



Supplemental test data
(参考資料)

Date of issue: Dec. 16, 2011

Test Data

Model Number: GPSA-600-12P

Model Name: DC POWER SUPPLY

INPUT: 85V -- 264V AC, 50 / 60 Hz

OUTPUT: 12V 50.0A (80A_{peak} at 100V AC)
(100 A_{peak} at 200V AC)
12VSB 0.5A

Minimum load : 0W
Rated load : 606W
Peak output power: 966W(at 100V AC)
1206W(at 200V AC)

Approved by : Makoto Uvzue (QA manager)
Designed by : Akira Tazumi (R&D engineer)
Tested by : Kohei Sawada (Evaluation test engineer)

Nipron Co., Ltd.

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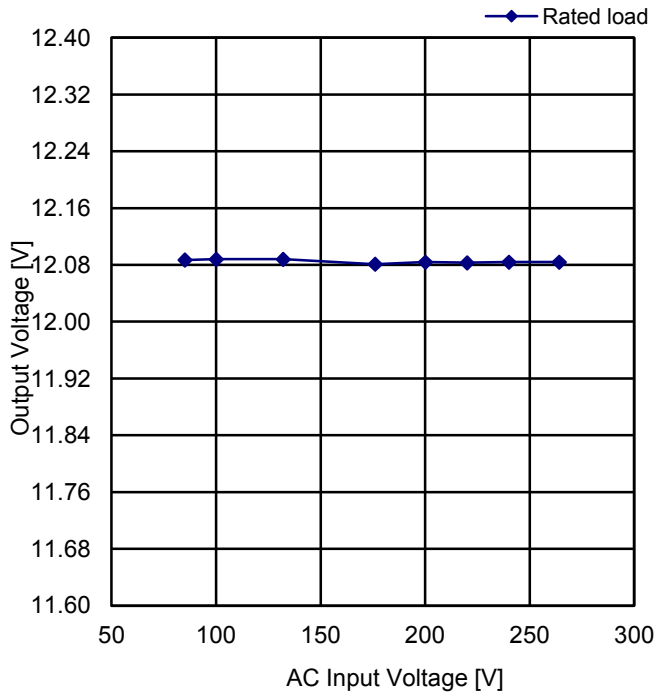
Model	GPSA-600-12P	Temperature: 25°C																																				
Item	Input Current (by Load Power)																																					
<p>Legend: - 85V AC (Blue diamonds) - 100V AC (Magenta squares) - 240V AC (Red triangles) - 264V AC (Green crosses)</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="4">Input Current [A rms]</th> </tr> <tr> <th>Input Voltage 85V AC</th> <th>Input Voltage 100V AC</th> <th>Input Voltage 240V AC</th> <th>Input Voltage 264V AC</th> </tr> </thead> <tbody> <tr> <td>0.0</td> <td>0.17</td> <td>0.14</td> <td>0.14</td> <td>0.13</td> </tr> <tr> <td>151.5</td> <td>2.36</td> <td>2.01</td> <td>0.91</td> <td>0.85</td> </tr> <tr> <td>303.0</td> <td>4.46</td> <td>3.78</td> <td>1.66</td> <td>1.54</td> </tr> <tr> <td>454.5</td> <td>6.62</td> <td>5.58</td> <td>2.41</td> <td>2.24</td> </tr> <tr> <td>606.0</td> <td>8.89</td> <td>7.46</td> <td>3.17</td> <td>2.94</td> </tr> </tbody> </table>			Load Power [W]	Input Current [A rms]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	0.0	0.17	0.14	0.14	0.13	151.5	2.36	2.01	0.91	0.85	303.0	4.46	3.78	1.66	1.54	454.5	6.62	5.58	2.41	2.24	606.0	8.89	7.46	3.17	2.94
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Item	Efficiency																															
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303.0	95.6	94.8	87.4	85.6																												
454.5	97.3	96.7	90.2	88.4																												
606.0	98.3	97.8	91.9	90.2																												

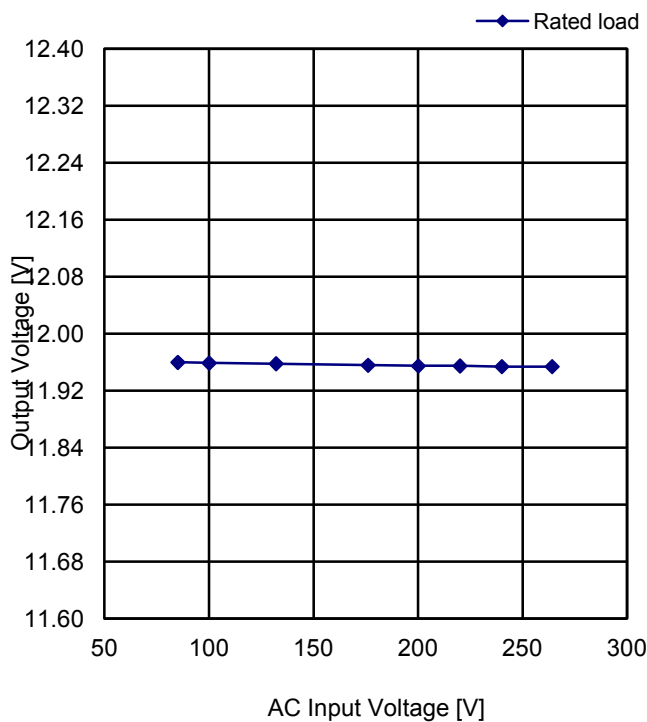
Model	GPSA-600-12P	Temperature: 25°C
Item	Line Regulation	

12V/50A



AC Input Voltage [V]	Output Voltage [V]
85	12.087
100	12.088
132	12.088
176	12.081
200	12.084
220	12.083
240	12.084
264	12.084

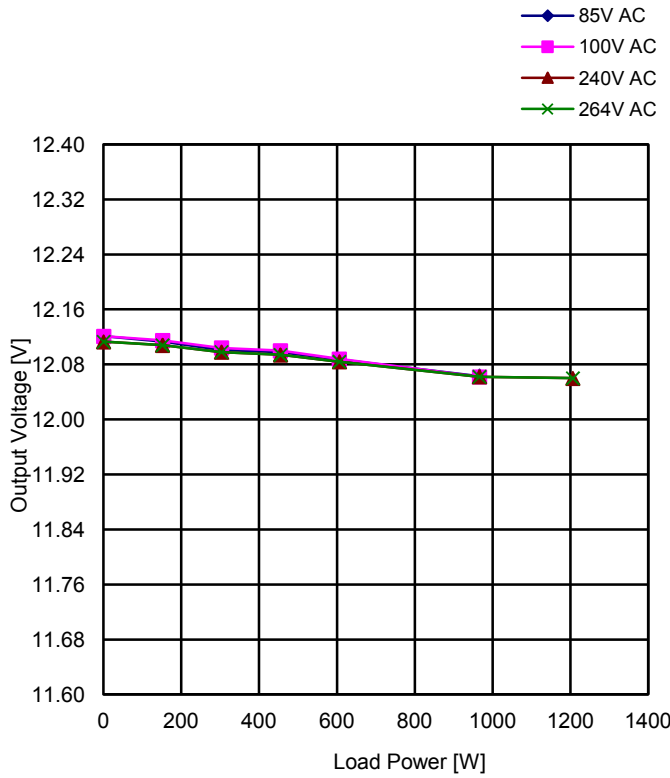
12VSB/0.5A



AC Input Voltage [V]	Output Voltage [V]
85	11.96
100	11.959
132	11.958
176	11.956
200	11.955
220	11.955
240	11.954
264	11.954

Model	GPSA-600-12P	Temperature: 25°C
Item	Load Regulation	

12V

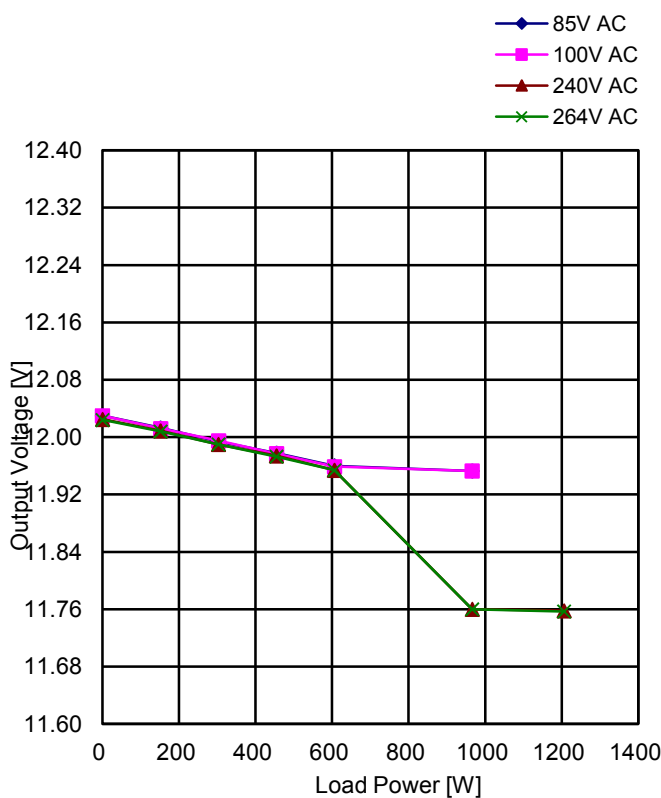


Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	12.121	12.121	12.113	12.113
151.5	12.113	12.115	12.108	12.108
303.0	12.101	12.104	12.098	12.098
454.5	12.098	12.100	12.094	12.094
606.0	12.087	12.088	12.084	12.084
966.0	12.063	12.062	12.062	12.062
1206.0	-	-	12.060	12.060

