



TEST DATA OF PBA150F-24

Regulated DC Power Supply
Apr.7. 2004

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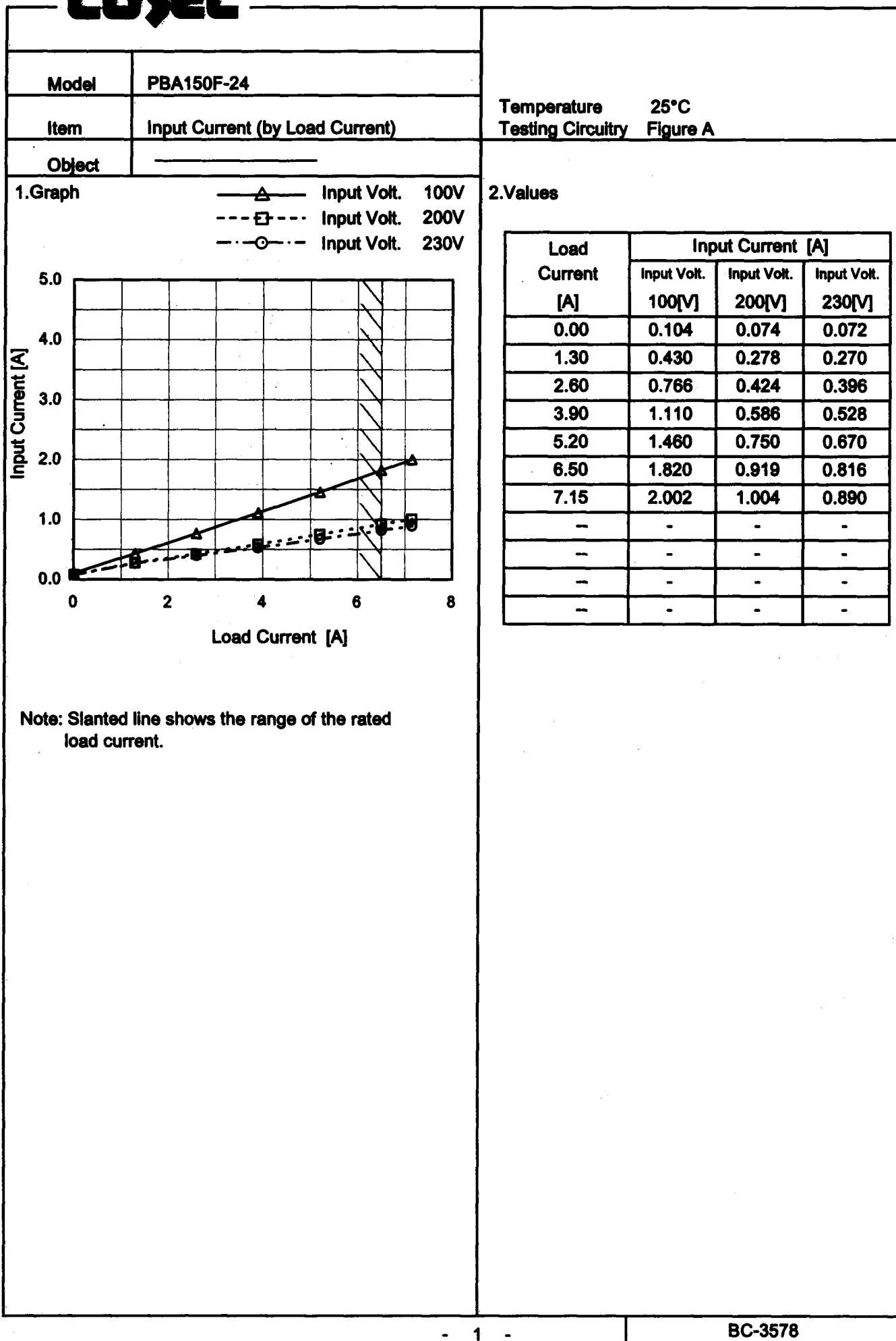
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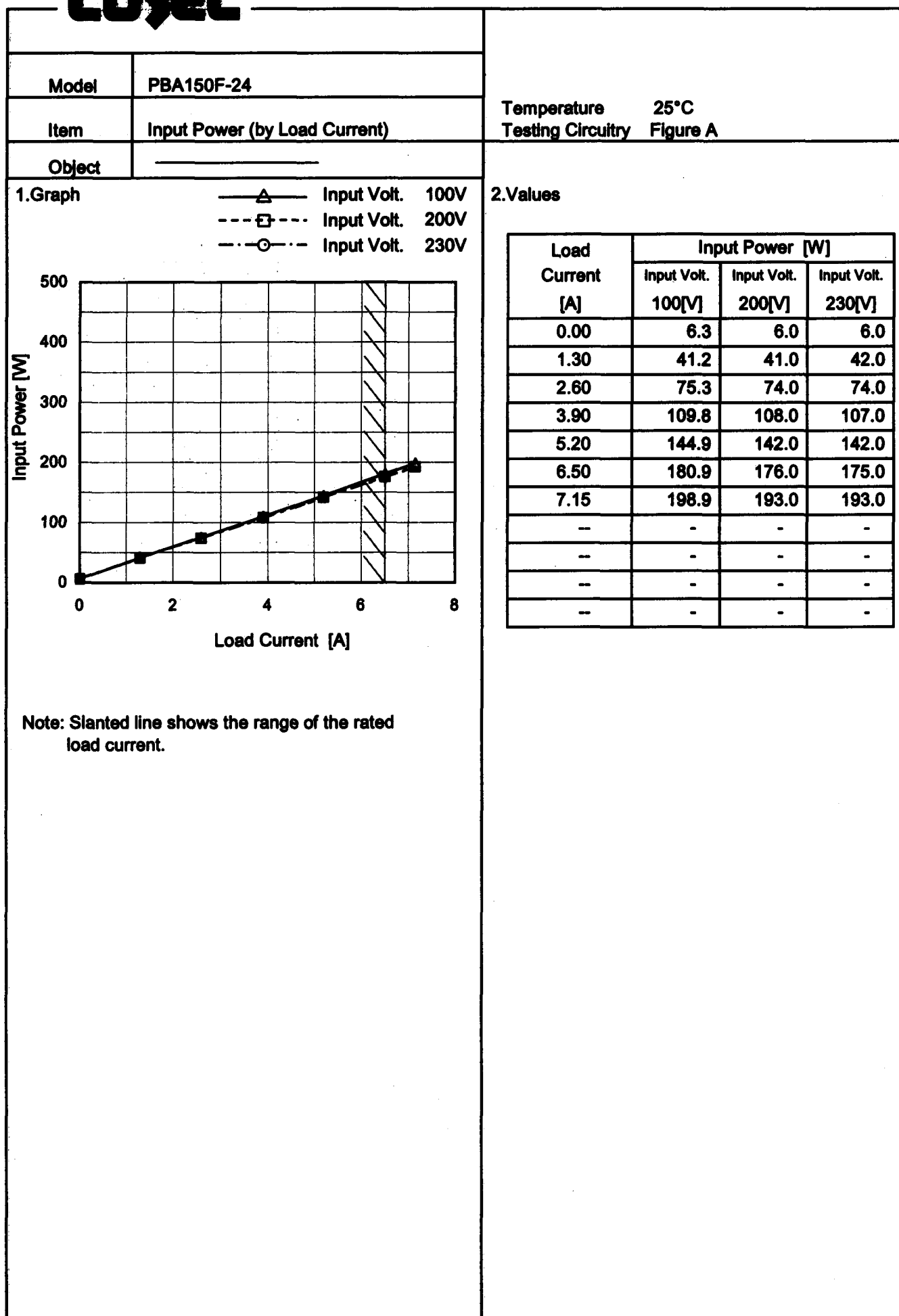
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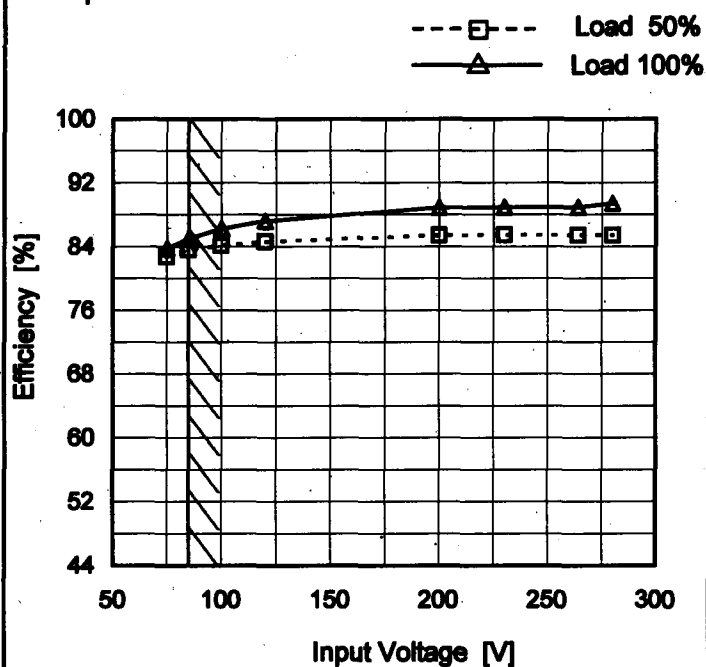
Model PBA150F-24

