COSEL

TEST DATA OF PBA1000F-7R5

Regulated DC Power Supply
Mar.30, 2004

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Kazunari Uotani

COSEL CO.,LTD.

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Model	PBA1000F-7R5
Item	Input Current (by Load Current)
Object	
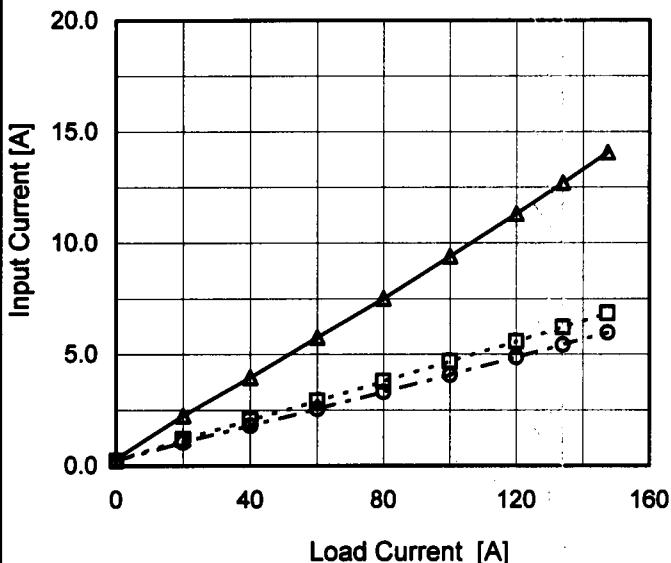
Temperature   25°C
Testing Circuitry   Figure A

1.Graph

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

Load Current [A]

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	0.318	0.230	0.239
20.0	2.260	1.196	1.060
40.0	3.960	2.060	1.810
60.0	5.760	2.912	2.560
80.0	7.520	3.790	3.312
100.0	9.390	4.680	4.082
120.0	11.310	5.580	4.870
134.0	12.700	6.220	5.430
147.4	14.060	6.860	5.980
--	-	-	-
--	-	-	-

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Model	PBA1000F-7R5
Item	Input Power (by Load Current)
Object	
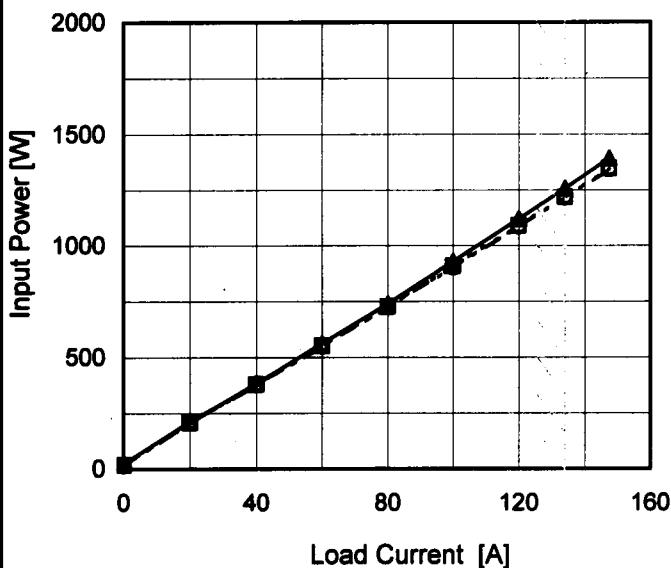
Temperature   25°C
Testing Circuitry   Figure A

1.Graph

△ Input Volt.   100V
☐ Input Volt.   200V
○ Input Volt.   230V

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	24	19	16
20.0	212	209	208
40.0	383	379	378
60.0	563	552	550
80.0	740	727	725
100.0	929	908	902
120.0	1121	1090	1086
134.0	1259	1219	1217
147.4	1394	1348	1344
--	-	-	-
--	-	-	-

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Model	PBA1000F-7R5
Item	Efficiency (by Input Voltage)
Object	

Temperature	25°C
Testing Circuitry	Figure A

1.Graph
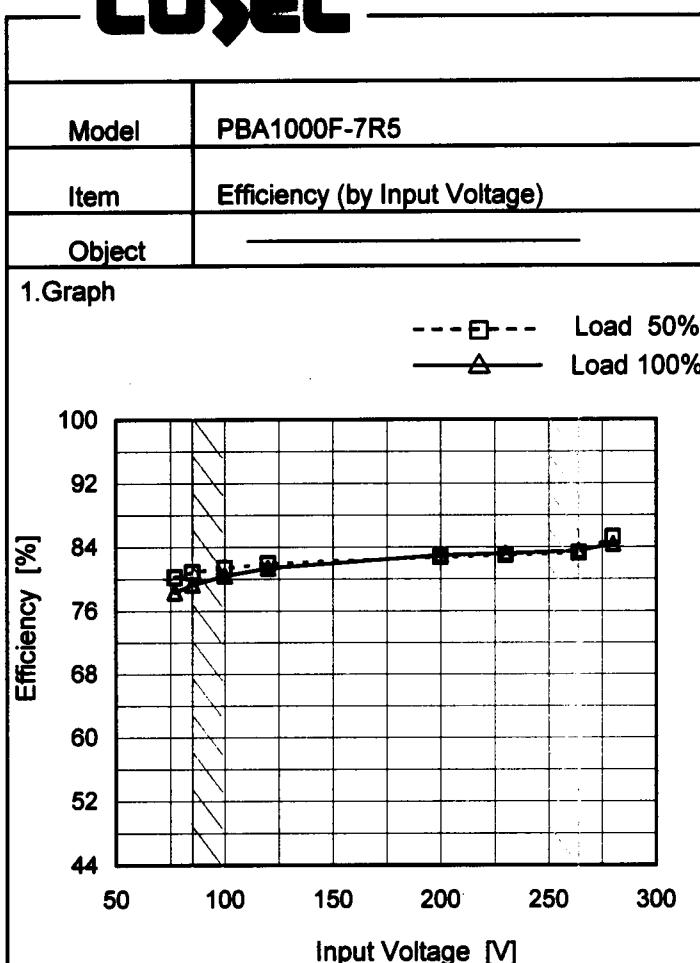
--- ⊟ --- Load 50%
——△—— Load 100%

