参考資料

COSEL

TEST DATA OF PBA600F-15

Regulated DC Power Supply
Oct.10. 2003

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Haruki Morita Design Engineer

COSEL CO.,LTD.

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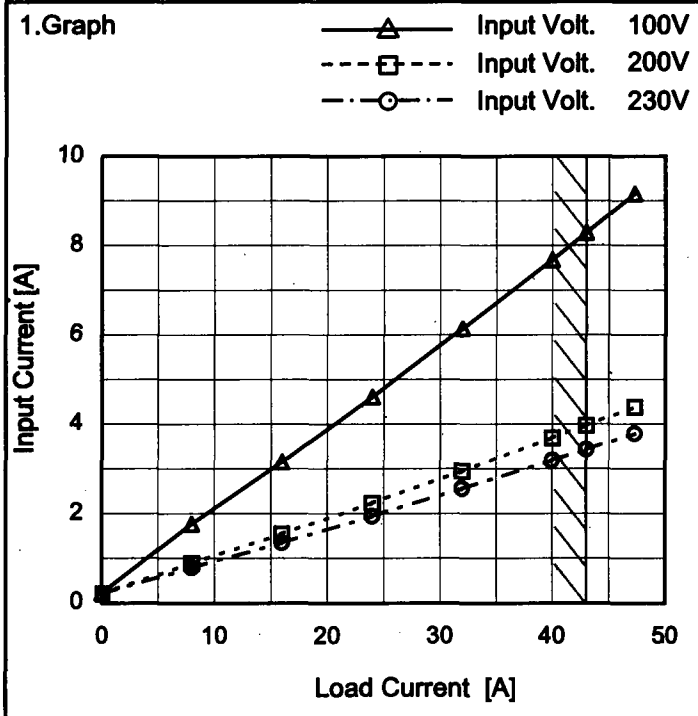
COSEL

Model	PBA600F-15
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

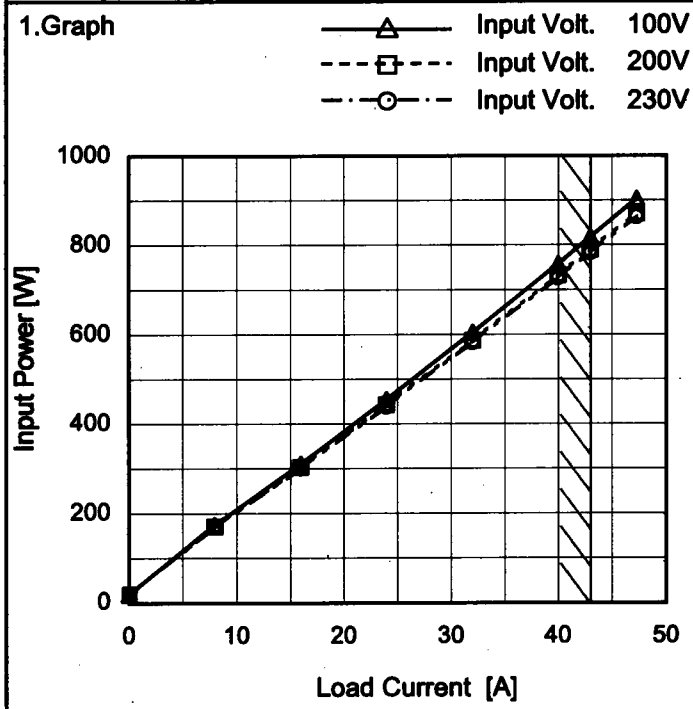
Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.226	0.202	0.200
8.0	1.768	0.888	0.788
16.0	3.154	1.542	1.346
24.0	4.610	2.236	1.942
32.0	6.140	2.952	2.558
40.0	7.680	3.690	3.190
43.0	8.290	3.970	3.432
47.3	9.160	4.380	3.783
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-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

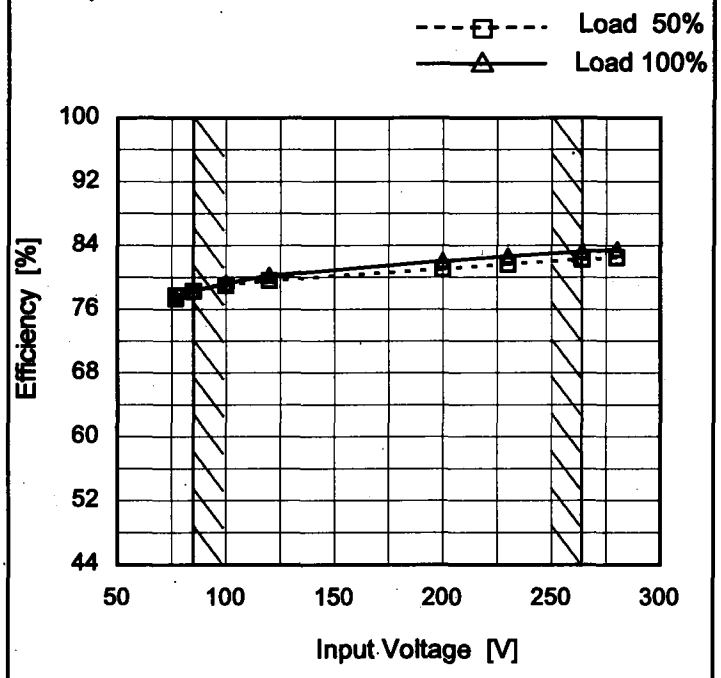
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	18.9	19.0	18.0
8.0	174.3	171.0	170.0
16.0	310.8	304.0	302.0
24.0	455.0	443.0	440.0
32.0	605.0	587.0	583.0
40.0	758.0	733.0	728.0
43.0	818.0	790.0	784.0
47.3	904.0	871.0	864.0
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-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