Item Efficiency (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

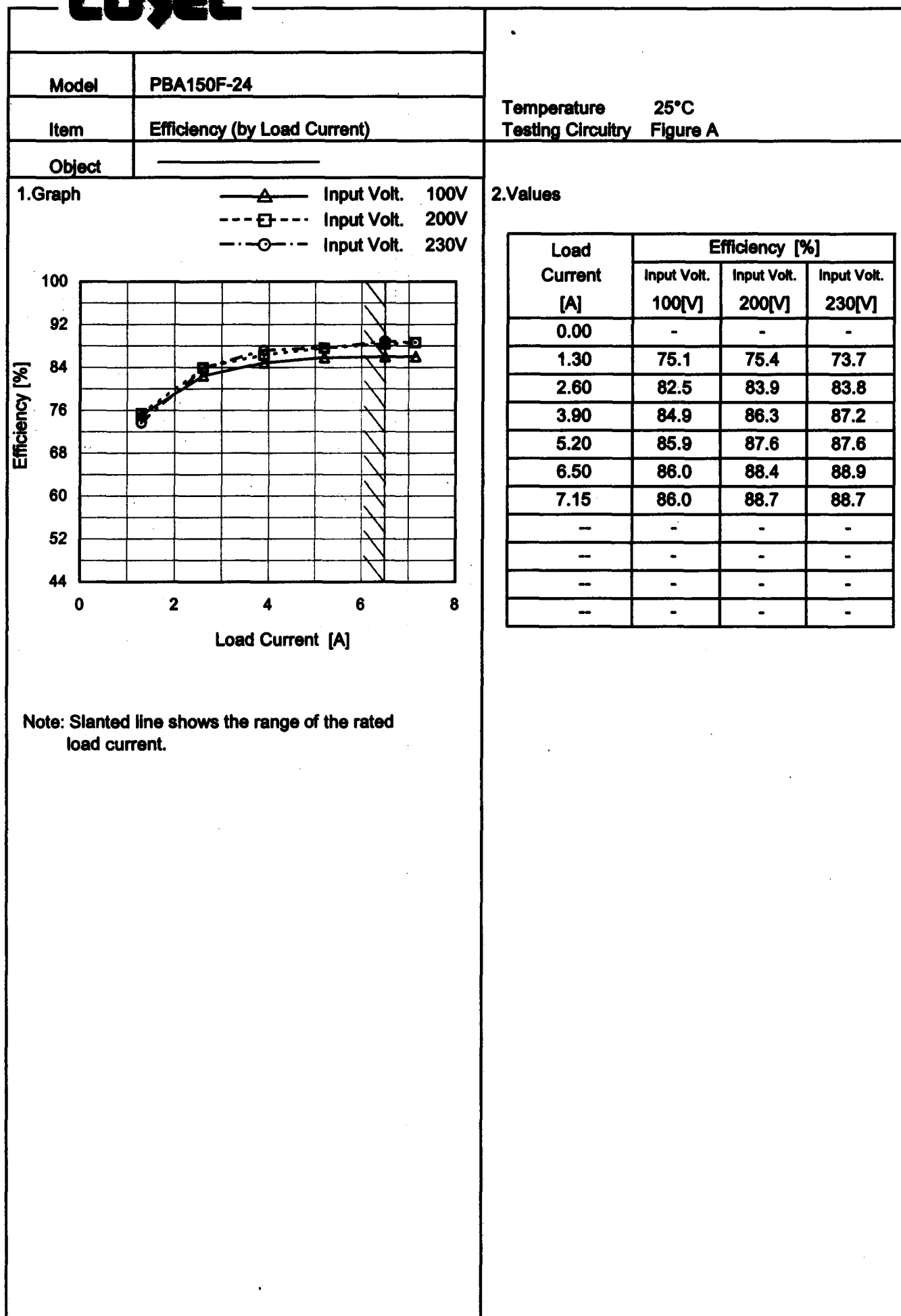
1. Graph



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

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	82.7	83.8
85	83.6	85.0
100	84.2	86.2
120	84.7	87.2
200	85.4	88.9
230	85.5	88.9
264	85.4	88.9
280	85.5	89.4
—	—	—

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Model		PBA150F-24	
Item		Power Factor (by Input Voltage)	
Object			

1.Graph

□

Load 50%

△

Load 100%

Power Factor

1.0

0.9

0.8

0.7

0.6

0.5

0.4

50

100

150

200

250

300

Input Voltage [V]

Input Voltage [V]	Load 50%	Load 100%
75	0.997	0.998
85	0.995	0.999
100	0.988	0.998
120	0.981	0.993
200	0.901	0.956
230	0.858	0.936
264	0.760	0.911
280	0.674	0.845

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.997	0.998
85	0.995	0.999
100	0.988	0.998
120	0.981	0.993
200	0.901	0.956
230	0.858	0.936
264	0.760	0.911
280	0.674	0.845
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Note: Slanted line shows the range of the rated input voltage.

