

COSEL

TEST DATA OF PBA150F-15

Regulated DC Power Supply
Apr.8. 2004

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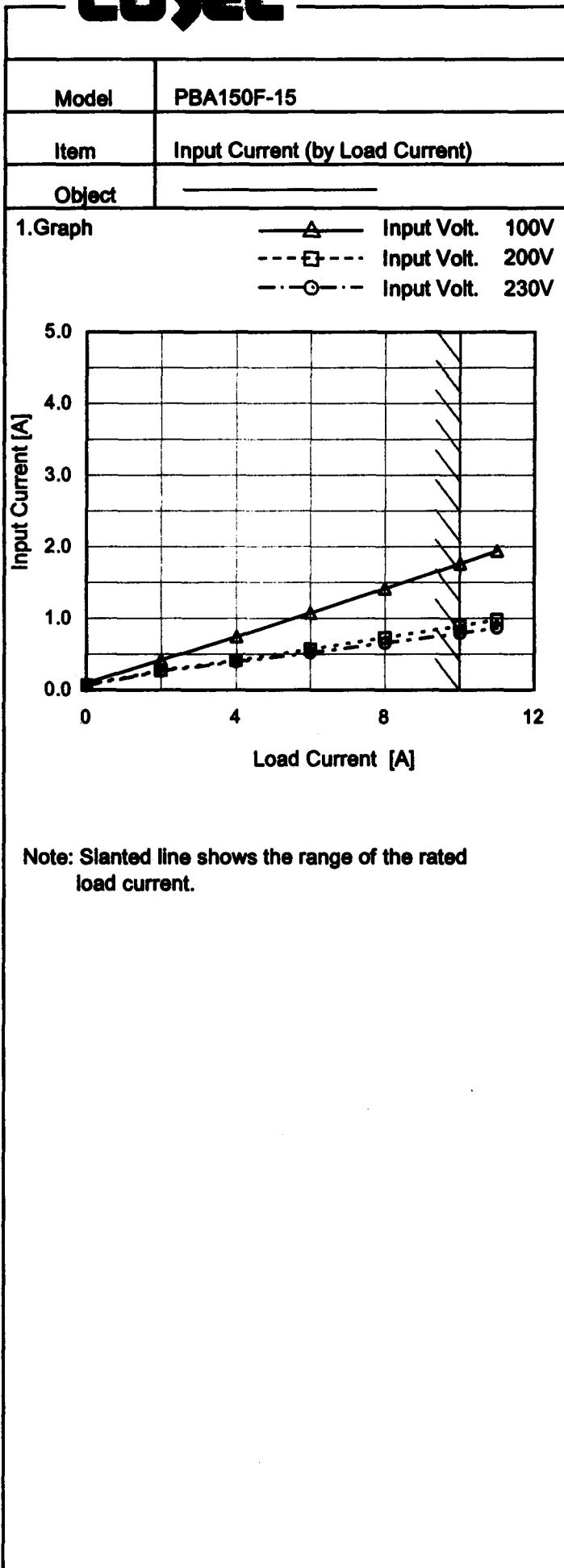
COSEL CO.,LTD.



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Temperature 25°C
Testing Circuitry Figure A

2. Values

| Load Current [A] | Input Current [A] | | |
|------------------|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 0.096 | 0.067 | 0.062 |
| 2 | 0.418 | 0.272 | 0.262 |
| 4 | 0.744 | 0.414 | 0.390 |
| 6 | 1.074 | 0.568 | 0.516 |
| 8 | 1.414 | 0.728 | 0.652 |
| 10 | 1.764 | 0.894 | 0.792 |
| 11 | 1.940 | 0.976 | 0.863 |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

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| Model | PBA150F-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|--|--|------------------------|------------------------|------------------------|---|-----|-----|-----|---|------|------|------|---|------|------|------|---|-------|-------|-------|---|-------|-------|-------|----|-------|-------|-------|----|-------|-------|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Item | Input Power (by Load Current) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | <u> </u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | —▲— Input Volt. 100V ---■--- Input Volt. 200V ---○--- Input Volt. 230V | Temperature 25°C Testing Circuitry Figure A | 2.Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>The graph plots Input Power [W] on the Y-axis (0 to 500) against Load Current [A] on the X-axis (0 to 12). Three curves are shown for different input voltages: 100V (solid line with squares), 200V (dashed line with circles), and 230V (dash-dot line with triangles). A slanted line is drawn across the graph, starting from approximately (0, 20) and ending at (10, 180), indicating the range of the rated load current.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100[V] [W]</th> <th>Input Volt. 200[V] [W]</th> <th>Input Volt. 230[V] [W]</th> </tr> </thead> <tbody> <tr><td>0</td><td>5.1</td><td>5.3</td><td>5.4</td></tr> <tr><td>2</td><td>39.9</td><td>40.0</td><td>41.0</td></tr> <tr><td>4</td><td>72.9</td><td>72.0</td><td>72.0</td></tr> <tr><td>6</td><td>106.4</td><td>104.0</td><td>104.0</td></tr> <tr><td>8</td><td>140.4</td><td>137.0</td><td>137.0</td></tr> <tr><td>10</td><td>175.5</td><td>171.0</td><td>170.0</td></tr> <tr><td>11</td><td>193.2</td><td>187.0</td><td>187.0</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] [W] | Input Volt. 200[V] [W] | Input Volt. 230[V] [W] | 0 | 5.1 | 5.3 | 5.4 | 2 | 39.9 | 40.0 | 41.0 | 4 | 72.9 | 72.0 | 72.0 | 6 | 106.4 | 104.0 | 104.0 | 8 | 140.4 | 137.0 | 137.0 | 10 | 175.5 | 171.0 | 170.0 | 11 | 193.2 | 187.0 | 187.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Load Current [A] | Input Volt. 100[V] [W] | Input Volt. 200[V] [W] | Input Volt. 230[V] [W] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 5.1 | 5.3 | 5.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 39.9 | 40.0 | 41.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 72.9 | 72.0 | 72.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 106.4 | 104.0 | 104.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 140.4 | 137.0 | 137.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 175.5 | 171.0 | 170.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 193.2 | 187.0 | 187.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

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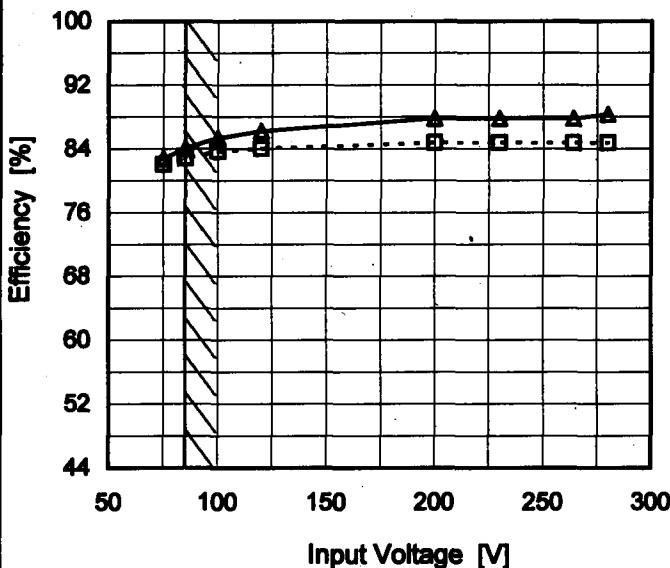
Model PBA150F-15

