参考資料

COSEL

TEST DATA OF PBA1000F-36

Regulated DC Power Supply
Mar.30, 2004

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COSEL CO.,LTD.

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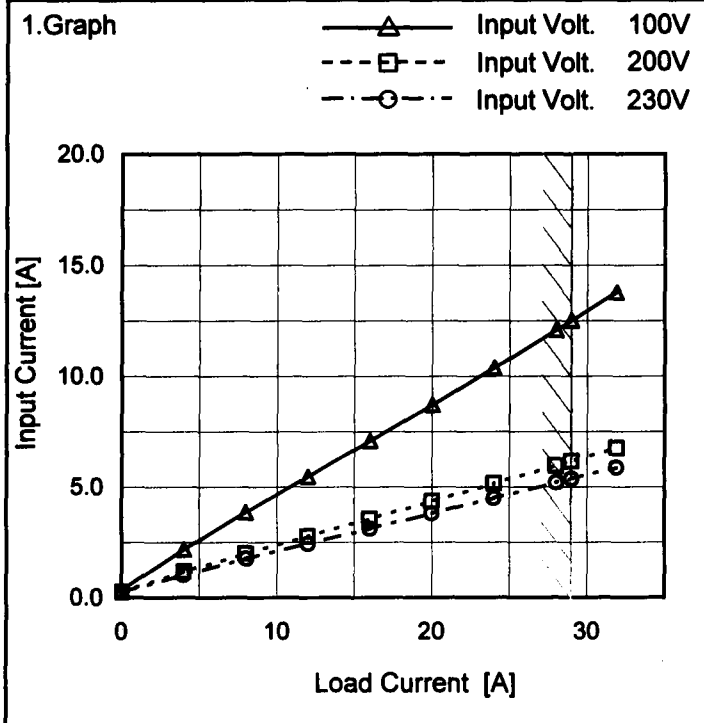
Model	PBA1000F-36
Item	Input Current (by Load Current)
Object	————————

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]
0.0	0.358	0.256	0.258
4.0	2.180	1.172	1.040
8.0	3.860	2.000	1.762
12.0	5.480	2.780	2.444
16.0	7.080	3.560	3.121
20.0	8.710	4.360	3.804
24.0	10.380	5.160	4.500
28.0	12.090	5.960	5.200
29.0	12.520	6.160	5.370
31.9	13.780	6.750	5.880
--	-	-	-

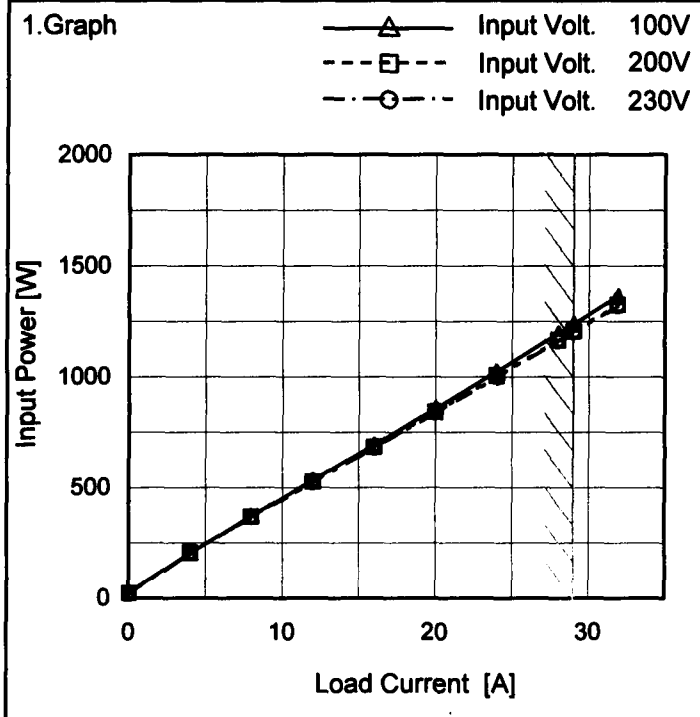
BC-3542

COSEL

Model	PBA1000F-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]
0.0	28	23	20
4.0	204	204	204
8.0	371	368	367
12.0	534	526	524
16.0	692	682	680
20.0	858	842	839
24.0	1025	1004	998
28.0	1195	1165	1162
29.0	1238	1205	1202
31.9	1364	1324	1321
--	-	-	-

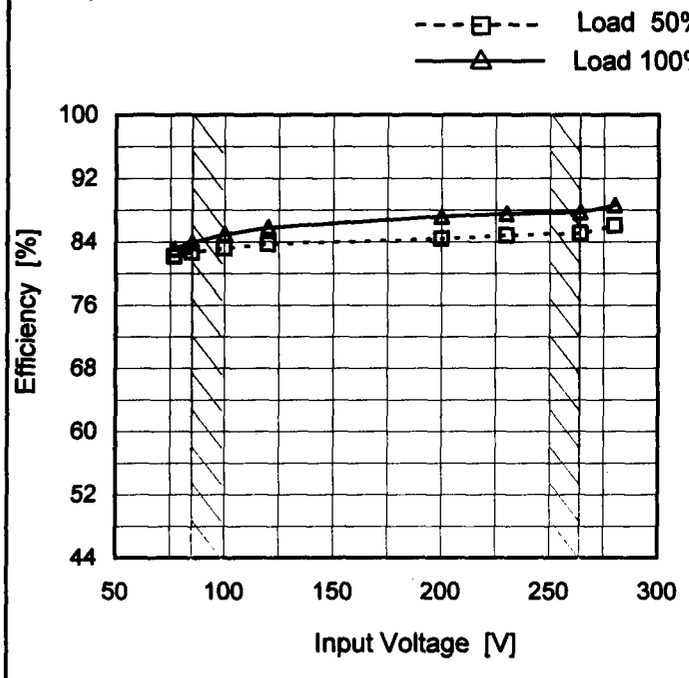
BC-3542

COSEL

Model	PBA1000F-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%
77	82.2	83.1
85	82.7	84.0
100	83.2	85.0
120	83.7	85.8
200	84.4	87.2
230	84.8	87.5
264	85.1	87.7
280	86.0	88.6
--	-	-

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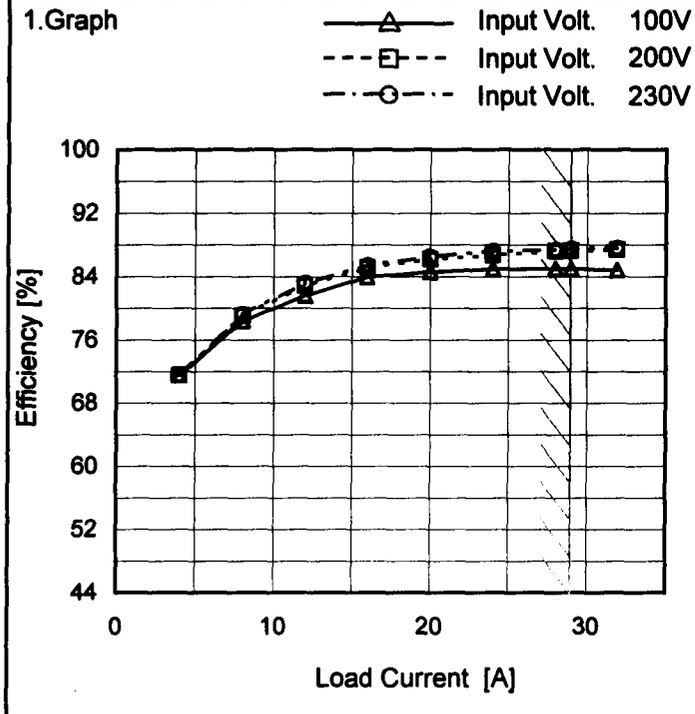
Model	PBA1000F-36
Item	Efficiency (by Load Current)
Object	————————

