temp.)
Object	+36V2.1A

Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

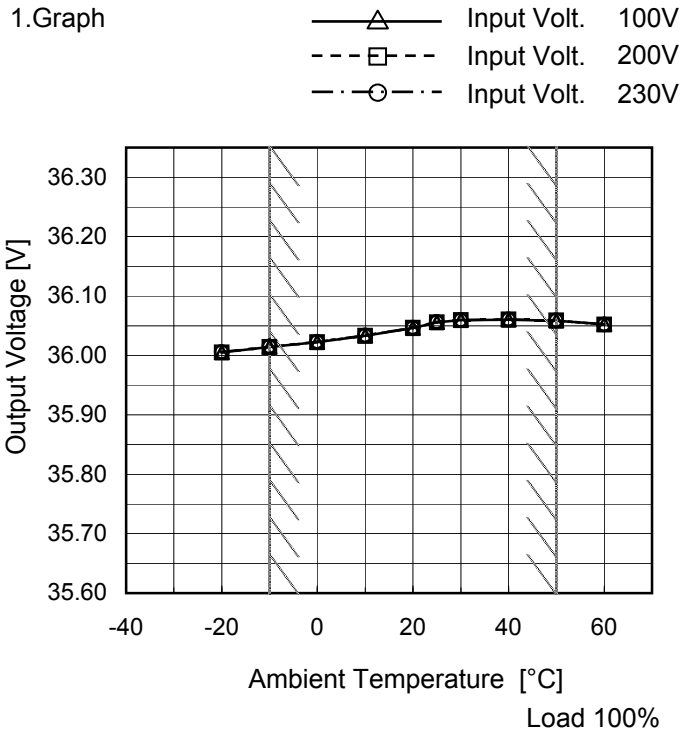
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	50	50
-10	35	35
0	20	20
25	15	15
50	15	15
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-36
Item	Ambient Temperature Drift
Object	+36V2.1A

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	36.005	36.005	36.006
-10	36.014	36.014	36.015
0	36.022	36.022	36.023
10	36.033	36.033	36.034
20	36.046	36.047	36.047
25	36.056	36.056	36.056
30	36.060	36.060	36.060
40	36.060	36.060	36.061
50	36.059	36.059	36.059
60	36.052	36.052	36.052
--	-	-	-

COSEL

Model	LFA75F-36	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+36V2.1A	

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 - 2.1A

* 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	40	85	0	36.069	±28	±0.1
Minimum Voltage	-10	85	2.1	36.014		

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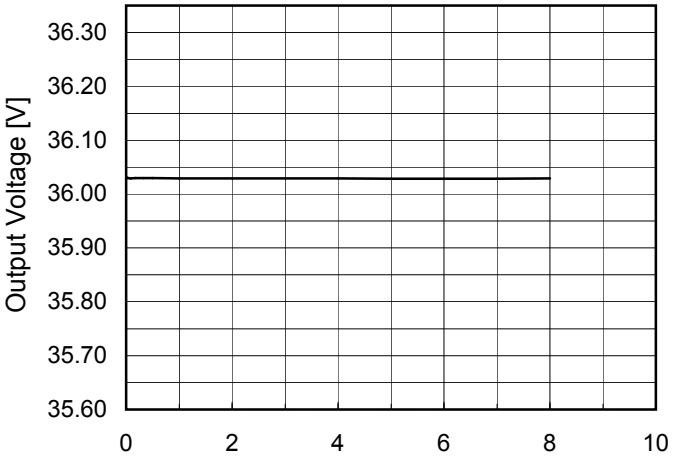
Model	LFA75F-36
Item	Time Lapse Drift
Object	+36V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

