



TEST DATA OF PBA150F-9

Regulated DC Power Supply
Apr.8. 2004

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Kuniaki Nagahara Design Manager

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Tetsuo Koide Design Engineer

COSEL CO.,LTD.



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	PBA150F-9	Temperature	25°C																																																			
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																																			
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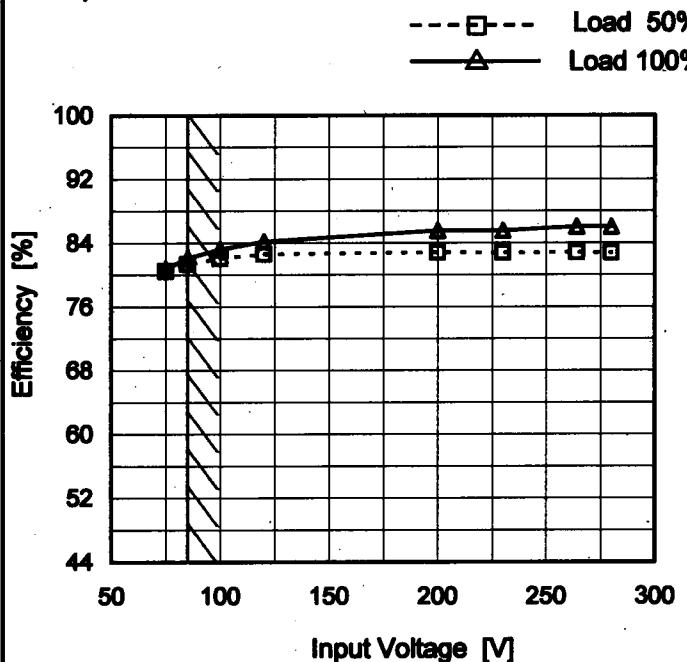
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Model	PBA150F-9
Item	Efficiency (by Input Voltage)
Object	—

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%
75	80.5	80.8
85	81.4	82.1
100	82.1	83.2
120	82.6	84.2
200	82.8	85.5
230	82.8	85.5
264	82.8	86.0
280	82.8	86.0
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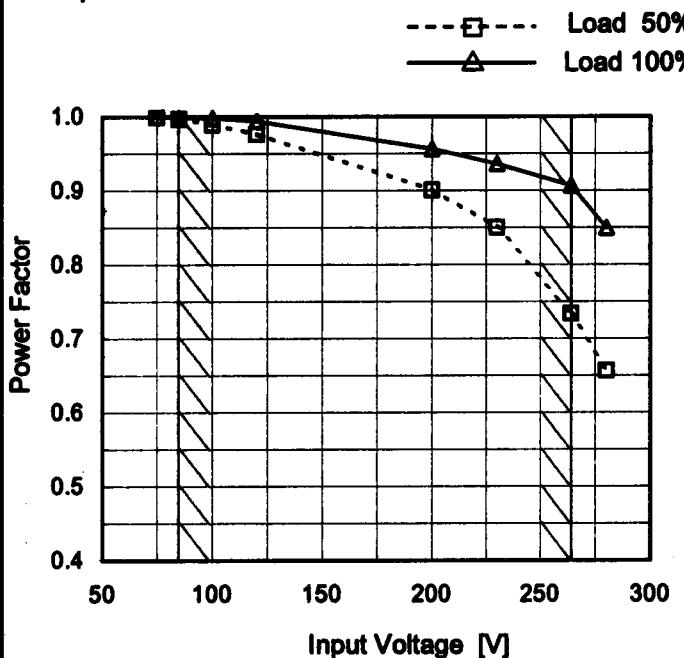
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Model	PBA150F-9
Item	Power Factor (by Input Voltage)
Object	—

