



TEST DATA OF PBA50F-5

Regulated DC Power Supply
Apr.1. 2004

Approved by : Kuniaki Nagahara
Kuniaki Nagahara Design Manager

Prepared by : Koji Todo
Koji Todo 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

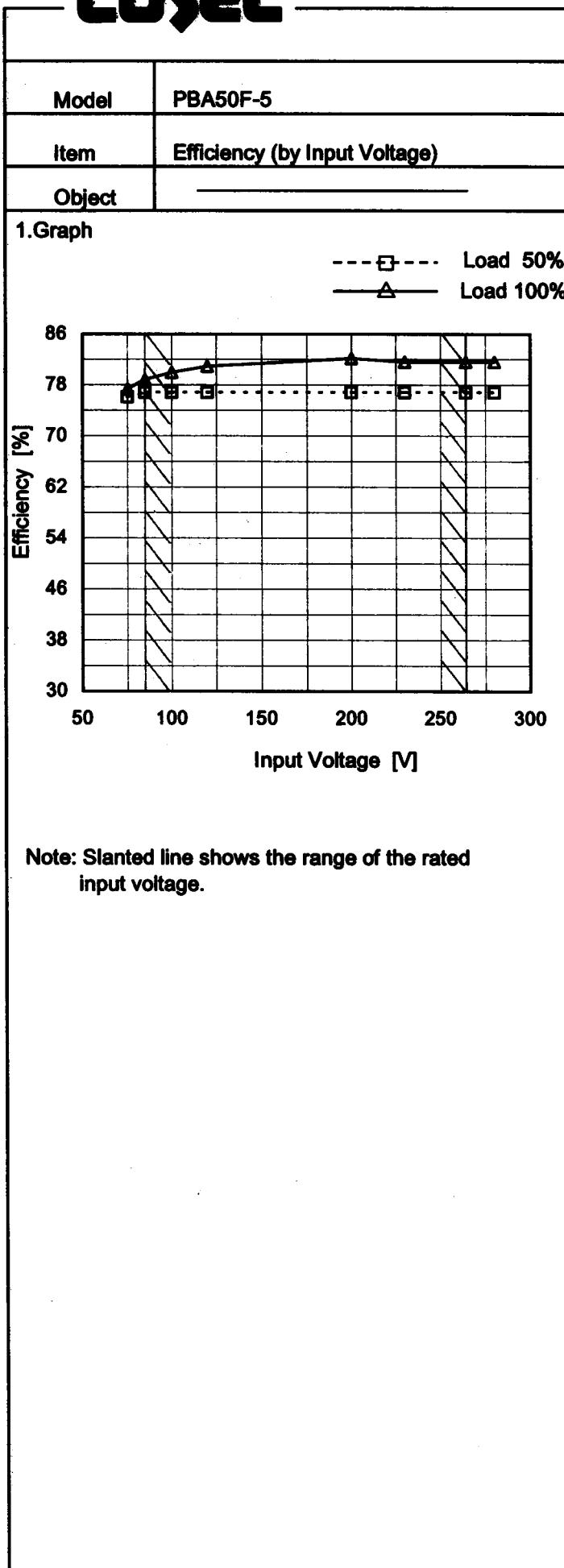
(Final Page 24)

COSSEL

Model	PBA50F-5	Temperature Testing Circuitry	25°C Figure A																																																		
Item	Input Current (by Load Current)																																																				
Object	—																																																				
1. Graph		—△— Input Volt. 100V - -□--- Input Volt. 200V - -○--- Input Volt. 230V																																																			
			2. Values																																																		
<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</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</td><td>0.070</td><td>0.062</td><td>0.061</td></tr> <tr><td>2</td><td>0.168</td><td>0.119</td><td>0.118</td></tr> <tr><td>4</td><td>0.276</td><td>0.167</td><td>0.159</td></tr> <tr><td>6</td><td>0.390</td><td>0.219</td><td>0.202</td></tr> <tr><td>8</td><td>0.509</td><td>0.272</td><td>0.250</td></tr> <tr><td>10</td><td>0.634</td><td>0.330</td><td>0.300</td></tr> <tr><td>11</td><td>0.699</td><td>0.359</td><td>0.325</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> </tbody> </table>			Load Current [A]	Input Current [A]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0	0.070	0.062	0.061	2	0.168	0.119	0.118	4	0.276	0.167	0.159	6	0.390	0.219	0.202	8	0.509	0.272	0.250	10	0.634	0.330	0.300	11	0.699	0.359	0.325	—	-	-	-	—	-	-	-	—	-	-	-	—	-	-	-
Load Current [A]	Input Current [A]																																																				
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																		
0	0.070	0.062	0.061																																																		
2	0.168	0.119	0.118																																																		
4	0.276	0.167	0.159																																																		
6	0.390	0.219	0.202																																																		
8	0.509	0.272	0.250																																																		
10	0.634	0.330	0.300																																																		
11	0.699	0.359	0.325																																																		
—	-	-	-																																																		
—	-	-	-																																																		
—	-	-	-																																																		
—	-	-	-																																																		
Note: Slanted line shows the range of the rated load current.																																																					

COSEL

Model	PBA50F-5	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Input Power (by Load Current)																																																					
Object	_____																																																					
1.Graph	<p>—△— Input Volt. 100V - - -□- - Input Volt. 200V - - ○- - Input Volt. 230V</p> <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Power [W] (100V)</th> <th>Input Power [W] (200V)</th> <th>Input Power [W] (230V)</th> </tr> </thead> <tbody> <tr><td>0</td><td>5.60</td><td>7.00</td><td>6.00</td></tr> <tr><td>2</td><td>16.04</td><td>17.00</td><td>17.00</td></tr> <tr><td>4</td><td>27.08</td><td>27.00</td><td>28.00</td></tr> <tr><td>6</td><td>38.63</td><td>38.00</td><td>38.00</td></tr> <tr><td>8</td><td>50.69</td><td>49.70</td><td>50.00</td></tr> <tr><td>10</td><td>63.31</td><td>61.60</td><td>62.00</td></tr> <tr><td>11</td><td>69.84</td><td>67.80</td><td>68.00</td></tr> </tbody> </table>			Load Current [A]	Input Power [W] (100V)	Input Power [W] (200V)	Input Power [W] (230V)	0	5.60	7.00	6.00	2	16.04	17.00	17.00	4	27.08	27.00	28.00	6	38.63	38.00	38.00	8	50.69	49.70	50.00	10	63.31	61.60	62.00	11	69.84	67.80	68.00																			
Load Current [A]	Input Power [W] (100V)	Input Power [W] (200V)	Input Power [W] (230V)																																																			
0	5.60	7.00	6.00																																																			
2	16.04	17.00	17.00																																																			
4	27.08	27.00	28.00																																																			
6	38.63	38.00	38.00																																																			
8	50.69	49.70	50.00																																																			
10	63.31	61.60	62.00																																																			
11	69.84	67.80	68.00																																																			
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Power [W]</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</td><td>5.60</td><td>7.00</td><td>6.00</td></tr> <tr><td>2</td><td>16.04</td><td>17.00</td><td>17.00</td></tr> <tr><td>4</td><td>27.08</td><td>27.00</td><td>28.00</td></tr> <tr><td>6</td><td>38.63</td><td>38.00</td><td>38.00</td></tr> <tr><td>8</td><td>50.69</td><td>49.70</td><td>50.00</td></tr> <tr><td>10</td><td>63.31</td><td>61.60</td><td>62.00</td></tr> <tr><td>11</td><td>69.84</td><td>67.80</td><td>68.00</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> </tbody> </table>			Load Current [A]	Input Power [W]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0	5.60	7.00	6.00	2	16.04	17.00	17.00	4	27.08	27.00	28.00	6	38.63	38.00	38.00	8	50.69	49.70	50.00	10	63.31	61.60	62.00	11	69.84	67.80	68.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Load Current [A]	Input Power [W]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0	5.60	7.00	6.00																																																			
2	16.04	17.00	17.00																																																			
4	27.08	27.00	28.00																																																			
6	38.63	38.00	38.00																																																			
8	50.69	49.70	50.00																																																			
10	63.31	61.60	62.00																																																			
11	69.84	67.80	68.00																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
Note:	Slanted line shows the range of the rated load current.																																																					