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]
0.0	-	-	-
4.0	71.5	71.5	71.6
8.0	78.4	79.1	79.3
12.0	81.6	82.9	83.2
16.0	84.0	85.2	85.4
20.0	84.6	86.2	86.5
24.0	85.0	86.7	87.3
28.0	85.0	87.2	87.4
29.0	85.0	87.3	87.5
31.9	84.8	87.4	87.6
--	-	-	-

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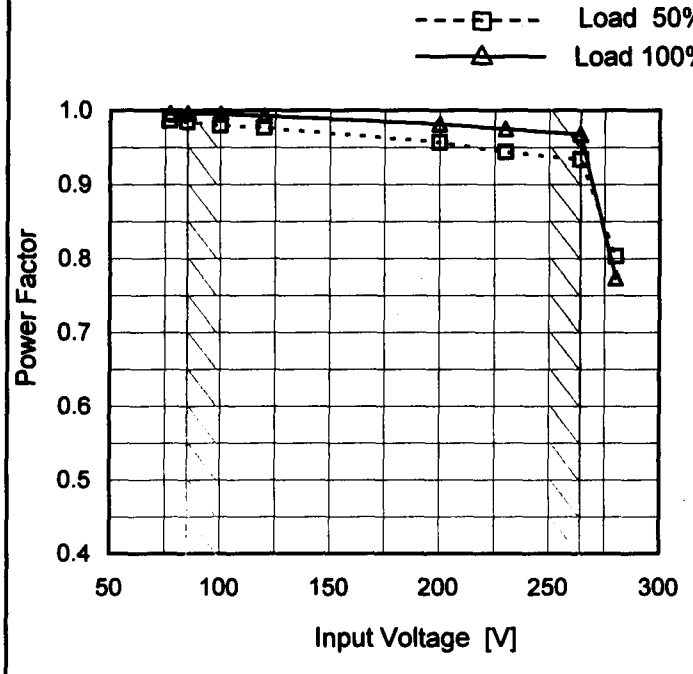
Model	PBA1000F-36
Item	Power Factor (by Input Voltage)
Object	———————

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%
77	0.986	0.996
85	0.985	0.996
100	0.980	0.995
120	0.977	0.993
200	0.957	0.981
230	0.944	0.975
264	0.934	0.968
280	0.803	0.773
--	-	-

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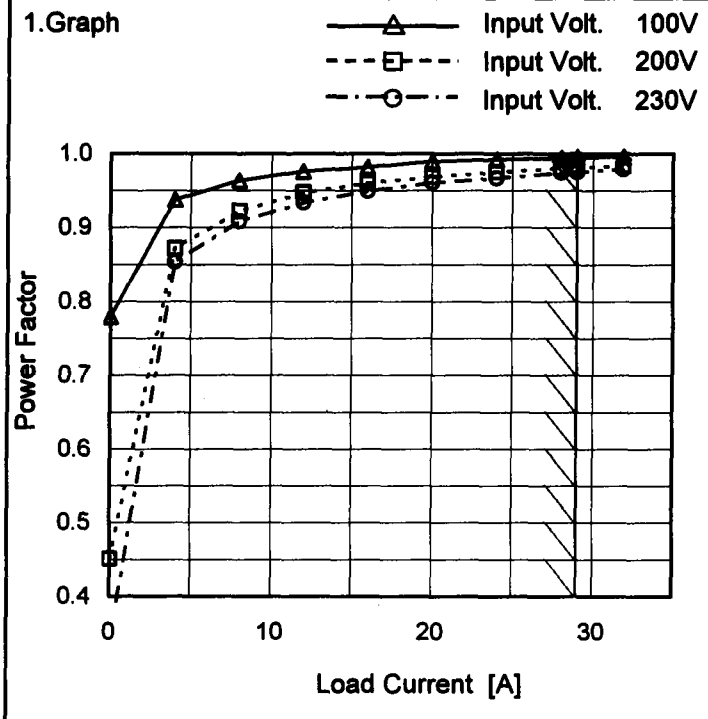
Model	PBA1000F-36
Item	Power Factor (by Load Current)
Object	————————

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]
0.0	0.779	0.451	0.339
4.0	0.938	0.872	0.854
8.0	0.964	0.922	0.908
12.0	0.976	0.948	0.934
16.0	0.982	0.961	0.950
20.0	0.990	0.969	0.961
24.0	0.992	0.976	0.967
28.0	0.994	0.981	0.975
29.0	0.995	0.981	0.976
31.9	0.996	0.984	0.979
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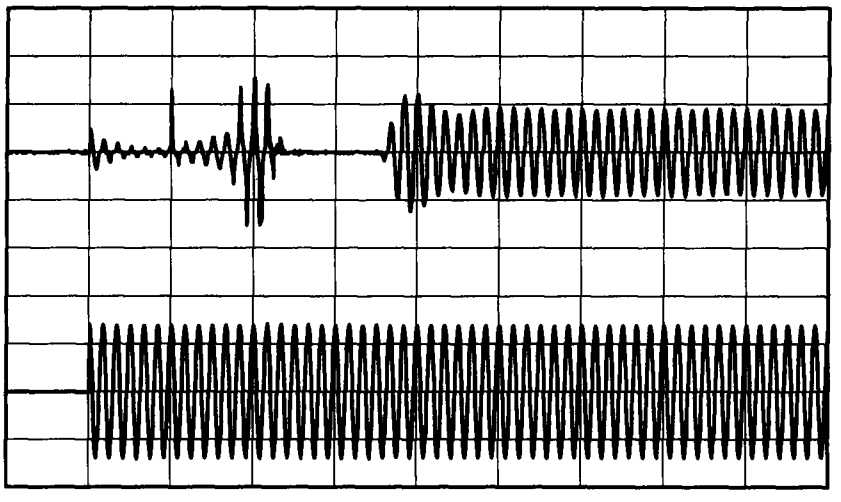
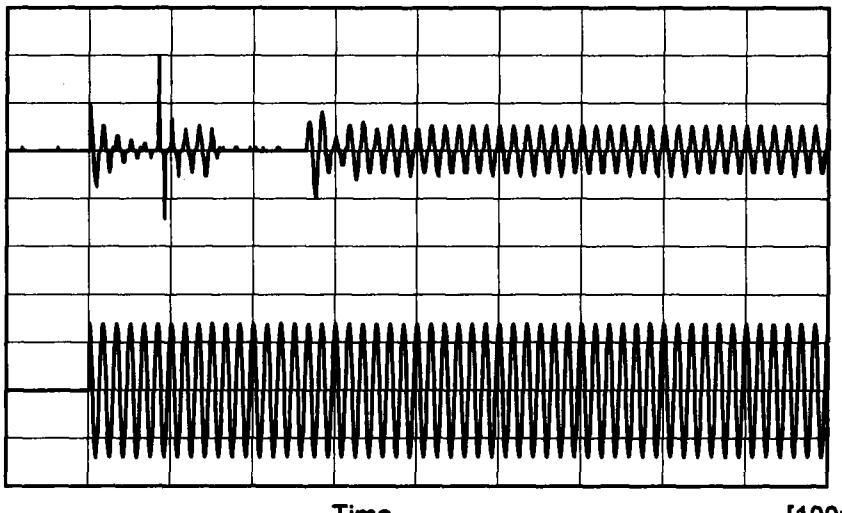
Model	PBA1000F-36
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



