参考資料

COSEL

TEST DATA OF LFA75F-15

Regulated DC Power Supply
August 10, 2009

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COSEL CO.,LTD.

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COSEL

Model	LFA75F-15
Item	Input Current (by Load Current)
Object	———————

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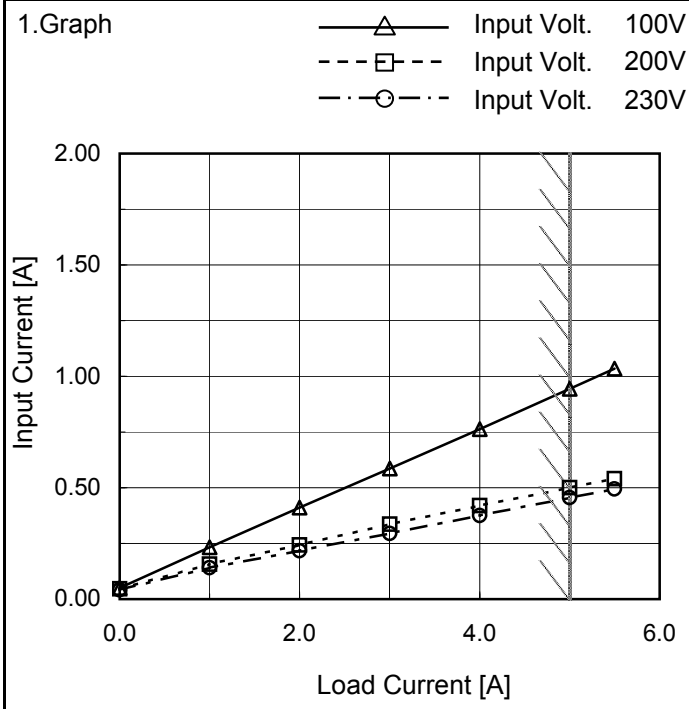

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.050	0.046	0.041
1.0	0.233	0.157	0.141
2.0	0.411	0.243	0.217
3.0	0.586	0.336	0.295
4.0	0.763	0.420	0.376
5.0	0.944	0.500	0.456
5.5	1.035	0.540	0.494
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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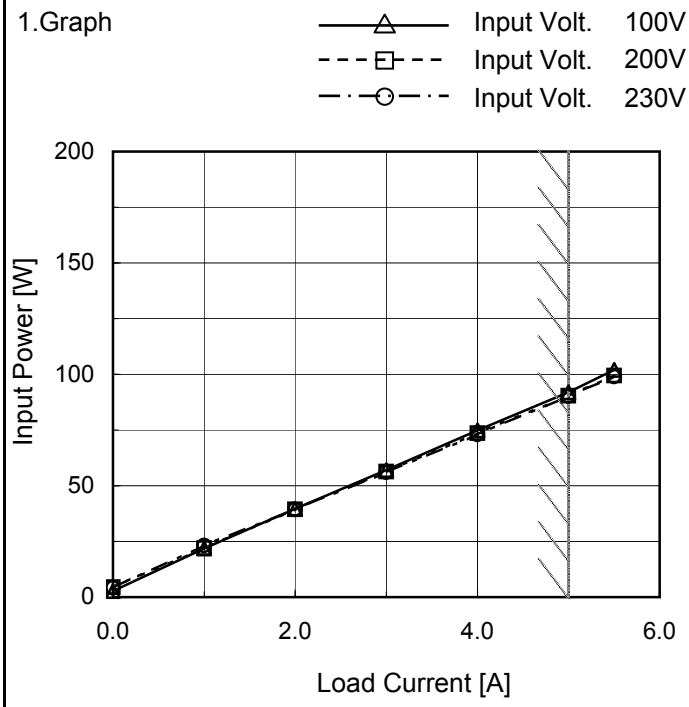
Model	LFA75F-15
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

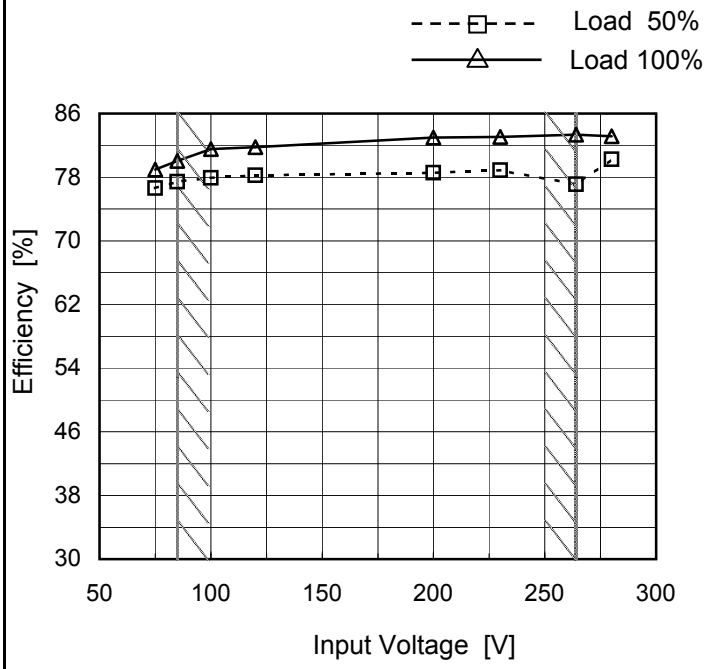
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	2.8	4.5	4.1
1.0	21.9	22.0	23.2
2.0	39.6	39.3	39.3
3.0	57.1	56.3	56.0
4.0	74.9	73.5	73.0
5.0	92.0	90.4	90.3
5.5	102.0	99.4	99.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LFA75F-15
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

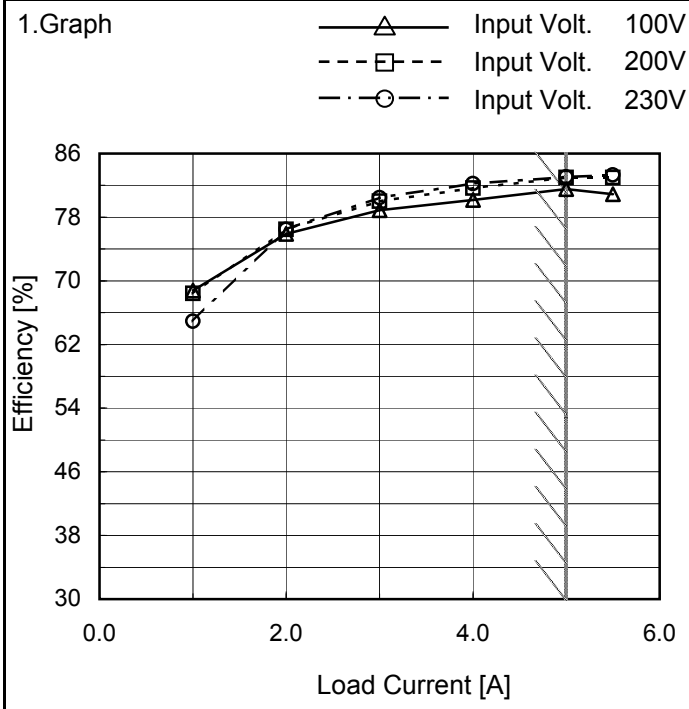
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	76.6	78.9
85	77.4	80.0
100	77.9	81.5
120	78.2	81.8
200	78.6	83.0
230	78.9	83.0
264	77.1	83.3
280	80.2	83.1
--	-	-

