



TEST DATA OF PBA300F-48

Regulated DC Power Supply

May 27, 2004

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Prepared by : Hajime Goto Hajime Goto Design Engineer

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COSEL CO.,LTD.

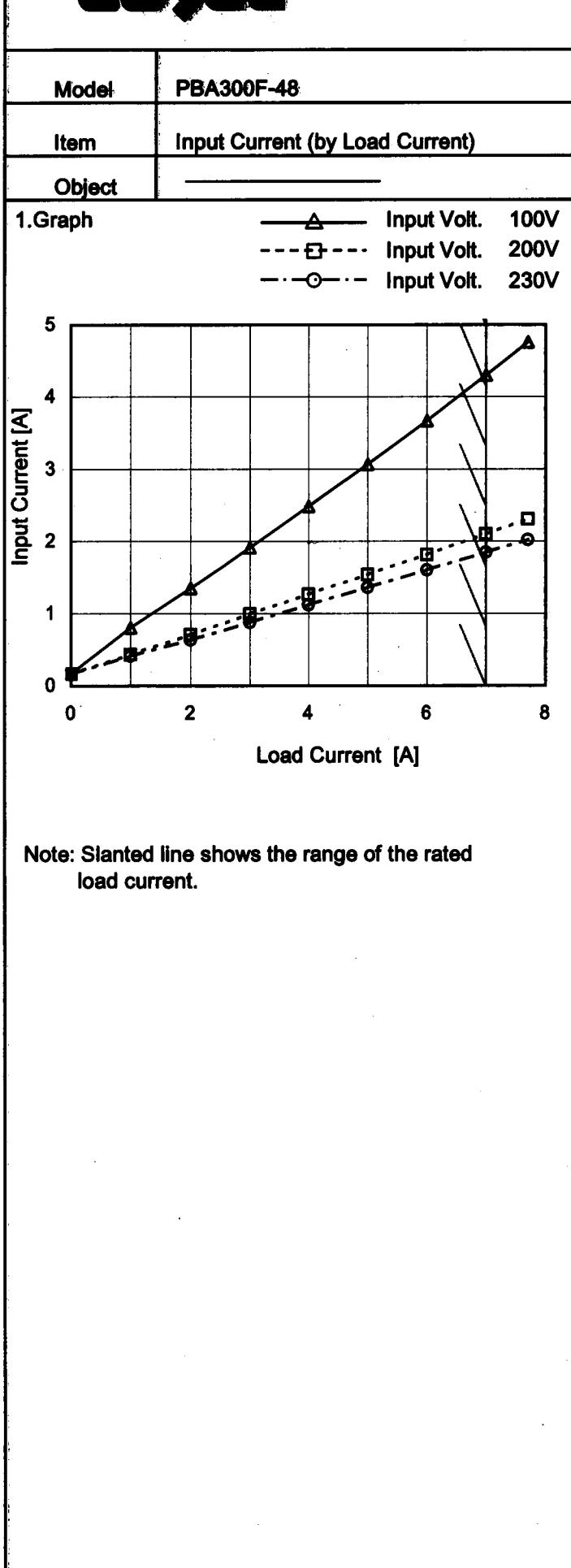


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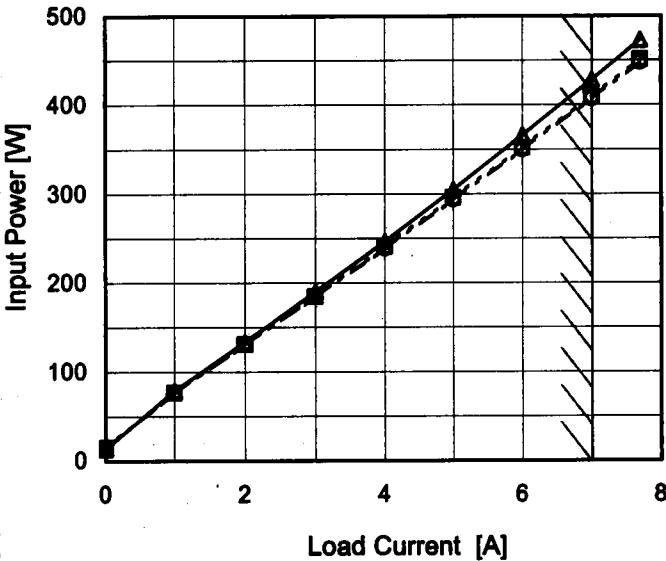


Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.168	0.164	0.160
1.0	0.804	0.436	0.412
2.0	1.352	0.708	0.634
3.0	1.914	0.996	0.876
4.0	2.484	1.268	1.122
5.0	3.068	1.540	1.362
6.0	3.670	1.818	1.602
7.0	4.300	2.102	1.848
7.7	4.760	2.308	2.022
-	-	-	-
-	-	-	-

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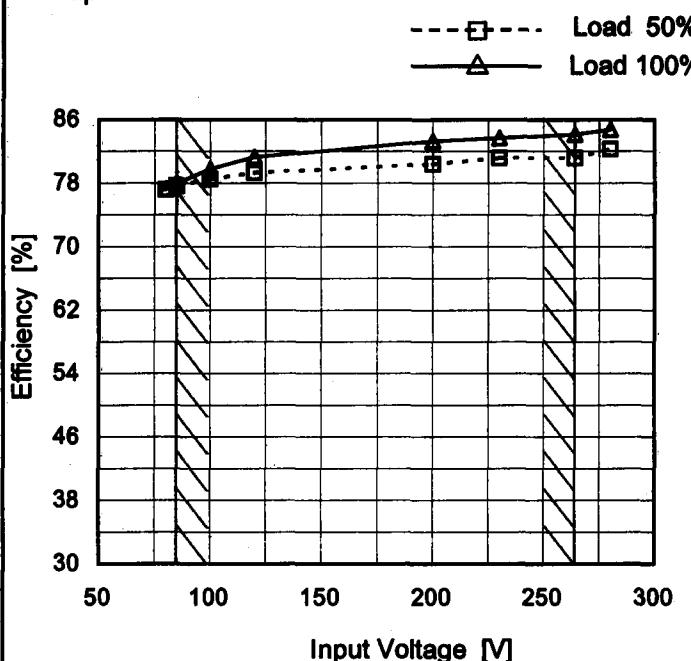
Model	PBA300F-48		
Item	Input Power (by Load Current)		
Object	_____		
1.Graph	<p>—△— Input Volt. 100V - -□--- Input Volt. 200V - -○--- Input Volt. 230V</p>  <p>The graph plots Input Power [W] on the Y-axis (0 to 500) against Load Current [A] on the X-axis (0 to 8). Three curves are shown for different input voltages: 100V (solid line with triangles), 200V (dashed line with squares), and 230V (dash-dot line with circles). All curves show a linear increase in power with load current. A slanted line is drawn across the graph, starting from approximately (0, 13.5) and ending at approximately (7.7, 473.0), representing the rated load current range.</p>		
Temperature	25°C	Testing Circuitry	Figure A
2.Values			
Load Current [A]	Input Power [W]		
	100[V]	200[V]	230[V]
0.0	13.5	15.0	14.0
1.0	78.6	77.0	77.0
2.0	133.8	131.0	131.0
3.0	189.9	185.0	185.0
4.0	246.9	241.0	239.0
5.0	305.1	296.0	294.0
6.0	366.0	352.0	350.0
7.0	428.0	409.0	407.0
7.7	473.0	451.0	448.0
--	-	-	-
--	-	-	-

