参考資料

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TEST DATA OF PBA30F-24

Regulated DC Power Supply
Sep 29, 2005

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COSEL CO.,LTD.

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CONTENTS

1.Input Current (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Power (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Power Factor (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Power Factor (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Inrush Current ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Leakage Current ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 9
10.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 10
11.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 11
12.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 12
13.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 13
14.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・・・・ 14
15.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 15
16.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 16
17.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
18.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
19.Hold-Up Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 19
20.Instantaneous Interruption Compensation ・・・・・・・・・・・・・・・・・・・・ 20
21.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・・・・・ 21
22.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 22
23.Overvoltage Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 23
24.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 24

(Final Page 24)

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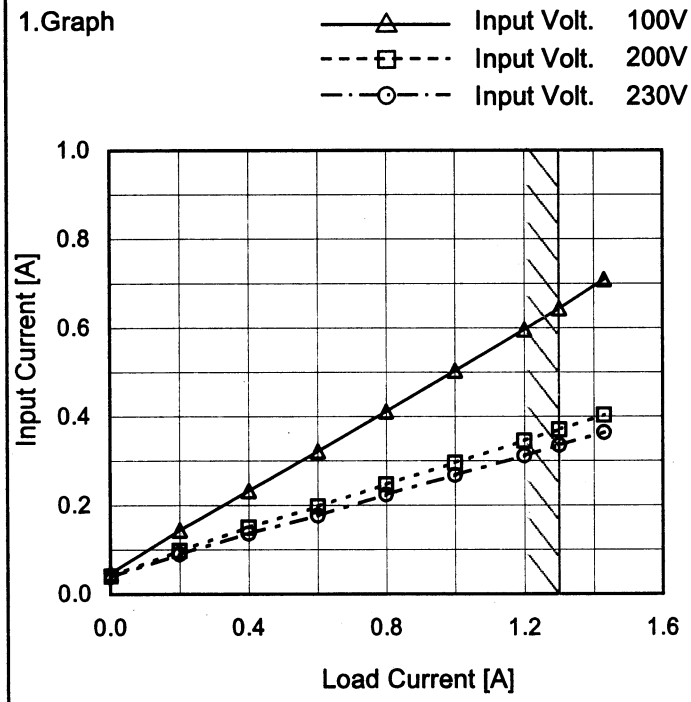
Model	PBA30F-24
Item	Input Current (by Load Current)
Object	————————

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	0.047	0.041	0.039
0.20	0.144	0.098	0.090
0.40	0.233	0.150	0.136
0.60	0.322	0.197	0.177
0.80	0.412	0.247	0.224
1.00	0.503	0.296	0.268
1.20	0.596	0.346	0.312
1.30	0.644	0.371	0.336
1.43	0.709	0.404	0.364
--	-	-	-
--	-	-	-

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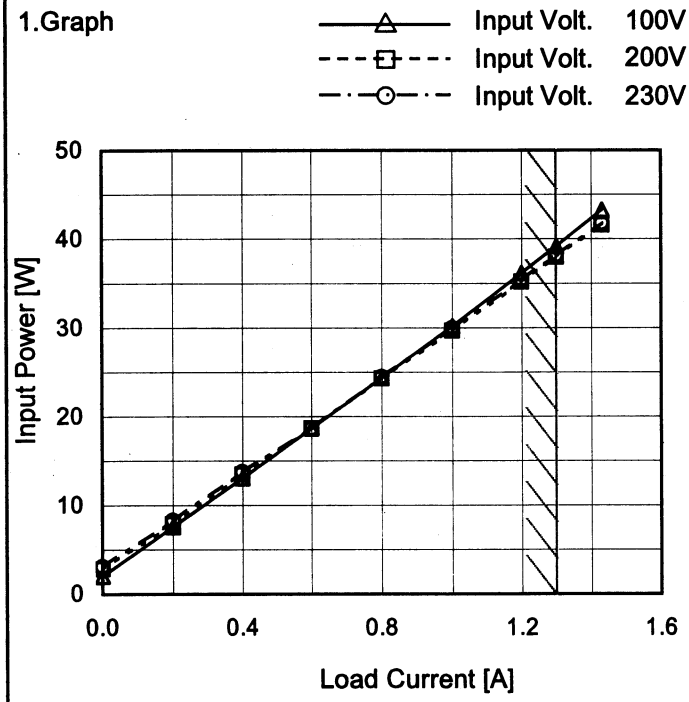
Model	PBA30F-24
Item	Input Power (by Load Current)
Object	————————

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	2.02	2.86	3.14
0.20	7.57	7.90	8.29
0.40	13.08	13.50	13.80
0.60	18.68	18.70	18.70
0.80	24.38	24.30	24.50
1.00	30.21	29.70	30.00
1.20	36.17	35.20	35.40
1.30	39.20	38.00	38.20
1.43	43.30	41.60	41.80
--	-	-	-
--	-	-	-

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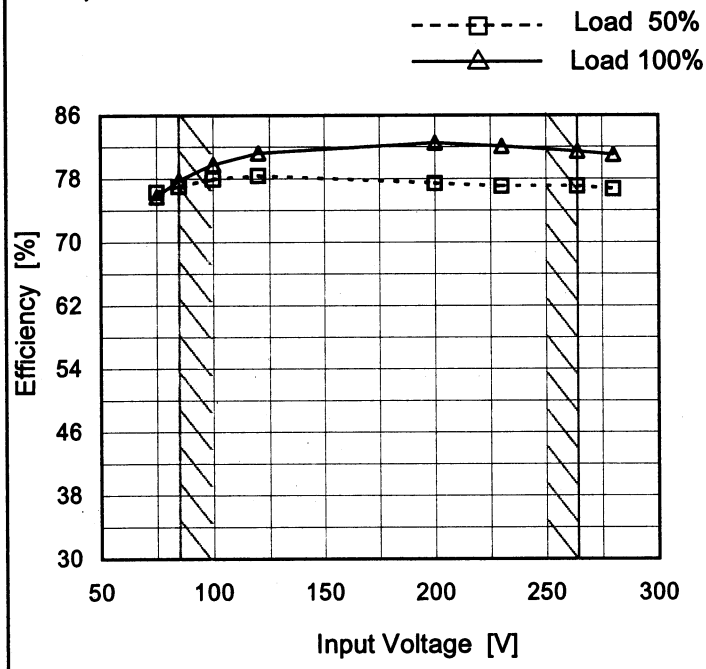
Model	PBA30F-24
Item	Efficiency (by Input Voltage)
Object	———————————