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
77	80.2	78.3
85	80.9	79.3
100	81.4	80.4
120	81.9	81.4
200	82.7	83.0
230	83.0	83.2
264	83.3	83.5
280	85.2	84.4
--	-	-

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

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Model	PBA1000F-7R5
Item	Efficiency (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△— Input Volt. 100V
---☐--- Input Volt. 200V
—·—○—·— Input Volt. 230V

Y-axis: Efficiency [%]
X-axis: Load Current [A]

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	-	-	-
20.0	71.1	72.1	72.4
40.0	78.9	79.7	80.0
60.0	80.6	82.1	82.4
80.0	81.7	83.2	83.4
100.0	81.4	83.2	83.8
120.0	80.9	83.2	83.5
134.0	80.4	83.1	83.2
147.4	79.9	82.6	82.9
--	-	-	-
--	-	-	-

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Model	PBA1000F-7R5
Item	Power Factor (by Input Voltage)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Load 50% (---□---)
Load 100% (——△——)

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

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
77	0.989	0.998
85	0.989	0.998
100	0.984	0.998
120	0.981	0.995
200	0.955	0.982
230	0.943	0.976
264	0.931	0.967
280	0.595	0.670
--	-	-

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Model	PBA1000F-7R5
Item	Power Factor (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 100V
- - - ⊟ - - - Input Volt. 200V
— · — ○ — · - Input Volt. 230V

Power Factor vs Load Current [A]
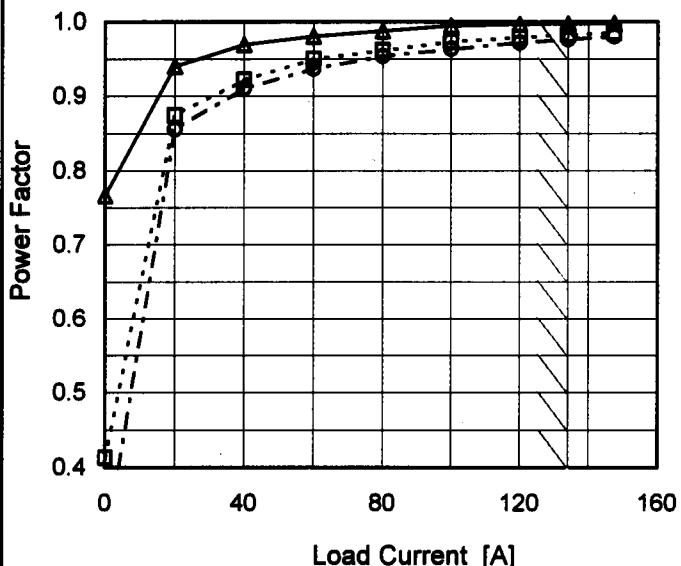
2.Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.767	0.413	0.291
20.0	0.941	0.874	0.856
40.0	0.970	0.922	0.911
60.0	0.981	0.950	0.937
80.0	0.988	0.962	0.954
100.0	0.995	0.973	0.964
120.0	0.996	0.979	0.972
134.0	0.998	0.982	0.977
147.4	0.998	0.985	0.980
--	-	-	-
--	-	-	-

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

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Model	PBA1000F-7R5
Item	Inrush Current
Object	

Temperature 25°C
Testing Circuitry Figure A

Input Current [20A/div]

Input Voltage [100V/div]

Time [100mS/div]

Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
15.0 A
Secondary inrush current :
36.6 A

Input Current [20A/div]

Input Voltage [200V/div]

Time [100mS/div]

Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
19.8 A
Secondary inrush current :
36.8 A

Primary inrush current   Secondary inrush current

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Model	PBA1000F-7R5
Item	Leakage Current
Object	

Temperature   25°C
Testing Circuitry   Figure B

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	200[V]	240[V]	
DEN-AN	Both phases	0.20	0.40	0.42	Operation
	One of phase	0.35	0.73	0.78	stand by
IEC60950	Both phases	0.21	0.40	0.52	Operation
	One of phase	0.36	0.72	0.87	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	PBA1000F-7R5
Item	Line Regulation
Object	+7.5V134A