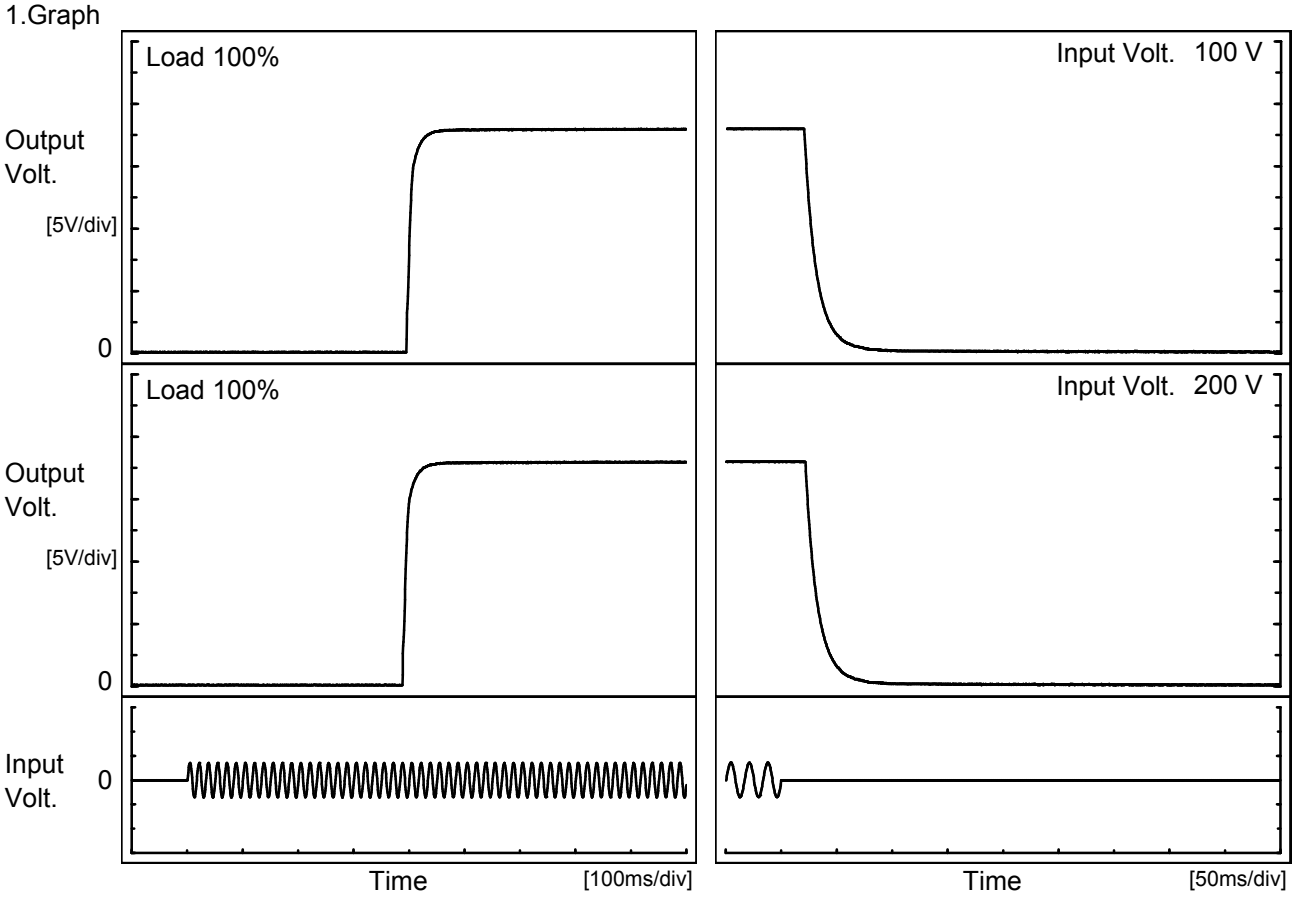
Time since start [H]	Output Voltage [V]
0.0	36.029
0.5	36.030
1.0	36.029
2.0	36.029
3.0	36.029
4.0	36.029
5.0	36.029
6.0	36.029
7.0	36.029
8.0	36.029

COSEL

Model	LFA75F-36
Item	Rise and Fall Time
Object	+36V2.1A

Temperature 25°C
Testing Circuitry Figure A

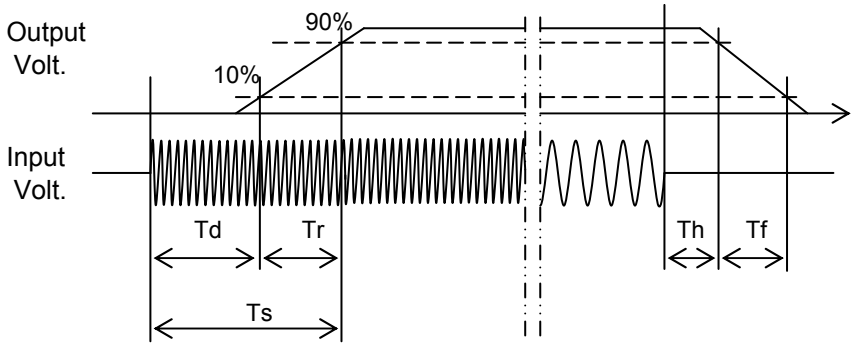
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	396.0	19.5	415.5	21.3	25.3
200 V	389.0	19.5	408.5	22.8	25.3