COSEL

Temperature 25°C
Testing Circuitry Figure A

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	76.1	77.4
85	76.8	78.8
100	76.8	80.0
120	76.8	80.9
200	76.8	82.2
230	76.8	81.6
264	76.8	81.6
280	76.8	81.6
--	-	-

COSEL

Model	PBA50F-5	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Efficiency (by Load Current)																																																					
Object	—																																																					
1.Graph	<p>—△— 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>Efficiency [100V] (%)</th> <th>Efficiency [200V] (%)</th> <th>Efficiency [230V] (%)</th> </tr> </thead> <tbody> <tr><td>0</td><td>63.3</td><td>59.7</td><td>59.8</td></tr> <tr><td>2</td><td>74.9</td><td>75.2</td><td>72.5</td></tr> <tr><td>4</td><td>78.7</td><td>80.0</td><td>80.0</td></tr> <tr><td>6</td><td>80.0</td><td>81.5</td><td>81.1</td></tr> <tr><td>8</td><td>80.0</td><td>82.2</td><td>81.6</td></tr> <tr><td>10</td><td>79.7</td><td>82.1</td><td>81.8</td></tr> <tr><td>11</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> </tbody> </table>			Load Current [A]	Efficiency [100V] (%)	Efficiency [200V] (%)	Efficiency [230V] (%)	0	63.3	59.7	59.8	2	74.9	75.2	72.5	4	78.7	80.0	80.0	6	80.0	81.5	81.1	8	80.0	82.2	81.6	10	79.7	82.1	81.8	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
Load Current [A]	Efficiency [100V] (%)	Efficiency [200V] (%)	Efficiency [230V] (%)																																																			
0	63.3	59.7	59.8																																																			
2	74.9	75.2	72.5																																																			
4	78.7	80.0	80.0																																																			
6	80.0	81.5	81.1																																																			
8	80.0	82.2	81.6																																																			
10	79.7	82.1	81.8																																																			
11	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Efficiency [%]</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</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2</td><td>63.3</td><td>59.7</td><td>59.8</td></tr> <tr><td>4</td><td>74.9</td><td>75.2</td><td>72.5</td></tr> <tr><td>6</td><td>78.7</td><td>80.0</td><td>80.0</td></tr> <tr><td>8</td><td>80.0</td><td>81.5</td><td>81.1</td></tr> <tr><td>10</td><td>80.0</td><td>82.2</td><td>81.6</td></tr> <tr><td>11</td><td>79.7</td><td>82.1</td><td>81.8</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> </tbody> </table>			Load Current [A]	Efficiency [%]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0	-	-	-	2	63.3	59.7	59.8	4	74.9	75.2	72.5	6	78.7	80.0	80.0	8	80.0	81.5	81.1	10	80.0	82.2	81.6	11	79.7	82.1	81.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0	-	-	-																																																			
2	63.3	59.7	59.8																																																			
4	74.9	75.2	72.5																																																			
6	78.7	80.0	80.0																																																			
8	80.0	81.5	81.1																																																			
10	80.0	82.2	81.6																																																			
11	79.7	82.1	81.8																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
Note:	Slanted line shows the range of the rated load current.																																																					

COSEL

Model	PBA50F-5																											
Item	Power Factor (by Input Voltage)																											
Object	_____																											
1. Graph																												
<p>Legend: Load 50% (dashed line with open squares), Load 100% (solid line with solid triangles)</p> <table border="1"> <caption>Data points estimated from Figure 1</caption> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 50% Power Factor</th> <th>Load 100% Power Factor</th> </tr> </thead> <tbody> <tr><td>75</td><td>0.994</td><td>0.986</td></tr> <tr><td>85</td><td>0.989</td><td>0.995</td></tr> <tr><td>100</td><td>0.981</td><td>0.993</td></tr> <tr><td>120</td><td>0.971</td><td>0.987</td></tr> <tr><td>200</td><td>0.846</td><td>0.932</td></tr> <tr><td>230</td><td>0.805</td><td>0.899</td></tr> <tr><td>264</td><td>0.717</td><td>0.800</td></tr> <tr><td>280</td><td>0.635</td><td>0.765</td></tr> </tbody> </table>		Input Voltage [V]	Load 50% Power Factor	Load 100% Power Factor	75	0.994	0.986	85	0.989	0.995	100	0.981	0.993	120	0.971	0.987	200	0.846	0.932	230	0.805	0.899	264	0.717	0.800	280	0.635	0.765
Input Voltage [V]	Load 50% Power Factor	Load 100% Power Factor																										
75	0.994	0.986																										
85	0.989	0.995																										
100	0.981	0.993																										
120	0.971	0.987																										
200	0.846	0.932																										
230	0.805	0.899																										
264	0.717	0.800																										
280	0.635	0.765																										
<p>Note: Slanted line shows the range of the rated input voltage.</p>																												

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.994	0.986
85	0.989	0.995
100	0.981	0.993
120	0.971	0.987
200	0.846	0.932
230	0.805	0.899
264	0.717	0.800
280	0.635	0.765
--	-	-

