



# TEST DATA OF PBA100F-5

Regulated DC Power Supply  
Mar.30. 2004

Approved by : Kuniaki Nagahara  
Kuniaki Nagahara Design Manager

Prepared by : Katsumi Ishikawa  
Katsumi Ishikawa Design Engineer

**COSEL CO.,LTD.**



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(Final Page 24)

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Model	PBA100F-5	Temperature	25°C																																																			
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																																			
Object	_____																																																					
1. Graph																																																						
<p style="text-align: center;"> <span style="margin-right: 10px;">—△— Input Volt. 100V</span> <span style="margin-right: 10px;">---□--- Input Volt. 200V</span> <span style="margin-right: 10px;">---○--- Input Volt. 230V</span> </p> <p>The graph plots Input Current [A] on the Y-axis (0.00 to 2.00) against Load Current [A] on the X-axis (0 to 20). Three curves are shown for different input voltages: 100V (solid line with triangles), 200V (dashed line with squares), and 230V (dash-dot line with circles). All curves start at (0,0) and increase linearly. A slanted line is drawn through the 100V curve between approximately 12A and 20A, indicating the rated load current range.</p>																																																						
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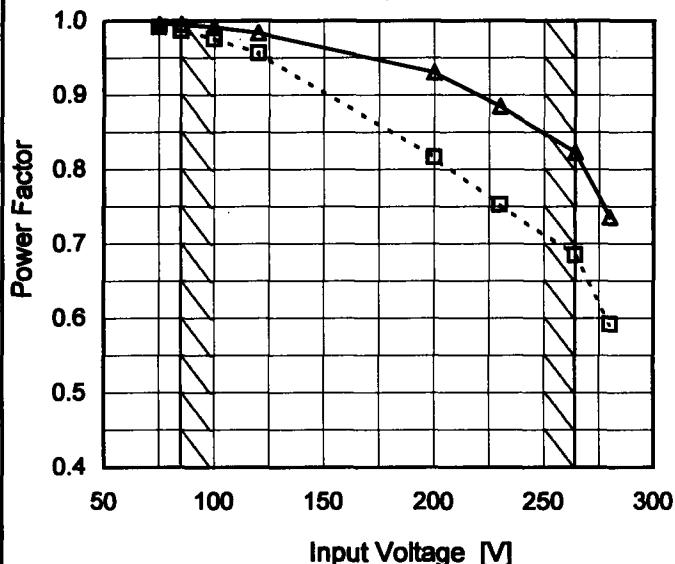
**COSEL**
**Model** PBA100F-5