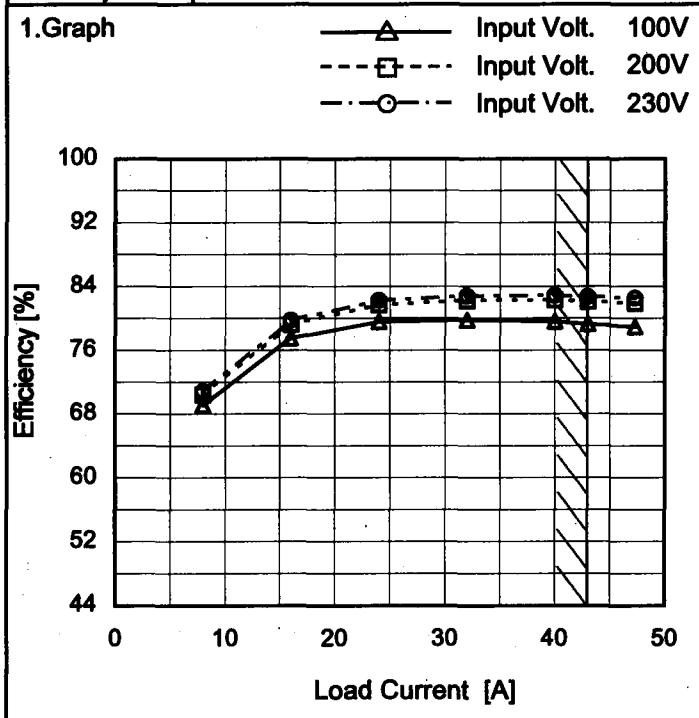
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
77	77.7	77.4
85	78.3	78.3
100	79.0	79.3
120	79.6	80.2
200	81.0	82.1
230	81.6	82.7
264	82.3	83.2
280	82.5	83.5
--	-	-

COSEL

Model	PBA600F-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	-	-	-
8.0	69.1	70.4	70.8
16.0	77.5	79.2	79.8
24.0	79.6	81.7	82.3
32.0	79.8	82.2	82.8
40.0	79.6	82.3	82.9
43.0	79.3	82.1	82.7
47.3	78.9	81.9	82.6
--	-	-	-
--	-	-	-
--	-	-	-

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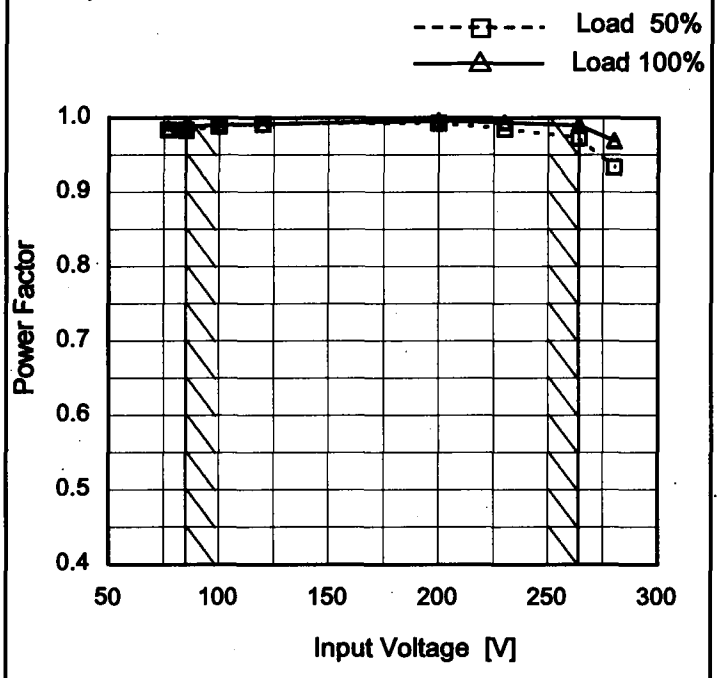
Model	PBA600F-15
Item	Power Factor (by Input Voltage)
Object	———————————

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%
77	0.983	0.985
85	0.983	0.988
100	0.988	0.990
120	0.991	0.991
200	0.993	0.996
230	0.985	0.994
264	0.973	0.990
280	0.933	0.969
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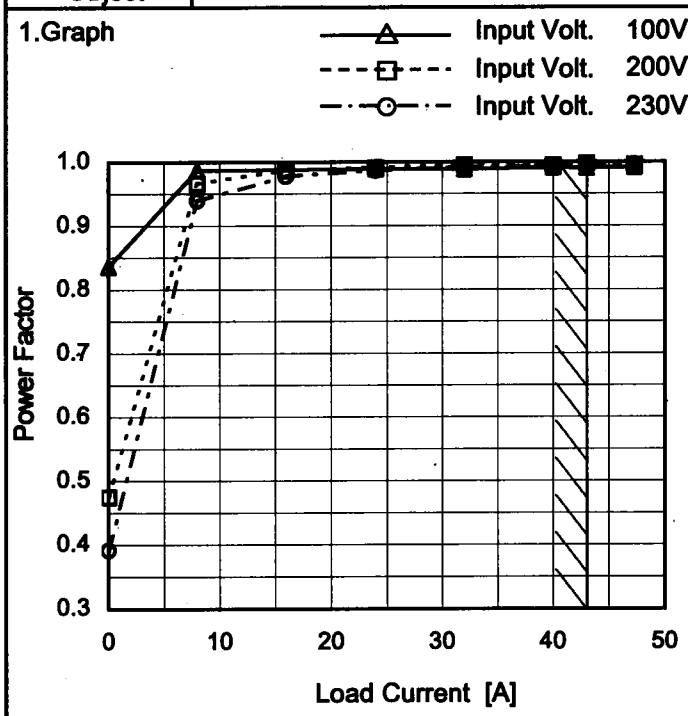
Model	PBA600F-15
Item	Power Factor (by Load Current)
Object	———————

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	0.836	0.475	0.391
8.0	0.987	0.966	0.939
16.0	0.988	0.987	0.977
24.0	0.989	0.991	0.987
32.0	0.989	0.995	0.991
40.0	0.991	0.995	0.993
43.0	0.990	0.997	0.995
47.3	0.991	0.995	0.994
--	-	-	-
--	-	-	-
--	-	-	-

