参考資料

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TEST DATA OF PBA15F-5

Regulated DC Power Supply
Sep 29, 2005

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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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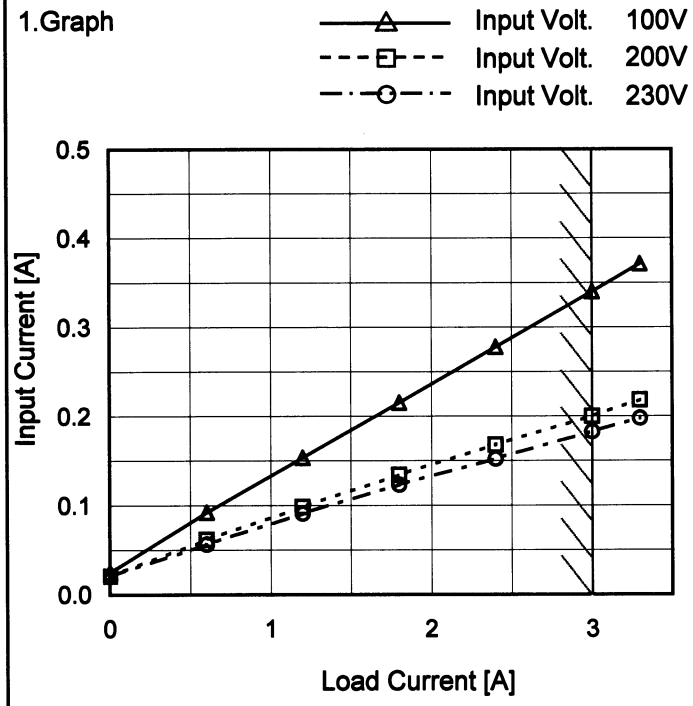
Model	PBA15F-5
Item	Input Current (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

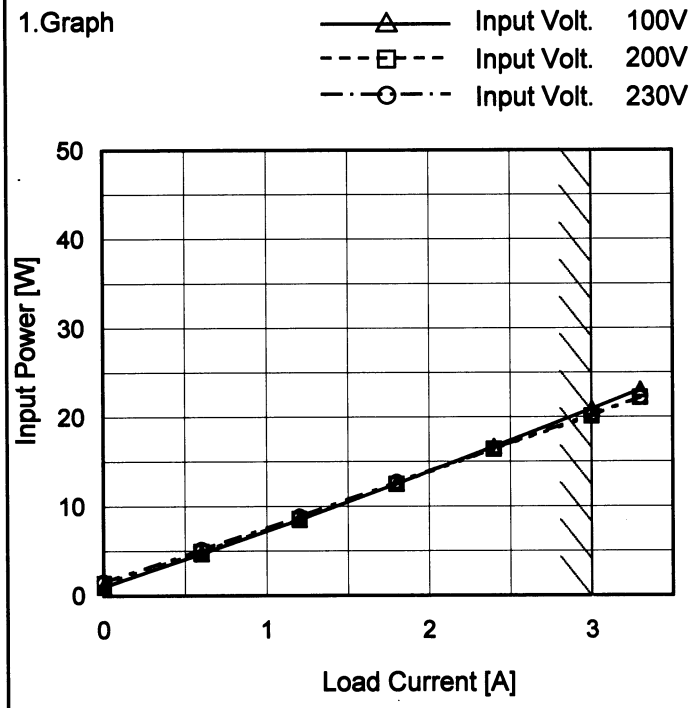
Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.025	0.021	0.021
0.6	0.092	0.062	0.057
1.2	0.154	0.098	0.091
1.8	0.216	0.134	0.123
2.4	0.278	0.168	0.152
3.0	0.340	0.200	0.183
3.3	0.372	0.219	0.198
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA15F-5
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

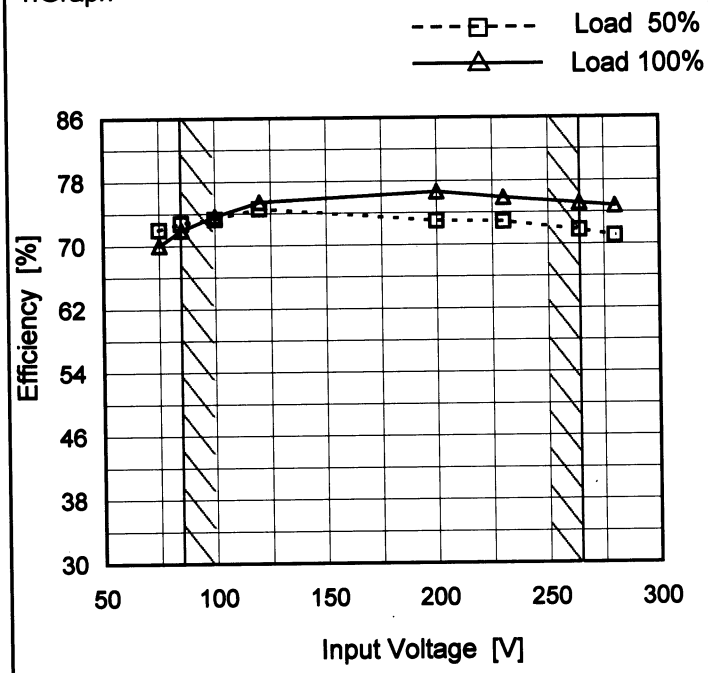
Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	1.00	1.35	1.51
0.6	4.70	4.91	5.12
1.2	8.53	8.60	8.84
1.8	12.54	12.50	12.72
2.4	16.70	16.40	16.40
3.0	20.93	20.10	20.30
3.3	23.10	22.20	22.20
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA15F-5
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	72.0	70.0
85	72.8	72.0
100	73.3	73.7
120	74.6	75.5
200	73.0	76.7
230	72.9	75.9
264	71.8	75.2
280	71.1	74.8
--	-	-

