参考資料

COSEL

TEST DATA OF PBA1000F-12

Regulated DC Power Supply
Mar.30, 2004

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COSEL CO.,LTD.

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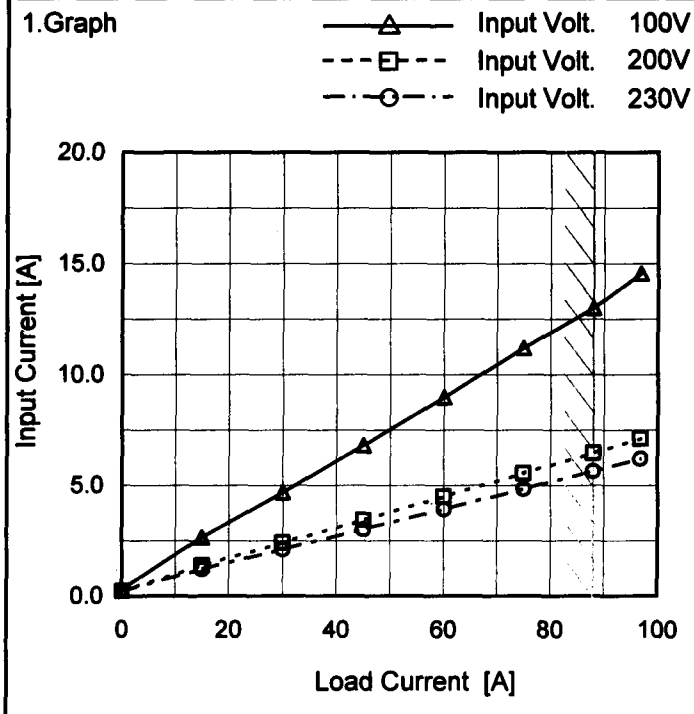
Model	PBA1000F-12
Item	Input Current (by Load Current)
Object	————————

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	0.318	0.218	0.217
15.0	2.654	1.384	1.224
30.0	4.690	2.408	2.114
45.0	6.810	3.438	3.012
60.0	8.980	4.490	3.918
75.0	11.200	5.550	4.840
88.0	13.000	6.470	5.650
96.8	14.560	7.110	6.200
--	-	-	-
--	-	-	-
--	-	-	-

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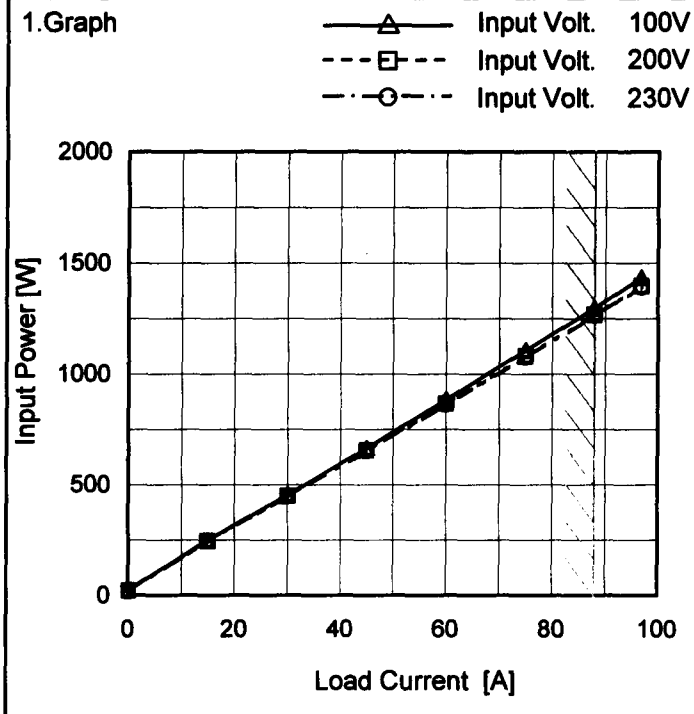
Model	PBA1000F-12
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

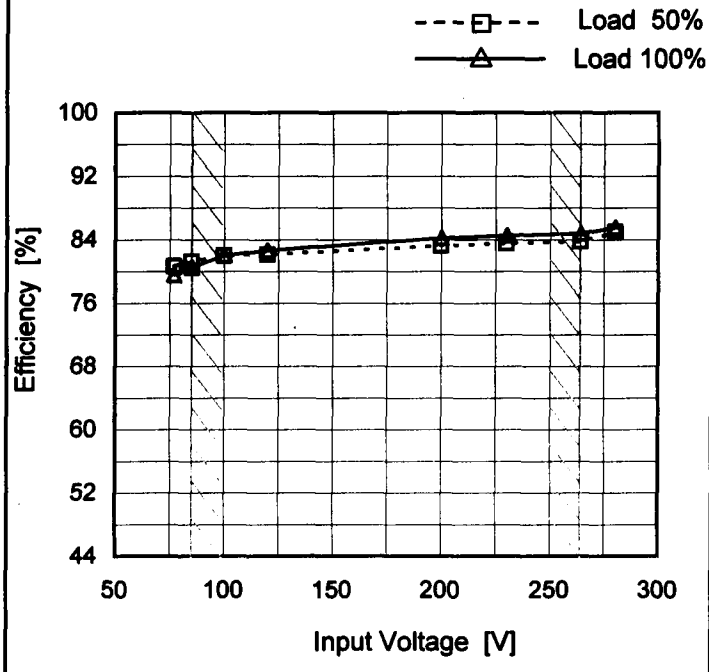
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	24	21	17
15.0	250	246	245
30.0	455	448	448
45.0	665	655	653
60.0	885	866	862
75.0	1108	1080	1076
88.0	1298	1267	1264
96.8	1435	1396	1391
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA1000F-12
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

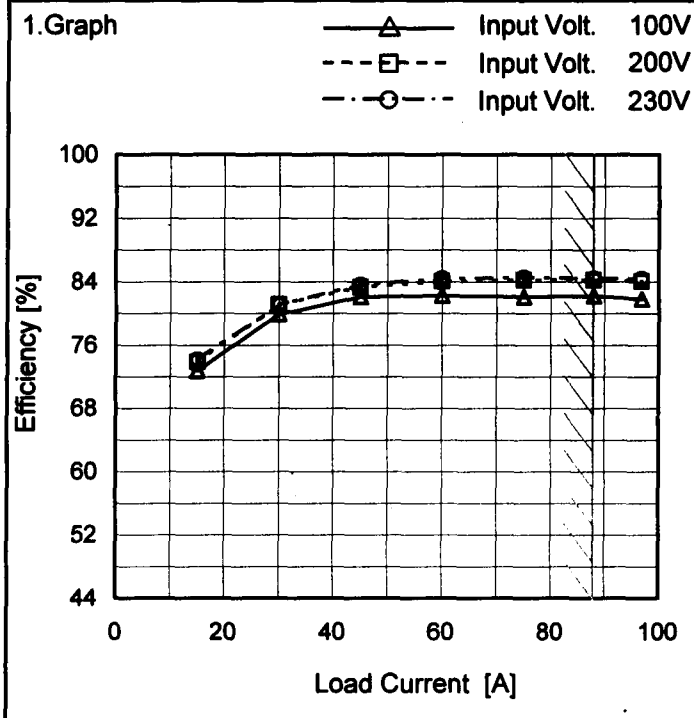
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
77	80.6	79.6
85	81.3	80.5
100	82.0	82.0
120	82.1	82.7
200	83.3	84.2
230	83.5	84.5
264	83.8	84.8
280	85.0	85.6
--	-	-