Temperature 25°C
Testing Circuitry Figure A

1.Graph
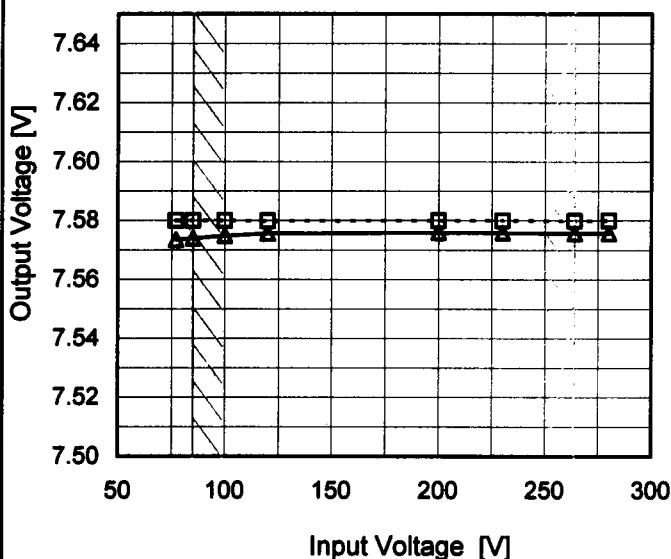
- - -◻- - - Load 50%
———△——— Load 100%

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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
77	7.580	7.573
85	7.580	7.574
100	7.580	7.575
120	7.580	7.576
200	7.580	7.576
230	7.580	7.576
264	7.580	7.576
280	7.580	7.576
--	-	-

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Model	PBA1000F-7R5
Item	Load Regulation
Object	+7.5V134A
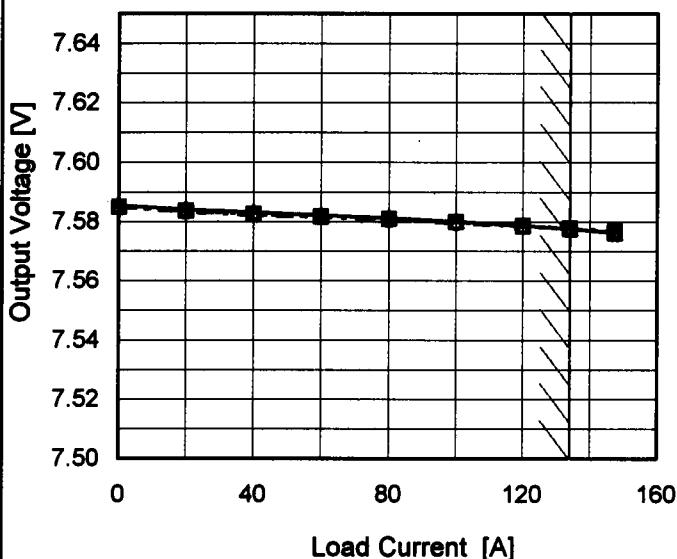
Temperature　　25°C
Testing Circuitry　　Figure A

1.Graph

—△— Input Volt.　100V
- - -🇬- - - Input Volt.　200V
— · —O— · · Input Volt.　230V

Output Voltage [V] vs Load Current [A]

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	7.586	7.585	7.585
20.0	7.584	7.584	7.583
40.0	7.583	7.583	7.582
60.0	7.582	7.582	7.582
80.0	7.581	7.581	7.581
100.0	7.580	7.580	7.580
120.0	7.579	7.579	7.579
134.0	7.578	7.578	7.578
147.4	7.576	7.577	7.577
--	-	-	-
--	-	-	-

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Model	PBA1000F-7R5
Item	Dynamic Load Response
Object	+7.5V134A

Temperature	25°C
Testing Circuitry	Figure A

Input Volt.   100 V

Cycle   1000 mS

Min. Load (0 A) − Load 100% (134 A)
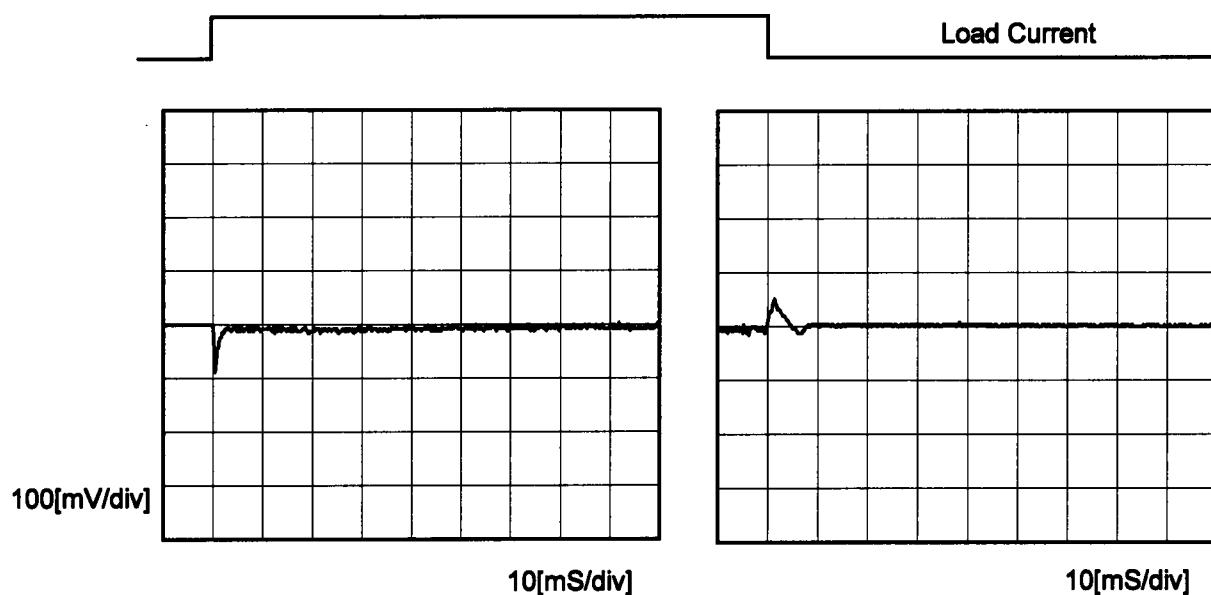
Load Current