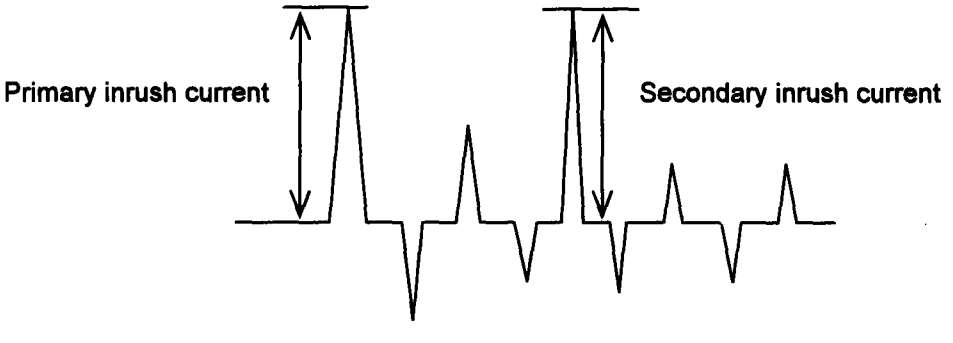
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
9.6 A
Secondary inrush current :
30.6 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
19.5 A
Secondary inrush current :
39.4 A



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Model	PBA1000F-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	0.20	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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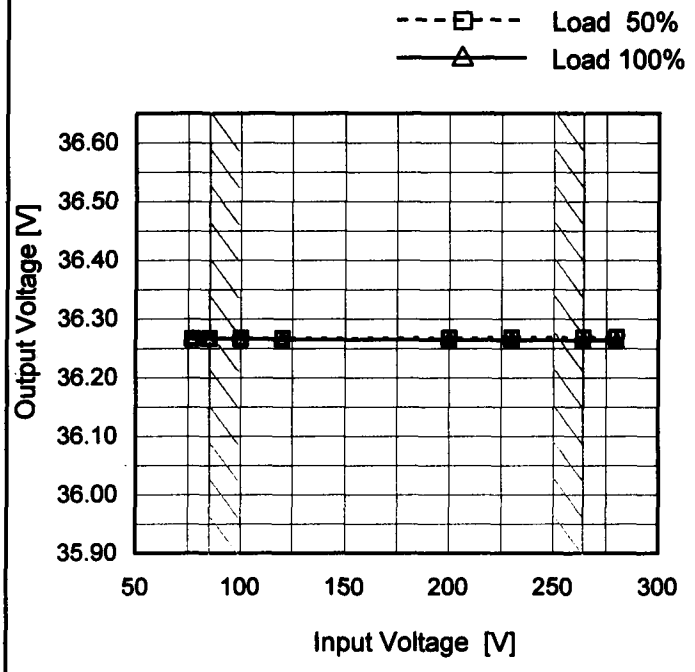
Model	PBA1000F-36
Item	Line Regulation
Object	+36V29A

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	36.267	36.268
85	36.267	36.267
100	36.267	36.267
120	36.267	36.266
200	36.268	36.265
230	36.268	36.264
264	36.268	36.264
280	36.269	36.264
--	-	-

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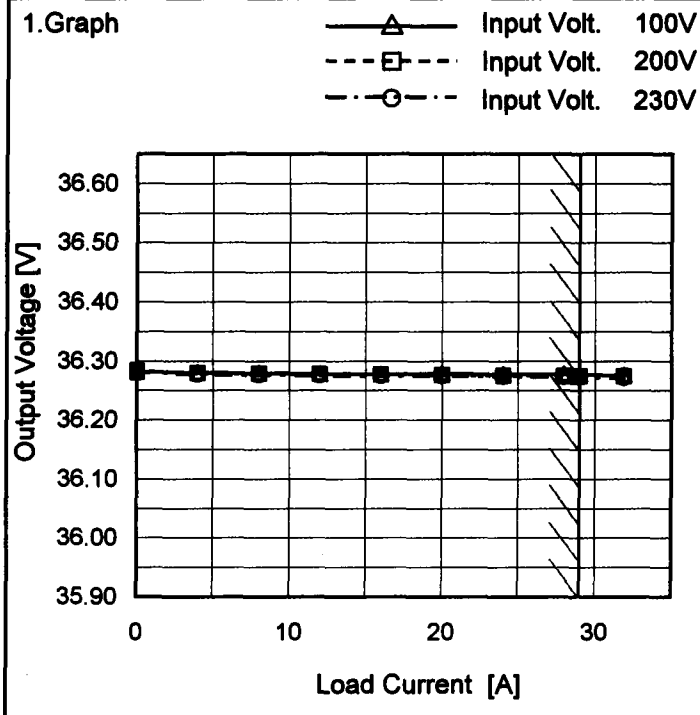
Model	PBA1000F-36
Item	Load Regulation
Object	+36V29A

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	36.282	36.284	36.283
4.0	36.280	36.280	36.277
8.0	36.280	36.279	36.276
12.0	36.279	36.278	36.275
16.0	36.278	36.277	36.275
20.0	36.278	36.276	36.275
24.0	36.278	36.276	36.274
28.0	36.278	36.275	36.273
29.0	36.277	36.275	36.273
31.9	36.277	36.274	36.271
–	-	-	-