COSEL

Model	PBA1000F-12
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	-	-	-
15.0	72.8	73.9	74.2
30.0	79.9	81.1	81.1
45.0	82.1	83.4	83.6
60.0	82.3	84.1	84.4
75.0	82.1	84.2	84.5
88.0	82.2	84.2	84.4
96.8	81.8	84.1	84.4
--	-	-	-
--	-	-	-
--	-	-	-

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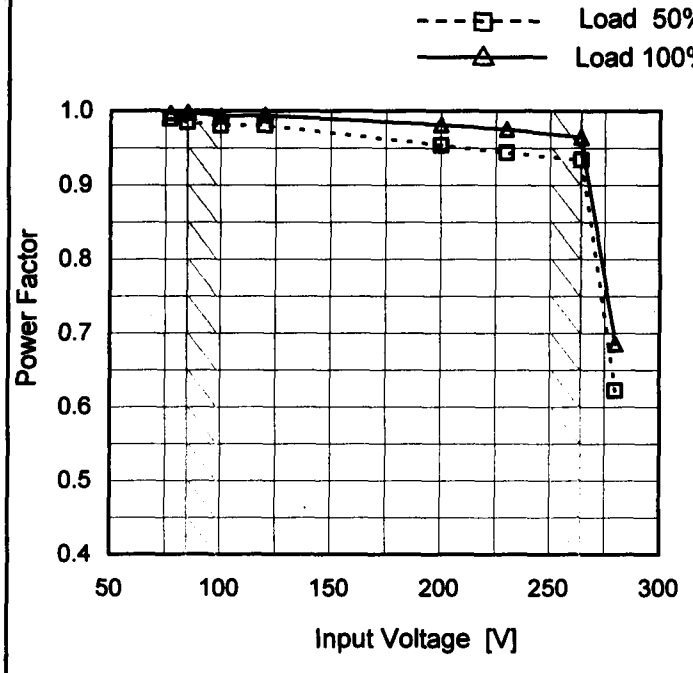
Model	PBA1000F-12
Item	Power Factor (by Input Voltage)
Object	———————————

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	0.990	0.997
85	0.985	0.998
100	0.980	0.993
120	0.980	0.994
200	0.954	0.981
230	0.944	0.975
264	0.934	0.965
280	0.622	0.686
--	-	-

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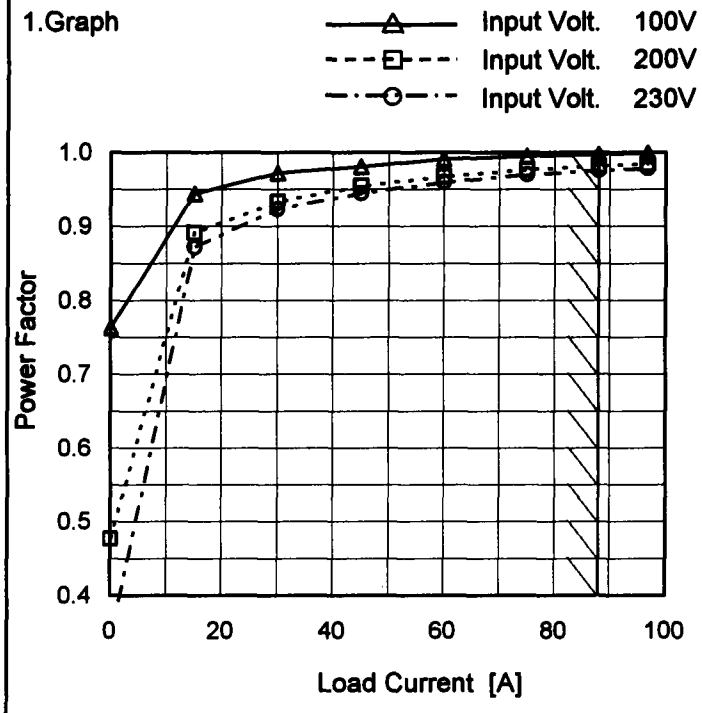
Model	PBA1000F-12
Item	Power Factor (by Load Current)
Object	————————

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	0.763	0.477	0.340
15.0	0.944	0.891	0.872
30.0	0.972	0.933	0.924
45.0	0.981	0.955	0.945
60.0	0.991	0.968	0.960
75.0	0.995	0.976	0.970
88.0	0.998	0.982	0.976
96.8	0.999	0.984	0.979
—	-	-	-
—	-	-	-
—	-	-	-

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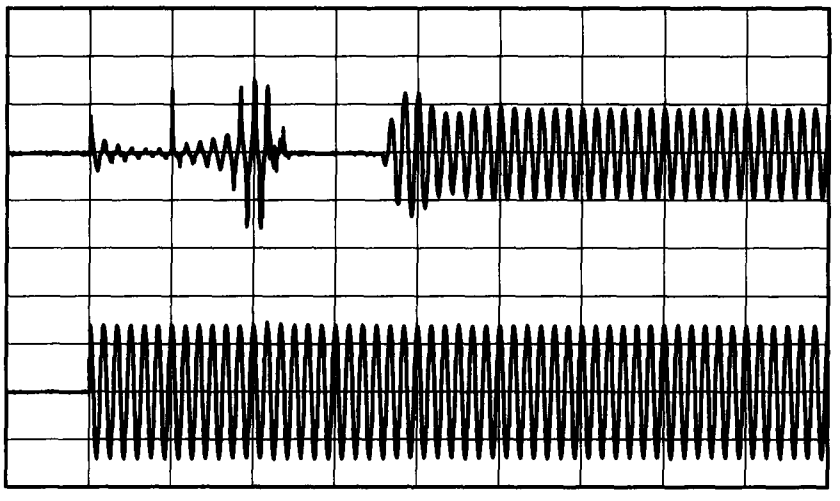
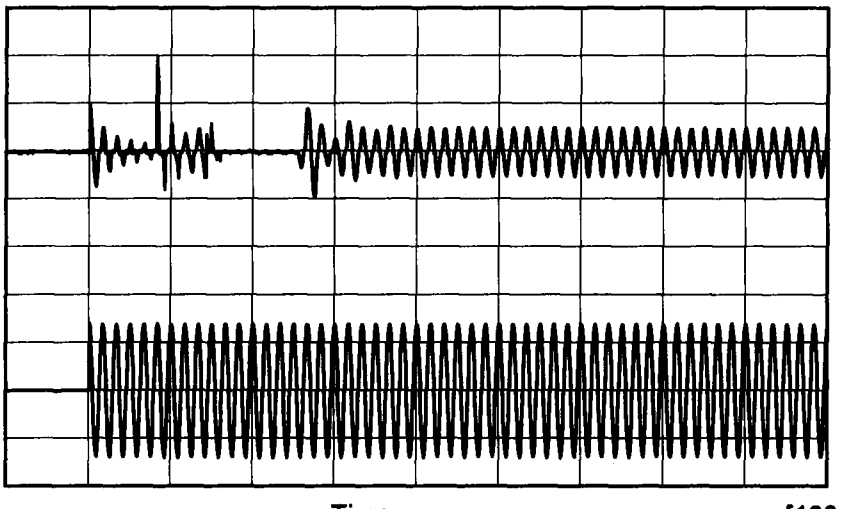
Model	PBA1000F-12
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