100[mV/div]

10[mS/div]   10[mS/div]

Min. Load (0 A) − Load 50% (67 A)

Load Current

100[mV/div]

10[mS/div]   10[mS/div]

* The characteristic of AC200V is equal.

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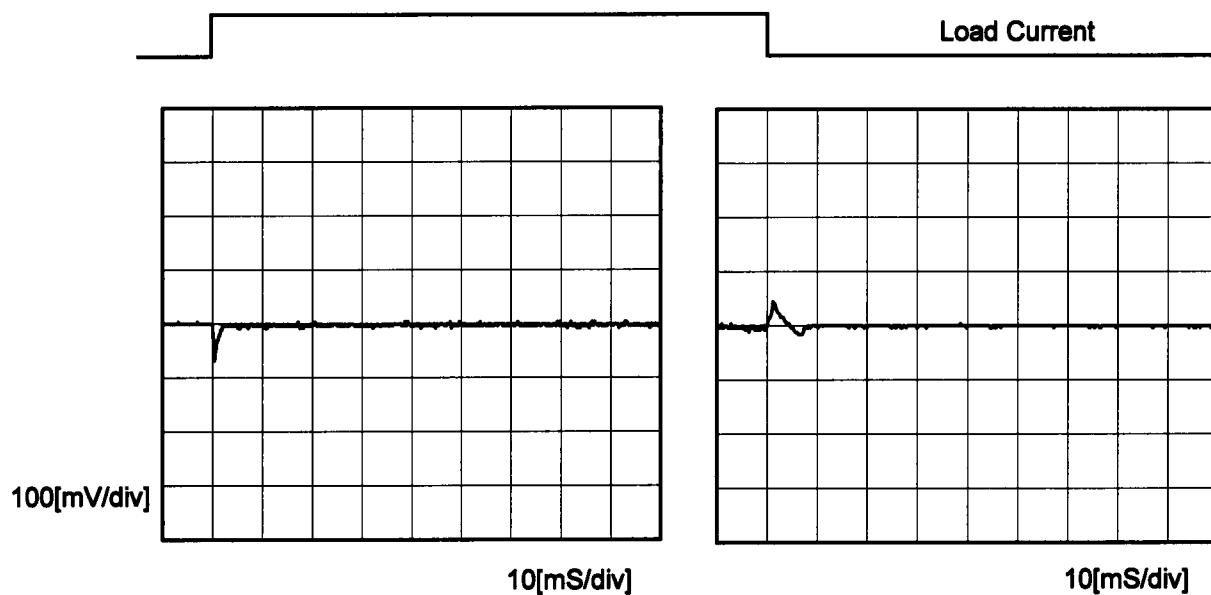
Model	PBA1000F-7R5
Item	Ripple Voltage (by Load Current)
Object	+7.5V134A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt. 100V
—·—○—·— Input Volt. 200V
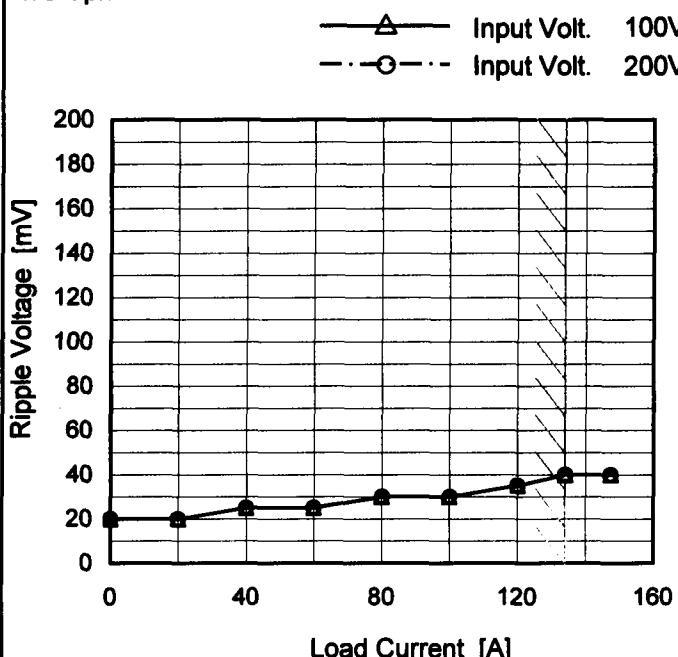
Load Current [A]

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	20	20
20.0	20	20
40.0	25	25
60.0	25	25
80.0	30	30
100.0	30	30
120.0	35	35
134.0	40	40
147.4	40	40
--	-	-
--	-	-

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

T2

Ripple [mVp-p]

T1

Fig. Complex Ripple Wave Form

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Model	PBA1000F-7R5
Item	Ripple-Noise
Object	+7.5V134A

