

Test Data

Model Number: mGPSA-360-24

Model Name: DC POWER SUPPLY

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

OUTPUT: 24 V 15.0A (20.8 A_{peak} at 100V AC)
(25.0 A_{peak} at 200V AC)
12VSB 0.3A

Minimum load : 0W

Rated load :363.6W

Peak output power: 502.8W(at 100V AC)
603.6W(at 200V AC)

Approved by : Makoto Urasue (QA manager)

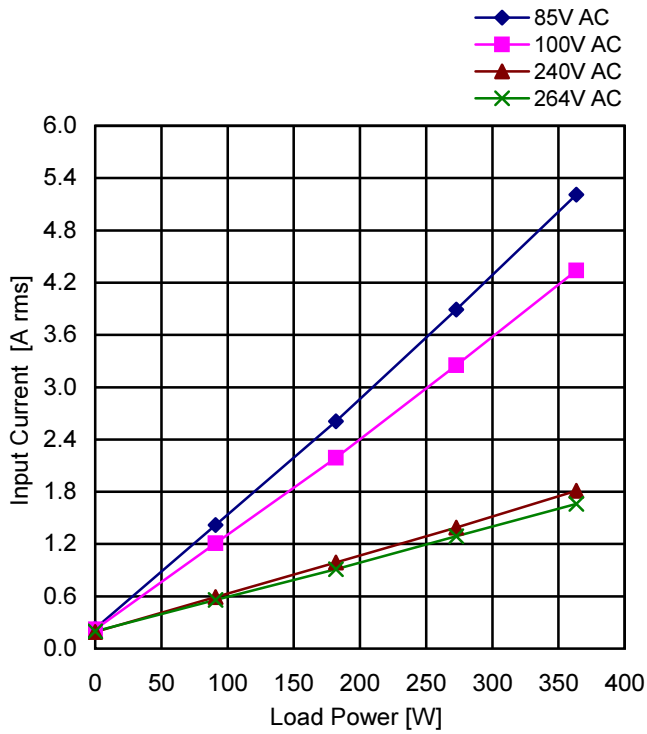
Designed by : Akira Tatsumi (R&D engineer)

Tested by : Kohji Sawada (Evaluation test engineer)

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Model	mGPSA-360-24	Temperature: 25°C
Item	Input Current (by Load Power)	



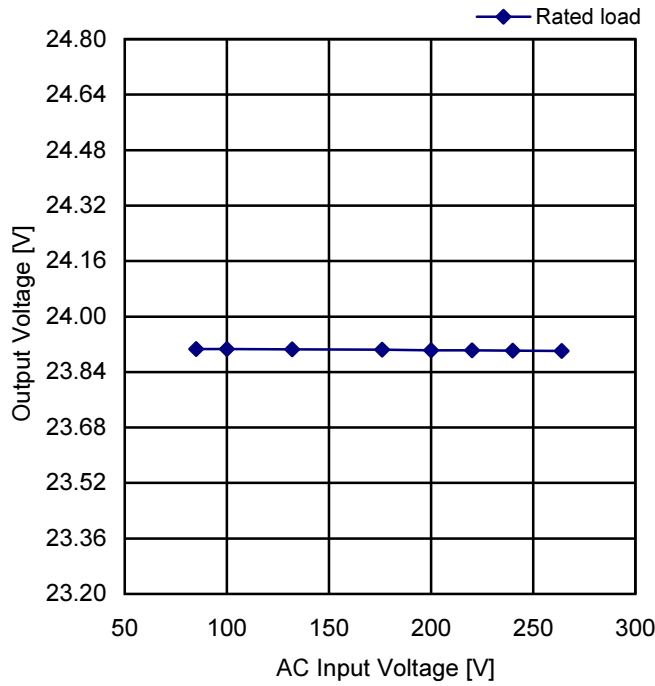
Load Power [W]	Input Current [A rms]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	0.23	0.22	0.19	0.20
90.9	1.42	1.21	0.59	0.56
181.8	2.61	2.19	0.99	0.91
272.7	3.89	3.25	1.39	1.29
363.6	5.21	4.34	1.81	1.66

Model	mGPSA-360-24	Temperature: 25°C																																
Item	Efficiency																																	
<p>■ Efficiency(by Input Voltage)</p> <table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>50% Load</th> <th>Rated Load</th> </tr> </thead> <tbody> <tr><td>85</td><td>82.00</td><td>81.83</td></tr> <tr><td>100</td><td>82.94</td><td>83.51</td></tr> <tr><td>132</td><td>84.08</td><td>85.45</td></tr> <tr><td>176</td><td>84.90</td><td>86.87</td></tr> <tr><td>200</td><td>85.37</td><td>87.25</td></tr> <tr><td>220</td><td>85.34</td><td>87.43</td></tr> <tr><td>240</td><td>85.95</td><td>87.76</td></tr> <tr><td>264</td><td>86.36</td><td>87.57</td></tr> </tbody> </table>						AC Input Voltage [V]	50% Load	Rated Load	85	82.00	81.83	100	82.94	83.51	132	84.08	85.45	176	84.90	86.87	200	85.37	87.25	220	85.34	87.43	240	85.95	87.76	264	86.36	87.57		
AC Input Voltage [V]	50% Load	Rated Load																																
85	82.00	81.83																																
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Load Power [W]	Efficiency [%]																																	
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AC Input Voltage [V]	50% Load	Rated Load																														
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176	97.0	98.2																														
200	95.0	97.4																														
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Load Power [W]	Power Factor [%]																															
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC																												
90.9	99.4	98.9	81.3	78.2																												
181.8	99.6	99.6	89.2	87.2																												
272.7	99.8	99.8	93.3	91.2																												
363.6	99.7	99.8	95.0	93.5																												