COSEL

Model	LFA75F-15
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	68.8	68.4	64.9
2.0	75.9	76.5	76.5
3.0	78.9	80.0	80.4
4.0	80.2	81.7	82.2
5.0	81.5	83.0	83.1
5.5	80.9	83.0	83.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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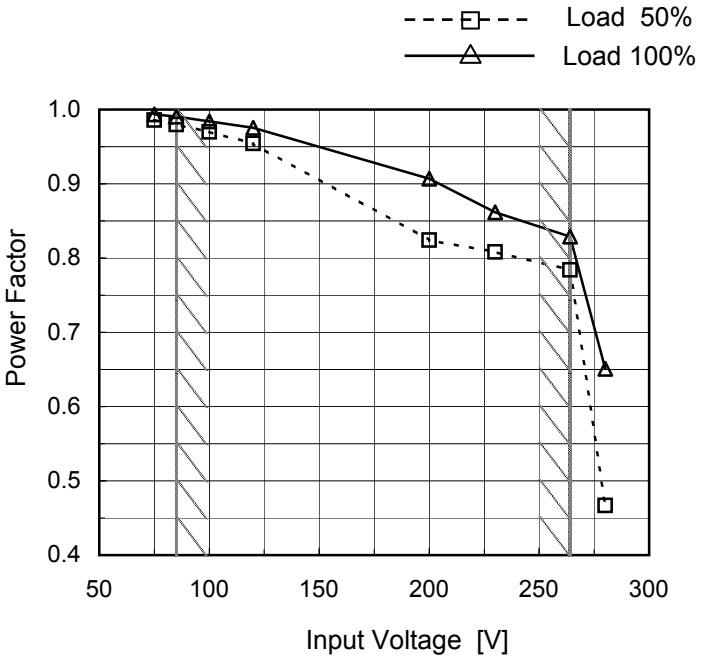
Model	LFA75F-15
Item	Power Factor (by Input Voltage)
Object	————————

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	0.994
85	0.980	0.990
100	0.970	0.984
120	0.954	0.976
200	0.824	0.907
230	0.808	0.862
264	0.784	0.829
280	0.467	0.651
--	-	-

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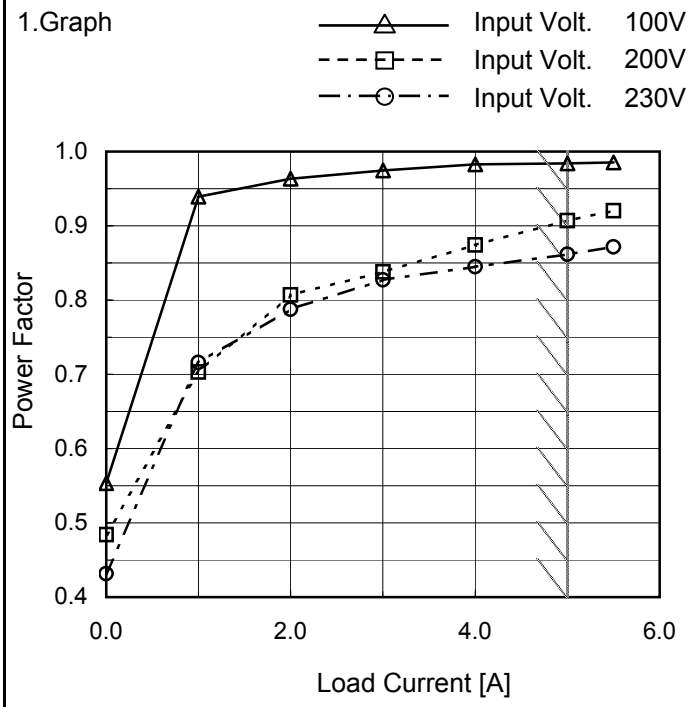
Model	LFA75F-15
Item	Power Factor (by Load Current)
Object	————————

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	0.553	0.484	0.432
1.0	0.939	0.703	0.716
2.0	0.964	0.807	0.788
3.0	0.974	0.838	0.827
4.0	0.983	0.874	0.845
5.0	0.984	0.907	0.862
5.5	0.986	0.920	0.871
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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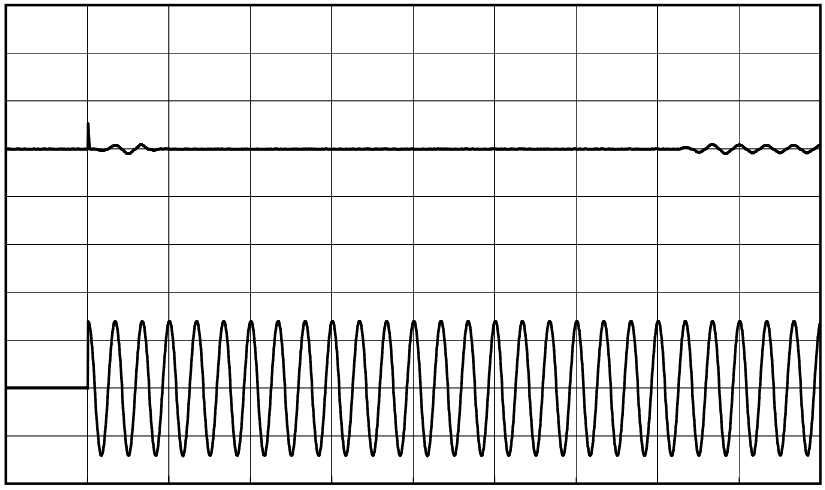
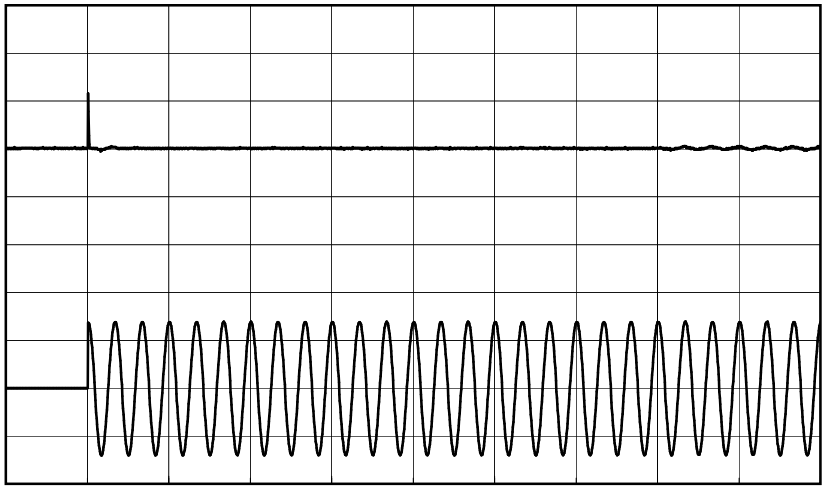
Model	LFA75F-15
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