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

— △ — Input Volt.　100V
—·—○—·· — Input Volt.　200V
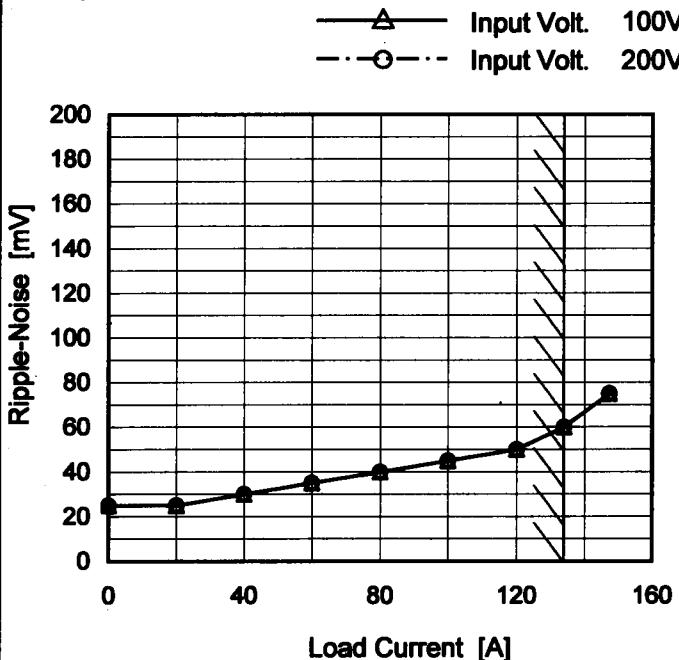
Load Current [A]

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	25	25
20.0	25	25
40.0	30	30
60.0	35	35
80.0	40	40
100.0	45	45
120.0	50	50
134.0	60	60
147.4	75	75
—	-	-
—	-	-

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

Ripple-Noise [mVp-p]
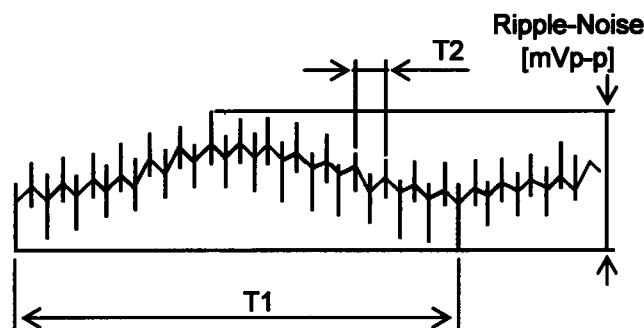
Fig. Complex Ripple Wave Form

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Model	PBA1000F-7R5
Item	Ripple Voltage (by Ambient Temp.)
Object	+7.5V134A

Testing Circuitry   Figure A

1.Graph

- - - ⊟ - - -   Input Volt.   100V

———△———   Input Volt.   200V

Ambient Temperature [°C]

Load 100 %
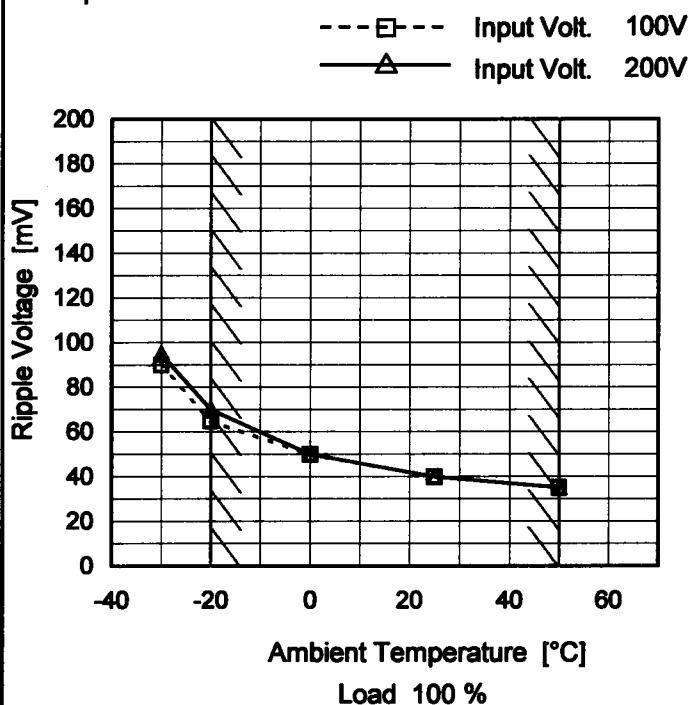
Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	90	95
-20	65	70
0	50	50
25	40	40
50	35	35
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model	PBA1000F-7R5
Item	Ambient Temperature Drift
Object	+7.5V134A
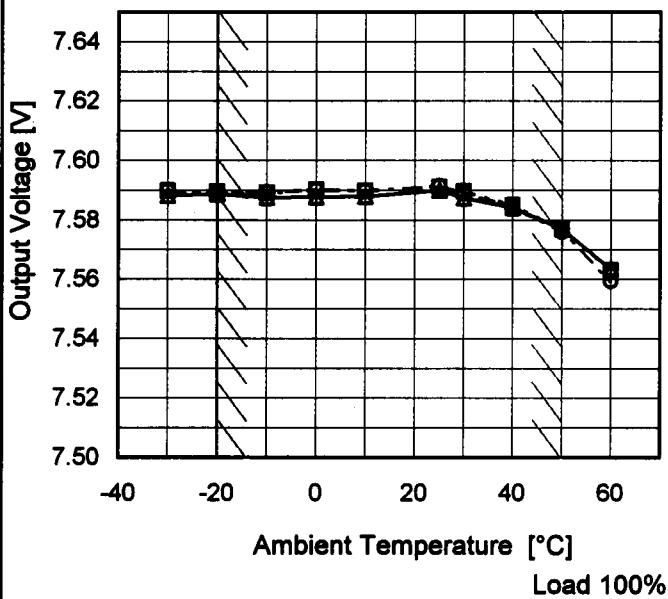
Testing Circuitry   Figure A