**Item** Power Factor (by Input Voltage)

**Object** \_\_\_\_\_

**1. Graph**

---□--- Load 50%  
—△— Load 100%



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

**Temperature 25°C  
Testing Circuitry Figure A**
**2. Values**

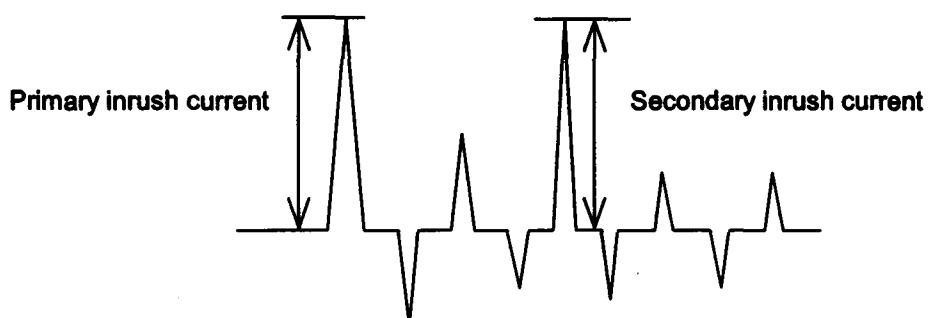
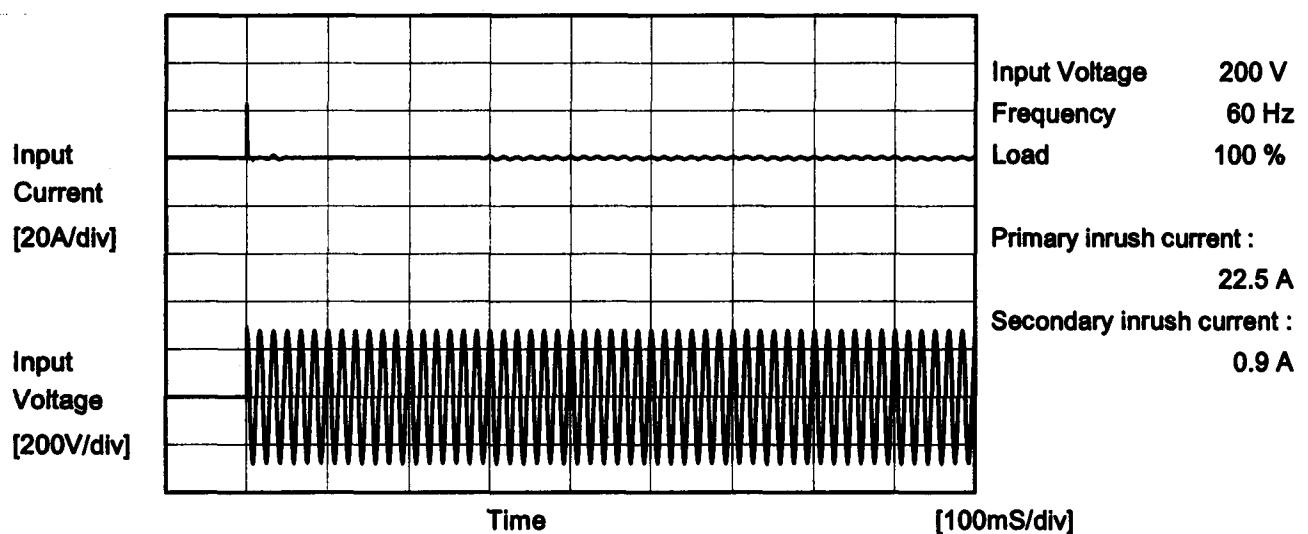
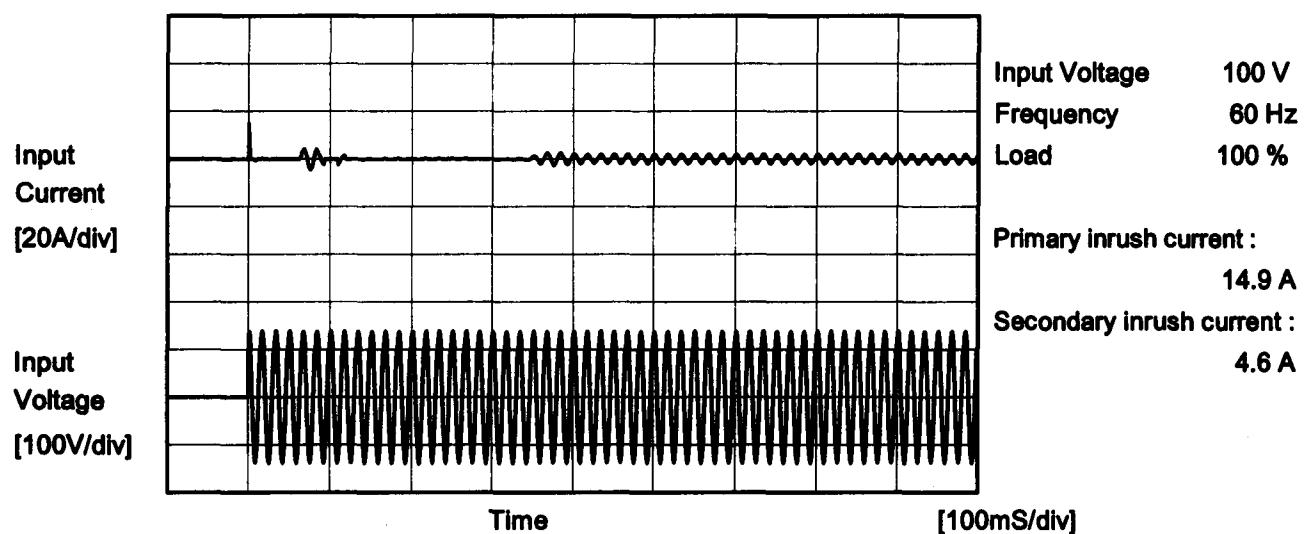
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.992	0.995
85	0.987	0.995
100	0.976	0.991
120	0.957	0.984
200	0.817	0.930
230	0.753	0.885
264	0.685	0.823
280	0.592	0.736
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**COSEL**

Model	PBA100F-5	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	—		





Model	PBA100F-5	Temperature Testing Circuitry	25°C Figure B
Item	Leakage Current		
Object	_____		

### 1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.15	0.28	0.34	Operation
	One of phase	0.25	0.53	0.62	stand by
IEC60950	Both phases	0.15	0.34	0.38	Operation
	One of phase	0.25	0.58	0.67	stand by

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

### 2. Condition

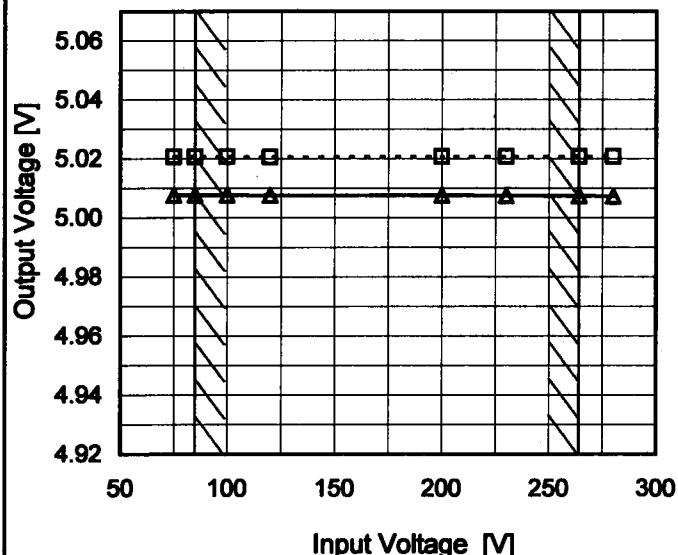
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