1. Graph



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

Temperature 25°C
Testing Circuitry Figure A

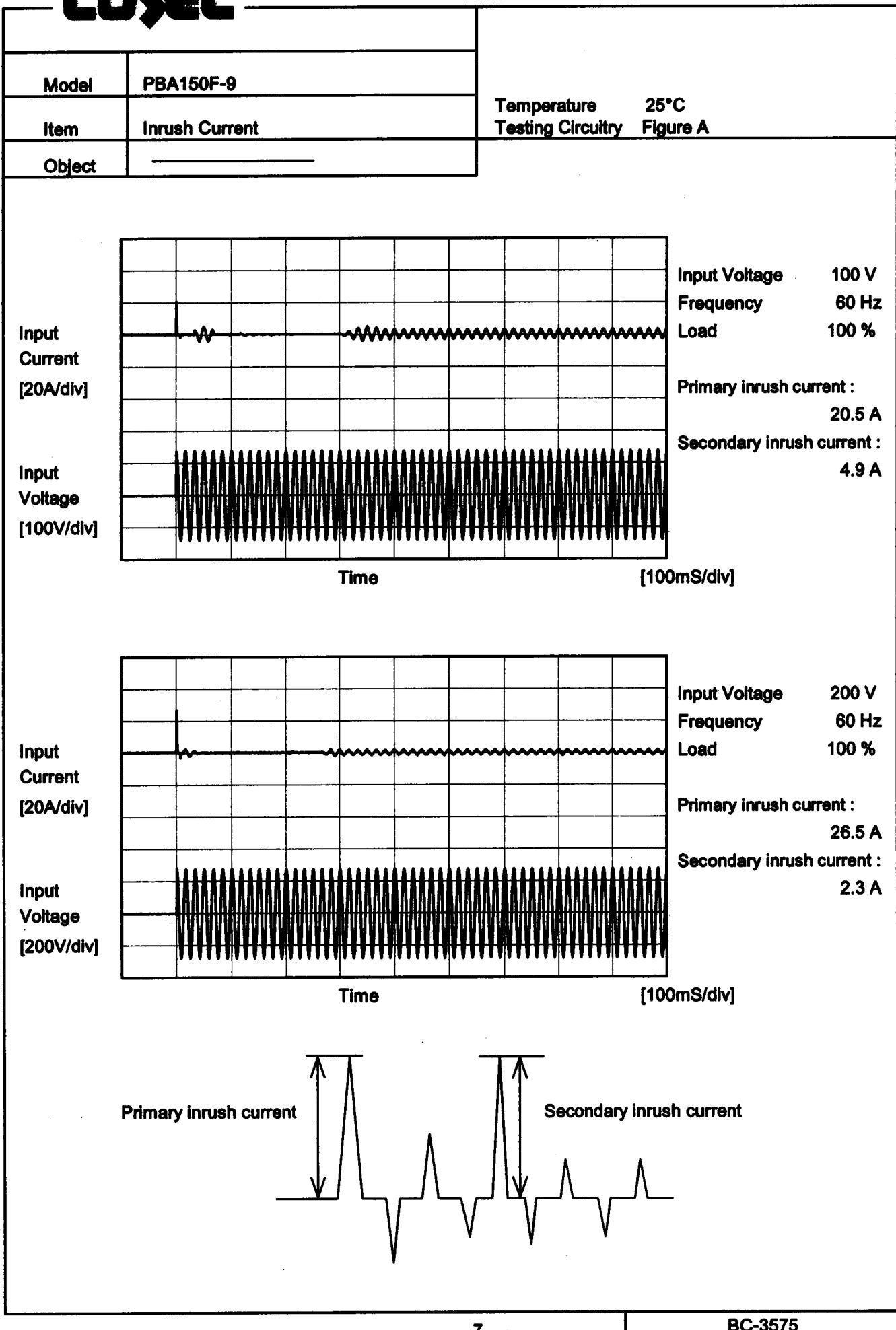
2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.999	0.999
85	0.997	0.999
100	0.989	0.998
120	0.976	0.994
200	0.901	0.957
230	0.850	0.936
264	0.734	0.907
280	0.657	0.850
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Model	PBA150F-9	Temperature Testing Circuitry	25°C Figure A																																		
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Note: Slanted line shows the range of the rated load current.

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Model	PBA150F-9	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.19	0.37	0.43	Operation
	One of phase	0.27	0.54	0.62	stand by
IEC60950	Both phases	0.19	0.38	0.48	Operation
	One of phase	0.27	0.58	0.71	stand by