1.Graph

△——— Input Volt.   100V
- - -⊟- - - Input Volt.   200V
—·—⊙—·— Input Volt.   230V

Load 100%

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]
-30	7.588	7.590	7.590
-20	7.589	7.590	7.589
-10	7.588	7.589	7.589
0	7.588	7.590	7.590
10	7.588	7.590	7.590
25	7.590	7.591	7.592
30	7.587	7.590	7.589
40	7.584	7.585	7.585
50	7.577	7.577	7.576
60	7.564	7.563	7.559
--	-	-	-

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Model	PBA1000F-7R5		
Item	Output Voltage Accuracy	Testing Circuitry	Figure A
Object	+7.5V134A		

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 - 134A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* Output Voltage Accuracy (Ration) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$ × 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	7.598	±14	±0.2
Minimum Voltage	50	85	134	7.571		

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参考資料

COSEL

Model	PBA1000F-7R5
Item	Time Lapse Drift
Object	+7.5V134A

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	7.579
0.5	7.573
1.0	7.573
2.0	7.573
3.0	7.573
4.0	7.573
5.0	7.573
6.0	7.573
7.0	7.573
8.0	7.573

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Model	PBA1000F-7R5
Item	Rise and Fall Time
Object	+7.5V134A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

Load 100% — Output Volt. [1V/div], 0 — Time [100mS/div]

Input Volt. 100 V — Output Volt. [1V/div], 0 — Time [10mS/div]

Load 100% — Output Volt. [1V/div], 0

Input Volt. 200 V — Output Volt. [1V/div], 0

Input Volt. 0

2.Values

[mS]

Input Volt. \\ Time	Td	Tr	Ts	Th	Tf
100 V	329.5	2.0	331.5	32.3	8.3
200 V	239.5	2.0	241.5	40.4	8.4

Output Volt. — 90%, 10%

Input Volt.

Td Tr Th Tf Ts

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Model	PBA1000F-7R5
Item	Hold-Up Time
Object	+7.5V134A

Temperature 25°C
Testing Circuitry Figure A

1.Graph
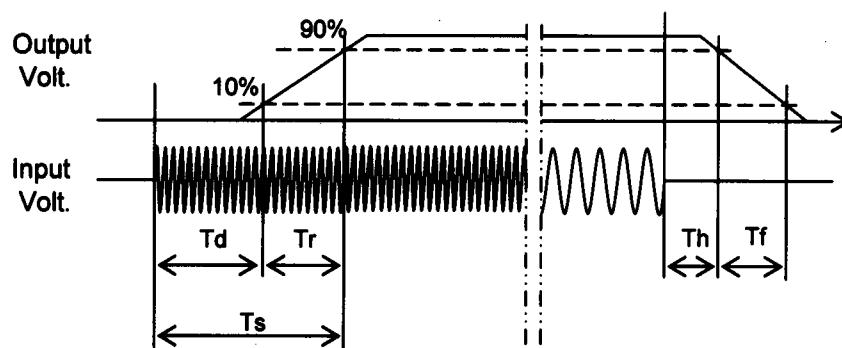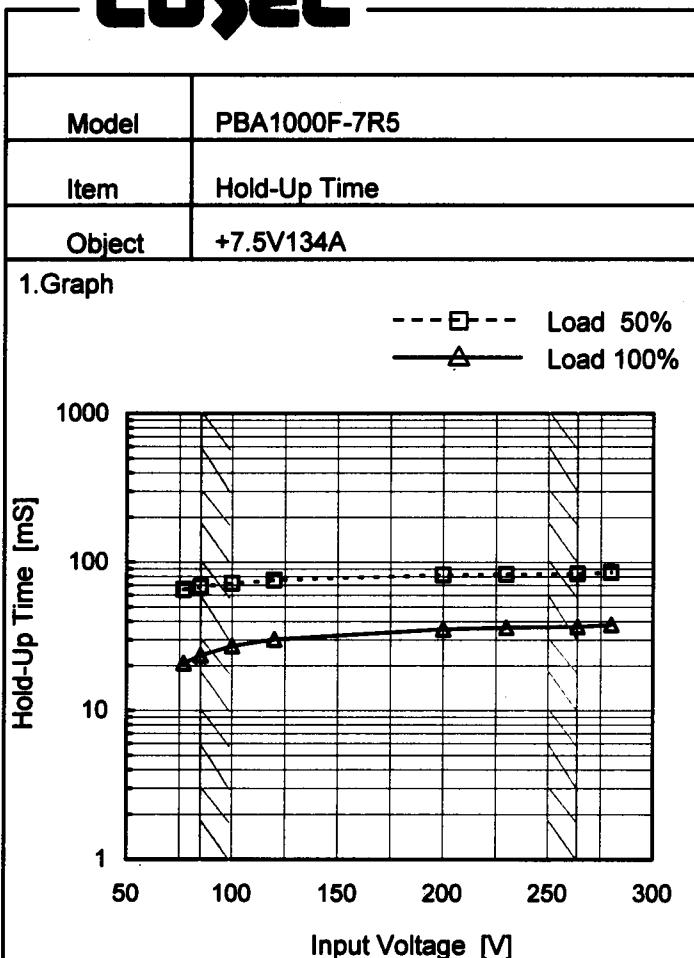
--- ▱ --- Load 50%
——△—— Load 100%