Item Efficiency (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] | Efficiency [%] | |
|-------------------|----------------|-----------|
| | Load 50% | Load 100% |
| 75 | 82.1 | 82.8 |
| 85 | 82.9 | 84.1 |
| 100 | 83.7 | 85.4 |
| 120 | 84.1 | 86.2 |
| 200 | 84.8 | 87.8 |
| 230 | 84.8 | 87.8 |
| 264 | 84.8 | 87.8 |
| 280 | 84.8 | 88.3 |
| - | - | - |

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| Model | PBA150F-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------|----------------------|----------------------|----------------------|----------------------|---|------|------|------|---|------|------|------|---|------|------|------|---|------|------|------|----|------|------|------|----|------|------|------|
| Item | Efficiency (by Load Current) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>The graph shows efficiency increasing with load current for all input voltages. The 100V curve is the highest, followed by 200V, and then 230V. A slanted line from the top left to the bottom right indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100V [%]</th> <th>Input Volt. 200V [%]</th> <th>Input Volt. 230V [%]</th> </tr> </thead> <tbody> <tr><td>2</td><td>74.6</td><td>74.4</td><td>72.6</td></tr> <tr><td>4</td><td>81.9</td><td>82.8</td><td>82.9</td></tr> <tr><td>6</td><td>84.1</td><td>86.1</td><td>86.1</td></tr> <tr><td>8</td><td>85.1</td><td>87.2</td><td>87.2</td></tr> <tr><td>10</td><td>85.1</td><td>87.3</td><td>87.8</td></tr> <tr><td>11</td><td>85.0</td><td>87.8</td><td>87.8</td></tr> </tbody> </table> | | Load Current [A] | Input Volt. 100V [%] | Input Volt. 200V [%] | Input Volt. 230V [%] | 2 | 74.6 | 74.4 | 72.6 | 4 | 81.9 | 82.8 | 82.9 | 6 | 84.1 | 86.1 | 86.1 | 8 | 85.1 | 87.2 | 87.2 | 10 | 85.1 | 87.3 | 87.8 | 11 | 85.0 | 87.8 | 87.8 |
| Load Current [A] | Input Volt. 100V [%] | Input Volt. 200V [%] | Input Volt. 230V [%] | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 74.6 | 74.4 | 72.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 81.9 | 82.8 | 82.9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 84.1 | 86.1 | 86.1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 85.1 | 87.2 | 87.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 85.1 | 87.3 | 87.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 85.0 | 87.8 | 87.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

| Load Current [A] | Efficiency [%] | | |
|------------------|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | - | - | - |
| 2 | 74.6 | 74.4 | 72.6 |
| 4 | 81.9 | 82.8 | 82.9 |
| 6 | 84.1 | 86.1 | 86.1 |
| 8 | 85.1 | 87.2 | 87.2 |
| 10 | 85.1 | 87.3 | 87.8 |
| 11 | 85.0 | 87.8 | 87.8 |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

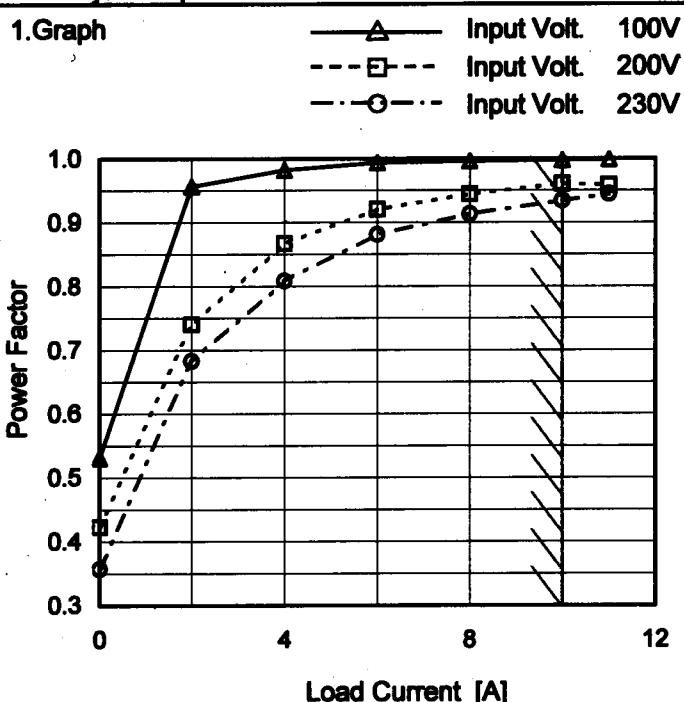
Note: Slanted line shows the range of the rated load current.

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| Model | PBA150F-15 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------------|-------------------|----------|-------------------|--------------|--|----------|-----------|----|-------|-------|----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|---|---|---|
| Item | Power Factor (by Input Voltage) | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Legend:</p> <ul style="list-style-type: none"> Load 50% (Dashed line with squares) Load 100% (Solid line with triangles) <p>Input Voltage [V]</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Power Factor</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>75</td> <td>0.999</td> <td>0.999</td> </tr> <tr> <td>85</td> <td>0.996</td> <td>0.999</td> </tr> <tr> <td>100</td> <td>0.988</td> <td>0.997</td> </tr> <tr> <td>120</td> <td>0.978</td> <td>0.994</td> </tr> <tr> <td>200</td> <td>0.898</td> <td>0.955</td> </tr> <tr> <td>230</td> <td>0.846</td> <td>0.934</td> </tr> <tr> <td>264</td> <td>0.742</td> <td>0.909</td> </tr> <tr> <td>280</td> <td>0.647</td> <td>0.833</td> </tr> <tr> <td>—</td> <td>-</td> <td>-</td> </tr> </tbody> </table> | | | | Input Voltage [V] | Power Factor | | Load 50% | Load 100% | 75 | 0.999 | 0.999 | 85 | 0.996 | 0.999 | 100 | 0.988 | 0.997 | 120 | 0.978 | 0.994 | 200 | 0.898 | 0.955 | 230 | 0.846 | 0.934 | 264 | 0.742 | 0.909 | 280 | 0.647 | 0.833 | — | - | - |
| Input Voltage [V] | Power Factor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 0.999 | 0.999 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 0.996 | 0.999 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 0.988 | 0.997 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 0.978 | 0.994 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 0.898 | 0.955 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 230 | 0.846 | 0.934 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264 | 0.742 | 0.909 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 280 | 0.647 | 0.833 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| — | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note: Slanted line shows the range of the rated input voltage.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | |
|--------|--------------------------------|
| Model | PBA150F-15 |
| Item | Power Factor (by Load Current) |
| Object | _____ |