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

2. Condition

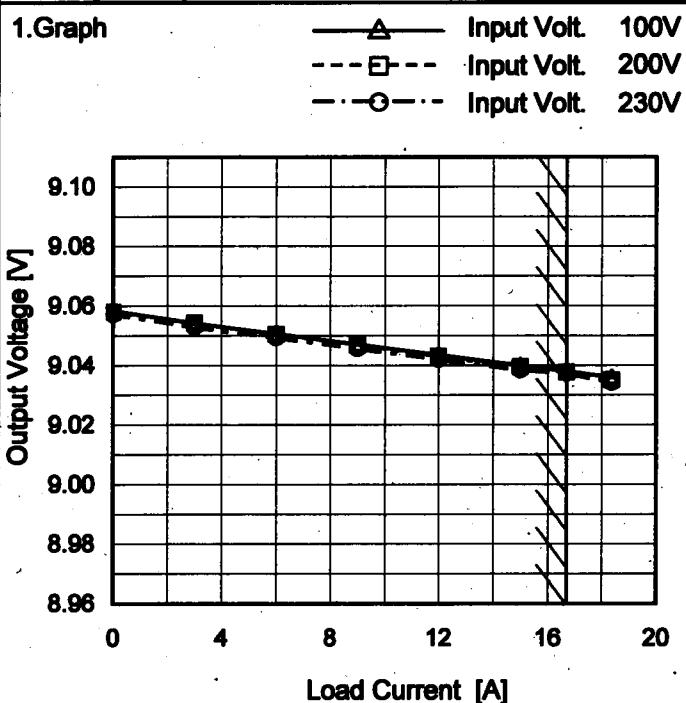
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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		<p style="text-align: center;">---□--- Load 50% —△— Load 100%</p>																														
		<p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Output Voltage [V] Load 50%</th> <th>Output Voltage [V] Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>9.045</td><td>9.036</td></tr> <tr><td>85</td><td>9.045</td><td>9.036</td></tr> <tr><td>100</td><td>9.045</td><td>9.036</td></tr> <tr><td>120</td><td>9.045</td><td>9.035</td></tr> <tr><td>200</td><td>9.046</td><td>9.036</td></tr> <tr><td>230</td><td>9.045</td><td>9.036</td></tr> <tr><td>264</td><td>9.045</td><td>9.035</td></tr> <tr><td>280</td><td>9.045</td><td>9.034</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	75	9.045	9.036	85	9.045	9.036	100	9.045	9.036	120	9.045	9.035	200	9.046	9.036	230	9.045	9.036	264	9.045	9.035	280	9.045	9.034	--	-	-
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																														
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230	9.045	9.036																														
264	9.045	9.035																														
280	9.045	9.034																														
--	-	-																														
Note: Slanted line shows the range of the rated input voltage.																																

COSEL

Model	PBA150F-9
Item	Load Regulation
Object	+9V16.7A



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

Temperature 25°C
Testing Circuitry Figure A

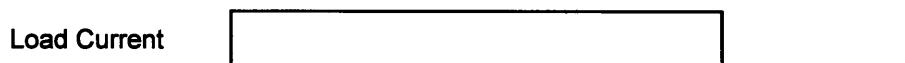
2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	9.058	9.058	9.057
3.00	9.054	9.054	9.053
6.00	9.051	9.051	9.049
9.00	9.047	9.047	9.046
12.00	9.044	9.043	9.042
15.00	9.040	9.040	9.038
16.70	9.038	9.038	9.037
18.37	9.036	9.035	9.034
-	-	-	-
-	-	-	-
-	-	-	-

COSEL

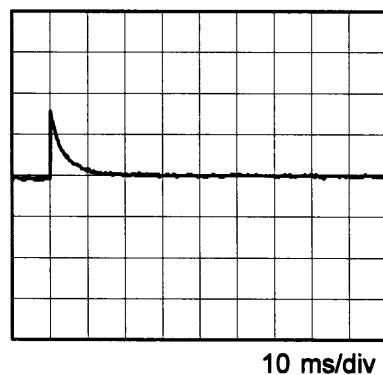
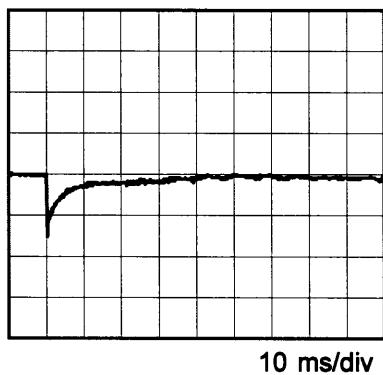
Model	PBA150F-9	Temperature Testing Circuitry 25°C Figure A
Item	Dynamic Load Response	
Object	+9V16.7A	

Input Volt. 100 V
 Cycle 1000 ms



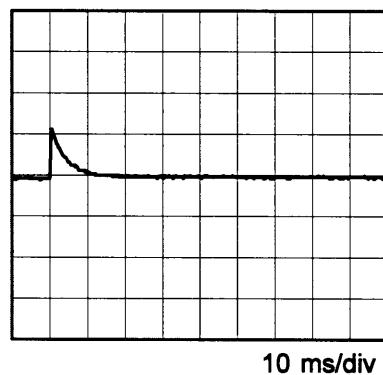
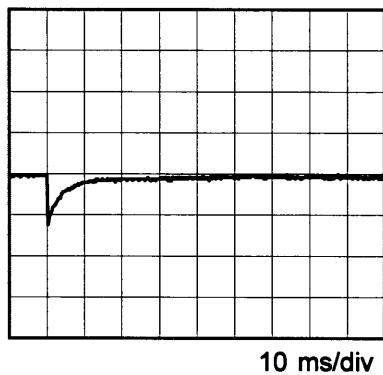
Min. Load (0A) ↔

Load 100% (16.7A)



Min. Load (0A) ↔

Load 50% (8.35A)



* The characteristic of AC200V is equal.

