



TEST DATA OF PBA600F-3R3

Regulated DC Power Supply
Sep.27. 2003

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Kuniaki Nagahara Design Manager

Prepared by : Haruki Morita
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COSEL CO.,LTD.



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Model	PBA600F-3R3	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Input Current (by Load Current)																																																					
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Object	_____																																		
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<p>The graph plots Efficiency [%] on the y-axis (44 to 100) against Input Voltage [V] on the x-axis (50 to 300). Two data series are shown: Load 50% (dashed line with open squares) and Load 100% (solid line with open triangles). Both series show efficiency increasing with input voltage. A slanted line on the graph indicates the rated input voltage range.</p>		2. Values																																	
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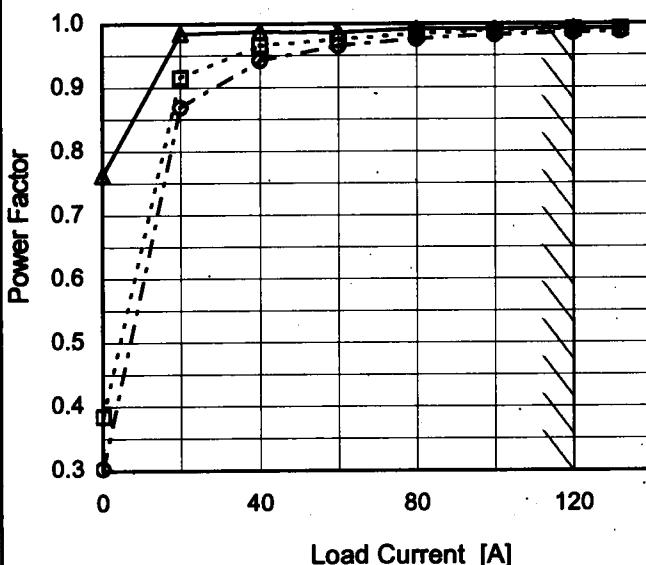
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Model	PBA600F-3R3
Item	Power Factor (by Load Current)
Object	

1. Graph

—△— Input Volt. 100V
 - -□--- Input Volt. 200V
 - -○--- Input Volt. 230V



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

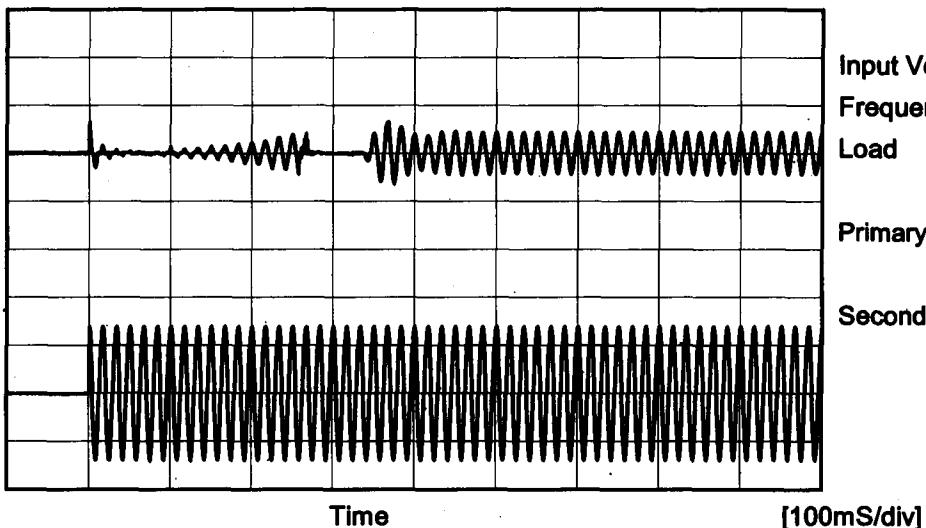
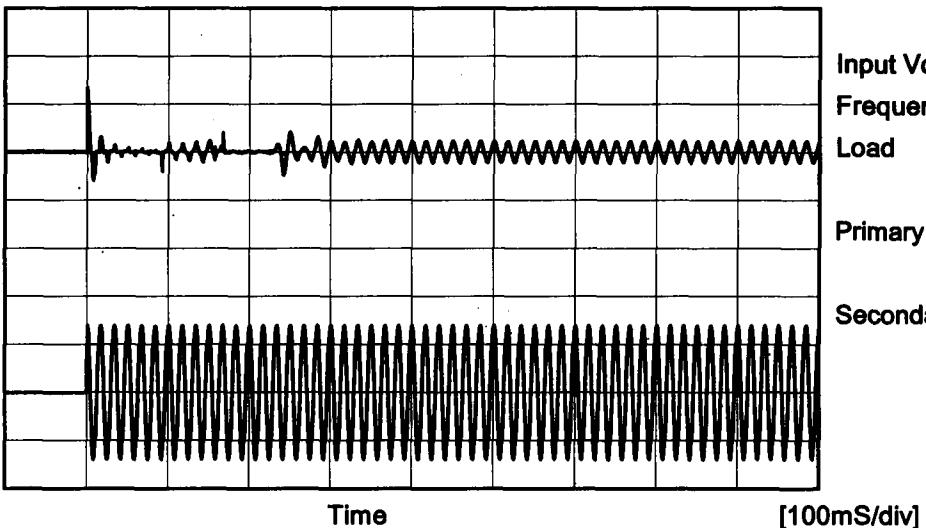
Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0	0.762	0.385	0.302
20	0.985	0.915	0.869
40	0.987	0.966	0.942
60	0.987	0.976	0.965
80	0.992	0.984	0.976
100	0.992	0.989	0.983
120	0.993	0.991	0.985
132	0.992	0.992	0.987
--	-	-	-
--	-	-	-
--	-	-	-