COSEL

Model	PBA50F-5	Temperature 25°C Testing Circuitry Figure A																																																		
Item	Power Factor (by Load Current)																																																			
Object	_____	2.Values																																																		
1.Graph	Input Volt. 100V Input Volt. 200V Input Volt. 230V																																																			
	<p>The graph plots Power Factor against Load Current for three input voltages: 100V, 200V, and 230V. The power factor generally increases with load current and is higher for higher input voltages. A slanted line on the graph indicates the rated load current range.</p> <table border="1"> <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</td><td>0.794</td><td>0.583</td><td>0.429</td></tr> <tr><td>2</td><td>0.946</td><td>0.708</td><td>0.630</td></tr> <tr><td>4</td><td>0.976</td><td>0.794</td><td>0.757</td></tr> <tr><td>6</td><td>0.986</td><td>0.864</td><td>0.809</td></tr> <tr><td>8</td><td>0.991</td><td>0.909</td><td>0.862</td></tr> <tr><td>10</td><td>0.993</td><td>0.929</td><td>0.899</td></tr> <tr><td>11</td><td>0.994</td><td>0.939</td><td>0.907</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> </tbody> </table>	Load Current [A]	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0	0.794	0.583	0.429	2	0.946	0.708	0.630	4	0.976	0.794	0.757	6	0.986	0.864	0.809	8	0.991	0.909	0.862	10	0.993	0.929	0.899	11	0.994	0.939	0.907	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Load Current [A]	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																	
0	0.794	0.583	0.429																																																	
2	0.946	0.708	0.630																																																	
4	0.976	0.794	0.757																																																	
6	0.986	0.864	0.809																																																	
8	0.991	0.909	0.862																																																	
10	0.993	0.929	0.899																																																	
11	0.994	0.939	0.907																																																	
-	-	-	-																																																	
-	-	-	-																																																	
-	-	-	-																																																	
-	-	-	-																																																	

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

COSEL

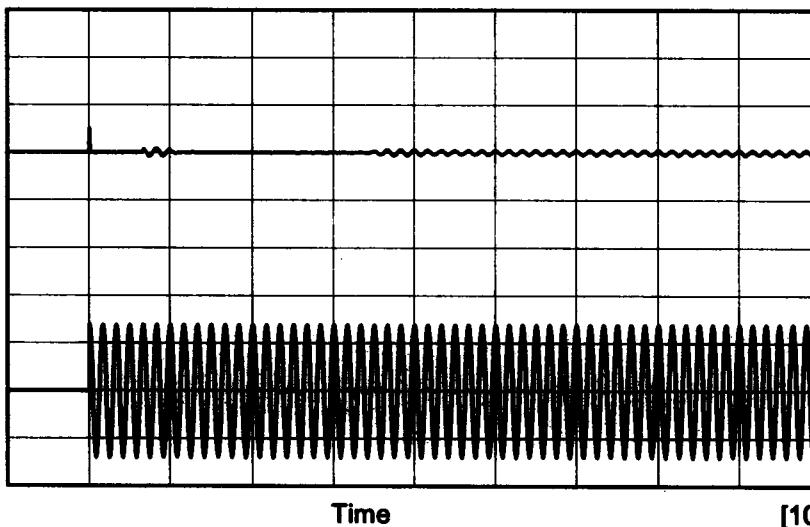
Model PBA50F-5

Item Inrush Current

Temperature 25°C
Testing Circuitry Figure A

Object _____

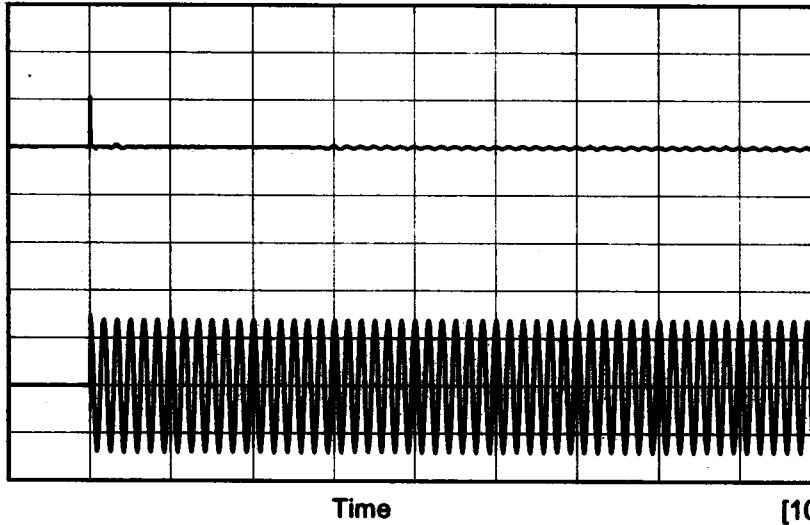
Input Current [20A/div]



Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 10.1 A
Secondary inrush current : 1.7 A

Input Current [20A/div]



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 20.9 A
Secondary inrush current : 0.9 A

Primary inrush current

Secondary inrush current



Model	PBA50F-5	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	_____		

1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.18	0.30	0.34	Operation
	One of phase	0.22	0.48	0.55	stand by
IEC60950	Both phases	0.18	0.32	0.36	Operation
	One of phase	0.22	0.48	0.55	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.