COSEL

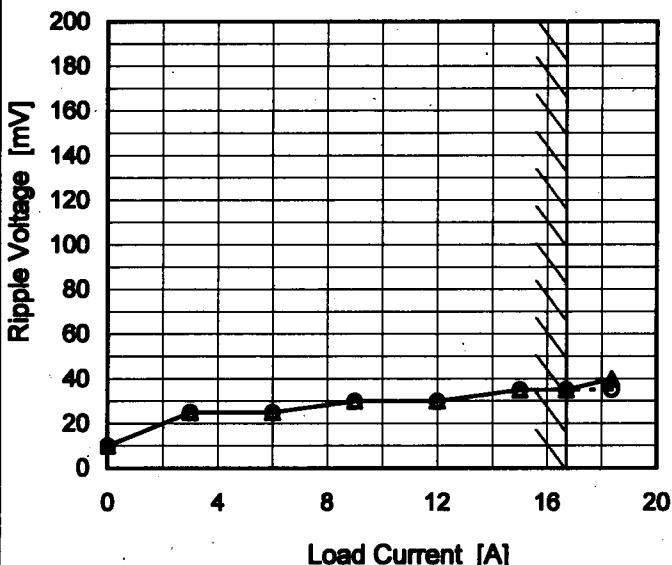
Model PBA150F-9

Item Ripple Voltage (by Load Current)

Object +9V16.7A

1. Graph

—△— Input Volt. 100V
 - -○-- Input Volt. 200V



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]
0.00	10	10
3.00	25	25
6.00	25	25
9.00	30	30
12.00	30	30
15.00	35	35
16.70	35	35
18.37	40	35
-	-	-
-	-	-
-	-	-

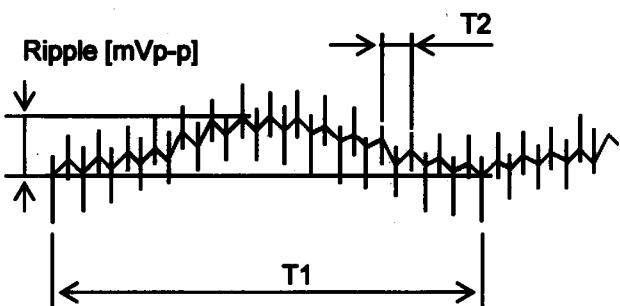
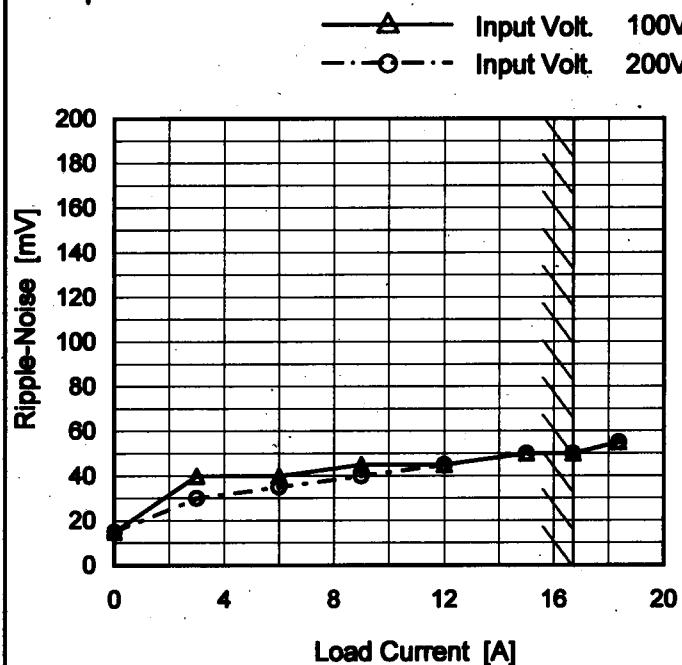
 T1: Due to AC Input Line
 T2: Due to Switching


Fig. Complex Ripple Wave Form

COSEL

Model	PBA150F-9
Item	Ripple-Noise
Object	+9V16.7A

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]
0.00	15	15
3.00	40	30
6.00	40	35
9.00	45	40
12.00	45	45
15.00	50	50
16.70	50	50
18.37	55	55
-	-	-
-	-	-
-	-	-