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Model PBA600F-3R3

Item Inrush Current

Object _____

Temperature 25°C
Testing Circuitry Figure AInput
Current
[20A/div]Input
Current
[20A/div]

Primary inrush current

Secondary inrush current



Model	PBA600F-3R3	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	0.30	0.47	0.58	Operation
	One of phase	0.38	0.77	0.98	stand by
IEC60950	Both phases	0.24	0.42	0.56	Operation
	One of phase	0.34	0.77	0.91	stand by

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

2. Condition

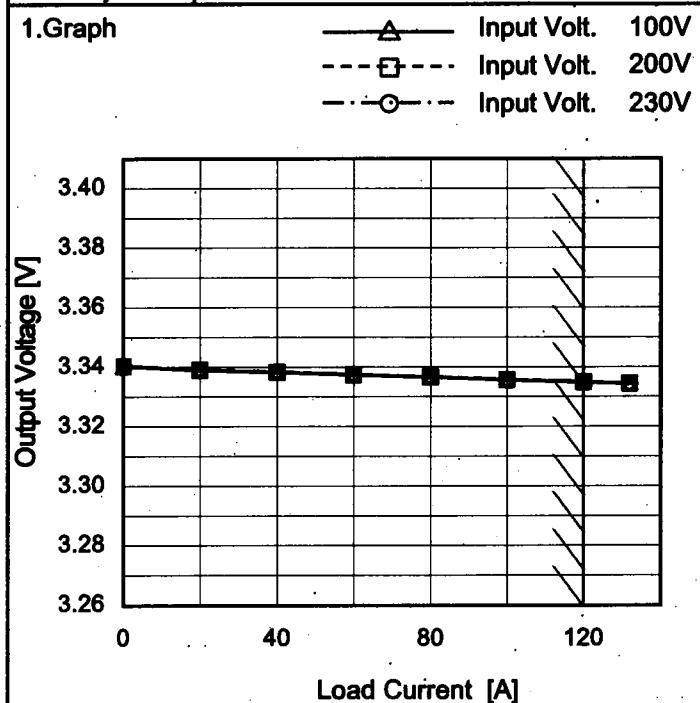
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Model	PBA600F-3R3	Temperature 25°C																																
Item	Line Regulation	Testing Circuitry Figure A																																
Object	+3.3V120A																																	
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Model	PBA600F-3R3
Item	Load Regulation
Object	+3.3V120A



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	3.340	3.340	3.340
20	3.339	3.339	3.339
40	3.338	3.338	3.338
60	3.337	3.338	3.338
80	3.337	3.337	3.337
100	3.336	3.336	3.336
120	3.335	3.335	3.335
132	3.334	3.335	3.334
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	PBA600F-3R3
Item	Dynamic Load Response
Object	+3.3V120A

Temperature 25°C
Testing Circuitry Figure AInput Volt. 100 V
Cycle 1000 mS

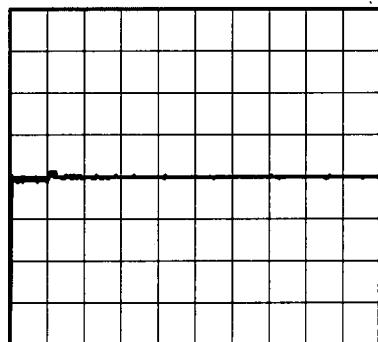
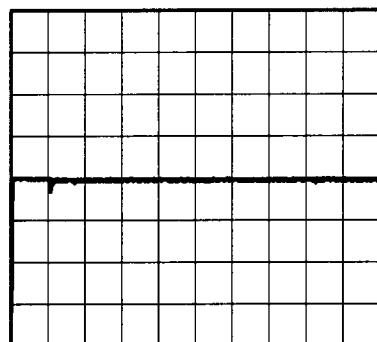
Load Current

Min.Load (0A) ←→
Load 100% (120A)

100mV/div

10ms/div

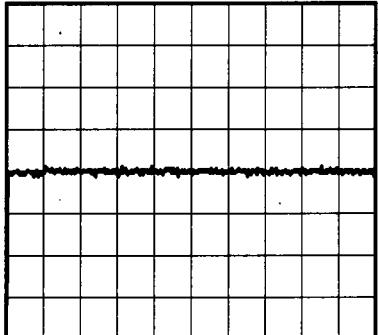
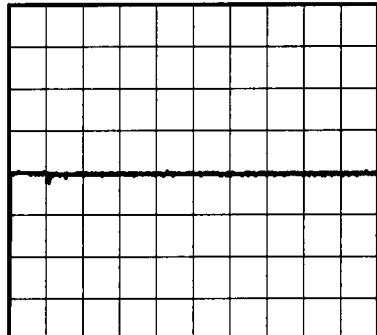
10ms/div

