参考資料

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# TEST DATA OF PBA300F-5

Regulated DC Power Supply
May 28,2004

Approved by : Takahiro Yoneda
Takahiro Yoneda — Design Manager

Prepared by : Hajime Goto
Hajime Goto — Design Engineer

**COSEL CO.,LTD.**

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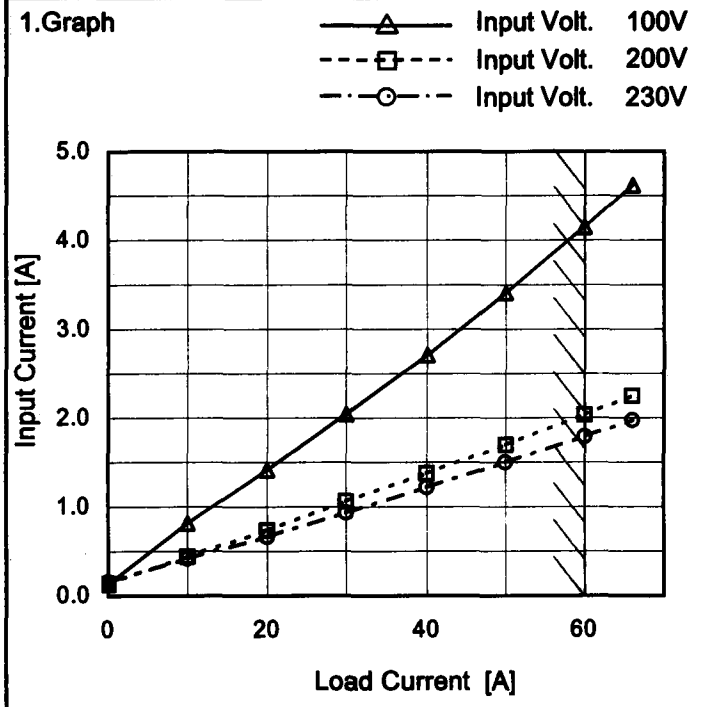
| Model | PBA300F-5 |
|---|---|
| Item | Input Current (by Load Current) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 0.134 | 0.140 | 0.157 |
| 10 | 0.814 | 0.442 | 0.420 |
| 20 | 1.416 | 0.738 | 0.664 |
| 30 | 2.046 | 1.062 | 0.934 |
| 40 | 2.710 | 1.378 | 1.220 |
| 50 | 3.408 | 1.700 | 1.500 |
| 60 | 4.150 | 2.038 | 1.793 |
| 66 | 4.620 | 2.250 | 1.975 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



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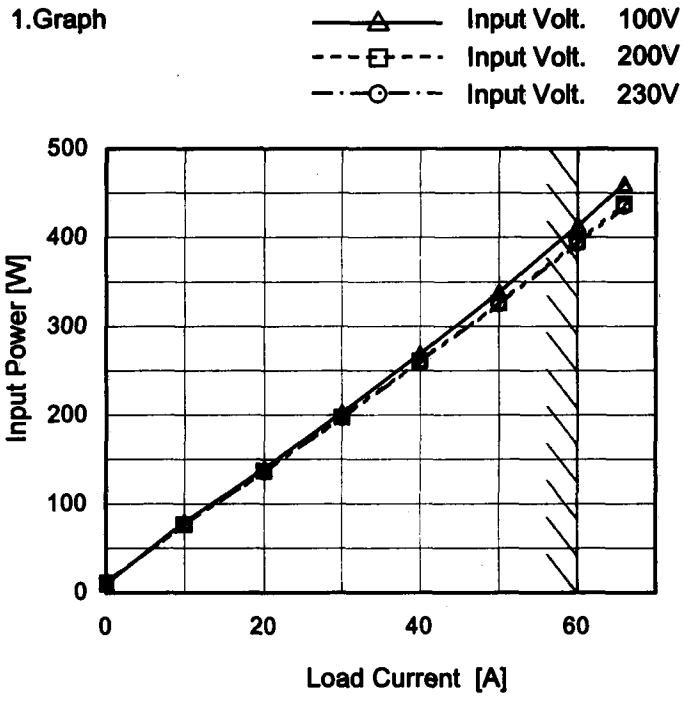
| Model | PBA300F-5 |
|---|---|
| Item | Input Power (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Input Power [W] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 10.2 | 11.0 | 11.0 |
| 10 | 79.3 | 77.0 | 77.0 |
| 20 | 139.8 | 137.0 | 136.0 |
| 30 | 202.8 | 198.0 | 197.0 |
| 40 | 269.1 | 261.0 | 260.0 |
| 50 | 338.4 | 326.0 | 325.0 |
| 60 | 413.0 | 395.0 | 393.0 |
| 66 | 460.0 | 438.0 | 435.0 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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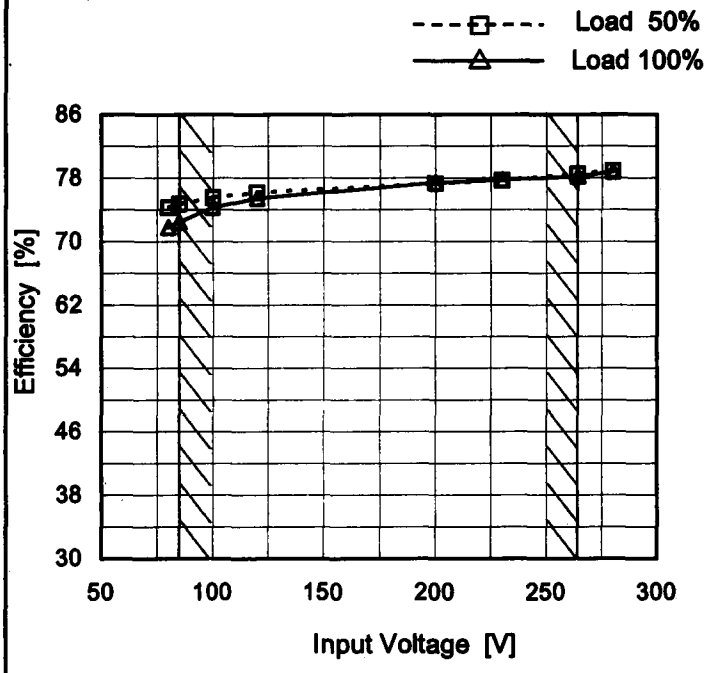
| Model | PBA300F-5 |
|---|---|
| Item | Efficiency (by Input Voltage) |
| Object | ——————————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