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



Model	PBA300F-48
Item	Efficiency (by Input Voltage)
Object	—

1. Graph



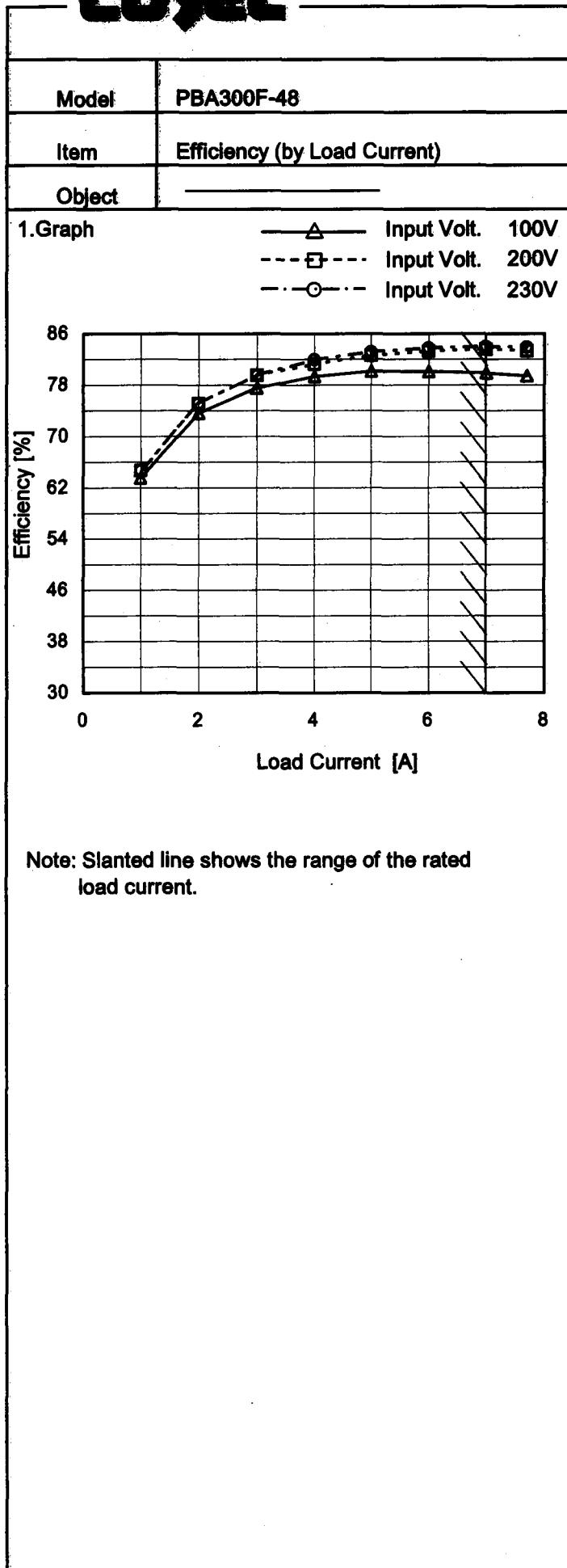
Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
80	77.2	77.3
85	77.7	78.0
100	78.5	79.8
120	79.3	81.3
200	80.4	83.3
230	81.2	83.7
264	81.2	84.1
280	82.3	84.8
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Temperature 25°C
Testing Circuitry Figure A

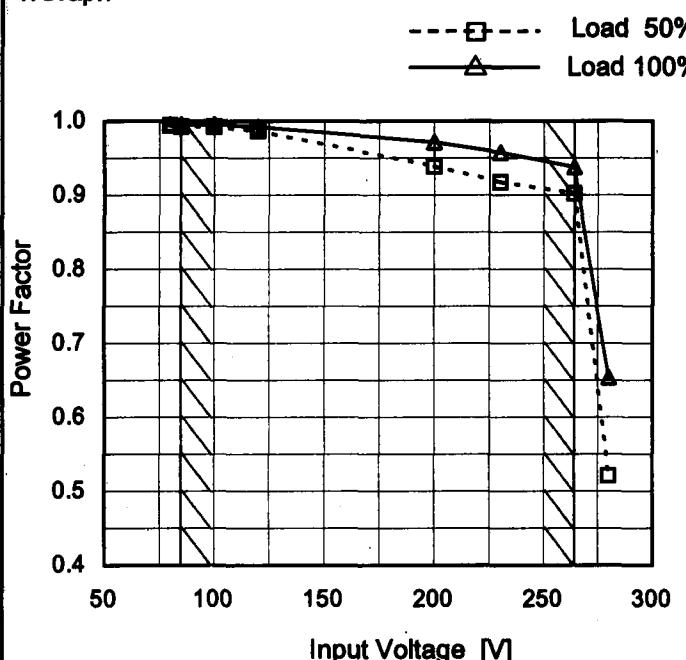
2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	63.6	64.7	64.7
2.0	73.7	75.2	75.2
3.0	77.5	79.6	79.6
4.0	79.4	81.3	82.0
5.0	80.2	82.6	83.2
6.0	80.1	83.3	83.8
7.0	79.9	83.6	84.0
7.7	79.5	83.3	83.9
--	-	-	-
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Model	PBA300F-48
Item	Power Factor (by Input Voltage)
Object	_____