Min.Load (0A) ←→
Load 50% (60A)

100mV/div

10ms/div

10ms/div



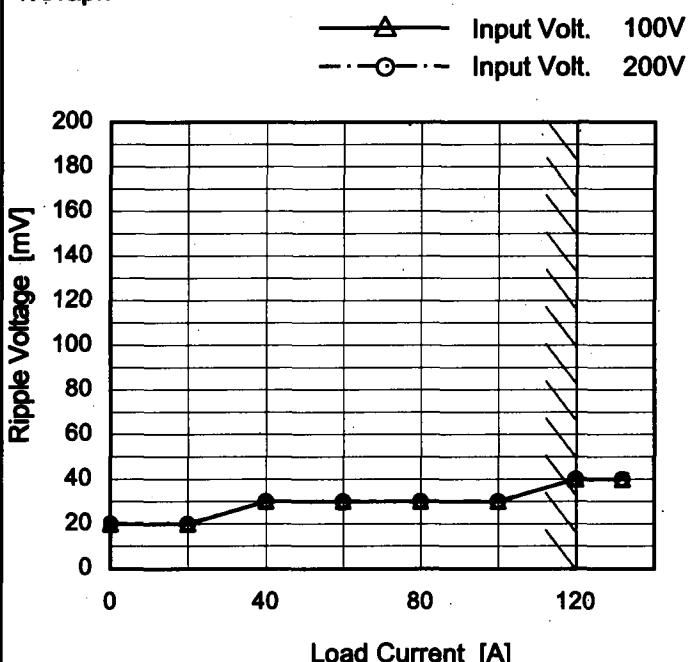
* The characteristic of AC200V is equal.

COSEL

Model	PBA600F-3R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V120A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0	20	20
20	20	20
40	30	30
60	30	30
80	30	30
100	30	30
120	40	40
132	40	40
-	-	-
-	-	-
-	-	-

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.

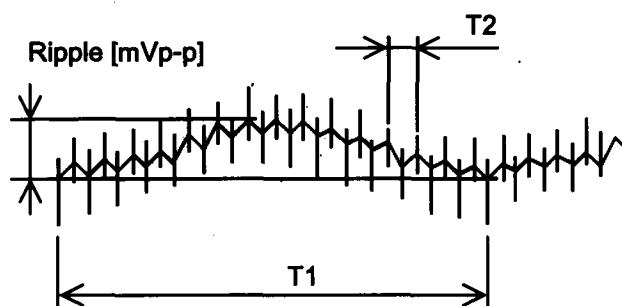
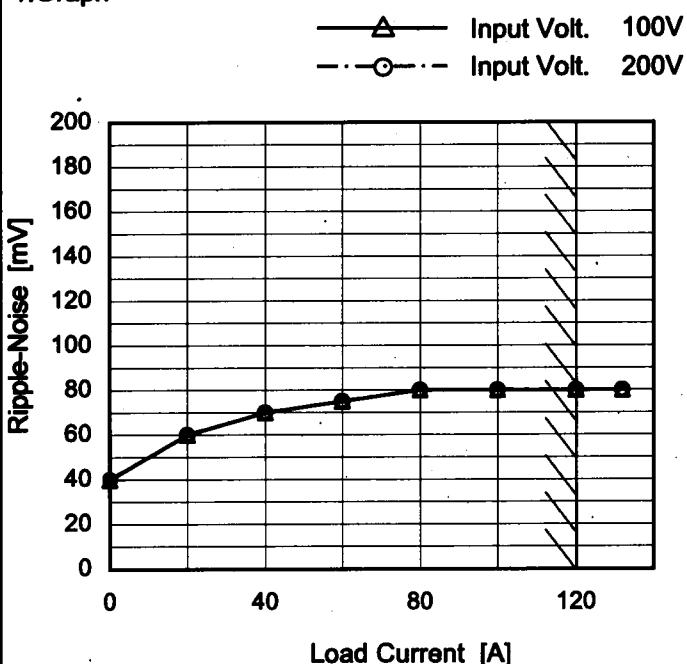
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

COSEL

Model	PBA600F-3R3
Item	Ripple-Noise
Object	+3.3V120A

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	40	40
20	60	60
40	70	70
60	75	75
80	80	80
100	80	80
120	80	80
132	80	80
--	-	-
--	-	-
--	-	-