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	76.3	75.7
85	77.0	77.8
100	78.0	79.8
120	78.4	81.2
200	77.4	82.5
230	77.1	82.1
264	77.1	81.5
280	76.7	81.0
--	-	-

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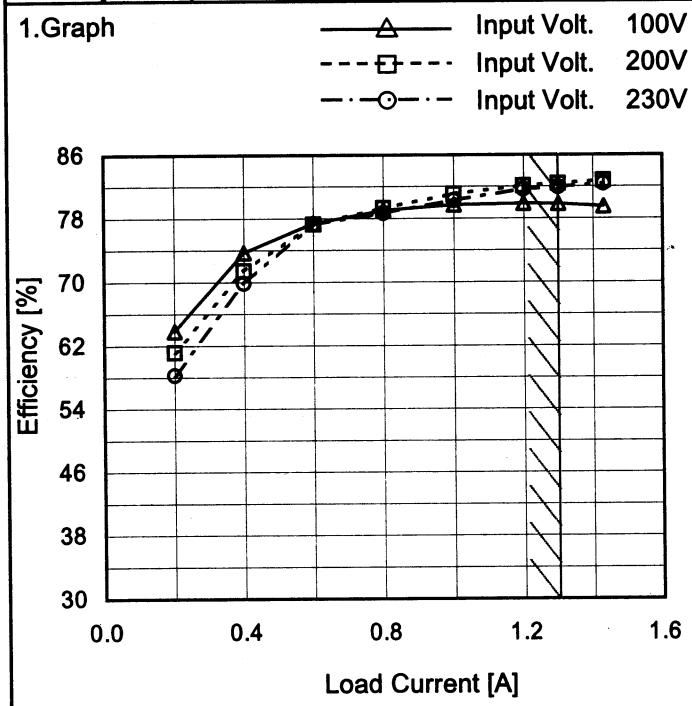
Model	PBA30F-24
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
0.20	63.9	61.2	58.3
0.40	73.7	71.4	69.9
0.60	77.4	77.3	77.3
0.80	79.0	79.3	78.7
1.00	79.7	81.1	80.3
1.20	79.9	82.1	81.6
1.30	79.8	82.4	81.9
1.43	79.5	82.8	82.4
--	-	-	-
--	-	-	-

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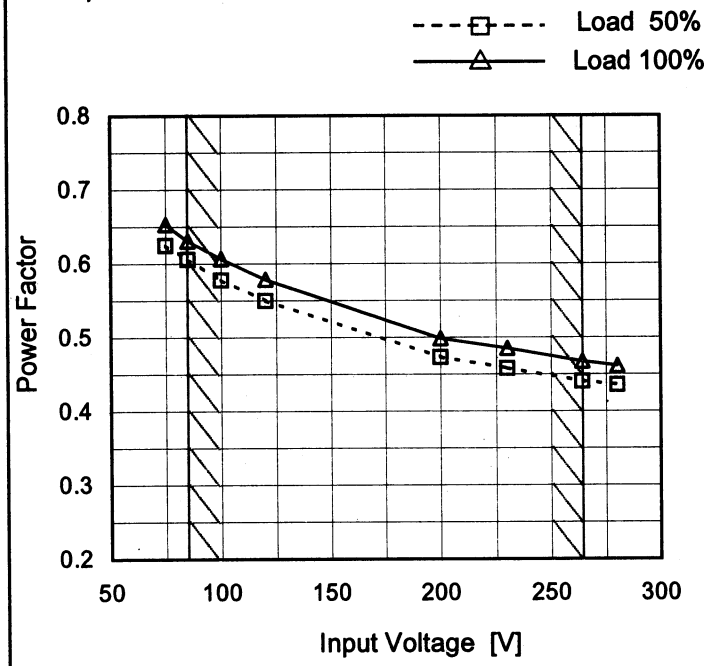
Model	PBA30F-24
Item	Power Factor (by Input Voltage)
Object	———

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	0.625	0.653
85	0.606	0.631
100	0.578	0.607
120	0.550	0.579
200	0.473	0.499
230	0.458	0.485
264	0.440	0.468
280	0.436	0.462
--	-	-

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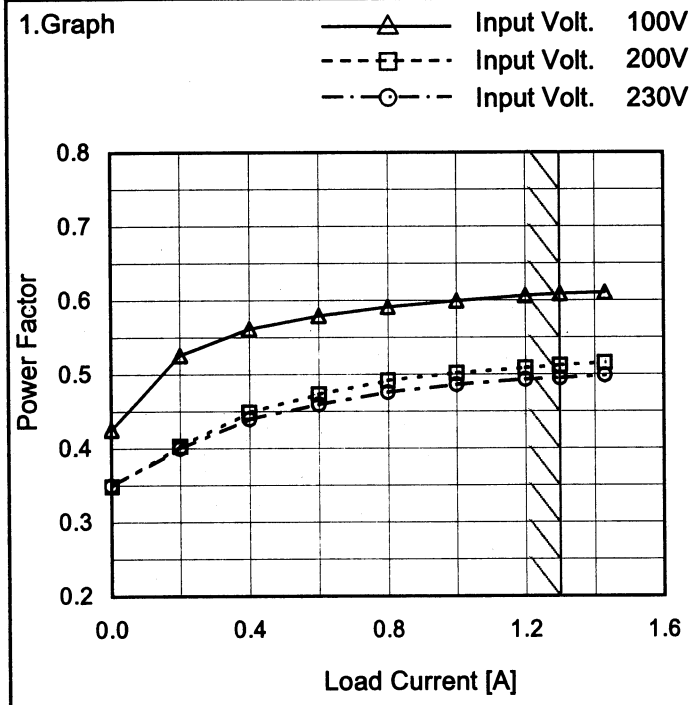
Model	PBA30F-24
Item	Power Factor (by Load Current)
Object	————————

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	0.425	0.349	0.350
0.20	0.526	0.403	0.400
0.40	0.562	0.449	0.439
0.60	0.579	0.473	0.459
0.80	0.591	0.492	0.476
1.00	0.600	0.502	0.486
1.20	0.606	0.509	0.493
1.30	0.609	0.512	0.495
1.43	0.611	0.515	0.499
--	-	-	-
--	-	-	-