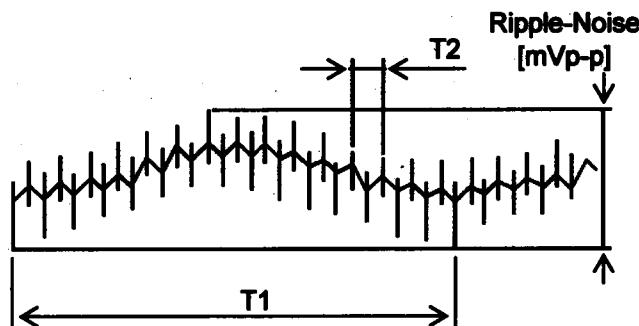
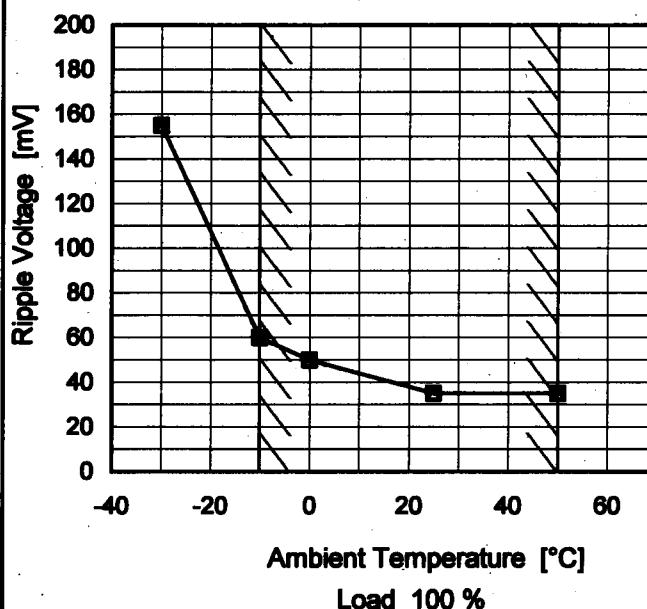
T1: Due to AC Input Line
T2: Due to Switching

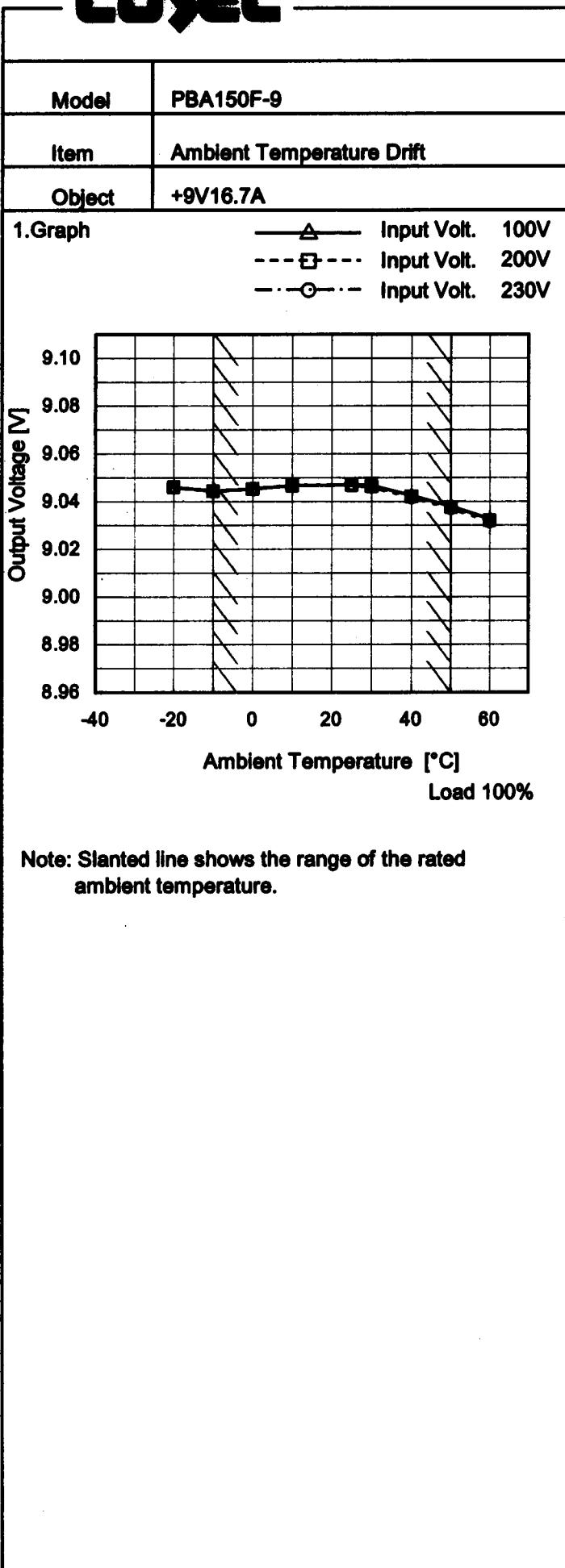
Fig. Complex Ripple Wave Form

COSEL
Model PBA150F-9
Item Ripple Voltage (by Ambient Temp.)
Object +9V16.7A
1. Graph