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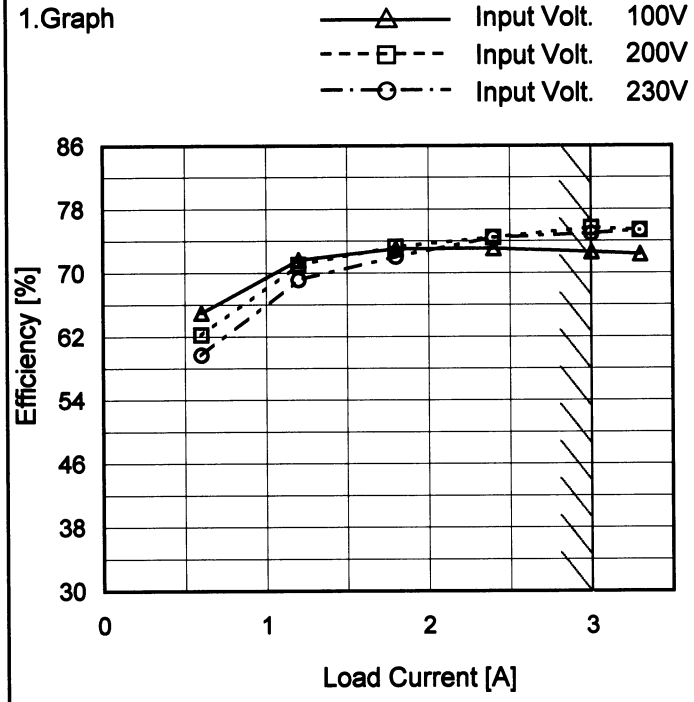
Model	PBA15F-5
Item	Efficiency (by Load Current)
Object	———————

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	-	-	-
0.6	65.0	62.2	59.7
1.2	71.6	71.1	69.1
1.8	73.1	73.3	72.0
2.4	73.1	74.4	74.4
3.0	72.6	75.7	74.9
3.3	72.4	75.4	75.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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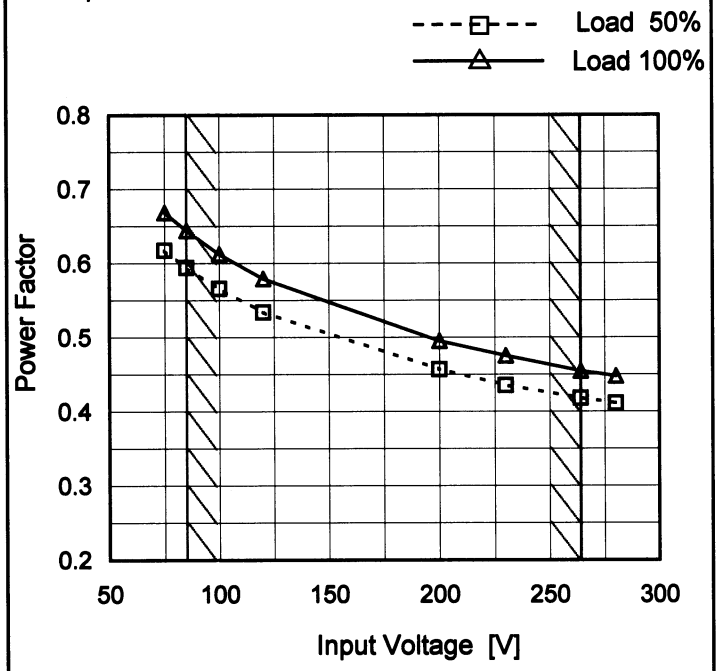
Model	PBA15F-5
Item	Power Factor (by Input Voltage)
Object	———————

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	0.618	0.669
85	0.595	0.645
100	0.566	0.612
120	0.534	0.579
200	0.457	0.495
230	0.435	0.475
264	0.418	0.455
280	0.411	0.448
--	-	-

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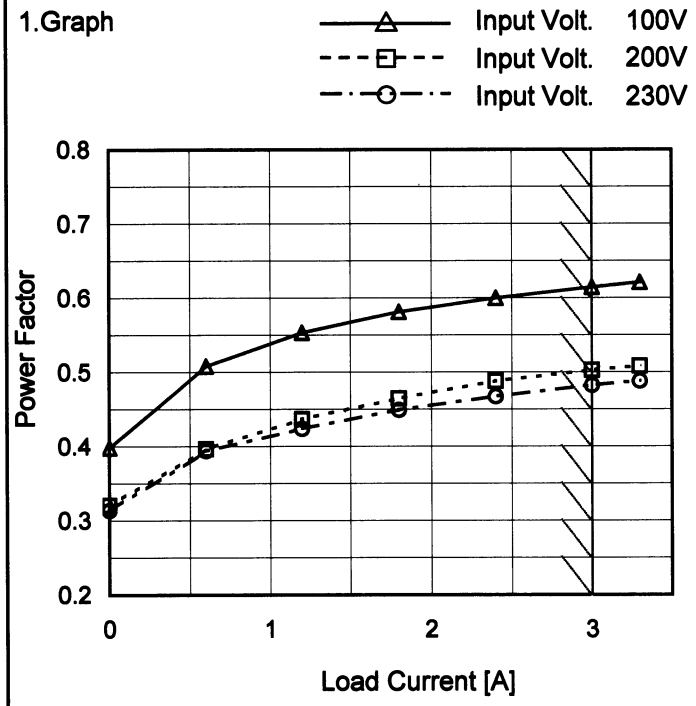
Model	PBA15F-5
Item	Power Factor (by Load Current)
Object	———————

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	0.398	0.321	0.314
0.6	0.508	0.397	0.394
1.2	0.554	0.437	0.424
1.8	0.581	0.465	0.449
2.4	0.600	0.488	0.467
3.0	0.615	0.503	0.482
3.3	0.621	0.508	0.488
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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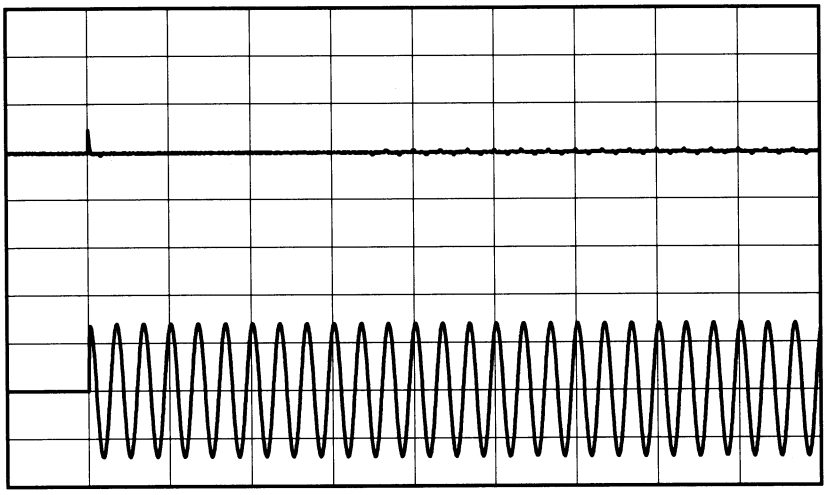
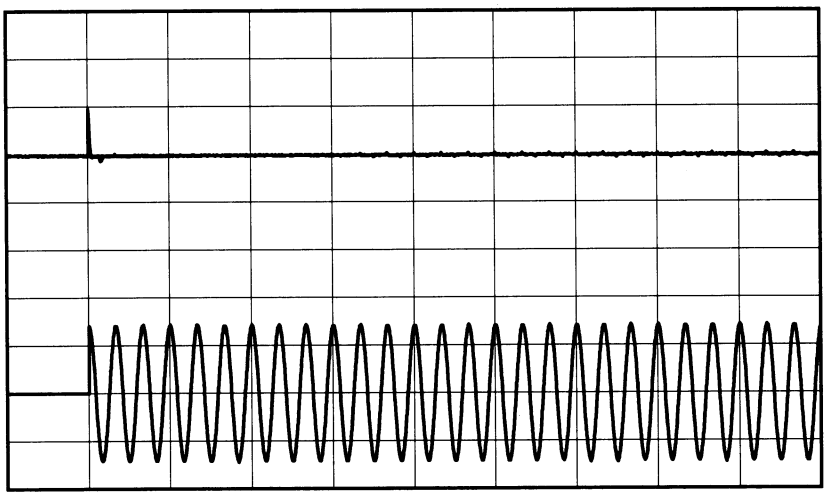
Model	PBA15F-5
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