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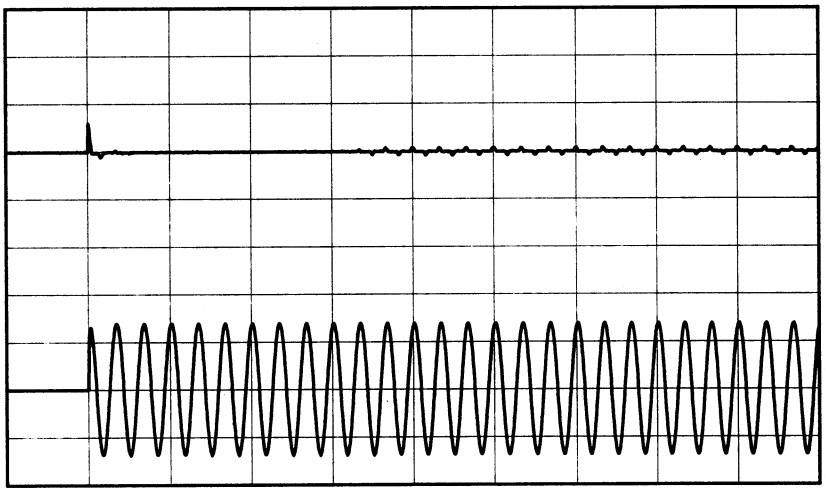
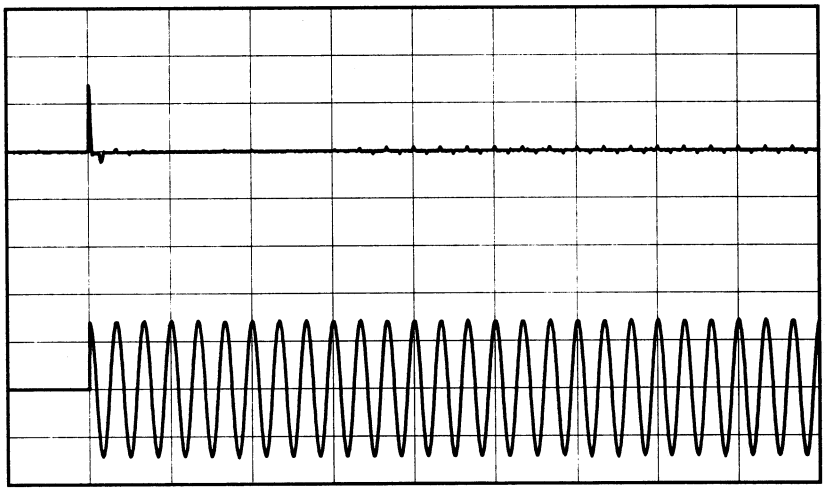
Model	PBA30F-24	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	————————		



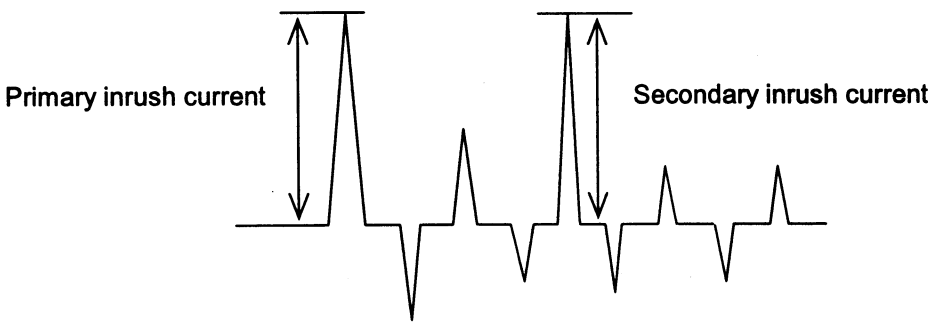
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
12.1 A
Secondary inrush current :
1.7 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
27.9 A
Secondary inrush current :
1.4 A



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Model	PBA30F-24	
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	0.15	0.32	0.39	Operation
	One of phase	0.30	0.64	0.79	stand by
IEC60950	Both phases	0.19	0.44	0.52	Operation
	One of phase	0.29	0.64	0.79	stand by

The value for "One of 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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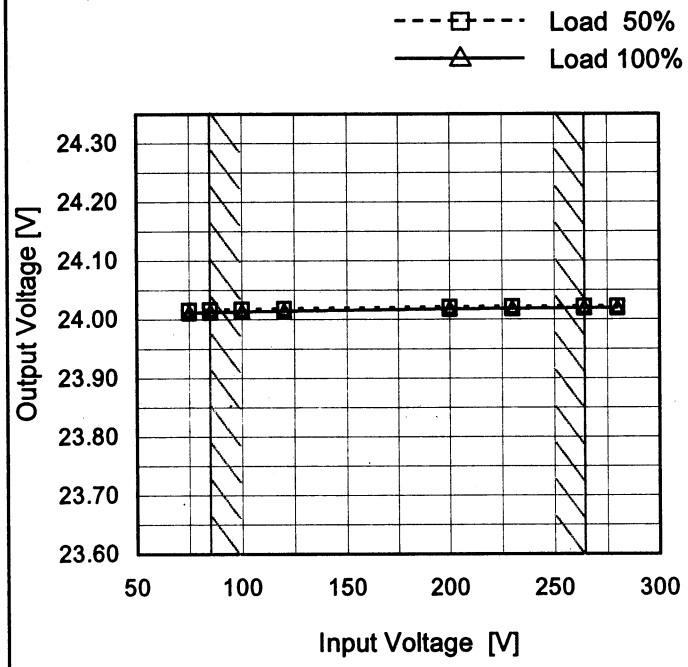
Model	PBA30F-24
Item	Line Regulation
Object	+24V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

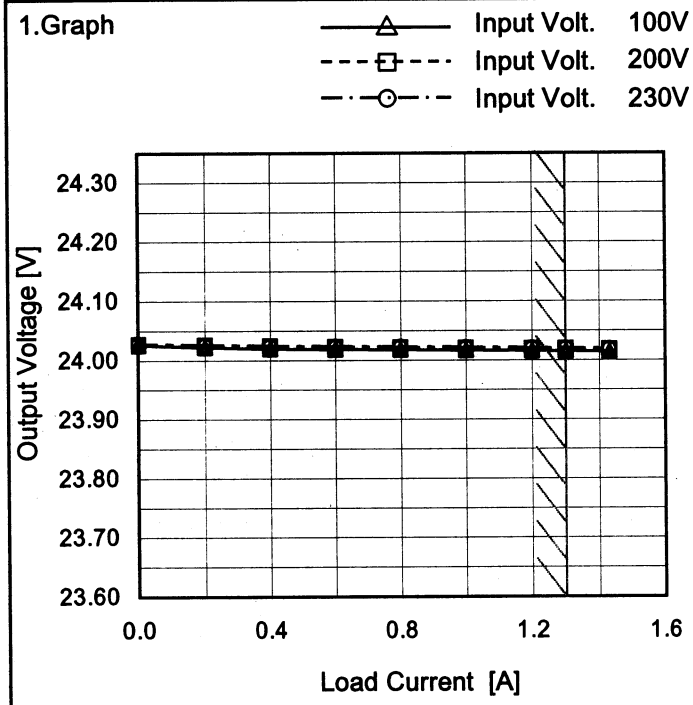
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	24.016	24.011
85	24.017	24.013
100	24.018	24.014
120	24.019	24.015
200	24.021	24.018
230	24.022	24.019
264	24.023	24.020
280	24.023	24.020
--	-	-