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


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	155	155
-10	60	60
0	50	50
25	35	35
50	35	35
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COREL

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	9.046	9.046	9.046
-10	9.045	9.044	9.044
0	9.045	9.045	9.045
10	9.047	9.047	9.047
25	9.047	9.047	9.047
30	9.047	9.046	9.046
40	9.043	9.042	9.042
50	9.038	9.038	9.037
60	9.033	9.032	9.031
--	-	-	-
--	-	-	-



Model	PBA150F-9	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+9V16.7A	

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 - 16.7A

* 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	85	0	9.067	±17	±0.2
Minimum Voltage	50	264	16.7	9.034		

COSEL

Model	PBA150F-9
Item	Time Lapse Drift
Object	+9V16.7A

1.Graph

Time since start [H]	Output Voltage [V]
0.0	9.043
0.5	9.036
1.0	9.037
2.0	9.037
3.0	9.037
4.0	9.037
5.0	9.037
6.0	9.037
7.0	9.037
8.0	9.038

Output Voltage [V]

Time [H]

Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

Temperature 25°C
Testing Circuitry Figure A

2.Values

Time since start [H]	Output Voltage [V]
0.0	9.043
0.5	9.036
1.0	9.037
2.0	9.037
3.0	9.037
4.0	9.037
5.0	9.037
6.0	9.037
7.0	9.037
8.0	9.038

COSEL

Model	PBA150F-9	Temperature Testing Circuitry	25°C Figure A
Item	Rise and Fall Time		
Object	+9V16.7A		

1. Graph

Output Volt. [1V/div]	Load 100%	Input Volt. 100 V
Output Volt. [1V/div]	Load 100%	Input Volt. 200 V
Input Volt.		

Time [100mS/div] Time [10mS/div]

2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]
100 V		316.0	6.5	322.5	21.6	12.1	
200 V		263.0	6.5	269.5	28.3	12.3	

Output Volt.
Input Volt.

Td, Tr, Ts, Th, Tf

COSEL

Model	PBA150F-9
Item	Hold-Up Time
Object	+9V16.7A

1. Graph

Legend: ---□--- Load 50%
—△— Load 100%

Input Voltage [V]	Hold-Up Time [ms] (Load 50%)	Hold-Up Time [ms] (Load 100%)
75	40	14
85	44	17
100	47	20
120	50	22
200	56	26
230	58	27
264	58	28
280	58	29
-	-	-

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%
75	40	14
85	44	17
100	47	20
120	50	22
200	56	26
230	58	27
264	58	28
280	58	29
-	-	-

COSEL

Model	PBA150F-9	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+9V16.7A																																																					
1.Graph	<p>—▲— Input Volt. 100V - - -□- - Input Volt. 200V - - ○- - Input Volt. 230V</p>																																																					
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Time [mS]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3.00</td><td>106</td><td>147</td><td>152</td></tr> <tr><td>6.00</td><td>65</td><td>77</td><td>79</td></tr> <tr><td>9.00</td><td>42</td><td>50</td><td>52</td></tr> <tr><td>12.00</td><td>30</td><td>37</td><td>38</td></tr> <tr><td>15.00</td><td>22</td><td>29</td><td>30</td></tr> <tr><td>16.70</td><td>20</td><td>26</td><td>27</td></tr> <tr><td>18.37</td><td>15</td><td>23</td><td>23</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</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]	Time [mS]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	3.00	106	147	152	6.00	65	77	79	9.00	42	50	52	12.00	30	37	38	15.00	22	29	30	16.70	20	26	27	18.37	15	23	23	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [mS]																																																					
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18.37	15	23	23																																																			
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Note: Slanted line shows the range of the rated load current.