Load Condition

Load Power [W]	Load Current [A]
	12V
0.0	0.00
151.5	12.50
303.0	25.00
454.5	37.50
606.0	50.00
966.0	80.00
1206.0	100.00

12VSB



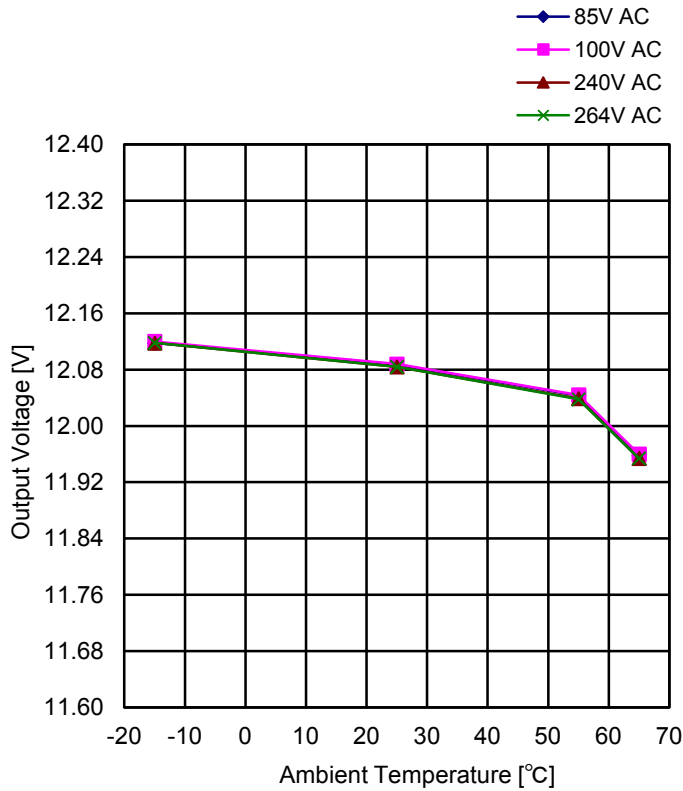
Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	12.030	12.030	12.025	12.024
151.5	12.013	12.012	12.009	12.008
303.0	11.994	11.995	11.990	11.990
454.5	11.978	11.977	11.974	11.973
606.0	11.960	11.959	11.954	11.954
966.0	11.953	11.953	11.760	11.760
1206.0	-	-	11.758	11.757

Load Condition

Load Power [W]	Load Current [A]
	12VSB
0.0	0.00
151.5	0.125
303.0	0.25
454.5	0.375
606.0	0.50
966.0	0.50
1206.0	0.50

Model	GPSA-600-12P
Item	Ambient Temperature Drift

12V

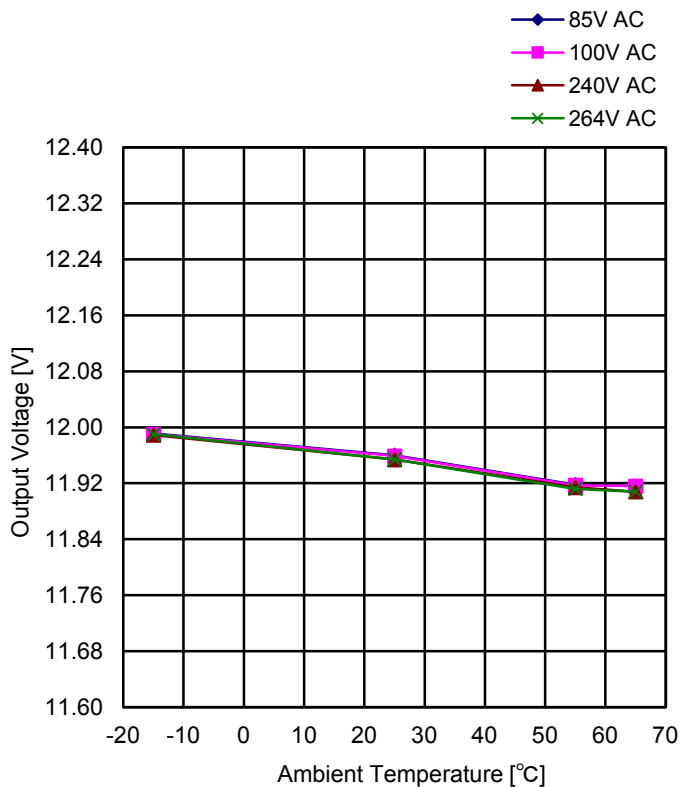


Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	12.118	12.120	12.118	12.118
25	12.087	12.088	12.084	12.084
55	12.043	12.044	12.039	12.038
65	11.958	11.960	11.954	11.954

Load Condition

Ambient Temp. (°C)	Load Current [A]
	12V
-15	50.00
25	50.00
55	50.00
65	40.00

12VSB



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	11.991	11.990	11.989	11.990
25	11.960	11.959	11.954	11.954
55	11.918	11.917	11.914	11.912
65	11.916	11.916	11.908	11.908

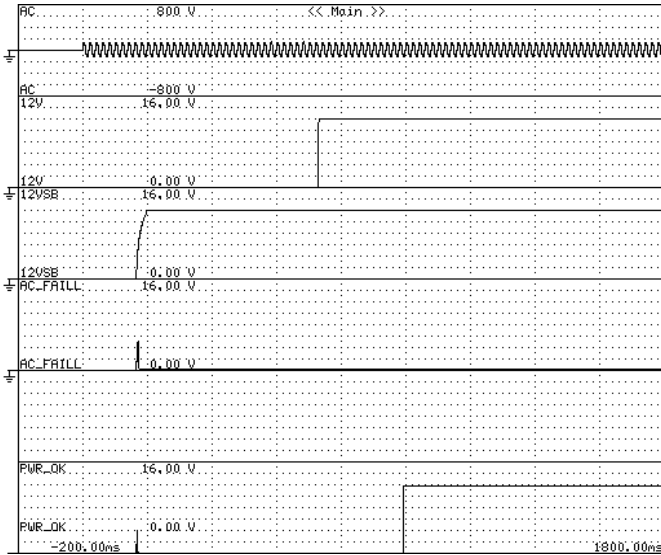
Load Condition

Ambient Temp. (°C)	Load Current [A]
	12VSB
-15	0.50
25	0.50
55	0.50
65	0.40

Model	GPSA-600-12P	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

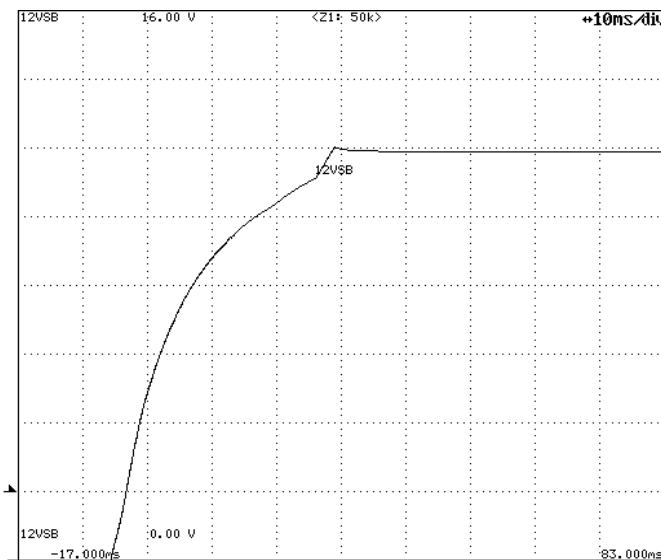
Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div