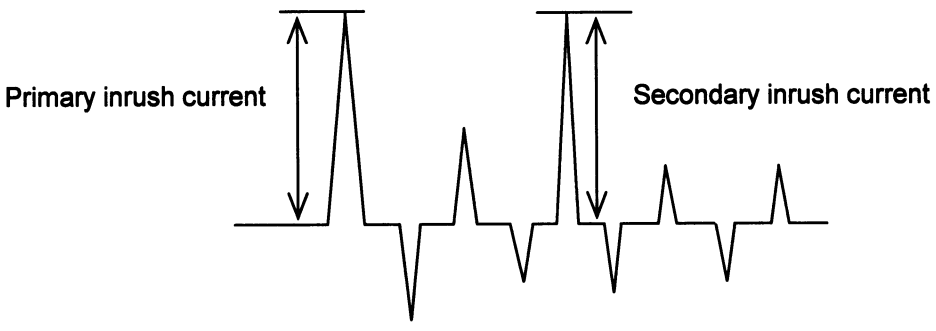
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
9.6 A
Secondary inrush current :
1.2 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
19.5 A
Secondary inrush current :
0.9 A



BC-10020

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Model	PBA15F-5	
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	0.06	0.12	0.14	Operation
	One of phase	0.10	0.22	0.27	stand by
IEC60950	Both phases	0.07	0.15	0.18	Operation
	One of phase	0.10	0.22	0.27	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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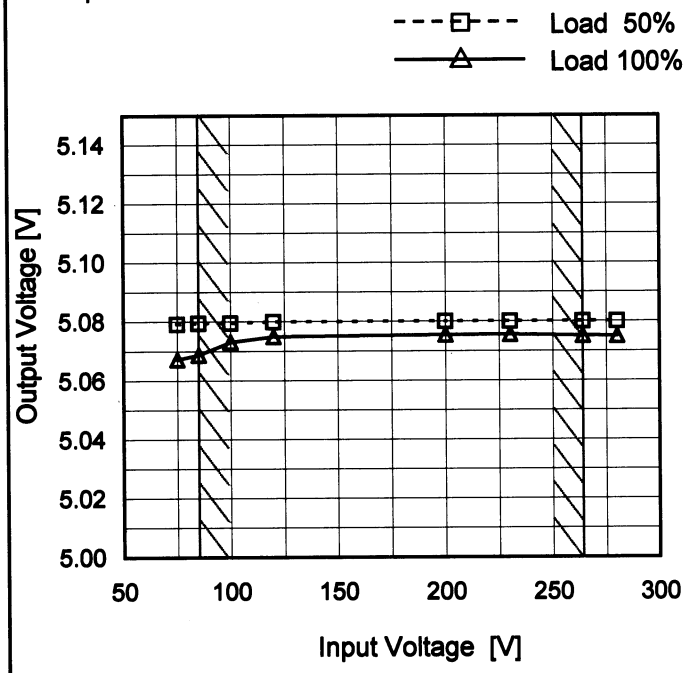
Model	PBA15F-5
Item	Line Regulation
Object	+5V3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

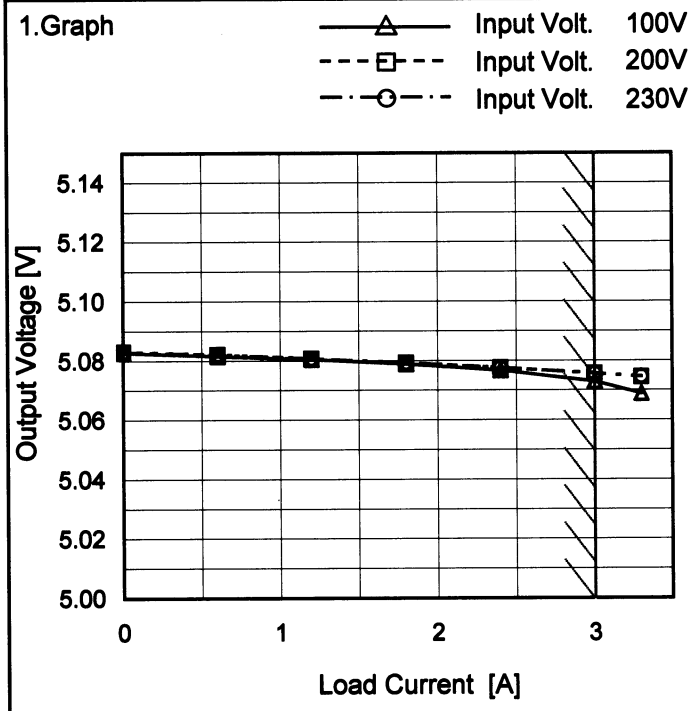
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	5.079	5.067
85	5.080	5.069
100	5.080	5.073
120	5.080	5.075
200	5.080	5.076
230	5.080	5.076
264	5.080	5.075
280	5.080	5.075
--	-	-