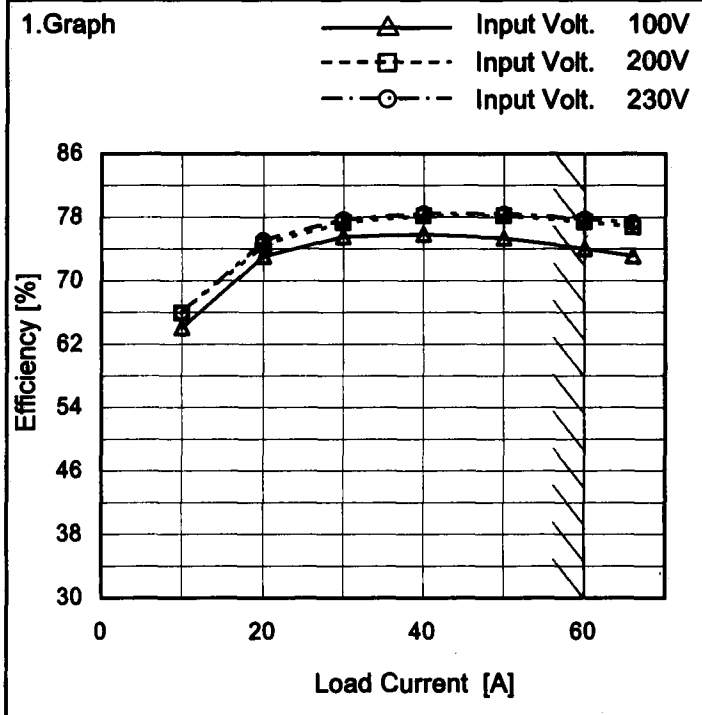
2.Values

| Input Voltage [V] | Efficiency [%] | |
|---|---|---|
| | Load 50% | Load 100% |
| 80 | 74.3 | 71.8 |
| 85 | 74.7 | 72.5 |
| 100 | 75.5 | 74.3 |
| 120 | 76.2 | 75.4 |
| 200 | 77.3 | 77.4 |
| 230 | 77.7 | 77.8 |
| 264 | 78.5 | 78.2 |
| 280 | 78.9 | 78.8 |
| -- | - | - |

| Model | PBA300F-5 |
|---|---|
| Item | Efficiency (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Efficiency [%] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | - | - | - |
| 10 | 64.1 | 65.9 | 66.0 |
| 20 | 73.1 | 74.6 | 75.1 |
| 30 | 75.5 | 77.3 | 77.7 |
| 40 | 75.9 | 78.2 | 78.5 |
| 50 | 75.4 | 78.2 | 78.5 |
| 60 | 74.1 | 77.4 | 77.8 |
| 66 | 73.1 | 76.8 | 77.3 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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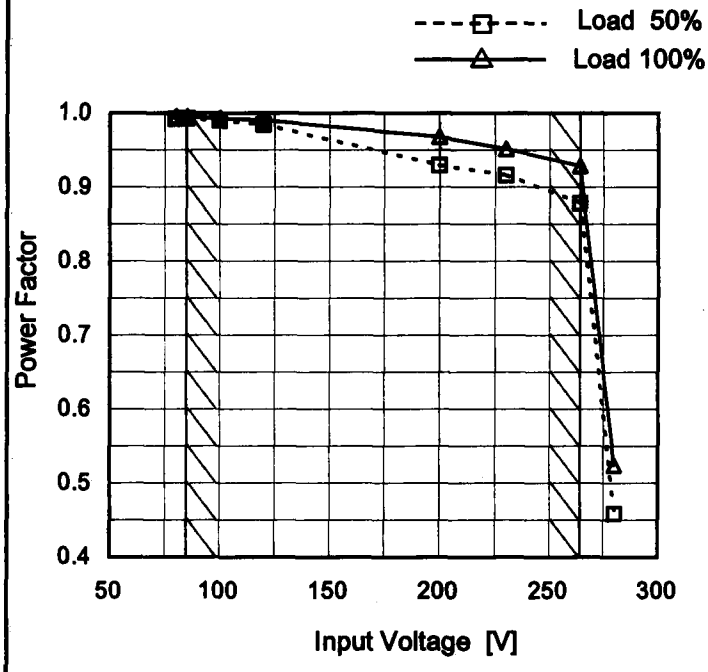
| Model | PBA300F-5 |
|---|---|
| Item | Power Factor (by Input Voltage) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Input Voltage [V] | Power Factor | |
|---|---|---|
| | Load 50% | Load 100% |
| 80 | 0.992 | 0.995 |
| 85 | 0.993 | 0.995 |
| 100 | 0.990 | 0.993 |
| 120 | 0.984 | 0.990 |
| 200 | 0.930 | 0.968 |
| 230 | 0.916 | 0.952 |
| 264 | 0.878 | 0.929 |
| 280 | 0.459 | 0.524 |
| -- | - | - |

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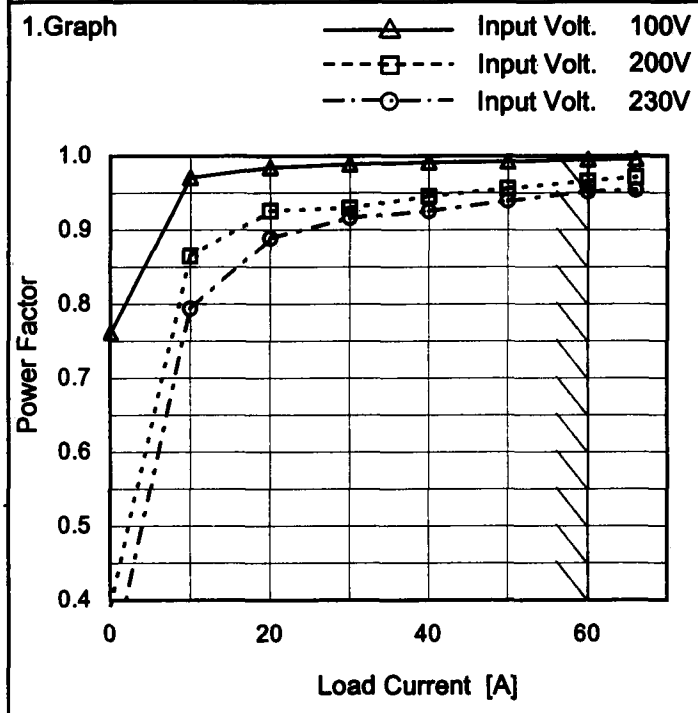
| Model | PBA300F-5 |
|---|---|
| Item | Power Factor (by Load Current) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Power Factor | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 0.761 | 0.393 | 0.306 |
| 10 | 0.971 | 0.865 | 0.794 |
| 20 | 0.985 | 0.926 | 0.889 |
| 30 | 0.989 | 0.930 | 0.916 |
| 40 | 0.992 | 0.946 | 0.925 |
| 50 | 0.992 | 0.956 | 0.939 |
| 60 | 0.995 | 0.966 | 0.952 |
| 66 | 0.996 | 0.971 | 0.954 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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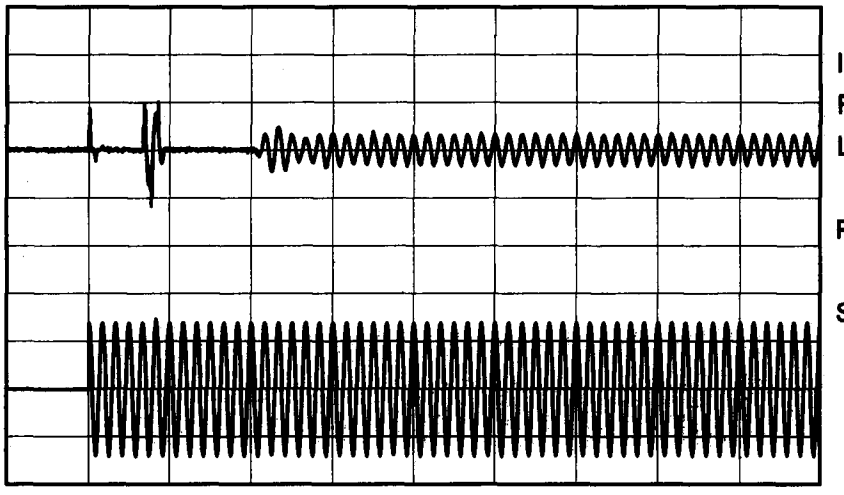
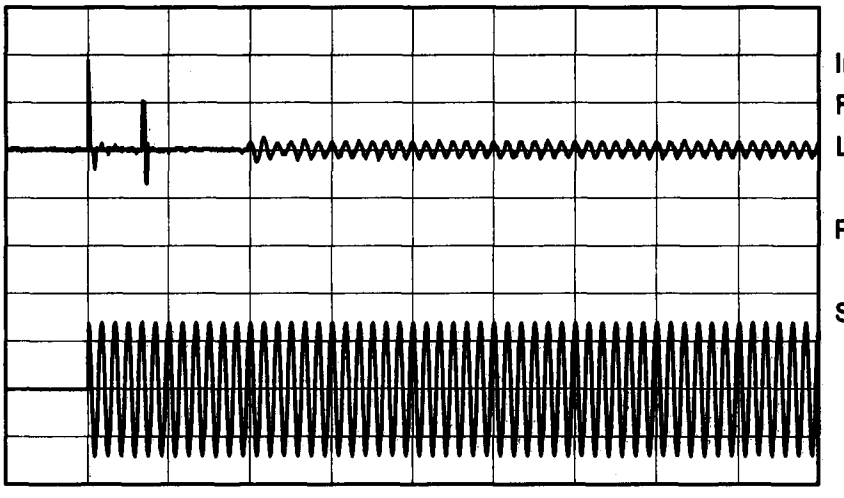
| Model | PBA300F-5 | Temperature 25°C |
|---|---|---|
| Item | Inrush Current | Testing Circuitry Figure A |
| Object | ———————— | |