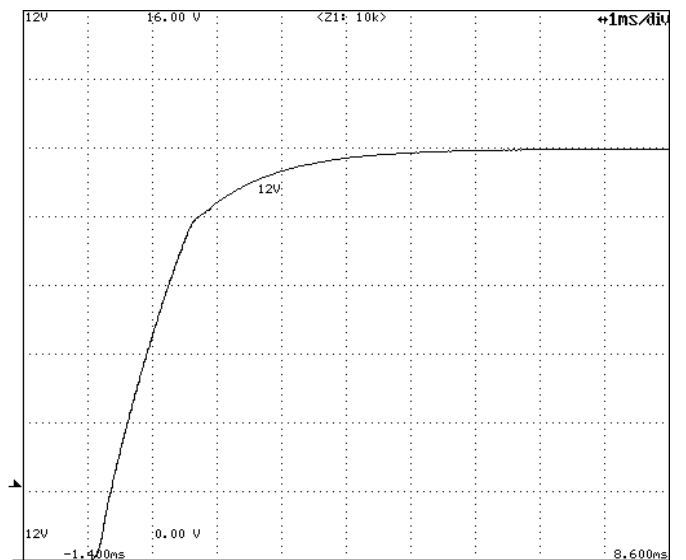
All Output Start-up Sequence

**Vertical Sensitivity: 2V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 2V/div
Timebase Range: 1ms/div**

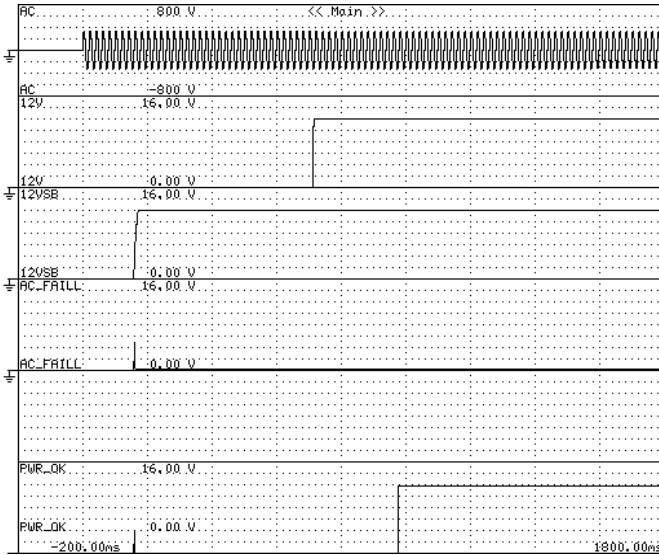


12V DC Output Rise Characteristics

Model	GPSA-600-12P	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

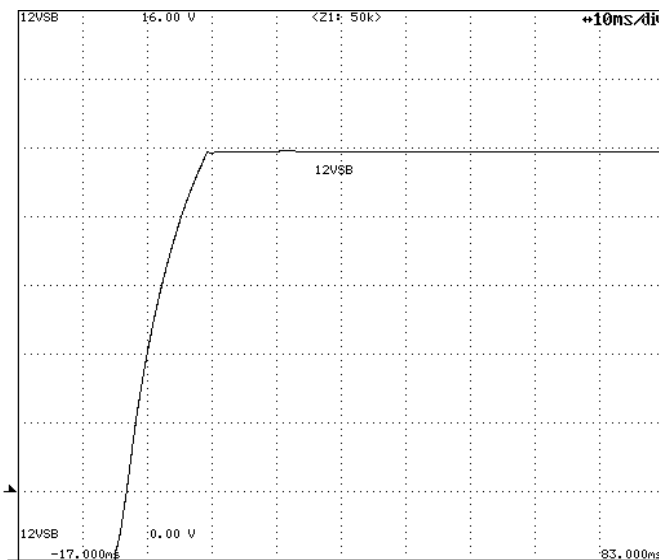
Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div



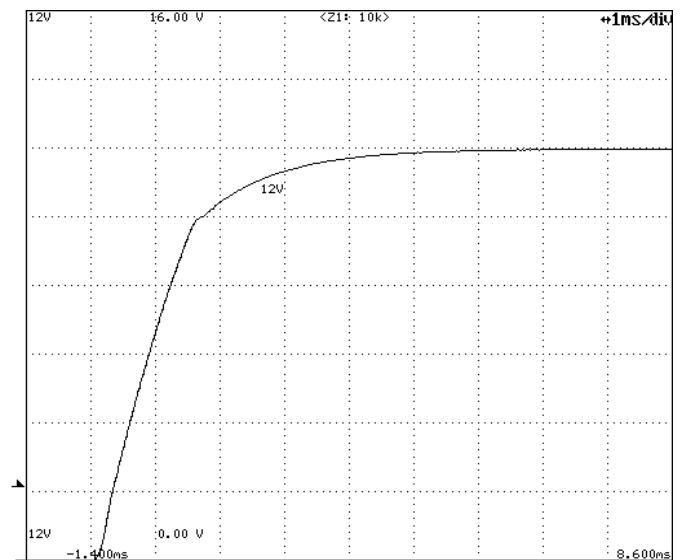
All Output Start-up Sequence

**Vertical Sensitivity: 2V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 2V/div
Timebase Range: 1ms/div**



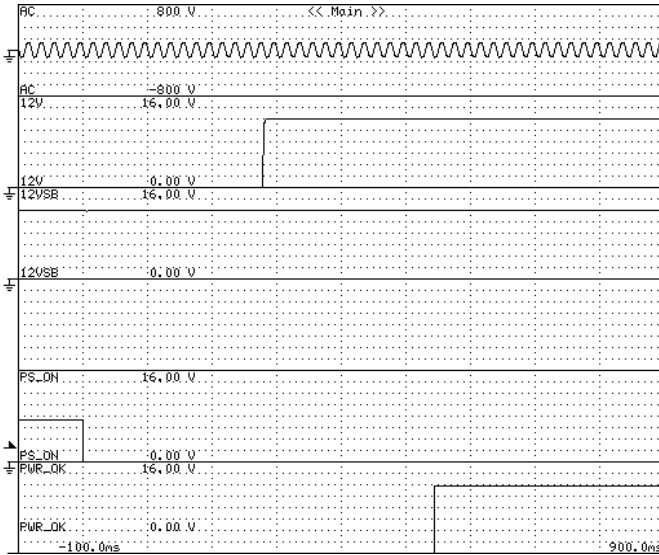
12V DC Output Rise Characteristics

Model	GPSA-600-12P	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	

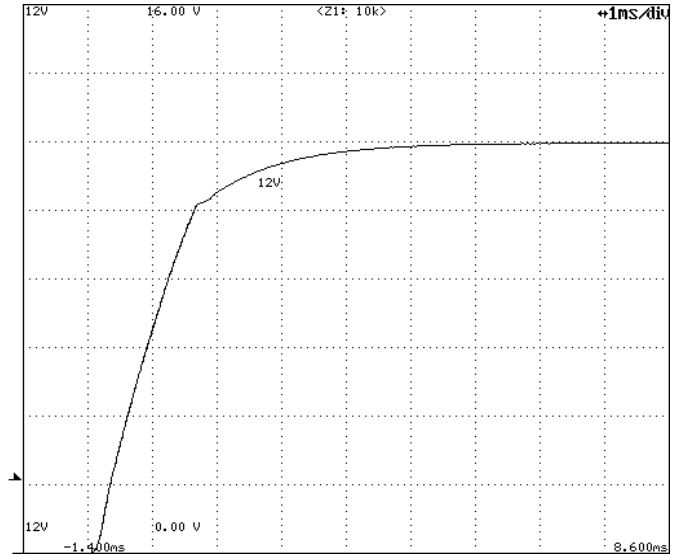
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 2V/div
Timebase Range: 1ms/div