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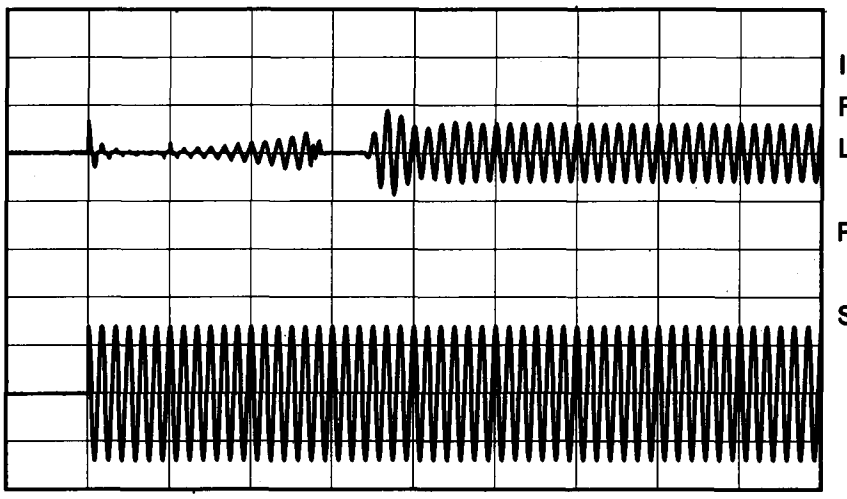
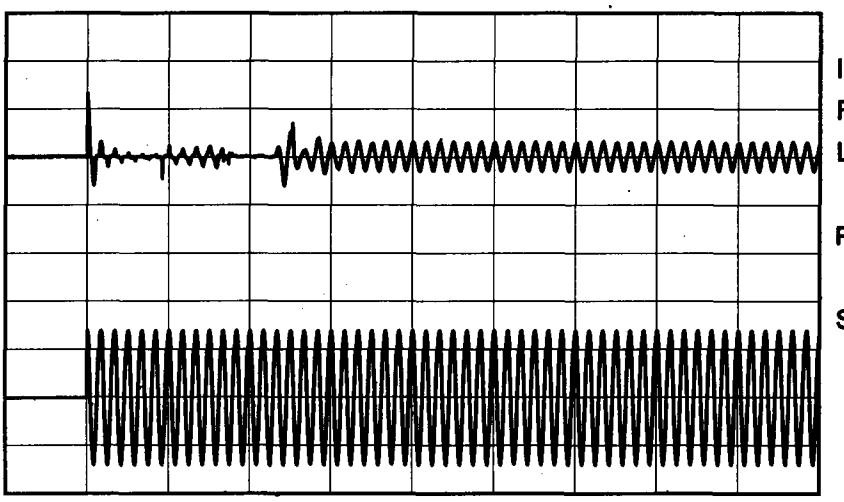
Model	PBA600F-15
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



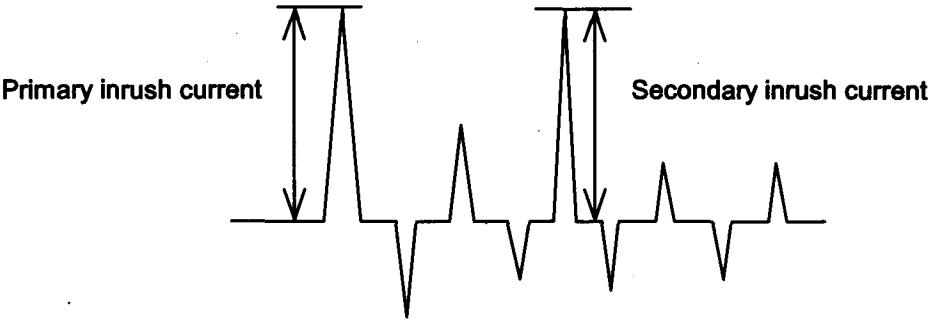
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
13.4 A
Secondary inrush current :
17.6 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
26.7 A
Secondary inrush current :
14.1 A



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Model	PBA600F-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	0.30	0.47	0.58	Operation
	One of phase	0.38	0.77	0.98	stand by
IEC60950	Both phases	0.24	0.42	0.56	Operation
	One of phase	0.34	0.77	0.91	stand by

The value for "One phase" is the reference value only.

2.Condition

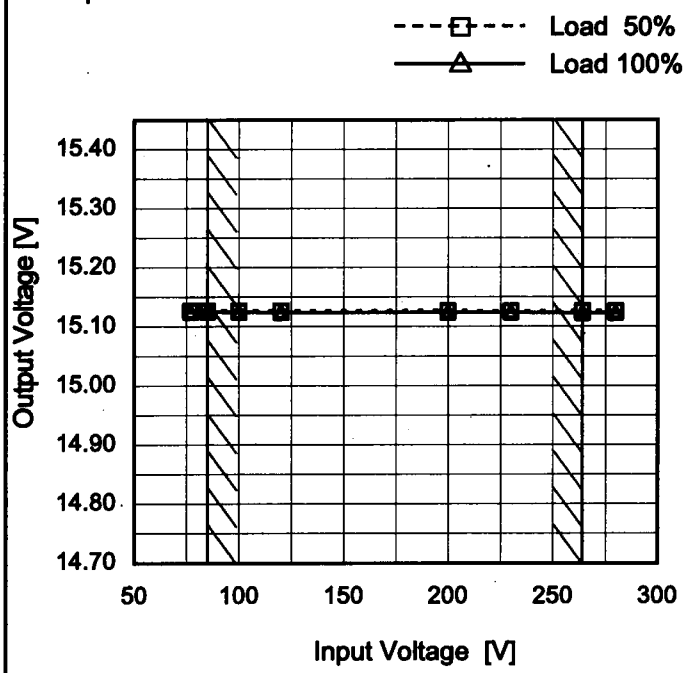
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

COSEL

Model	PBA600F-15
Item	Line Regulation
Object	+15V43A

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%
77	15.127	15.125
85	15.127	15.125
100	15.127	15.125
120	15.127	15.124
200	15.127	15.124
230	15.126	15.124
264	15.126	15.123
280	15.126	15.123
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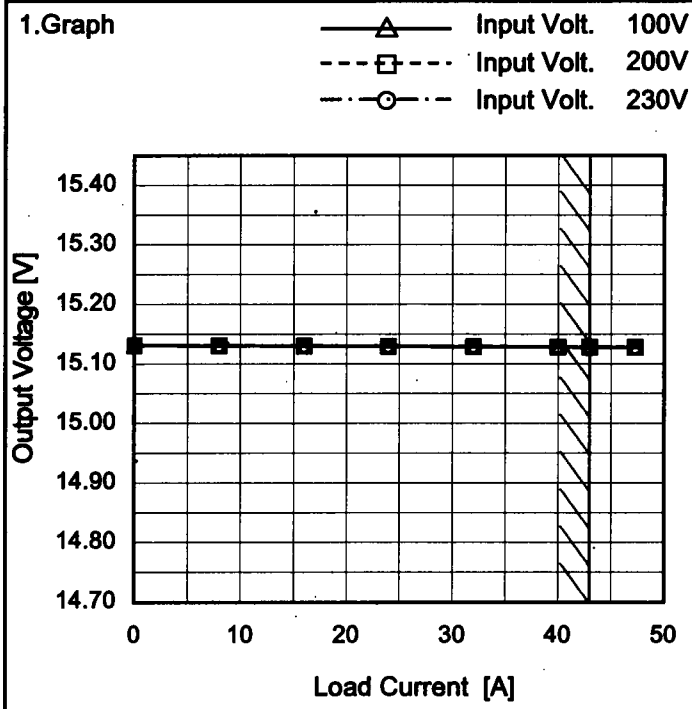
Model	PBA600F-15
Item	Load Regulation
Object	+15V43A