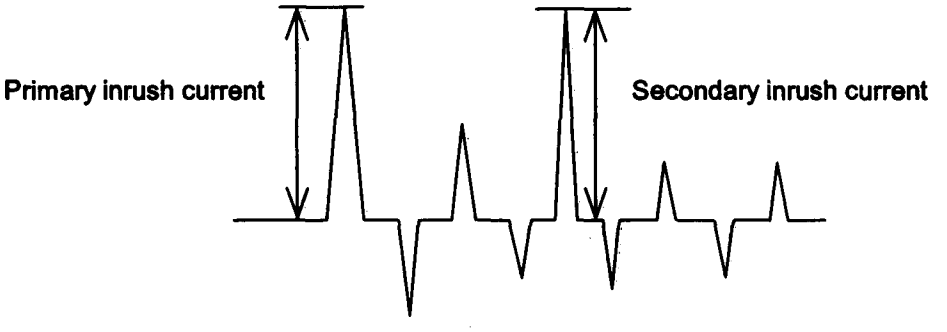

Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
17.4 A
Secondary inrush current :
23.4 A




Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
37.7 A
Secondary inrush current :
20.9 A



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| | | | |
|---|---|---|---|
| Model | PBA300F-5 | | |
| Item | Leakage Current | Temperature | 25°C |
| Object | ——————— | Testing Circuitry | Figure B |

1.Results

[mA]

| Standards | | Input Volt. | | | Note |
|---|---|---|---|---|---|
| | | 100 [V] | 200 [V] | 230 [V] | |
| DEN-AN | Both phases | 0.14 | 0.25 | 0.28 | Operation |
| | One of phase | 0.23 | 0.45 | 0.52 | stand by |
| IEC60950 | Both phases | 0.14 | 0.25 | 0.28 | Operation |
| | One of phase | 0.23 | 0.45 | 0.52 | 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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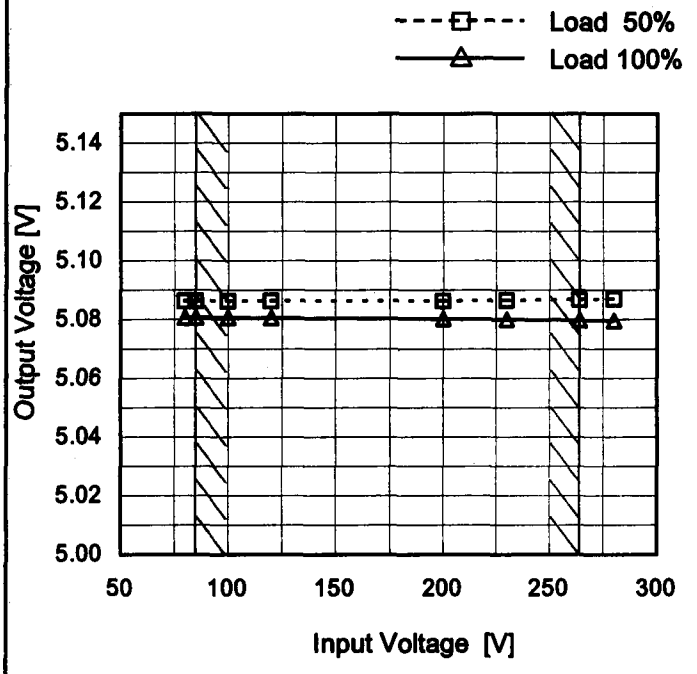
| Model | PBA300F-5 |
|---|---|
| Item | Line Regulation |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 80 | 5.086 | 5.081 |
| 85 | 5.086 | 5.081 |
| 100 | 5.086 | 5.081 |
| 120 | 5.086 | 5.081 |
| 200 | 5.086 | 5.080 |
| 230 | 5.087 | 5.080 |
| 264 | 5.087 | 5.080 |
| 280 | 5.087 | 5.080 |
| -- | - | - |

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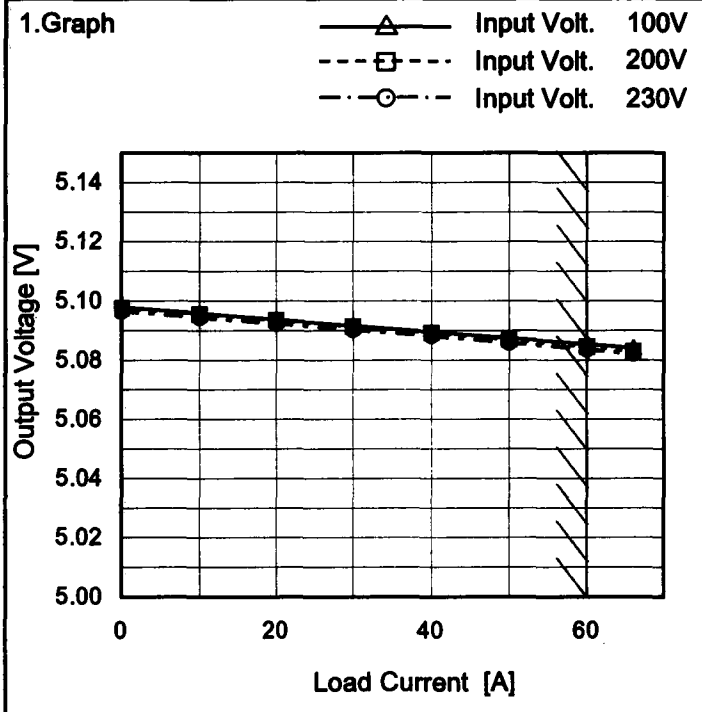
| Model | PBA300F-5 |
|---|---|
| Item | Load Regulation |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | 5.098 | 5.098 | 5.097 |
| 10 | 5.096 | 5.096 | 5.094 |
| 20 | 5.094 | 5.094 | 5.092 |
| 30 | 5.092 | 5.091 | 5.090 |
| 40 | 5.090 | 5.089 | 5.088 |
| 50 | 5.088 | 5.087 | 5.086 |
| 60 | 5.085 | 5.085 | 5.084 |
| 66 | 5.084 | 5.083 | 5.082 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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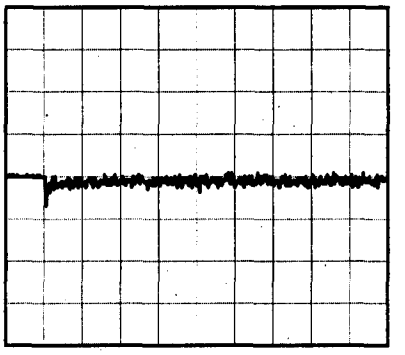
| | | | |
|---|---|---|---|
| Model | PBA300F-5 | | |
| Item | Dynamic Load Response<br>動的負荷変動 | Temperature<br>Testing Circuitry | 25℃<br>Figure A |
| Object | +5V60A | | |