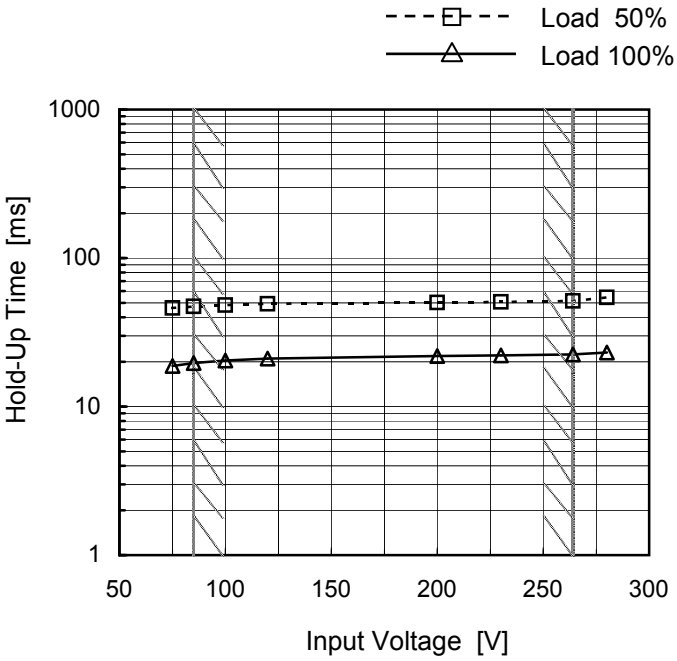
BC-10374

COSEL

Model	LFA75F-36
Item	Hold-Up Time
Object	+36V2.1A

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	46	19
85	47	20
100	48	20
120	49	21
200	50	22
230	51	22
264	51	23
280	54	23
--	-	-

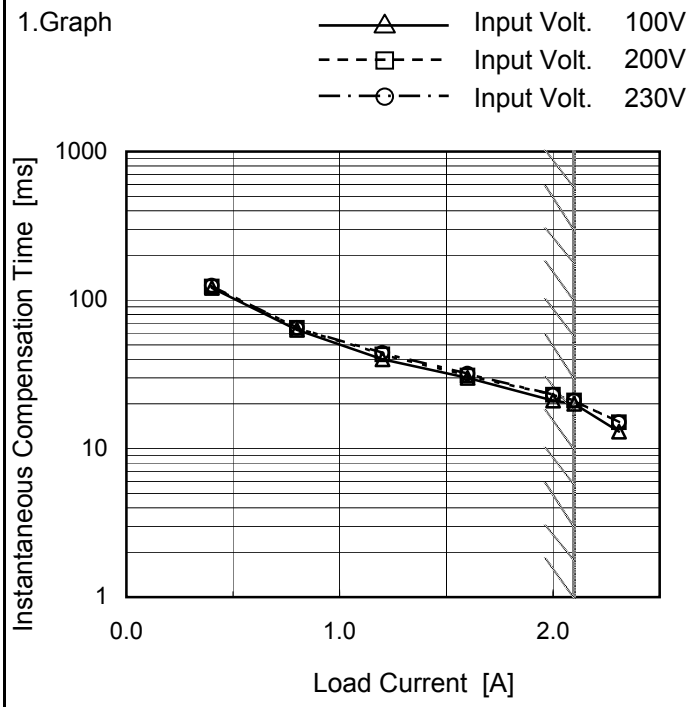
BC-10374

COSEL

Model	LFA75F-36
Item	Instantaneous Interruption Compensation
Object	+36V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