1. Graph



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

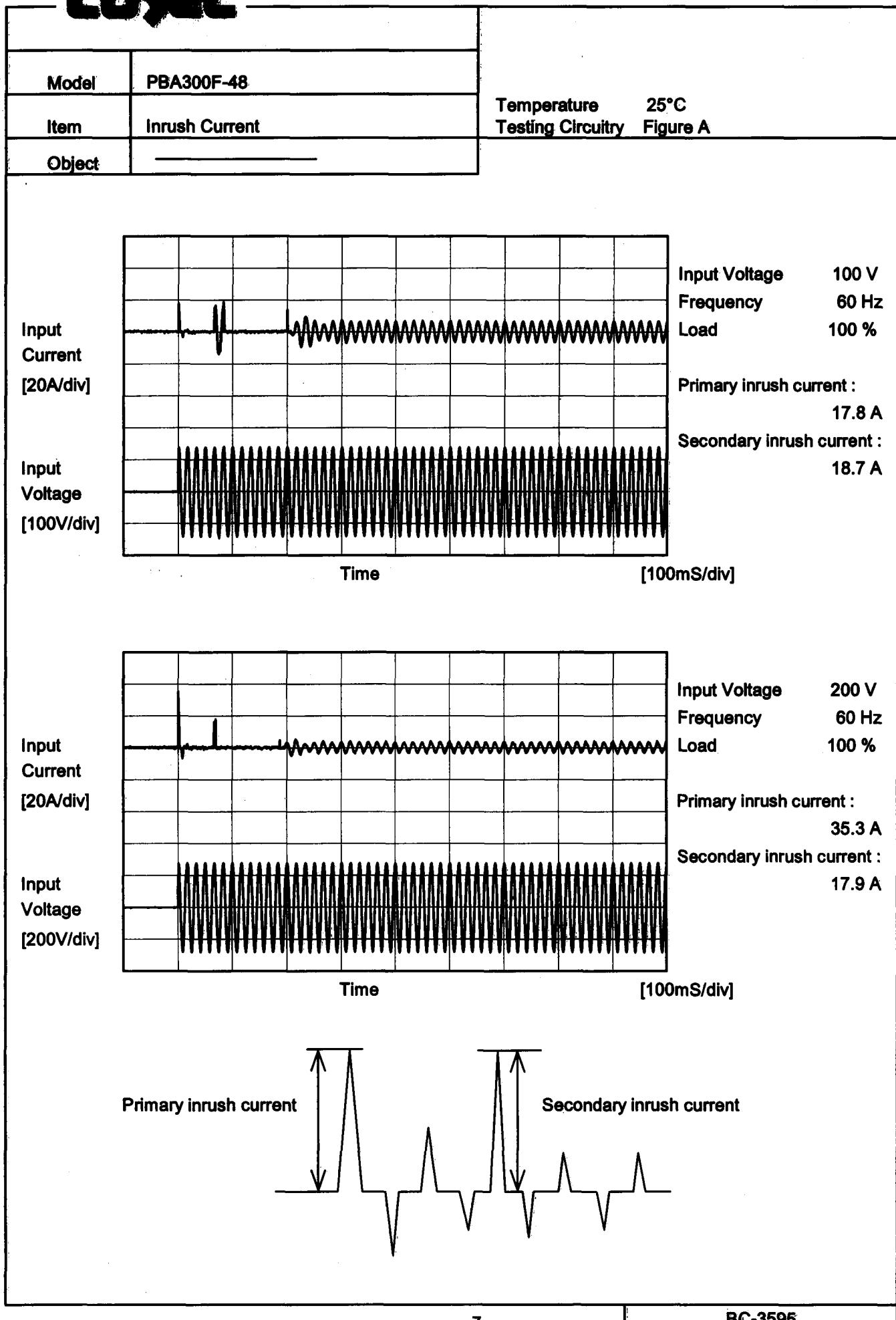
Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
80	0.994	0.996
85	0.992	0.995
100	0.992	0.995
120	0.987	0.992
200	0.939	0.972
230	0.918	0.958
264	0.902	0.938
280	0.521	0.654
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Model	PBA300F-48																																																					
Item	Power Factor (by Load Current)																																																					
Object	_____																																																					
1.Graph	<p style="text-align: center;"> △ Input Volt. 100V □ Input Volt. 200V ○ Input Volt. 230V </p> <table border="1"> <caption>Data points estimated from Figure A graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.799</td><td>0.455</td><td>0.378</td></tr> <tr><td>1.0</td><td>0.974</td><td>0.885</td><td>0.811</td></tr> <tr><td>2.0</td><td>0.987</td><td>0.923</td><td>0.897</td></tr> <tr><td>3.0</td><td>0.990</td><td>0.925</td><td>0.916</td></tr> <tr><td>4.0</td><td>0.992</td><td>0.949</td><td>0.923</td></tr> <tr><td>5.0</td><td>0.993</td><td>0.958</td><td>0.936</td></tr> <tr><td>6.0</td><td>0.995</td><td>0.964</td><td>0.949</td></tr> <tr><td>7.0</td><td>0.995</td><td>0.969</td><td>0.955</td></tr> <tr><td>7.7</td><td>0.994</td><td>0.974</td><td>0.961</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	0.799	0.455	0.378	1.0	0.974	0.885	0.811	2.0	0.987	0.923	0.897	3.0	0.990	0.925	0.916	4.0	0.992	0.949	0.923	5.0	0.993	0.958	0.936	6.0	0.995	0.964	0.949	7.0	0.995	0.969	0.955	7.7	0.994	0.974	0.961	--	-	-	-	--	-	-	-			
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Note:	Slanted line shows the range of the rated load current.																																																					

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Model	PBA300F-48	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	_____		

1. Results

[mA]

Standards		Input Volt.			Note
		100[V]	200[V]	240[V]	
DEN-AN	Both phases	0.14	0.25	0.29	Operation
	One of phase	0.23	0.45	0.54	stand by
IEC60950	Both phases	0.14	0.25	0.29	Operation
	One of phase	0.23	0.45	0.54	stand by

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

2. Condition

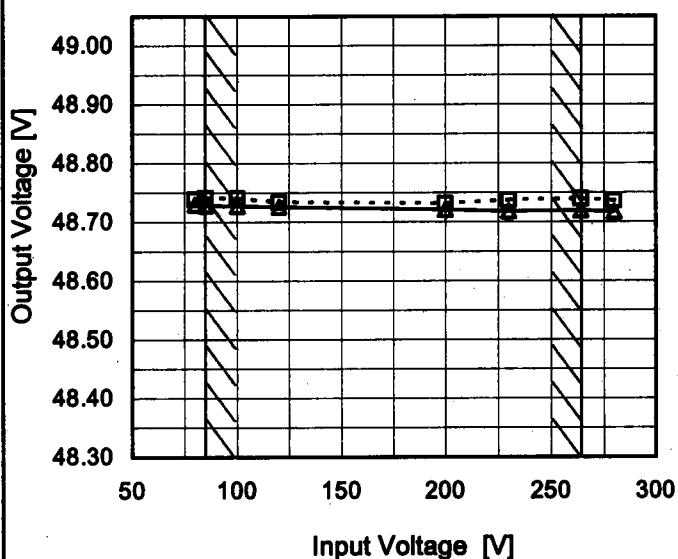
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Model	PBA300F-48
Item	Line Regulation
Object	+48V7A

1. Graph

---□--- Load 50%
 —△— Load 100%



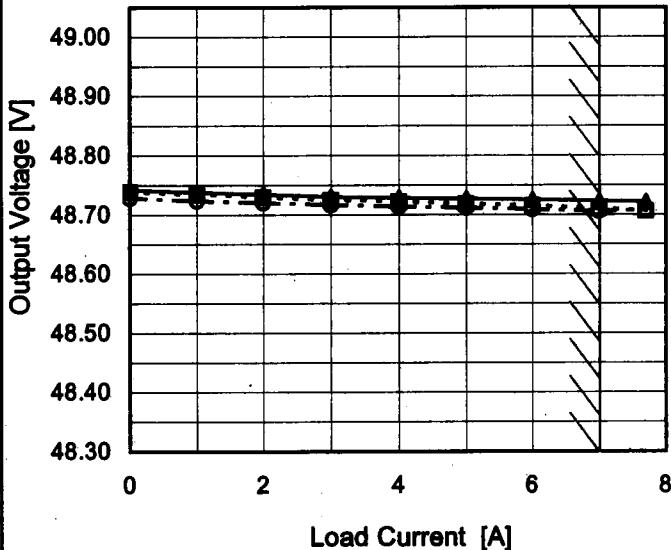
Note: Slanted line shows the range of the rated input voltage.