All Output Start-up Sequence

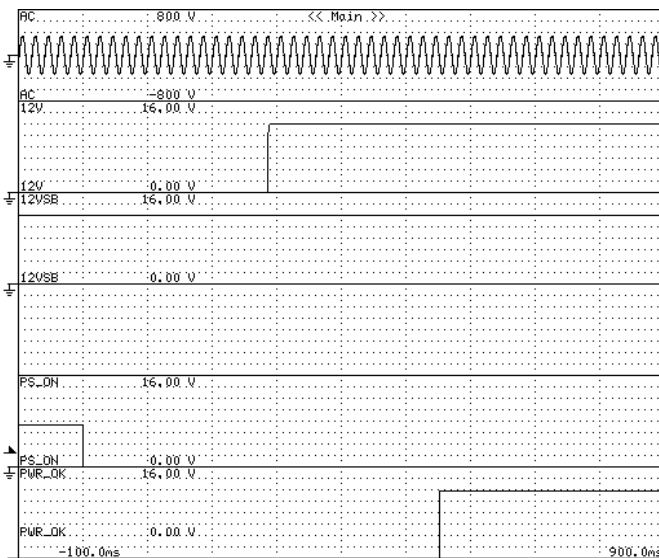


12V DC Output Rise Characteristics

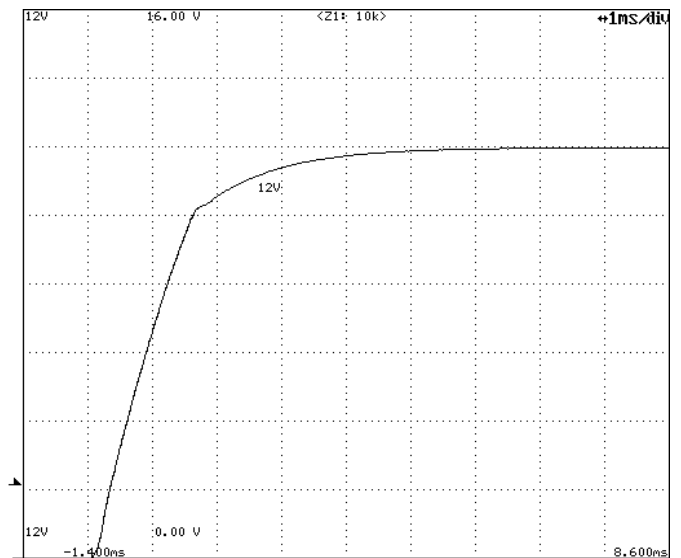
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 2V/div
Timebase Range: 1ms/div



All Output Start-up Sequence



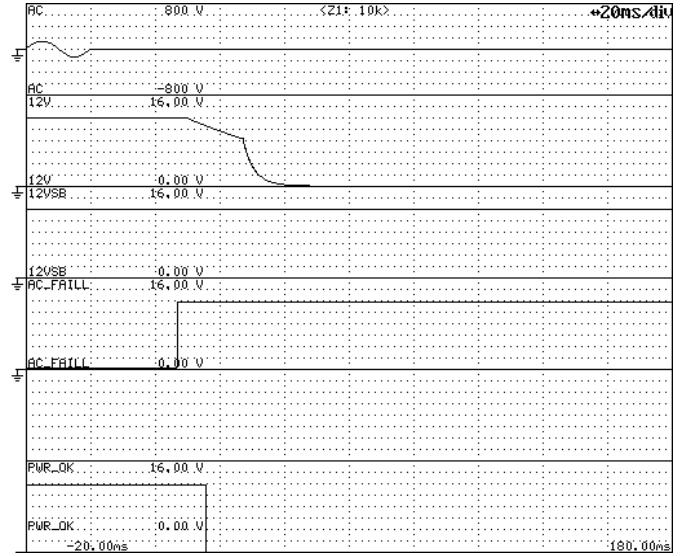
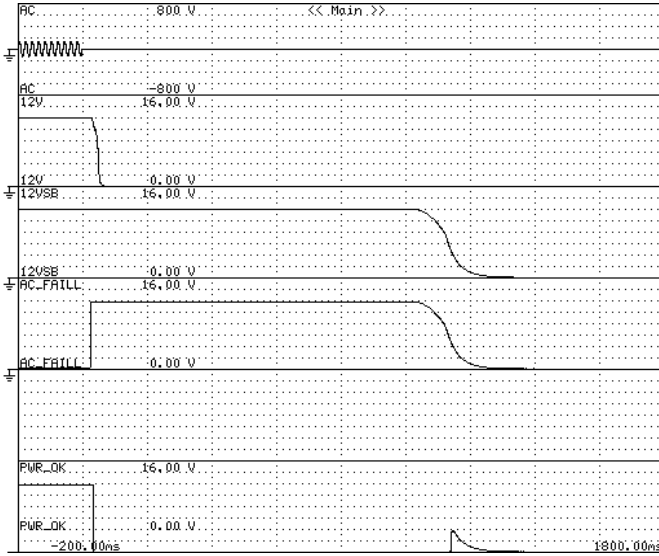
12V DC Output Rise Characteristics

Model	GPSA-600-12P	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div

Timebase Range: 20ms/div



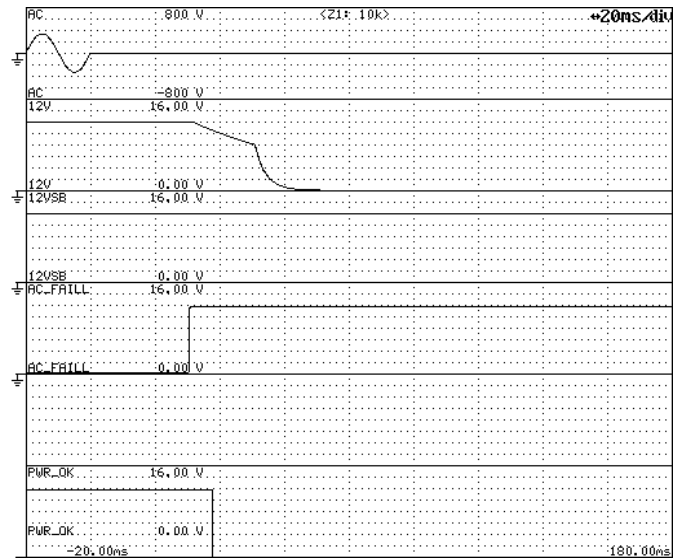
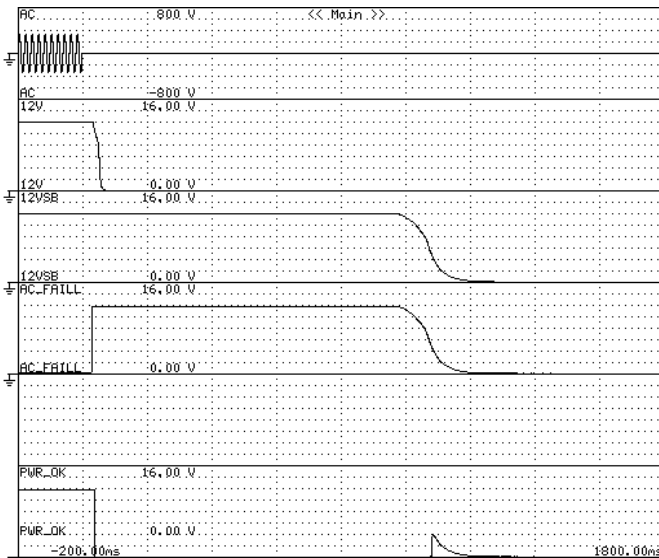
Output Fall Characteristics

Output Fall Characteristics (magnification)

Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div

Timebase Range: 20ms/div



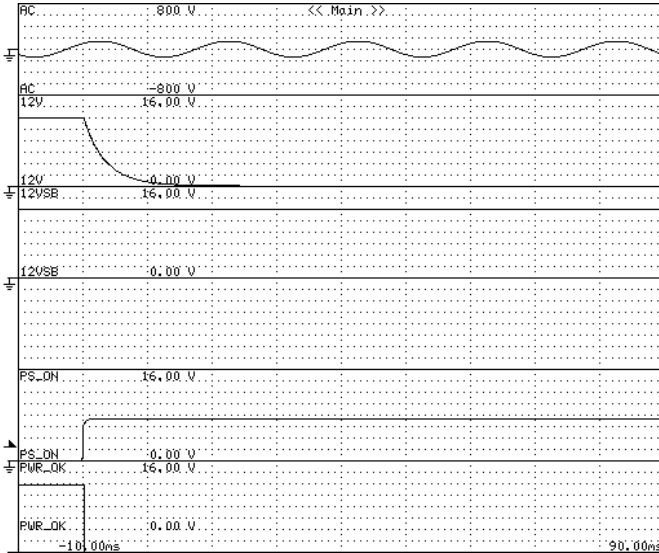
Output Fall Characteristics

Output Fall Characteristics (magnification)