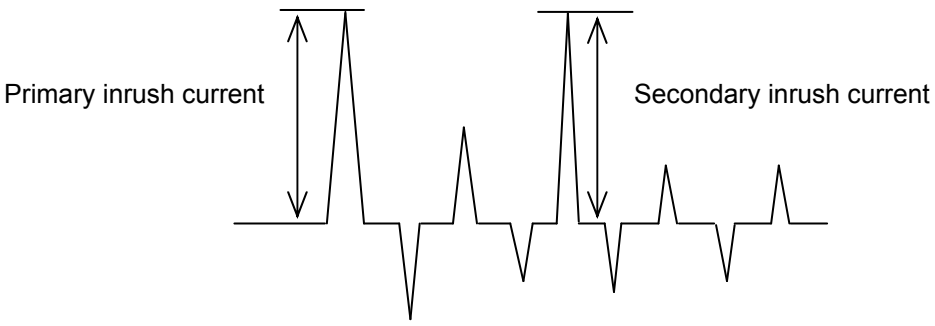
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
10.7 A
Secondary inrush current :
1.8 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
23.0 A
Secondary inrush current :
1.2 A



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Model	LFA75F-15	
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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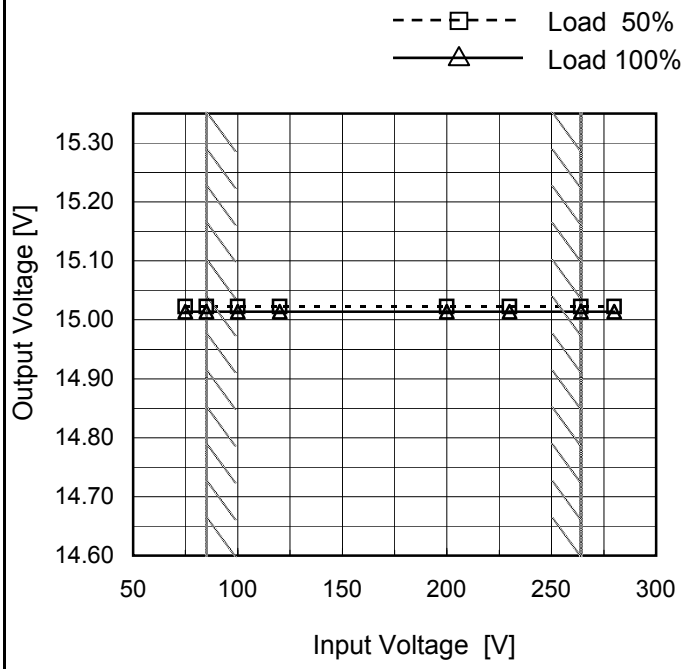
Model	LFA75F-15
Item	Line Regulation
Object	+15V5A

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	15.022	15.014
85	15.022	15.014
100	15.022	15.014
120	15.022	15.014
200	15.022	15.014
230	15.022	15.014
264	15.022	15.014
280	15.022	15.014
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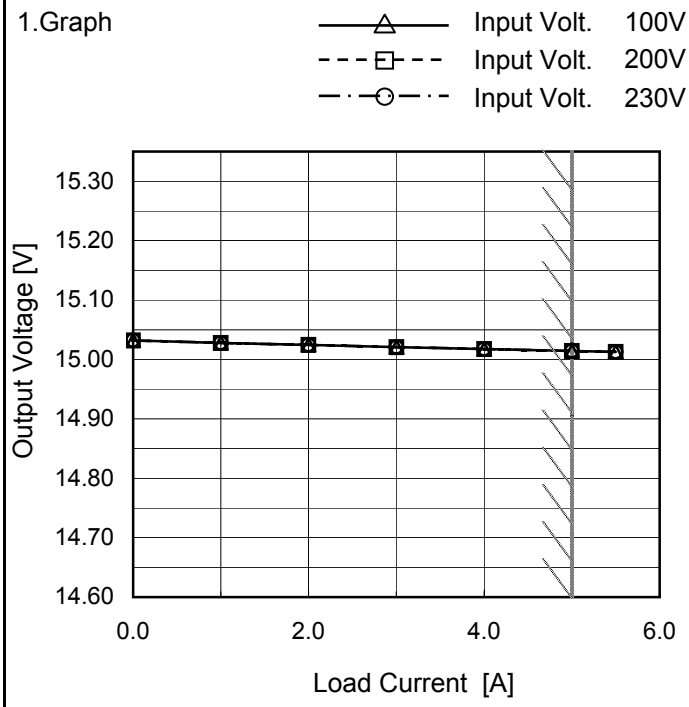
Model	LFA75F-15
Item	Load Regulation
Object	+15V5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

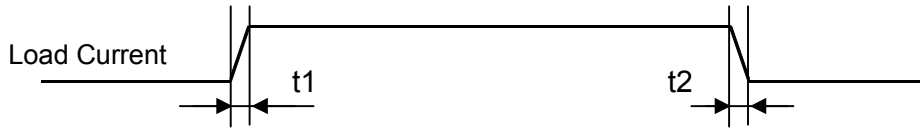
Load Current [A]	Output Voltage [V] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	15.032	15.032	15.032
1.0	15.028	15.028	15.028
2.0	15.024	15.024	15.024
3.0	15.021	15.021	15.021
4.0	15.018	15.018	15.018
5.0	15.014	15.014	15.014
5.5	15.013	15.013	15.013
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