Input Volt. 100 V

Cycle 1000 ms

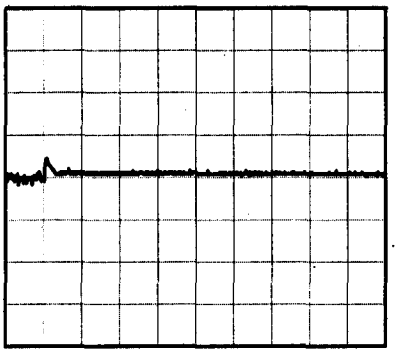
Load Current

Min. Load (0A) ⟷
Load 100% (60A)



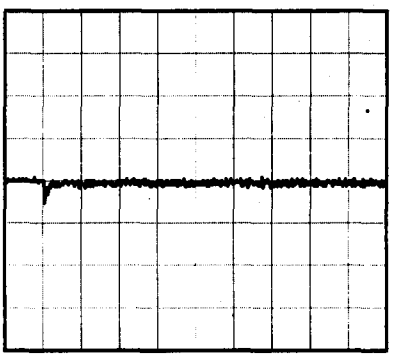
100 mV/div

10 ms/div



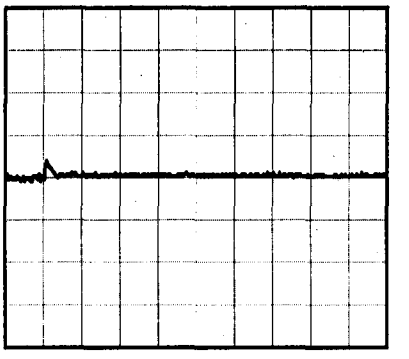
10 ms/div

Min. Load (0A) ⟷
Load 50% (30A)



100 mV/div

10 ms/div



10 ms/div

* The characteristic of AC200V is equal.

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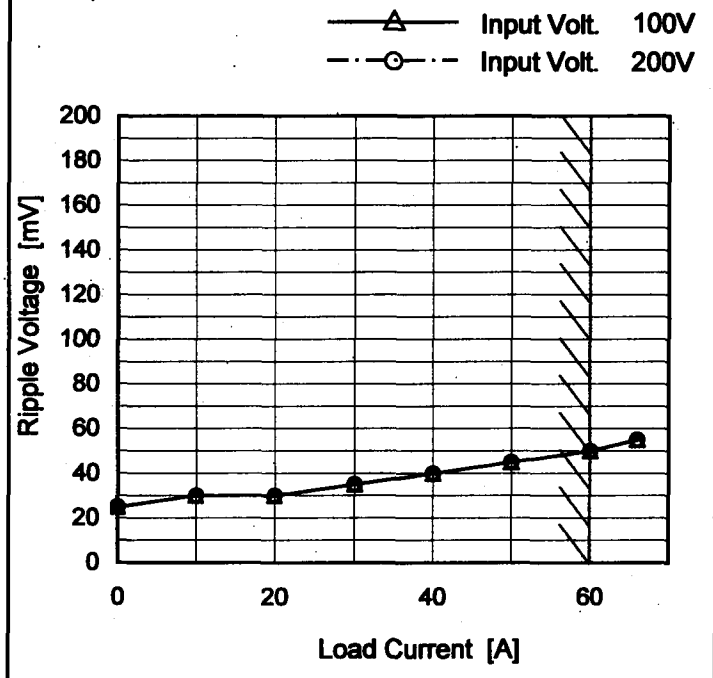
| | |
|---|---|
| Model | PBA300F-5 |
| Item | Ripple Voltage (by Load Current) |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

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

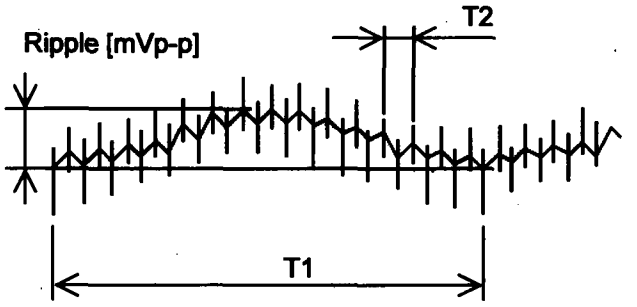



Fig. Complex Ripple Wave Form

2.Values

| Load Current [A] | Ripple Voltage [mV] Input Volt. 100 [V] | Ripple Voltage [mV] Input Volt. 200 [V] |
|---|---|---|
| 0 | 25 | 25 |
| 10 | 30 | 30 |
| 20 | 30 | 30 |
| 30 | 35 | 35 |
| 40 | 40 | 40 |
| 50 | 45 | 45 |
| 60 | 50 | 50 |
| 66 | 55 | 55 |
| – | - | - |
| – | - | - |
| – | - | - |



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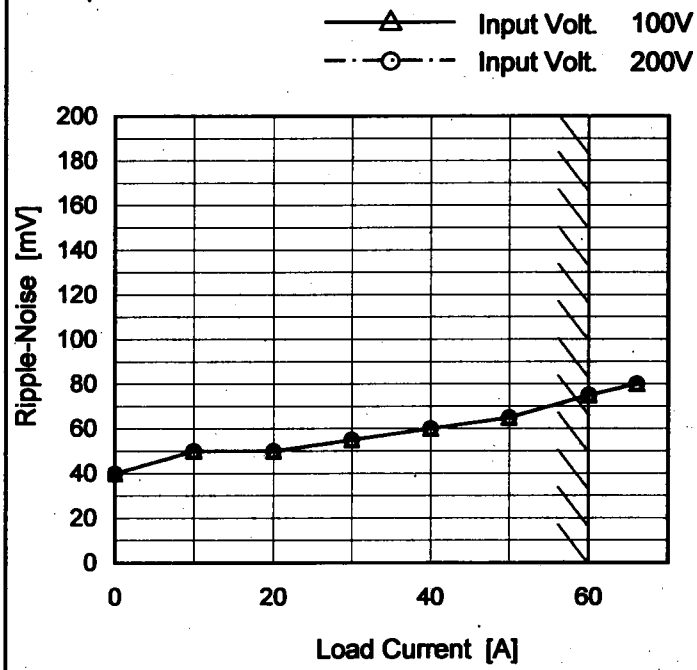
| | |
|---|---|
| Model | PBA300F-5 |
| Item | Ripple-Noise |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 100 [V] | Input Volt. 200 [V] |
| 0 | 40 | 40 |
| 10 | 50 | 50 |
| 20 | 50 | 50 |
| 30 | 55 | 55 |
| 40 | 60 | 60 |
| 50 | 65 | 65 |
| 60 | 75 | 75 |
| 66 | 80 | 80 |
| – | - | - |
| – | - | - |
| – | - | - |