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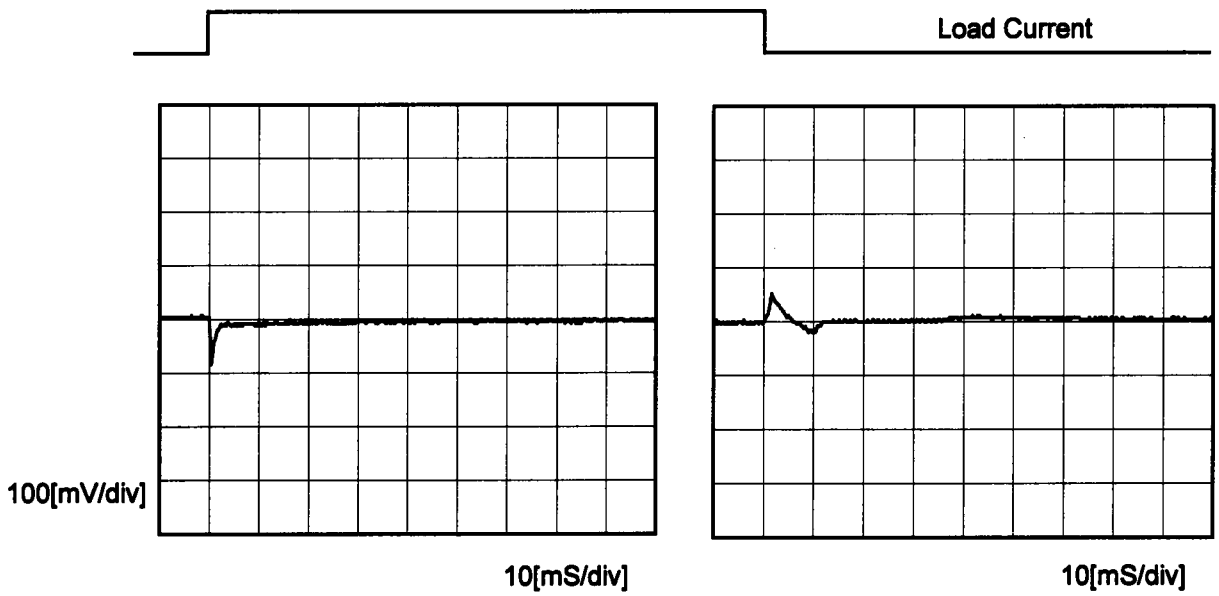
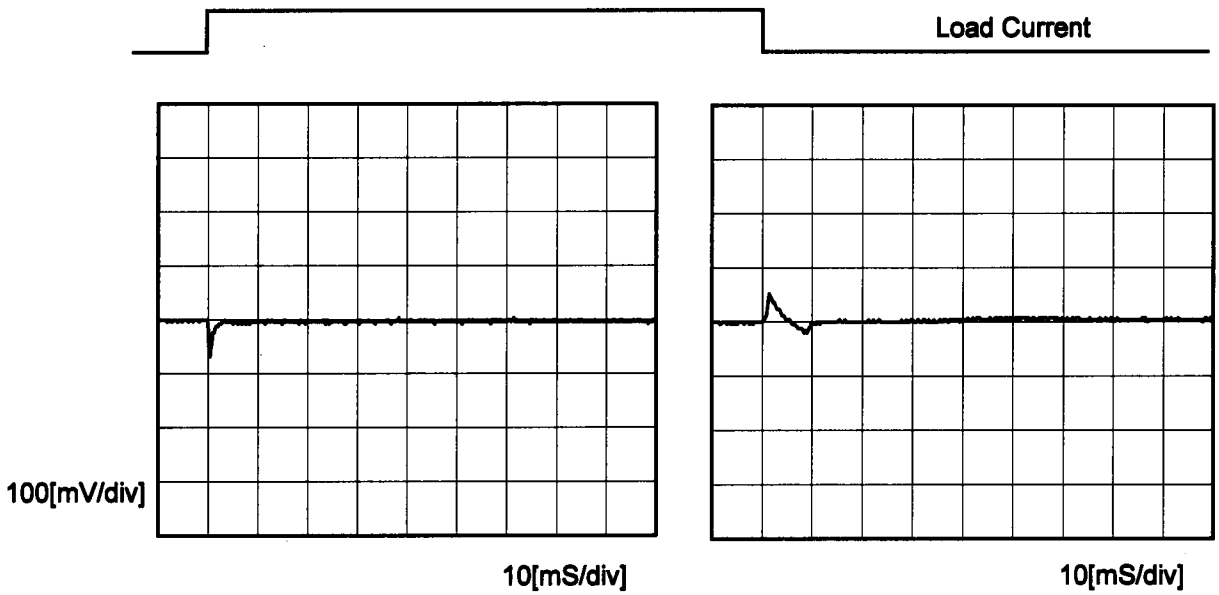
Model	PBA1000F-36	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+36V29A		

Input Volt. 100 V
Cycle 1000 mS

Min. Load (0 A) -- Load 100% (29 A)



Min. Load (0 A) -- Load 50% (14.5 A)



* The characteristic of AC200V is equal.

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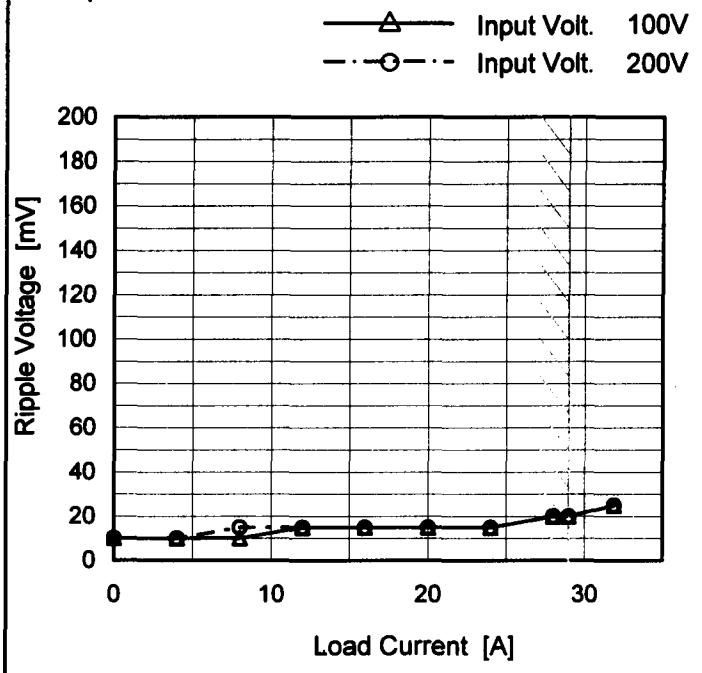
Model	PBA1000F-36
Item	Ripple Voltage (by Load Current)
Object	+36V29A