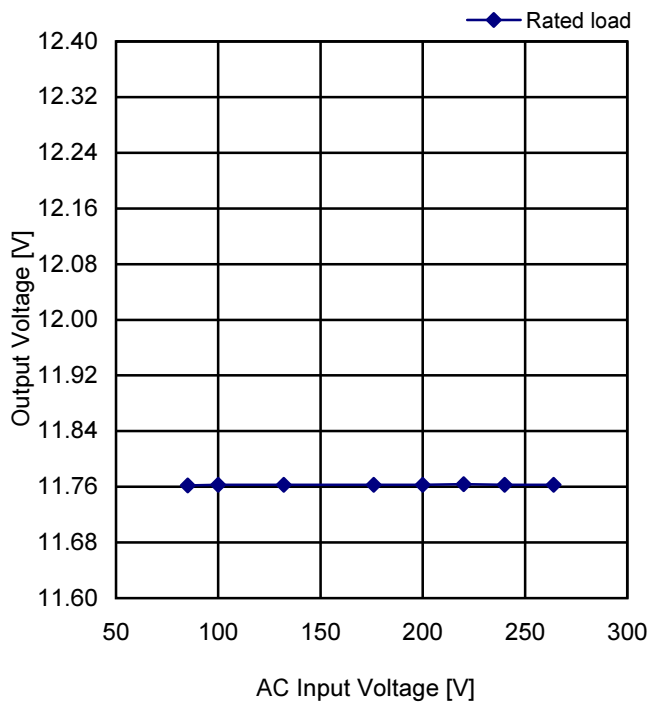
Model	mGPSA-360-24	Temperature: 25°C
Item	Line Regulation	

24V/15A



AC Input Voltage [V]	Output Voltage [V]
85	23.906
100	23.906
132	23.905
176	23.904
200	23.903
220	23.903
240	23.902
264	23.901

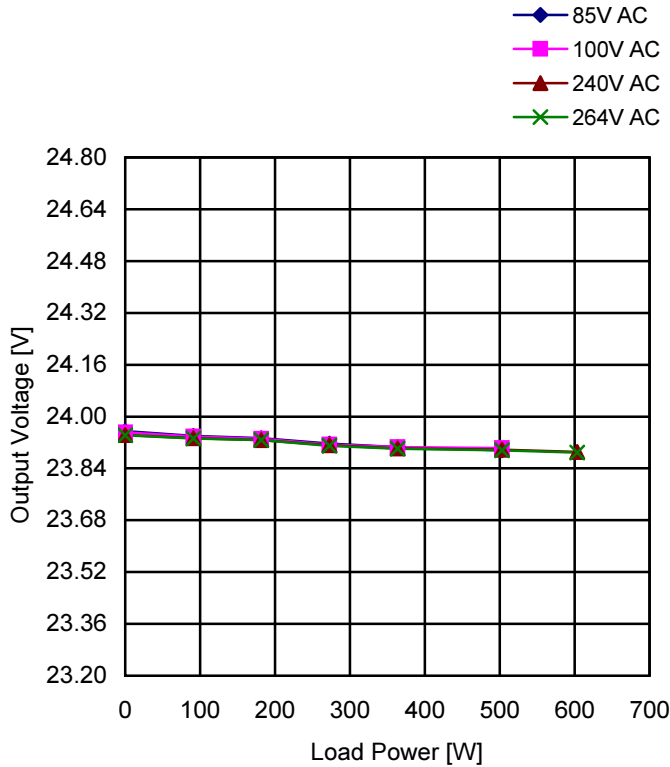
12VSB/0.3A



AC Input Voltage [V]	Output Voltage [V]
85	11.762
100	11.763
132	11.763
176	11.763
200	11.763
220	11.764
240	11.763
264	11.763