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

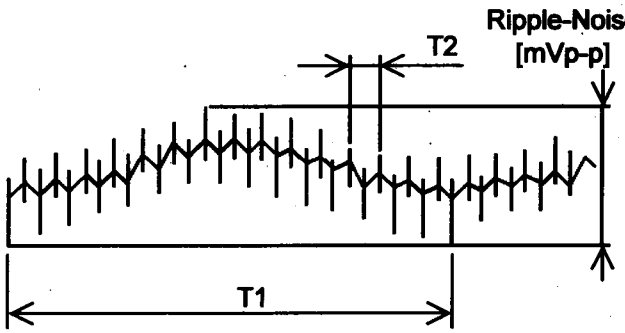



Fig. Complex Ripple Wave Form

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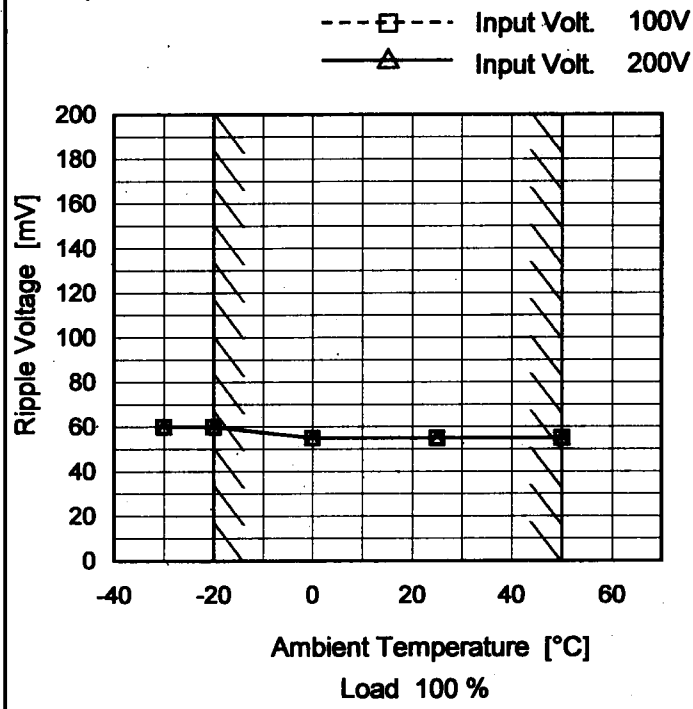
| | |
|---|---|
| Model | PBA300F-5 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +5V60A |

Testing Circuitry Figure A

1.Graph




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

2.Values

| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 100 [V] | Input Volt. 200 [V] |
| -30 | 60 | 60 |
| -20 | 60 | 60 |
| 0 | 55 | 55 |
| 25 | 55 | 55 |
| 50 | 55 | 55 |
| — | - | - |
| — | - | - |
| — | - | - |
| — | - | - |
| — | - | - |
| — | - | - |

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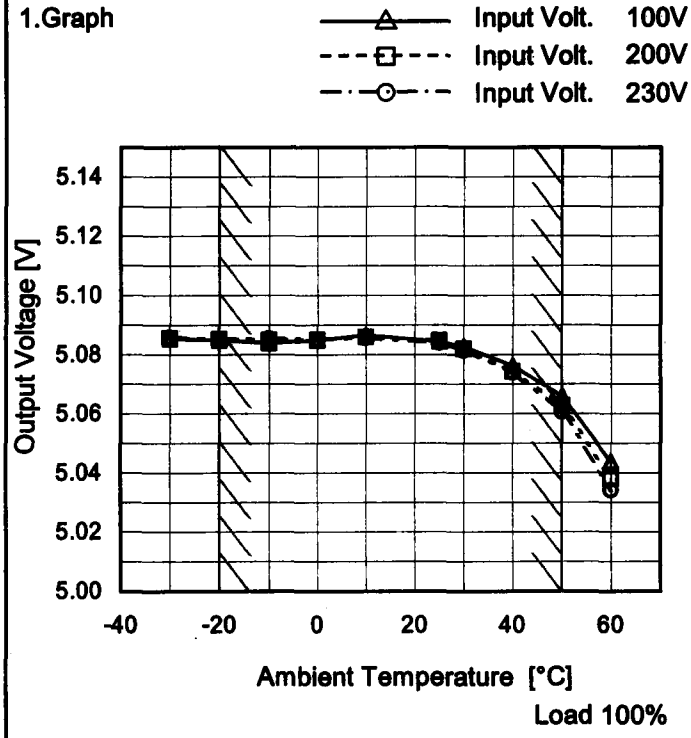
| Model | PBA300F-5 |
|---|---|
| Item | Ambient Temperature Drift |
| Object | +5V60A |

Testing Circuitry Figure A

1.Graph




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

2.Values

| Ambient Temperature [°C] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| -30 | 5.085 | 5.086 | 5.086 |
| -20 | 5.085 | 5.085 | 5.085 |
| -10 | 5.084 | 5.085 | 5.085 |
| 0 | 5.085 | 5.085 | 5.085 |
| 10 | 5.087 | 5.086 | 5.086 |
| 25 | 5.085 | 5.085 | 5.084 |
| 30 | 5.083 | 5.082 | 5.082 |
| 40 | 5.076 | 5.074 | 5.074 |
| 50 | 5.066 | 5.063 | 5.061 |
| 60 | 5.044 | 5.038 | 5.034 |
| -- | - | - | - |

| | | |
|---|---|---|
| Model | PBA300F-5 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +5V60A | |

1.Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -20 - 50°C
Input Voltage : 85 - 264V
Load Current : 0 - 60A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - 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 | -20 | 264 | 0 | 5.097 | ±23 | ±0.5 |
| Minimum Voltage | 50 | 264 | 60 | 5.051 | | |

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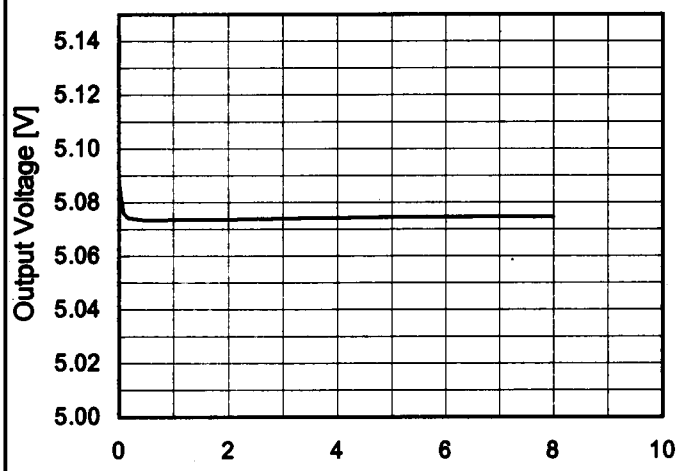
| | |
|---|---|
| Model | PBA300F-5 |
| Item | Time Lapse Drift |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 100V
Load 100%