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

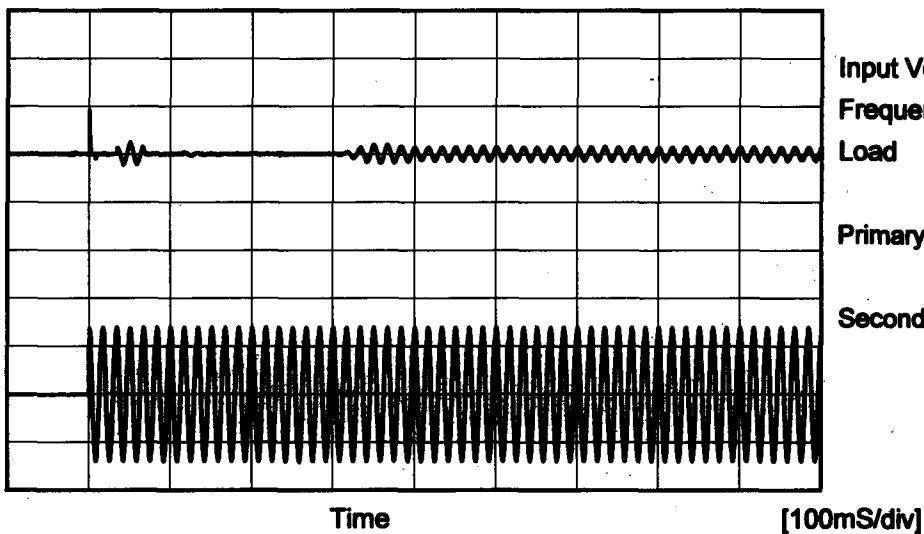
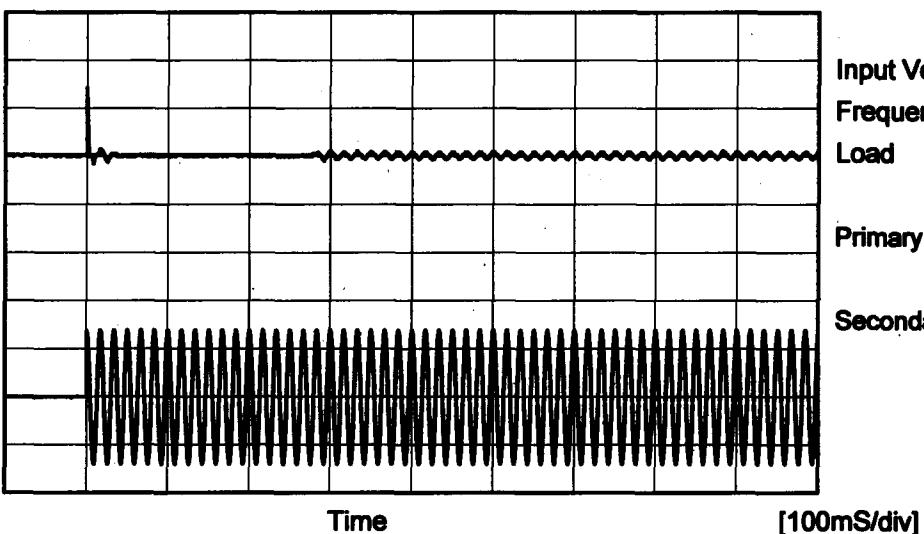
| Load Current [A] | Power Factor | | |
|------------------|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 0.531 | 0.423 | 0.357 |
| 2 | 0.957 | 0.741 | 0.683 |
| 4 | 0.982 | 0.867 | 0.809 |
| 6 | 0.993 | 0.920 | 0.881 |
| 8 | 0.996 | 0.945 | 0.913 |
| 10 | 0.998 | 0.961 | 0.934 |
| 11 | 0.999 | 0.959 | 0.944 |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

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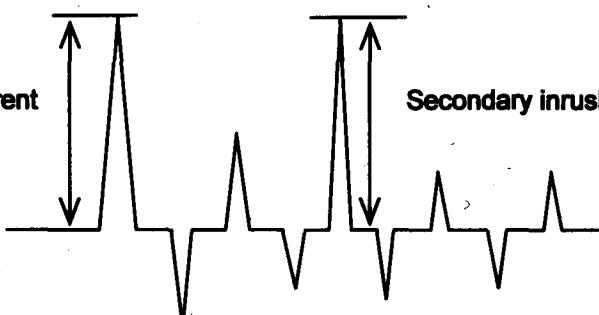
Model PBA150F-15

Item Inrush Current

Object

Temperature 25°C
Testing Circuitry Figure AInput
Current
[20A/div]Input
Voltage
[100V/div]Input
Current
[20A/div]Input
Voltage
[200V/div]

Primary inrush current Secondary inrush current





| | | | |
|--------|-----------------|----------------------------------|------------------|
| Model | PBA150F-15 | 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 | 0.19 | 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-15 | Temperature | 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|-------------------|----------|----------------------|-----------------------|--|----------|-----------|----|--------|--------|----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|-----|--------|--------|---|---|---|
| Item | Line Regulation | Testing Circuitry | Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Graph | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Legend: ---□--- Load 50% —△— Load 100%</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Values | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <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>15.032</td> <td>15.026</td> </tr> <tr> <td>85</td> <td>15.032</td> <td>15.025</td> </tr> <tr> <td>100</td> <td>15.032</td> <td>15.026</td> </tr> <tr> <td>120</td> <td>15.031</td> <td>15.025</td> </tr> <tr> <td>200</td> <td>15.032</td> <td>15.025</td> </tr> <tr> <td>230</td> <td>15.031</td> <td>15.024</td> </tr> <tr> <td>264</td> <td>15.030</td> <td>15.024</td> </tr> <tr> <td>280</td> <td>15.031</td> <td>15.023</td> </tr> <tr> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table> | | | | Input Voltage [V] | Output Voltage [V] | | Load 50% | Load 100% | 75 | 15.032 | 15.026 | 85 | 15.032 | 15.025 | 100 | 15.032 | 15.026 | 120 | 15.031 | 15.025 | 200 | 15.032 | 15.025 | 230 | 15.031 | 15.024 | 264 | 15.030 | 15.024 | 280 | 15.031 | 15.023 | - | - | - |
| Input Voltage [V] | Output Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 15.032 | 15.026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 15.032 | 15.025 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 15.032 | 15.026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 15.031 | 15.025 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 15.032 | 15.025 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 230 | 15.031 | 15.024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264 | 15.030 | 15.024 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 280 | 15.031 | 15.023 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: Slanted line shows the range of the rated input voltage. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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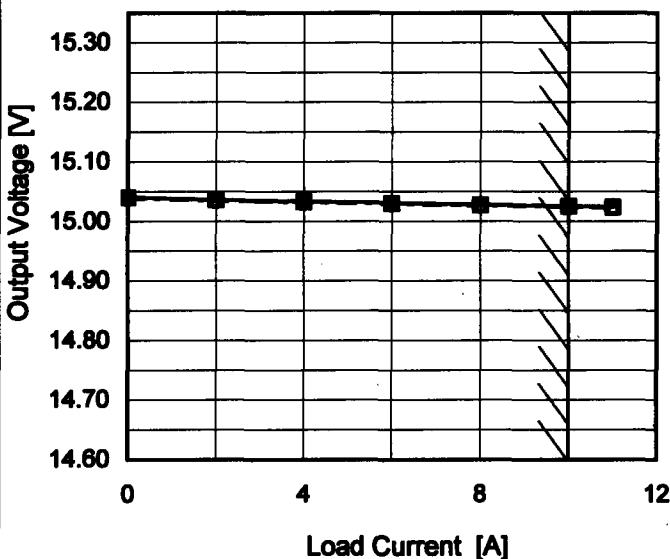
Model PBA150F-15