COSEL

Model	PBA30F-24
Item	Load Regulation
Object	+24V1.3A

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	24.026	24.028	24.028
0.20	24.023	24.026	24.026
0.40	24.020	24.024	24.025
0.60	24.019	24.023	24.023
0.80	24.018	24.022	24.023
1.00	24.017	24.021	24.022
1.20	24.016	24.020	24.021
1.30	24.015	24.020	24.020
1.43	24.014	24.019	24.019
--	-	-	-
--	-	-	-

BC-10014

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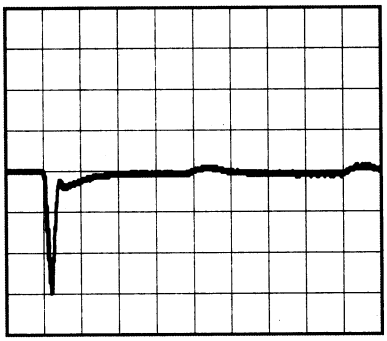
Model	PBA30F-24		
Item	Dynamic Load Response	Temperature	25℃
		Testing Circuitry	Figure A
Object	+24V1.3A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ⟷
Load 100% (1.3A)

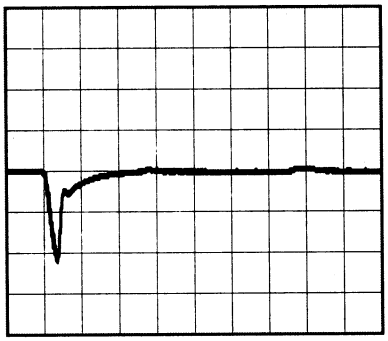


200 mV/div

2 ms/div

2 ms/div

Min. Load (0A) ⟷
Load 50% (0.65A)



200 mV/div

2 ms/div

2 ms/div

* The characteristic of AC200V is equal.

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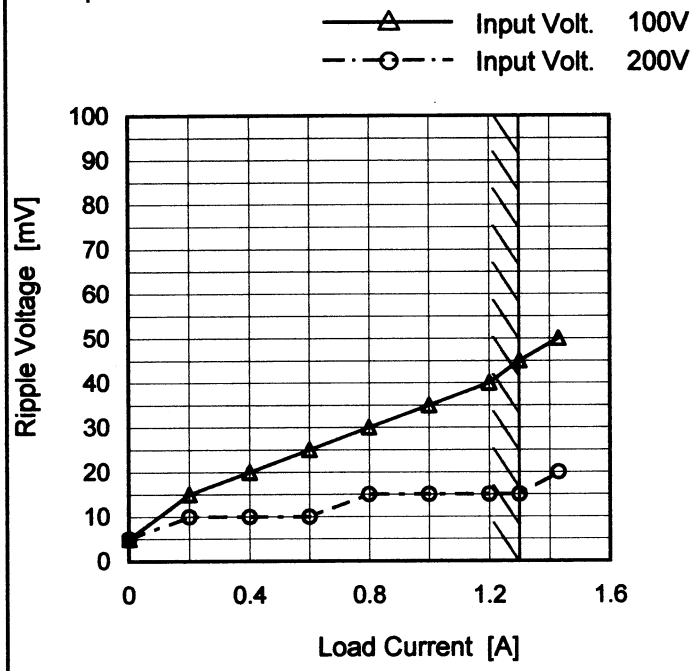
Model	PBA30F-24
Item	Ripple Voltage (by Load Current)
Object	+24V1.3A

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.

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	5	5
0.20	15	10
0.40	20	10
0.60	25	10
0.80	30	15
1.00	35	15
1.20	40	15
1.30	45	15
1.43	50	20
–	-	-
–	-	-

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

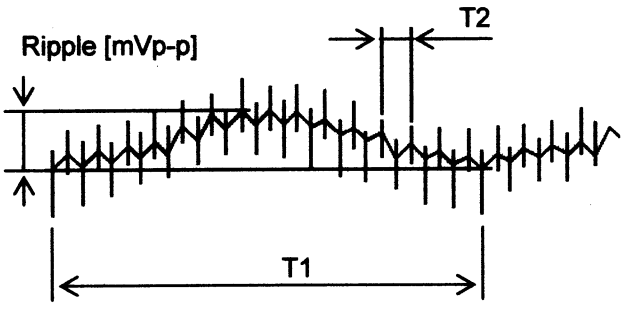


Fig. Complex Ripple Wave Form

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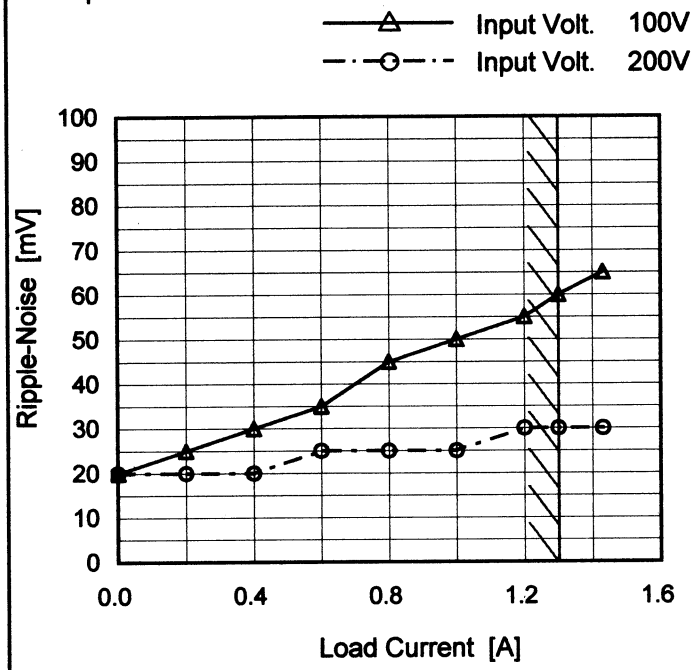
Model	PBA30F-24
Item	Ripple-Noise
Object	+24V1.3A