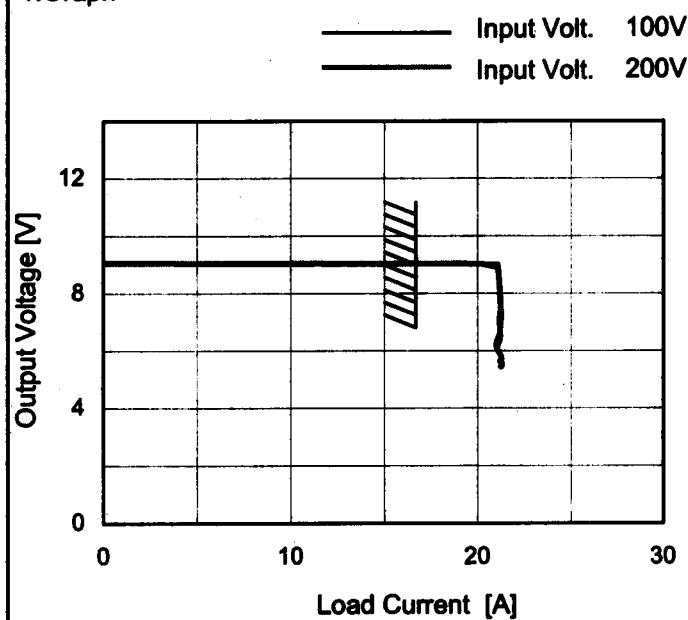
COSEL

Model	PBA150F-9																																							
Item	Minimum Input Voltage for Regulated Output Voltage																																							
Object	+9V16.7A																																							
1. Graph																																								
<p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Legend:</p> <ul style="list-style-type: none"> Load 50% (dashed line with square markers) Load 100% (solid line with triangle markers) 																																								
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								
Testing Circuitry Figure A																																								
2. Values																																								
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Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-20	47	65																																						
-10	47	65																																						
0	47	65																																						
10	47	65																																						
25	47	65																																						
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60	47	65																																						
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--	-	-																																						

COSEL

Model	PBA150F-9
Item	Overcurrent Protection
Object	+9V16.7A

1. Graph



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

Intermittent operation occurs when the output voltage is from 5.4V to 0V.

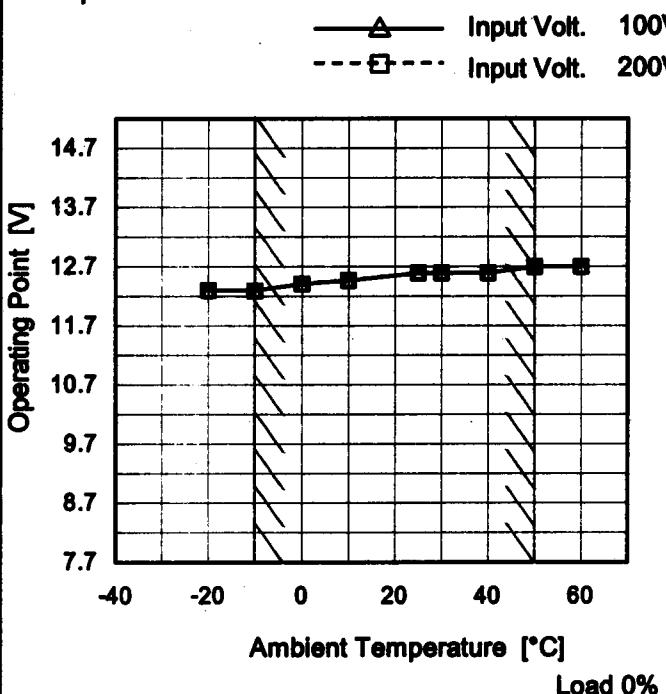
Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
9.00	17.21	17.19
8.55	21.18	21.12
8.10	21.24	21.17
7.20	21.29	21.18
6.30	21.19	21.00
5.40	21.33	21.23
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA150F-9
Item	Overvoltage Protection
Object	+9V16.7A

1. Graph

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]
-20	12.31	12.31
-10	12.31	12.30
0	12.42	12.42
10	12.48	12.48
25	12.60	12.60
30	12.60	12.60
40	12.60	12.60
50	12.71	12.71
60	12.71	12.71
--	-	-
--	-	-