Item Load Regulation

Object +15V10A

1. Graph

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



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

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

| Load Current [A] | Output Voltage [V] | | |
|------------------|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 15.041 | 15.040 | 15.039 |
| 2 | 15.036 | 15.036 | 15.035 |
| 4 | 15.034 | 15.033 | 15.032 |
| 6 | 15.031 | 15.030 | 15.030 |
| 8 | 15.029 | 15.027 | 15.027 |
| 10 | 15.026 | 15.025 | 15.024 |
| 11 | 15.025 | 15.024 | 15.023 |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |

COSEL

| | |
|--------|-----------------------|
| Model | PBA150F-15 |
| Item | Dynamic Load Response |
| Object | +15V10A |

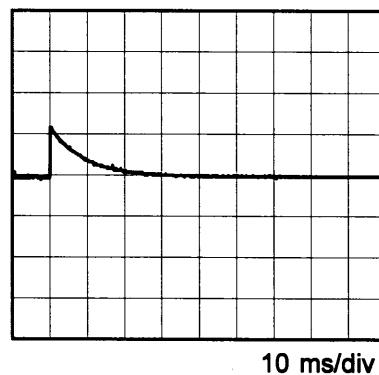
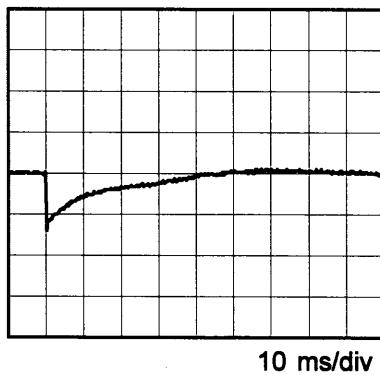
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 1000 ms



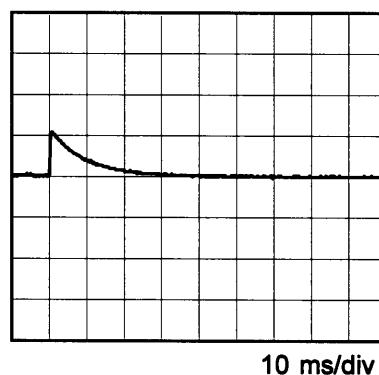
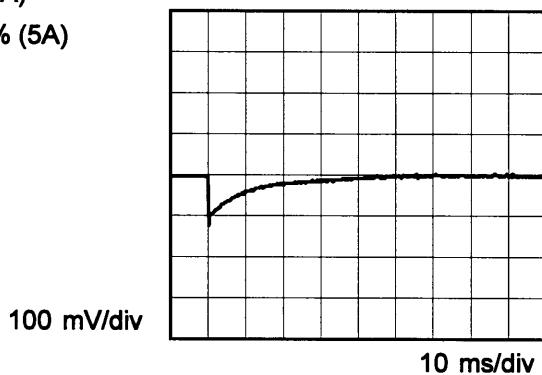
Min. Load (0A) ↔

Load 100% (10A)



Min. Load (0A) ↔

Load 50% (5A)

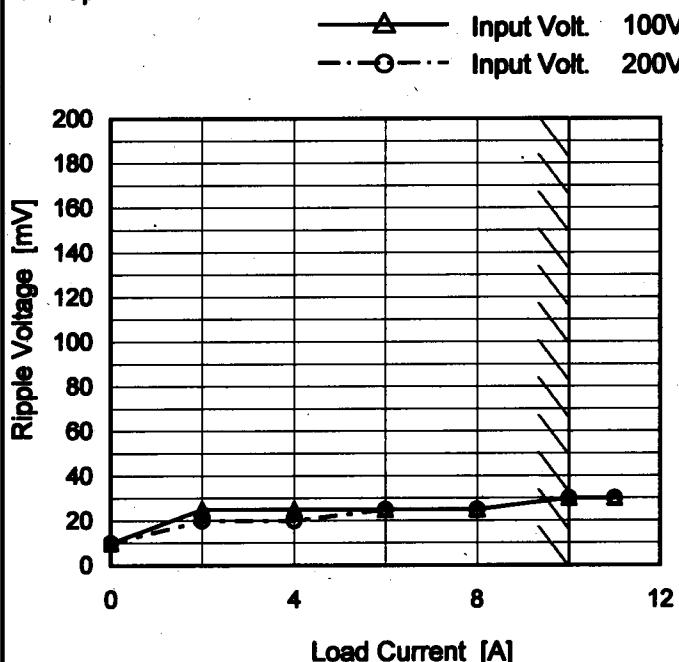


* The characteristic of AC200V is equal.

COSEL

| | |
|--------|----------------------------------|
| Model | PBA150F-15 |
| Item | Ripple Voltage (by Load Current) |
| Object | +15V10A |

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

| Load Current [A] | Ripple Voltage [mV] | |
|------------------|---------------------|---------------------|
| | Input Volt. 100 [V] | Input Volt. 200 [V] |
| 0 | 10 | 10 |
| 2 | 25 | 20 |
| 4 | 25 | 20 |
| 6 | 25 | 25 |
| 8 | 25 | 25 |
| 10 | 30 | 30 |
| 11 | 30 | 30 |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |

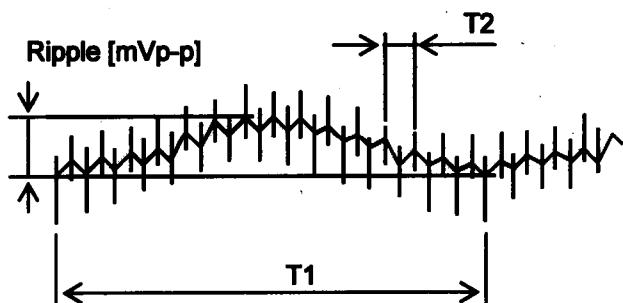
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