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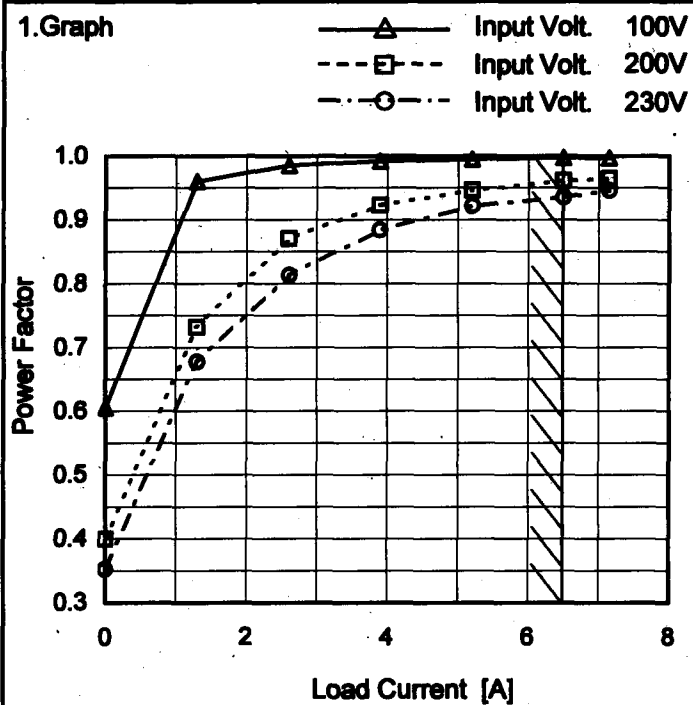
Model PBA150F-24

Item Power Factor (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph



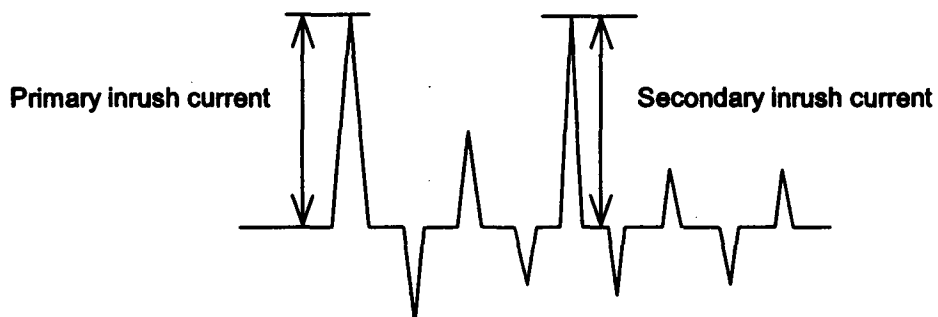
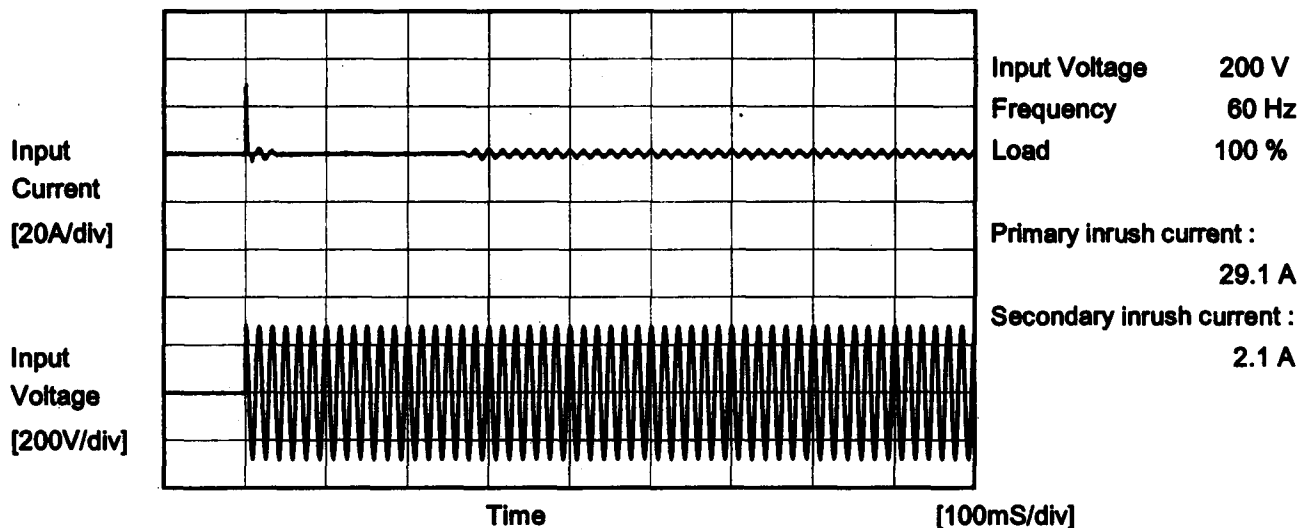
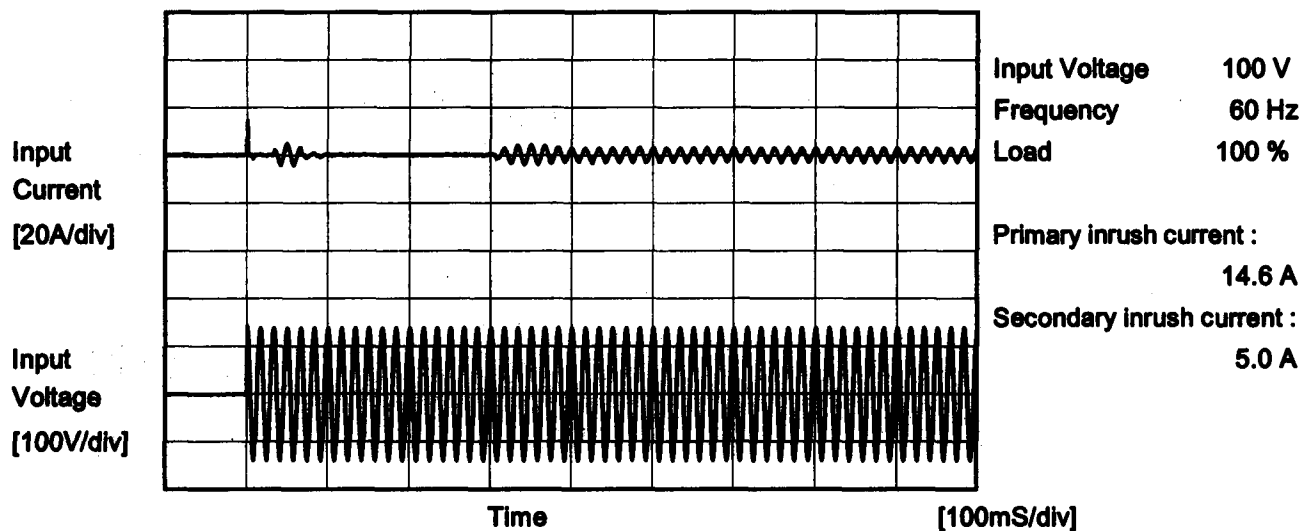
Note: Slanted line shows the range of the rated load current.