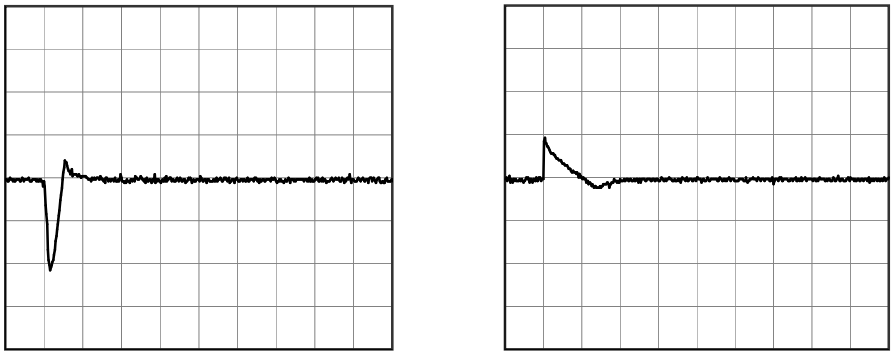
Model	LFA75F-15		
Item	Dynamic Load Response	Temperature Testing Circuitry	25℃ Figure A
Object	+15V5A		

Input Volt. 100 V
Cycle 1000 ms

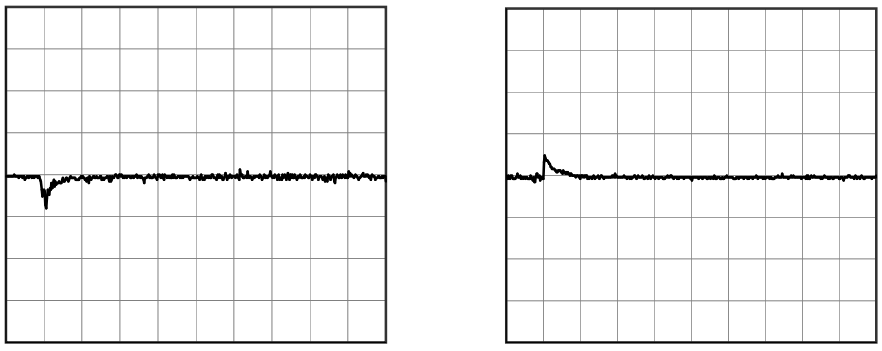
Response. t1=t2=50us. Typ



Min. Load (0A) ←→
Load 100% (5A)



Min. Load (0A) ←→
Load 50% (2.5A)



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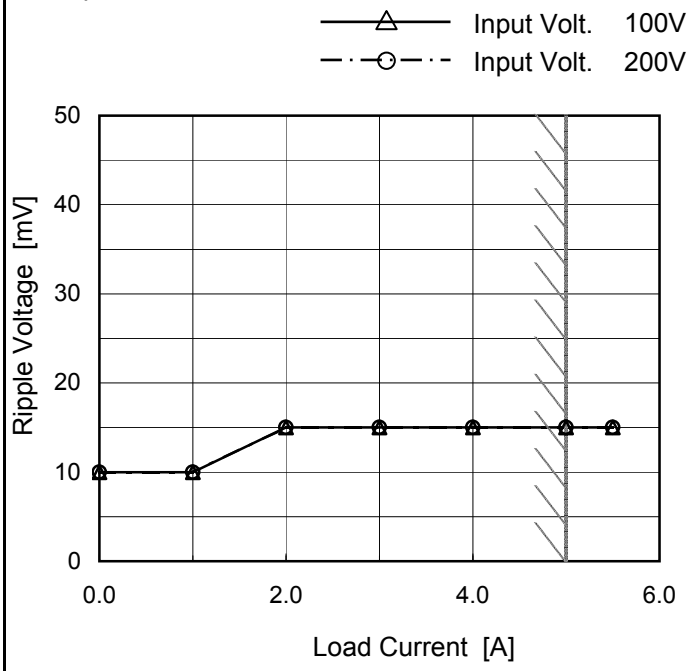
Model	LFA75F-15
Item	Ripple Voltage (by Load Current)
Object	+15V5A

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

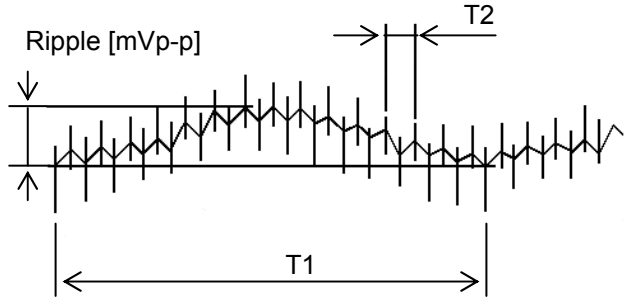


Fig. Complex Ripple Wave Form

2.Values

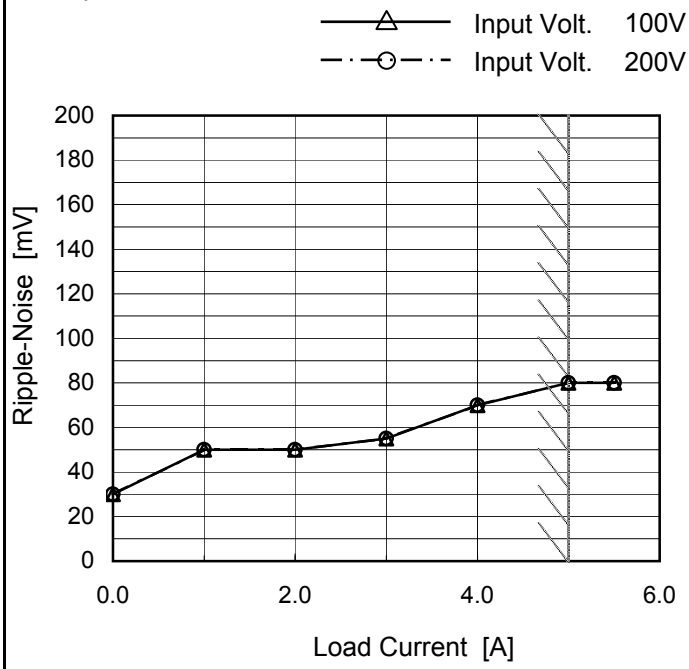
Load Current [A]	Ripple Voltage [mV] Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
1.0	10	10
2.0	15	15
3.0	15	15
4.0	15	15
5.0	15	15
5.5	15	15
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-15
Item	Ripple-Noise
Object	+15V5A