COSEL

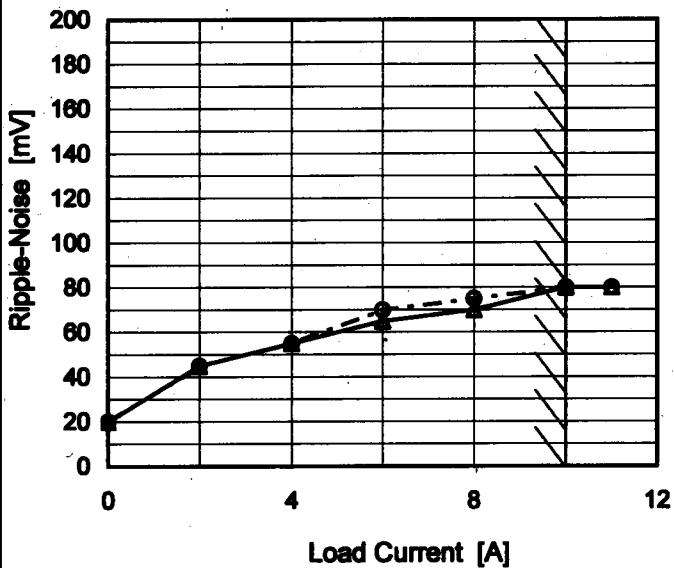
Model PBA150F-15

Item Ripple-Noise

Object +15V10A

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 | 20 | 20 |
| 2 | 45 | 45 |
| 4 | 55 | 55 |
| 6 | 65 | 70 |
| 8 | 70 | 75 |
| 10 | 80 | 80 |
| 11 | 80 | 80 |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |

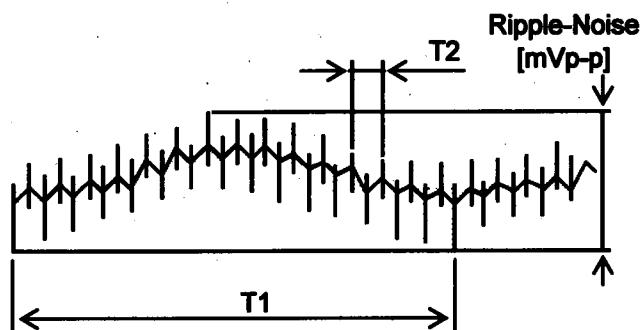
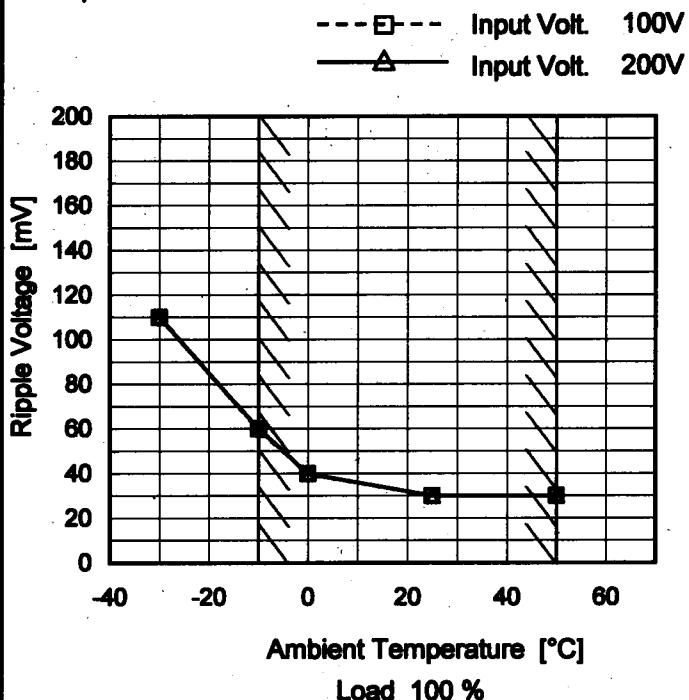
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

COSSEL

| | |
|--------|-----------------------------------|
| Model | PBA150F-15 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +15V10A |

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 | 110 | 110 |
| -10 | 60 | 60 |
| 0 | 40 | 40 |
| 25 | 30 | 30 |
| 50 | 30 | 30 |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |

COSSEL

| | |
|--|---------------------------|
| Model | PBA150F-15 |
| Item | Ambient Temperature Drift |
| Object | +15V10A |
| 1.Graph | |
| <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 100V Input Volt. 200V Input Volt. 230V | |
| <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 | 15.038 | 15.037 | 15.037 |
| -10 | 15.037 | 15.037 | 15.037 |
| 0 | 15.036 | 15.036 | 15.036 |
| 10 | 15.037 | 15.036 | 15.036 |
| 25 | 15.039 | 15.039 | 15.039 |
| 30 | 15.041 | 15.040 | 15.040 |
| 40 | 15.036 | 15.035 | 15.035 |
| 50 | 15.030 | 15.029 | 15.029 |
| 60 | 15.019 | 15.017 | 15.017 |
| -- | - | - | - |
| -- | - | - | - |



| | | |
|--------|-------------------------|----------------------------|
| Model | PBA150F-15 | Testing Circuitry Figure A |
| Item | Output Voltage Accuracy | |
| Object | +15V10A | |

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

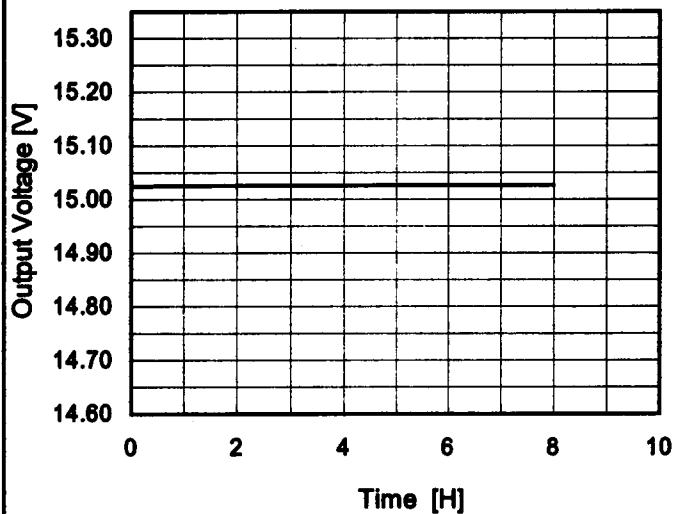
* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
|-----------------|---------------------|---------------------|------------|------------|-------------------------|------------|
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 25 | 264 | 0 | 15.055 | ±16 | ±0.1 |
| Minimum Voltage | 50 | 264 | 10 | 15.024 | | |

COSEL

| | |
|---------------|-------------------------|
| Model | PBA150F-15 |
| Item | Time Lapse Drift |
| Object | +15V10A |

1.Graph

* The characteristic of AC200V is equal.