**COSEL**

Model	PBA100F-5
Item	Line Regulation
Object	+5V20A

## 1. Graph

--- □ --- Load 50%  
— △ — Load 100%



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

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

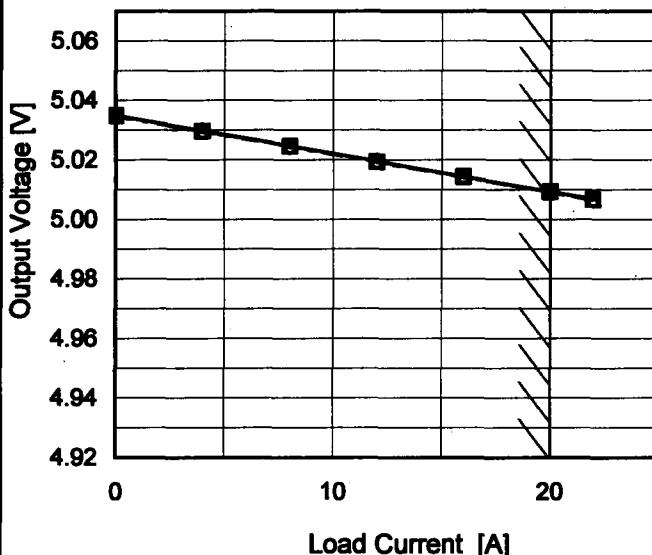
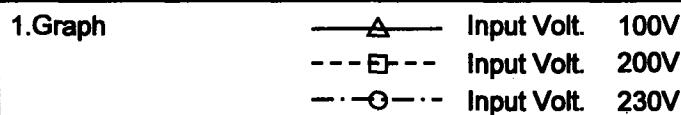
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
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85	5.021	5.008
100	5.021	5.008
120	5.021	5.008
200	5.021	5.008
230	5.021	5.008
264	5.021	5.007
280	5.021	5.007
-	-	-

# COSEL

Model PBA100F-5

Item Load Regulation

Object +5V20A

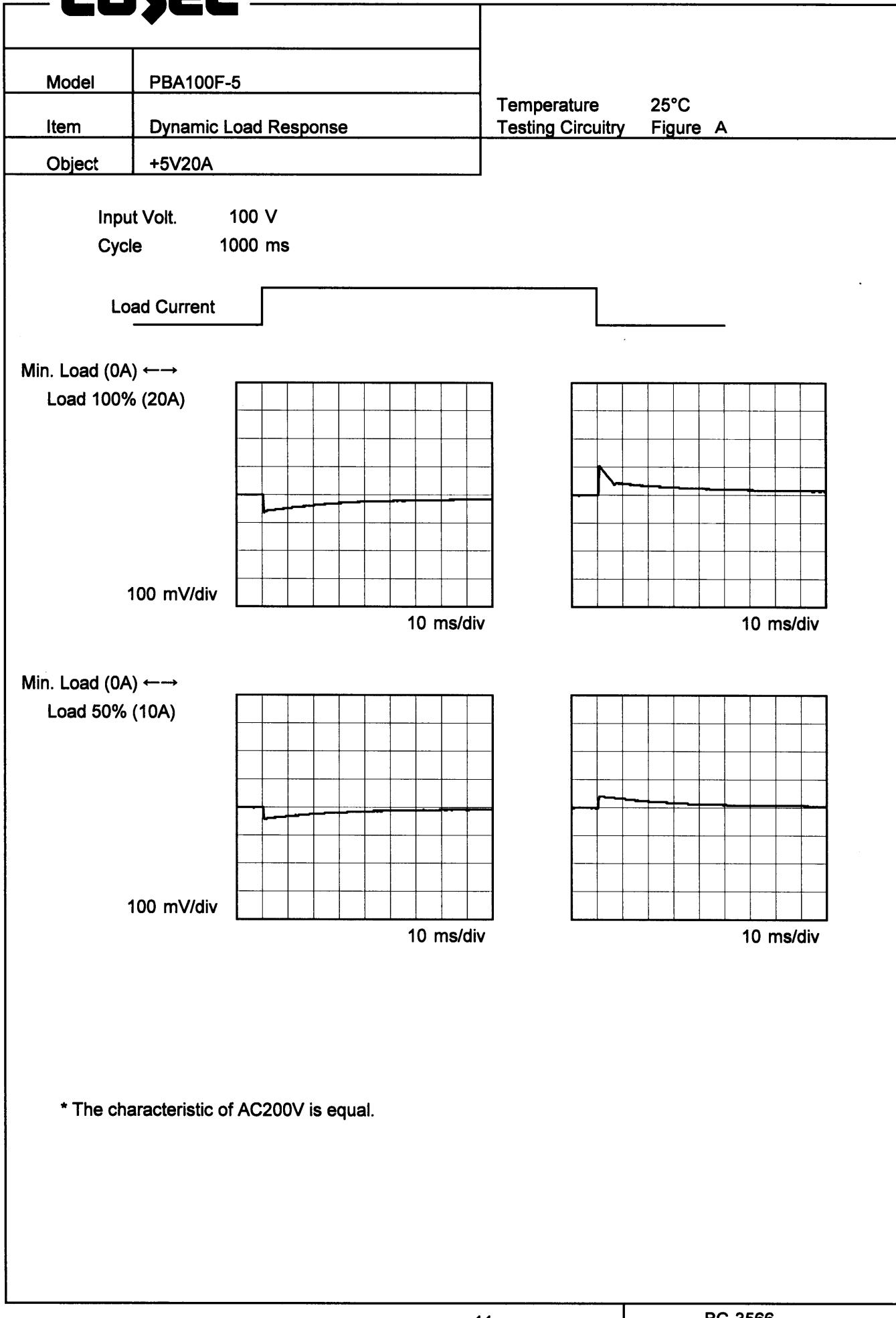


Note: Slanted line shows the range of the rated load current.