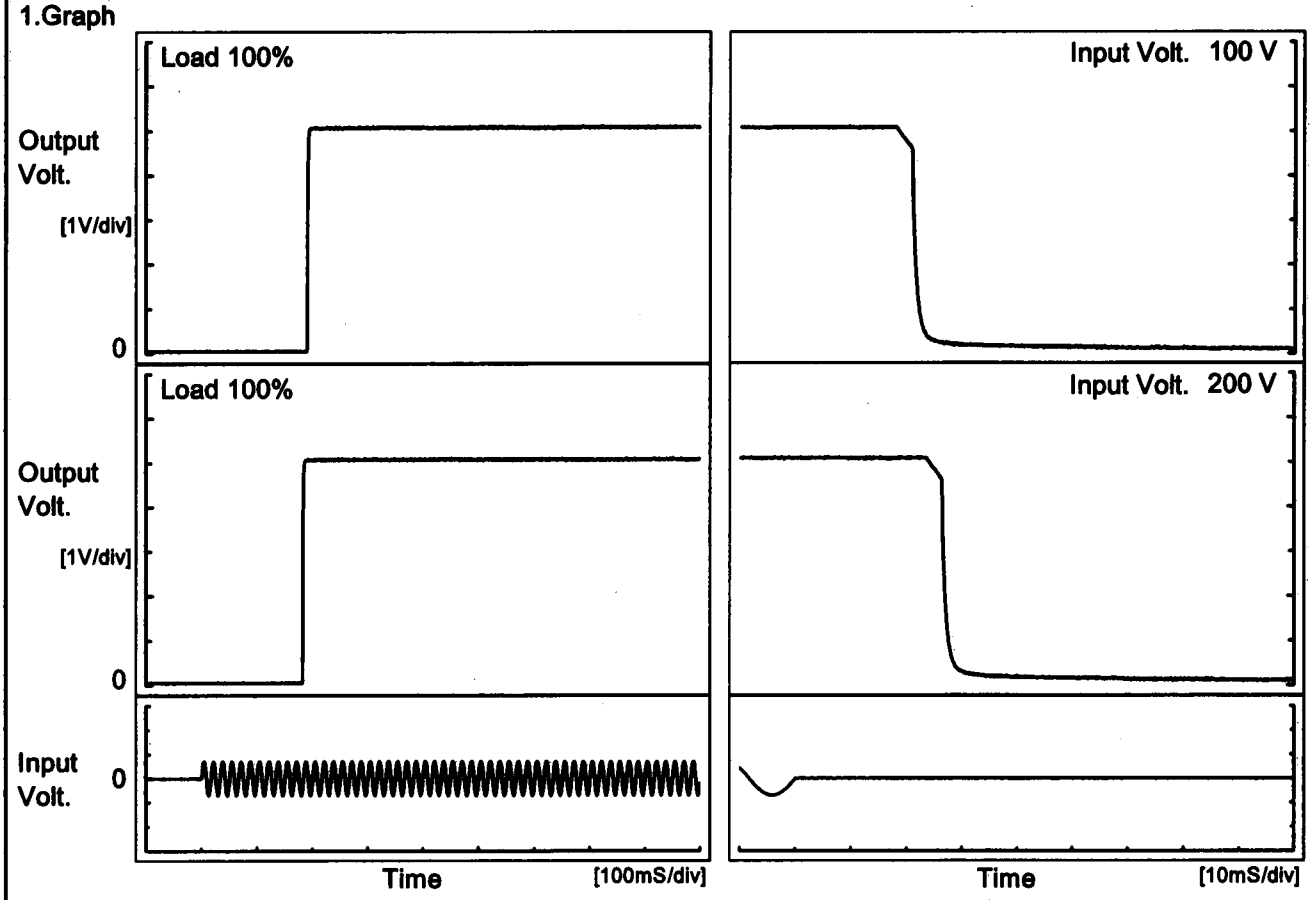
* The characteristic of AC200V is equal.

2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 5.088 |
| 0.5 | 5.073 |
| 1.0 | 5.074 |
| 2.0 | 5.074 |
| 3.0 | 5.074 |
| 4.0 | 5.074 |
| 5.0 | 5.075 |
| 6.0 | 5.075 |
| 7.0 | 5.075 |
| 8.0 | 5.075 |

| | | | |
|---|---|---|---|
| Model | PBA300F-5 | | |
| Item | Rise and Fall Time | Temperature | 25°C |
| | | Testing Circuitry | Figure A |
| Object | +5V60A | | |

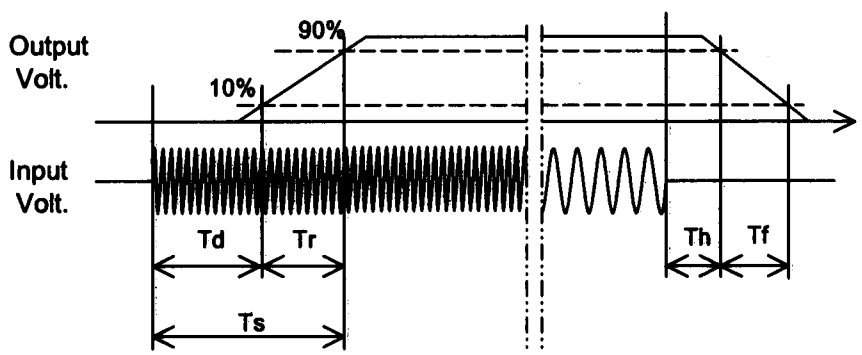
1.Graph




2.Values

[mS]

| Input Volt. \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 100 V | 190.5 | 1.5 | 192.0 | 20.9 | 2.1 |
| 200 V | 182.0 | 2.0 | 184.0 | 26.4 | 2.1 |

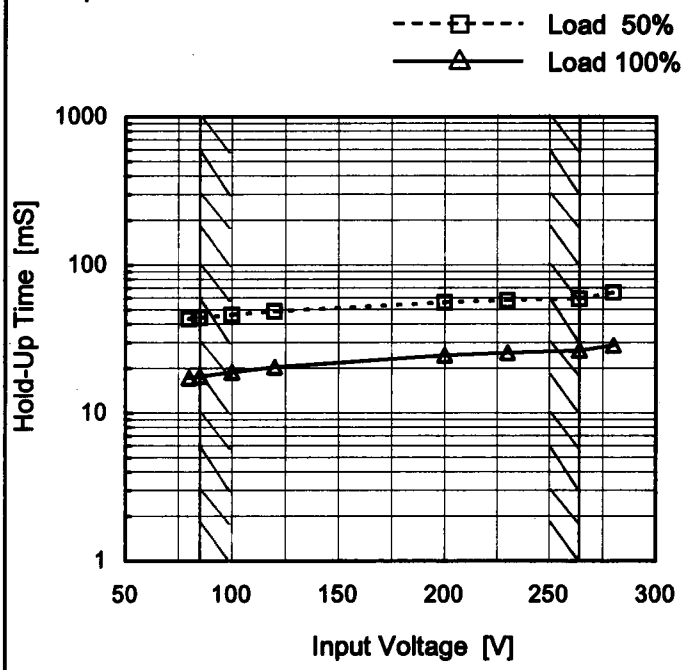


COSEL

| Model | PBA300F-5 |
|---|---|
| Item | Hold-Up Time |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

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.