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]
0.00	20	20
0.20	25	20
0.40	30	20
0.60	35	25
0.80	45	25
1.00	50	25
1.20	55	30
1.30	60	30
1.43	65	30
–	-	-
–	-	-

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

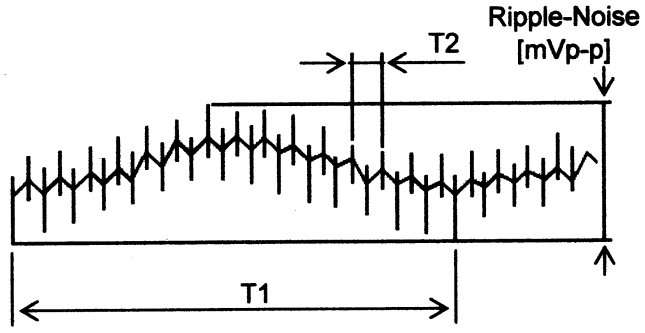


Fig. Complex Ripple Wave Form

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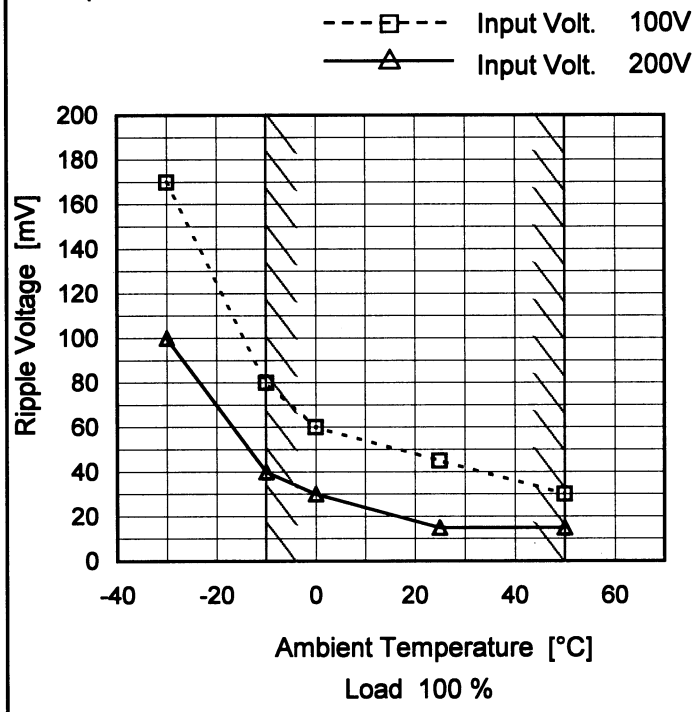
Model	PBA30F-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V1.3A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

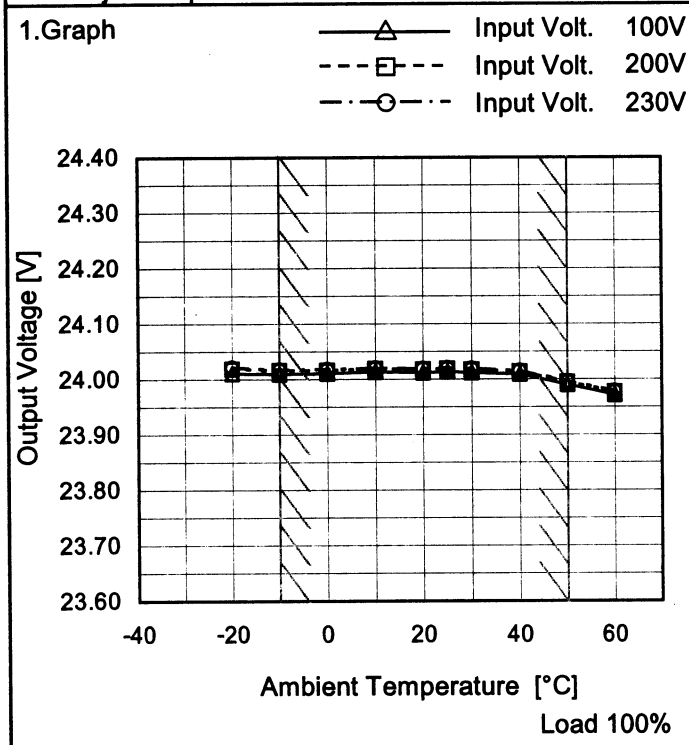
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	170	100
-10	80	40
0	60	30
25	45	15
50	30	15
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA30F-24
Item	Ambient Temperature Drift
Object	+24V1.3A

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	24.011	24.019	24.021
-10	24.010	24.016	24.017
0	24.011	24.016	24.018
10	24.014	24.019	24.020
20	24.012	24.018	24.019
25	24.014	24.019	24.020
30	24.012	24.017	24.019
40	24.009	24.014	24.015
50	23.990	23.995	23.996
60	23.972	23.977	23.978
--	-	-	-

COSEL

Model	PBA30F-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V1.3A	

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 - 1.3A

* 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	10	264	0	24.028	±19	±0.1
Minimum Voltage	50	85	1.3	23.990		

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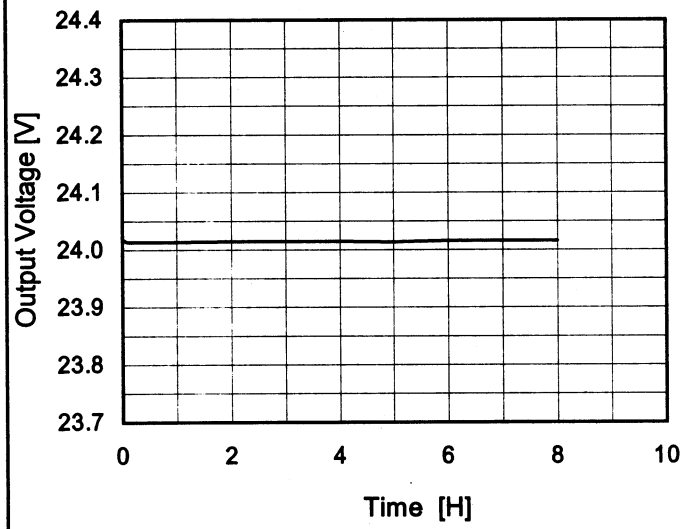
Model	PBA30F-24
Item	Time Lapse Drift
Object	+24V1.3A

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	24.017
0.5	24.014
1.0	24.014
2.0	24.015
3.0	24.015
4.0	24.015
5.0	24.014
6.0	24.016
7.0	24.016
8.0	24.016