Model	GPSA-600-12P	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	

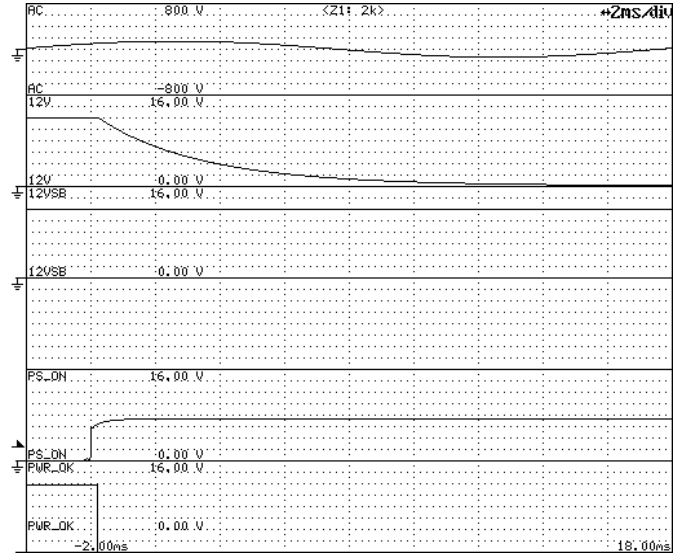
Input: 100V AC
Load: Rated Load

Timebase Range: 10ms/div



Output Fall Characteristics

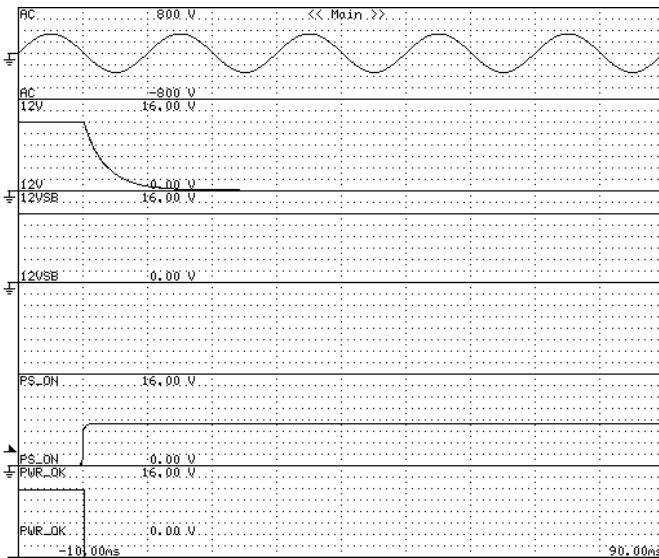
Timebase Range: 2ms/div



Output Fall Characteristics (magnification)

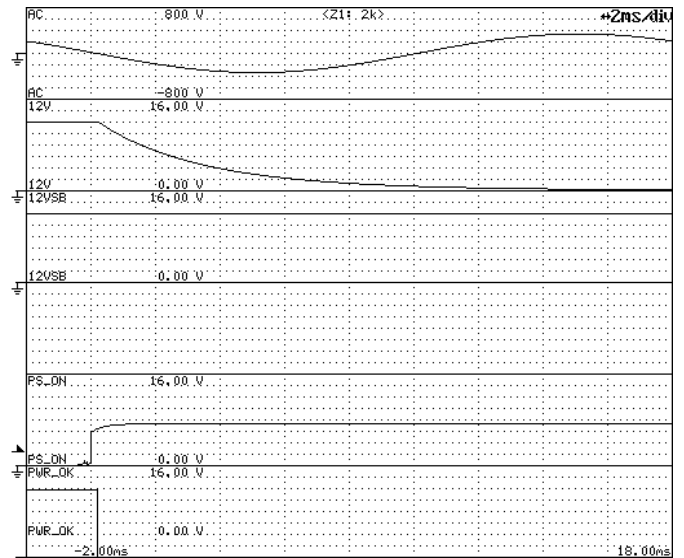
Input: 240V AC
Load: Rated Load

Timebase Range: 10ms/div



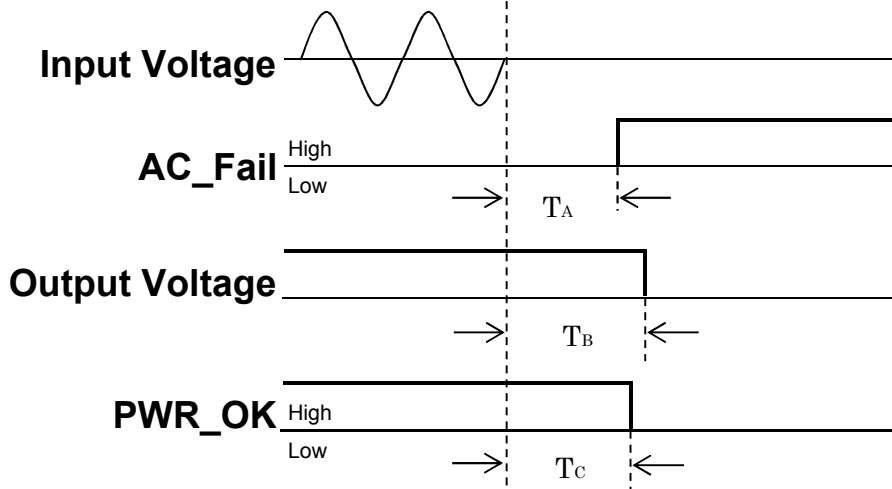
Output Fall Characteristics

Timebase Range: 2ms/div

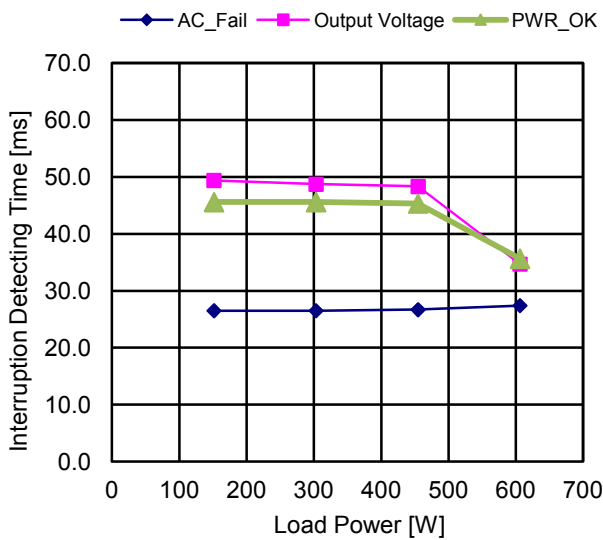


Output Fall Characteristics (magnification)

Model	GPSA-600-12P	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

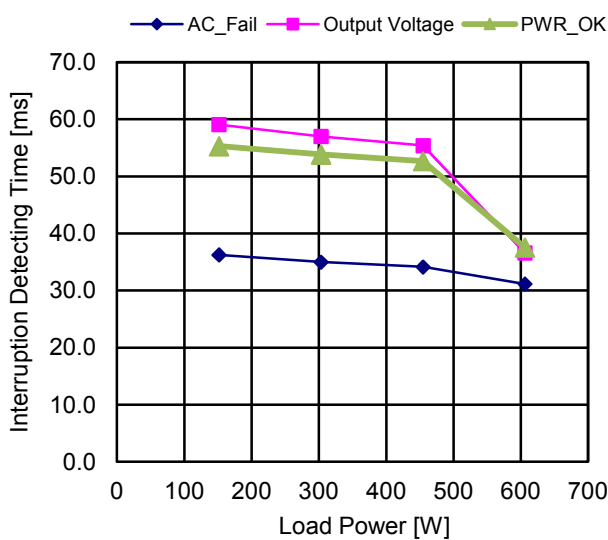


Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
151.5	26.5	49.4	45.6
303.0	26.5	48.8	45.6
454.5	26.7	48.4	45.4
606.0	27.4	34.7	35.7

Input Voltage: 240V AC

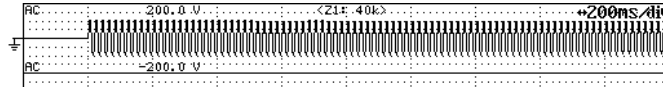


Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
151.5	36.3	59.1	55.3
303.0	35.0	57.0	53.9
454.5	34.2	55.4	52.7
606.0	31.2	36.6	37.6

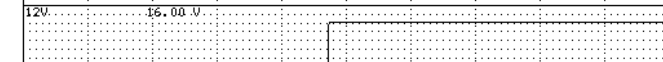
Model	GPSA-600-12P	Temperature: 25°C
Item	Start-Up Voltage	