2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.606	0.400	0.353
1.30	0.960	0.732	0.677
2.60	0.986	0.871	0.813
3.90	0.992	0.923	0.884
5.20	0.995	0.947	0.922
6.50	0.997	0.962	0.936
7.15	0.997	0.965	0.946
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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		Temperature 25°C Testing Circuitry Figure A
Model	PBA150F-24	
Item	Inrush Current	
Object		





		Temperature 25°C Testing Circuitry Figure B
Model	PBA150F-24	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

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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Model		PBA150F-24	
Item		Line Regulation	
Object		+24V6.5A	

1.Graph

---□---

Load 50%

---△---

Load 100%

Output Voltage [V]

24.30

24.20

24.10

24.00

23.90

23.80

23.70

23.60

50

100

150

200

250

300

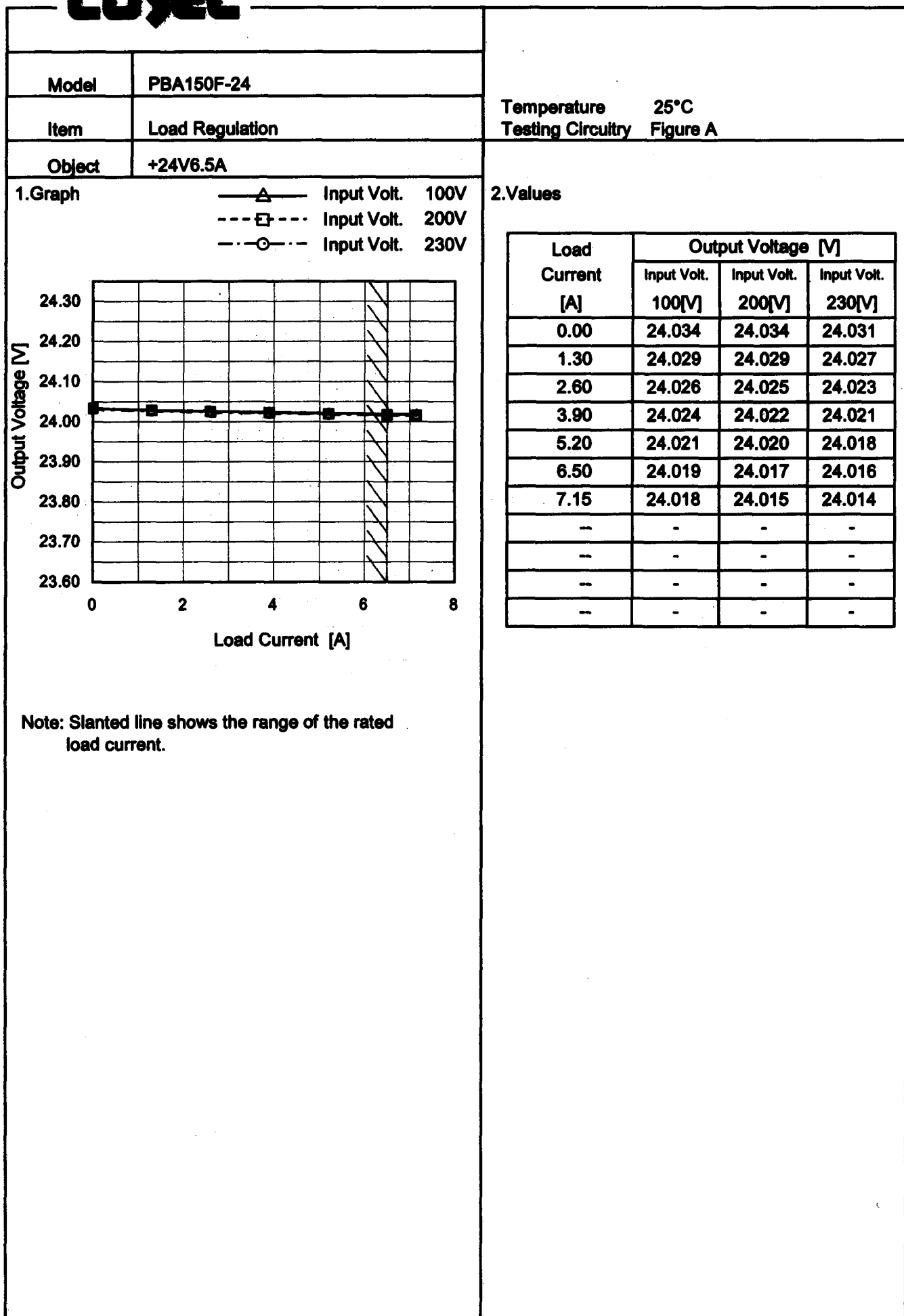
Input Voltage [V]

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

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	24.021	24.017
85	24.021	24.016
100	24.021	24.015
120	24.020	24.015
200	24.021	24.017
230	24.020	24.016
264	24.019	24.015
280	24.019	24.015
--	-	-