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	15.131	15.131	15.131
8.0	15.131	15.130	15.131
16.0	15.130	15.130	15.130
24.0	15.129	15.130	15.129
32.0	15.129	15.129	15.129
40.0	15.128	15.128	15.128
43.0	15.128	15.128	15.128
47.3	15.128	15.128	15.128
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

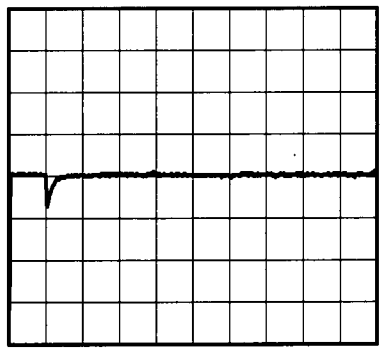
Model	PBA600F-15
Item	Dynamic Load Response
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 mS

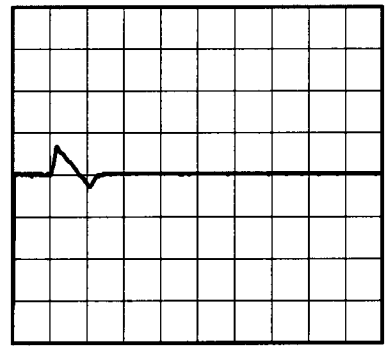
Load Current

Min.Load (0A) ⟷
Load 100% (43A)



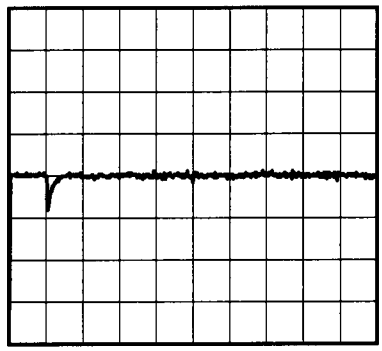
100mV/div

10ms/div



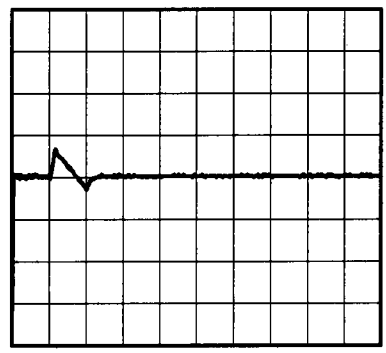
10ms/div

Min.Load (0A) ⟷
Load 50% (21.5A)



100mV/div

10ms/div



10ms/div

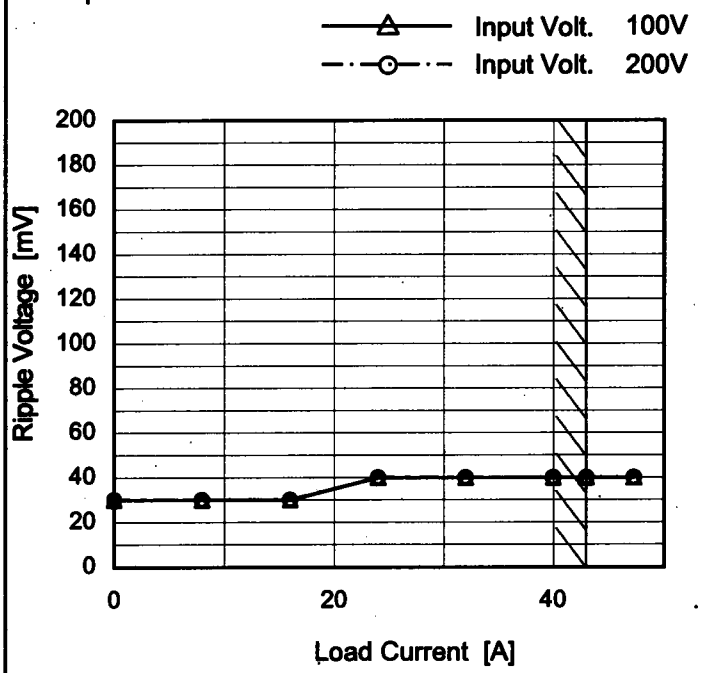
* The characteristic of AC200V is equal.

COSEL

Model	PBA600F-15
Item	Ripple Voltage (by Load Current)
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

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

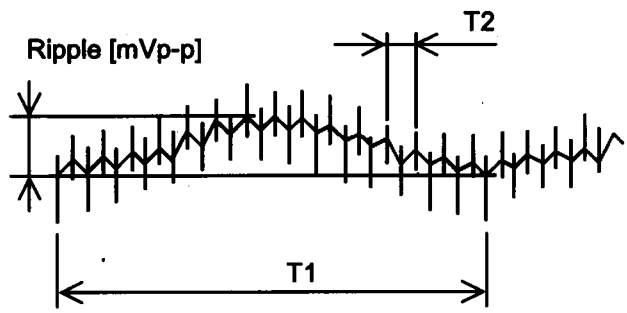


Fig. Complex Ripple Wave Form

2.Values

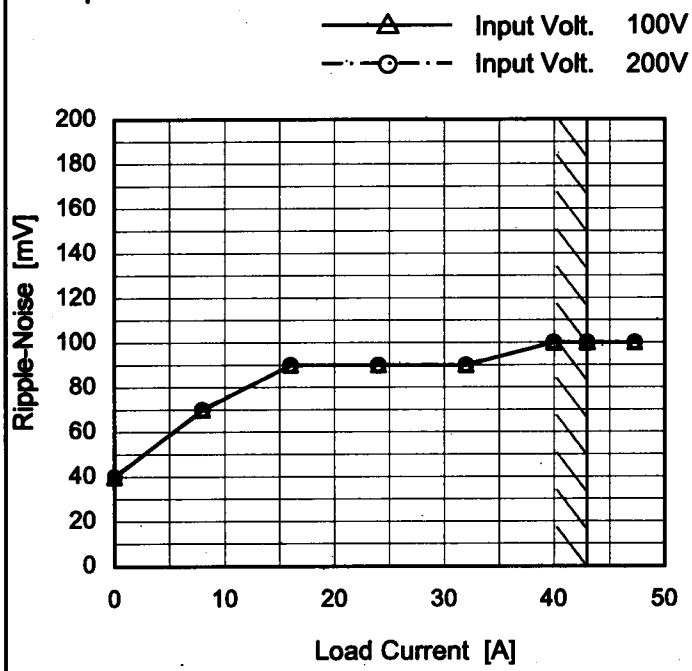
Load Current [A]	Ripple Voltage [mV] Input Volt. 100 [V]	Ripple Voltage [mV] Input Volt. 200 [V]
0.0	30	30
8.0	30	30
16.0	30	30
24.0	40	40
32.0	40	40
40.0	40	40
43.0	40	40
47.3	40	40
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-15
Item	Ripple-Noise
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