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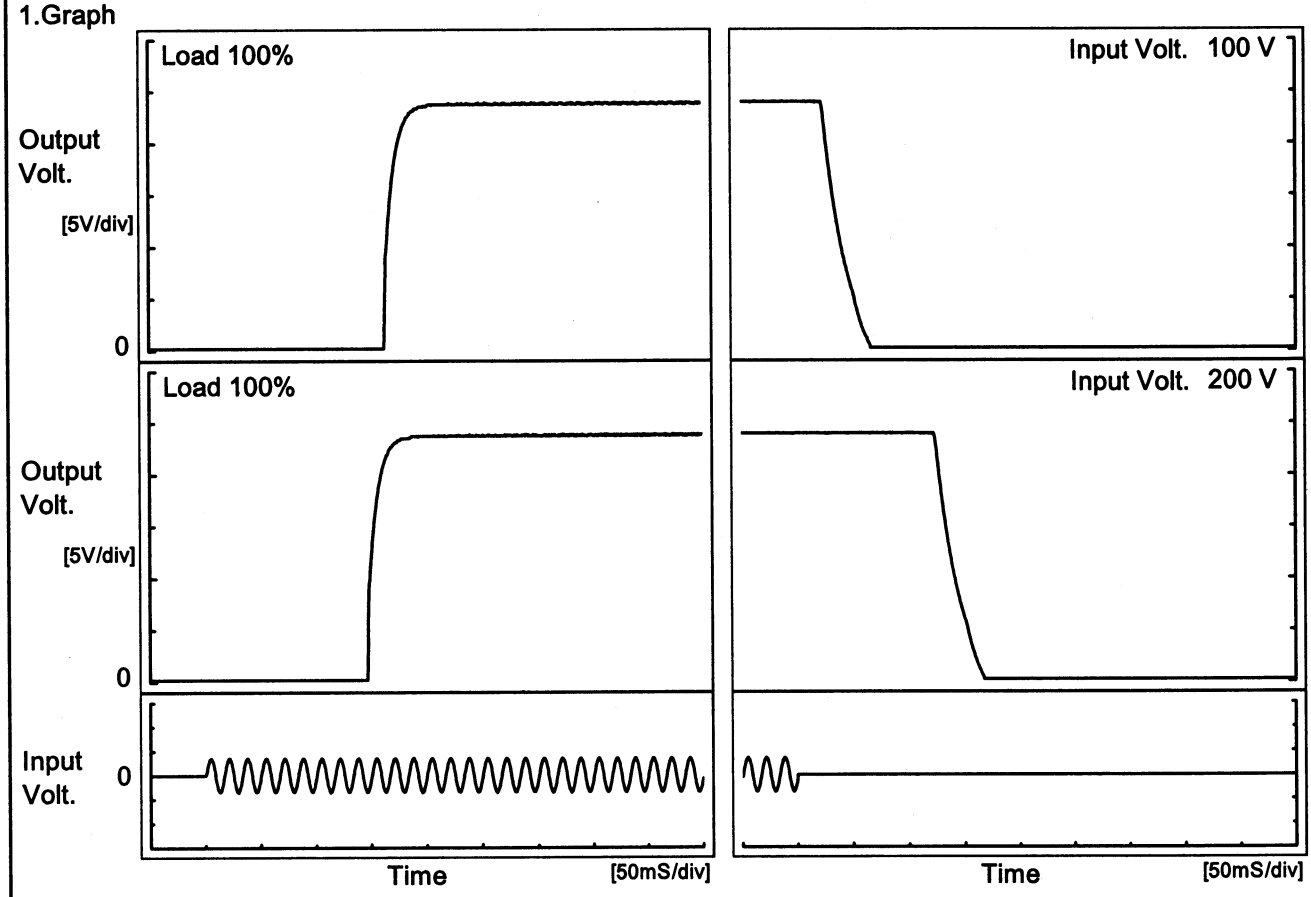
Model	PBA30F-24
Item	Rise and Fall Time
Object	+24V1.3A

Temperature 25°C
Testing Circuitry Figure A

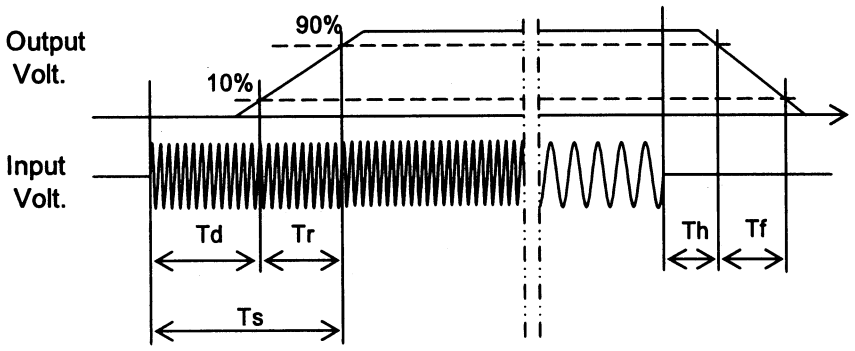
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	163.3	17.5	180.8	24.8	33.0
200 V	147.3	17.3	164.6	125.3	33.5