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	5.035	5.035	5.035
4	5.030	5.030	5.030
8	5.025	5.025	5.025
12	5.020	5.019	5.019
16	5.014	5.014	5.014
20	5.009	5.009	5.009
22	5.007	5.007	5.007
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

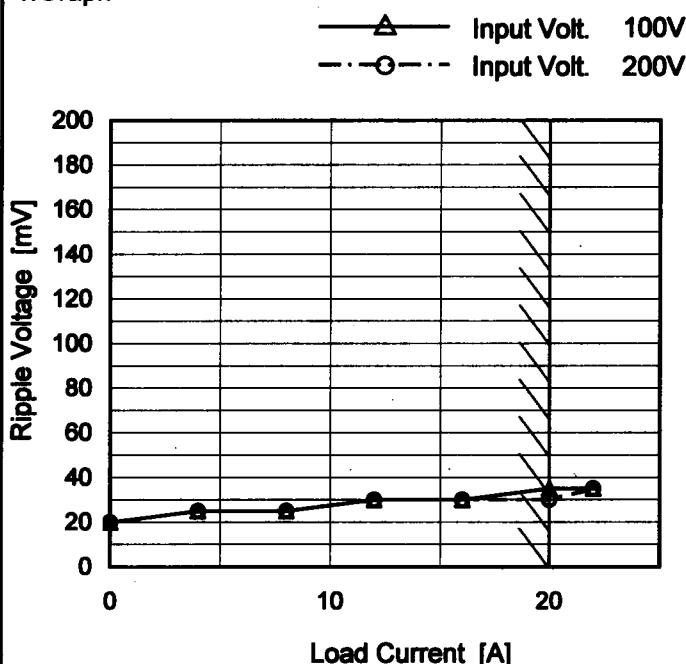
**COSEL**

**COSEL**

Model	PBA100F-5
Item	Ripple Voltage (by Load Current)
Object	+5V20A

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
4	25	25
8	25	25
12	30	30
16	30	30
20	35	30
22	35	35
-	-	-
-	-	-
-	-	-
-	-	-

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

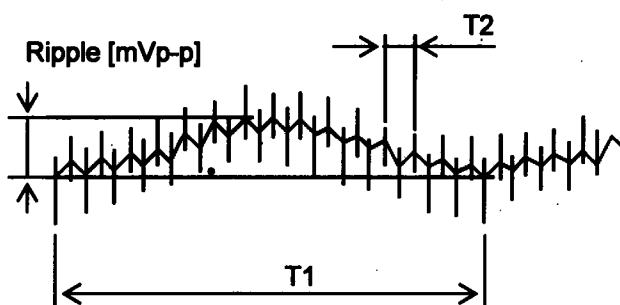


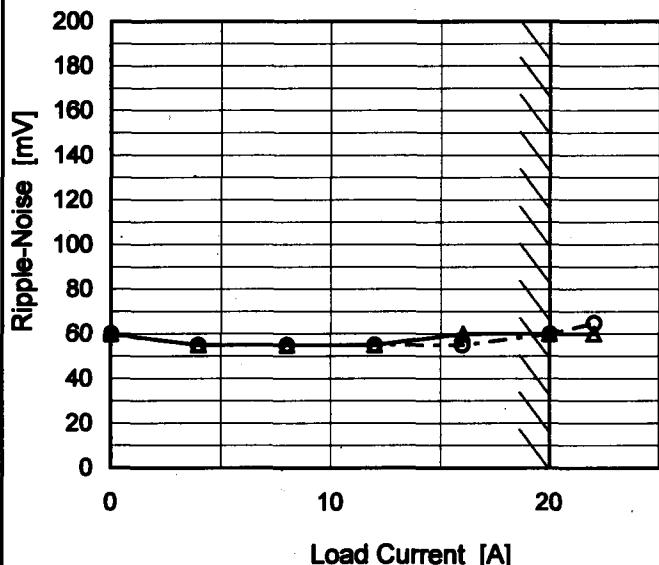
Fig. Complex Ripple Wave Form

# COSEL

Model	PBA100F-5
Item	Ripple-Noise
Object	+5V20A

## 1.Graph

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



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	60	60
4	55	55
8	55	55
12	55	55
16	60	55
20	60	60
22	60	65
-	-	-
-	-	-
-	-	-
-	-	-