COSEL

Model	PBA15F-5
Item	Load Regulation
Object	+5V3A

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	5.083	5.083	5.083
0.6	5.082	5.082	5.082
1.2	5.081	5.081	5.081
1.8	5.079	5.079	5.079
2.4	5.077	5.078	5.078
3.0	5.073	5.076	5.076
3.3	5.069	5.075	5.075
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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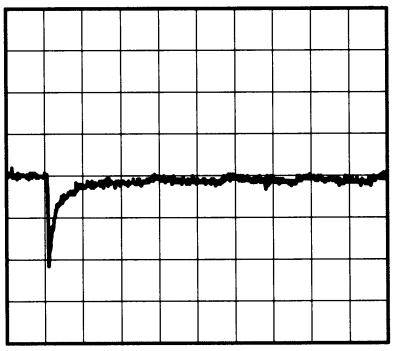
Model	PBA15F-5		
Item	Dynamic Load Response	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5V3A		

Input Volt. 100 V
Cycle 1000 ms

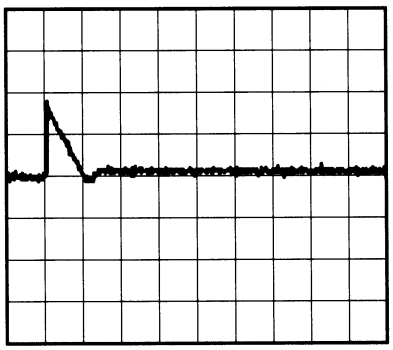
Load Current

Min. Load (0A) ⟷
Load 100% (3A)



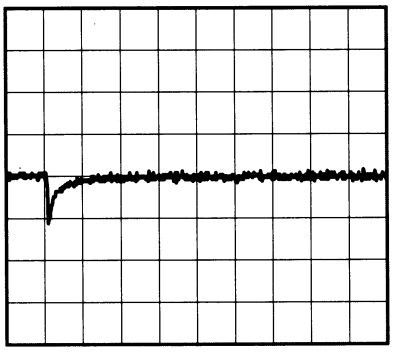
100 mV/div

5 ms/div



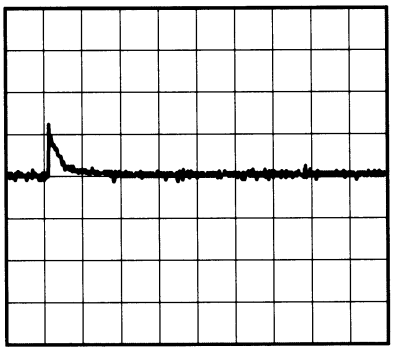
5 ms/div

Min. Load (0A) ⟷
Load 50% (1.5A)



100 mV/div

5 ms/div



5 ms/div

* The characteristic of AC200V is equal.

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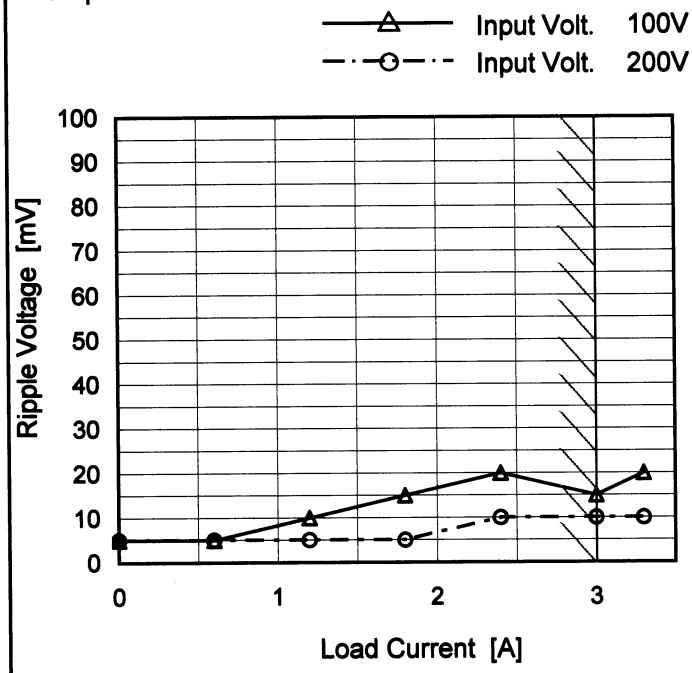
Model	PBA15F-5
Item	Ripple Voltage (by Load Current)
Object	+5V3A

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]
0.0	5	5
0.6	5	5
1.2	10	5
1.8	15	5
2.4	20	10
3.0	15	10
3.3	20	10
--	-	-
--	-	-
--	-	-
--	-	-

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

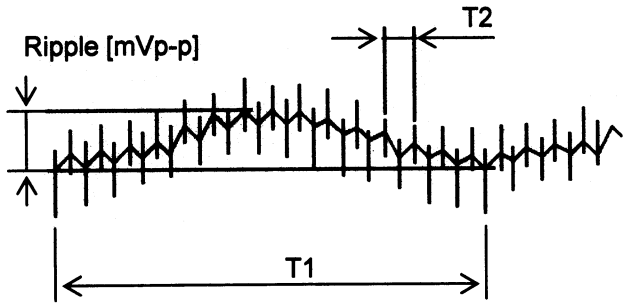


Fig. Complex Ripple Wave Form

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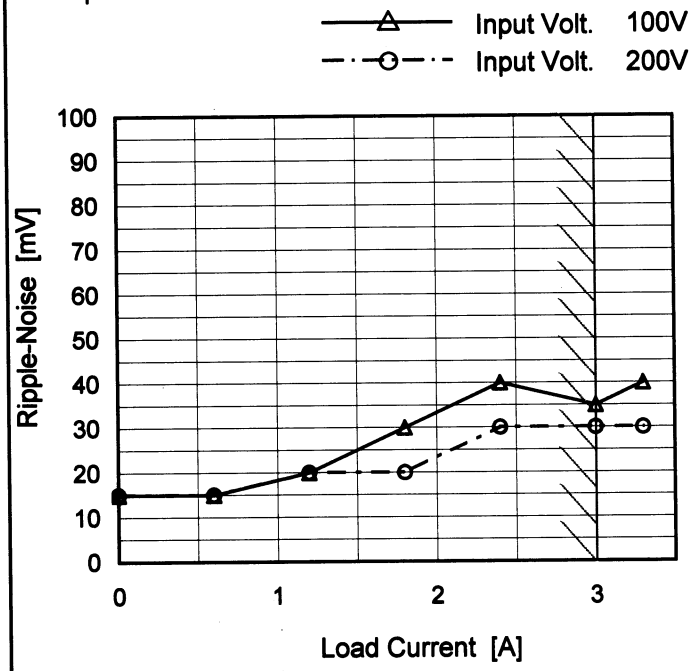
Model	PBA15F-5
Item	Ripple-Noise
Object	+5V3A