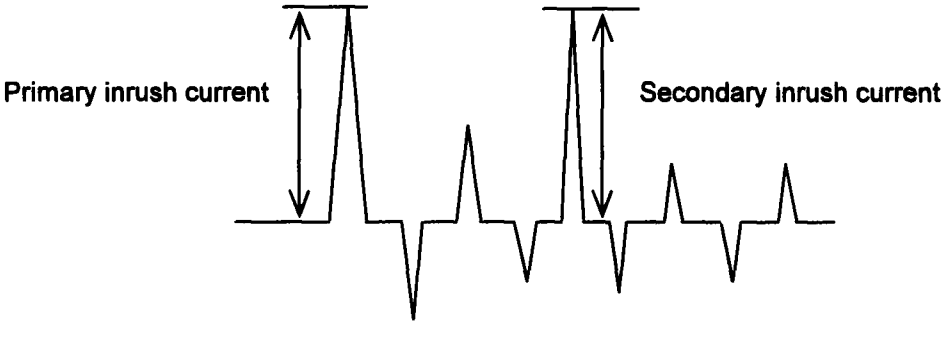
Input Voltage 100 V
Frequency 50 Hz
Load 100 %

Primary inrush current :
15.6 A
Secondary inrush current :
31.2 A



Input Voltage 200 V
Frequency 50 Hz
Load 100 %

Primary inrush current :
20.4 A
Secondary inrush current :
39.2 A



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Model	PBA1000F-12	
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	0.20	0.40	0.42	Operation
	One of phase	0.35	0.73	0.78	stand by
IEC60950	Both phases	0.21	0.40	0.52	Operation
	One of phase	0.36	0.72	0.87	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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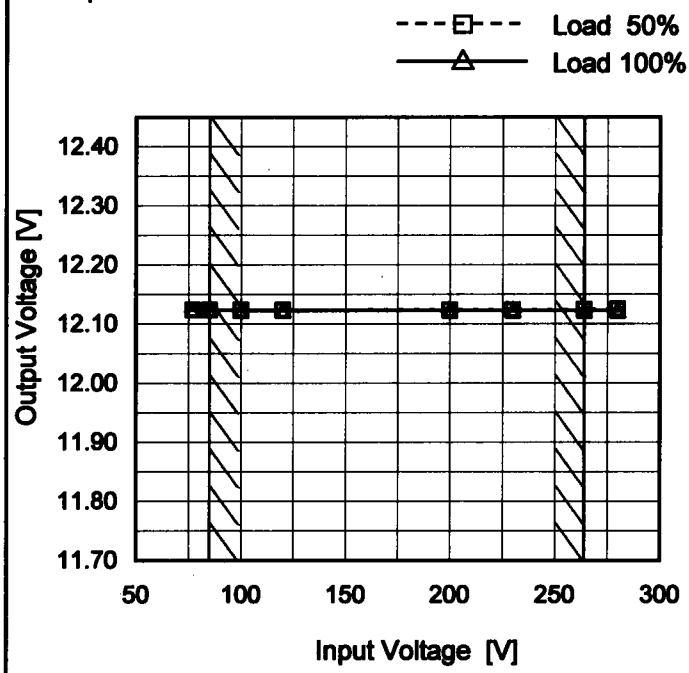
Model	PBA1000F-12
Item	Line Regulation
Object	+12V88A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

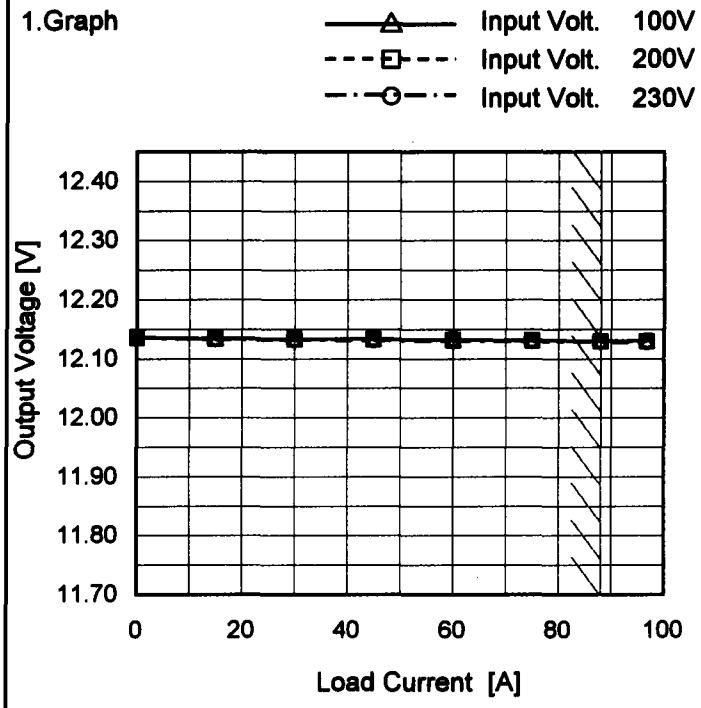
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
77	12.123	12.125
85	12.124	12.124
100	12.124	12.123
120	12.124	12.123
200	12.124	12.123
230	12.124	12.123
264	12.125	12.123
280	12.125	12.123
–	-	-

COSEL

Model	PBA1000F-12
Item	Load Regulation
Object	+12V88A

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	12.136	12.137	12.136
15.0	12.134	12.134	12.133
30.0	12.134	12.133	12.132
45.0	12.133	12.133	12.131
60.0	12.132	12.132	12.130
75.0	12.131	12.131	12.129
88.0	12.131	12.130	12.128
96.8	12.130	12.130	12.128
--	-	-	-
--	-	-	-
--	-	-	-