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

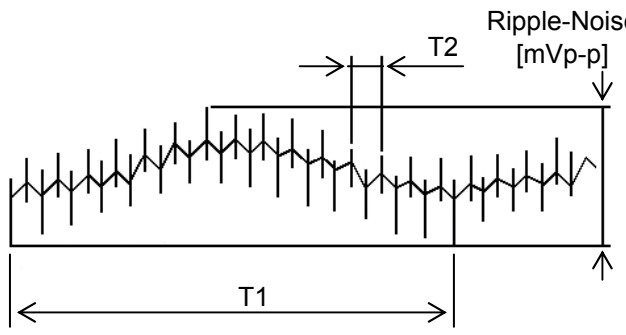


Fig. Complex Ripple Wave Form

2.Values

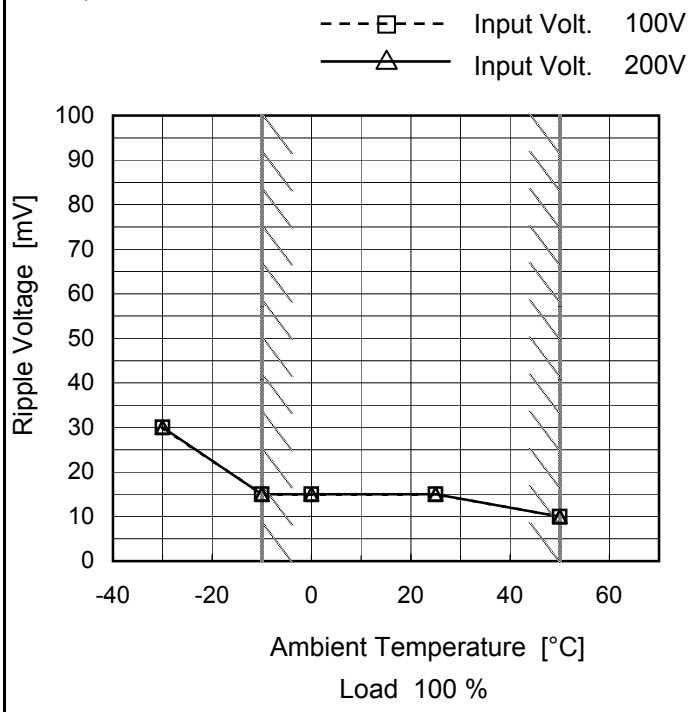
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	30	30
1.0	50	50
2.0	50	50
3.0	55	55
4.0	70	70
5.0	80	80
5.5	80	80
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V5A

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

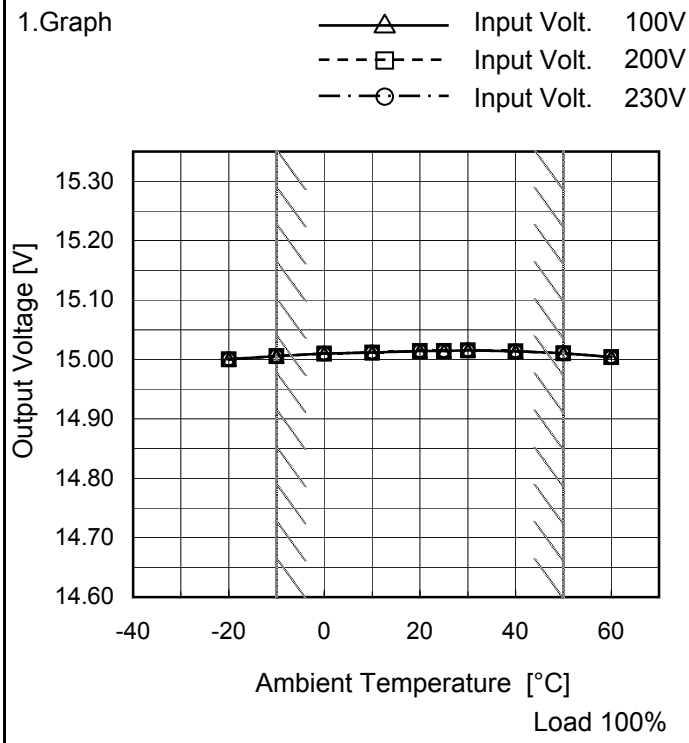
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	30	30
-10	15	15
0	15	15
25	15	15
50	10	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LFA75F-15
Item	Ambient Temperature Drift
Object	+15V5A

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	15.000	15.000	15.000
-10	15.006	15.006	15.006
0	15.010	15.010	15.010
10	15.012	15.012	15.012
20	15.014	15.014	15.014
25	15.015	15.015	15.015
30	15.015	15.015	15.015
40	15.014	15.014	15.014
50	15.011	15.010	15.010
60	15.004	15.004	15.004
--	-	-	-

COSEL

Model	LFA75F-15	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V5A	

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 - 5A

* 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	15.032	±13	±0.1
Minimum Voltage	-10	85	5	15.006		

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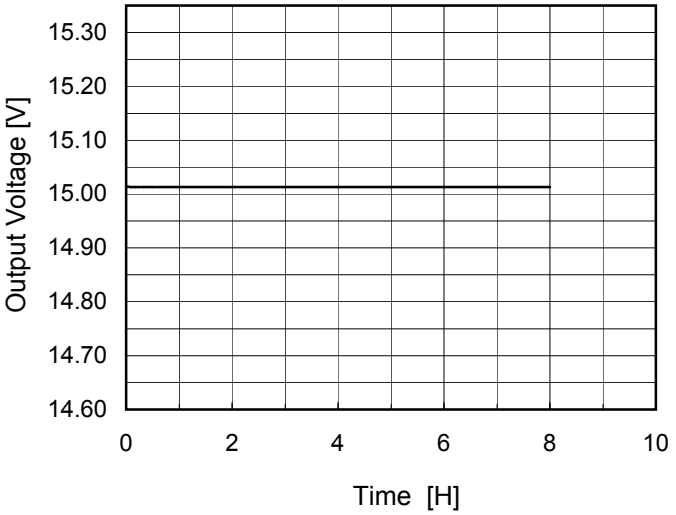
Model	LFA75F-15
Item	Time Lapse Drift
Object	+15V5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