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	15	15
0.6	15	15
1.2	20	20
1.8	30	20
2.4	40	30
3.0	35	30
3.3	40	30
--	-	-
--	-	-
--	-	-
--	-	-

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

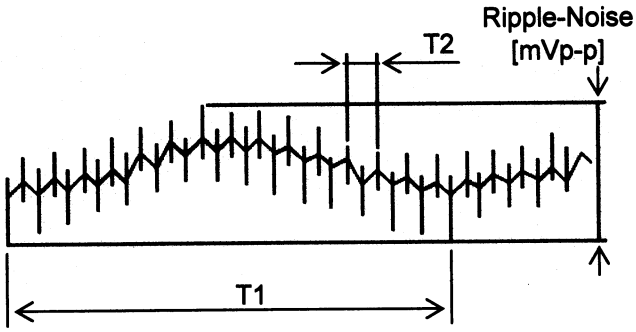


Fig. Complex Ripple Wave Form

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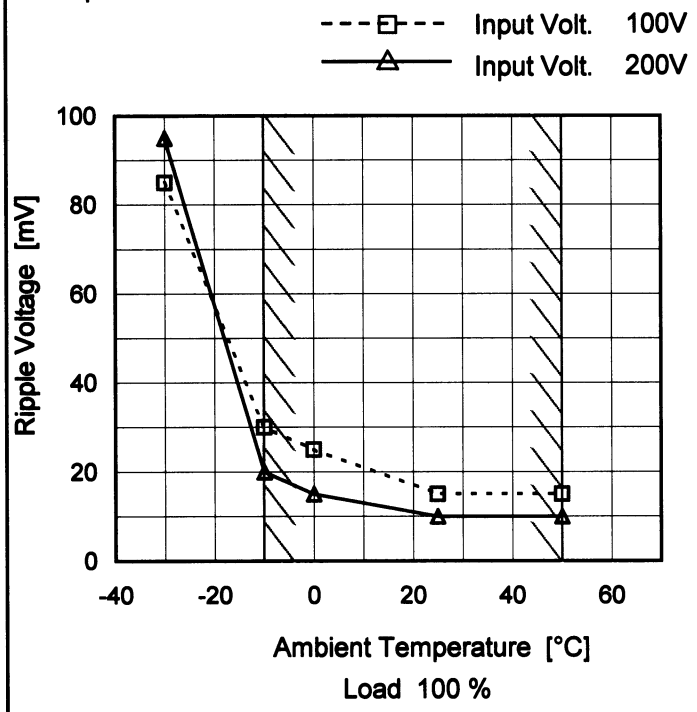
Model	PBA15F-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V3A

Testing Circuitry Figure A

1.Graph



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

2.Values

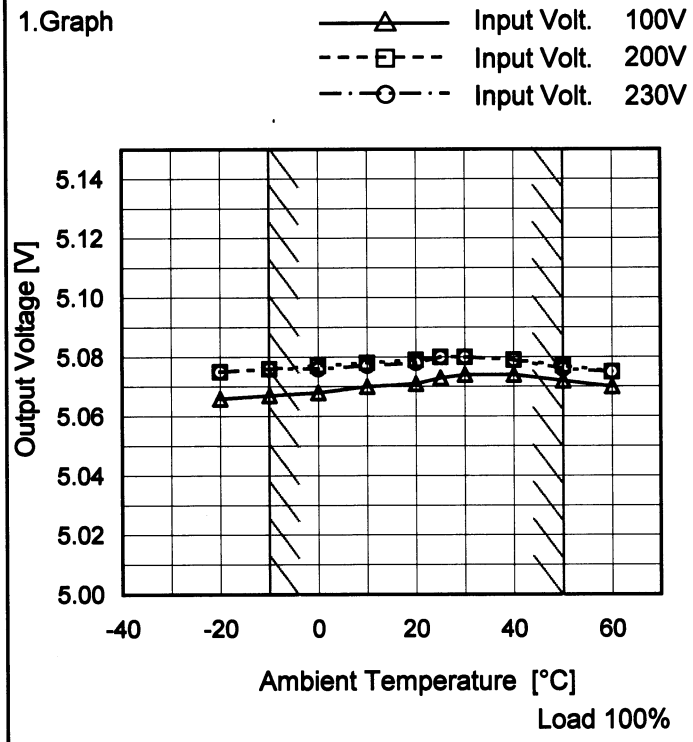
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	85	95
-10	30	20
0	25	15
25	15	10
50	15	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA15F-5
Item	Ambient Temperature Drift
Object	+5V3A

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	5.066	5.075	5.075
-10	5.067	5.076	5.076
0	5.068	5.077	5.076
10	5.070	5.078	5.077
20	5.071	5.079	5.078
25	5.073	5.080	5.080
30	5.074	5.080	5.080
40	5.074	5.079	5.079
50	5.072	5.077	5.076
60	5.070	5.075	5.075
--	-	-	-

COSEL

Model	PBA15F-5	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V3A	

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 - 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	30	200	0	5.088	±11	±0.2
Minimum Voltage	-10	85	3	5.067		

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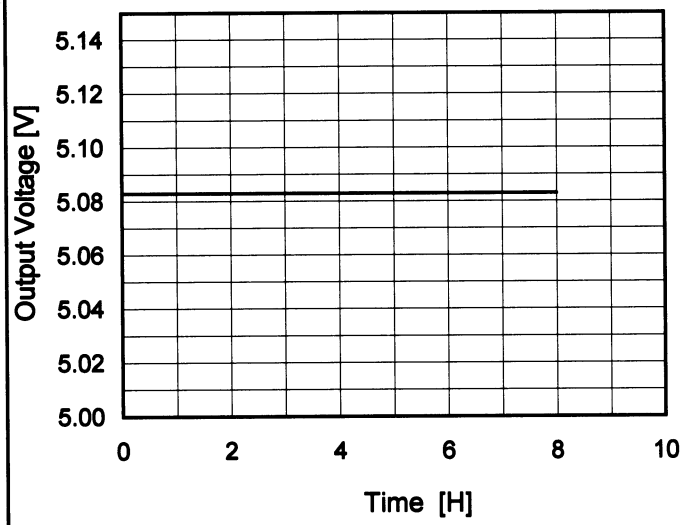
Model	PBA15F-5
Item	Time Lapse Drift
Object	+5V3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