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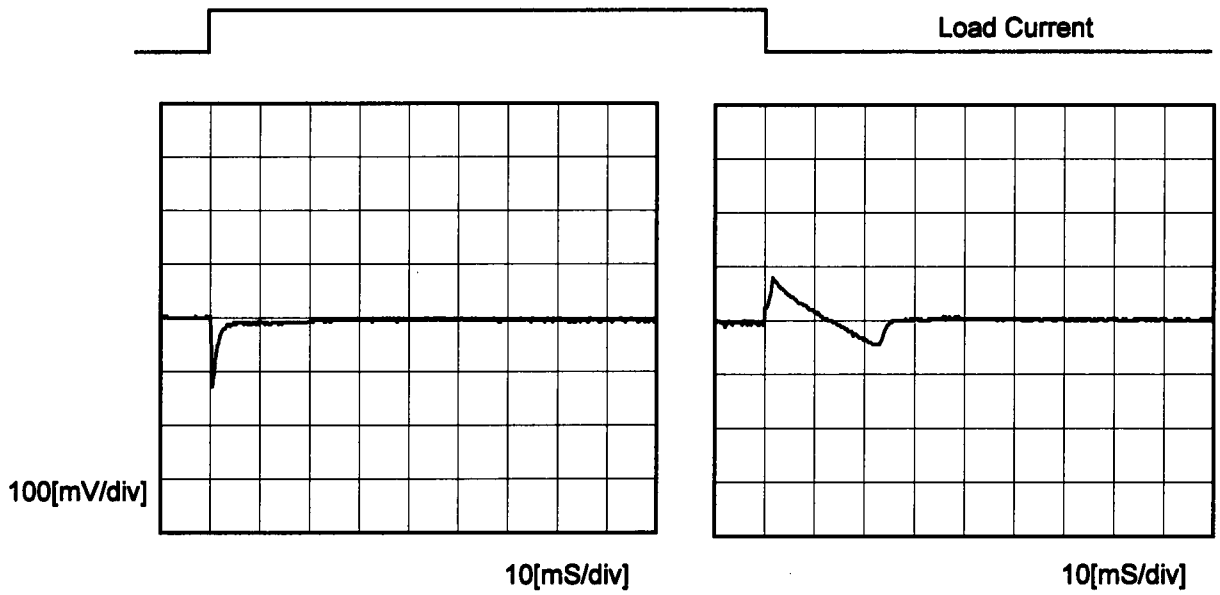
Model	PBA1000F-12
Item	Dynamic Load Response
Object	+12V88A

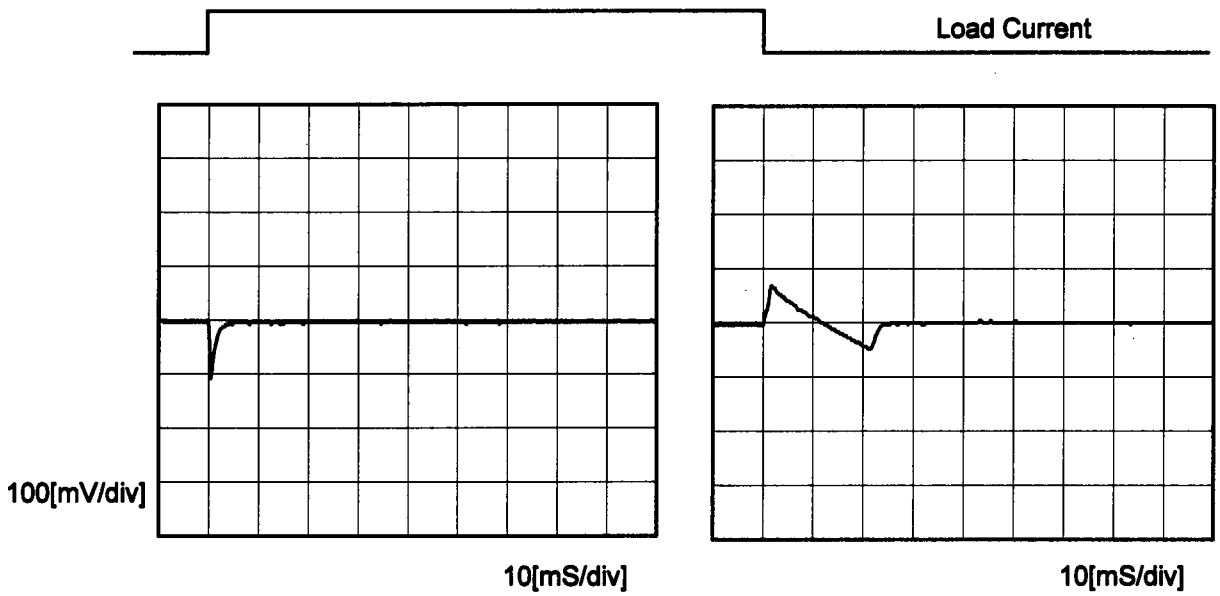
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 mS

Min. Load (0 A) -- Load 100% (88 A)



Min. Load (0 A) -- Load 50% (44 A)



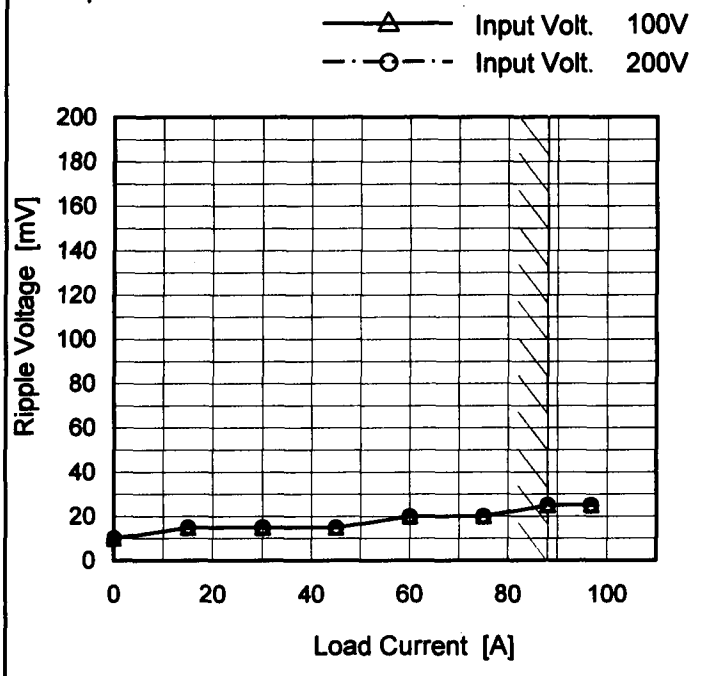
* The characteristic of AC200V is equal.