Model	mGPSA-360-24	Temperature: 25°C
Item	Load Regulation	

24V

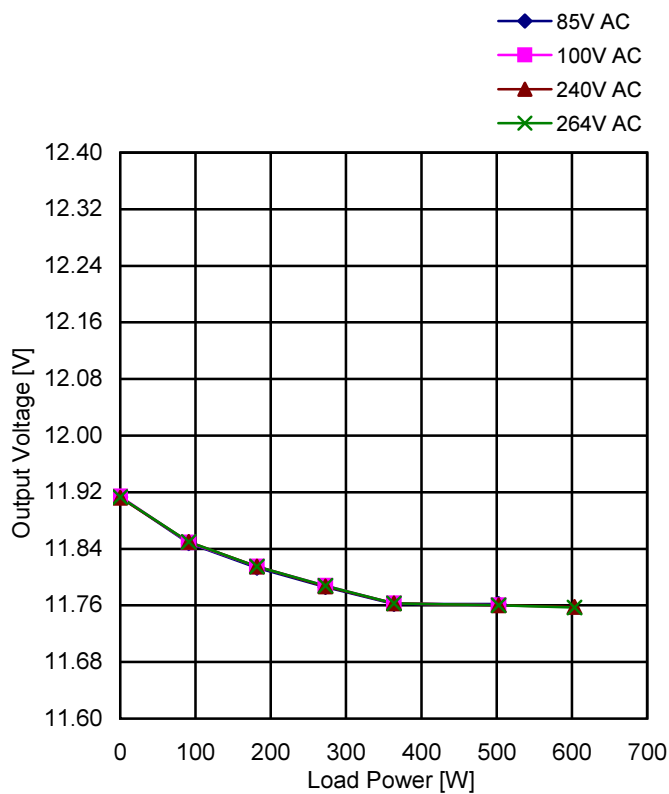


Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	23.955	23.951	23.943	23.942
90.9	23.940	23.938	23.933	23.932
181.8	23.933	23.931	23.927	23.927
272.7	23.916	23.914	23.912	23.910
363.6	23.906	23.906	23.902	23.901
502.8	23.896	23.903	23.898	23.896
603.6	-	-	23.891	23.889

Load Condition

Load Power [W]	Load Current [A]
	24V
0.0	0.00
90.9	3.75
181.8	7.50
272.7	11.25
363.6	15.00
502.8	20.80
603.6	25.00

12VSB



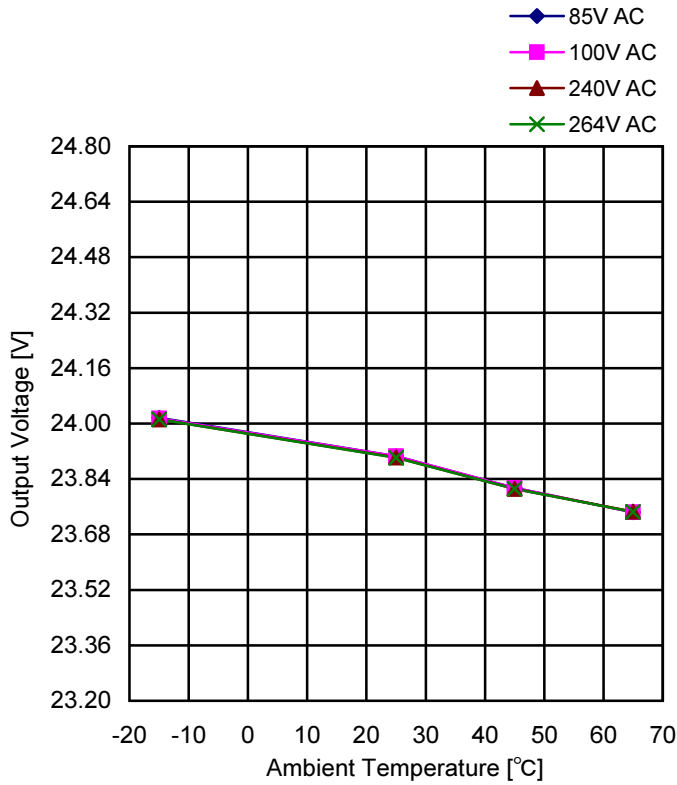
Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	11.913	11.914	11.912	11.913
90.9	11.848	11.849	11.850	11.850
181.8	11.813	11.815	11.815	11.815
272.7	11.786	11.788	11.787	11.788
363.6	11.762	11.763	11.763	11.763
502.8	11.762	11.760	11.760	11.760
603.6	-	-	11.758	11.757

Load Condition

Load Power [W]	Load Current [A]
	12VSB
0.0	0.00
90.9	0.075
181.8	0.15
272.7	0.225
363.6	0.30
502.8	0.30
603.6	0.30