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

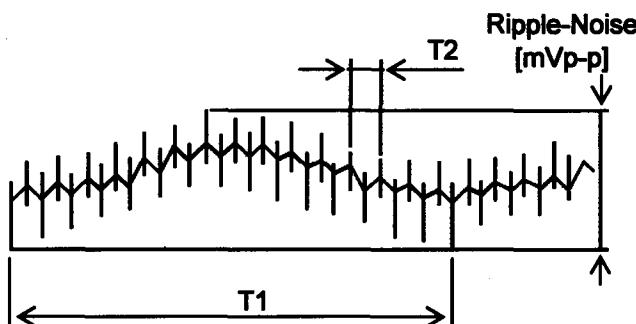
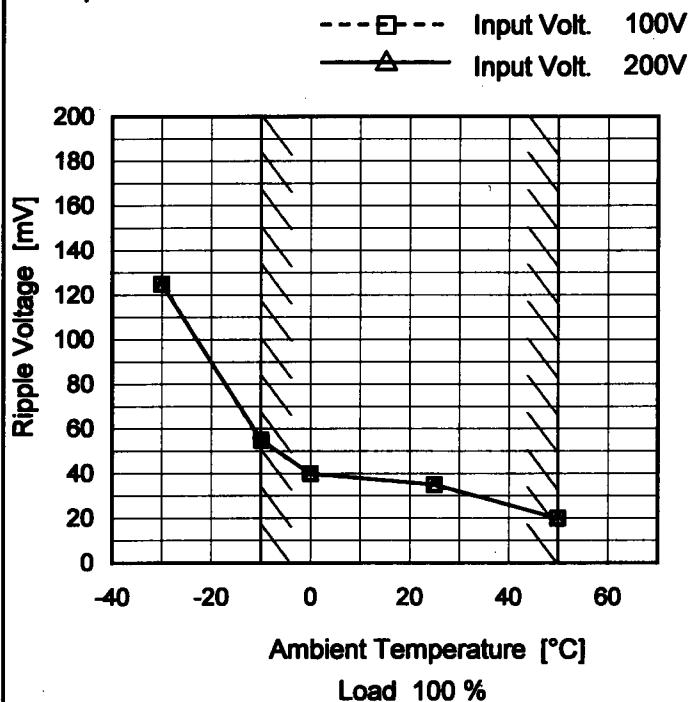


Fig. Complex Ripple Wave Form

**COSEL**

Model	PBA100F-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V20A

### 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	125	125
-10	55	55
0	40	40
25	35	35
50	20	20
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

# COSEL

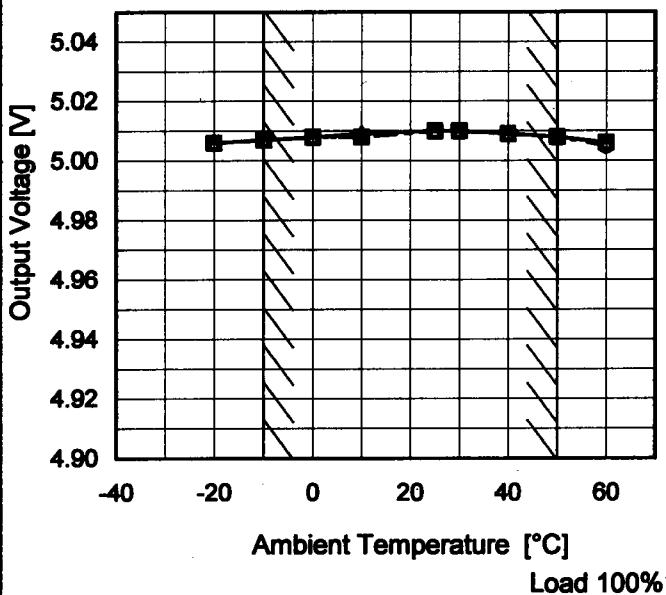
Model PBA100F-5

Item Ambient Temperature Drift

Object +5V20A

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	5.006	5.006	5.006
-10	5.007	5.007	5.007
0	5.008	5.008	5.008
10	5.009	5.008	5.008
25	5.010	5.010	5.010
30	5.010	5.010	5.010
40	5.009	5.009	5.009
50	5.008	5.008	5.008
60	5.006	5.006	5.005
—	—	—	—
—	—	—	—



Model	PBA100F-5	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V20A	

### 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 - 20A

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

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

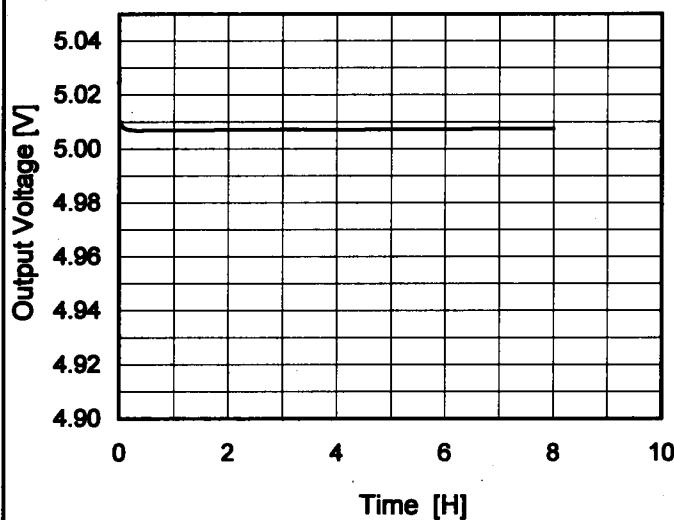
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	40	200	0	5.036	±15	±0.3
Minimum Voltage	-10	85	20	5.007		