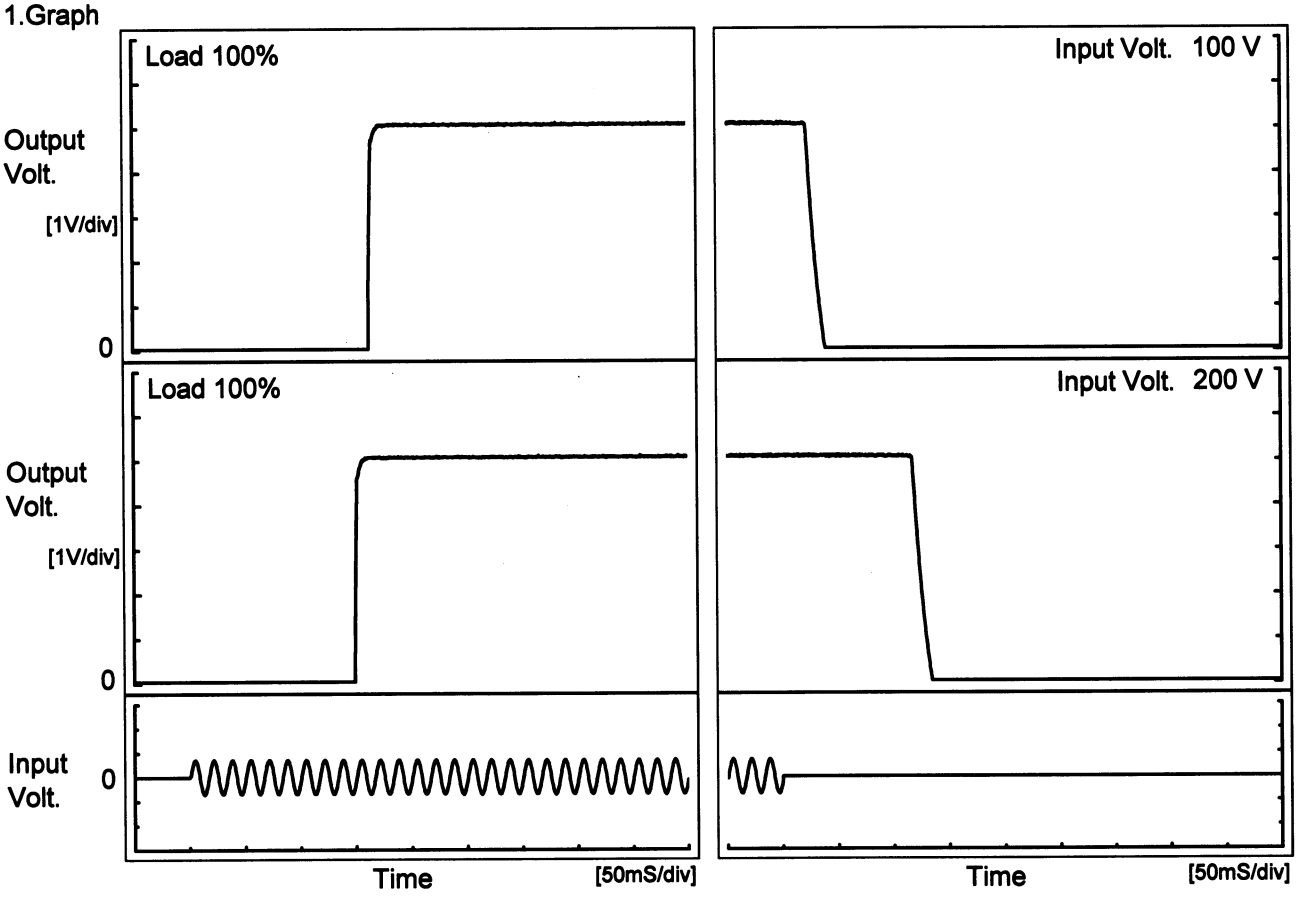
2.Values

Time since start [H]	Output Voltage [V]
0.0	5.083
0.5	5.083
1.0	5.083
2.0	5.083
3.0	5.083
4.0	5.083
5.0	5.083
6.0	5.083
7.0	5.083
8.0	5.083

COSEL

Model	PBA15F-5	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+5V3A	

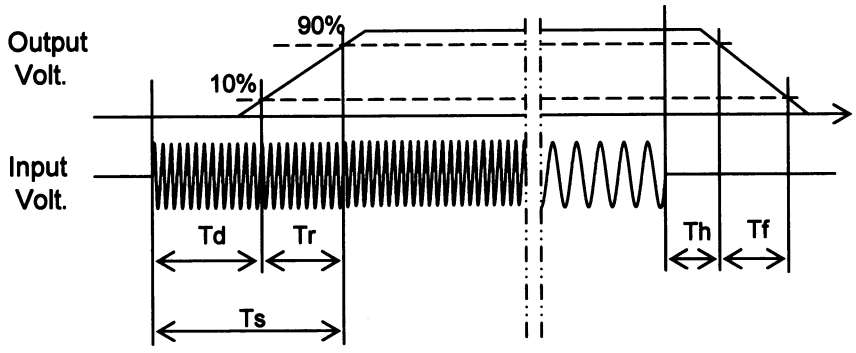
1.Graph



2.Values

[mS]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	162.3	2.8	165.1	22.8	13.8
200 V	149.3	2.3	151.6	118.0	14.0