Model	mGPSA-360-24
Item	Ambient Temperature Drift

24V

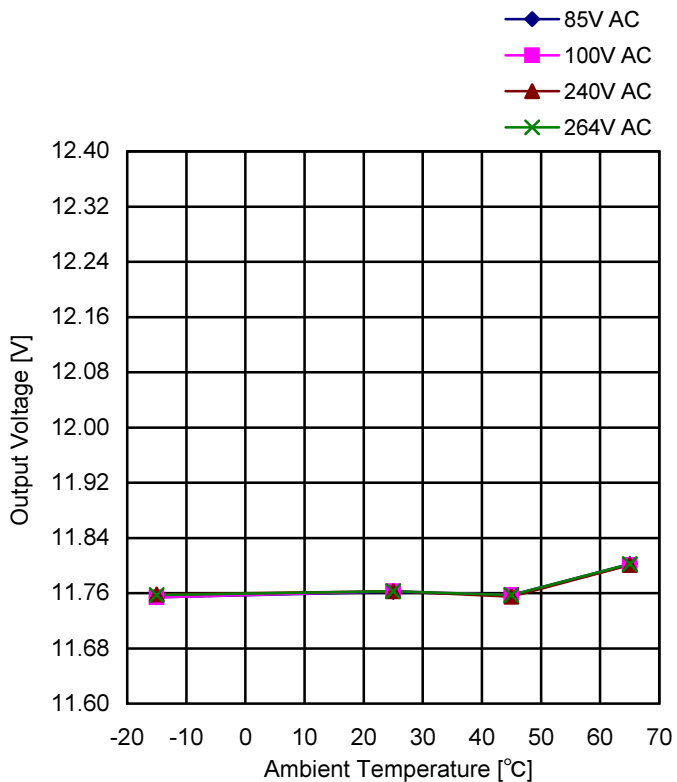


Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	24.017	24.015	24.012	24.012
25	23.906	23.906	23.902	23.901
45	23.814	23.814	23.812	23.812
65	23.744	23.744	23.746	23.745

Load Condition

Ambient Temp. (°C)	Load Current [A]
	24V
-15	15.00
25	15.00
45	15.00
65	9.00

12VSB



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	11.754	11.754	11.758	11.757
25	11.762	11.763	11.763	11.763
45	11.757	11.757	11.755	11.757
65	11.802	11.801	11.801	11.802

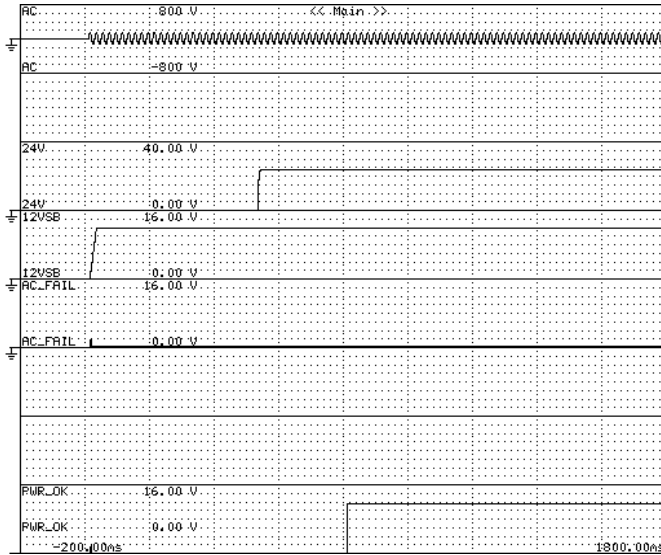
Load Condition

Ambient Temp. (°C)	Load Current [A]
	12VSB
-15	0.30
25	0.30
45	0.30
65	0.18

Model	mGPSA-360-24	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

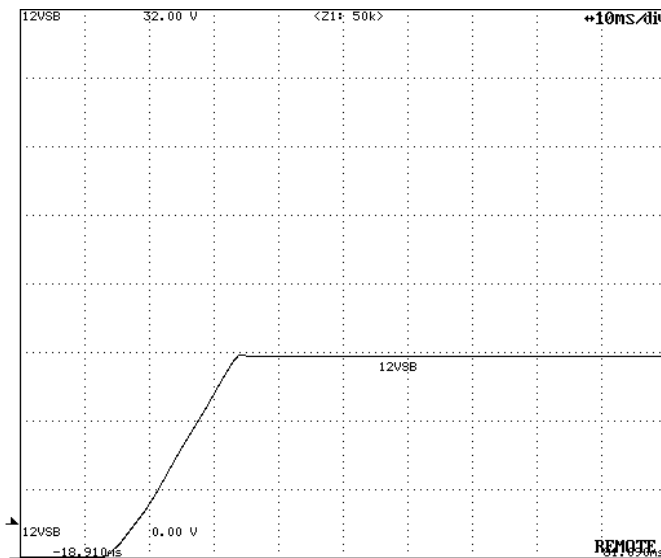
Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div