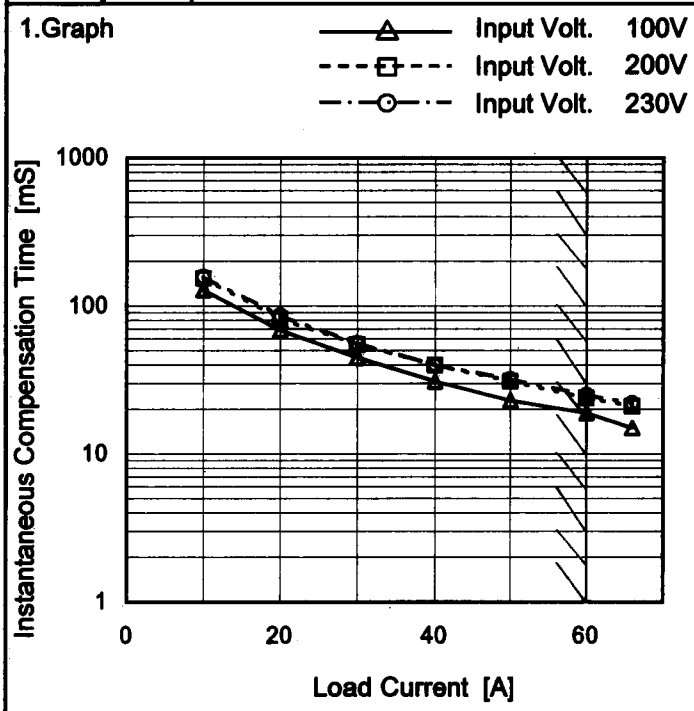
2.Values

| Input Voltage [V] | Hold-Up Time [mS] | |
|---|---|---|
| | Load 50% | Load 100% |
| 80 | 43 | 17 |
| 85 | 44 | 18 |
| 100 | 46 | 19 |
| 120 | 49 | 20 |
| 200 | 56 | 25 |
| 230 | 58 | 26 |
| 264 | 59 | 27 |
| 280 | 65 | 29 |
| -- | - | - |

| Model | PBA300F-5 |
|---|---|
| Item | Instantaneous Interruption Compensation |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

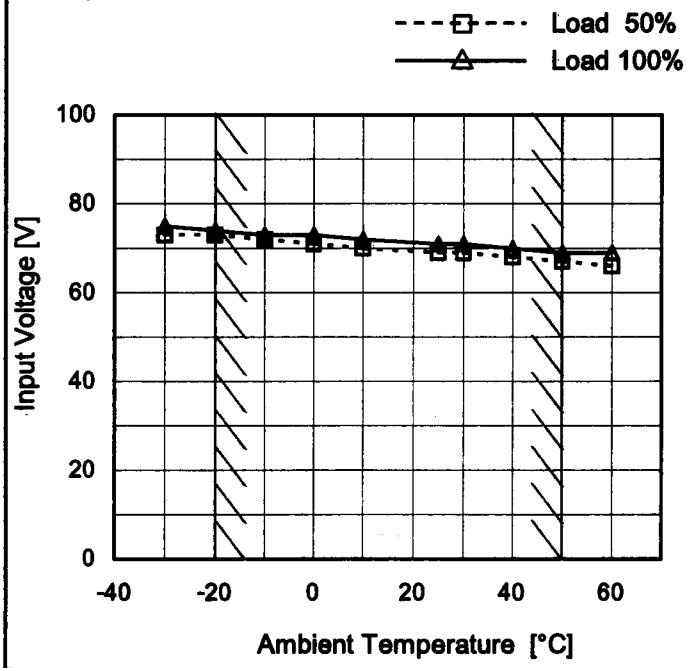
| Load Current [A] | Time [mS] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 230[V] |
| 0 | - | - | - |
| 10 | 129 | 154 | 157 |
| 20 | 69 | 82 | 86 |
| 30 | 45 | 55 | 56 |
| 40 | 31 | 40 | 40 |
| 50 | 23 | 31 | 32 |
| 60 | 19 | 24 | 25 |
| 66 | 15 | 21 | 22 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | PBA300F-5 |
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +5V60A |

Testing Circuitry Figure A

1.Graph




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

2.Values

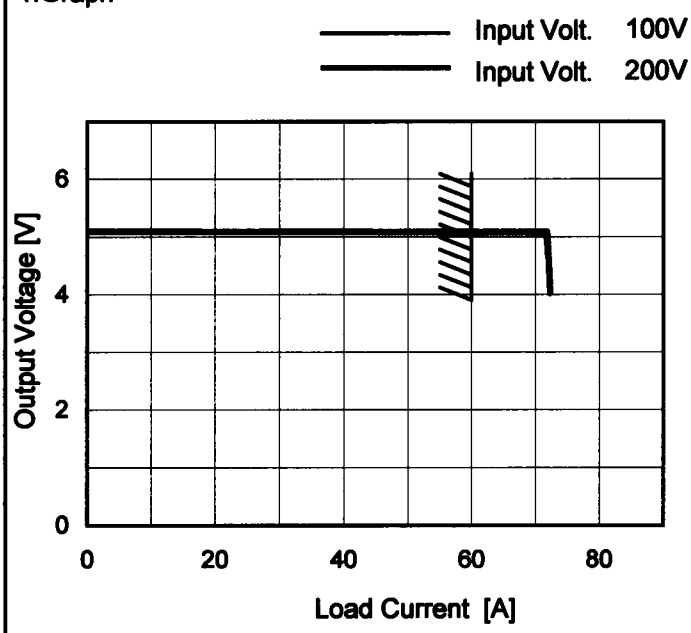
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -30 | 73 | 75 |
| -20 | 73 | 74 |
| -10 | 72 | 73 |
| 0 | 71 | 73 |
| 10 | 70 | 72 |
| 25 | 69 | 71 |
| 30 | 69 | 71 |
| 40 | 68 | 70 |
| 50 | 67 | 69 |
| 60 | 66 | 69 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | PBA300F-5 |
| Item | Overcurrent Protection |
| Object | +5V60A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

Intermittent operation occurs when the output voltage is from 4V to 0V.