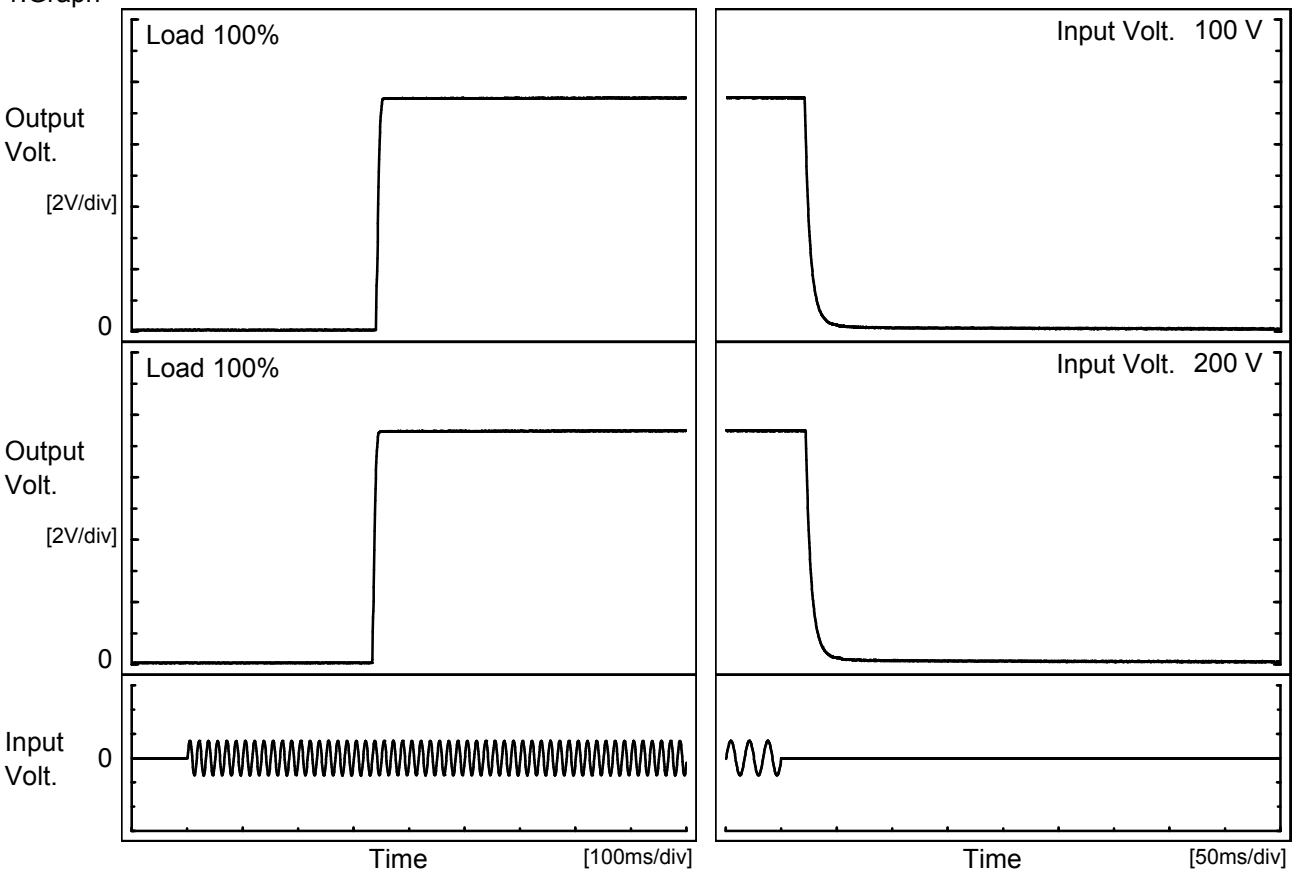
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.014
0.5	15.013
1.0	15.013
2.0	15.013
3.0	15.013
4.0	15.013
5.0	15.013
6.0	15.013
7.0	15.013
8.0	15.013

COSEL

Model	LFA75F-15	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V5A	

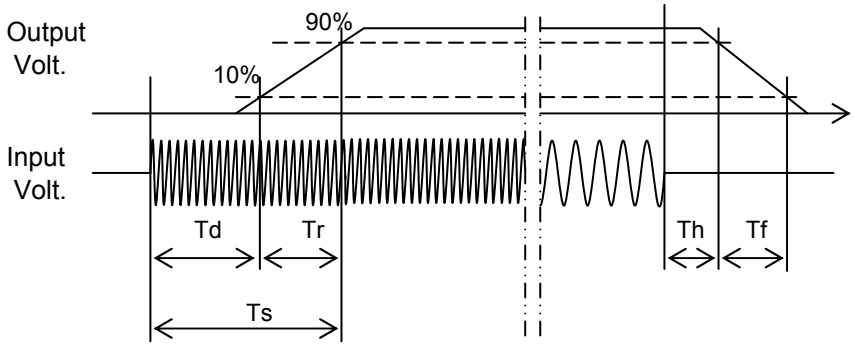
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	341.5	7.5	349.0	21.0	12.0
200 V	334.5	7.5	342.0	22.5	12.0

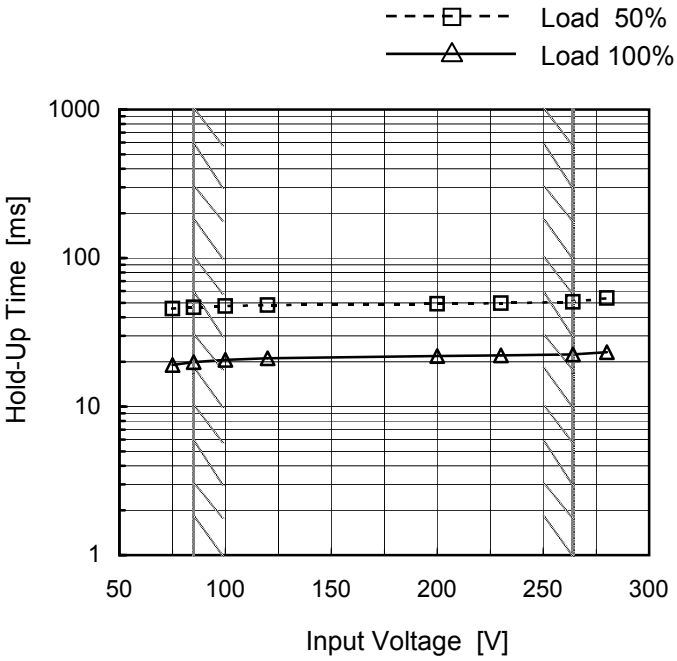


COSEL

Model	LFA75F-15
Item	Hold-Up Time
Object	+15V5A

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

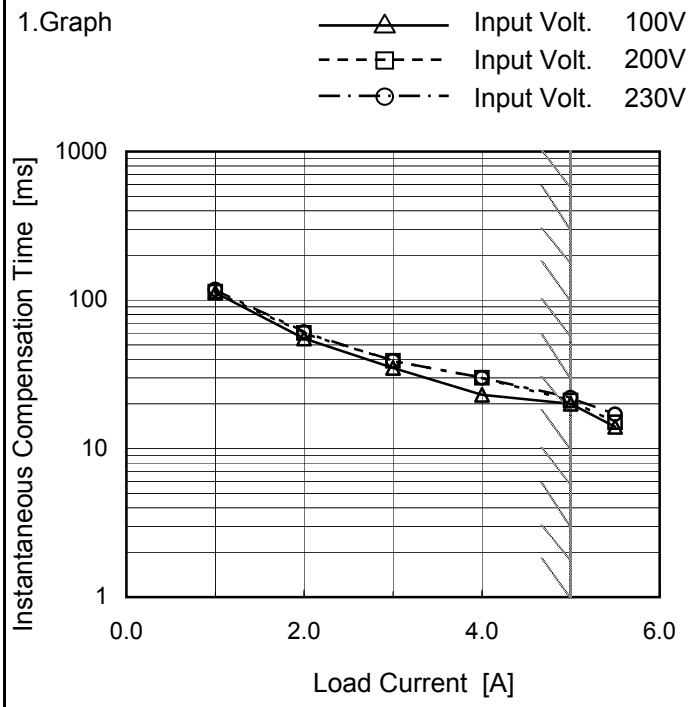
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	46	19
85	47	20
100	48	21
120	48	21
200	49	22
230	50	22
264	51	22
280	54	23
--	-	-