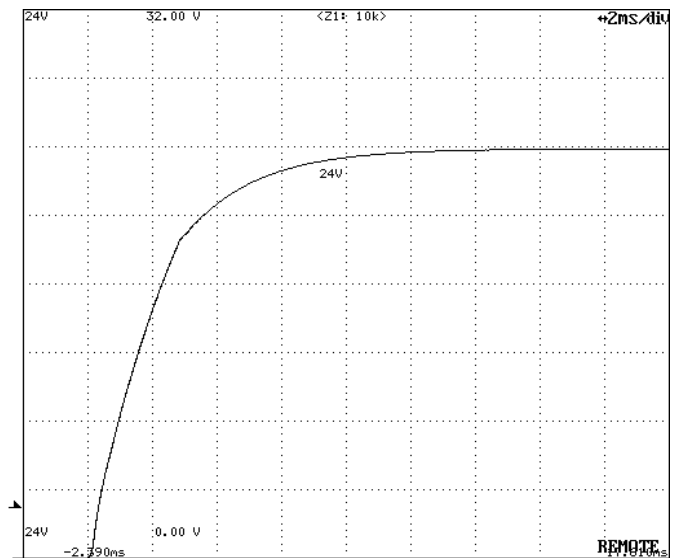
All Output Start-up Sequence

**Vertical Sensitivity: 4V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 4V/div
Timebase Range: 2ms/div**

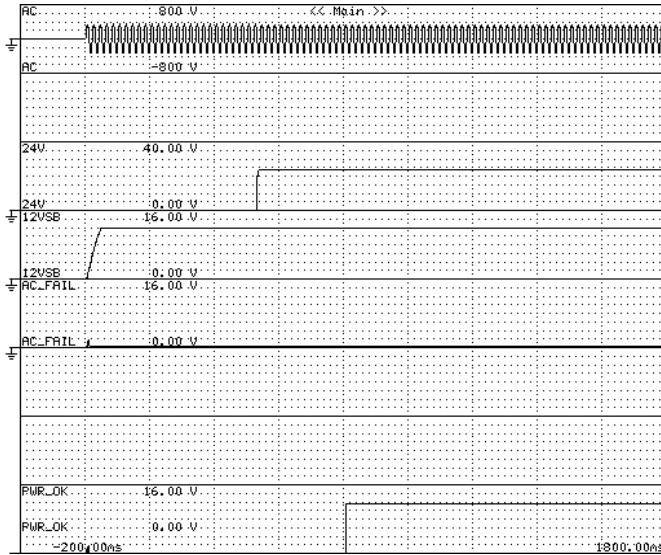


24V DC Output Rise Characteristics

Model	mGPSA-360-24	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

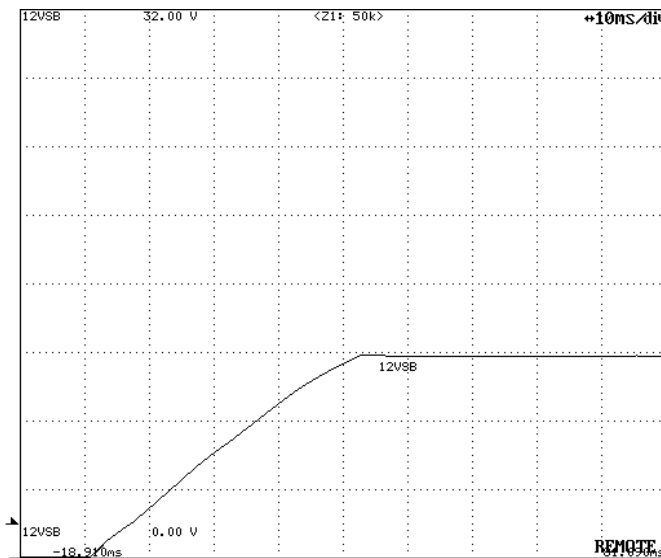
Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div