**Timebase Range: 200ms/div
Load: Rated Load**

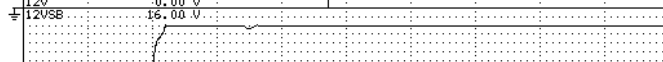
AC Input



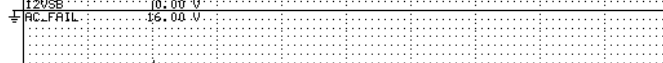
+12V



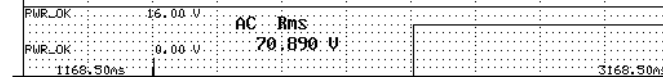
+12VSB



AC_FAIL



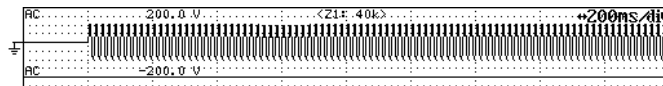
PWR_OK



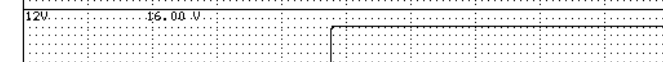
Start-up Voltage: 70.9V AC

**Timebase Range: 200ms/div
Load: Minimum Load**

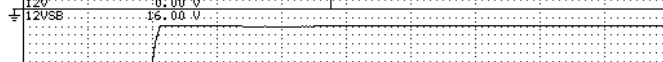
AC Input



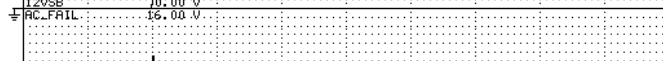
+12V



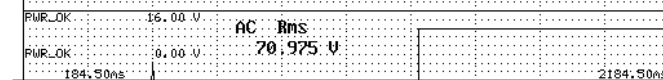
+12VSB



AC_FAIL



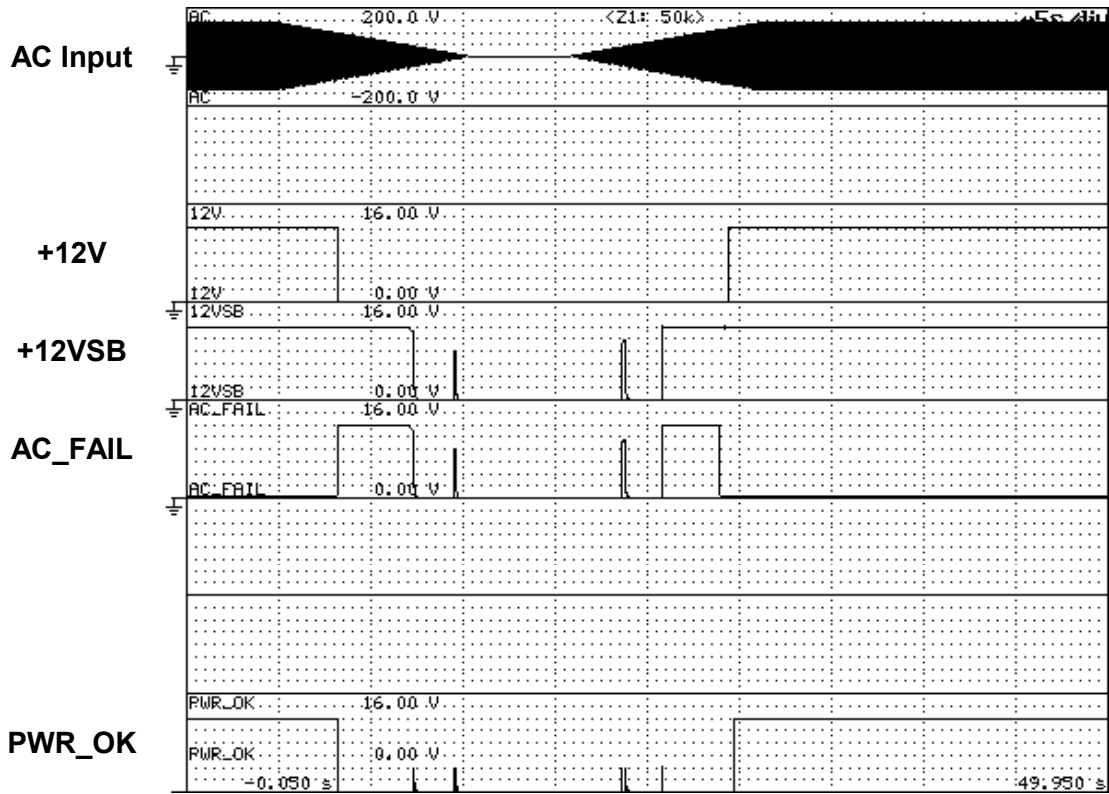
PWR_OK



Start-up Voltage: 71.0V AC

Model	GPSA-600-12P	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

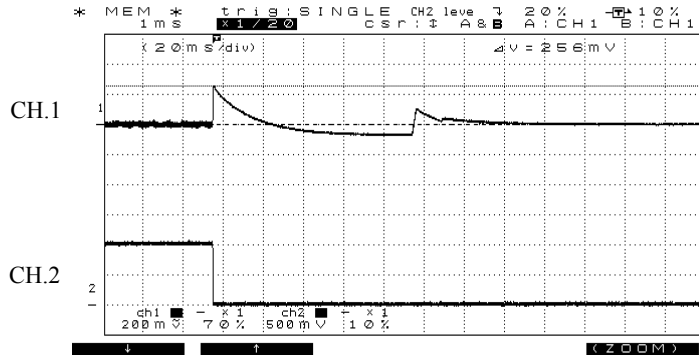
Timebase Range: 5s/div
Load: Rated Load



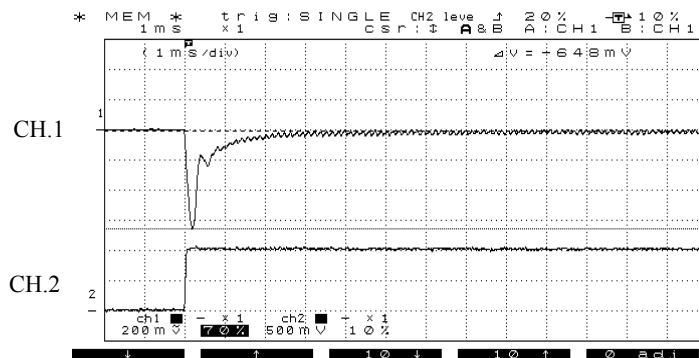
Sweep Rate: 10Vave/sec

Model	GPSA-600-12P	Temperature: 25°C
Item	Dynamic Load Response	

+12V DC Output Transient Response Waveforms



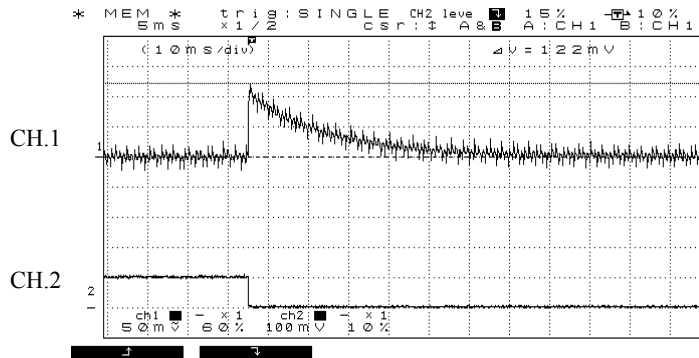
Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 200mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 25A/div
Timebase Range	20ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load(50A) → Minimum load(0A)	



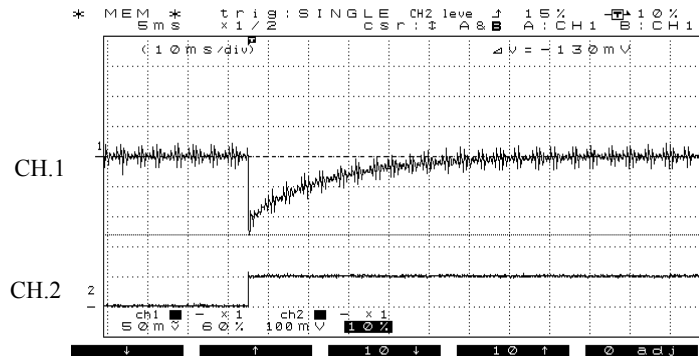
Waveform 2	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 200mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 25A/div
Timebase Range	1ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Minimum load(0A) → Rated Load(50A)	

Model	GPSA-600-12P	Temperature: 25°C
Item	Dynamic Load Response	

12VSB Output Transient Response Waveforms

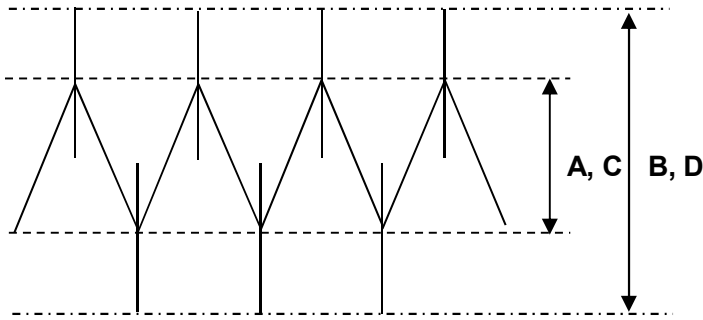


Waveform 3	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 50mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 0.5A/div
Timebase Range	10ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load(0.5A) → Minimum load(0A)	