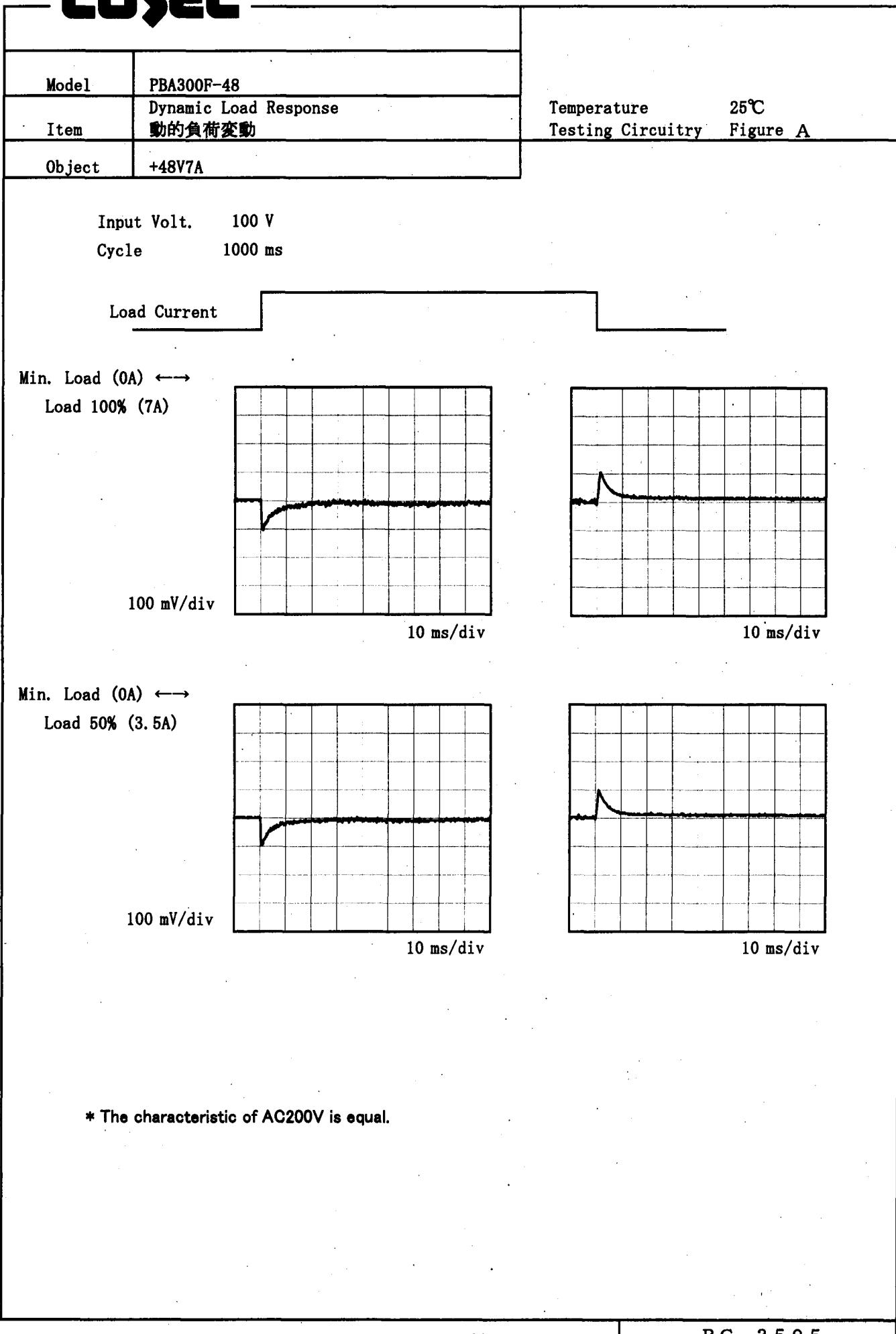
Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
80	48.740	48.730
85	48.742	48.729
100	48.741	48.728
120	48.735	48.726
200	48.732	48.722
230	48.738	48.719
264	48.740	48.720
280	48.737	48.718
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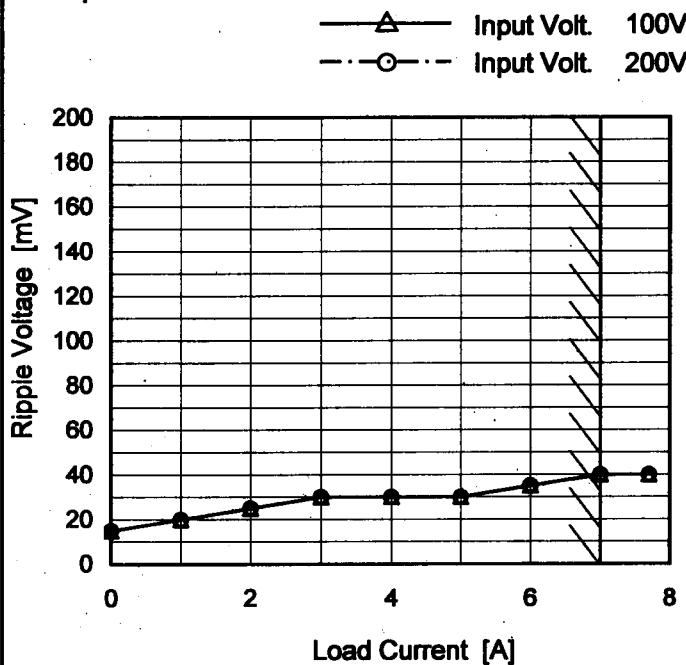
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Note:	Slanted line shows the range of the rated load current.																																																						

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Model	PBA300F-48
Item	Ripple Voltage (by Load Current)
Object	+48V7A

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	15	15
1.0	20	20
2.0	25	25
3.0	30	30
4.0	30	30
5.0	30	30
6.0	35	35
7.0	40	40
7.7	40	40
—	—	—
—	—	—