2.Values

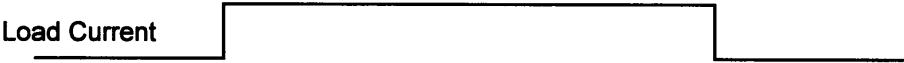
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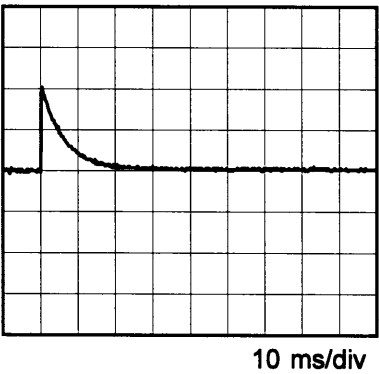
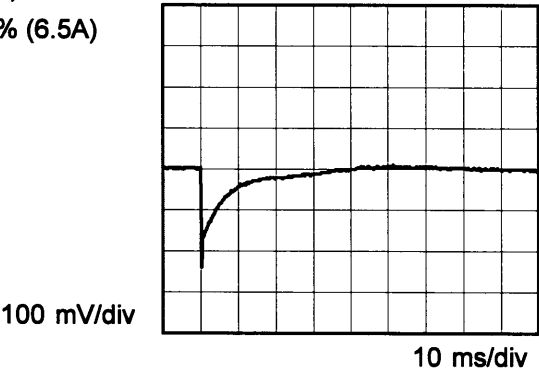


Model	PBA150F-24		
Item	Dynamic Load Response	Temperature	25°C
Object	+24V6.5A	Testing Circuitry	Figure A

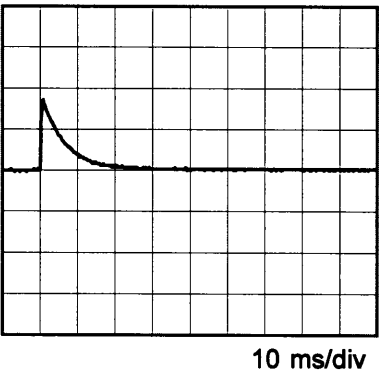
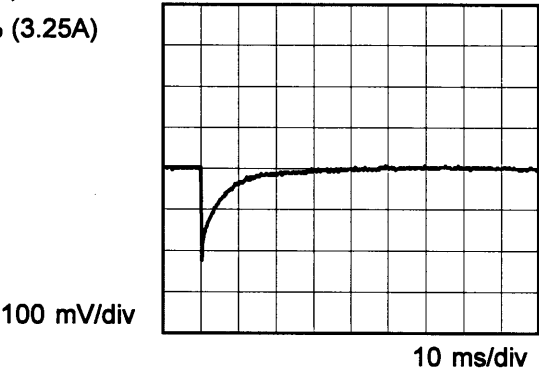
Input Volt. 100 V
Cycle 1000 ms



Min. Load (0A) ←→
Load 100% (6.5A)



Min. Load (0A) ←→
Load 50% (3.25A)



* The characteristic of AC200V is equal.

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Model

PBA150F-24

Item

Ripple Voltage (by Load Current)

Object

+24V6.5A

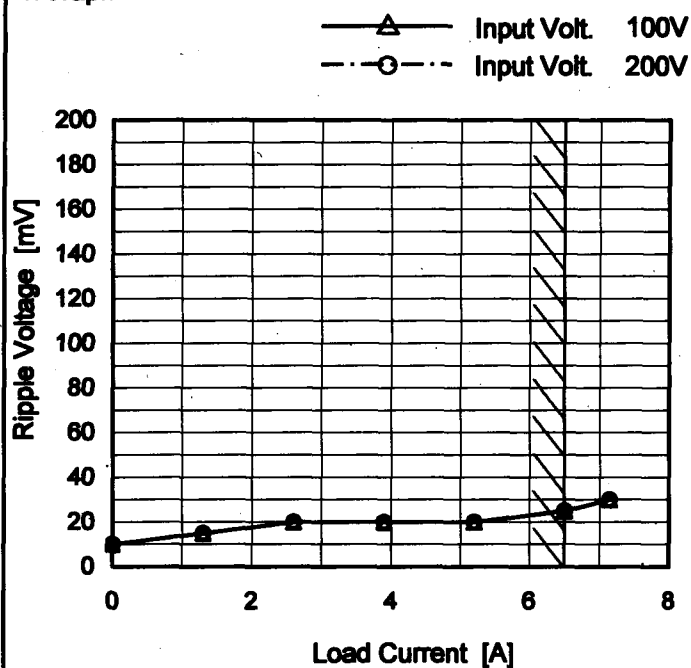
Temperature

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]
0.00	10	10
1.30	15	15
2.60	20	20
3.90	20	20
5.20	20	20
6.50	25	25
7.15	30	30
-	-	-
-	-	-
-	-	-
-	-	-

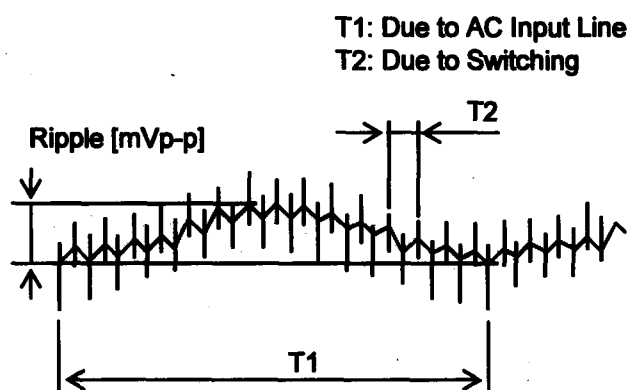


Fig. Complex Ripple Wave Form

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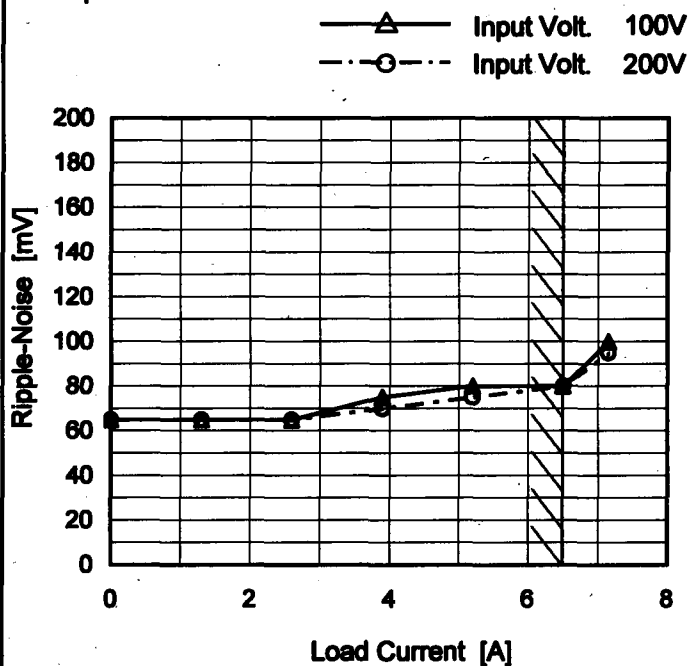
Model PBA150F-24