COSEL

Model	LFA75F-15
Item	Instantaneous Interruption Compensation
Object	+15V5A

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	112	114	118
2.0	55	60	61
3.0	35	39	39
4.0	23	30	30
5.0	20	21	22
5.5	14	15	17
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

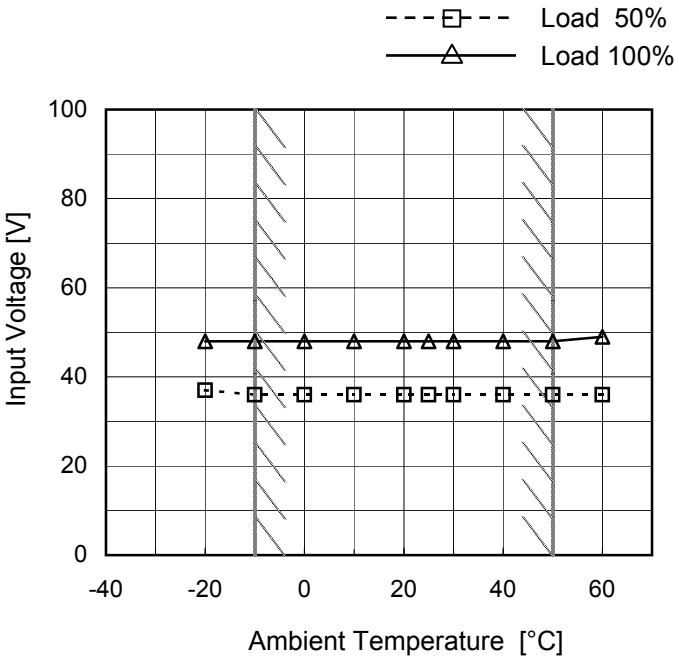
BC-10372

COSEL

Model	LFA75F-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V5A

Testing Circuitry Figure A

1.Graph



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

2.Values

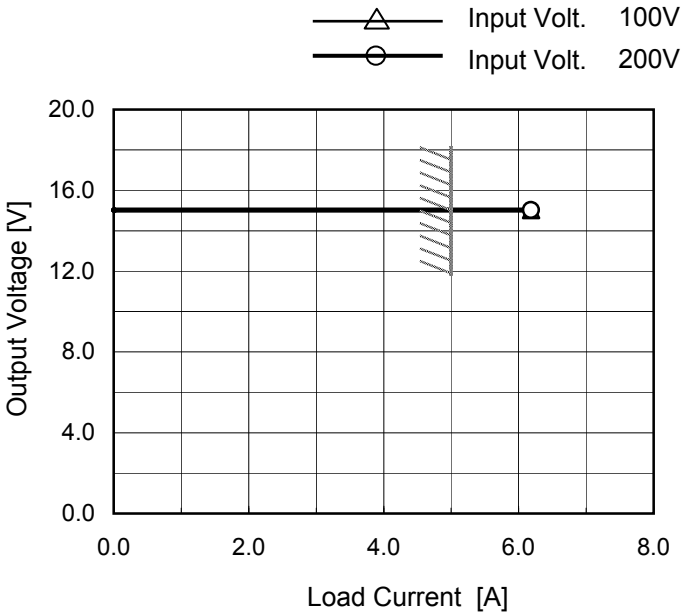
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	37	48
-10	36	48
0	36	48
10	36	48
20	36	48
25	36	48
30	36	48
40	36	48
50	36	48
60	36	49
--	-	-

COSEL

Model	LFA75F-15
Item	Overcurrent Protection
Object	+15V5A

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

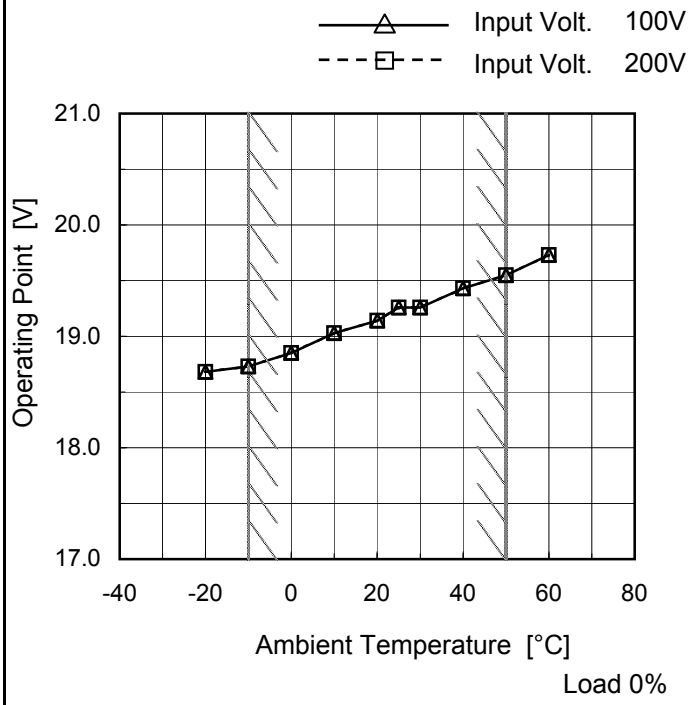
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
15.00	6.18	6.18
14.25	-	-
13.50	-	-
12.00	-	-
10.50	-	-
9.00	-	-
7.50	-	-
6.00	-	-
4.50	-	-
3.00	-	-
1.50	-	-
0.00	-	-

COSEL

Model	LFA75F-15
Item	Overvoltage Protection
Object	+15V5A

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	18.68	18.68
-10	18.73	18.73
0	18.85	18.85
10	19.03	19.03
20	19.14	19.14
25	19.26	19.26
30	19.26	19.26
40	19.43	19.43
50	19.55	19.55
60	19.73	19.73
--	-	-