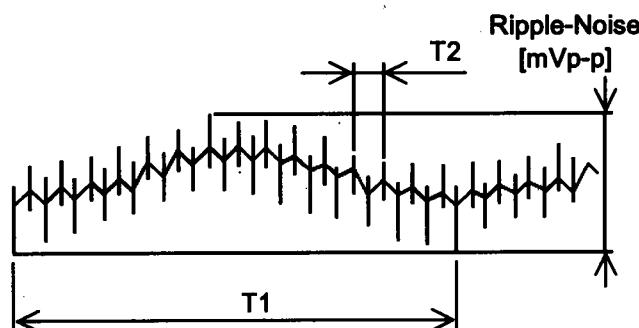
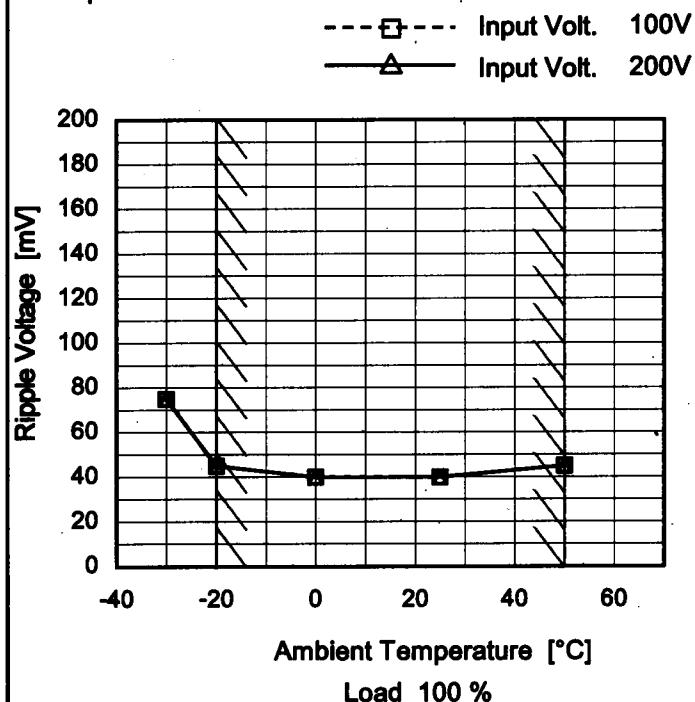
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

COSEL

Model	PBA600F-3R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V120A

1. Graph



Measured by 20 MHz Oscilloscope.

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

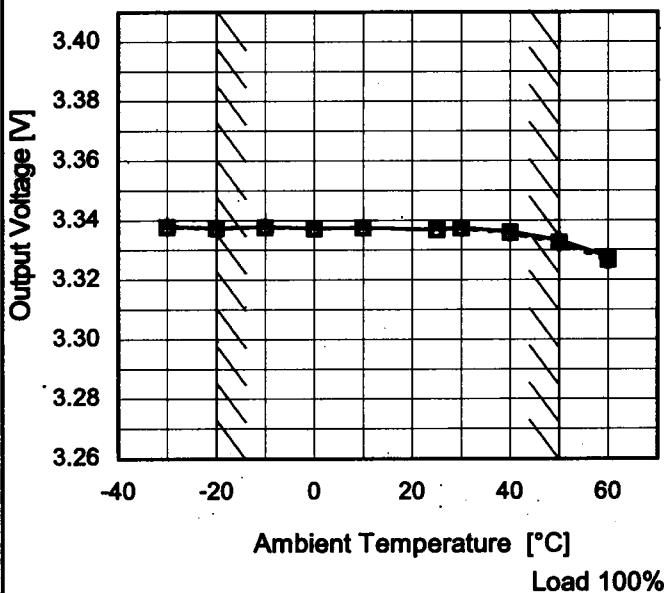
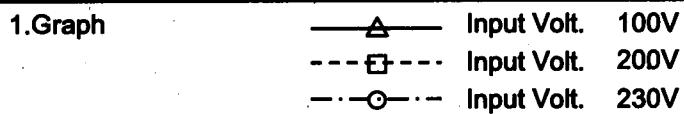
Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	75	75
-20	45	45
0	40	40
25	40	40
50	45	45
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-3R3
Item	Ambient Temperature Drift
Object	+3.3V120A



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

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-30	3.338	3.338	3.338
-20	3.337	3.338	3.337
-10	3.338	3.338	3.338
0	3.337	3.337	3.337
10	3.338	3.338	3.337
25	3.337	3.337	3.337
30	3.338	3.337	3.337
40	3.336	3.336	3.336
50	3.333	3.333	3.332
60	3.328	3.327	3.326
--	-	-	-



Model	PBA600F-3R3	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+3.3V120A	

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 - 120A

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

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

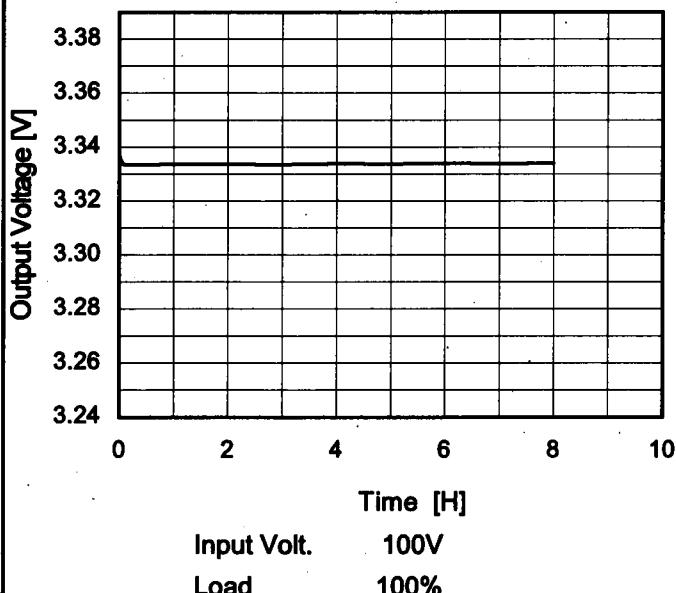
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	264	0	3.343	± 7	± 0.2
Minimum Voltage	50	264	120	3.329		