Temperature 25°C
Testing Circuitry Figure A

2.Values

| Time since start [H] | Output Voltage [V] |
|----------------------|--------------------|
| 0.0 | 15.031 |
| 0.5 | 15.025 |
| 1.0 | 15.026 |
| 2.0 | 15.026 |
| 3.0 | 15.026 |
| 4.0 | 15.026 |
| 5.0 | 15.027 |
| 6.0 | 15.027 |
| 7.0 | 15.027 |
| 8.0 | 15.027 |

COSEL

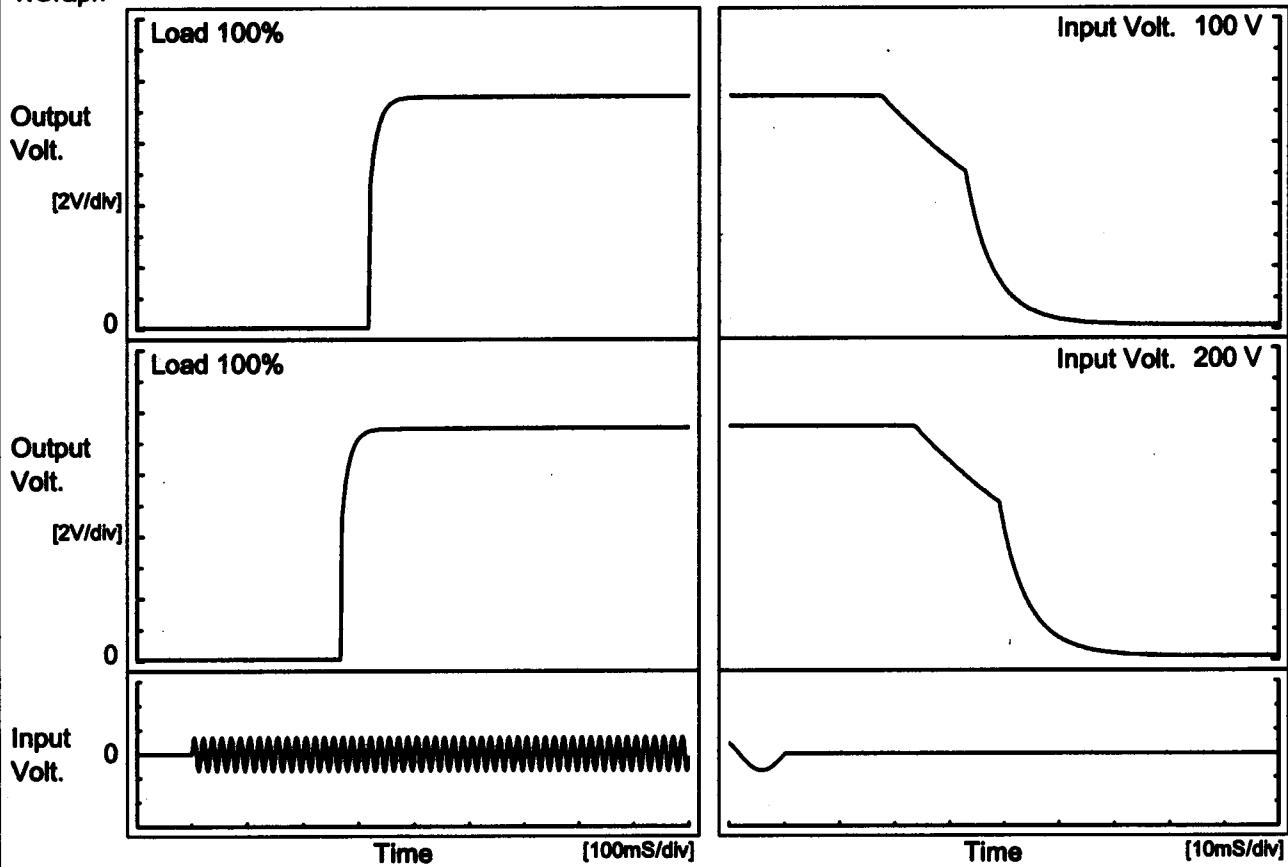
Model PBA150F-15

Item Rise and Fall Time

Object +15V10A

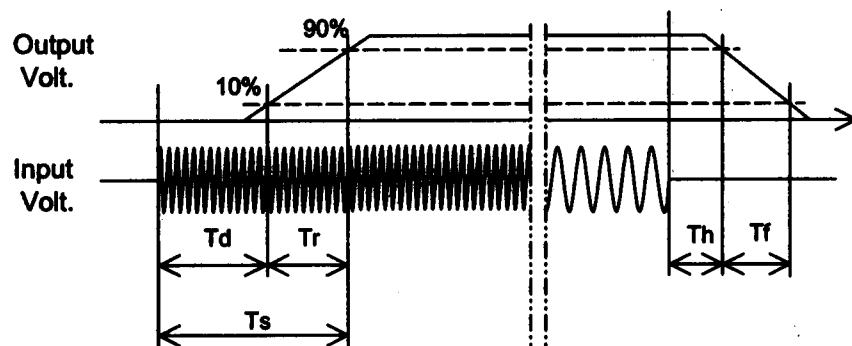
Temperature 25°C
Testing Circuitry Figure A

1. Graph



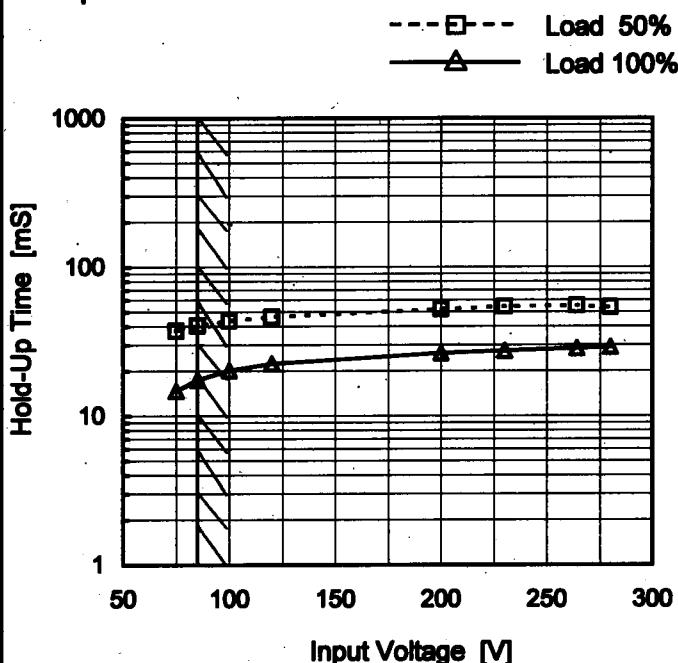
2. Values

| Input Volt. | Time | Td | Tr | Ts | Th | Tf | [mS] |
|-------------|------|-------|------|-------|------|------|------|
| 100 V | | 318.5 | 23.0 | 341.5 | 21.1 | 22.0 | |
| 200 V | | 267.5 | 22.5 | 290.0 | 27.4 | 22.1 | |



COSEL

| | |
|--------|--------------|
| Model | PBA150F-15 |
| Item | Hold-Up Time |
| Object | +15V10A |

1. Graph

This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

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

Temperature 25°C
Testing Circuitry Figure A

2. Values

| Input Voltage [V] | Hold-Up Time [mS] | |
|-------------------|-------------------|-----------|
| | Load 50% | Load 100% |
| 75 | 38 | 15 |
| 85 | 41 | 18 |
| 100 | 44 | 20 |
| 120 | 46 | 23 |
| 200 | 52 | 27 |
| 230 | 54 | 27 |
| 264 | 55 | 29 |
| 280 | 54 | 29 |
| - | - | - |