Item Ripple-Noise

Object +24V6.5A

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]
0.00	65	65
1.30	65	65
2.60	65	65
3.90	75	70
5.20	80	75
6.50	80	80
7.15	100	95
—	—	—
—	—	—
—	—	—
—	—	—

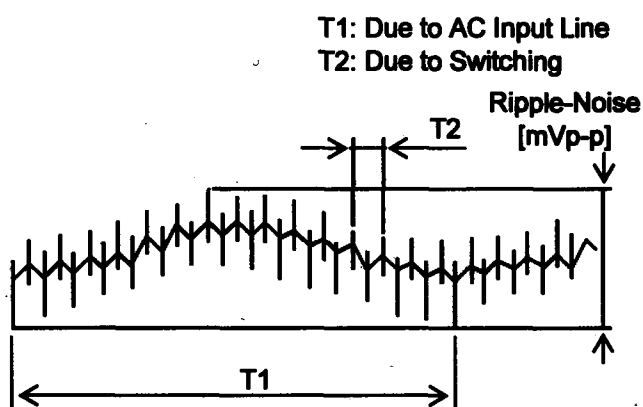


Fig. Complex Ripple Wave Form

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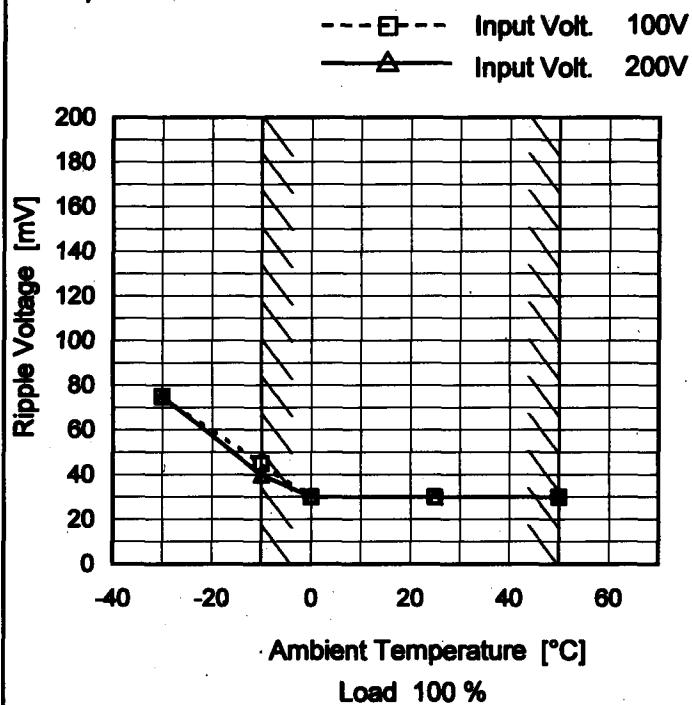
Model PBA150F-24

Item Ripple Voltage (by Ambient Temp.)

Object +24V6.5A

Testing Circuitry Figure A

1. Graph



Measured by 20 MHz Oscilloscope.

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

2. Values

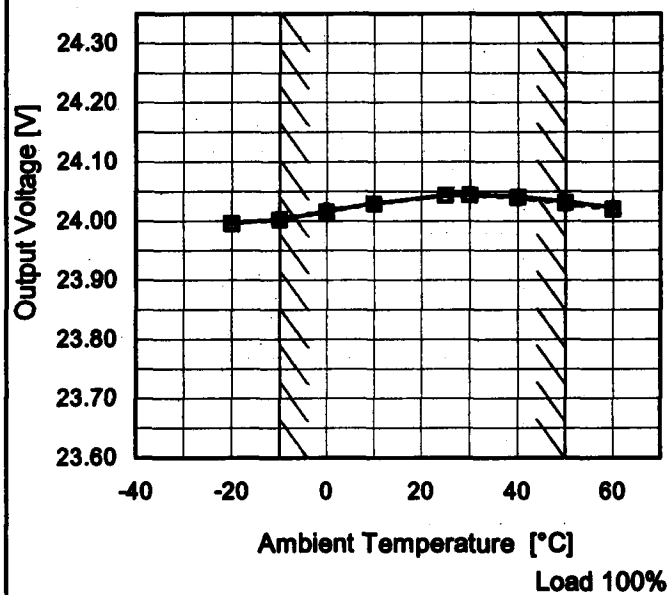
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	75	75
-10	45	40
0	30	30
25	30	30
50	30	30
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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Model	PBA150F-24
Item	Ambient Temperature Drift
Object	+24V6.5A

1. Graph

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



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]
-20	23.997	23.996	23.996
-10	24.003	24.003	24.004
0	24.016	24.016	24.018
10	24.030	24.029	24.029
25	24.044	24.043	24.043
30	24.045	24.044	24.044
40	24.042	24.040	24.039
50	24.033	24.031	24.030
60	24.023	24.020	24.019
--	-	-	-
--	-	-	-

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		Testing Circuitry Figure A
Model	PBA150F-24	
Item	Output Voltage Accuracy	
Object	+24V6.5A	

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 - 6.5A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	25	200	0	24.060	±27	±0.1
Minimum Voltage	-10	200	6.5	24.007		