Hold-Up Time [mS] vs Input Voltage [V]

2.Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
77	65	21
85	68	24
100	72	27
120	76	30
200	82	36
230	83	36
264	84	37
280	85	38
--	-	-

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.

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参考資料

COSEL

Model	PBA1000F-7R5
Item	Instantaneous Interruption Compensation
Object	+7.5V134A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

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

Instantaneous Compensation Time [mS] vs Load Current [A]

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	-	-	-
20.0	220	279	280
40.0	70	136	144
60.0	36	81	88
80.0	36	53	61
100.0	36	38	40
120.0	33	37	38
134.0	28	36	37
147.4	22	31	32
--	-	-	-
--	-	-	-

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Model	PBA1000F-7R5
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+7.5V134A
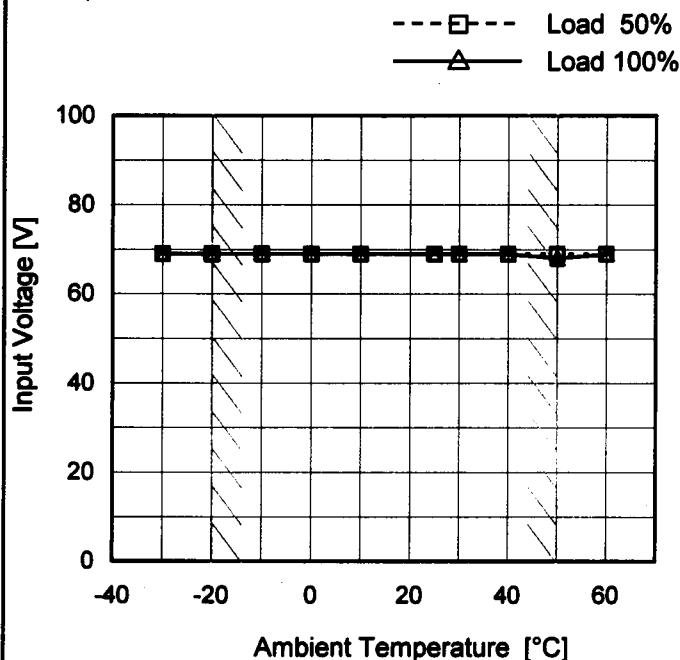
Testing Circuitry   Figure A

1.Graph

- - -☐- - - Load 50%
———△——— Load 100%

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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	69	69
-20	69	69
-10	69	69
0	69	69
10	69	69
25	69	69
30	69	69
40	69	69
50	69	68
60	69	69
--	-	-

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Model	PBA1000F-7R5
Item	Overcurrent Protection
Object	+7.5V134A
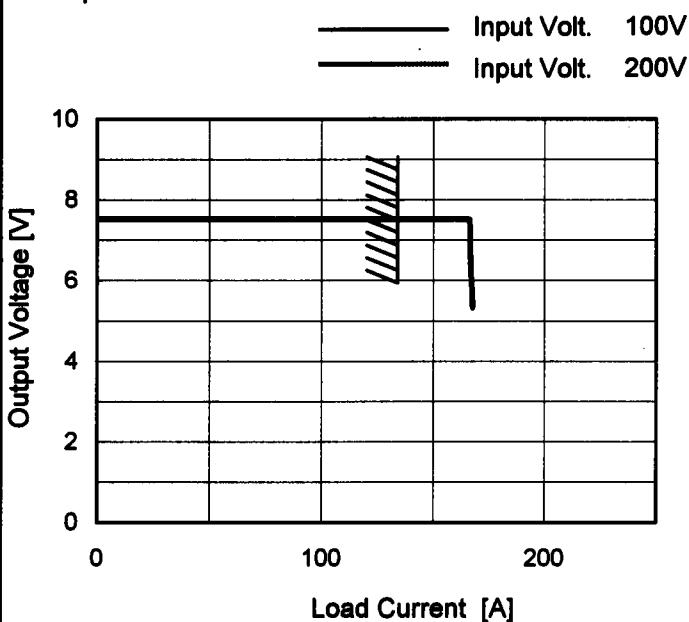
Temperature	25°C
Testing Circuitry	Figure A

1.Graph

———	Input Volt.	100V
━━━	Input Volt.	200V

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]
7.500	166.47	166.46
7.125	166.70	166.75
6.750	167.12	166.77
6.000	167.32	167.33
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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COSEL