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

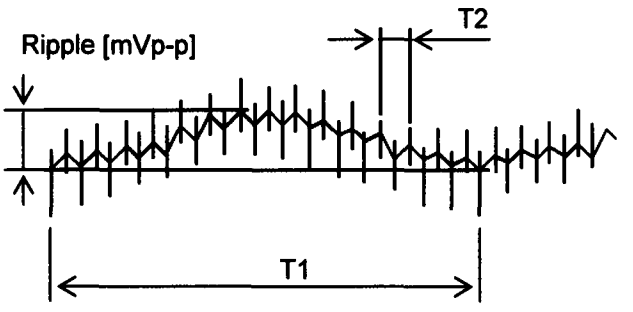


Fig. Complex Ripple Wave Form

2.Values

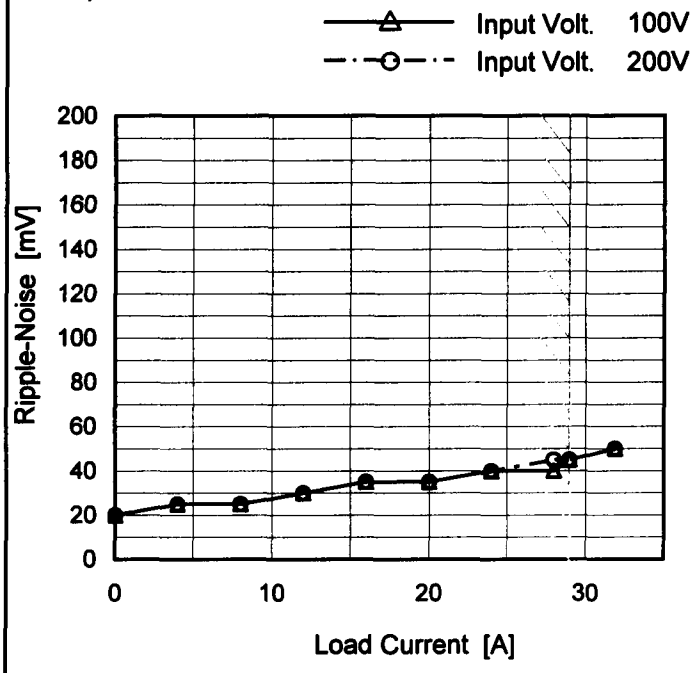
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
4.0	10	10
8.0	10	15
12.0	15	15
16.0	15	15
20.0	15	15
24.0	15	15
28.0	20	20
29.0	20	20
31.9	25	25
--	-	-

COSEL

Model	PBA1000F-36
Item	Ripple-Noise
Object	+36V29A

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
4.0	25	25
8.0	25	25
12.0	30	30
16.0	35	35
20.0	35	35
24.0	40	40
28.0	40	45
29.0	45	45
31.9	50	50
--	-	-

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

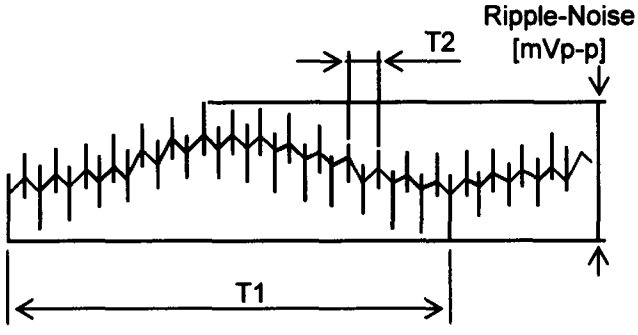


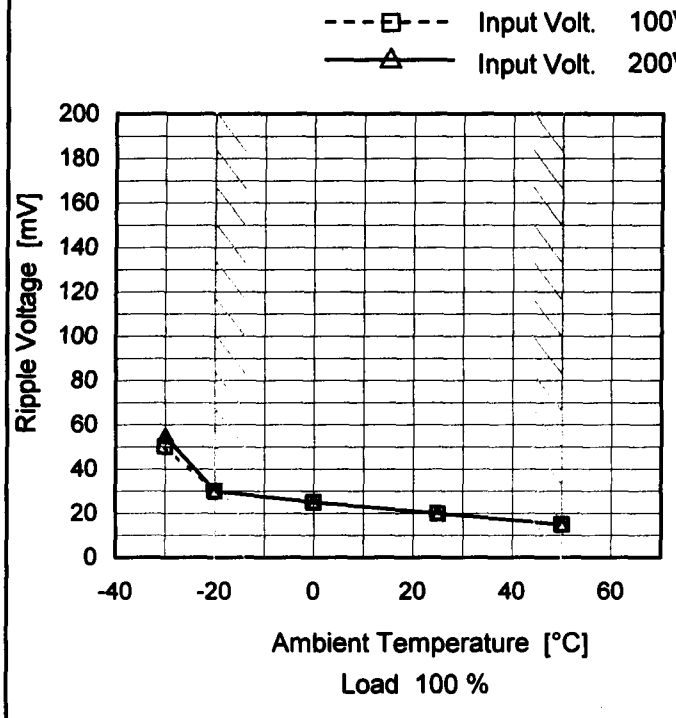
Fig. Complex Ripple Wave Form

COSEL

Model	PBA1000F-36
Item	Ripple Voltage (by Ambient Temp.)
Object	+36V29A

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	50	55
-20	30	30
0	25	25
25	20	20
50	15	15
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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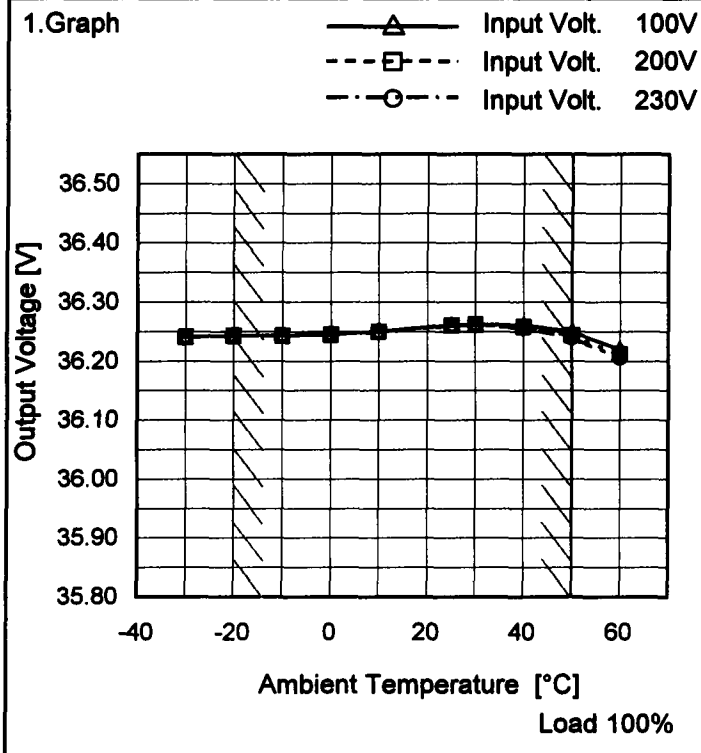
Model	PBA1000F-36
Item	Ambient Temperature Drift
Object	+36V29A

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	36.241	36.241	36.241
-20	36.243	36.243	36.243
-10	36.244	36.244	36.244
0	36.245	36.245	36.246
10	36.251	36.250	36.250
25	36.261	36.261	36.261
30	36.262	36.262	36.262
40	36.261	36.258	36.256
50	36.250	36.244	36.241
60	36.220	36.212	36.207
--	-	-	-

COSEL

Model	PBA1000F-36	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+36V29A	

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 - 29A

* 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	36.273	±23	±0.1
Minimum Voltage	50	264	29	36.228		