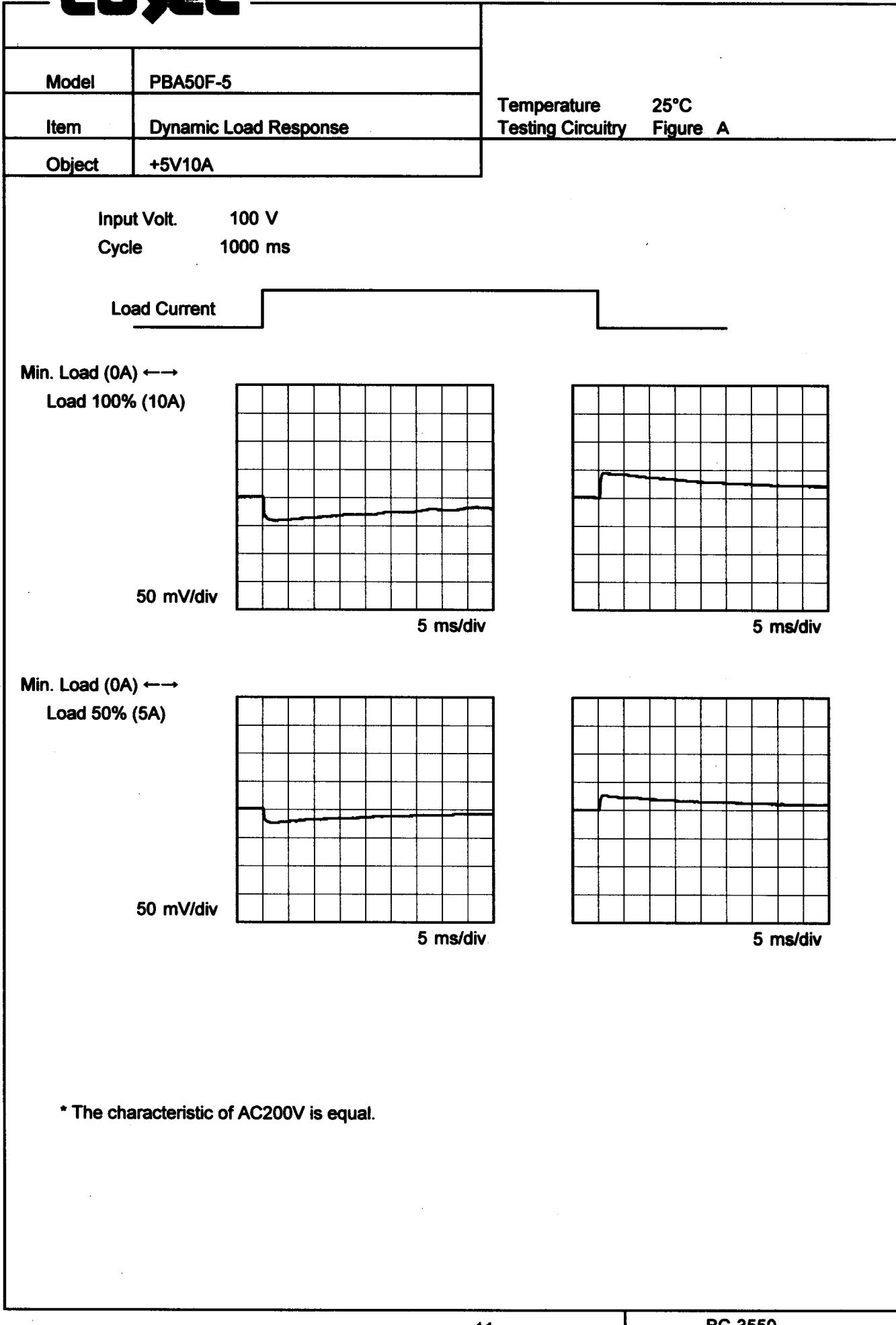
COSEL

Model	PBA50F-5	Temperature Testing Circuitry	25°C Figure A																																
Item	Line Regulation																																		
Object	+5V10A																																		
1. Graph			2. Values																																
<p>The graph plots Output Voltage [V] on the y-axis (4.96 to 5.10) against Input Voltage [V] on the x-axis (50 to 300). Two data series are shown: Load 50% (squares) and Load 100% (triangles). Both series show a very stable output voltage of approximately 5.04V across the entire input voltage range. A horizontal line at 5.04V and a slanted line representing the input voltage range are also present.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>75</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>85</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>100</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>120</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>200</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>230</td> <td>5.054</td> <td>5.045</td> </tr> <tr> <td>264</td> <td>5.054</td> <td>5.044</td> </tr> <tr> <td>280</td> <td>5.055</td> <td>5.044</td> </tr> <tr> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	5.054	5.045	85	5.054	5.045	100	5.054	5.045	120	5.054	5.045	200	5.054	5.045	230	5.054	5.045	264	5.054	5.044	280	5.055	5.044	-	-	-
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
75	5.054	5.045																																	
85	5.054	5.045																																	
100	5.054	5.045																																	
120	5.054	5.045																																	
200	5.054	5.045																																	
230	5.054	5.045																																	
264	5.054	5.044																																	
280	5.055	5.044																																	
-	-	-																																	

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

COSEL

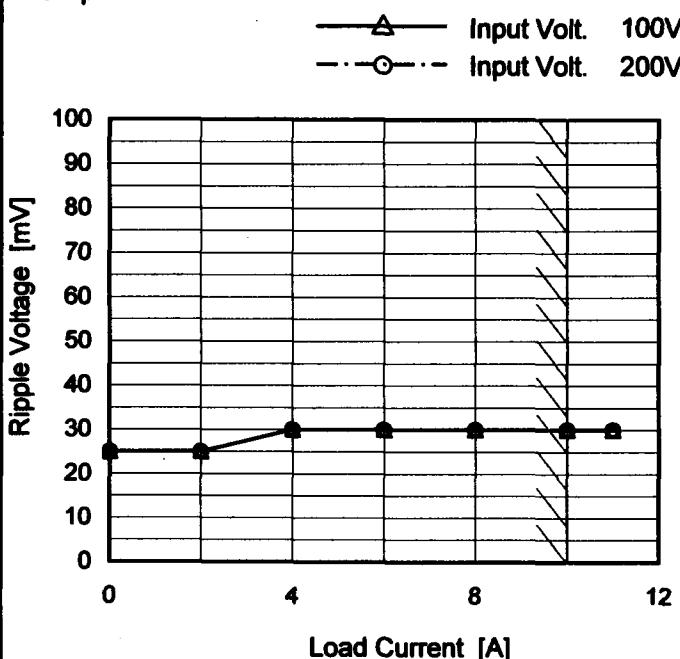
Model	PBA50F-5	Temperature	25°C																																																			
Item	Load Regulation	Testing Circuitry	Figure A																																																			
Object	+5V10A																																																					
1.Graph		2.Values																																																				
<p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 100V Input Volt. 200V Input Volt. 230V 		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>100[V]</th> <th>200[V]</th> <th>230[V]</th> </tr> </thead> <tbody> <tr><td>0</td><td>5.065</td><td>5.065</td><td>5.065</td></tr> <tr><td>2</td><td>5.061</td><td>5.061</td><td>5.061</td></tr> <tr><td>4</td><td>5.057</td><td>5.057</td><td>5.057</td></tr> <tr><td>6</td><td>5.053</td><td>5.053</td><td>5.053</td></tr> <tr><td>8</td><td>5.049</td><td>5.049</td><td>5.049</td></tr> <tr><td>10</td><td>5.045</td><td>5.045</td><td>5.045</td></tr> <tr><td>11</td><td>5.043</td><td>5.043</td><td>5.043</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> </tbody> </table>		Load Current [A]	Output Voltage [V]			100[V]	200[V]	230[V]	0	5.065	5.065	5.065	2	5.061	5.061	5.061	4	5.057	5.057	5.057	6	5.053	5.053	5.053	8	5.049	5.049	5.049	10	5.045	5.045	5.045	11	5.043	5.043	5.043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	100[V]	200[V]	230[V]																																																			
0	5.065	5.065	5.065																																																			
2	5.061	5.061	5.061																																																			
4	5.057	5.057	5.057																																																			
6	5.053	5.053	5.053																																																			
8	5.049	5.049	5.049																																																			
10	5.045	5.045	5.045																																																			
11	5.043	5.043	5.043																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
<p>Note: Slanted line shows the range of the rated load current.</p>																																																						