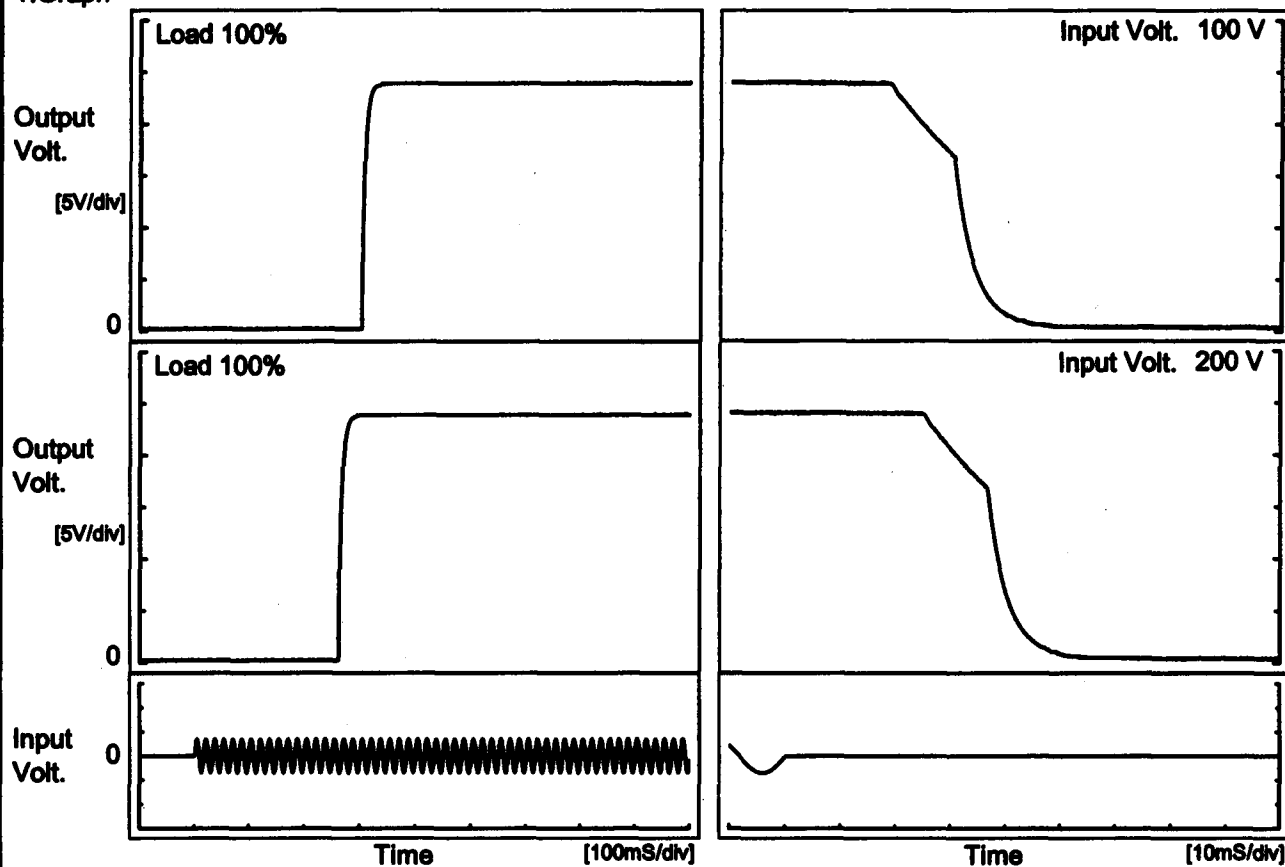
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Model	PBA150F-24		
Item	Time Lapse Drift	Temperature	25°C
		Testing Circuitry	Figure A
Object	+24V6.5A		
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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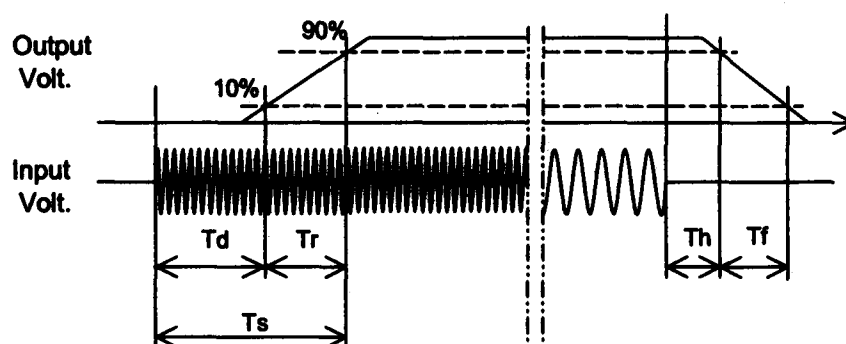
Model	PBA150F-24	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V6.5A		

1. Graph

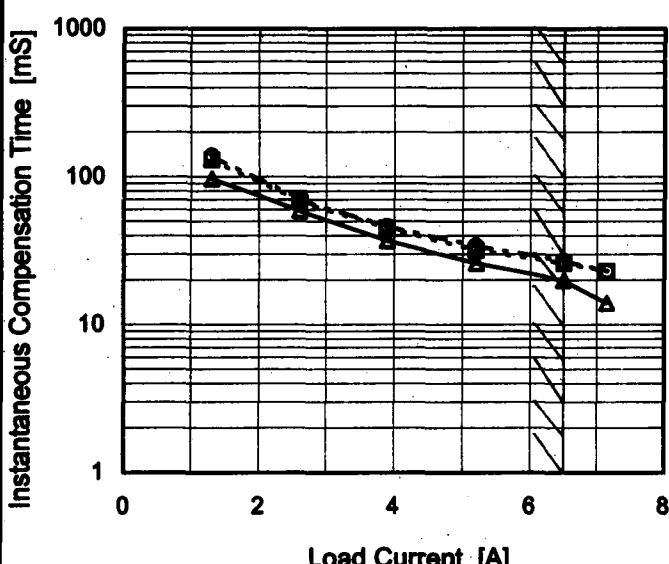


2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		303.0	13.0	316.0	21.8	15.9
200 V		262.0	13.0	275.0	27.9	16.1

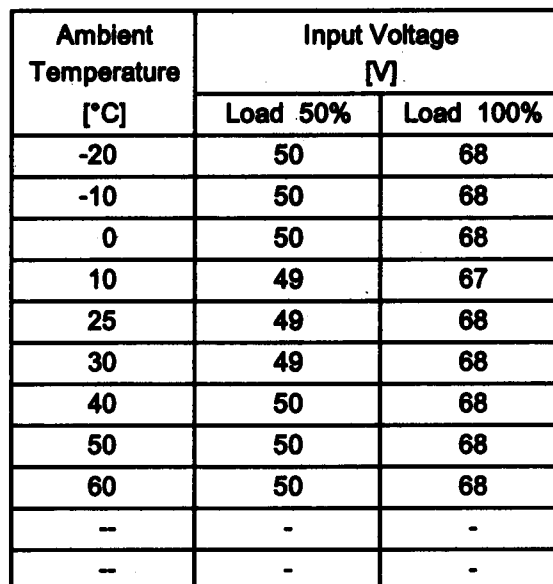


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Model	PBA150F-24																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+24V6.5A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div>—△— Input Volt. 100V</div><div>---□--- Input Volt. 200V</div><div>---○--- Input Volt. 230V</div></div>  <p>Instantaneous Compensation Time [mS]</p> <p>Load Current [A]</p>		<table><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><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.30</td><td>97</td><td>130</td><td>139</td></tr><tr><td>2.60</td><td>59</td><td>68</td><td>70</td></tr><tr><td>3.90</td><td>37</td><td>45</td><td>46</td></tr><tr><td>5.20</td><td>26</td><td>32</td><td>34</td></tr><tr><td>6.50</td><td>20</td><td>26</td><td>27</td></tr><tr><td>7.15</td><td>14</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Time [mS]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	-	-	-	1.30	97	130	139	2.60	59	68	70	3.90	37	45	46	5.20	26	32	34	6.50	20	26	27	7.15	14	23	23	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [mS]																																																					
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Note: Slanted line shows the range of the rated load current.																																																						