COSEL

Model	PBA1000F-12
Item	Ripple Voltage (by Load Current)
Object	+12V88A

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

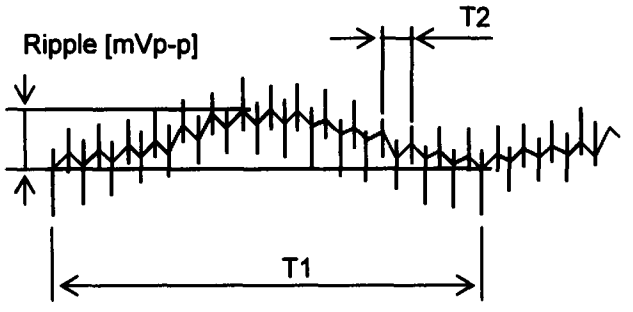


Fig. Complex Ripple Wave Form

2.Values

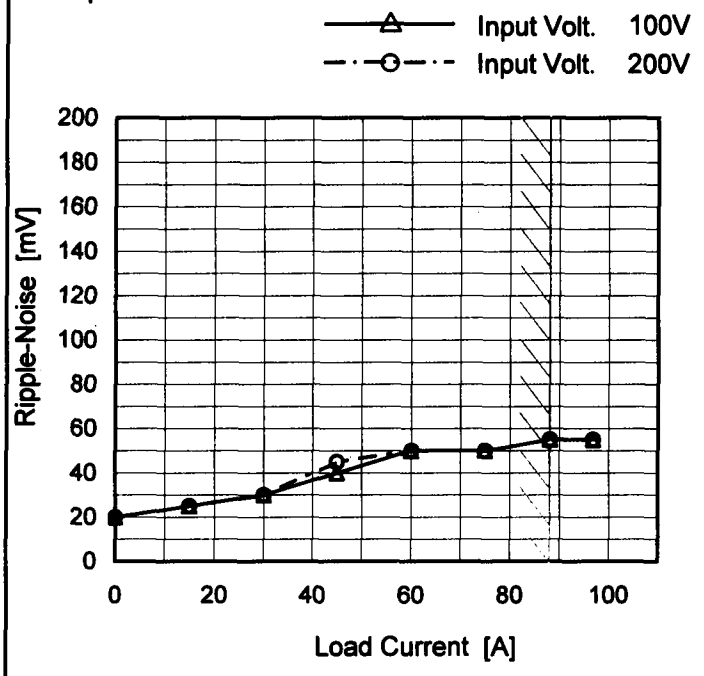
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
15.0	15	15
30.0	15	15
45.0	15	15
60.0	20	20
75.0	20	20
88.0	25	25
96.8	25	25
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1000F-12
Item	Ripple-Noise
Object	+12V88A

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]	Input Volt. 200 [V]
0.0	20	20
15.0	25	25
30.0	30	30
45.0	40	45
60.0	50	50
75.0	50	50
88.0	55	55
96.8	55	55
--	-	-
--	-	-
--	-	-

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

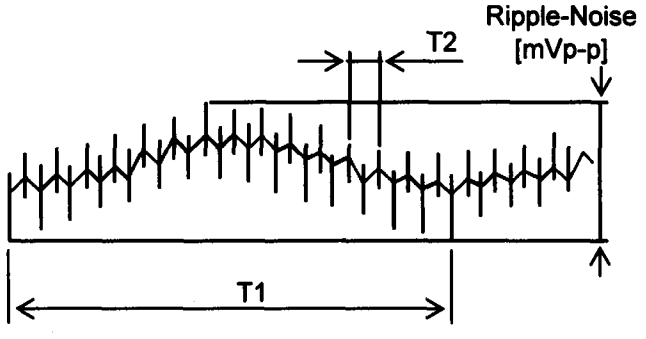


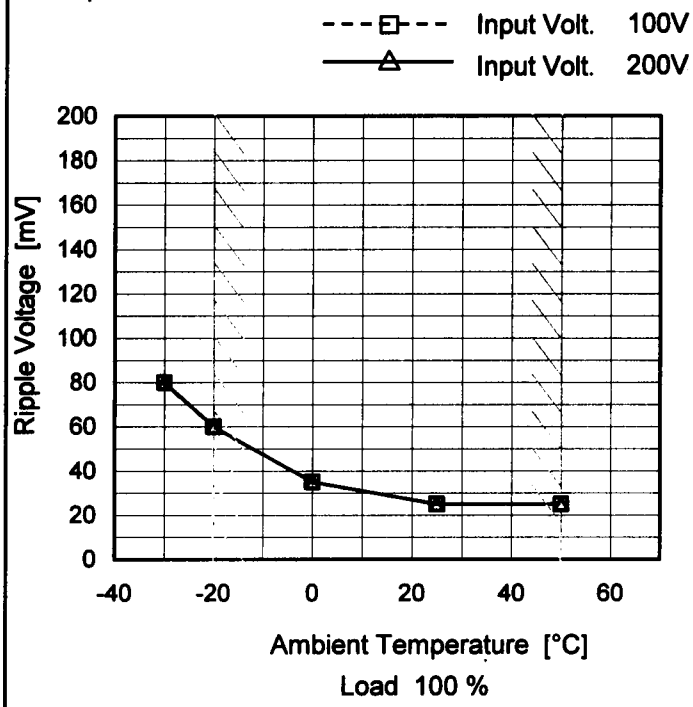
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1000F-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V88A

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	80	80
-20	60	60
0	35	35
25	25	25
50	25	25
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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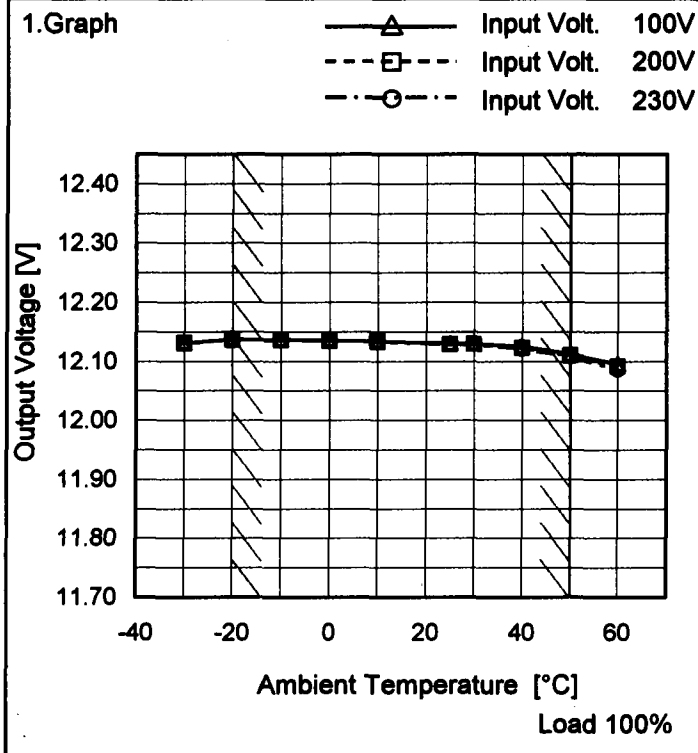
Model	PBA1000F-12
Item	Ambient Temperature Drift
Object	+12V88A

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	12.132	12.131	12.131
-20	12.137	12.137	12.137
-10	12.137	12.136	12.136
0	12.135	12.136	12.136
10	12.134	12.134	12.134
25	12.130	12.129	12.129
30	12.130	12.130	12.130
40	12.125	12.123	12.121
50	12.112	12.110	12.109
60	12.096	12.092	12.087
--	-	-	-

COSEL

Model	PBA1000F-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V88A	

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 - 88A

* 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	12.149	±24	±0.2
Minimum Voltage	50	264	88	12.101		