COSEL

COSEL

Model	PBA50F-5
Item	Ripple Voltage (by Load Current)
Object	+5V10A

1. Graph



Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0	25	25
2	25	25
4	30	30
6	30	30
8	30	30
10	30	30
11	30	30
-	-	-
-	-	-
-	-	-
-	-	-

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

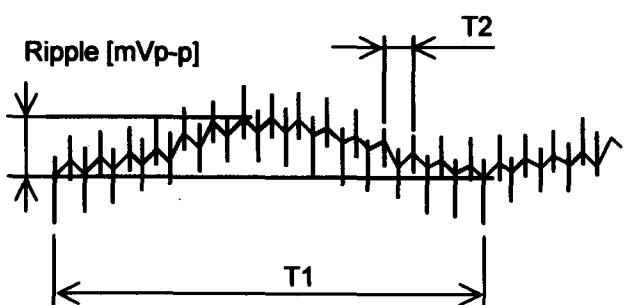
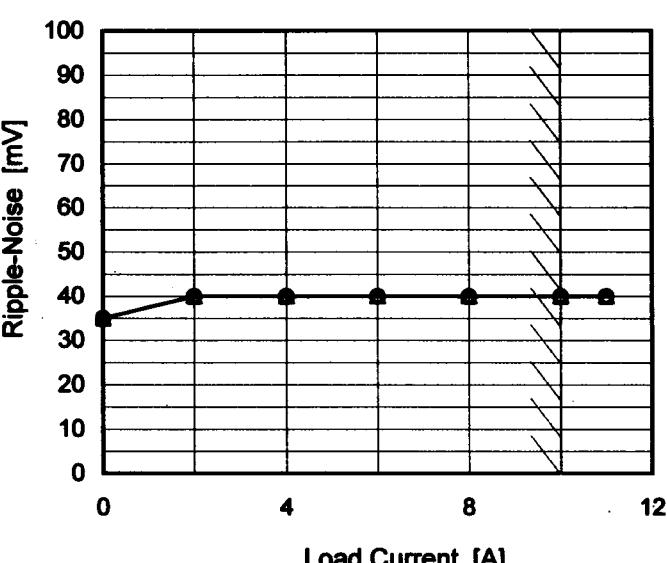
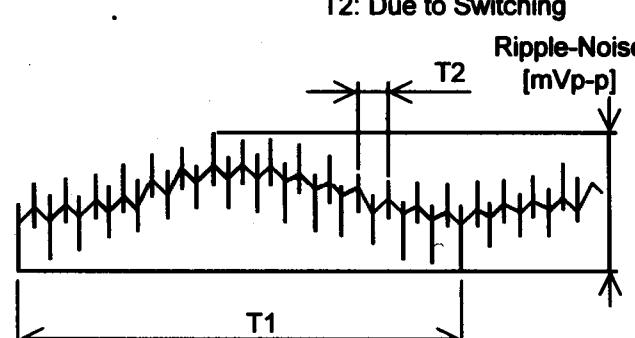


Fig. Complex Ripple Wave Form

COSEL

Model	PBA50F-5
Item	Ripple-Noise
Object	+5V10A
1. Graph	
<p style="text-align: center;"> Input Volt. 100V Input Volt. 200V </p> 	
<p>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.</p>	
<p style="text-align: center;"> T1: Due to AC Input Line T2: Due to Switching </p> 	
<p>Fig. Complex Ripple Wave Form</p>	

Temperature 25°C
 Testing Circuitry Figure A

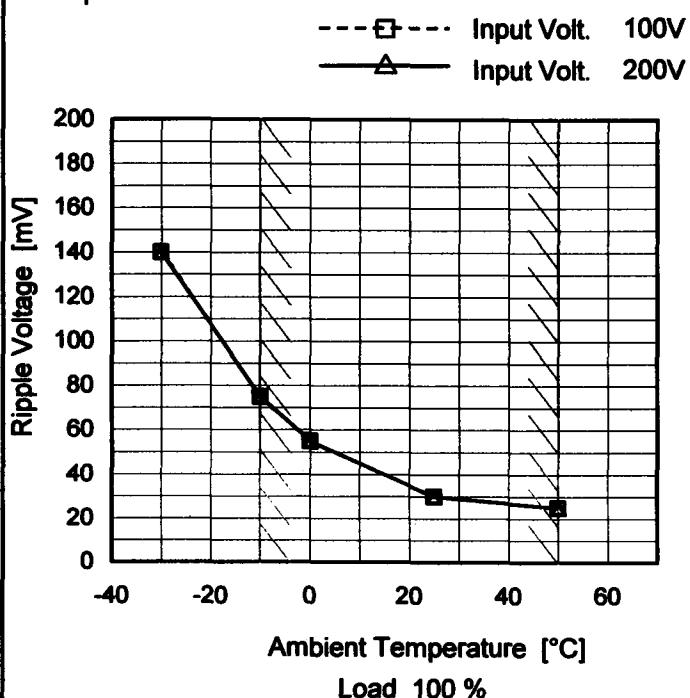
2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0	35	35
2	40	40
4	40	40
6	40	40
8	40	40
10	40	40
11	40	40
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA50F-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V10A

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	140	140
-10	75	75
0	55	55
25	30	30
50	25	25
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA50F-5
Item	Ambient Temperature Drift
Object	+5V10A
1.Graph	
<p style="text-align: center;"> — △ — Input Volt. 100V --- □ --- Input Volt. 200V --- ○ --- Input Volt. 230V </p> <p style="text-align: center;">Load 100%</p>	
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>	

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	5.032	5.032	5.033
-10	5.038	5.038	5.038
0	5.041	5.041	5.041
10	5.043	5.043	5.043
25	5.046	5.045	5.045
30	5.047	5.047	5.047
40	5.047	5.047	5.047
50	5.047	5.047	5.047
60	5.046	5.046	5.046
--	-	-	-
--	-	-	-



Model	PBA50F-5	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V10A	

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 - 10A

* 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	50	200	0	5.068	±15	±0.3
Minimum Voltage	-10	85	10	5.038		