**COSEL**

Model	PBA100F-5
Item	Time Lapse Drift
Object	+5V20A

## 1. Graph



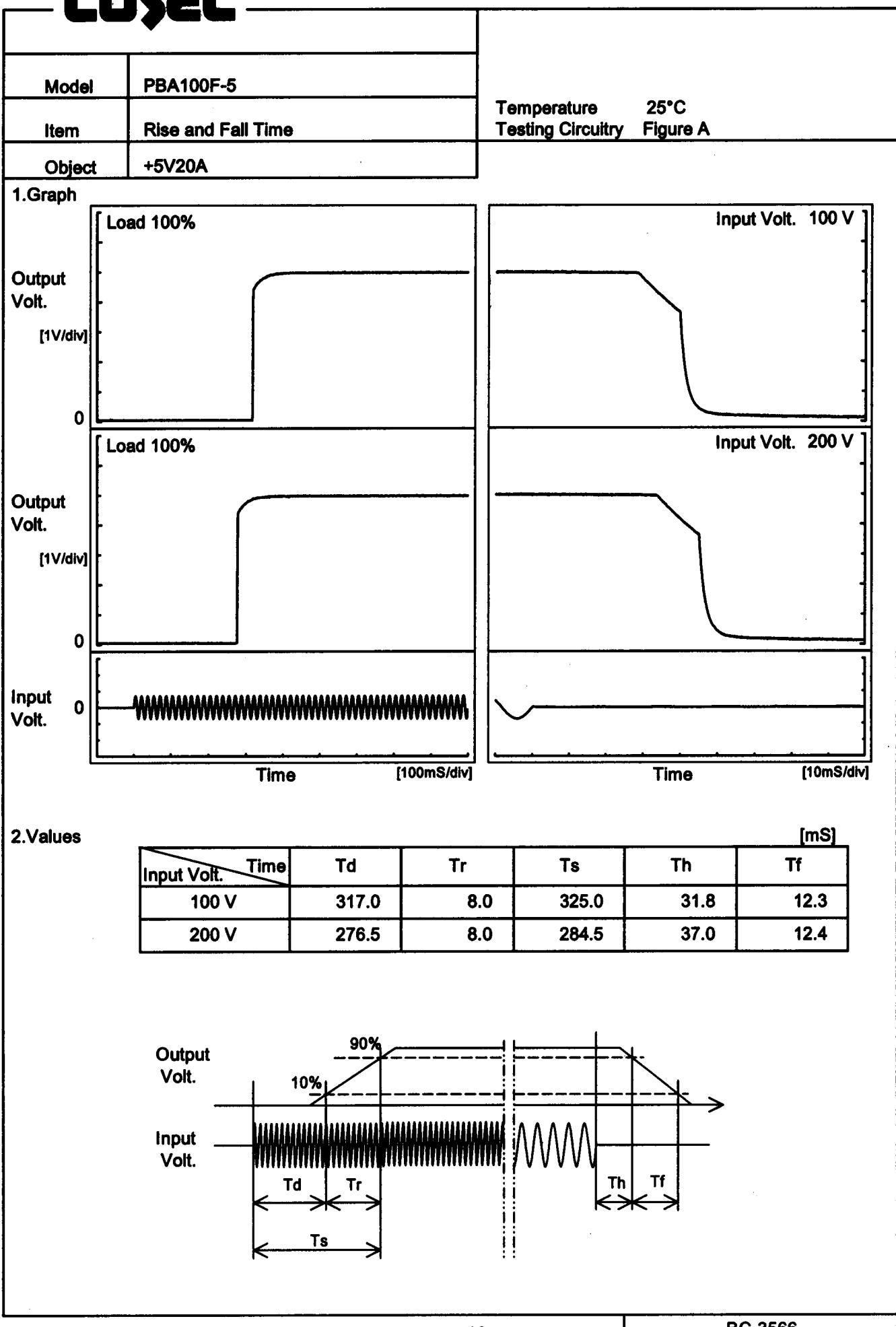
Input Volt. 100V  
Load 100%

\* The characteristic of AC200V is equal.

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Time since start [H]	Output Voltage [V]
0.0	5.011
0.5	5.007
1.0	5.007
2.0	5.007
3.0	5.007
4.0	5.007
5.0	5.007
6.0	5.007
7.0	5.007
8.0	5.007

**COSEL**

**COSEL**

Model	PBA100F-5																																	
Item	Hold-Up Time	Temperature 25°C Testing Circuitry Figure A																																
Object	+5V20A																																	
1. Graph																																		
2. Values																																		
<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Hold-Up Time [mS]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>75</td><td>61</td><td>24</td></tr> <tr> <td>85</td><td>64</td><td>27</td></tr> <tr> <td>100</td><td>67</td><td>29</td></tr> <tr> <td>120</td><td>69</td><td>31</td></tr> <tr> <td>200</td><td>74</td><td>34</td></tr> <tr> <td>230</td><td>75</td><td>35</td></tr> <tr> <td>264</td><td>76</td><td>36</td></tr> <tr> <td>280</td><td>76</td><td>36</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> </tbody> </table>			Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	61	24	85	64	27	100	67	29	120	69	31	200	74	34	230	75	35	264	76	36	280	76	36	--	-	-
Input Voltage [V]	Hold-Up Time [mS]																																	
	Load 50%	Load 100%																																
75	61	24																																
85	64	27																																
100	67	29																																
120	69	31																																
200	74	34																																
230	75	35																																
264	76	36																																
280	76	36																																
--	-	-																																
<p>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.</p>																																		