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

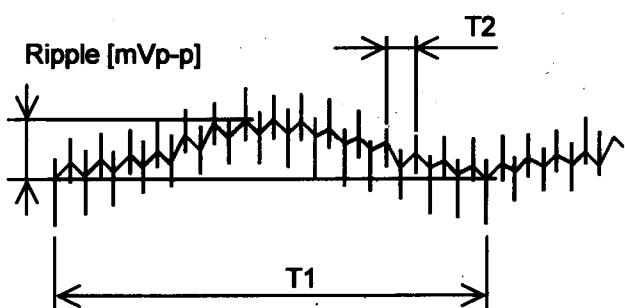


Fig. Complex Ripple Wave Form

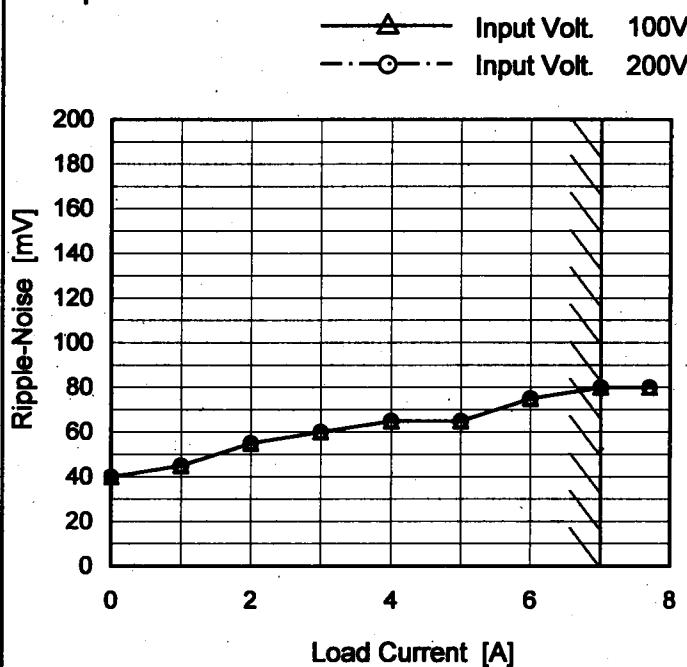
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Model PBA300F-48

Item Ripple-Noise

Object +48V7A

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	40	40
1.0	45	45
2.0	55	55
3.0	60	60
4.0	65	65
5.0	65	65
6.0	75	75
7.0	80	80
7.7	80	80
—	—	—
—	—	—

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

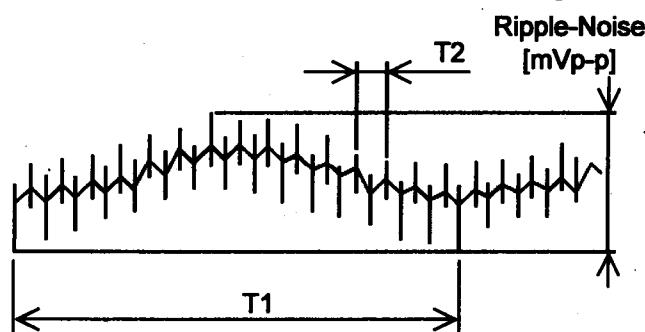
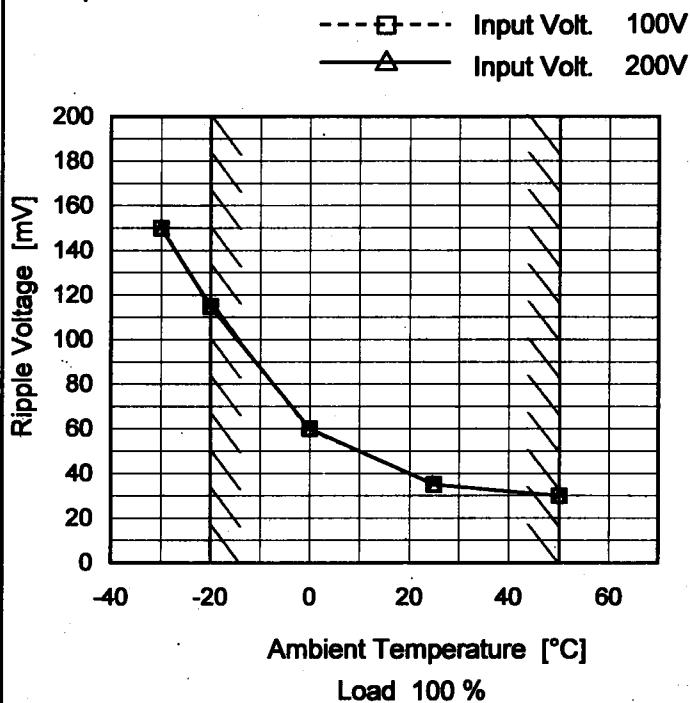


Fig. Complex Ripple Wave Form

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Model PBA300F-48
Item Ripple Voltage (by Ambient Temp.)
Object +48V7A
1. Graph

Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.
Testing Circuitry Figure A
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	150	150
-20	115	115
0	60	60
25	35	35
50	30	30
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

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Model	PBA300F-48																																																					
Item	Ambient Temperature Drift																																																					
Object	+48V7A																																																					
1.Graph	<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Legend: Input Volt. 100V (solid line with squares), Input Volt. 200V (dashed line with squares), Input Volt. 230V (dashed line with circles)</p>																																																					
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Note: Slanted line shows the range of the rated ambient temperature.



Model	PBA300F-48	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+48V7A	

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 - 7A

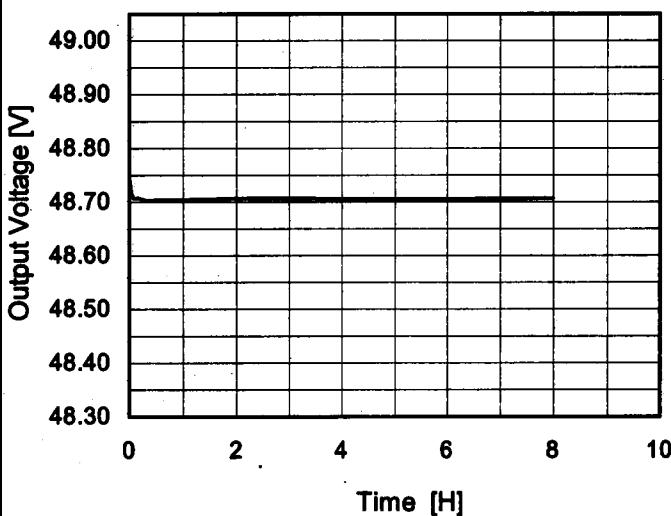
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	264	0	48.819	±125	±0.3
Minimum Voltage	50	264	7	48.570		