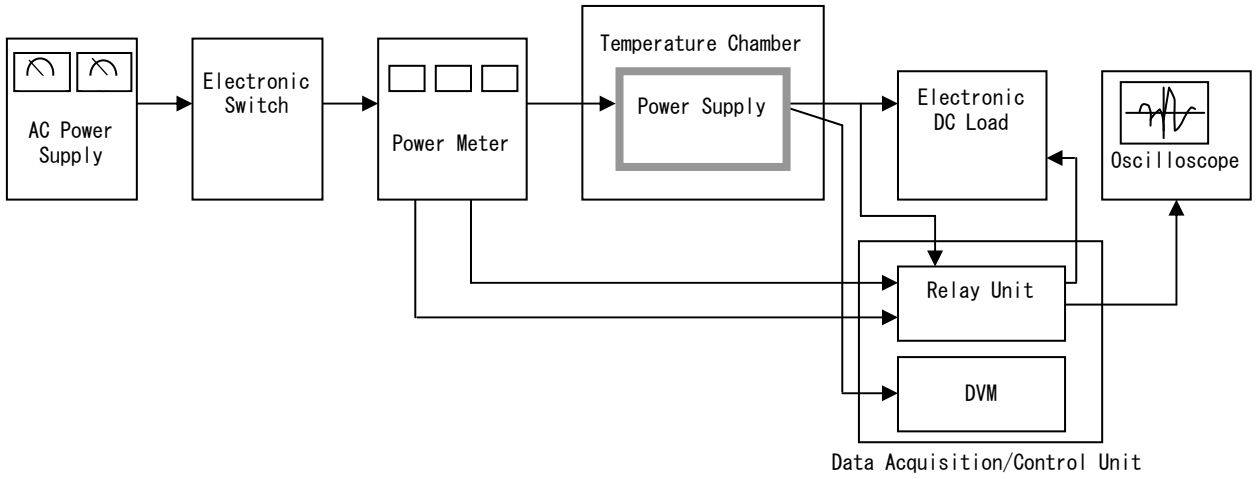


Figure A

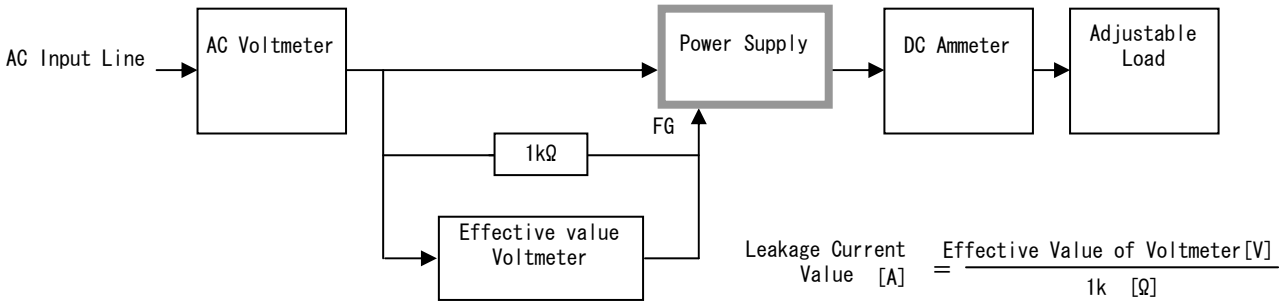


Figure B (DEN-AN)

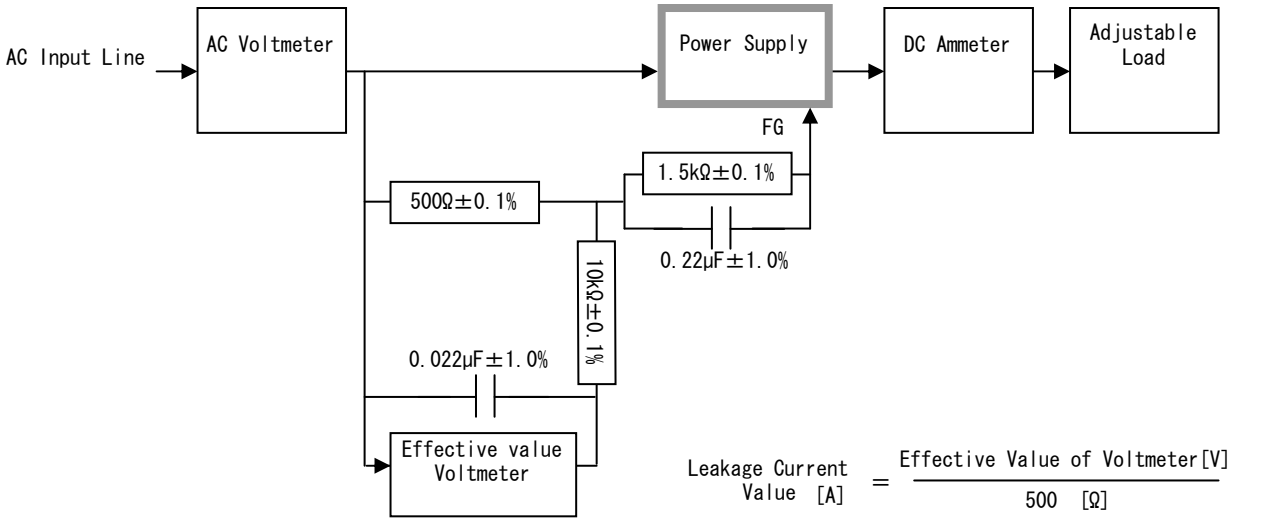


Figure B (IEC60950-1)

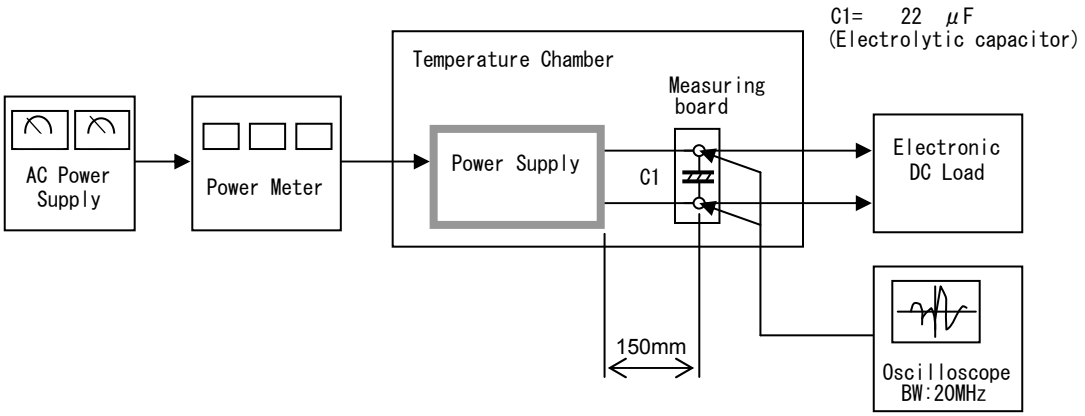

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C