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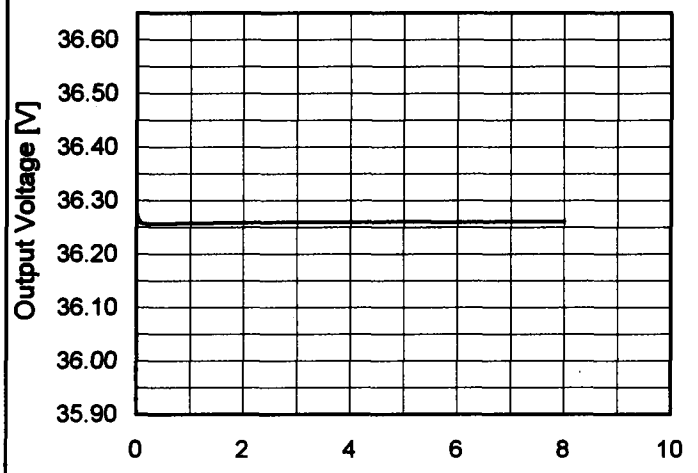
Model	PBA1000F-36
Item	Time Lapse Drift
Object	+36V29A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

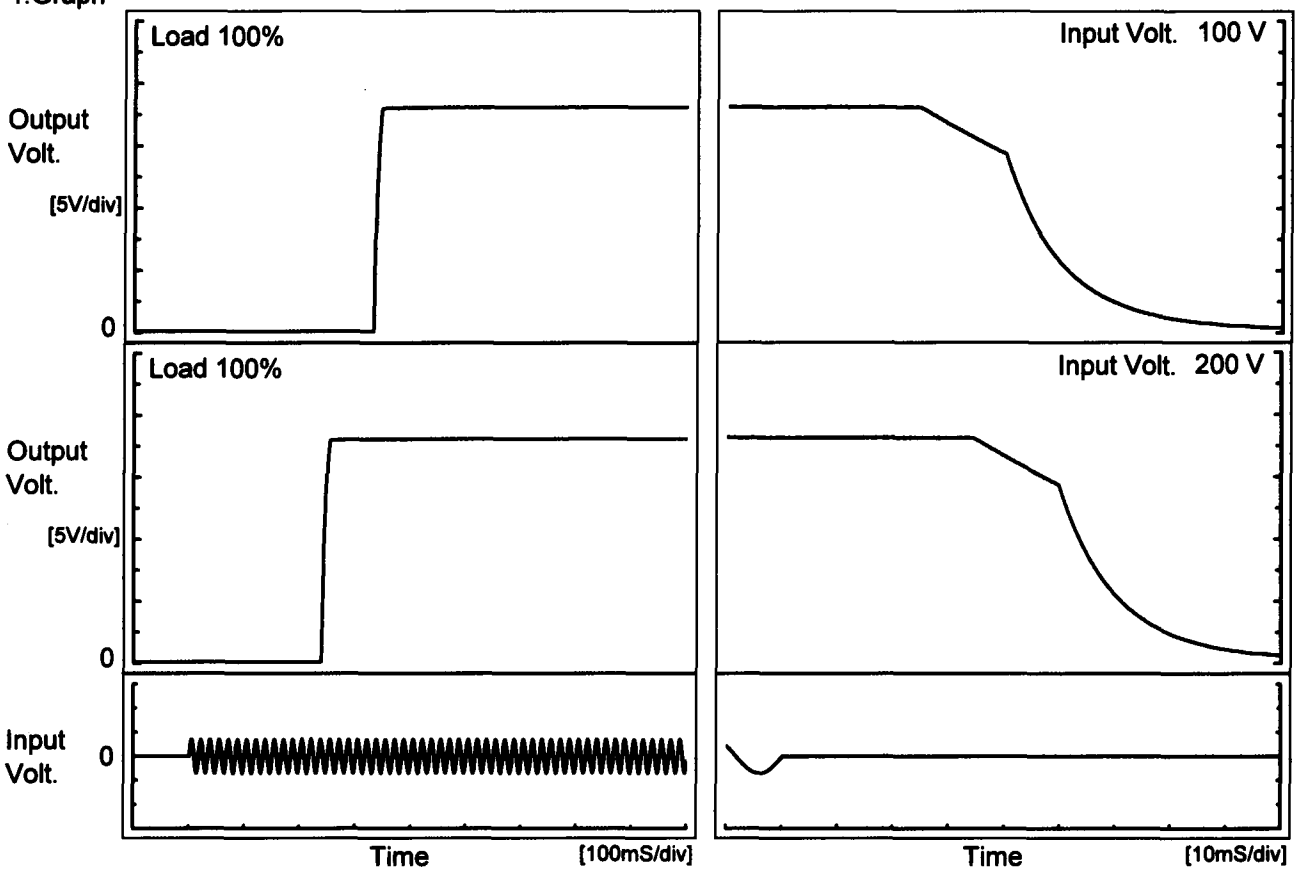
2.Values

Time since start [H]	Output Voltage [V]
0.0	36.275
0.5	36.257
1.0	36.258
2.0	36.259
3.0	36.260
4.0	36.260
5.0	36.260
6.0	36.260
7.0	36.261
8.0	36.261

COSEL

Model	PBA1000F-36	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+36V29A	

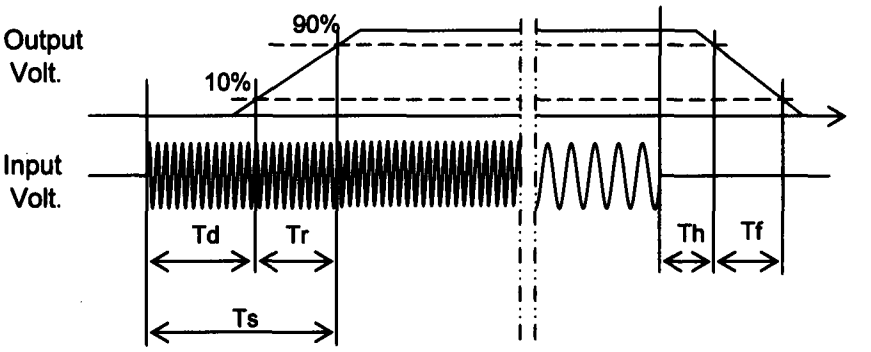
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	331.5	11.5	343.0	31.6	31.2
200 V	239.5	11.0	250.5	41.4	31.2