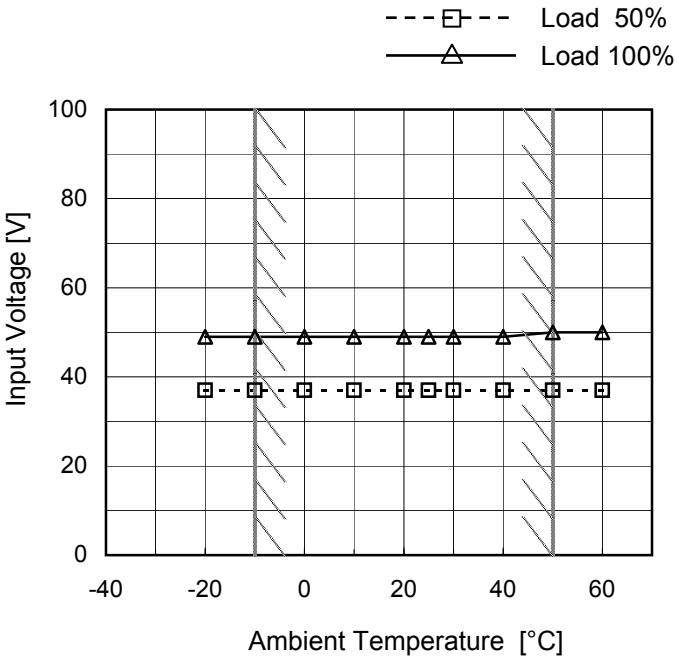
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.40	121	123	125
0.80	63	65	65
1.20	40	43	44
1.60	30	31	32
2.00	21	23	23
2.10	20	21	21
2.31	13	15	15
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA75F-36
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+36V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

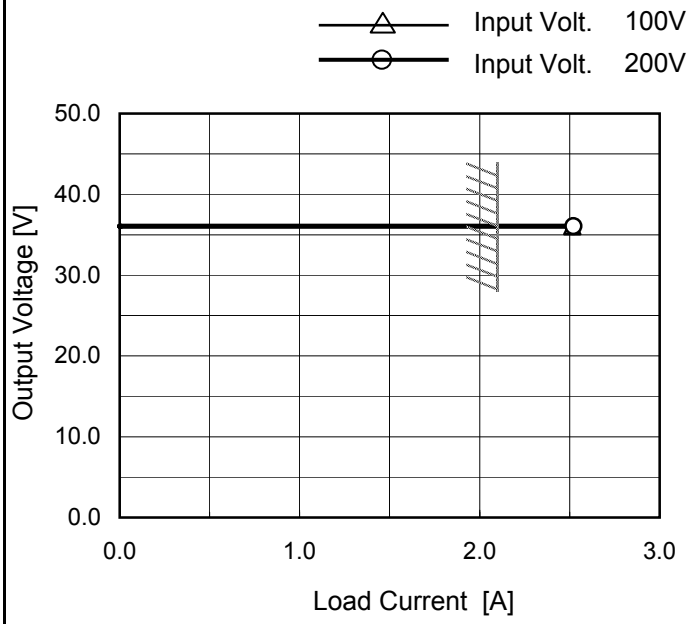
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	37	49
-10	37	49
0	37	49
10	37	49
20	37	49
25	37	49
30	37	49
40	37	49
50	37	50
60	37	50
--	-	-

COSEL

Model	LFA75F-36
Item	Overcurrent Protection
Object	+36V2.1A

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 less than rated output voltage.