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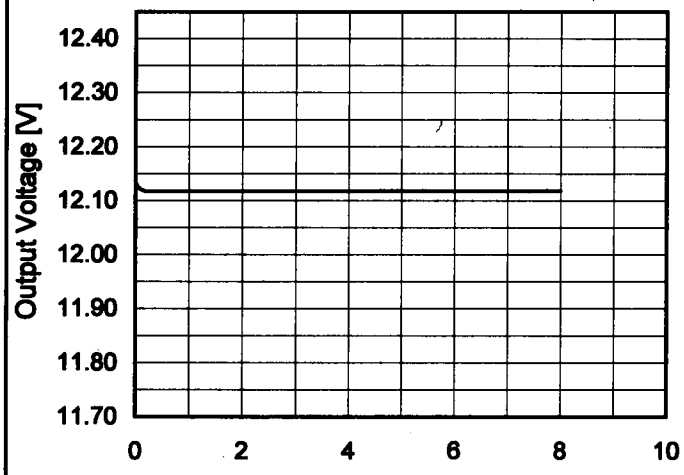
Model	PBA1000F-12
Item	Time Lapse Drift
Object	+12V88A

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	12.134
0.5	12.118
1.0	12.118
2.0	12.118
3.0	12.118
4.0	12.118
5.0	12.118
6.0	12.118
7.0	12.118
8.0	12.118

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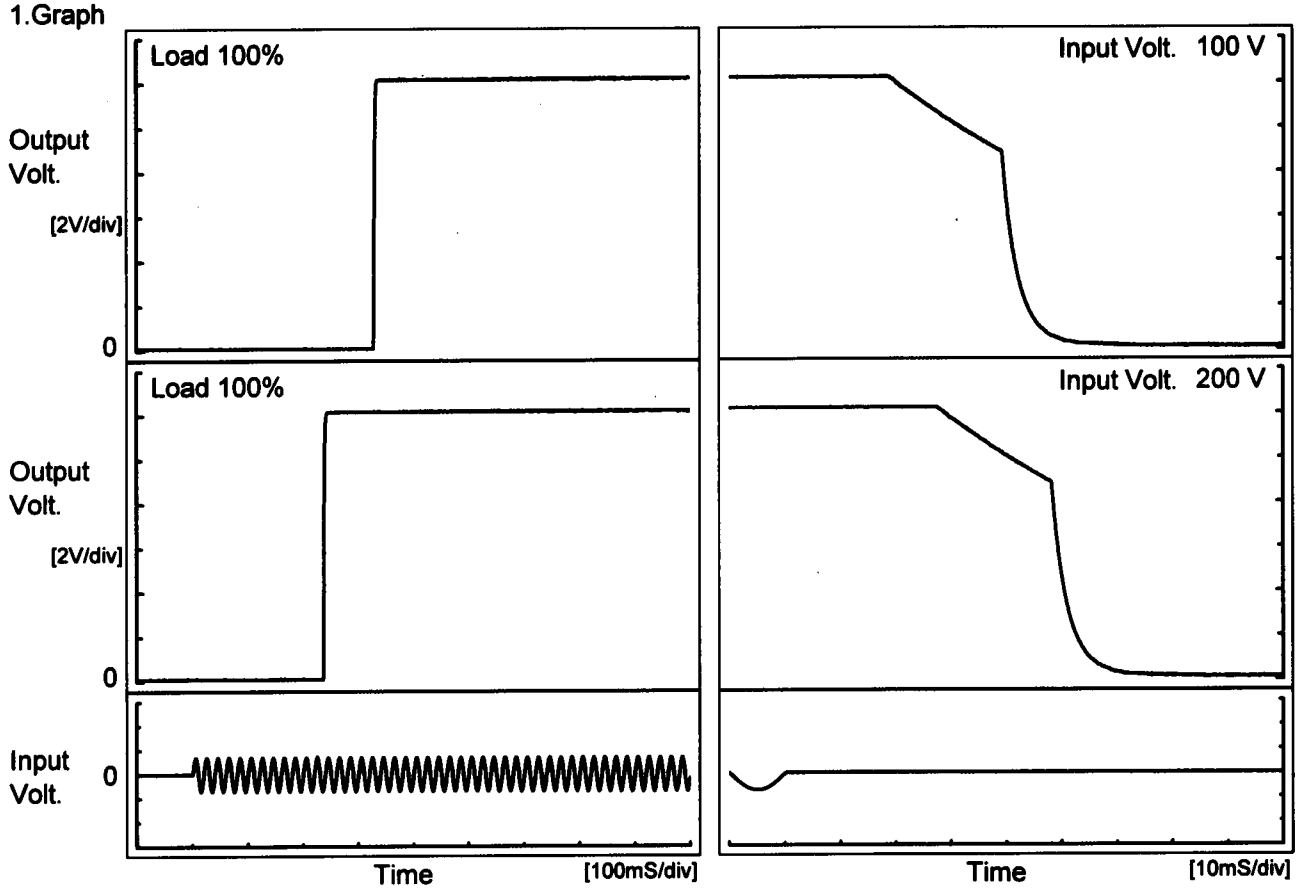
Model	PBA1000F-12
Item	Rise and Fall Time
Object	+12V88A

Temperature 25°C
Testing Circuitry Figure A

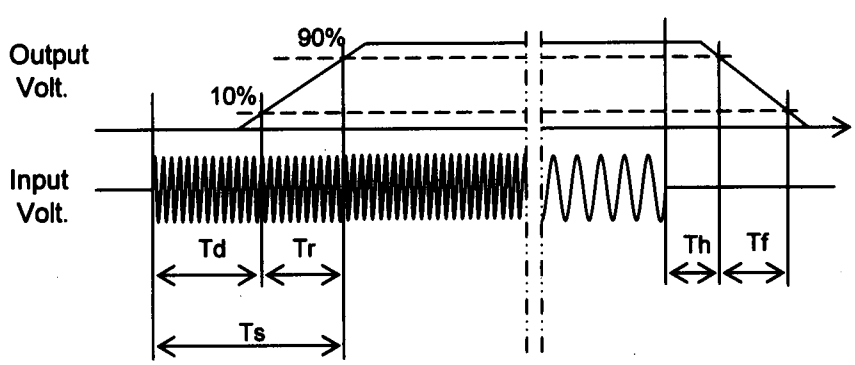
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	329.0	3.0	332.0	26.3	18.8
200 V	237.5	3.0	240.5	35.1	19.1