Testing Circuitry Figure A

2.Values



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

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Model	PBA150F-24	Temperature 25°C Testing Circuitry Figure A																																										
Item	Overcurrent Protection																																											
Object	+24V6.5A																																											
1.Graph		2.Values																																										
<div><div><div></div><div>Input Volt. 100V</div></div><div><div></div><div>Input Volt. 200V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is from 12V to 0V.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th></tr><tr><td>24.0</td><td>6.75</td><td>6.66</td></tr><tr><td>22.8</td><td>8.25</td><td>8.23</td></tr><tr><td>21.6</td><td>8.27</td><td>8.25</td></tr><tr><td>19.2</td><td>8.27</td><td>8.26</td></tr><tr><td>16.8</td><td>8.23</td><td>8.21</td></tr><tr><td>14.4</td><td>8.29</td><td>8.27</td></tr><tr><td>12.0</td><td>8.28</td><td>8.25</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 200[V]	24.0	6.75	6.66	22.8	8.25	8.23	21.6	8.27	8.25	19.2	8.27	8.26	16.8	8.23	8.21	14.4	8.29	8.27	12.0	8.28	8.25	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																											
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Model		PBA150F-24	
Item		Overvoltage Protection	
Object		+24V6.5A	

1.Graph

—△—

Input Volt.

100V

---□---

Input Volt.

200V

Operating Point [V]

COSEL

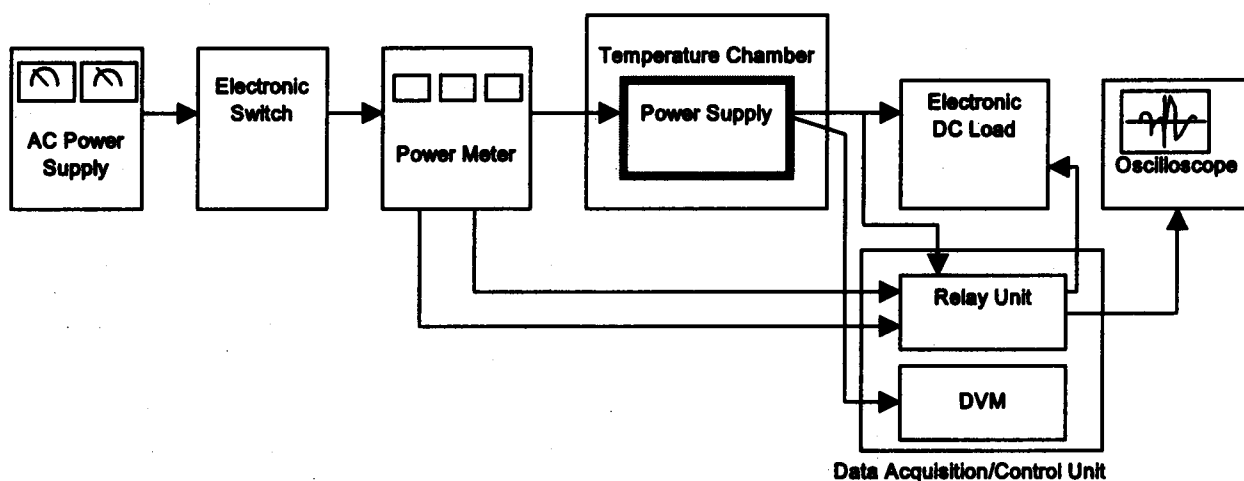


Figure A

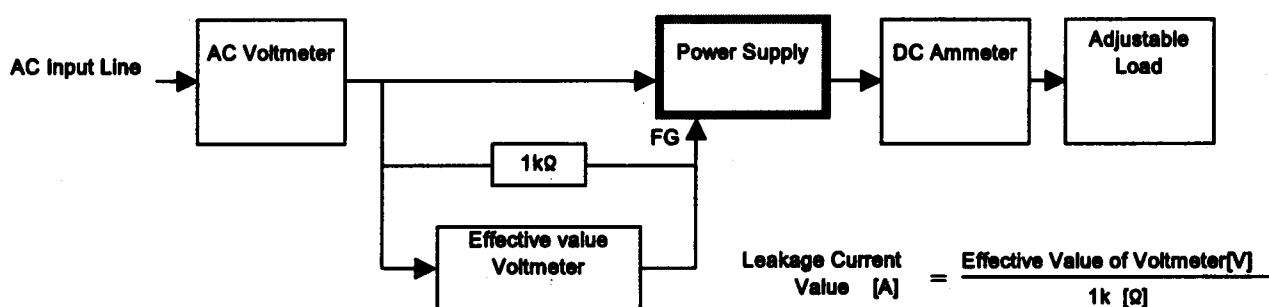


Figure B (DEN-AN)

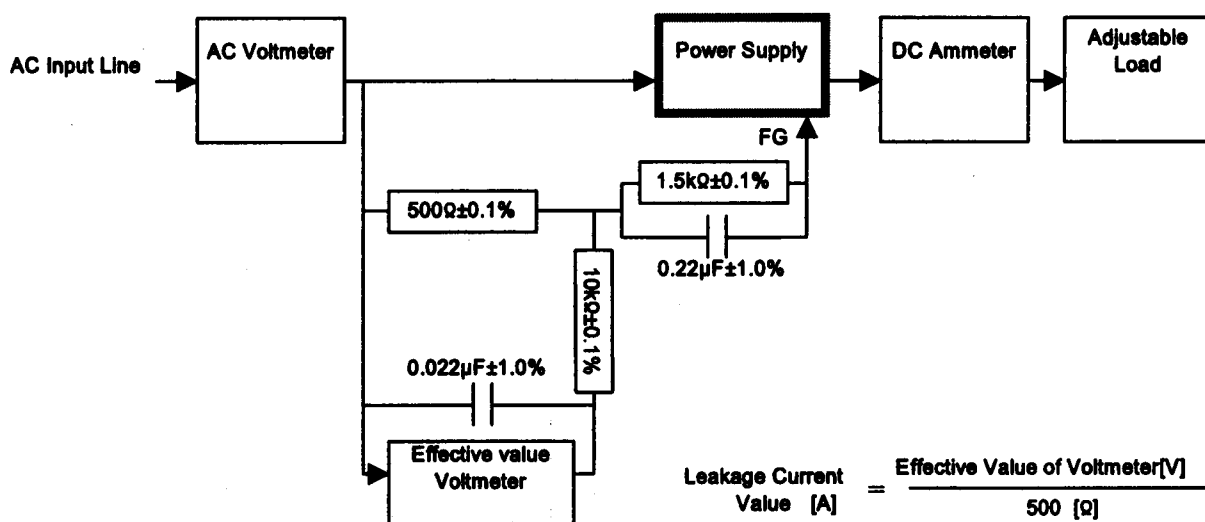


Figure B (IEC60950)