COSEL

Model	PBA50F-5	Temperature Testing Circuitry 25°C Figure A																						
Item	Time Lapse Drift																							
Object	+5V10A																							
1.Graph																								
<p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>																								
<p>* The characteristic of AC200V is equal.</p>																								
2.Values																								
<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>5.047</td></tr> <tr><td>0.5</td><td>5.046</td></tr> <tr><td>1.0</td><td>5.046</td></tr> <tr><td>2.0</td><td>5.046</td></tr> <tr><td>3.0</td><td>5.046</td></tr> <tr><td>4.0</td><td>5.046</td></tr> <tr><td>5.0</td><td>5.046</td></tr> <tr><td>6.0</td><td>5.046</td></tr> <tr><td>7.0</td><td>5.046</td></tr> <tr><td>8.0</td><td>5.046</td></tr> </tbody> </table>			Time since start [H]	Output Voltage [V]	0.0	5.047	0.5	5.046	1.0	5.046	2.0	5.046	3.0	5.046	4.0	5.046	5.0	5.046	6.0	5.046	7.0	5.046	8.0	5.046
Time since start [H]	Output Voltage [V]																							
0.0	5.047																							
0.5	5.046																							
1.0	5.046																							
2.0	5.046																							
3.0	5.046																							
4.0	5.046																							
5.0	5.046																							
6.0	5.046																							
7.0	5.046																							
8.0	5.046																							

COSEL

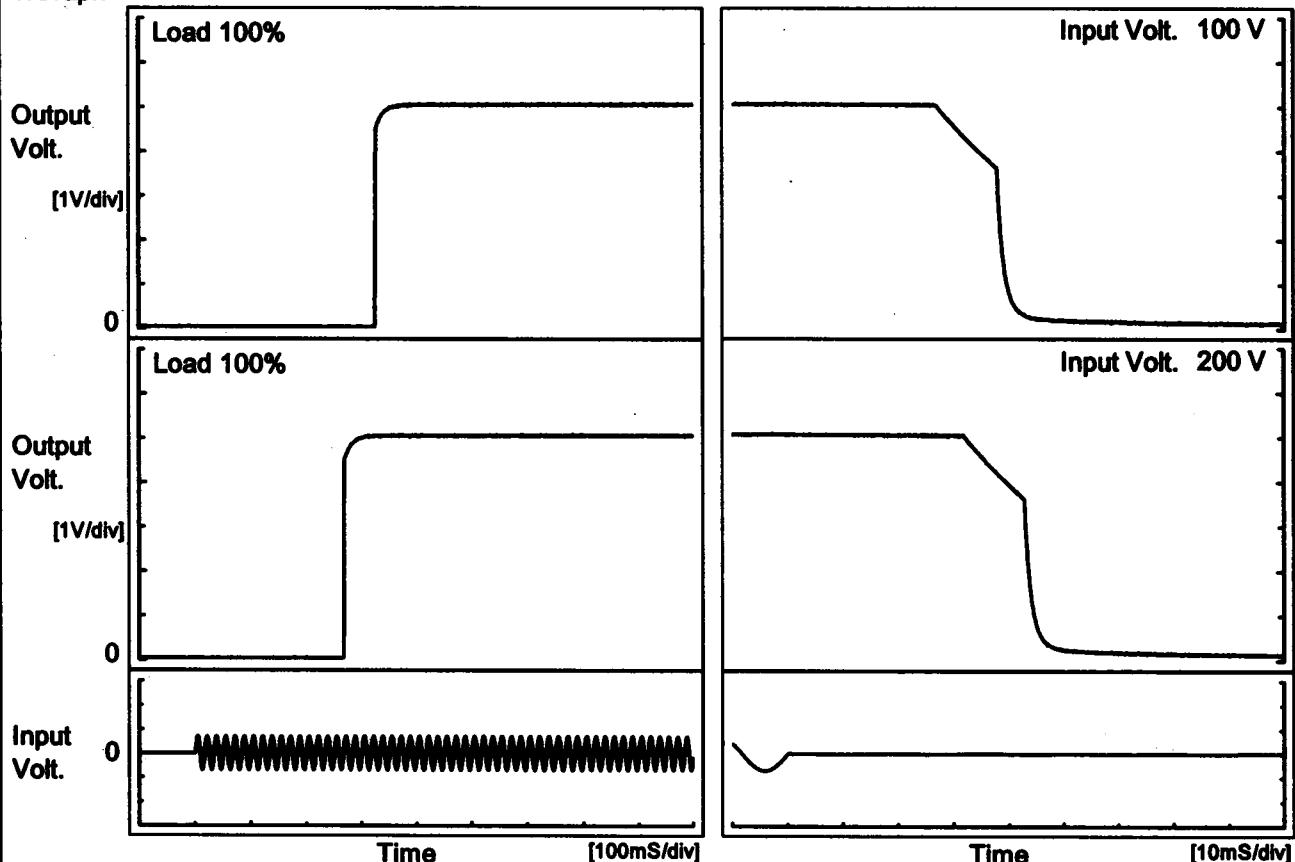
Model PBA50F-5

Item Rise and Fall Time

Temperature 25°C
Testing Circuitry Figure A

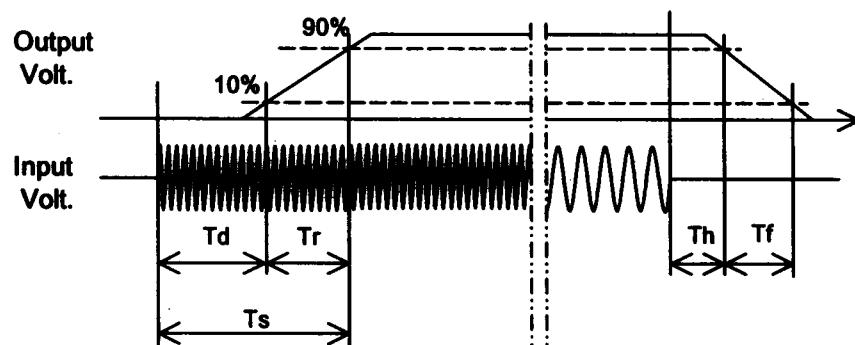
Object +5V10A

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]
100 V		325.5	2.5	328.0	30.4	10.6	
200 V		268.0	2.5	270.5	35.4	10.6	