**COSEL**

Model	PBA100F-5	Temperature	25°C		
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A		
Object	+5V20A				
1. Graph					
<p style="text-align: center;"> <span style="margin-right: 10px;">—△— Input Volt. 100V</span> <span style="margin-right: 10px;">---□--- Input Volt. 200V</span> <span style="margin-right: 10px;">---○--- Input Volt. 230V</span> </p> <p>Instantaneous Compensation Time [mS]</p> <p>Load Current [A]</p>					
<p>Note: Slanted line shows the range of the rated load current.</p>					
2. Values					
Load Current [A]	Time [mS]				
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]		
0	-	-	-		
4	144	180	183		
8	86	94	96		
12	55	62	62		
16	39	45	46		
20	29	35	35		
22	27	31	31		
-	-	-	-		
-	-	-	-		
-	-	-	-		
-	-	-	-		

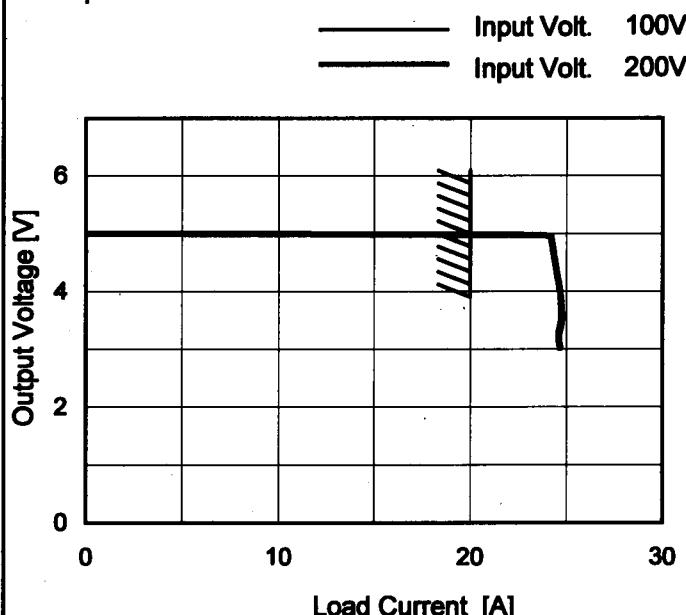
**COSEL**

Model	PBA100F-5	Testing Circuitry Figure A																																						
Item	Minimum Input Voltage for Regulated Output Voltage																																							
Object	+5V20A																																							
1.Graph		2.Values																																						
<p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Legend:</p> <ul style="list-style-type: none"> <li>Load 50% (Dashed line with squares)</li> <li>Load 100% (Solid line with triangles)</li> </ul>		<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>41</td><td>56</td></tr> <tr><td>-10</td><td>41</td><td>55</td></tr> <tr><td>0</td><td>41</td><td>55</td></tr> <tr><td>10</td><td>41</td><td>55</td></tr> <tr><td>25</td><td>41</td><td>56</td></tr> <tr><td>30</td><td>41</td><td>56</td></tr> <tr><td>40</td><td>41</td><td>56</td></tr> <tr><td>50</td><td>41</td><td>57</td></tr> <tr><td>60</td><td>41</td><td>57</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	41	56	-10	41	55	0	41	55	10	41	55	25	41	56	30	41	56	40	41	56	50	41	57	60	41	57	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
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-10	41	55																																						
0	41	55																																						
10	41	55																																						
25	41	56																																						
30	41	56																																						
40	41	56																																						
50	41	57																																						
60	41	57																																						
--	-	-																																						
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Note: Slanted line shows the range of the rated ambient temperature.

**COSEL**

Model	PBA100F-5
Item	Overcurrent Protection
Object	+5V20A

**1.Graph**

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

Intermittent operation occurs when the output voltage is from 3V 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	21.77	21.66
4.75	24.38	24.29
4.50	24.50	24.43
4.00	24.76	24.66
3.50	24.82	24.73
3.00	24.77	24.66
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

**COSEL**

Model	PBA100F-5	Testing Circuitry Figure A																																							
Item	Overvoltage Protection																																								
Object	+5V20A																																								
1.Graph			2.Values																																						
<p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p> <p>—△— Input Volt. 100V ---□--- Input Volt. 200V</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>-20</td> <td>6.59</td> <td>6.59</td> </tr> <tr> <td>-10</td> <td>6.59</td> <td>6.59</td> </tr> <tr> <td>0</td> <td>6.59</td> <td>6.59</td> </tr> <tr> <td>10</td> <td>6.59</td> <td>6.59</td> </tr> <tr> <td>25</td> <td>6.59</td> <td>6.59</td> </tr> <tr> <td>30</td> <td>6.58</td> <td>6.58</td> </tr> <tr> <td>40</td> <td>6.58</td> <td>6.58</td> </tr> <tr> <td>50</td> <td>6.58</td> <td>6.58</td> </tr> <tr> <td>60</td> <td>6.58</td> <td>6.58</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</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]	-20	6.59	6.59	-10	6.59	6.59	0	6.59	6.59	10	6.59	6.59	25	6.59	6.59	30	6.58	6.58	40	6.58	6.58	50	6.58	6.58	60	6.58	6.58	--	-	-	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
	Input Volt. 100[V]	Input Volt. 200[V]																																							
-20	6.59	6.59																																							
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Note: Slanted line shows the range of the rated ambient temperature.