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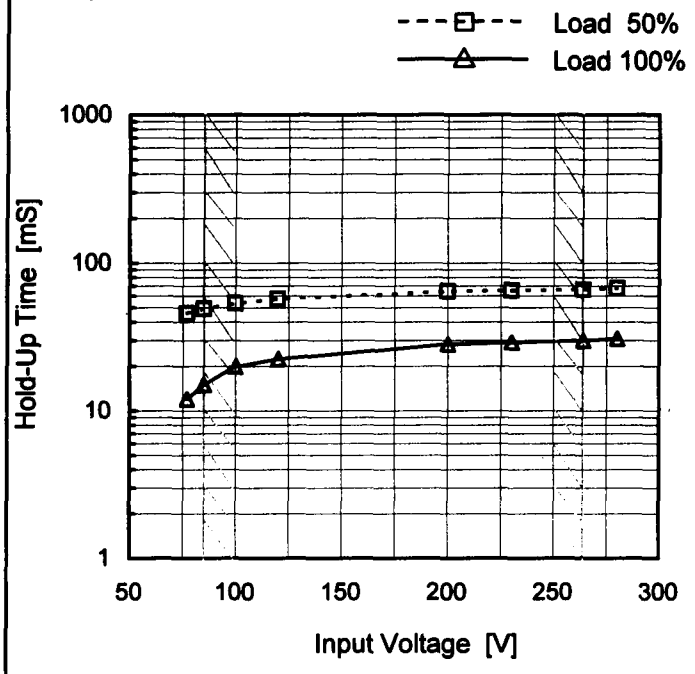
COSEL

Model	PBA1000F-12
Item	Hold-Up Time
Object	+12V88A

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

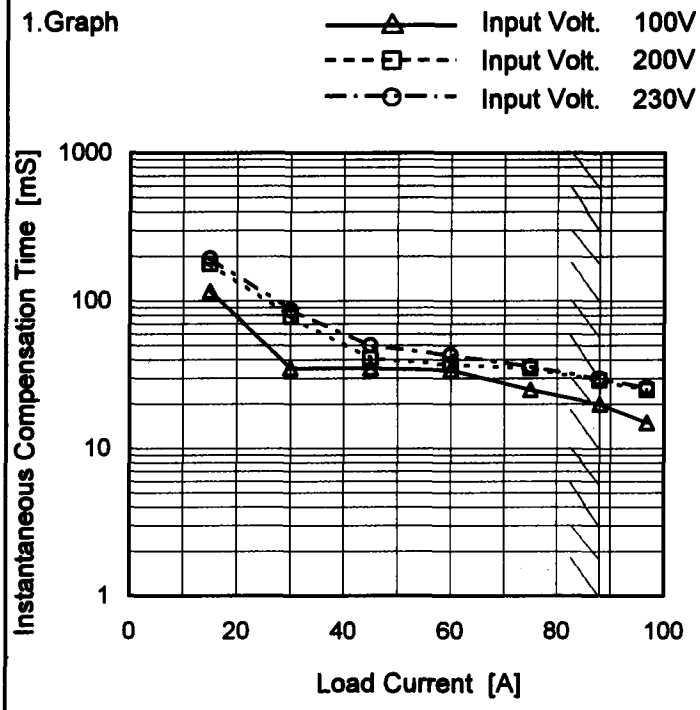
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	46	12
85	49	15
100	54	20
120	57	23
200	64	28
230	65	29
264	66	30
280	68	31
--	-	-

COSEL

Model	PBA1000F-12
Item	Instantaneous Interruption Compensation
Object	+12V88A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

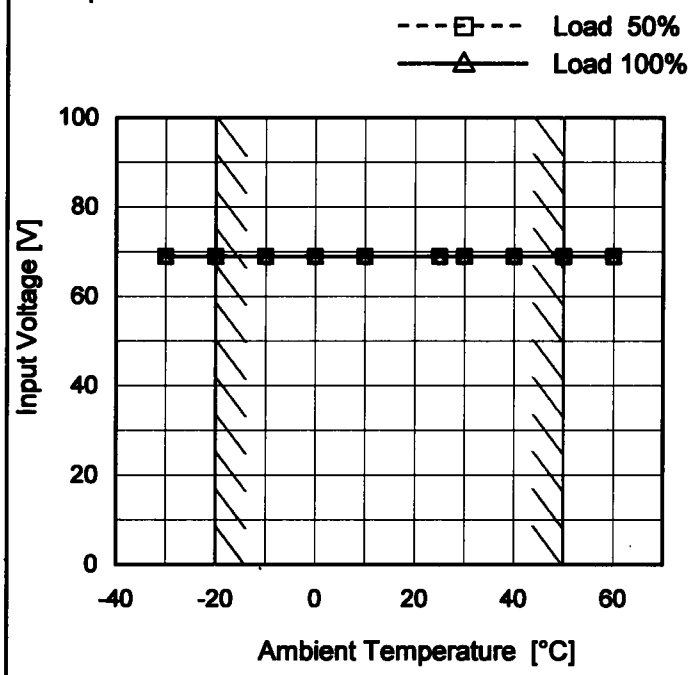
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
15.0	116	178	194
30.0	35	78	87
45.0	35	41	50
60.0	34	37	43
75.0	25	35	36
88.0	20	29	30
96.8	15	25	26
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA1000F-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V88A

Testing Circuitry Figure A

1.Graph



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

2.Values

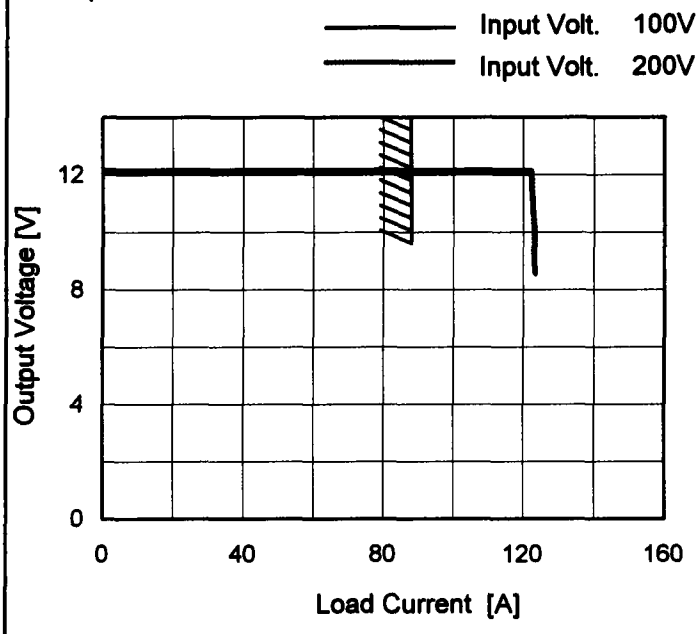
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	69	69
-20	69	69
-10	69	69
0	69	69
10	69	69
25	69	69
30	69	69
40	69	69
50	69	69
60	69	69
–	-	-

COSEL

Model	PBA1000F-12
Item	Overcurrent Protection
Object	+12V88A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