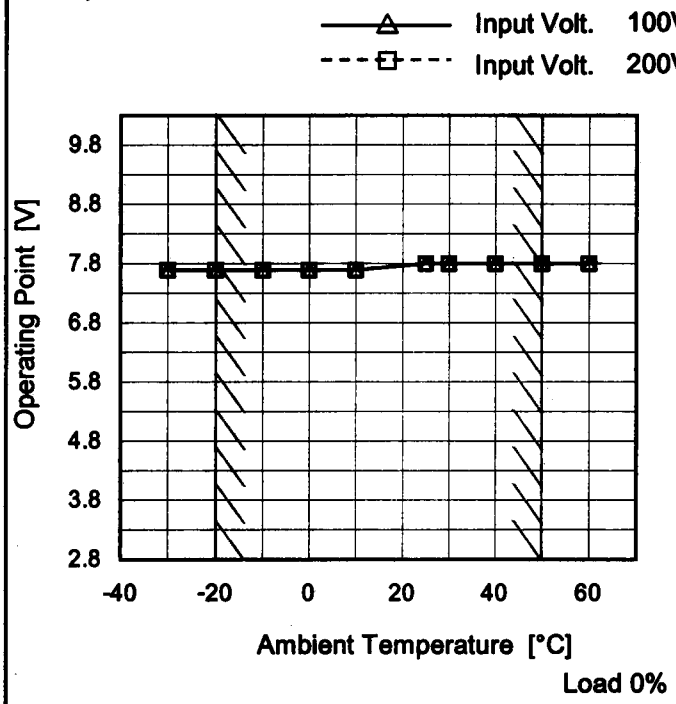
2.Values

| Output Voltage [V] | Load Current [A] | |
|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] |
| 5.00 | 68.03 | 67.65 |
| 4.75 | 71.89 | 71.98 |
| 4.50 | 72.07 | 72.09 |
| 4.00 | 72.33 | 72.31 |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |

| Model | PBA300F-5 |
|---|---|
| Item | Overvoltage Protection |
| Object | +5V60A |

Testing Circuitry Figure A

1.Graph




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

2.Values

| Ambient Temperature [°C] | Operating Point [V] | |
|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] |
| -30 | 7.66 | 7.66 |
| -20 | 7.66 | 7.66 |
| -10 | 7.66 | 7.66 |
| 0 | 7.66 | 7.66 |
| 10 | 7.66 | 7.66 |
| 25 | 7.77 | 7.77 |
| 30 | 7.77 | 7.77 |
| 40 | 7.77 | 7.77 |
| 50 | 7.77 | 7.77 |
| 60 | 7.77 | 7.77 |
| -- | - | - |

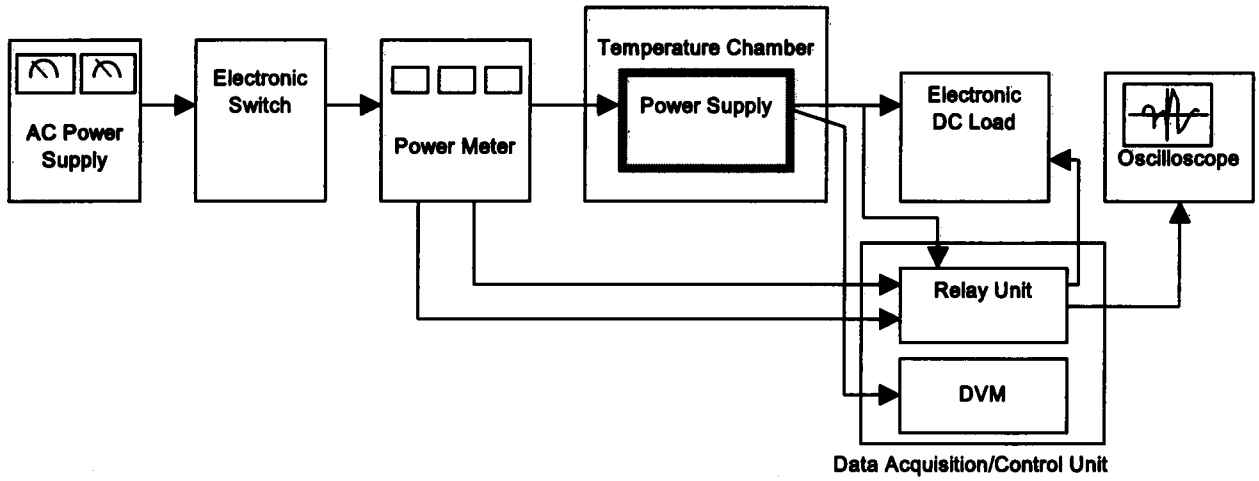



Figure A

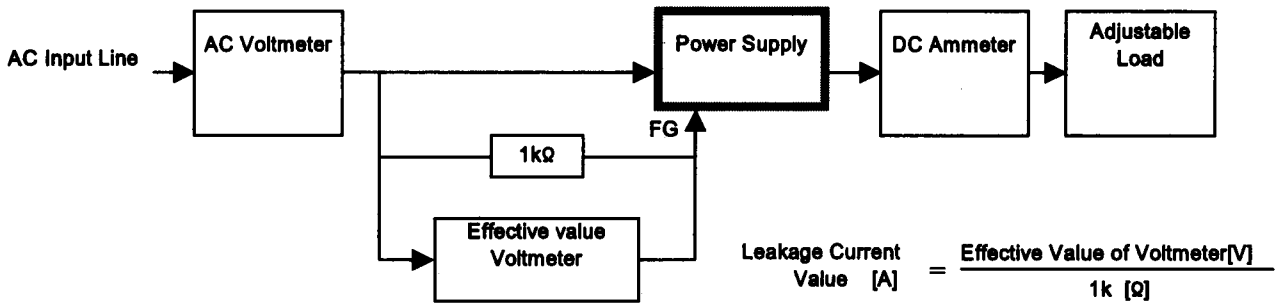



Figure B ( DEN-AN )

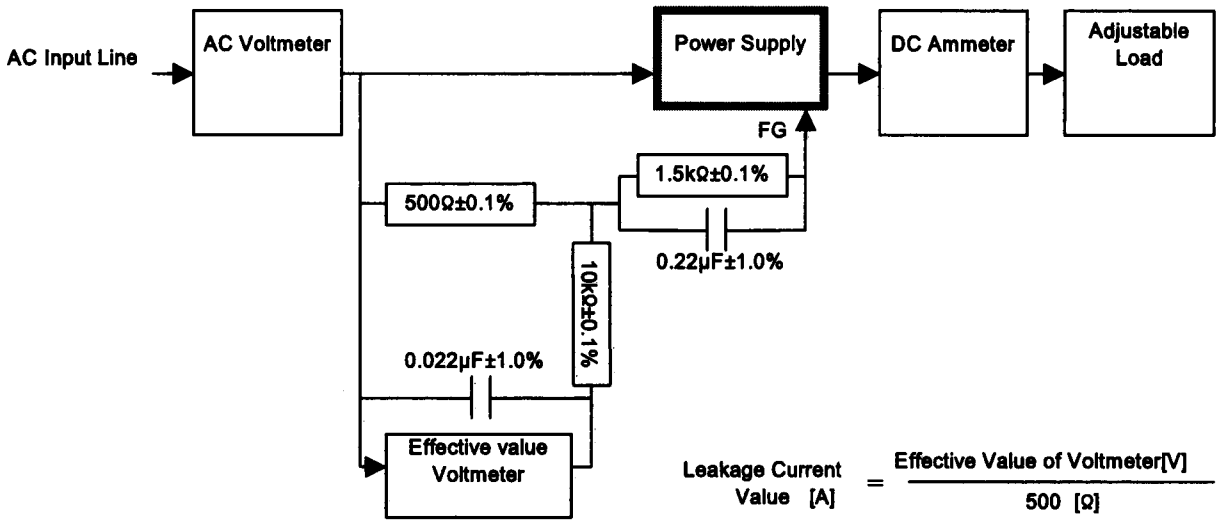



Figure B ( IEC60950 )