COSEL

Model	PBA600F-3R3
Item	Time Lapse Drift
Object	+3.3V120A

1.Graph.



* The characteristic of AC200V is equal.

Temperature 25°C
Testing Circuitry Figure A

2.Values

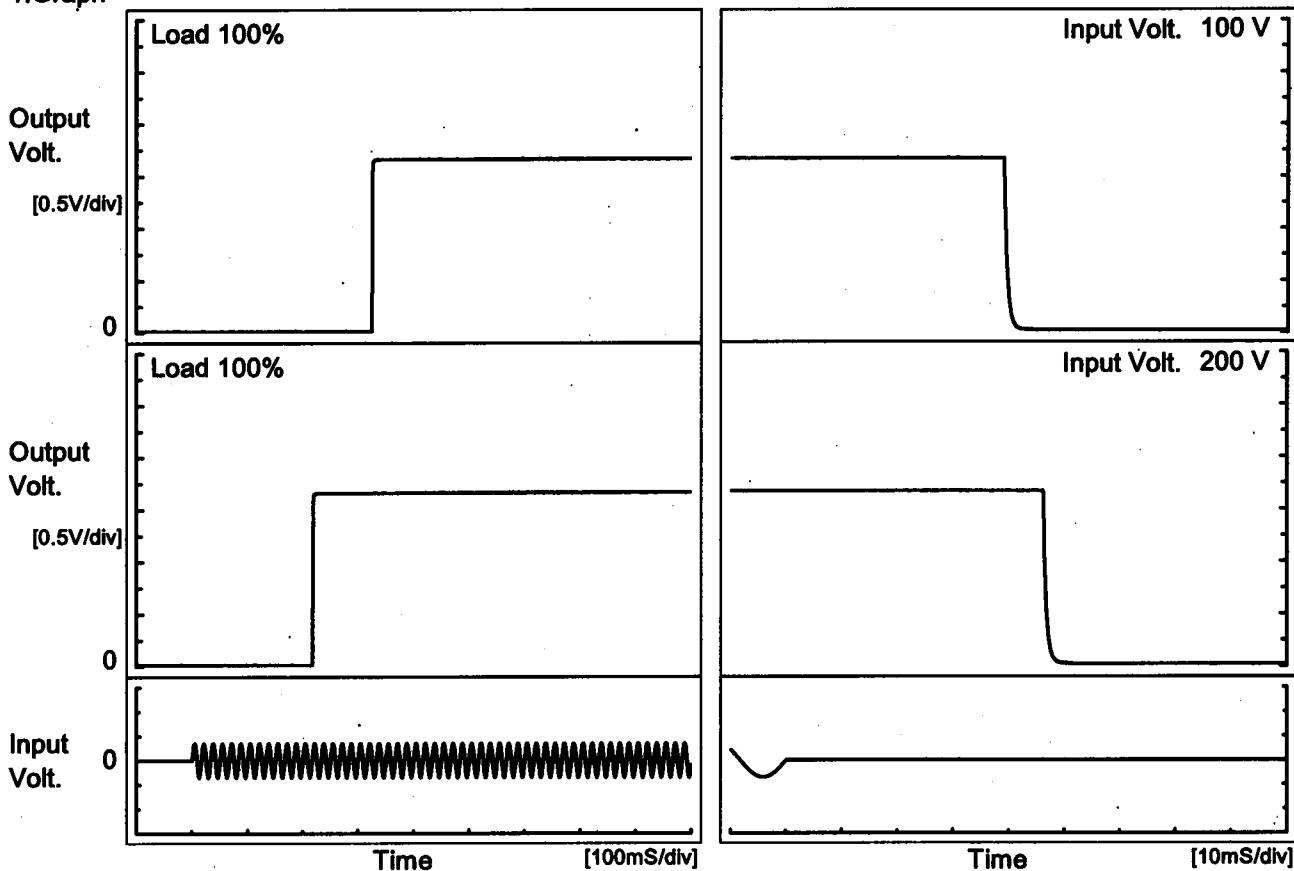
Time since start [H]	Output Voltage [V]
0.0	3.337
0.5	3.334
1.0	3.334
2.0	3.334
3.0	3.334
4.0	3.334
5.0	3.334
6.0	3.334
7.0	3.334
8.0	3.334