COSEL

| Model | PBA150F-15 | Temperature 25°C Testing Circuitry Figure A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|--|--------------------|--|------------------|-----------|-----------|-----------|--------------------|--------------------|--------------------|-----|---|----|----|----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|---|---|----|---|---|---|----|---|---|---|----|---|---|---|
| Item | Instantaneous Interruption Compensation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Object | +15V10A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.Graph | <p>—△— Input Volt. 100V - - -□- - Input Volt. 200V - - ○- - Input Volt. 230V</p> <table border="1"> <caption>Data points estimated from Graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>100V [ms]</th> <th>200V [ms]</th> <th>230V [ms]</th> </tr> </thead> <tbody> <tr><td>2</td><td>89</td><td>130</td><td>136</td></tr> <tr><td>4</td><td>57</td><td>66</td><td>69</td></tr> <tr><td>6</td><td>36</td><td>44</td><td>45</td></tr> <tr><td>8</td><td>25</td><td>32</td><td>33</td></tr> <tr><td>10</td><td>19</td><td>25</td><td>26</td></tr> <tr><td>11</td><td>15</td><td>22</td><td>23</td></tr> </tbody> </table> | | | | Load Current [A] | 100V [ms] | 200V [ms] | 230V [ms] | 2 | 89 | 130 | 136 | 4 | 57 | 66 | 69 | 6 | 36 | 44 | 45 | 8 | 25 | 32 | 33 | 10 | 19 | 25 | 26 | 11 | 15 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | |
| Load Current [A] | 100V [ms] | 200V [ms] | 230V [ms] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 89 | 130 | 136 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 57 | 66 | 69 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 36 | 44 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 25 | 32 | 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 19 | 25 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 15 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.Values | <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2</td><td>89</td><td>130</td><td>136</td></tr> <tr><td>4</td><td>57</td><td>66</td><td>69</td></tr> <tr><td>6</td><td>36</td><td>44</td><td>45</td></tr> <tr><td>8</td><td>25</td><td>32</td><td>33</td></tr> <tr><td>10</td><td>19</td><td>25</td><td>26</td></tr> <tr><td>11</td><td>15</td><td>22</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> </tbody> </table> | | | | Load Current [A] | Time [mS] | | | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | 0 | - | - | - | 2 | 89 | 130 | 136 | 4 | 57 | 66 | 69 | 6 | 36 | 44 | 45 | 8 | 25 | 32 | 33 | 10 | 19 | 25 | 26 | 11 | 15 | 22 | 23 | - | - | - | - | -- | - | - | - | -- | - | - | - | -- | - | - | - |
| Load Current [A] | Time [mS] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 89 | 130 | 136 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 57 | 66 | 69 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 36 | 44 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 25 | 32 | 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 19 | 25 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 15 | 22 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Note: | Slanted line shows the range of the rated load current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

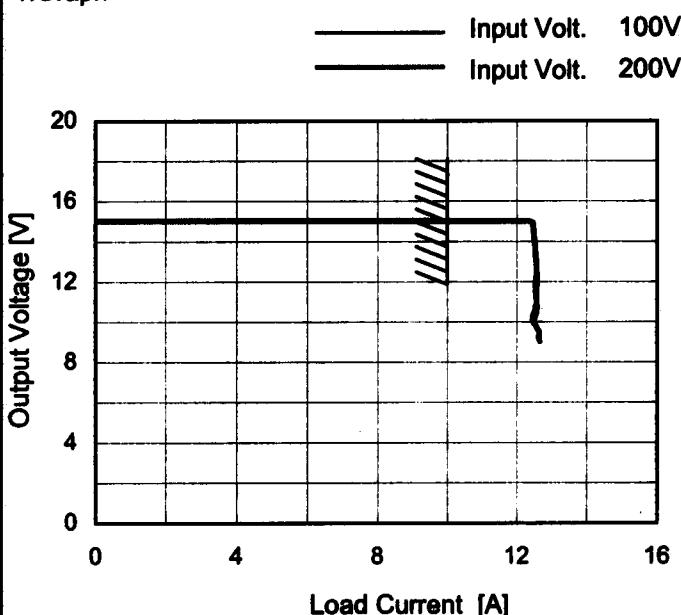
COSEL

| <p>Model PBA150F-15</p> <p>Item Minimum Input Voltage for Regulated Output Voltage</p> <p>Object +15V10A</p> | <p>Testing Circuitry Figure A</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------------------|-------------------|--|----------|-----------|-----|----|----|-----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|----|---|---|
| <p>1. Graph</p> <p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> | <p>2. Values</p> <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>46</td> <td>64</td> </tr> <tr> <td>-10</td> <td>46</td> <td>64</td> </tr> <tr> <td>0</td> <td>46</td> <td>64</td> </tr> <tr> <td>10</td> <td>46</td> <td>64</td> </tr> <tr> <td>25</td> <td>46</td> <td>64</td> </tr> <tr> <td>30</td> <td>46</td> <td>64</td> </tr> <tr> <td>40</td> <td>46</td> <td>64</td> </tr> <tr> <td>50</td> <td>47</td> <td>64</td> </tr> <tr> <td>60</td> <td>47</td> <td>64</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 | 46 | 64 | -10 | 46 | 64 | 0 | 46 | 64 | 10 | 46 | 64 | 25 | 46 | 64 | 30 | 46 | 64 | 40 | 46 | 64 | 50 | 47 | 64 | 60 | 47 | 64 | -- | - | - | -- | - | - |
| Ambient Temperature [°C] | Input Voltage [V] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Load 50% | Load 100% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | 46 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 47 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | 47 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- | - | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

COSEL

| | |
|---------------|-------------------------------|
| Model | PBA150F-15 |
| Item | Overcurrent Protection |
| Object | +15V10A |

1.Graph

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

Intermittent operation occurs when the output voltage is from 9V to 0V.

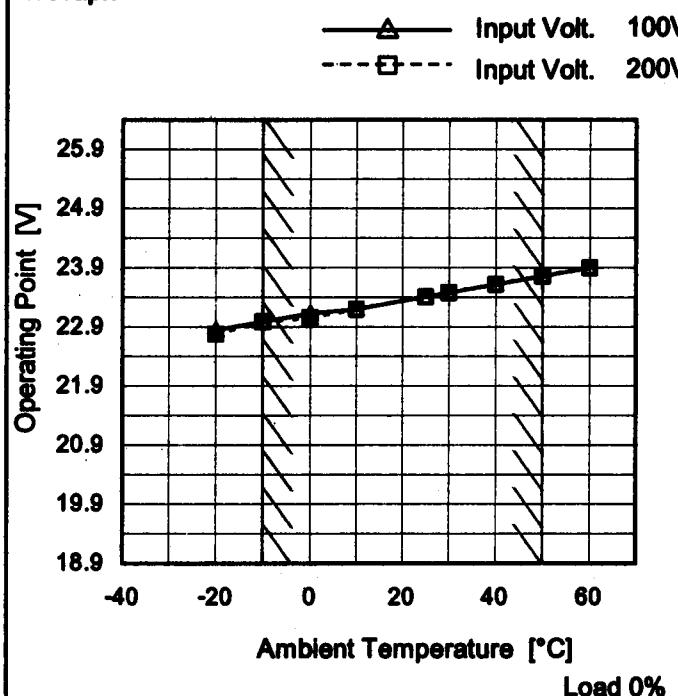
Temperature 25°C
Testing Circuitry Figure A