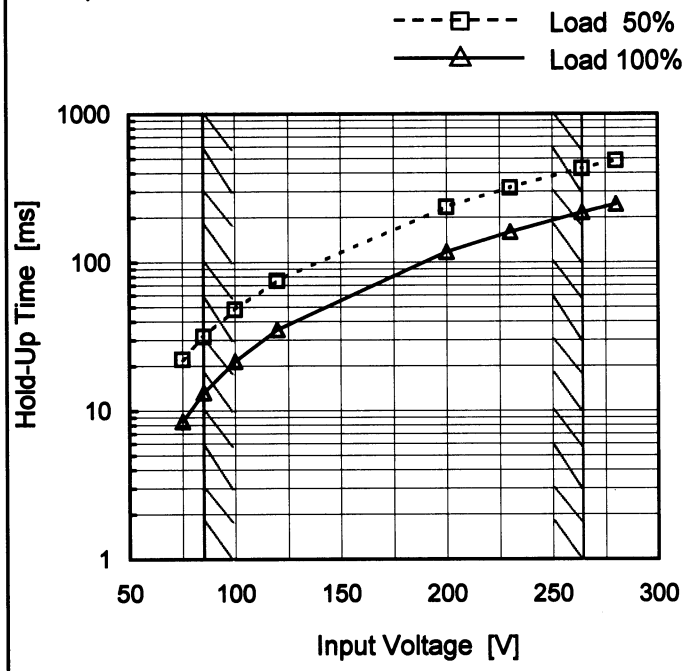


COSEL

Model	PBA15F-5
Item	Hold-Up Time
Object	+5V3A

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

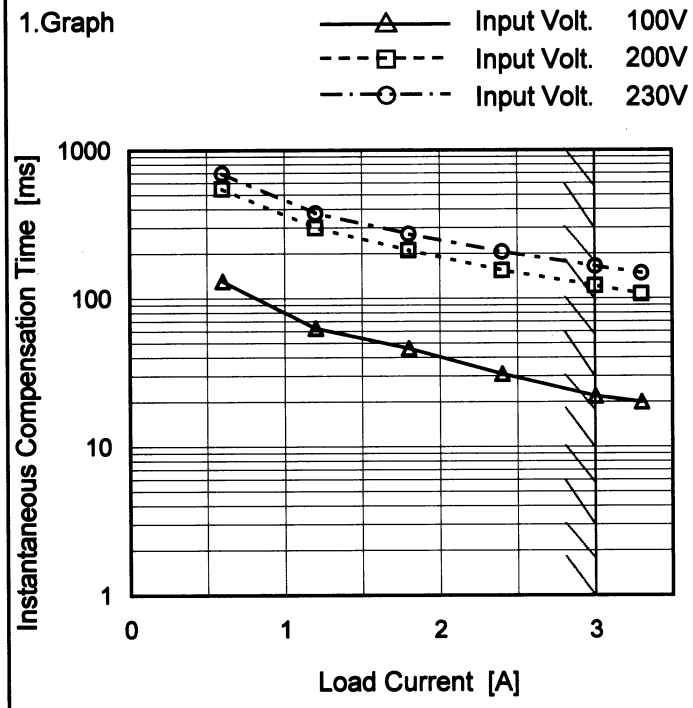
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	22	9
85	32	13
100	48	22
120	75	35
200	236	118
230	318	160
264	427	217
280	485	246
--	-	-

COSEL

Model	PBA15F-5
Item	Instantaneous Interruption Compensation
Object	+5V3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

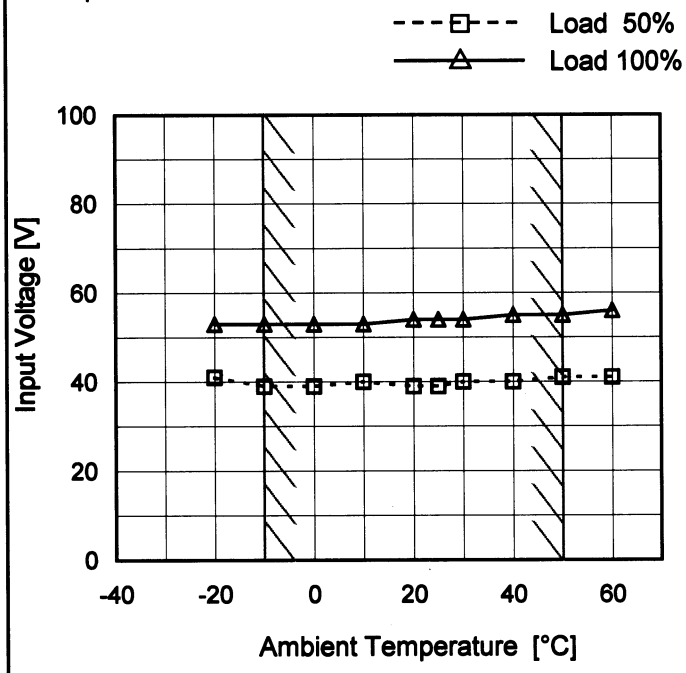
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
0.6	131	549	695
1.2	63	299	377
1.8	46	212	273
2.4	31	155	206
3.0	22	122	165
3.3	20	107	148
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA15F-5
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V3A

Testing Circuitry Figure A

1.Graph



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

2.Values

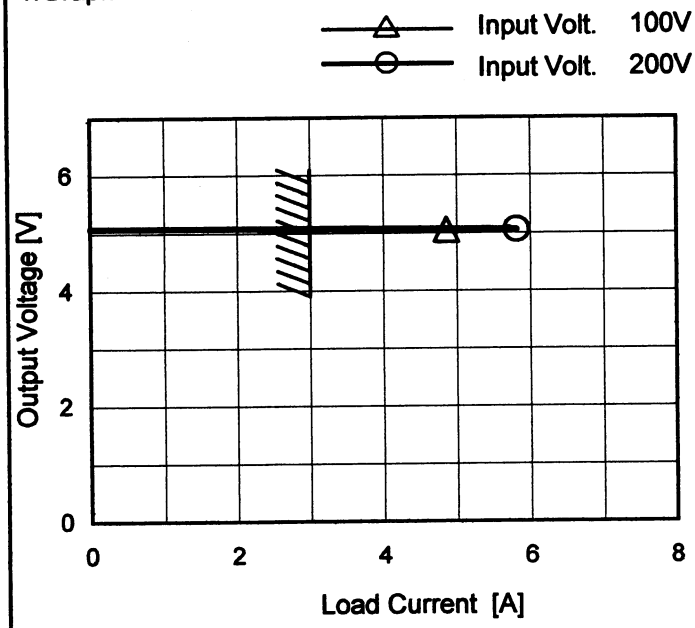
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	41	53
-10	39	53
0	39	53
10	40	53
20	39	54
25	39	54
30	40	54
40	40	55
50	41	55
60	41	56
--	-	-

COSEL

Model	PBA15F-5
Item	Overcurrent Protection
Object	+5V3A

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

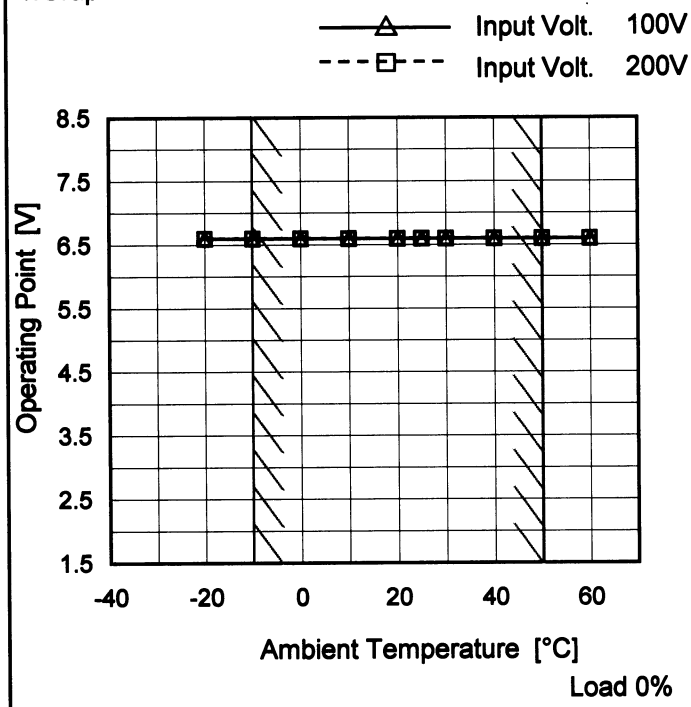
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
5.00	4.86	5.81
4.75	-	-
4.50	-	-
4.00	-	-
3.50	-	-
3.00	-	-
2.50	-	-
2.00	-	-
1.50	-	-
1.00	-	-
0.50	-	-
0.00	-	-