COSEL

Model	PBA600F-3R3
Item	Rise and Fall Time
Object	+3.3V120A

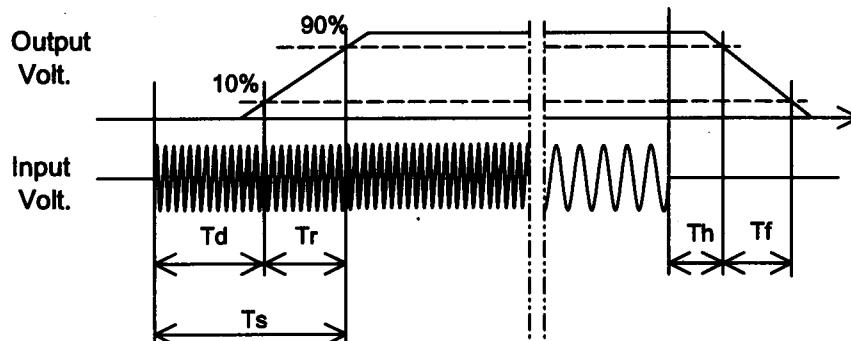
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

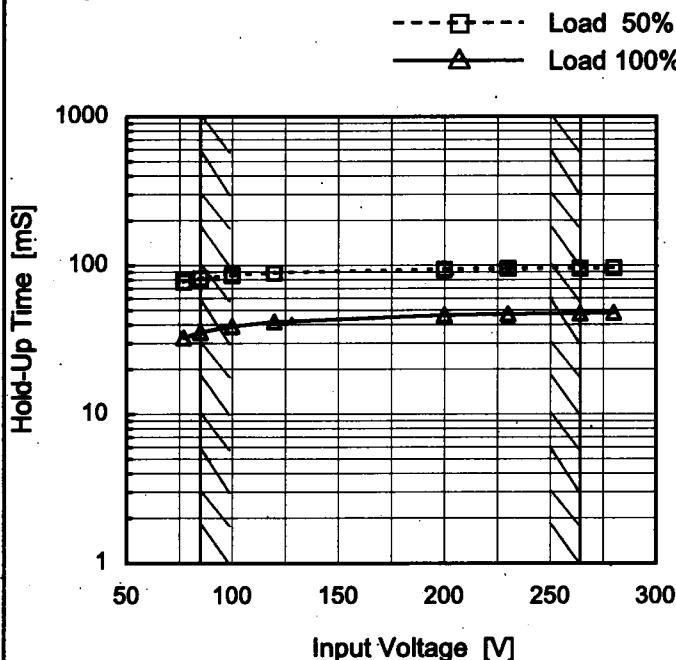
Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]
100 V		325.5	1.5	327.0	39.1	1.3	
200 V		218.0	1.0	219.0	46.3	1.3	



COSEL

Model	PBA600F-3R3
Item	Hold-Up Time
Object	+3.3V120A

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.

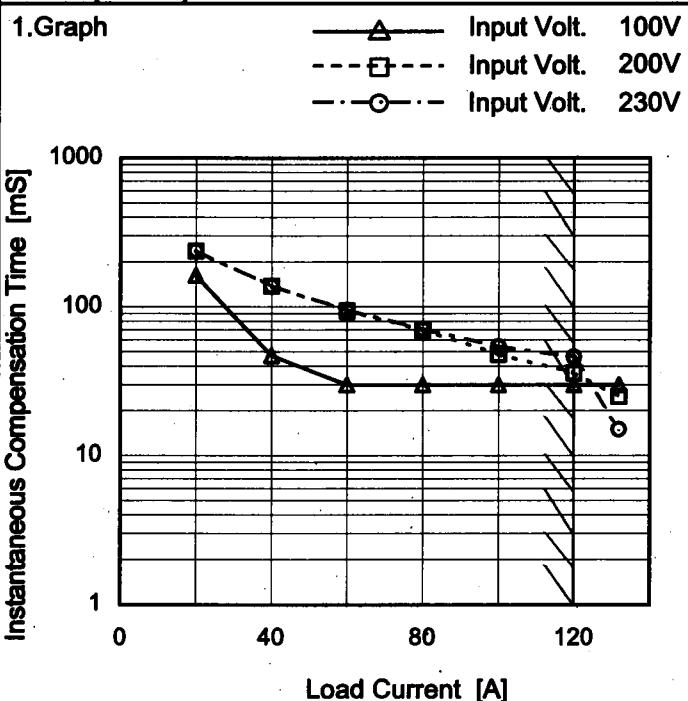
Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	78	33
85	82	36
100	86	39
120	89	42
200	94	46
230	95	47
264	96	48
280	96	48
--	-	-

COSEL

Model	PBA600F-3R3
Item	Instantaneous Interruption Compensation
Object	+3.3V120A



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	-	-	-
20	163	237	238
40	47	138	138
60	30	94	95
80	30	70	71
100	30	48	54
120	30	36	46
132	30	25	15
--	-	-	-
--	-	-	-
--	-	-	-