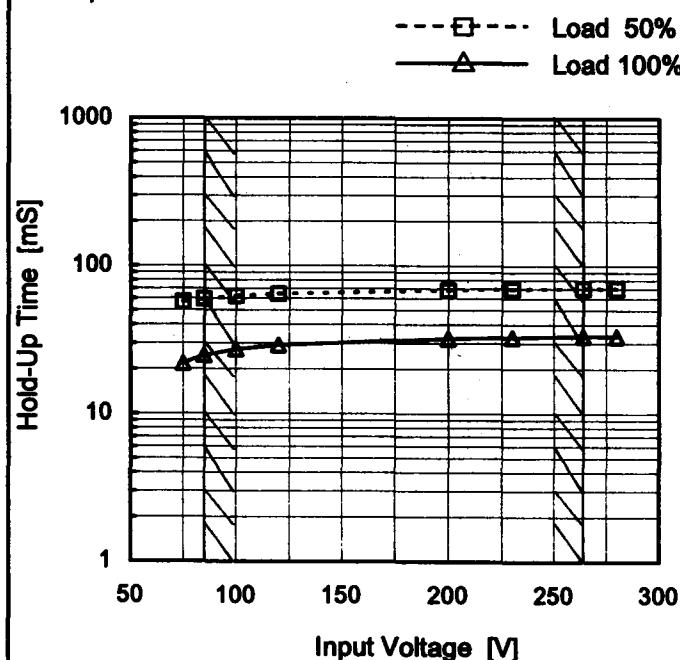


COSEL

Model	PBA50F-5
Item	Hold-Up Time
Object	+5V10A

Temperature 25°C
 Testing Circuitry Figure A

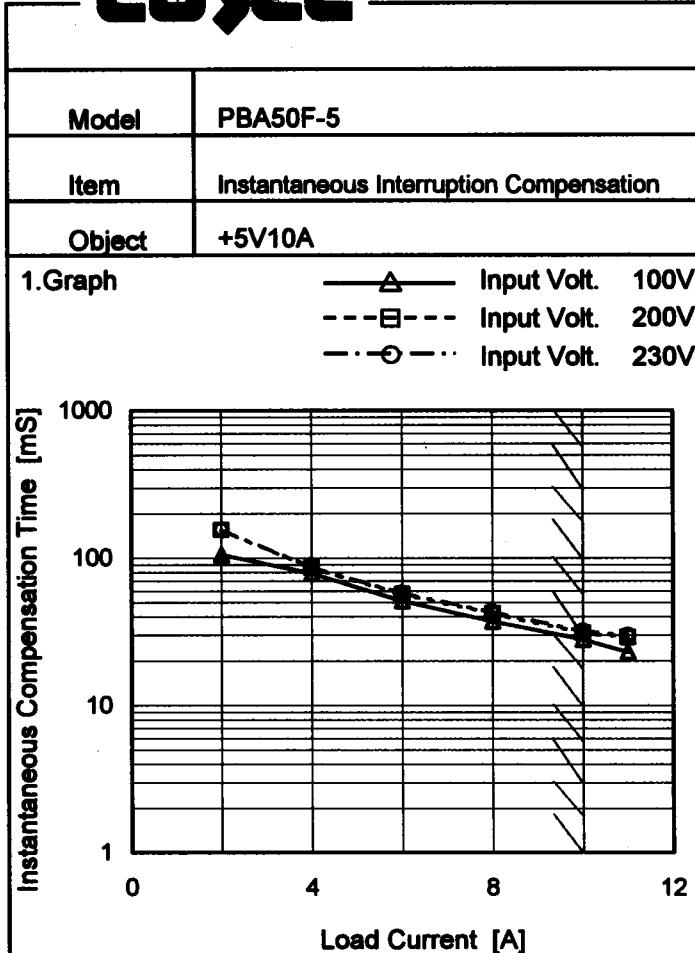
1. Graph



2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	57	22
85	59	25
100	62	27
120	64	29
200	68	32
230	70	33
264	70	34
280	70	33
-	-	-

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.

COSSEL

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	-	-	-
2	105	155	156
4	79	86	87
6	51	57	58
8	37	42	43
10	28	31	32
11	23	29	30
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

COSEL

Model	PBA50F-5	Testing Circuitry Figure A																																						
Item	Minimum Input Voltage for Regulated Output Voltage																																							
Object	+5V10A																																							
1.Graph	<p style="text-align: center;">---□--- Load 50% —△— Load 100%</p>	2.Values																																						
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-20</td><td>48</td><td>64</td></tr> <tr><td>-10</td><td>47</td><td>64</td></tr> <tr><td>0</td><td>47</td><td>64</td></tr> <tr><td>10</td><td>47</td><td>64</td></tr> <tr><td>25</td><td>47</td><td>64</td></tr> <tr><td>30</td><td>47</td><td>65</td></tr> <tr><td>40</td><td>47</td><td>65</td></tr> <tr><td>50</td><td>47</td><td>65</td></tr> <tr><td>60</td><td>47</td><td>65</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	48	64	-10	47	64	0	47	64	10	47	64	25	47	64	30	47	65	40	47	65	50	47	65	60	47	65	—	—	—	—	—	—
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-20	48	64																																						
-10	47	64																																						
0	47	64																																						
10	47	64																																						
25	47	64																																						
30	47	65																																						
40	47	65																																						
50	47	65																																						
60	47	65																																						
—	—	—																																						
—	—	—																																						

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

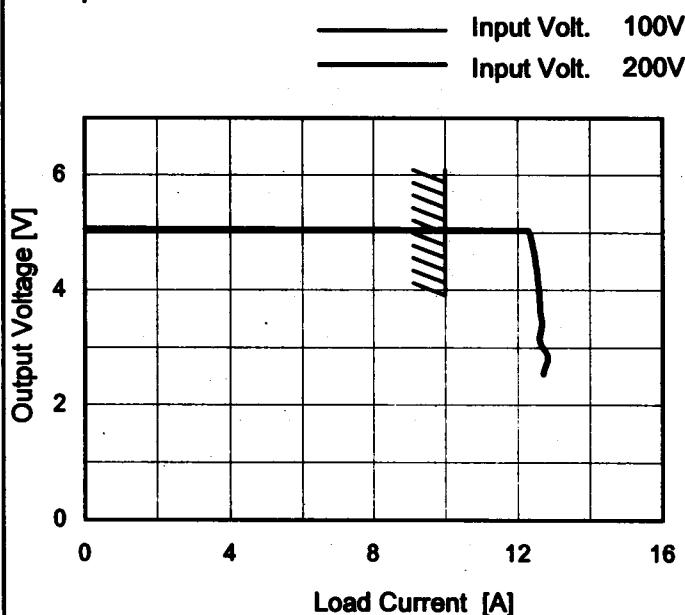
COSEL

Model PBA50F-5

Item Overcurrent Protection

Object +5V10A

1. Graph



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

Intermittent operation occurs when the output voltage is from 2.5V to 0V.