2.Values

| Output Voltage [V] | Load Current [A] | |
|--------------------|--------------------|--------------------|
| | Input Volt. 100[V] | Input Volt. 200[V] |
| 15.00 | 10.23 | 10.28 |
| 14.25 | 12.53 | 12.50 |
| 13.50 | 12.57 | 12.53 |
| 12.00 | 12.62 | 12.55 |
| 10.50 | 12.60 | 12.52 |
| 9.00 | 12.66 | 12.68 |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |

COSEL

| | |
|---------------|-----------------------------|
| Model | PBA150F-15 |
| Item | Ovvoltage Protection |
| Object | +15V10A |

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 | 22.87 | 22.80 |
| -10 | 23.01 | 23.01 |
| 0 | 23.15 | 23.08 |
| 10 | 23.22 | 23.22 |
| 25 | 23.43 | 23.43 |
| 30 | 23.50 | 23.50 |
| 40 | 23.64 | 23.64 |
| 50 | 23.78 | 23.78 |
| 60 | 23.92 | 23.92 |
| -- | - | - |
| -- | - | - |

COSEL

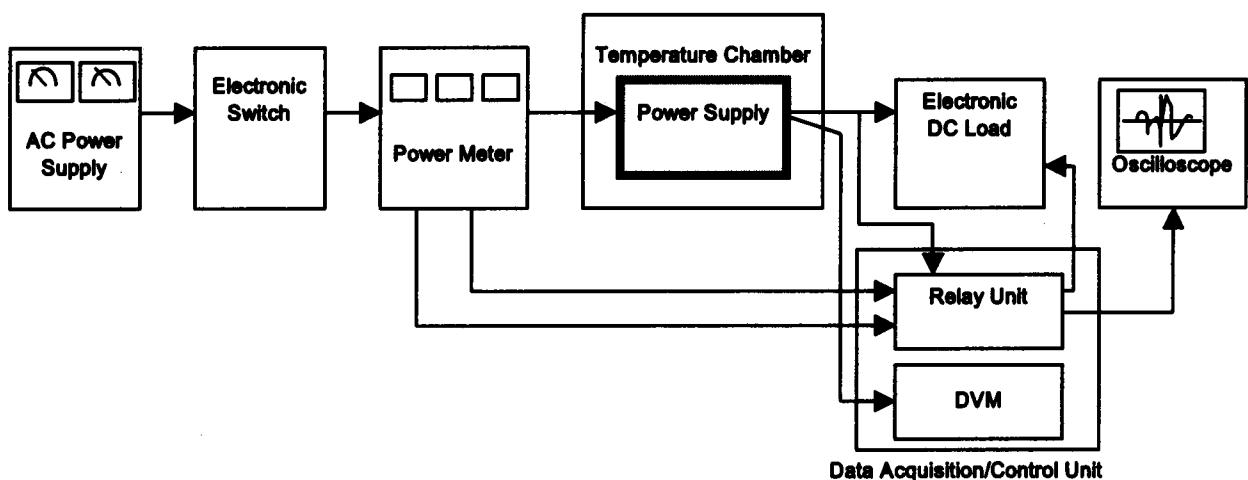


Figure A

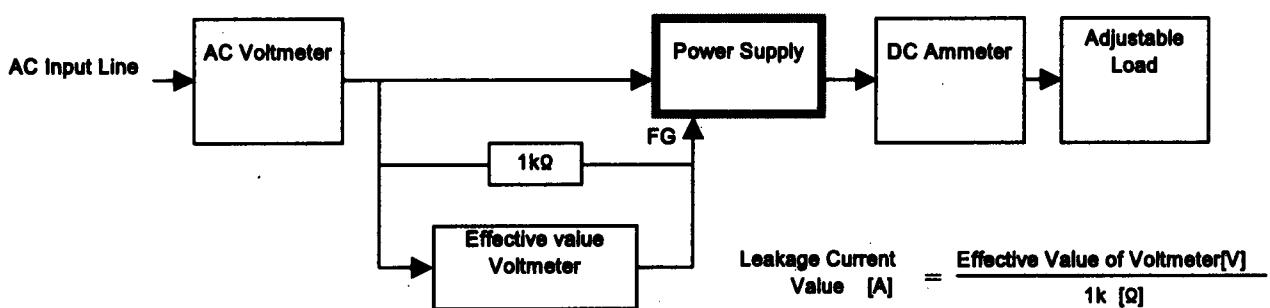


Figure B (DEN-AN)

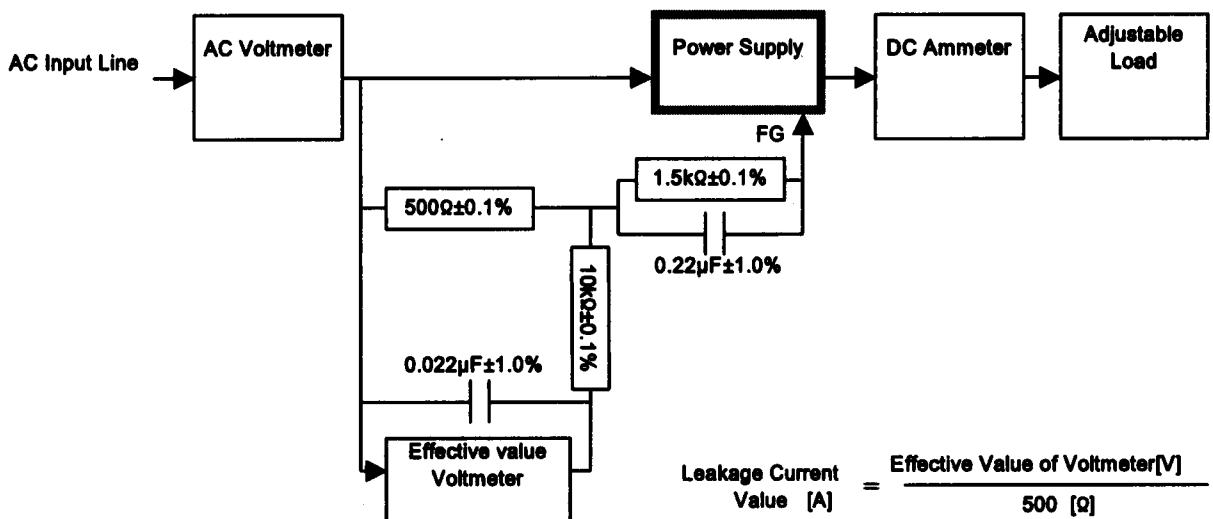


Figure B (IEC60950)