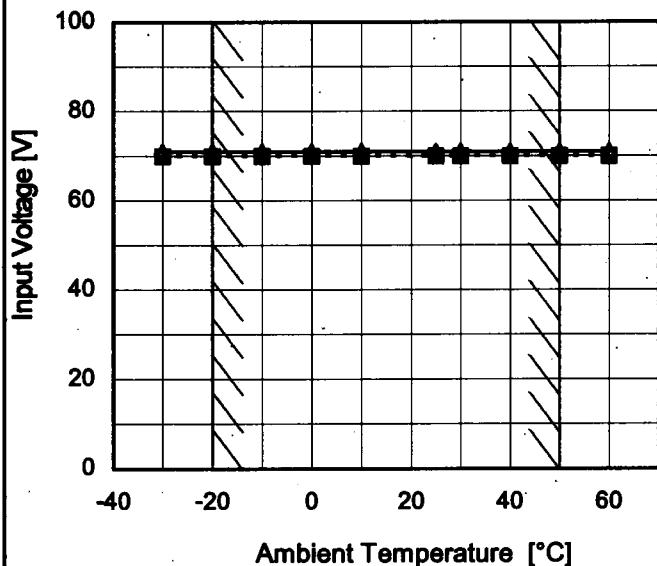
Note: Slanted line shows the range of the rated load current.

COSEL

Model	PBA600F-3R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V120A

1. Graph

---□--- Load 50%
—△— Load 100%



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

Testing Circuitry Figure A

2. Values

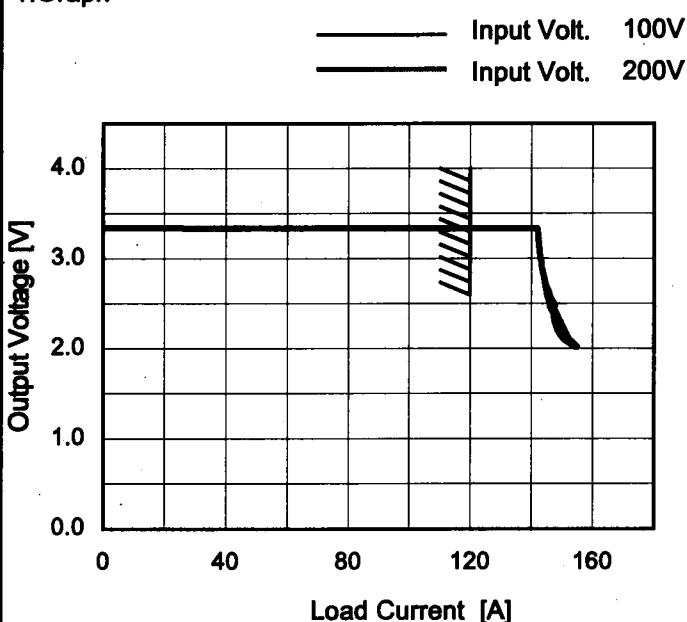
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	70	71
-20	70	71
-10	70	71
0	70	71
10	70	71
25	70	71
30	70	71
40	70	71
50	70	71
60	70	71
--	-	-

COSEL

Model	PBA600F-3R3
Item	Overcurrent Protection
Object	+3.3V120A

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]
3.30	128.21	134.48
3.14	142.41	142.53
2.97	143.02	143.21
2.64	144.71	145.59
2.31	147.29	147.98
2.05	153.43	156.12
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA600F-3R3	Testing Circuitry Figure A																																						
Item	Overvoltage Protection																																							
Object	+3.3V120A																																							
1.Graph		2.Values																																						
<p>—△— Input Volt. 100V ---□--- Input Volt. 200V</p> <p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>4.41</td><td>4.41</td></tr> <tr><td>-20</td><td>4.41</td><td>4.41</td></tr> <tr><td>-10</td><td>4.41</td><td>4.41</td></tr> <tr><td>0</td><td>4.41</td><td>4.41</td></tr> <tr><td>10</td><td>4.41</td><td>4.41</td></tr> <tr><td>25</td><td>4.41</td><td>4.41</td></tr> <tr><td>30</td><td>4.41</td><td>4.41</td></tr> <tr><td>40</td><td>4.41</td><td>4.41</td></tr> <tr><td>50</td><td>4.40</td><td>4.41</td></tr> <tr><td>60</td><td>4.40</td><td>4.41</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 200[V]	-30	4.41	4.41	-20	4.41	4.41	-10	4.41	4.41	0	4.41	4.41	10	4.41	4.41	25	4.41	4.41	30	4.41	4.41	40	4.41	4.41	50	4.40	4.41	60	4.40	4.41	--	-	-
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50	4.40	4.41																																						
60	4.40	4.41																																						
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Note: Slanted line shows the range of the rated ambient temperature.