Waveform 4	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 50mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 0.5A/div
Timebase Range	10ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Minimum load(0A) → Rated Load(0.5A)	

Model	GPSA-600-12P	Load: Rated Load
Item	Ripple / Noise Voltage	



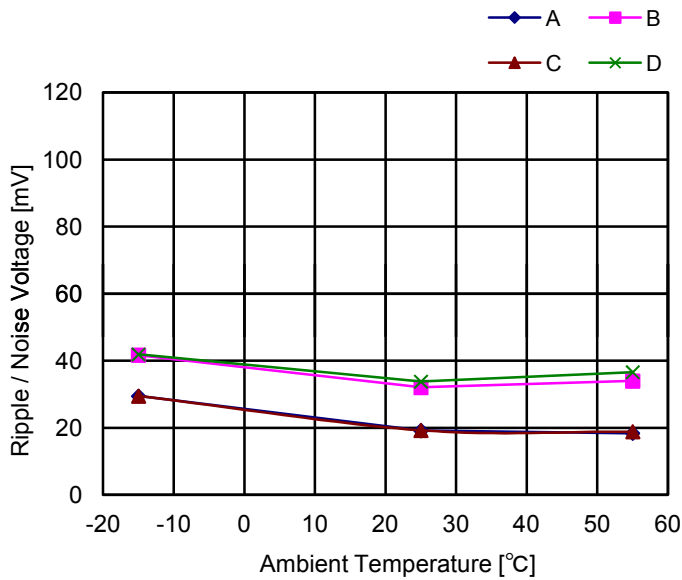
at 100V AC

A: Ripple Voltage (mV_{P-P})
B: Noise Voltage (mV_{P-P})

at 240V AC

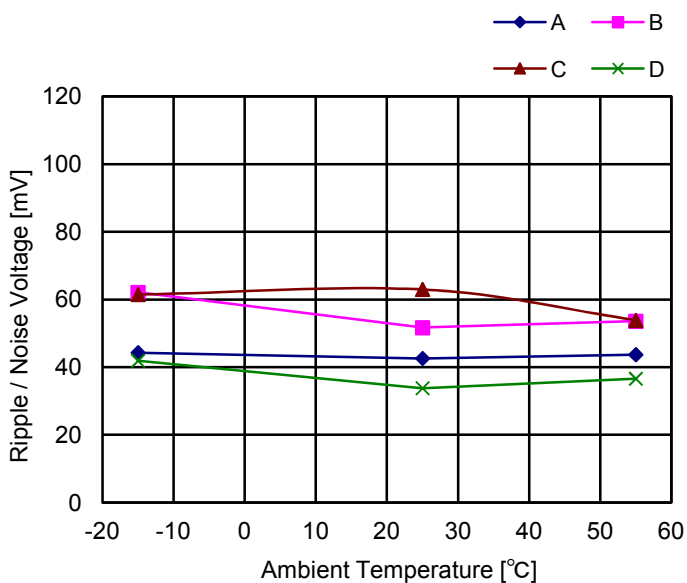
C: Ripple Voltage (mV_{P-P})
D: Noise Voltage (mV_{P-P})

12V



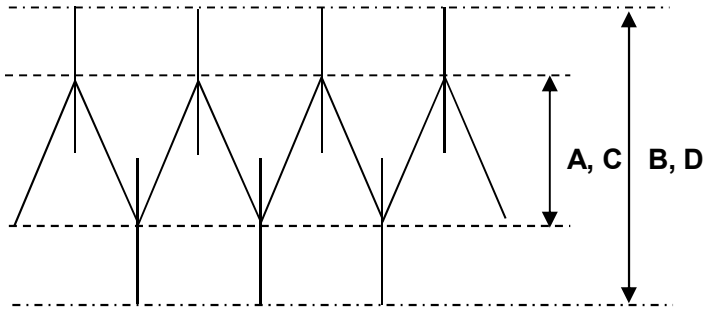
Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	29.5	41.7	29.5	41.9
25	19.2	32.1	19.3	33.8
55	18.4	34.0	18.9	36.6

12VSB



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	44.3	62.1	43.8	61.5
25	42.6	51.7	45.7	63.0
55	43.7	53.6	43.5	53.9

Model	GPSA-600-12P	Temperature : 25°C
Item	Ripple / Noise Voltage	



at 100V AC

A: Ripple Voltage (mV_{P-P})

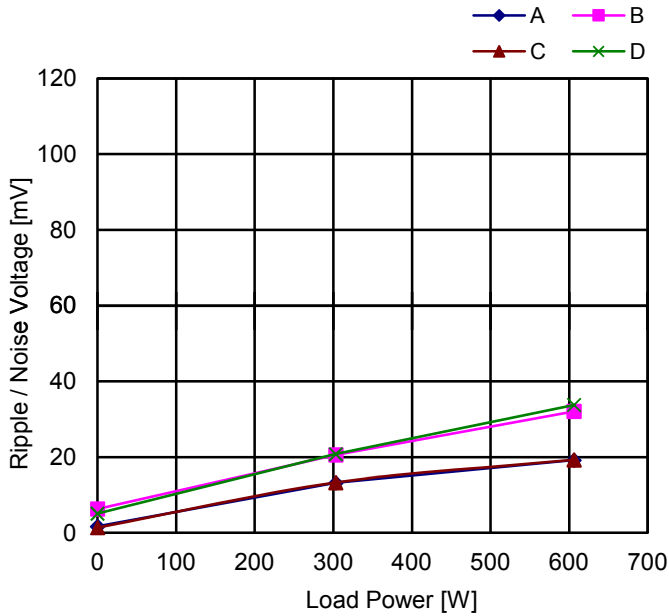
B: Noise Voltage (mV_{P-P})

at 240V AC

C: Ripple Voltage (mV_{P-P})

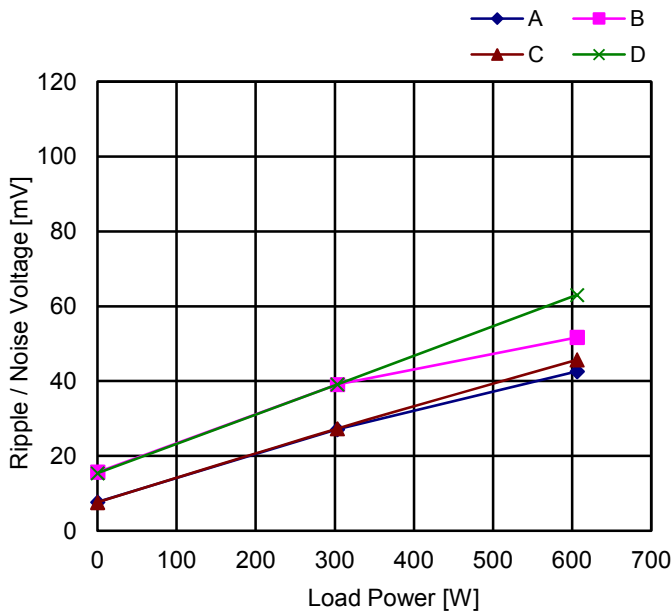
D: Noise Voltage (mV_{P-P})

12V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	1.7	6.3	1.4	5.1
303.0	13.2	20.6	13.3	20.8
606.0	19.2	32.1	19.3	33.8

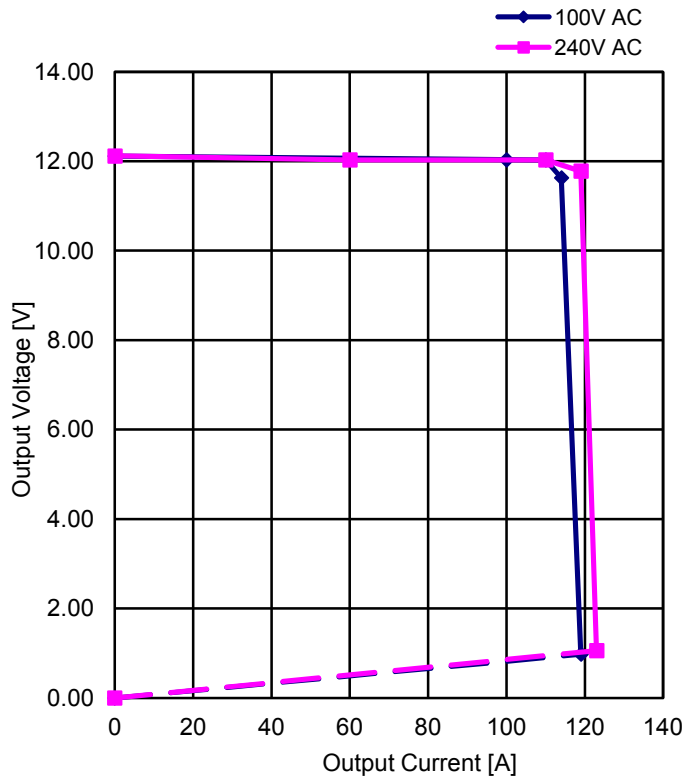
12VSB



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	7.7	15.7	7.6	15.4
303.0	27.1	39.1	27.3	39.1
606.0	42.6	51.7	45.7	63.0