2.Values

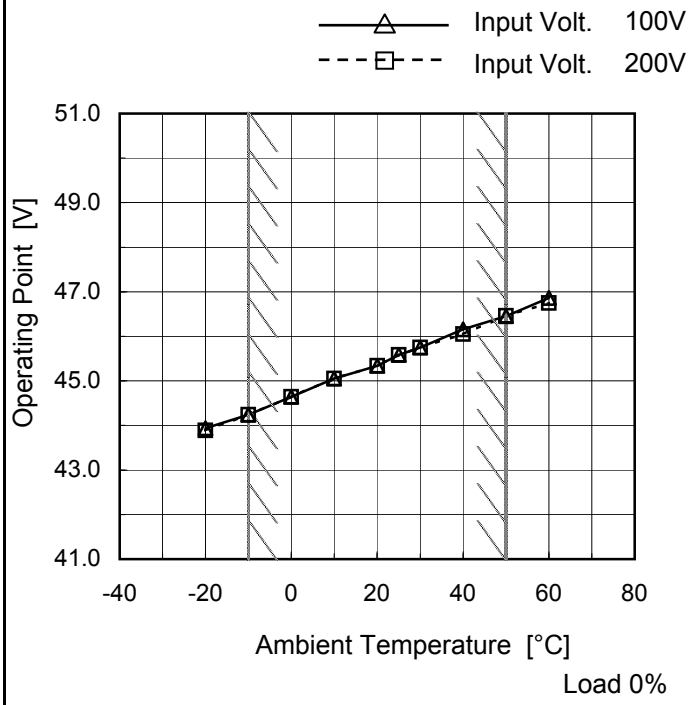
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
36.0	2.51	2.52
34.2	-	-
32.4	-	-
28.8	-	-
25.2	-	-
21.6	-	-
18.0	-	-
14.4	-	-
10.8	-	-
7.2	-	-
3.6	-	-
0.0	-	-

COSEL

Model	LFA75F-36
Item	Overvoltage Protection
Object	+36V2.1A

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	43.94	43.89
-10	44.24	44.24
0	44.64	44.64
10	45.05	45.05
20	45.34	45.34
25	45.58	45.58
30	45.75	45.75
40	46.16	46.05
50	46.45	46.46
60	46.86	46.75
--	-	-

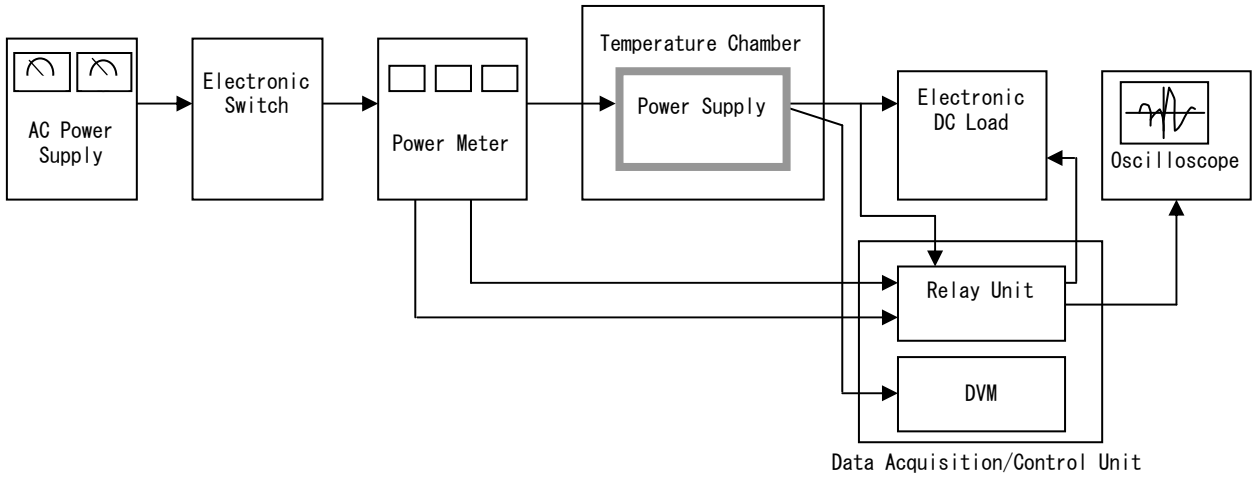


Figure A

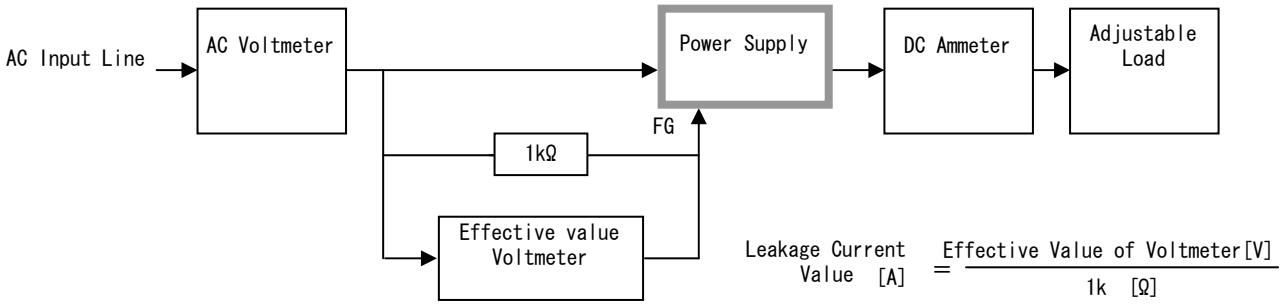


Figure B (DEN-AN)