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]	Ripple-Noise [mV] Input Volt. 200 [V]
0.0	40	40
8.0	70	70
16.0	90	90
24.0	90	90
32.0	90	90
40.0	100	100
43.0	100	100
47.3	100	100
--	-	-
--	-	-
--	-	-

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

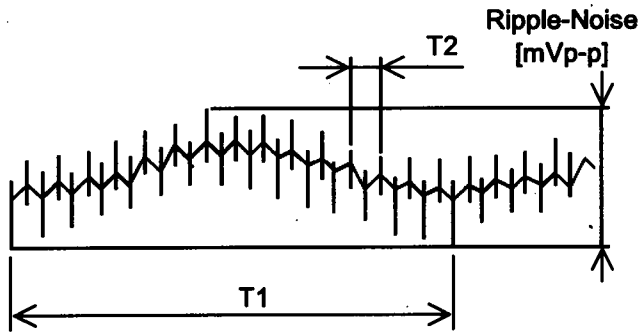


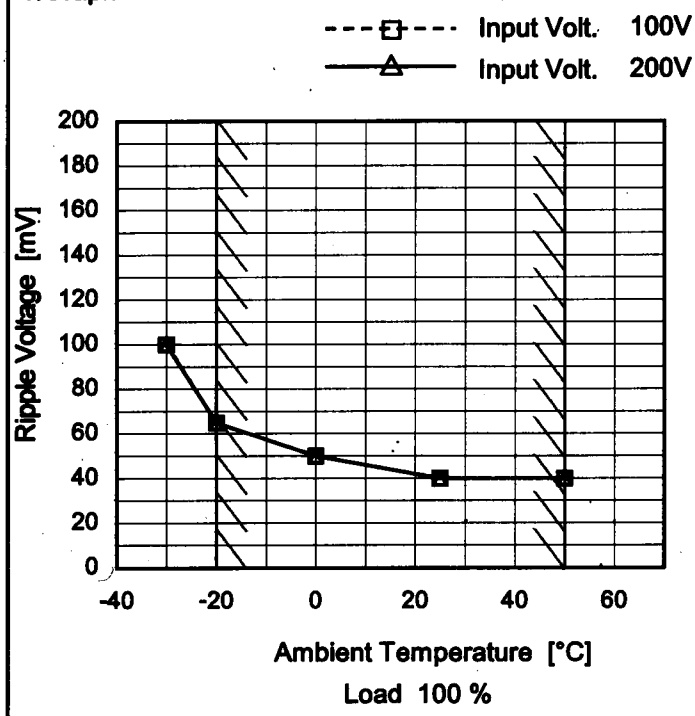
Fig. Complex Ripple Wave Form

COSEL

Model	PBA600F-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V43A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

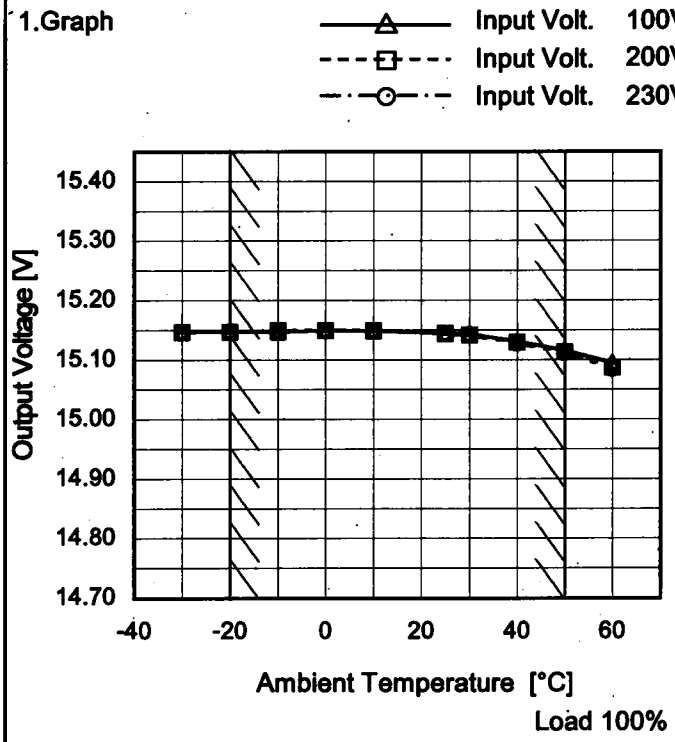
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	100	100
-20	65	65
0	50	50
25	40	40
50	40	40
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-15
Item	Ambient Temperature Drift
Object	+15V43A

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]
-30	15.147	15.147	15.147
-20	15.148	15.147	15.147
-10	15.147	15.149	15.149
0	15.149	15.150	15.150
10	15.149	15.149	15.149
25	15.145	15.144	15.144
30	15.143	15.142	15.141
40	15.131	15.130	15.128
50	15.116	15.113	15.112
60	15.095	15.088	15.085
--	-	-	-

COSEL

Model	PBA600F-15
Item	Output Voltage Accuracy
Object	+15V43A

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 : -20 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 43A

* 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

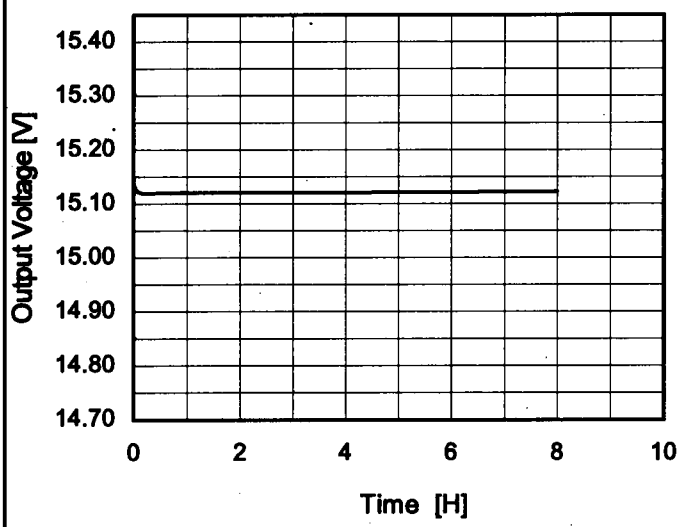
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	264	0	15.151	±24	±0.2
Minimum Voltage	50	264	43	15.104		

COSEL

Model	PBA600F-15
Item	Time Lapse Drift
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