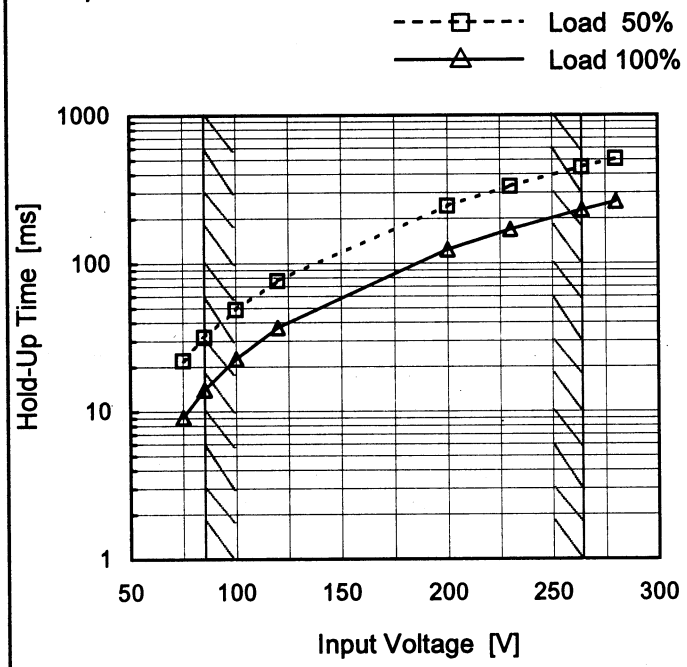


COSEL

Model	PBA30F-24
Item	Hold-Up Time
Object	+24V1.3A

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

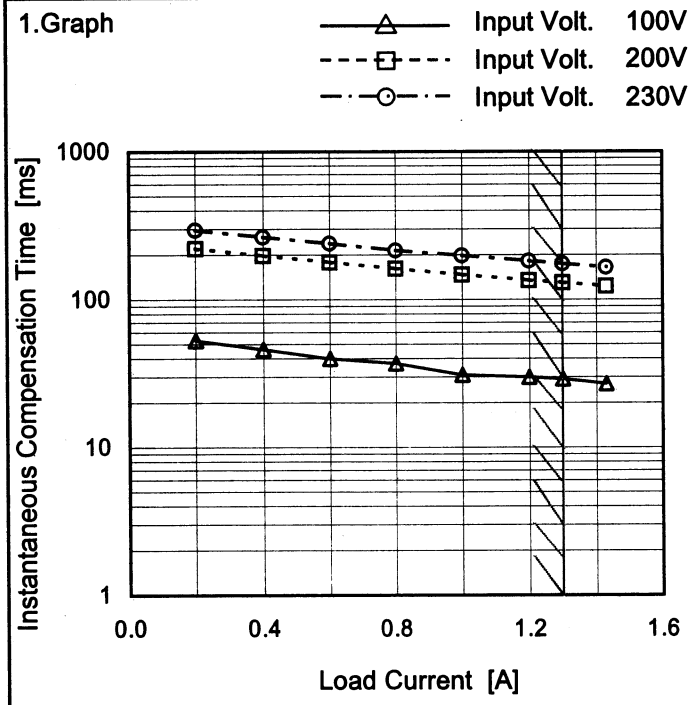
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	22	9
85	32	14
100	49	23
120	77	37
200	244	124
230	331	169
264	445	229
280	507	261
--	-	-

COSEL

Model	PBA30F-24
Item	Instantaneous Interruption Compensation
Object	+24V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

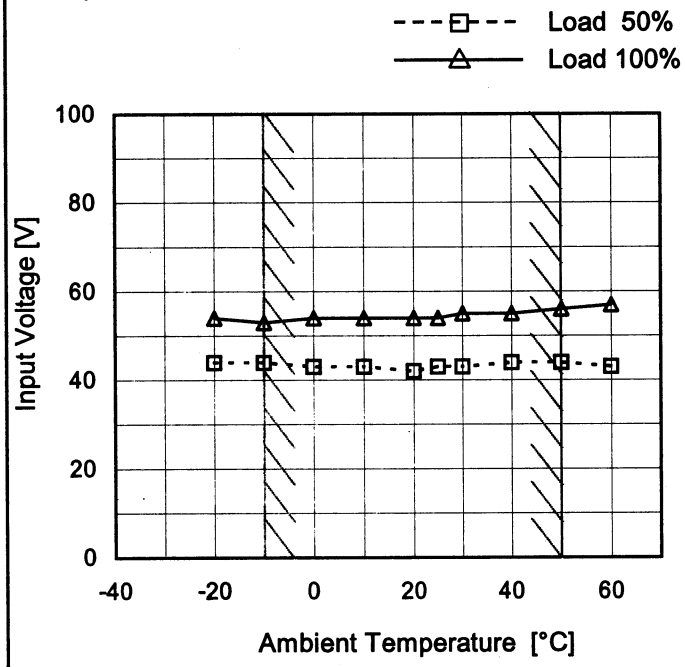
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.20	53	221	295
0.40	46	198	265
0.60	40	179	239
0.80	37	162	215
1.00	31	147	198
1.20	30	135	182
1.30	29	130	174
1.43	27	123	165
--	-	-	-
--	-	-	-

COSEL

Model	PBA30F-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V1.3A

Testing Circuitry Figure A

1.Graph



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

2.Values

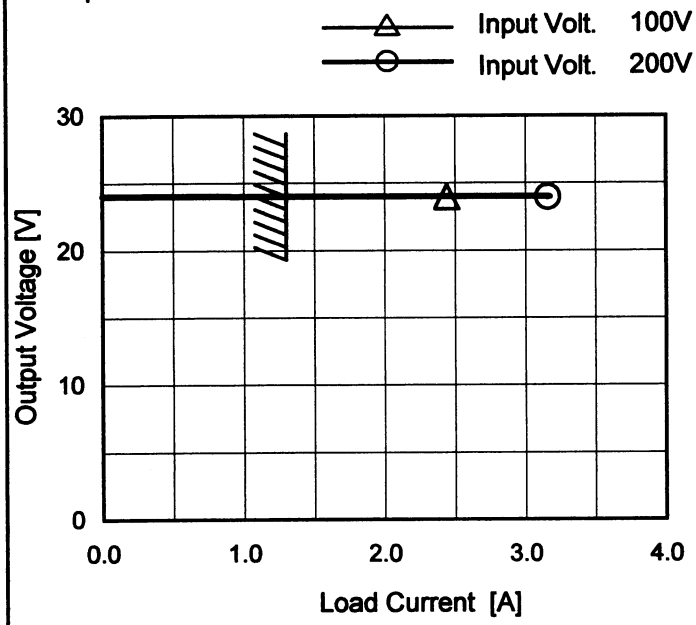
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	44	54
-10	44	53
0	43	54
10	43	54
20	42	54
25	43	54
30	43	55
40	44	55
50	44	56
60	43	57
--	-	-

COSEL

Model	PBA30F-24
Item	Overcurrent Protection
Object	+24V1.3A

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

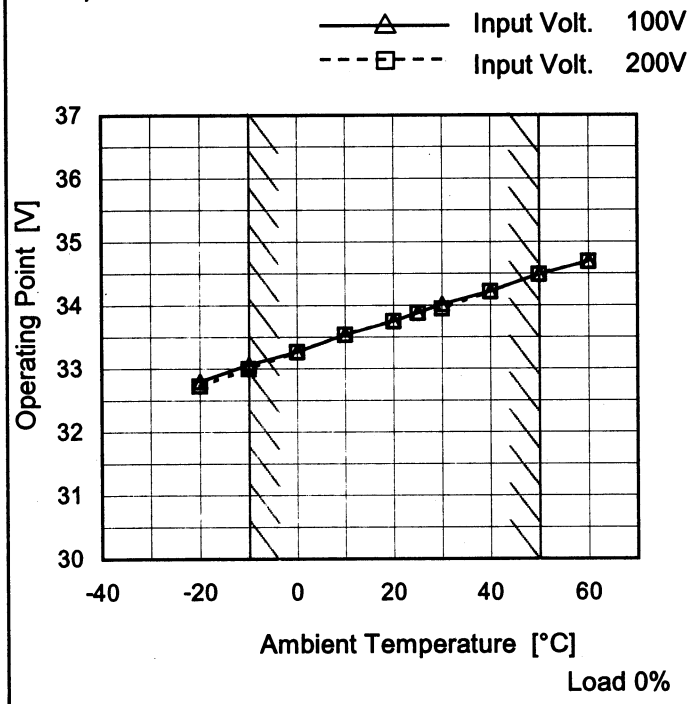
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
24.0	2.44	3.16
22.8	-	-
21.6	-	-
19.2	-	-
16.8	-	-
14.4	-	-
12.0	-	-
9.6	-	-
7.2	-	-
4.8	-	-
2.4	-	-
0.0	-	-