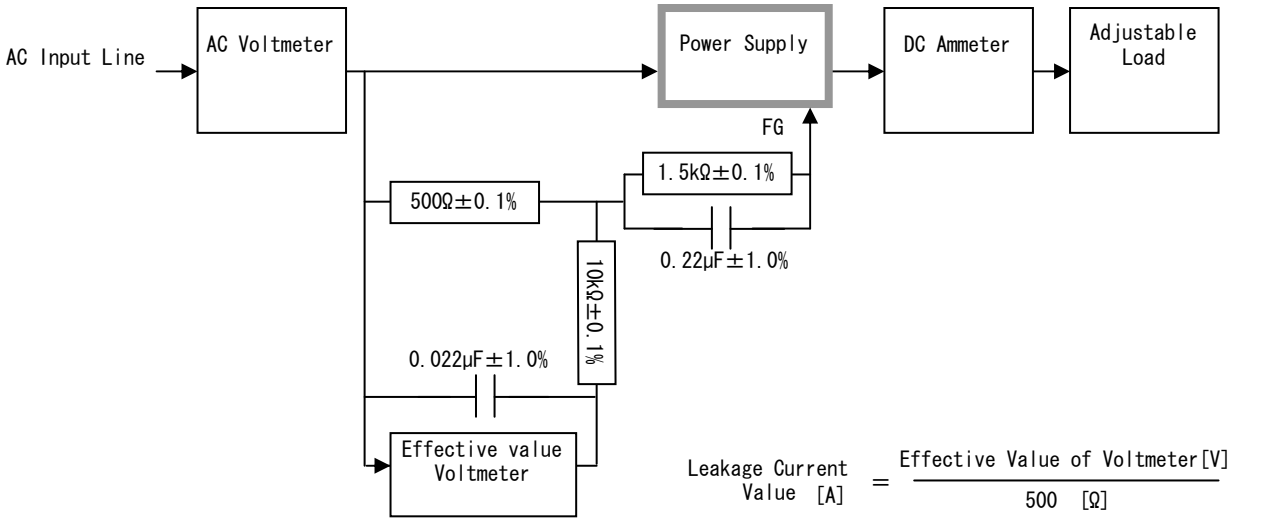


Figure B (IEC60950-1)

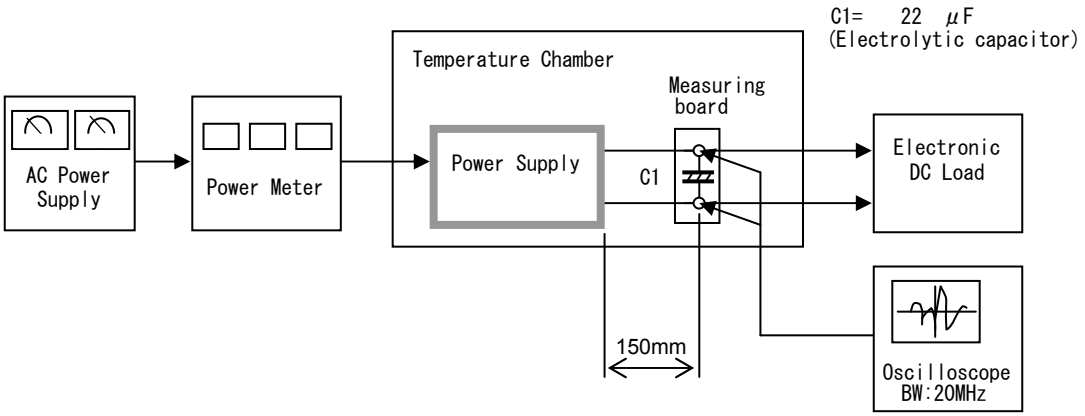

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C