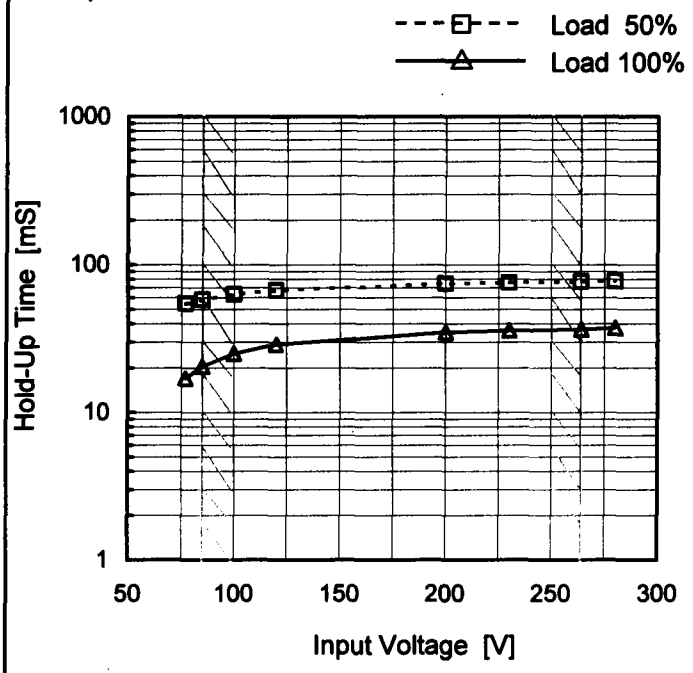


COSEL

Model	PBA1000F-36
Item	Hold-Up Time
Object	+36V29A

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

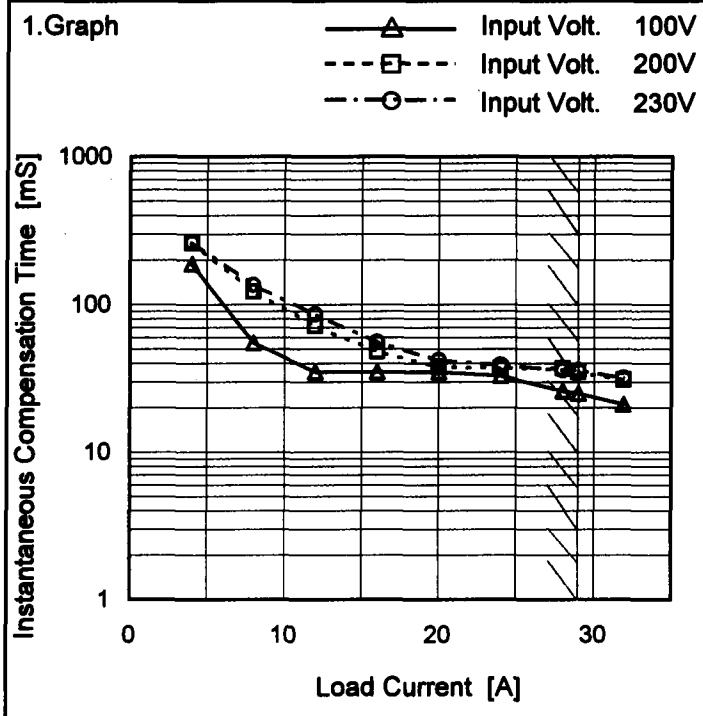
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	55	17
85	58	21
100	63	25
120	67	29
200	75	35
230	76	36
264	77	37
280	78	38
--	-	-

COSEL

Model	PBA1000F-36
Item	Instantaneous Interruption Compensation
Object	+36V29A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

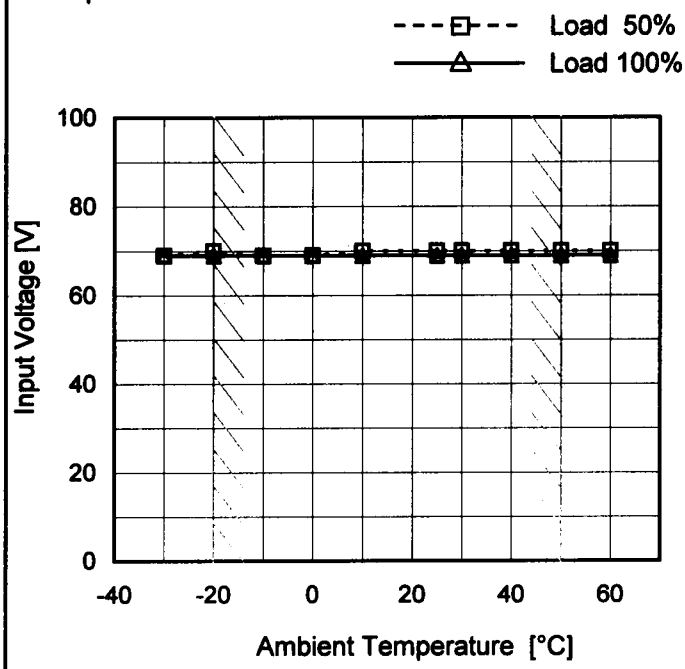
Load Current [A]	Time [mS] Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
4.0	189	261	263
8.0	55	122	136
12.0	35	72	86
16.0	35	48	56
20.0	35	38	42
24.0	33	37	39
28.0	26	37	36
29.0	25	35	36
31.9	21	31	32
--	-	-	-

COSEL

Model	PBA1000F-36
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+36V29A

Testing Circuitry Figure A

1.Graph



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

2.Values

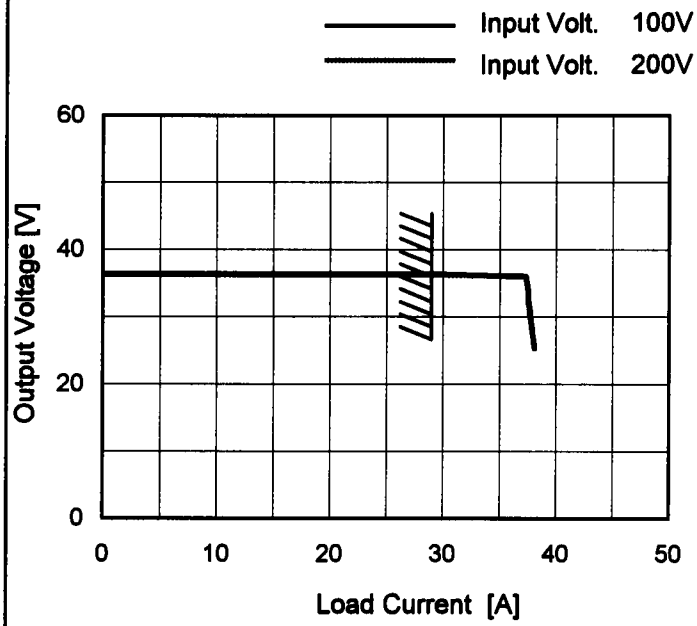
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	69	69
-20	70	69
-10	69	69
0	69	69
10	70	69
25	70	69
30	70	69
40	70	69
50	70	69
60	70	69
--	-	-

COSEL

Model	PBA1000F-36
Item	Overcurrent Protection
Object	+36V29A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