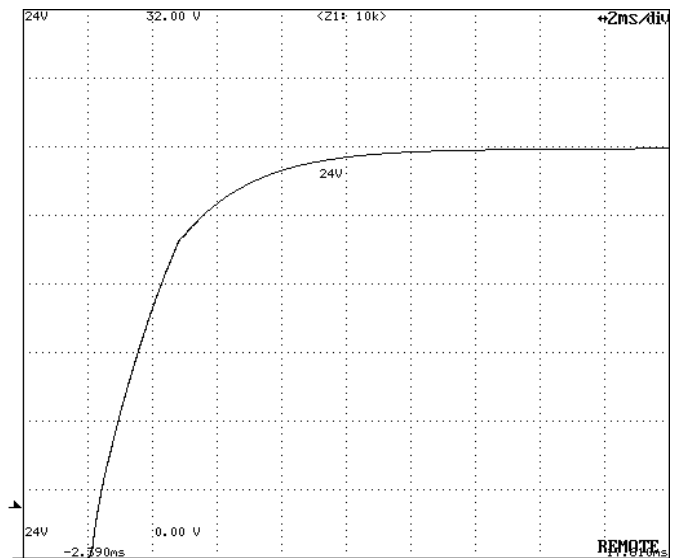
All Output Start-up Sequence

**Vertical Sensitivity: 4V/div
Timebase Range: 10ms/div**



12VSB DC Output Rise Characteristics

**Vertical Sensitivity: 4V/div
Timebase Range: 2ms/div**



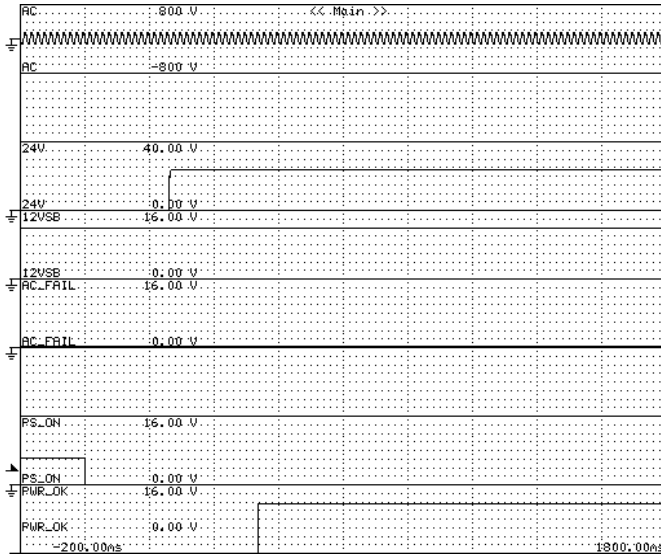
24V DC Output Rise Characteristics

Model	mGPSA-360-24	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	

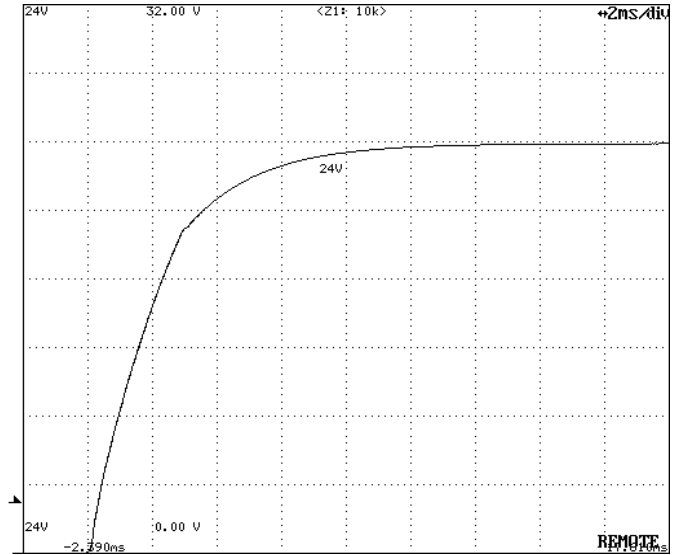
Input: 100V AC
Load: Rated Load

Timebase Range: 200ms/div

Vertical Sensitivity: 4V/div
Timebase Range: 2ms/div



All Output Start-up Sequence

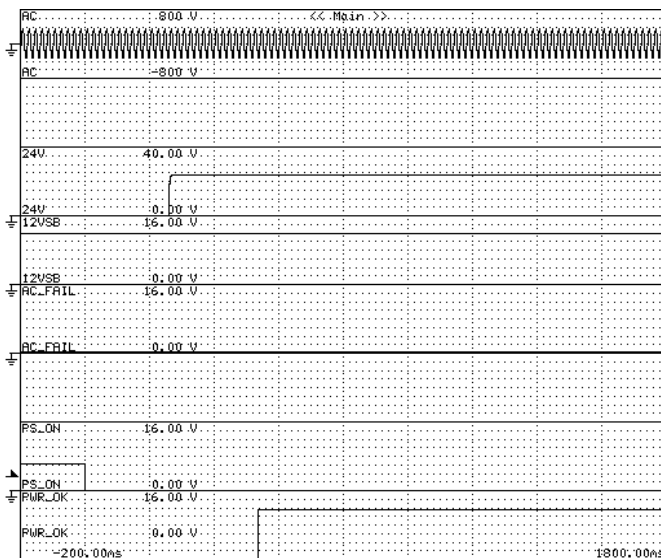