COSEL

Model	PBA30F-24
Item	Overvoltage Protection
Object	+24V1.3A

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	32.80	32.73
-10	33.07	33.00
0	33.27	33.27
10	33.54	33.54
20	33.75	33.75
25	33.88	33.88
30	34.02	33.95
40	34.22	34.22
50	34.49	34.49
60	34.69	34.69
--	-	-

COSEL

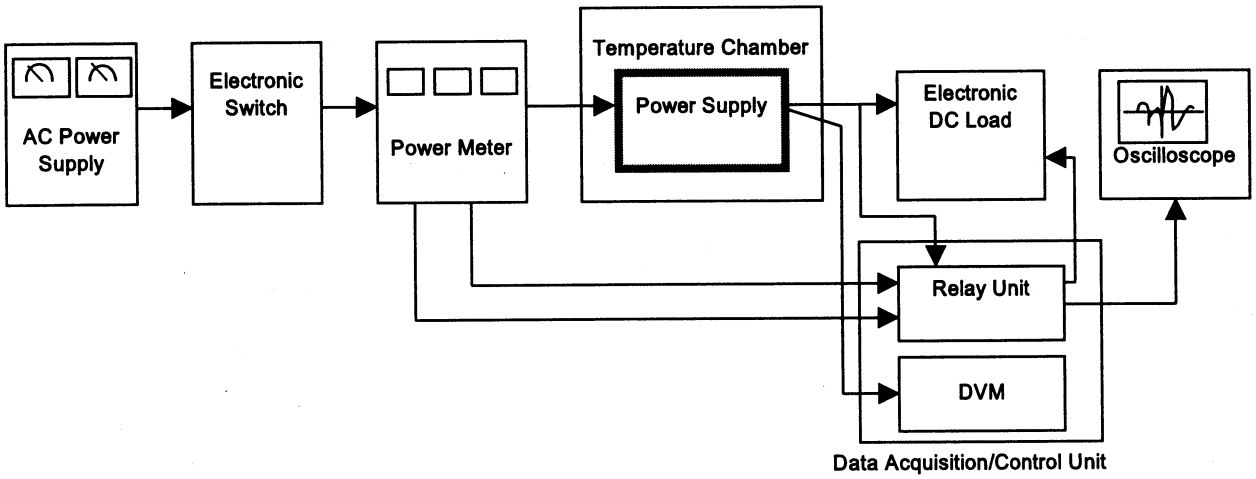


Figure A

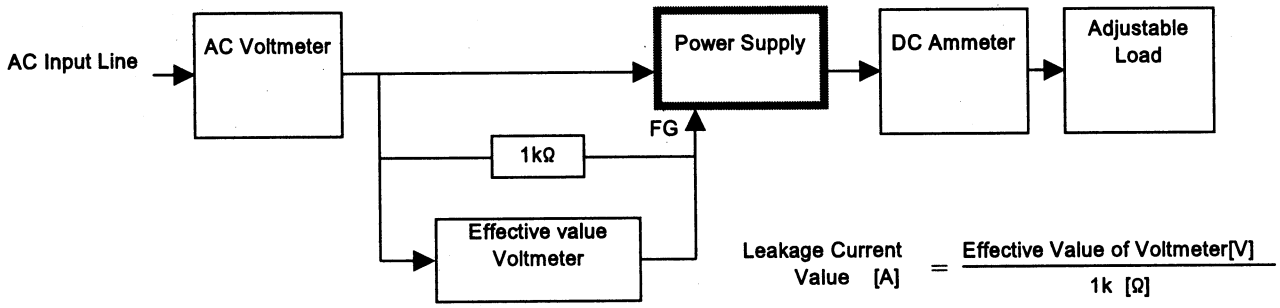


Figure B (DEN-AN)

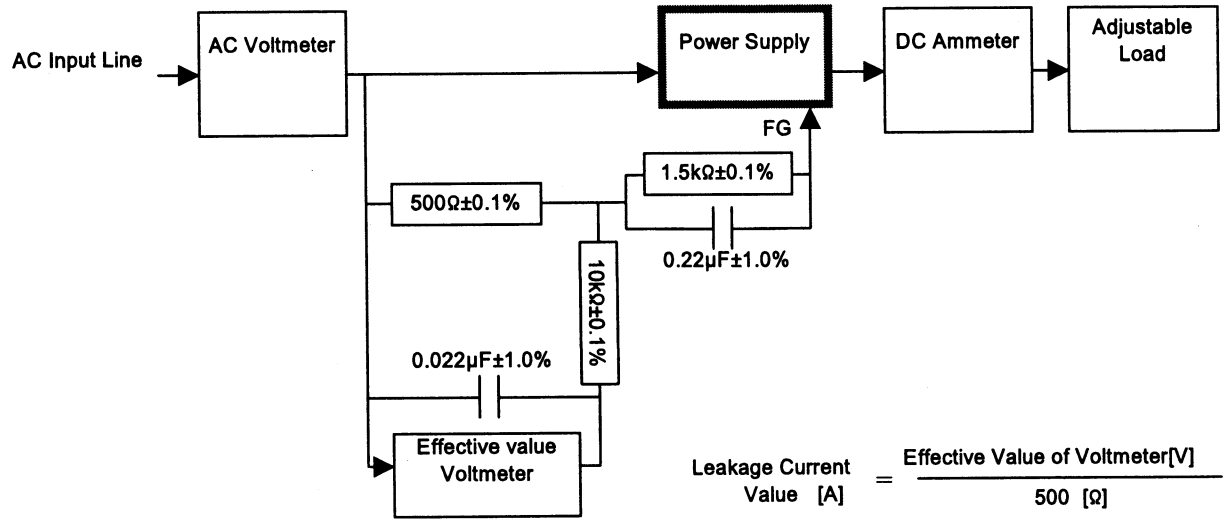


Figure B (IEC60950)