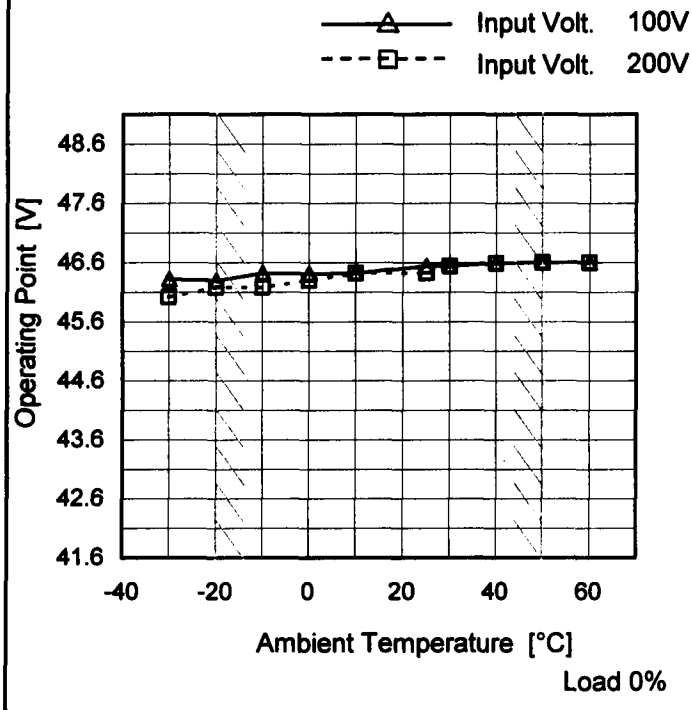
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
36.0	37.40	37.35
34.2	37.50	37.50
32.4	37.63	37.56
28.8	37.86	37.83
25.2	38.12	38.11
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA1000F-36
Item	Overvoltage Protection
Object	+36V29A

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]	Operating Point [V] Input Volt. 200[V]
-30	46.35	46.05
-20	46.33	46.21
-10	46.45	46.21
0	46.44	46.33
10	46.45	46.45
25	46.57	46.45
30	46.57	46.57
40	46.62	46.62
50	46.63	46.63
60	46.63	46.63
--	-	-

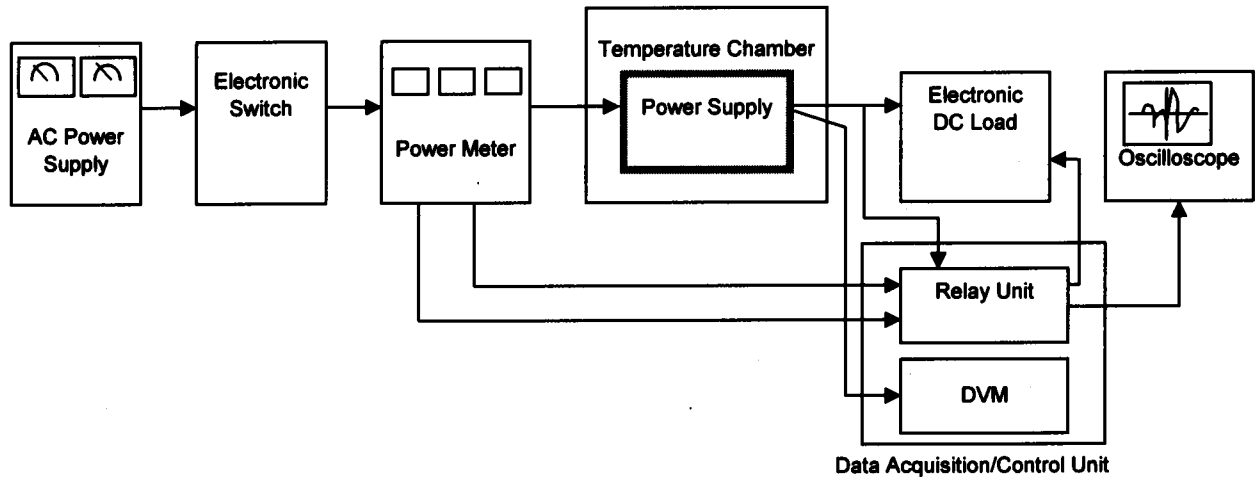


Figure A

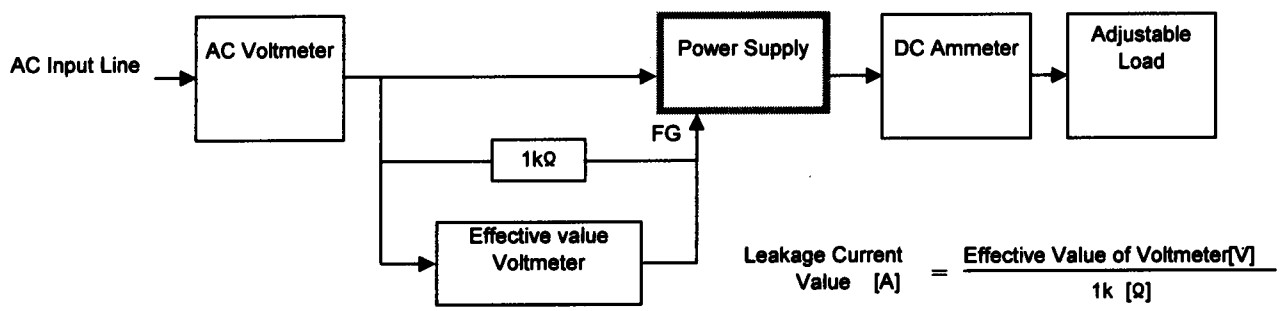


Figure B (DEN-AN)

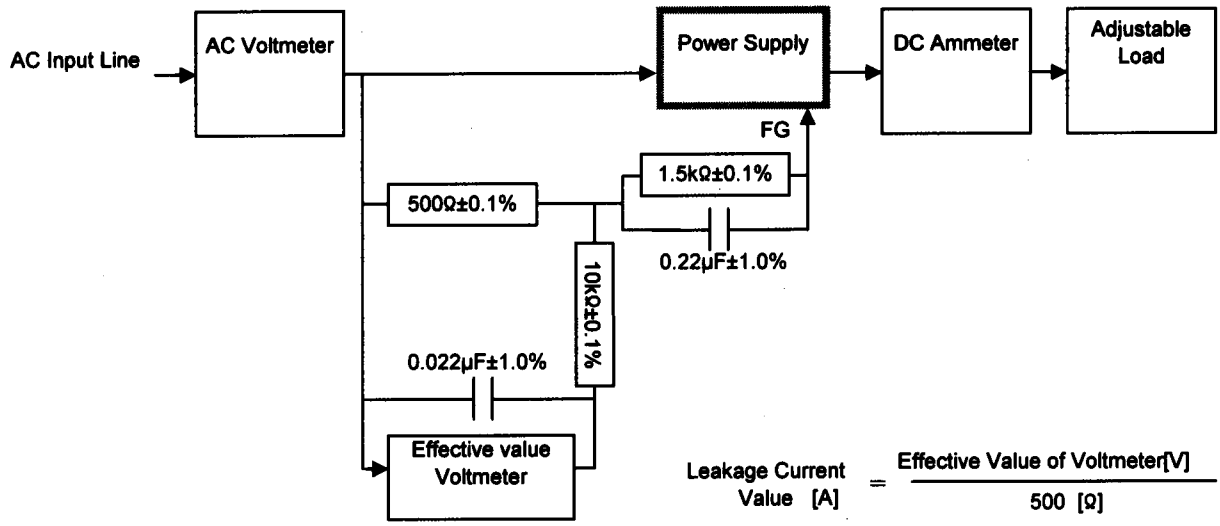


Figure B (IEC60950)