24V DC Output Rise Characteristics

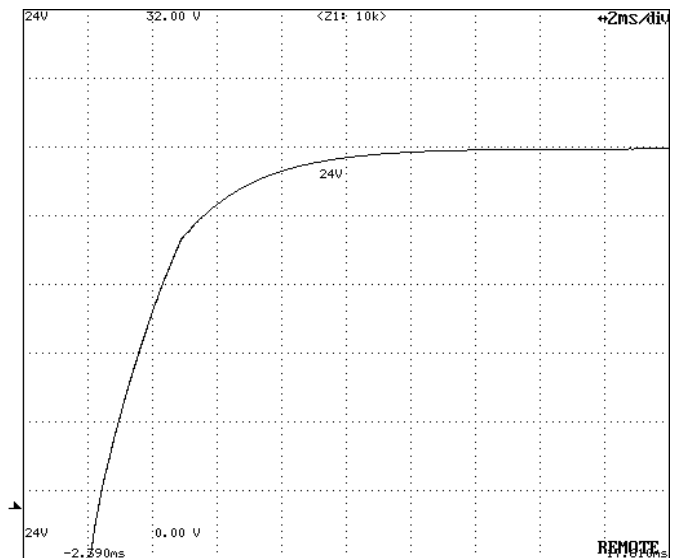
Input: 240V AC
Load: Rated Load

Timebase Range: 200ms/div

Vertical Sensitivity: 4V/div
Timebase Range: 2ms/div



All Output Start-up Sequence

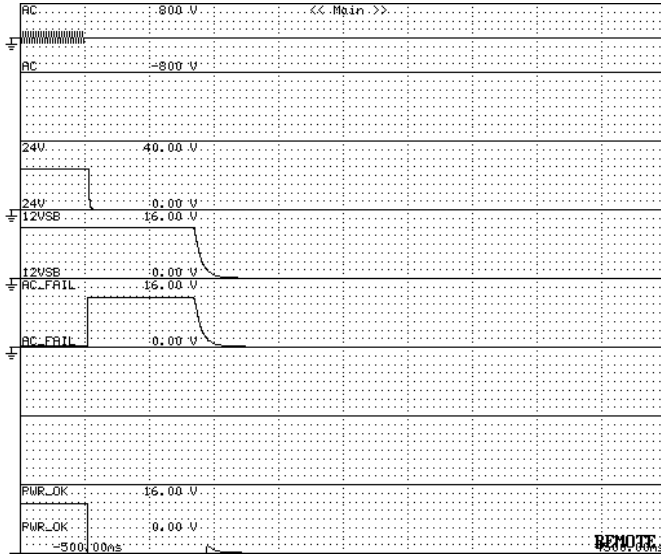


24V DC Output Rise Characteristics

Model	mGPSA-360-24	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

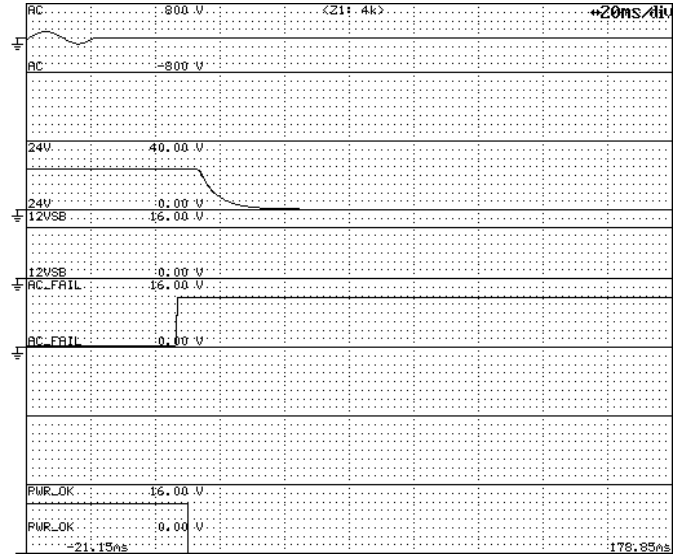
Input: 100V AC
Load: Rated Load

Timebase Range: 500ms/div



Output Fall Characteristics

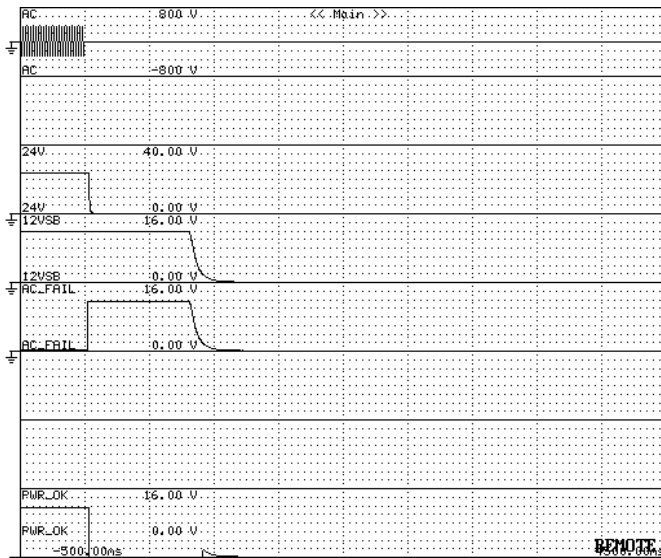
Timebase Range: 20ms/div



Output Fall Characteristics (magnification)