Temperature 25°C
Testing Circuitry Figure A

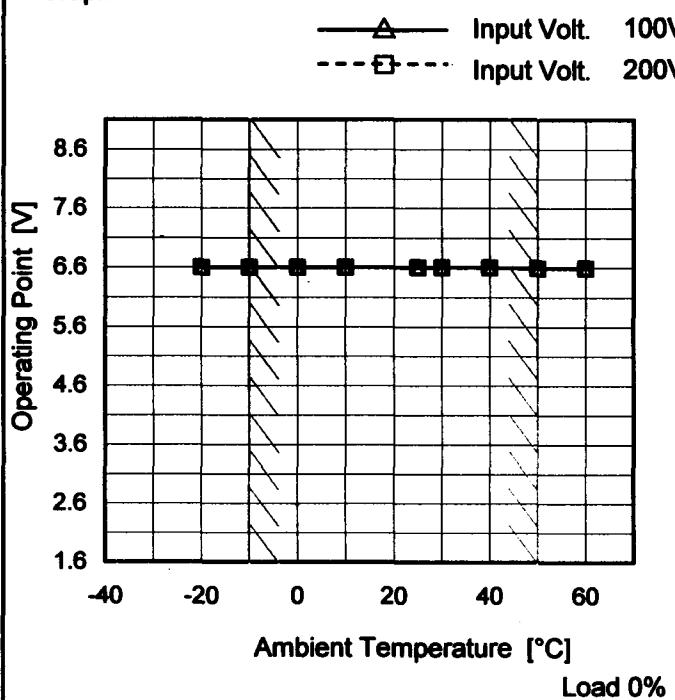
2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
5.00	10.71	10.70
4.75	12.43	12.42
4.50	12.48	12.50
4.00	12.60	12.59
3.50	12.65	12.66
3.00	12.67	12.68
2.50	12.74	12.72
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PBA50F-5
Item	Overvoltage Protection
Object	+5V10A

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	6.60	6.60
-10	6.60	6.60
0	6.60	6.60
10	6.60	6.60
25	6.60	6.60
30	6.60	6.60
40	6.60	6.60
50	6.59	6.59
60	6.59	6.59
—	-	-
—	-	-

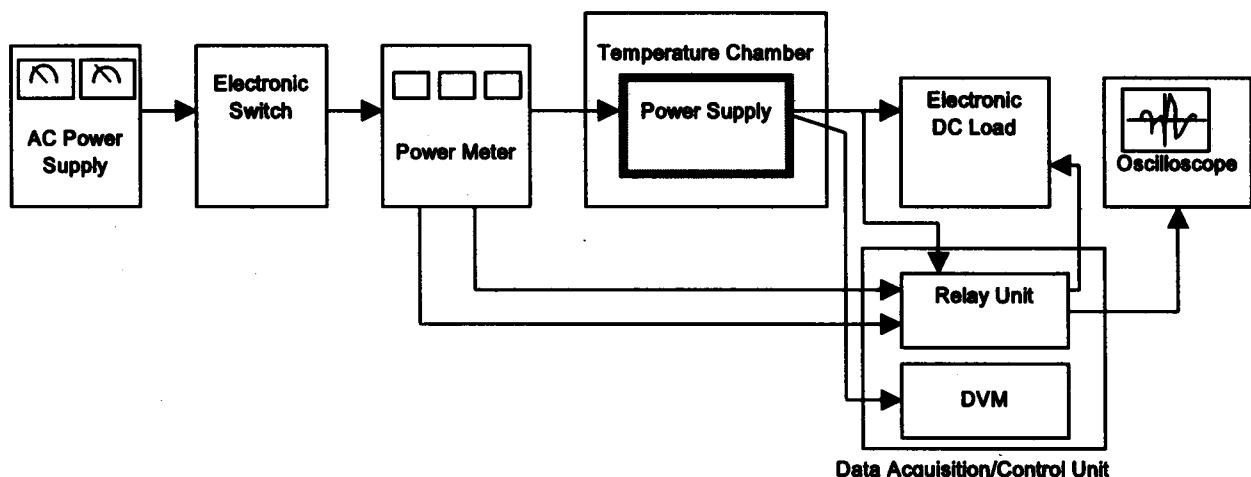


Figure A

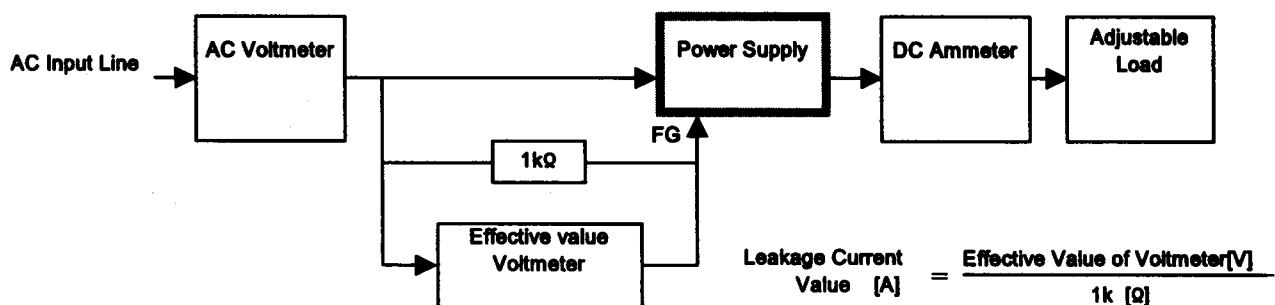


Figure B (DEN-AN)

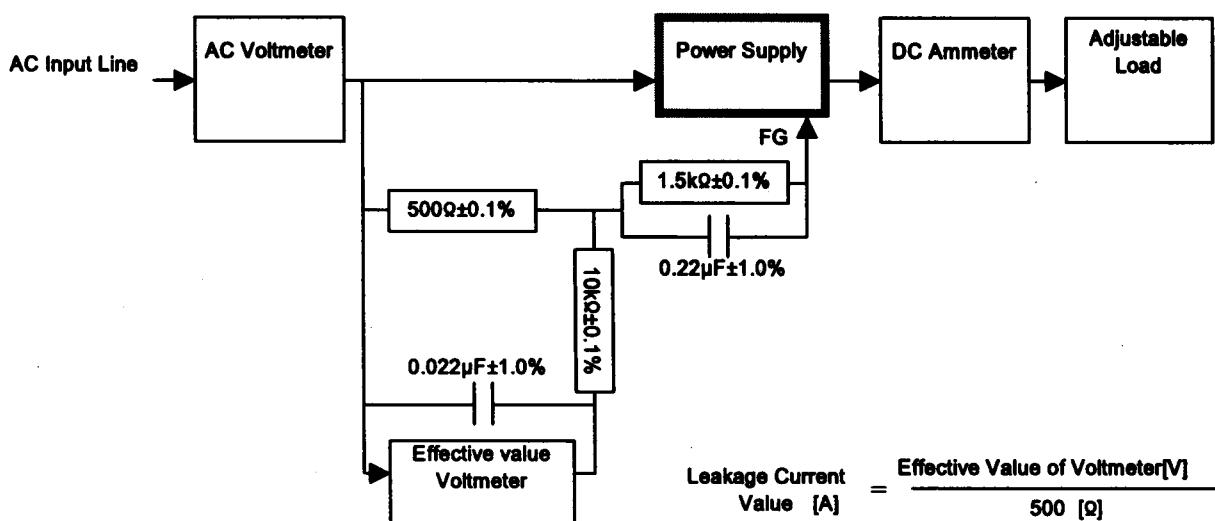


Figure B (IEC60950)