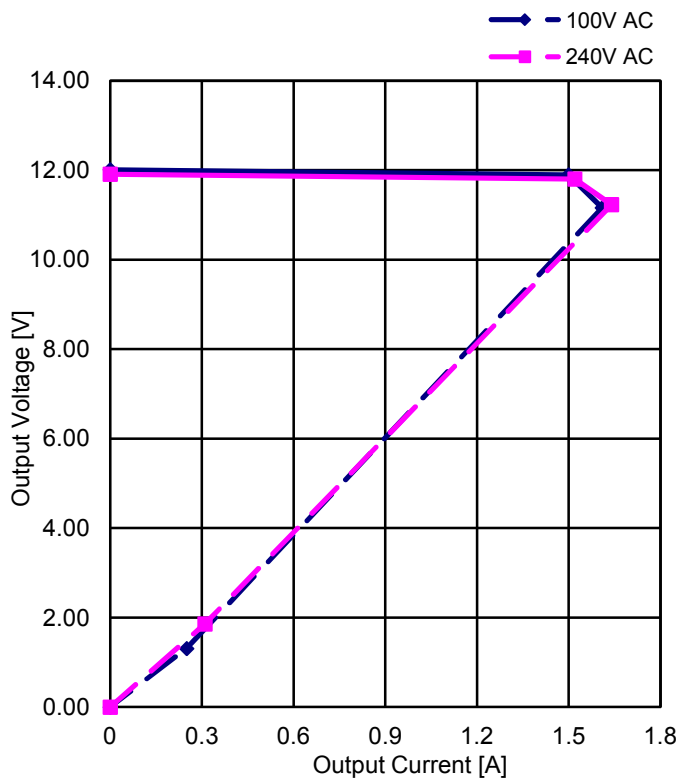
Model	GPSA-600-12P	Temperature: 25°C
Item	Over-Current Protection	

V-I Characteristics of 12V O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	12.12	0.00	12.12
100.00	12.04	60.00	12.03
110.00	12.03	110.00	12.03
114.00	11.63	119.00	11.78
119.00	0.98	123.00	1.06

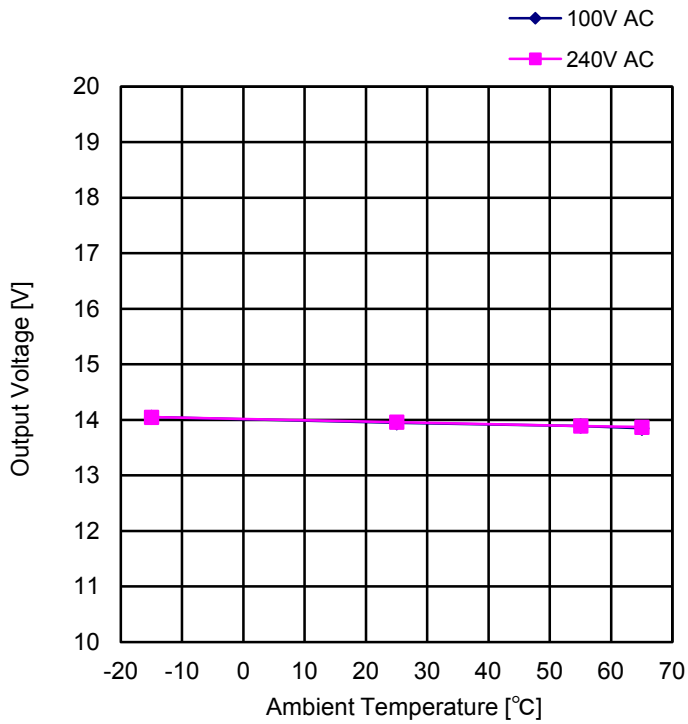
V-I Characteristics of 12VSB O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	12.01	0.00	11.91
1.50	11.89	1.52	11.80
1.61	11.16	1.64	11.23
0.25	1.31	0.31	1.86
0.00	0.00	0.00	0.00

Model	GPSA-600-12P	Load: Minimum Load
Item	Over-Voltage Protection	

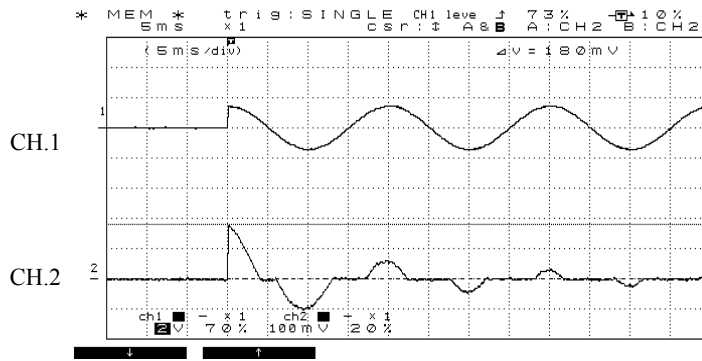
12V



Ambient Temp. [°C]	Output Voltage[V]	
	Input Voltage 100V AC	Input Voltage 240V AC
-15	14.05	14.05
25	13.95	13.96
55	13.89	13.89
65	13.85	13.87

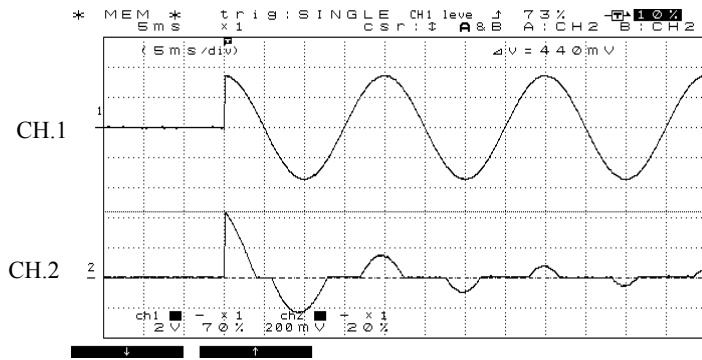
Model	GPSA-600-12P	Temperature: 25°C
Item	Inrush Current	Load: Rated Load

Inrush Current Waveforms



Waveform 1

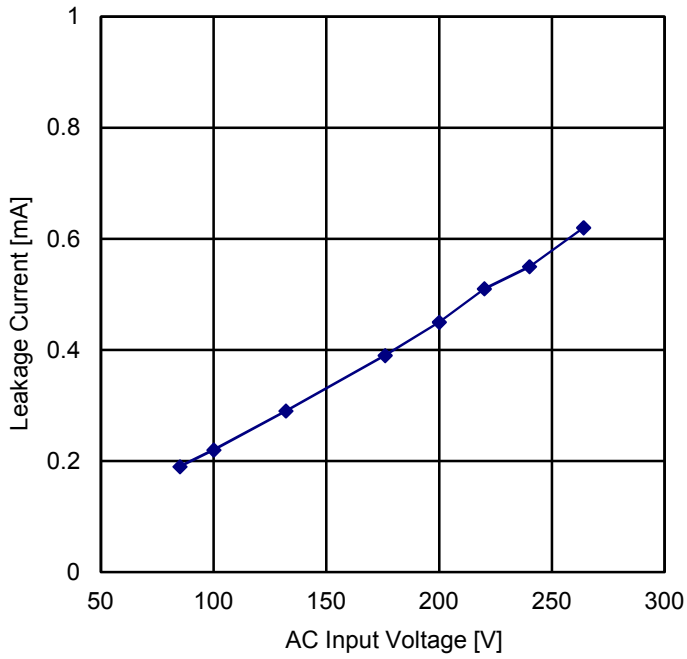
CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	5A/div
Timebase Range	5ms/div	
Conditions	Input: 100V AC Load: Rated Load	
Note: Inrush Current: 9.0A		



Waveform 2

CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	10A/div
Timebase Range	5ms/div	
Conditions	Input: 240V AC Load: Rated Load	
Note: Inrush Current: 22.0A		

Model	GPSA-600-12P	Load: Rated Load
Item	Leakage Current	Temperature: 25°C



AC Input Voltage [V]	Leakage Current [mA]
85	0.19
100	0.22
132	0.29
176	0.39
200	0.45
220	0.51
240	0.55
264	0.62