2.Values

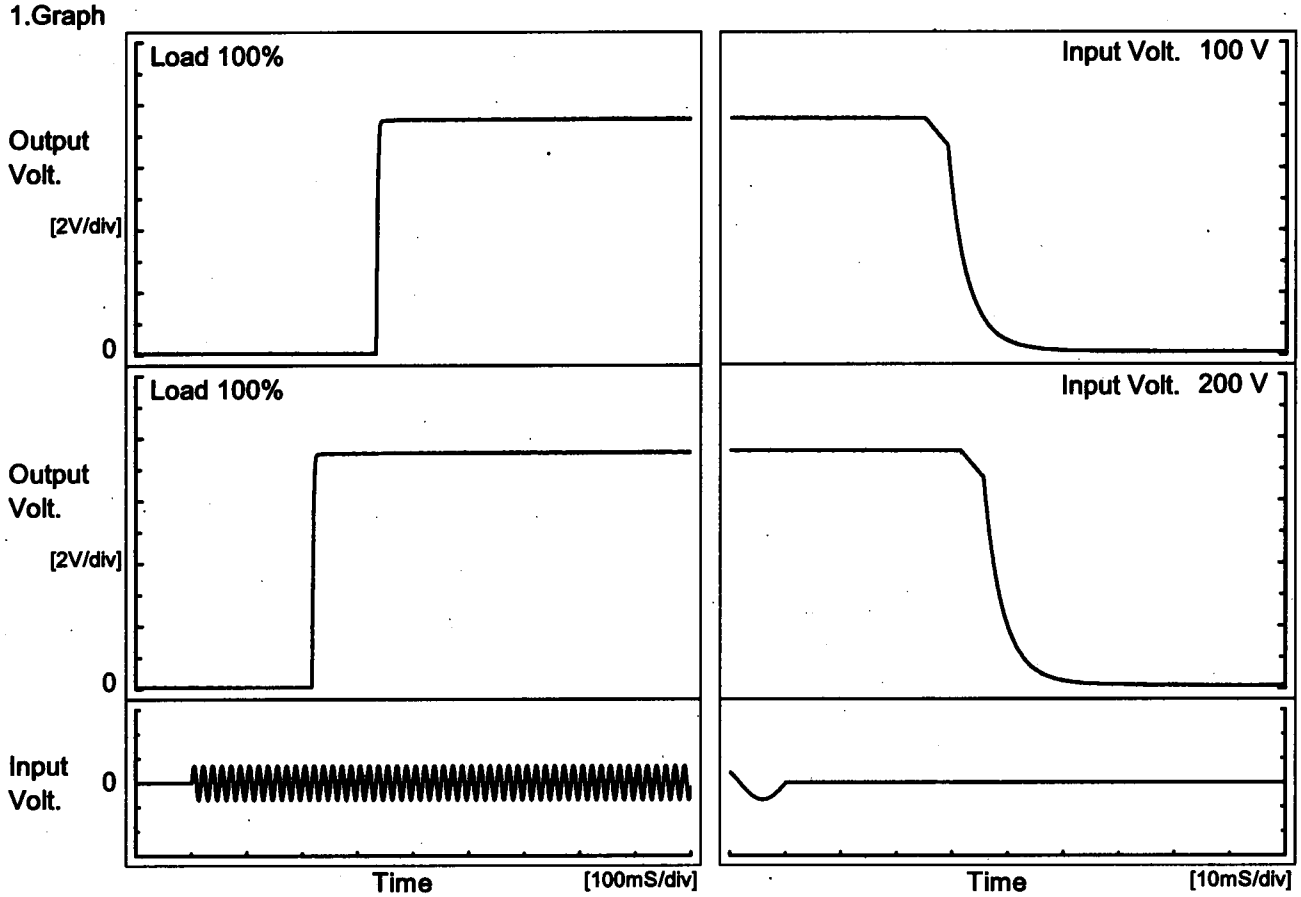
Time since start [H]	Output Voltage [V]
0.0	15.138
0.5	15.120
1.0	15.121
2.0	15.121
3.0	15.121
4.0	15.121
5.0	15.121
6.0	15.122
7.0	15.122
8.0	15.122

COSEL

Model	PBA600F-15
Item	Rise and Fall Time
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

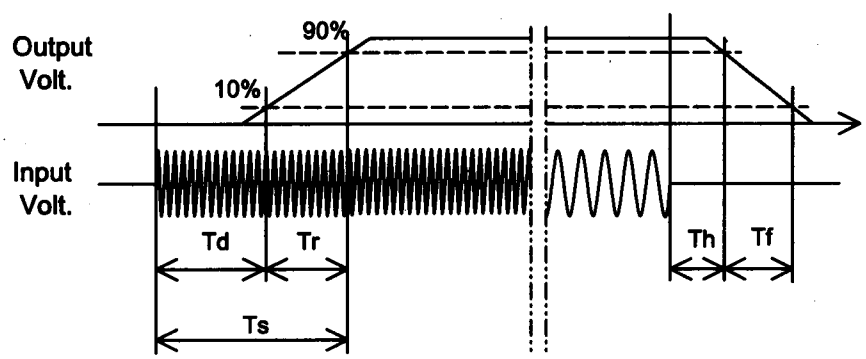
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	334.0	5.0	339.0	28.6	8.7
200 V	217.5	5.0	222.5	35.2	8.6