COSEL

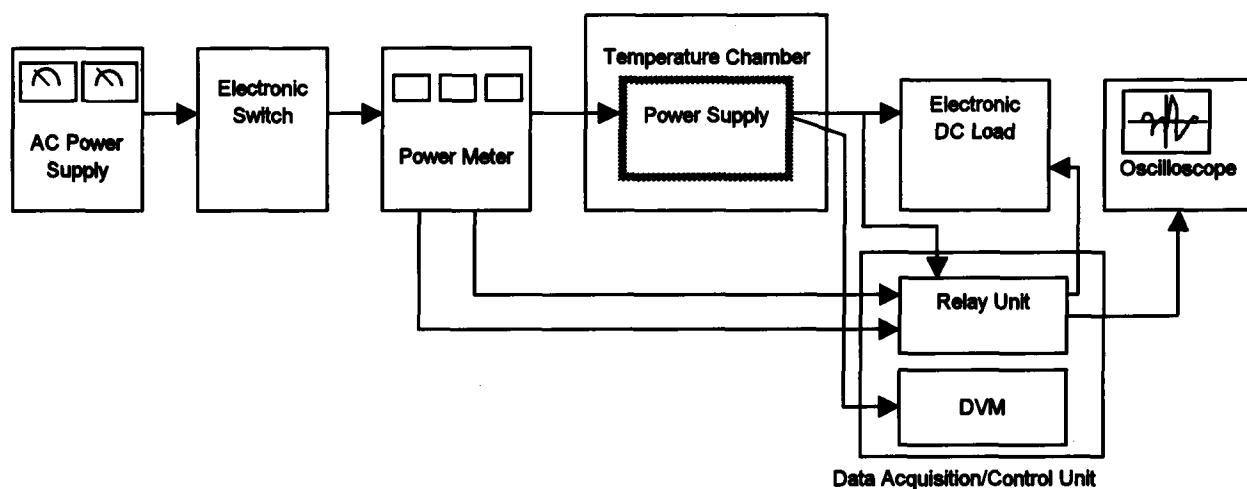


Figure A

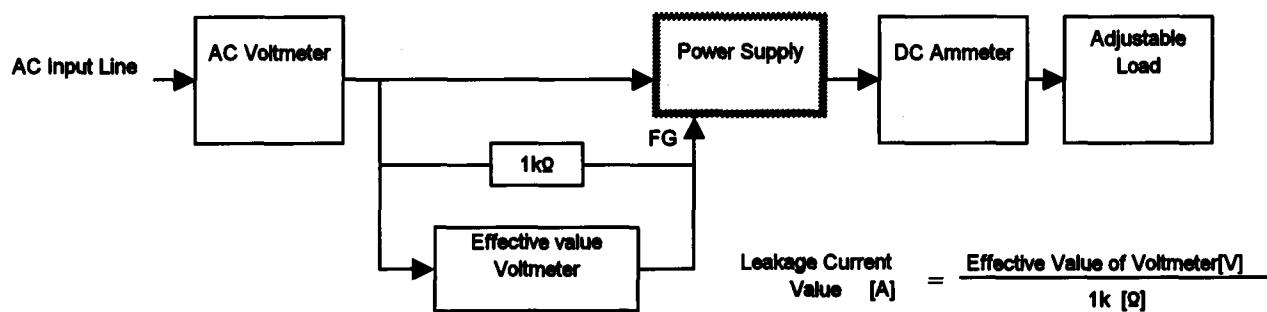


Figure B (DEN-AN)

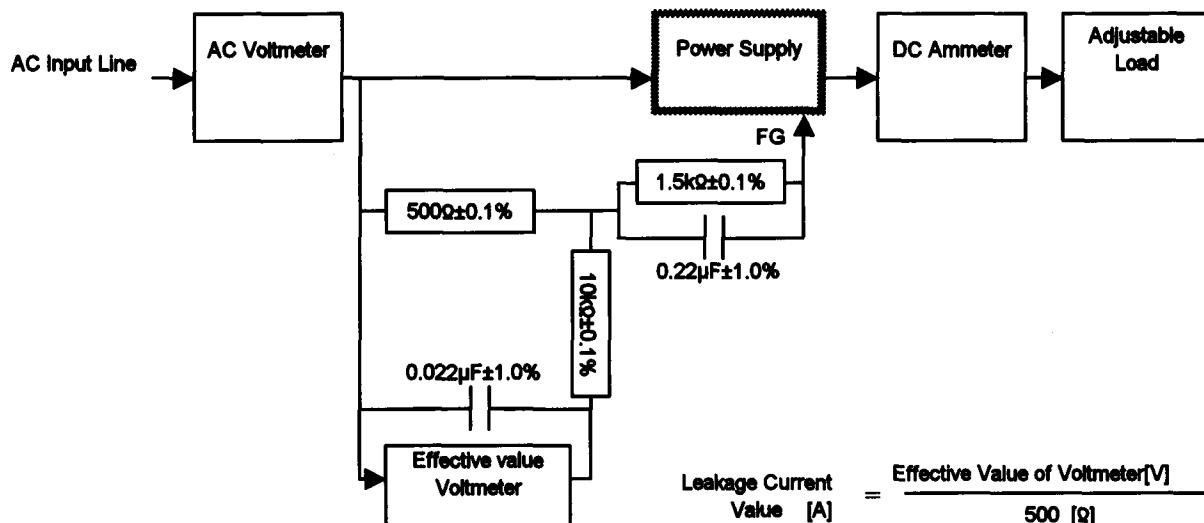


Figure B (IEC60950)