Model	PBA1000F-7R5
Item	Overvoltage Protection
Object	+7.5V134A
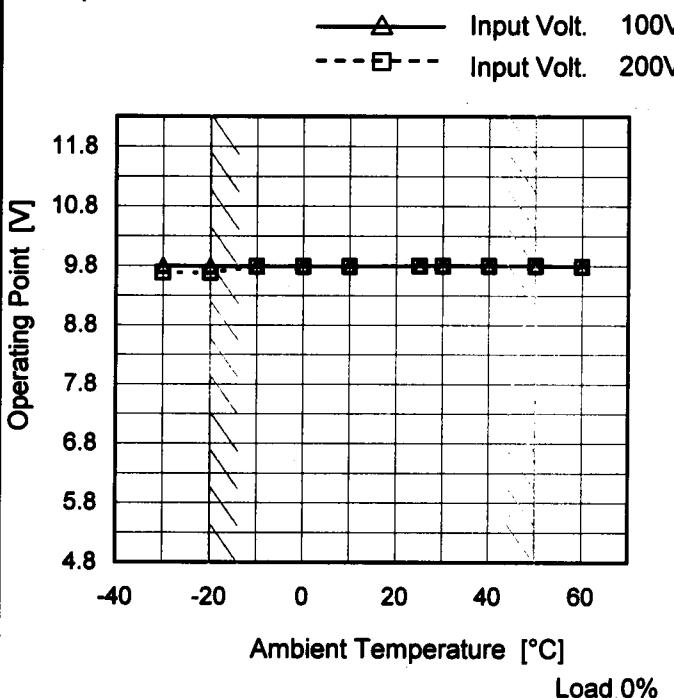
Testing Circuitry   Figure A

1.Graph

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

Ambient Temperature [°C]

Load 0%

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]
-30	9.75	9.63
-20	9.74	9.63
-10	9.74	9.74
0	9.74	9.74
10	9.74	9.74
25	9.75	9.75
30	9.75	9.75
40	9.75	9.75
50	9.75	9.75
60	9.74	9.74
--	-	-

BC-3538
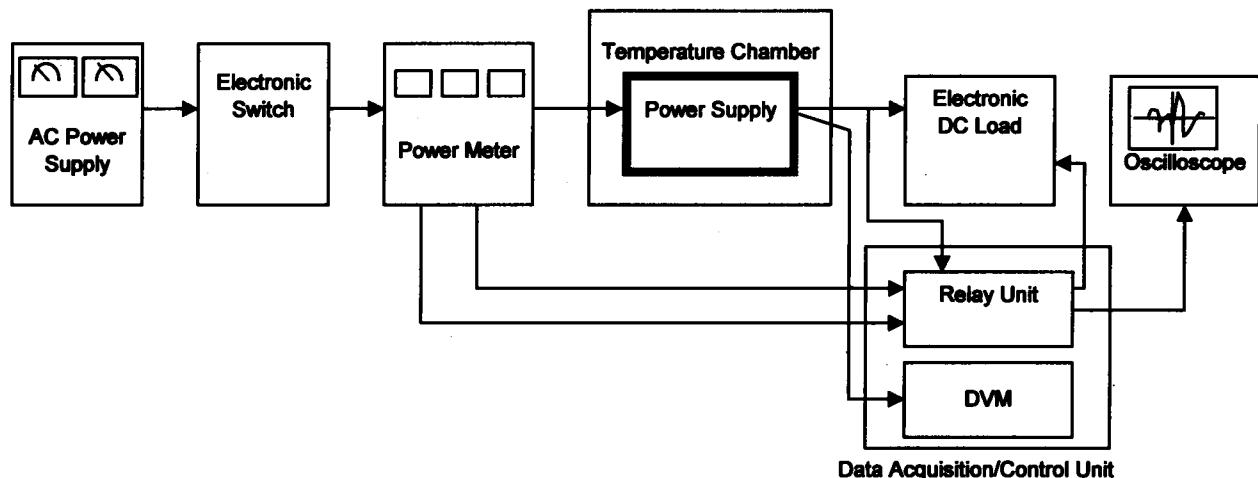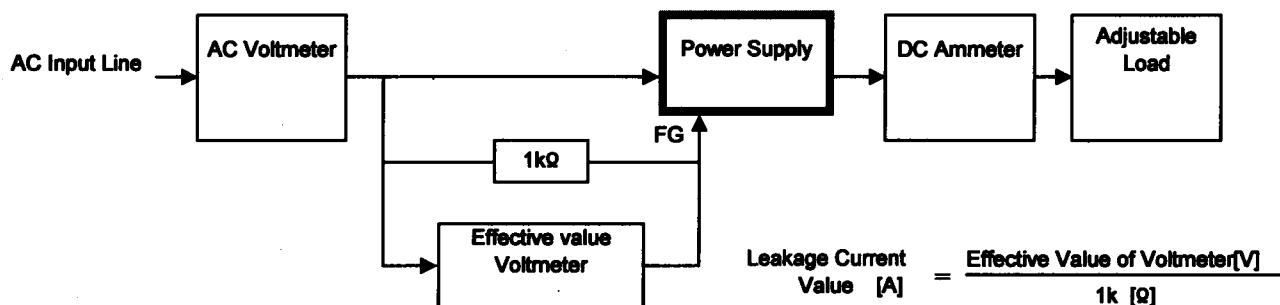
Figure A

Figure B (DEN-AN)

Figure B (IEC60950)

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