COSEL

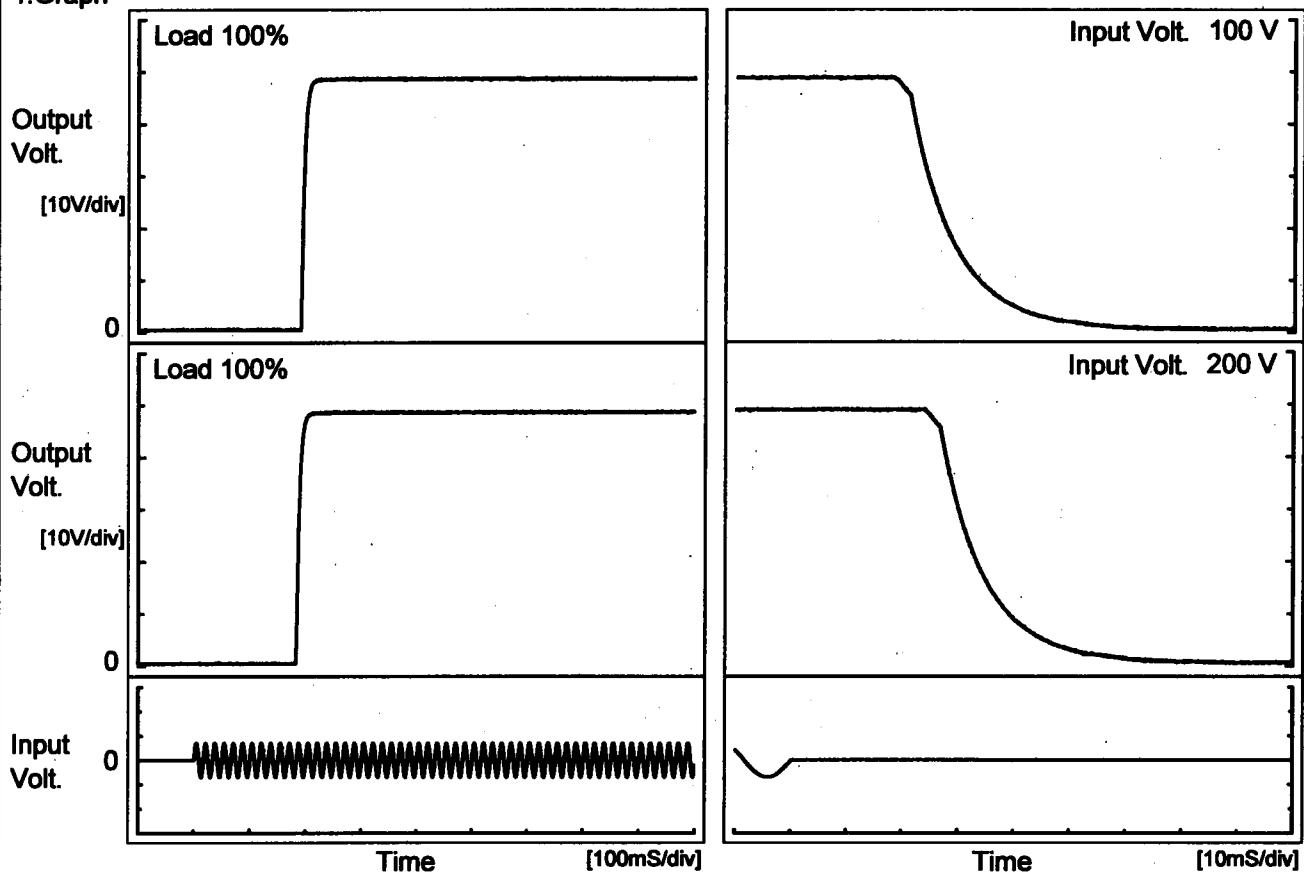
Model	PBA300F-48	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+48V7A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>48.745</td></tr> <tr><td>0.5</td><td>48.704</td></tr> <tr><td>1.0</td><td>48.705</td></tr> <tr><td>2.0</td><td>48.707</td></tr> <tr><td>3.0</td><td>48.707</td></tr> <tr><td>4.0</td><td>48.707</td></tr> <tr><td>5.0</td><td>48.706</td></tr> <tr><td>6.0</td><td>48.706</td></tr> <tr><td>7.0</td><td>48.706</td></tr> <tr><td>8.0</td><td>48.707</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	48.745	0.5	48.704	1.0	48.705	2.0	48.707	3.0	48.707	4.0	48.707	5.0	48.706	6.0	48.706	7.0	48.706	8.0	48.707
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8.0	48.707																								

COSEL

Model	PBA300F-48
Item	Rise and Fall Time
Object	+48V7A

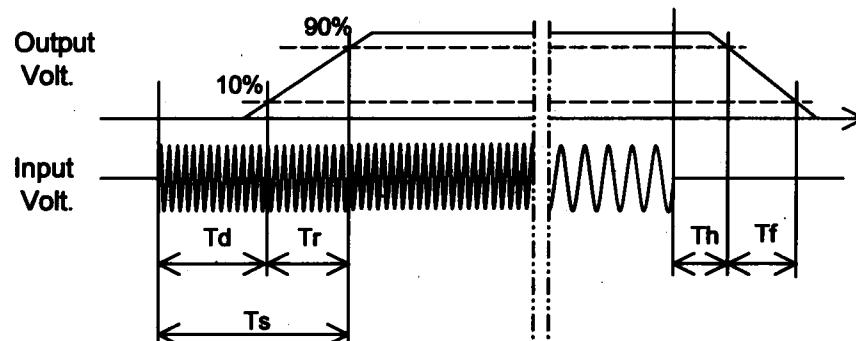
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

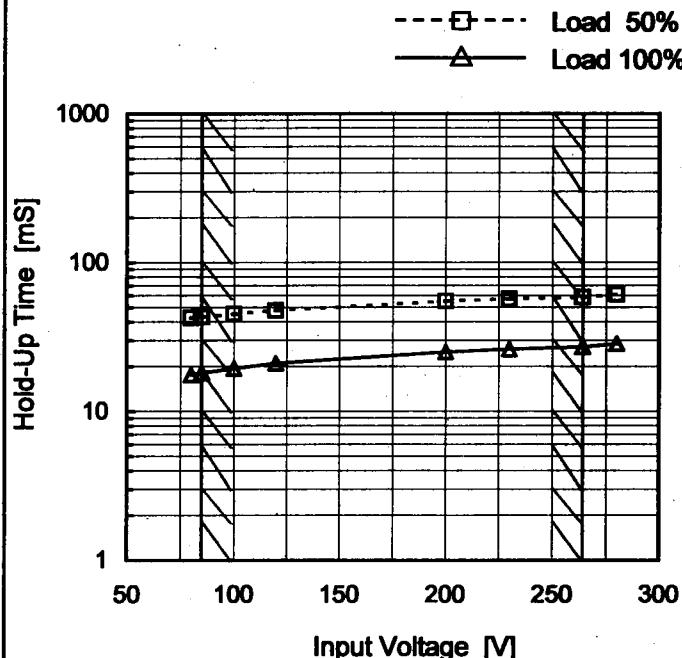
Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]
100 V		191.5	11.5	203.0	21.6	18.0	
200 V		183.5	11.5	195.0	27.2	17.8	



COSEL

Model	PBA300F-48
Item	Hold-Up Time
Object	+48V7A

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.