COSEL

Model	PBA15F-5
Item	Overvoltage Protection
Object	+5V3A

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	6.60	6.60
-10	6.60	6.60
0	6.60	6.60
10	6.60	6.60
20	6.60	6.60
25	6.60	6.60
30	6.60	6.60
40	6.60	6.60
50	6.60	6.60
60	6.60	6.60
--	-	-

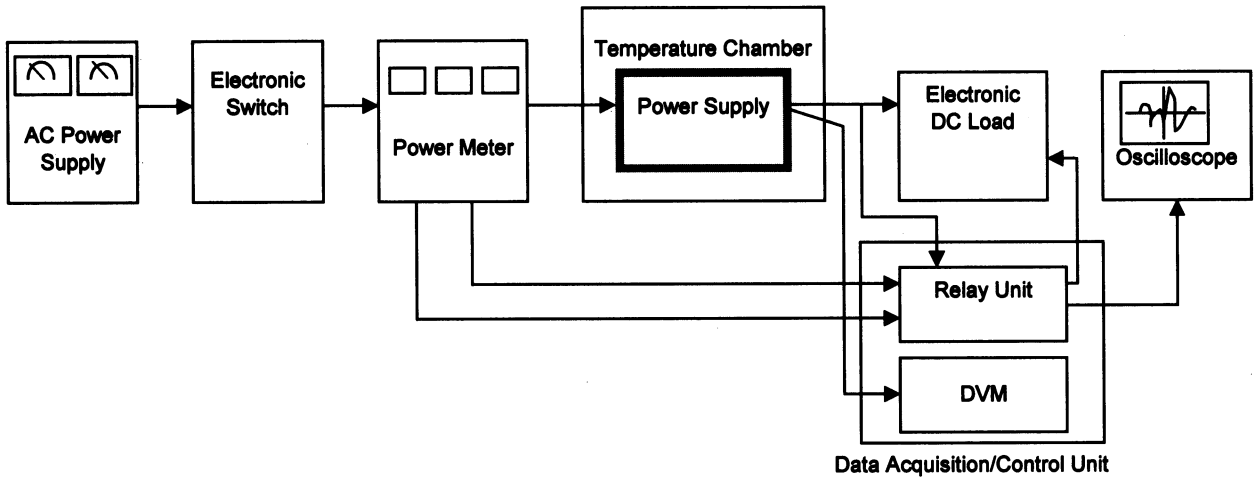


Figure A

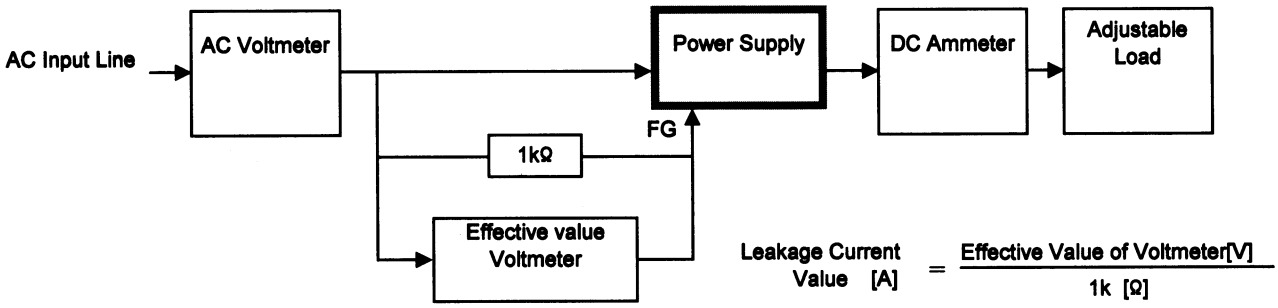


Figure B (DEN-AN)

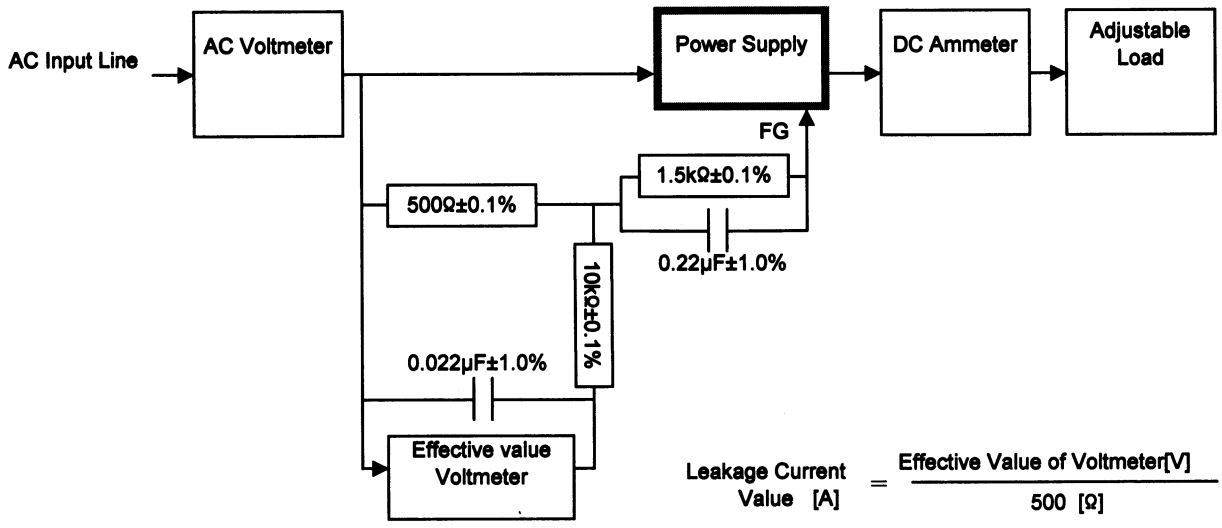


Figure B (IEC60950)