COSEL

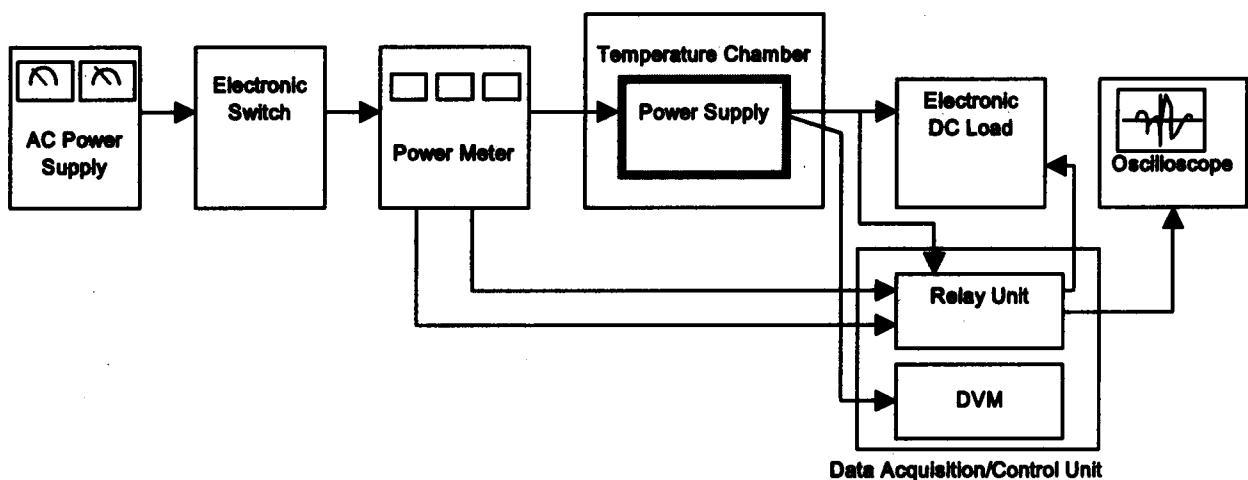


Figure A

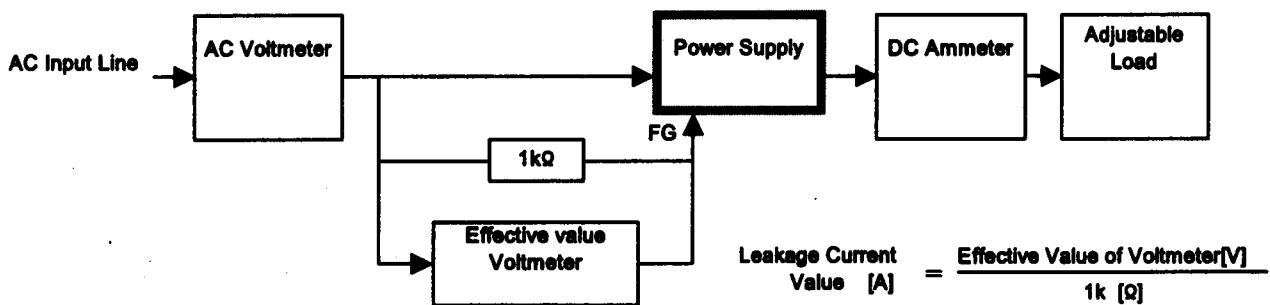


Figure B (DEN-AN)

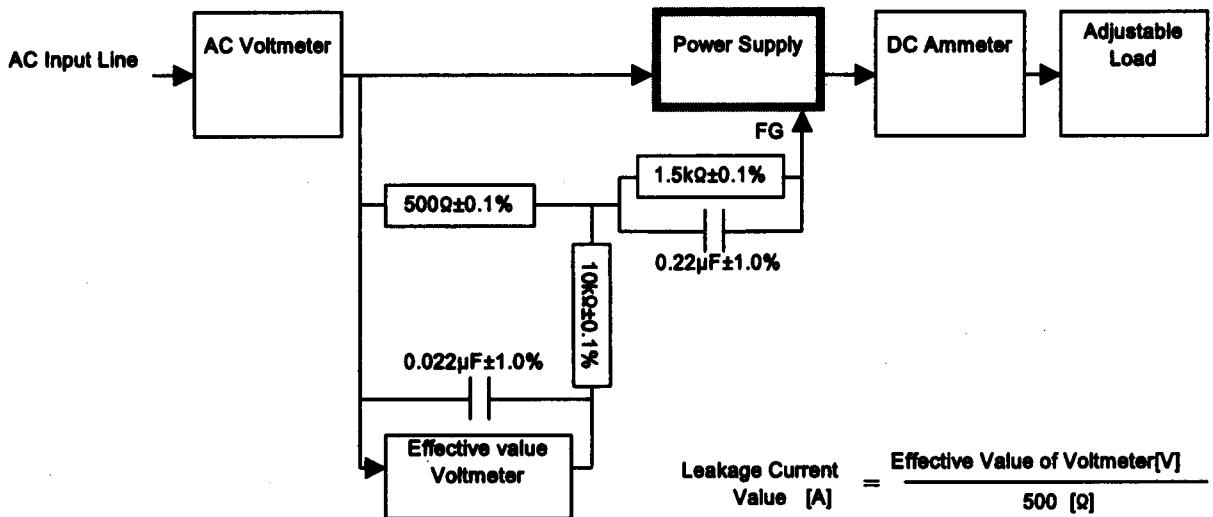


Figure B (IEC60950)