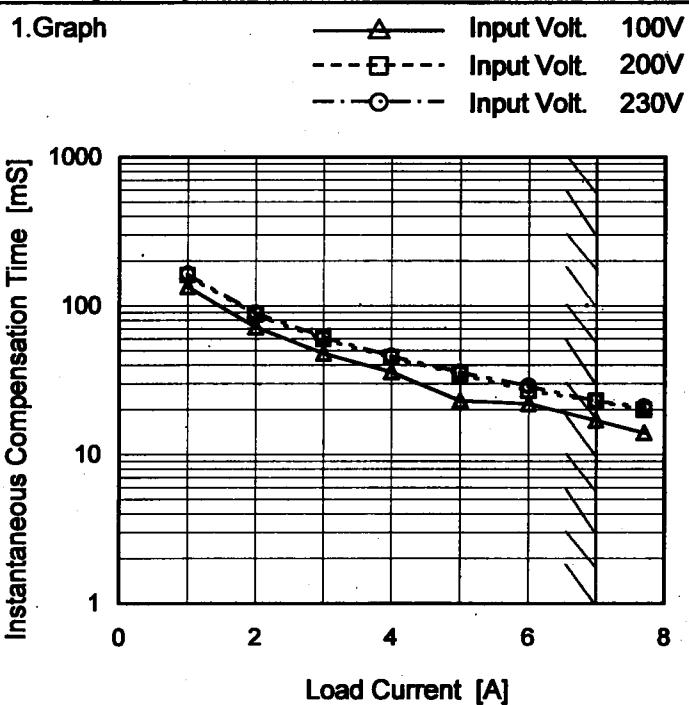
Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
80	43	18
85	43	18
100	45	19
120	48	21
200	55	25
230	57	26
264	58	27
280	61	29
-	-	-

COSEL

Model	PBA300F-48
Item	Instantaneous Interruption Compensation
Object	+48V7A



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

Temperature 25°C
Testing Circuitry Figure A

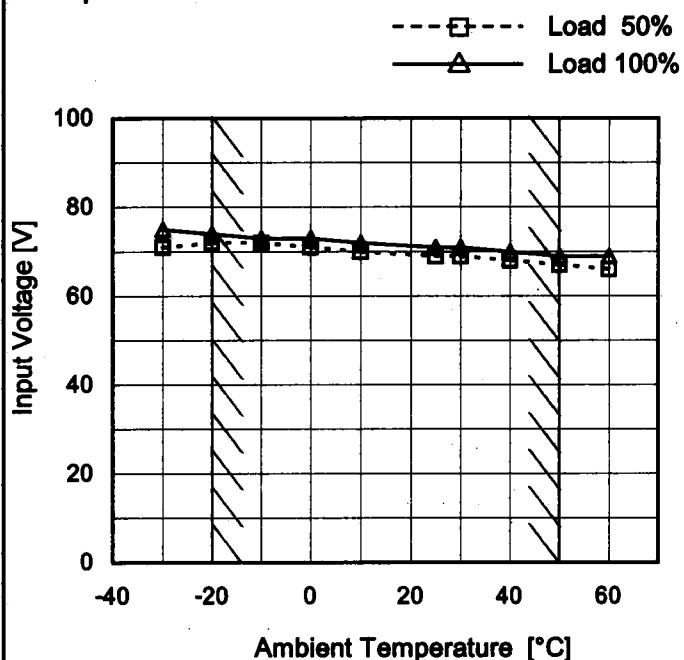
2. Values

Load Current [A]	Time [mS]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	135	161	165
2.0	72	88	90
3.0	48	60	62
4.0	36	45	46
5.0	23	35	36
6.0	22	27	29
7.0	17	23	23
7.7	14	20	21
-	-	-	-
-	-	-	-

COSEL

Model	PBA300F-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V7A

1.Graph



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

Testing Circuitry Figure A

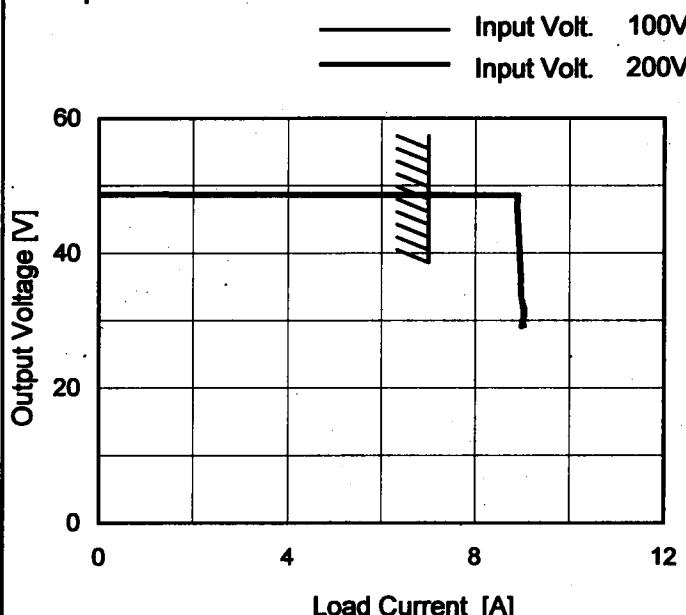
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	71	75
-20	72	74
-10	72	73
0	71	73
10	70	72
25	69	71
30	69	71
40	68	70
50	67	69
60	66	69
--	-	-

COSEL

Model	PBA300F-48
Item	Overcurrent Protection
Object	+48V7A

1. Graph



Intermittent operation occurs when the output voltage is from 28.8V to 0V.