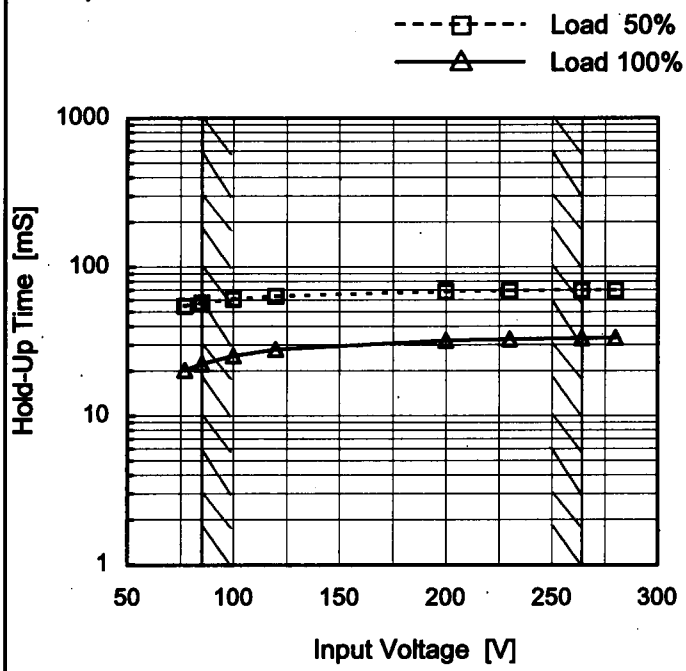


COSEL

Model	PBA600F-15
Item	Hold-Up Time
Object	+15V43A

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

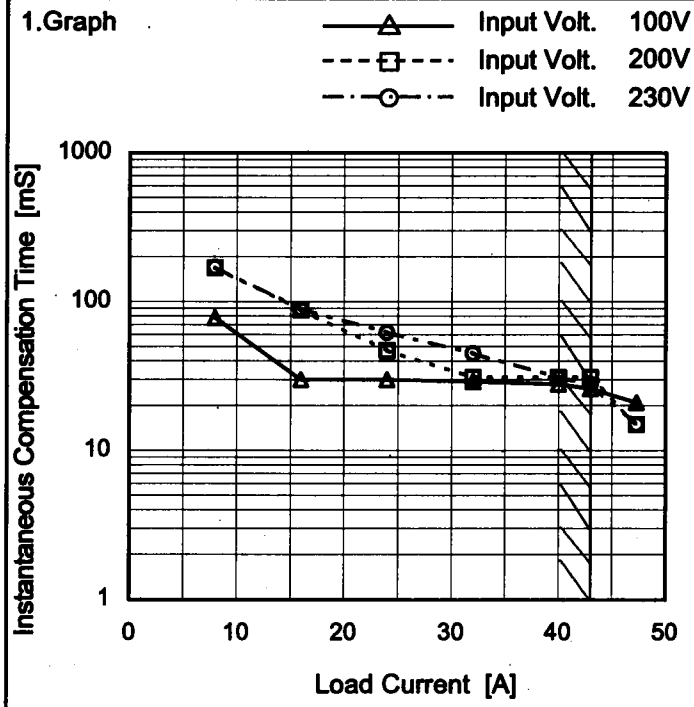
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	55	20
85	57	22
100	61	25
120	64	28
200	68	32
230	69	33
264	70	33
280	70	33
--	-	-

COSEL

Model	PBA600F-15
Item	Instantaneous Interruption Compensation
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

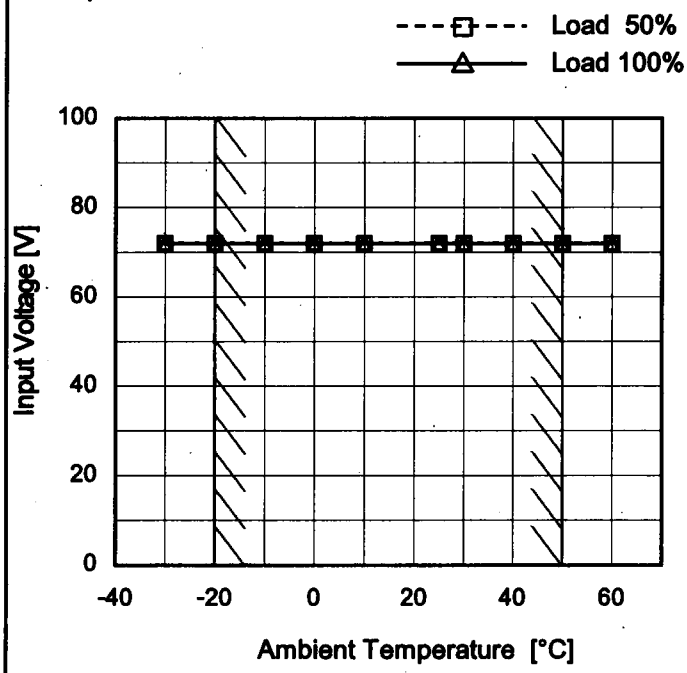
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
8.0	78	169	170
16.0	30	88	89
24.0	30	47	62
32.0	29	31	45
40.0	28	31	31
43.0	26	31	28
47.3	21	15	15
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V43A

Testing Circuitry Figure A

1.Graph



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

2.Values

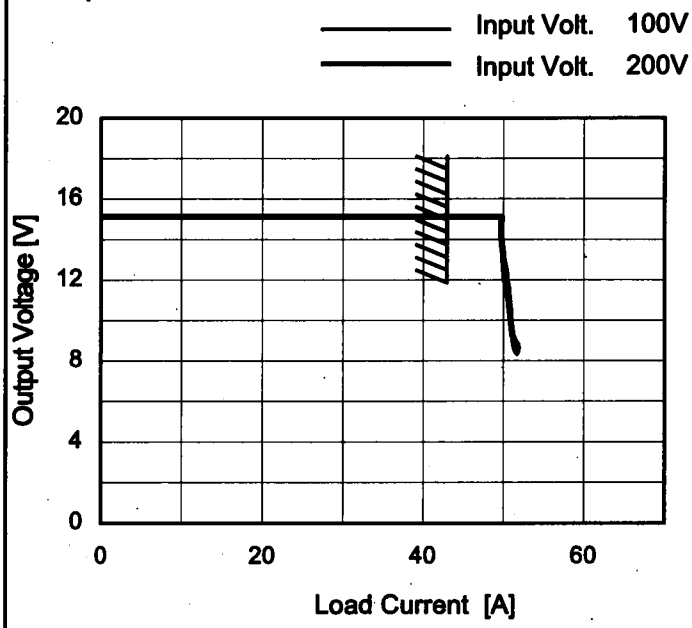
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	72	72
-20	72	72
-10	72	72
0	72	72
10	72	72
25	72	72
30	72	72
40	72	72
50	72	72
60	72	72
--	-	-

COSEL

Model	PBA600F-15
Item	Overcurrent Protection
Object	+15V43A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent opertion occurs when the output voltage is from 8.3V to 0V.

2.Values

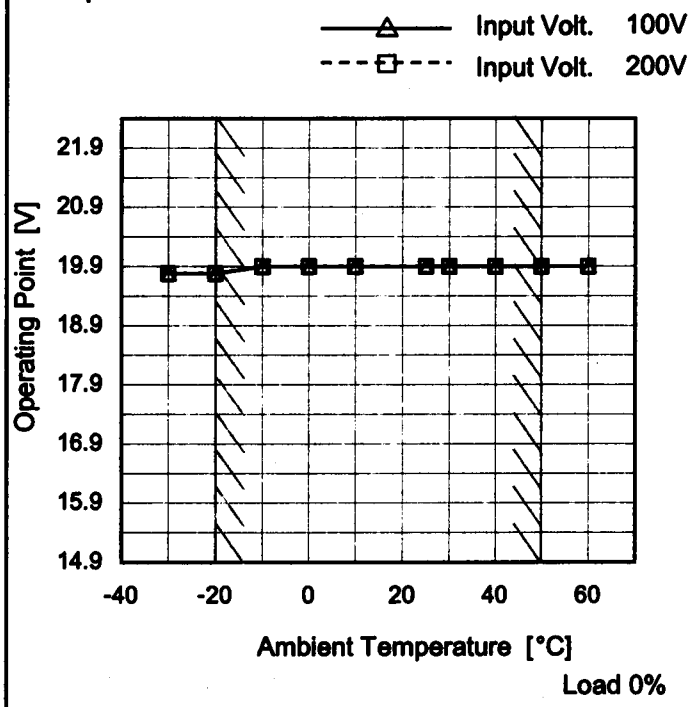
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
15.0	49.81	49.78
14.3	49.76	49.74
13.5	49.79	49.88
12.0	50.07	50.41
10.5	50.65	50.82
9.0	51.17	51.40
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-15
Item	Overvoltage Protection
Object	+15V43A