COSEL

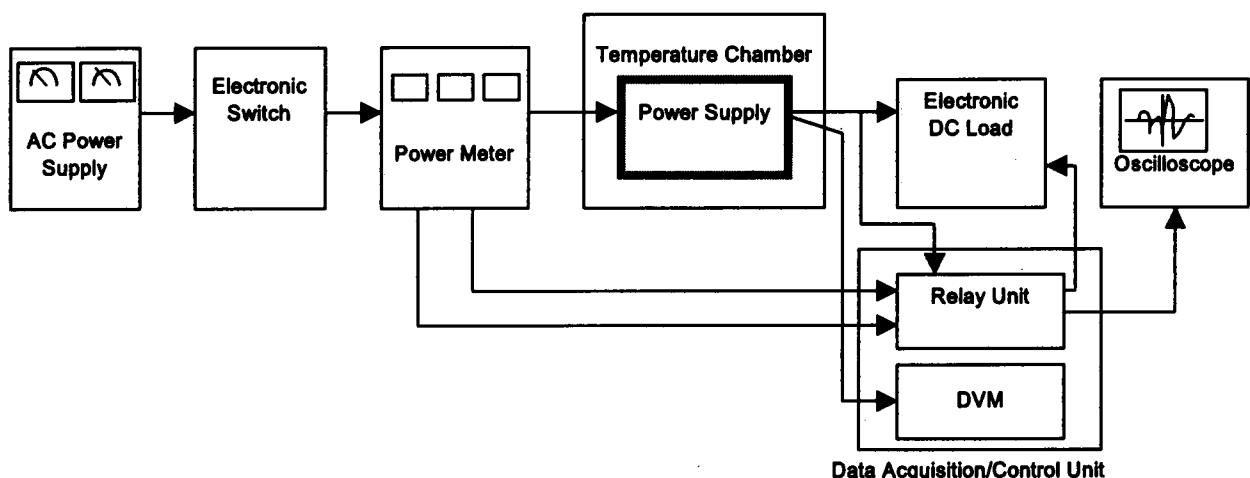


Figure A

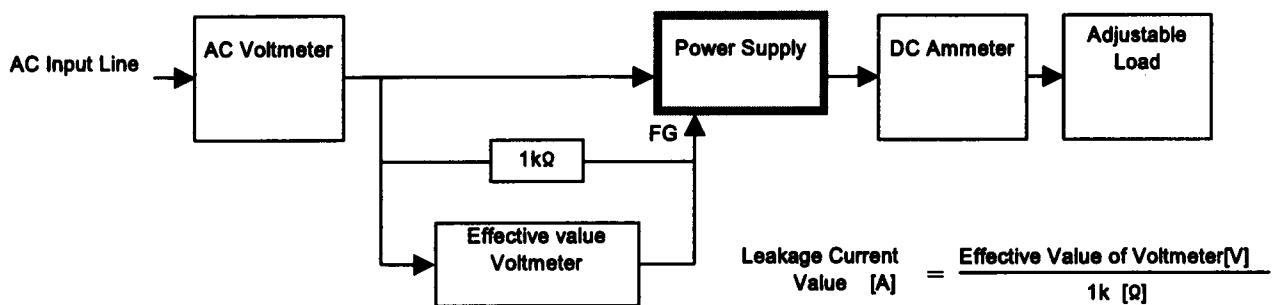


Figure B ( DEN-AN )

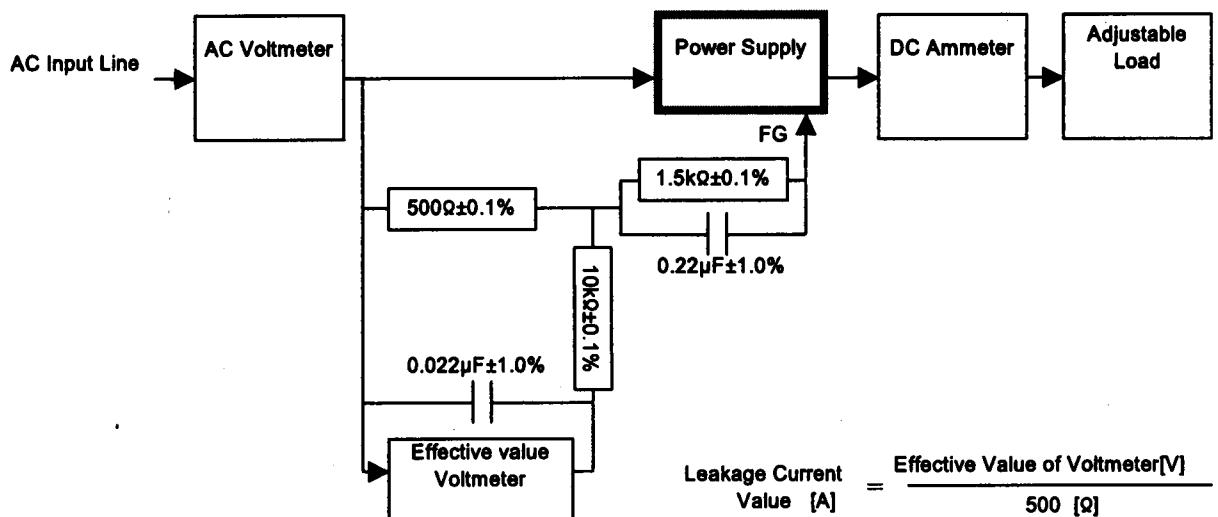


Figure B ( IEC60950 )