Temperature 25°C
Testing Circuitry Figure A

2. Values

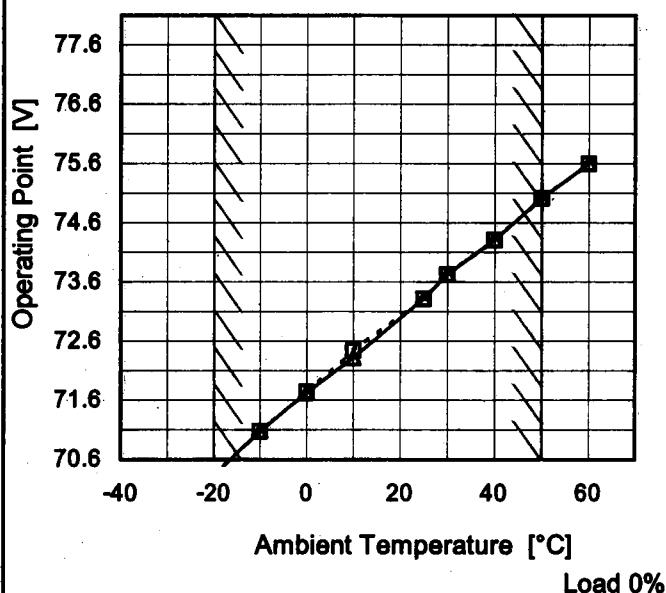
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
48.0	8.89	8.90
45.6	8.89	8.90
43.2	8.91	8.92
38.4	8.96	8.96
33.6	8.99	8.98
28.8	9.08	9.00
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA300F-48
Item	Overvoltage Protection
Object	+48V7A

1.Graph:

—▲— Input Volt. 100V
 - - - □ - - Input Volt. 200V



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-30	69.73	69.73
-20	70.37	70.37
-10	71.12	71.12
0	71.77	71.78
10	72.36	72.48
25	73.36	73.36
30	73.77	73.77
40	74.35	74.35
50	75.06	75.06
60	75.64	75.64
--	-	-

COSEL

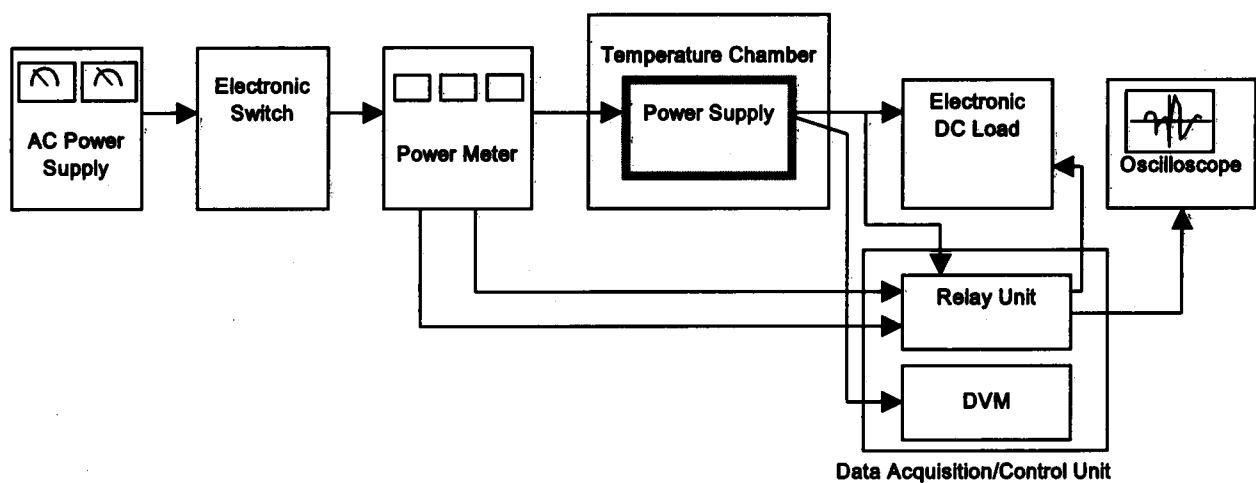


Figure A

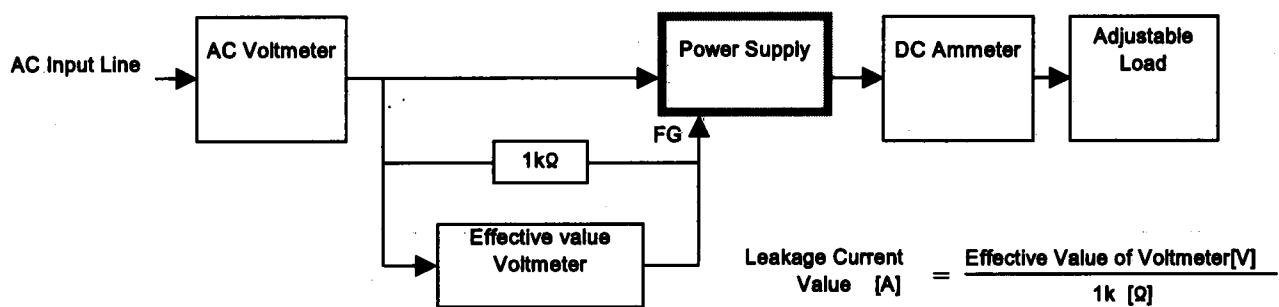


Figure B (DEN-AN)

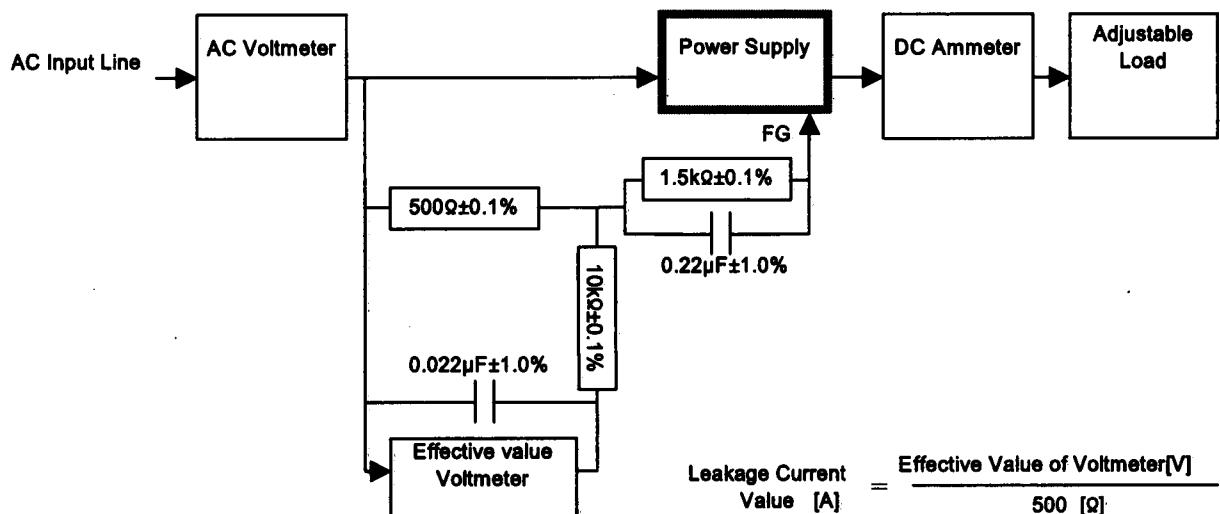


Figure B (IEC60950)