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]
-30	19.73	19.73
-20	19.73	19.73
-10	19.85	19.85
0	19.85	19.85
10	19.85	19.85
25	19.85	19.85
30	19.85	19.85
40	19.85	19.85
50	19.85	19.85
60	19.85	19.85
–	-	-

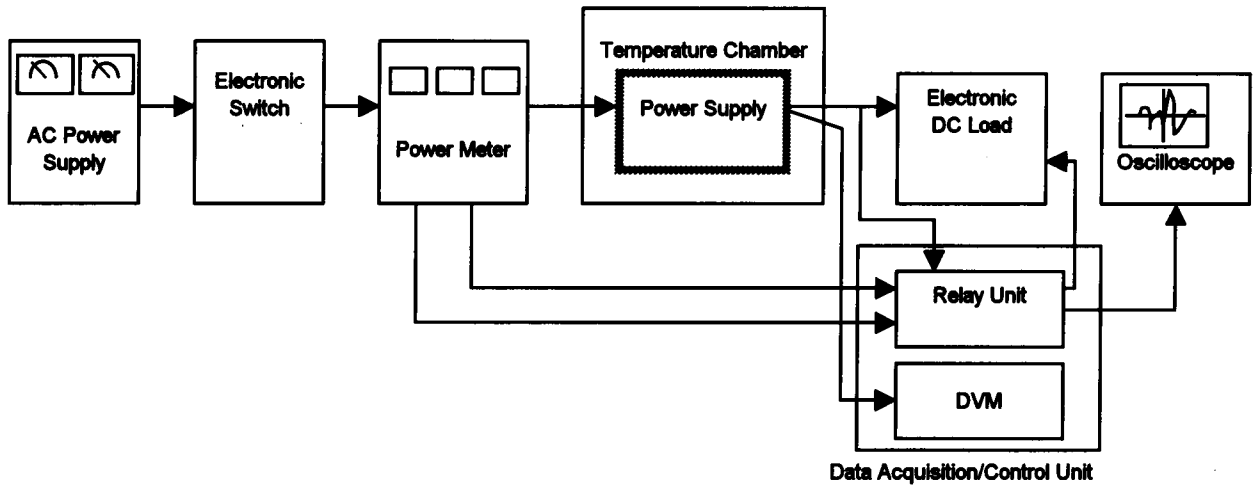


Figure A

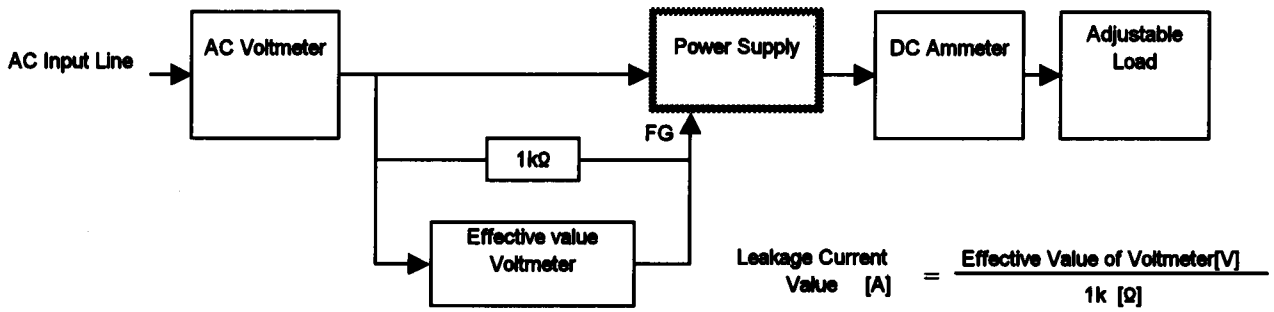


Figure B (DEN-AN)

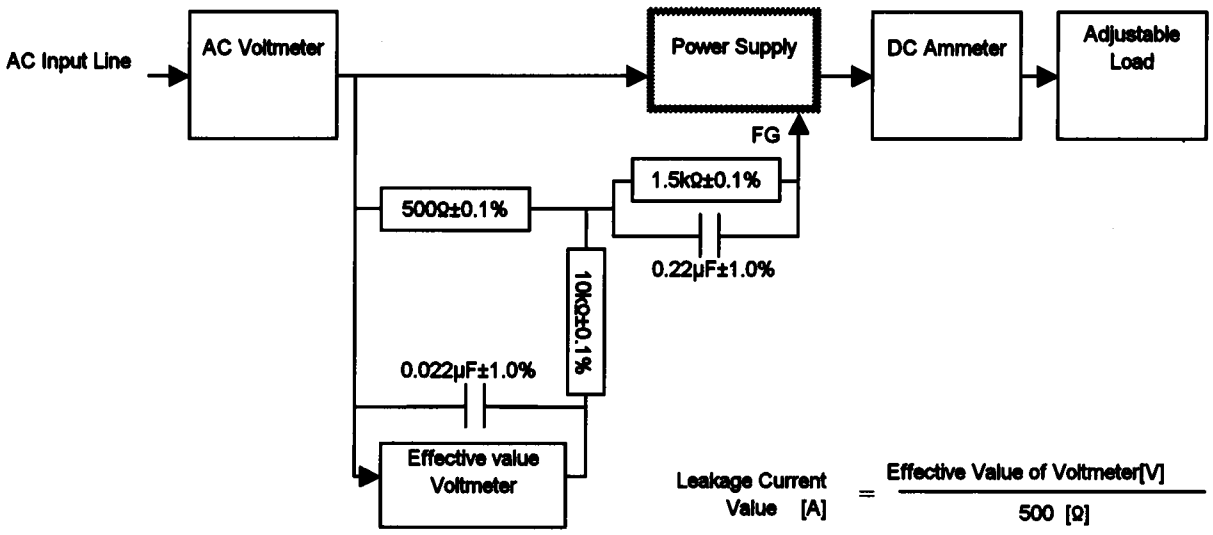


Figure B (IEC60950)