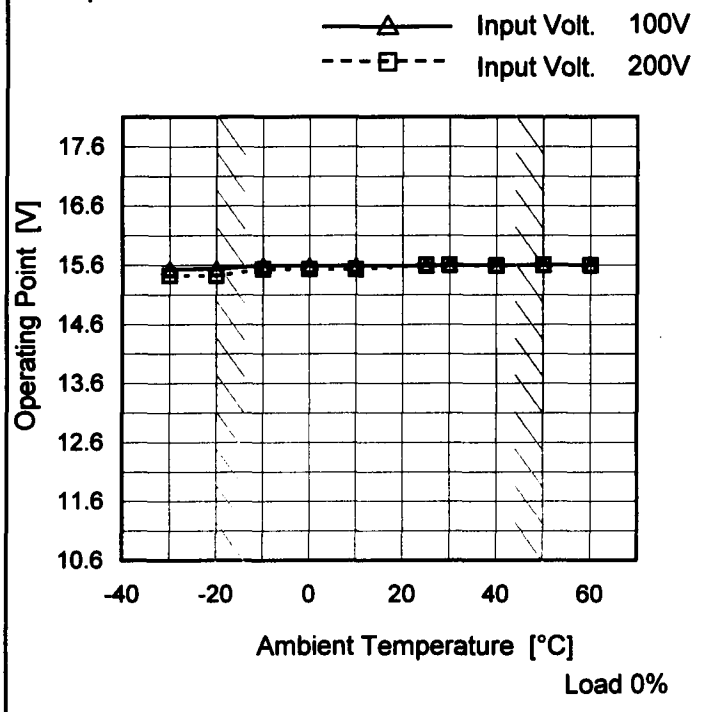
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
12.0	122.26	122.32
11.4	122.52	122.53
10.8	122.85	122.75
9.6	123.24	123.09
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1000F-12
Item	Overvoltage Protection
Object	+12V88A

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	15.55	15.44
-20	15.56	15.44
-10	15.61	15.55
0	15.61	15.55
10	15.61	15.55
25	15.61	15.62
30	15.62	15.62
40	15.62	15.61
50	15.62	15.62
60	15.62	15.62
--	-	-

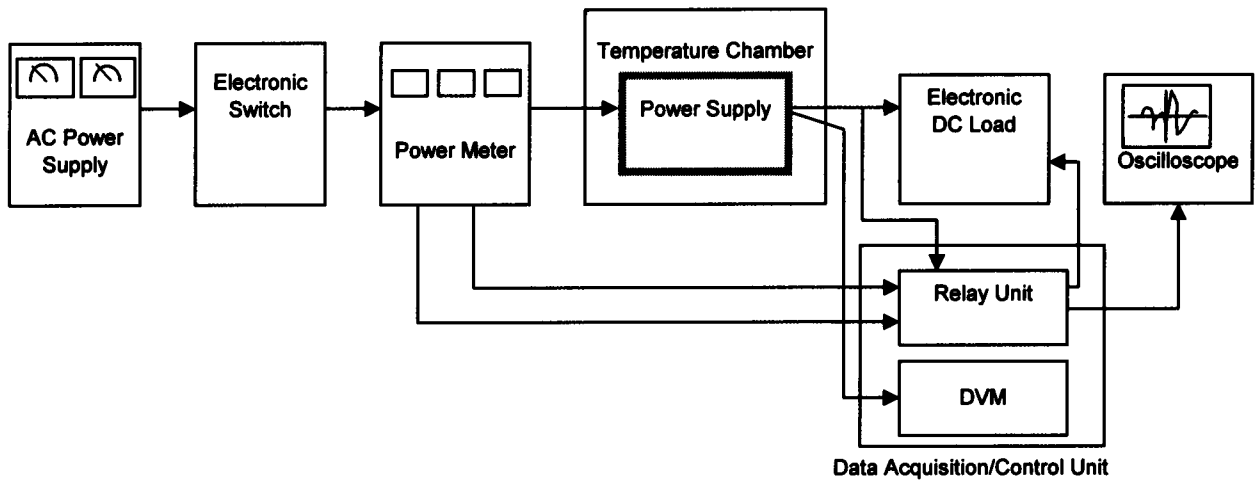


Figure A

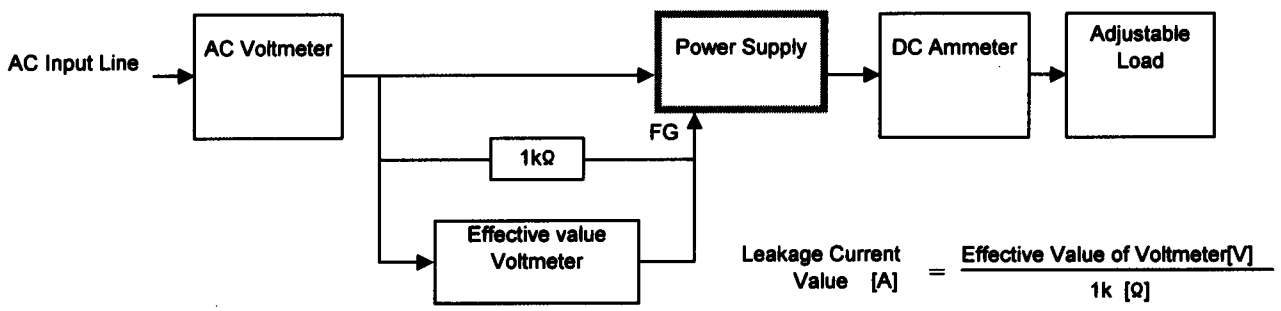


Figure B (DEN-AN)

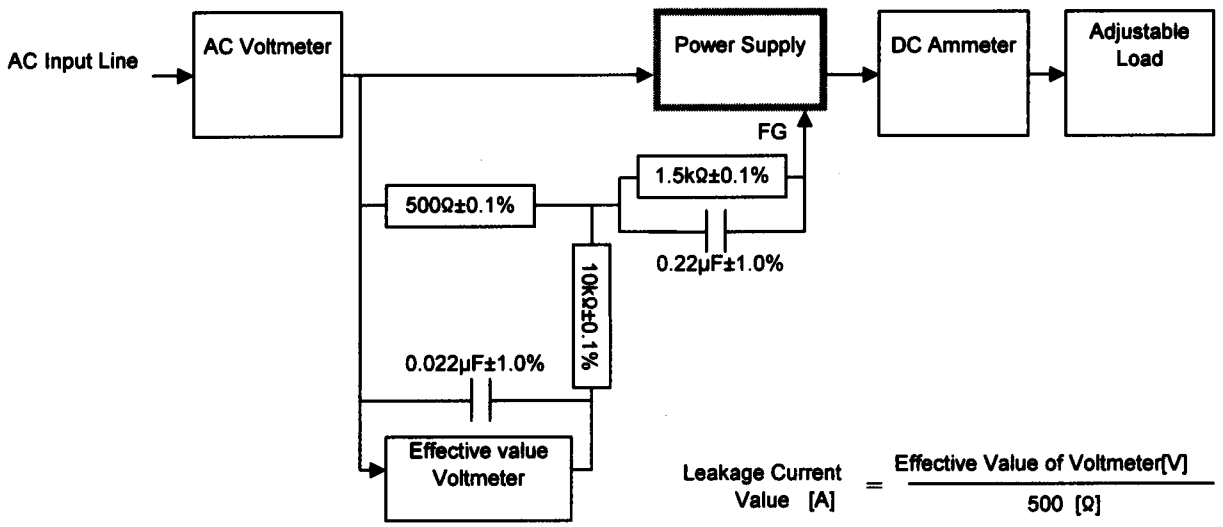


Figure B (IEC60950)