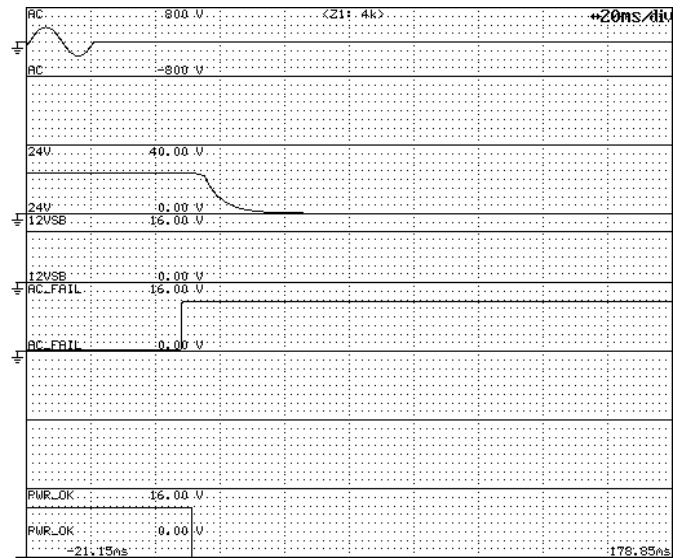
Input: 240V AC
Load: Rated Load

Timebase Range: 500ms/div



Output Fall Characteristics

Timebase Range: 20ms/div

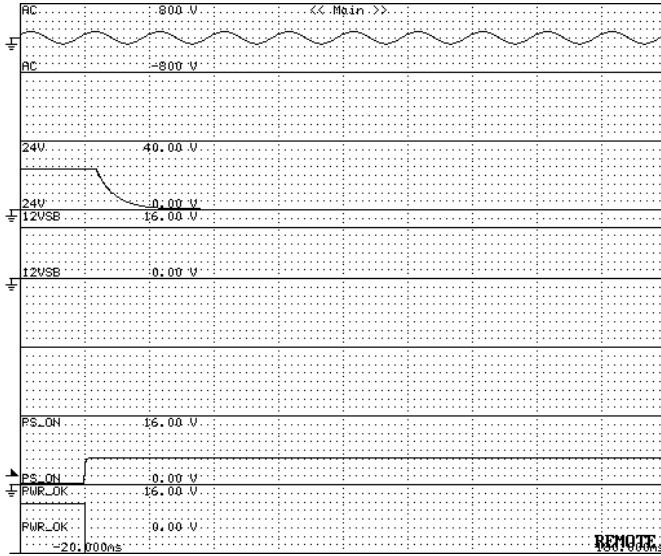


Output Fall Characteristics (magnification)

Model	mGPSA-360-24	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	

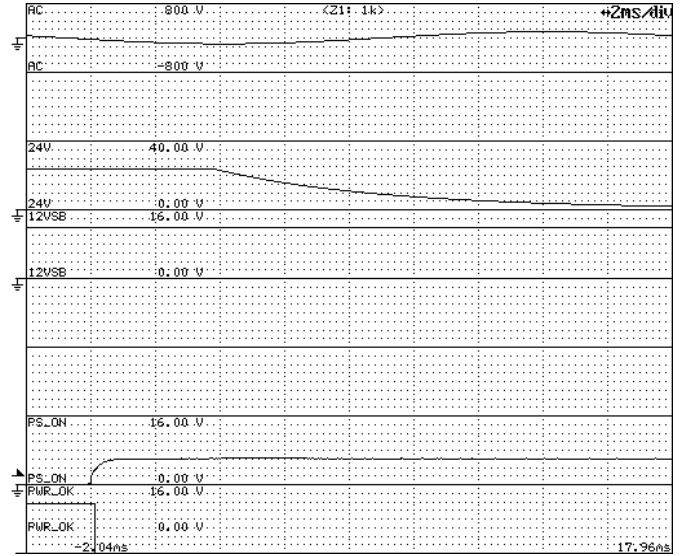
Input: 100V AC
Load: Rated Load

Timebase Range: 20ms/div



Output Fall Characteristics

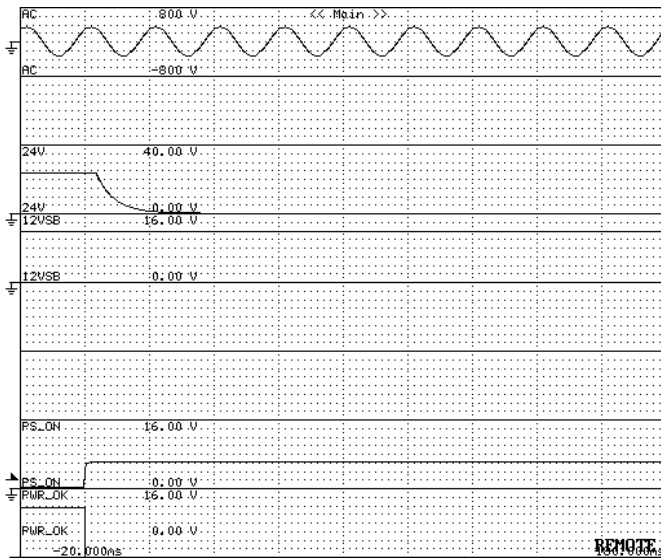
Timebase Range: 2ms/div



Output Fall Characteristics (magnification)

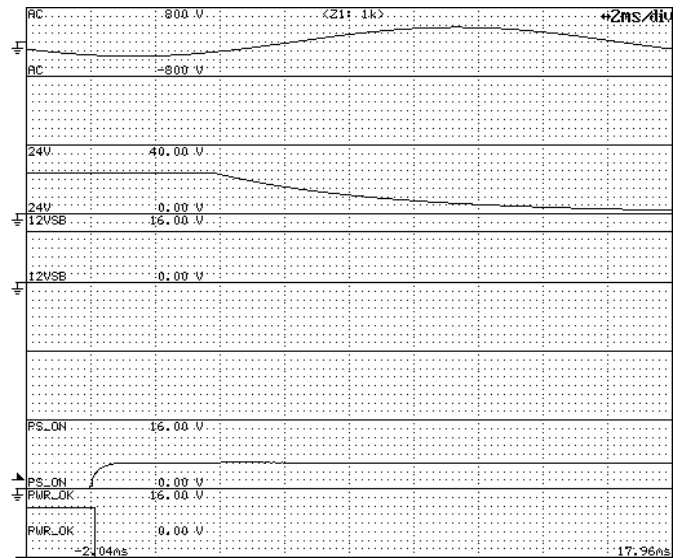
Input: 240V AC
Load: Rated Load

Timebase Range: 20ms/div



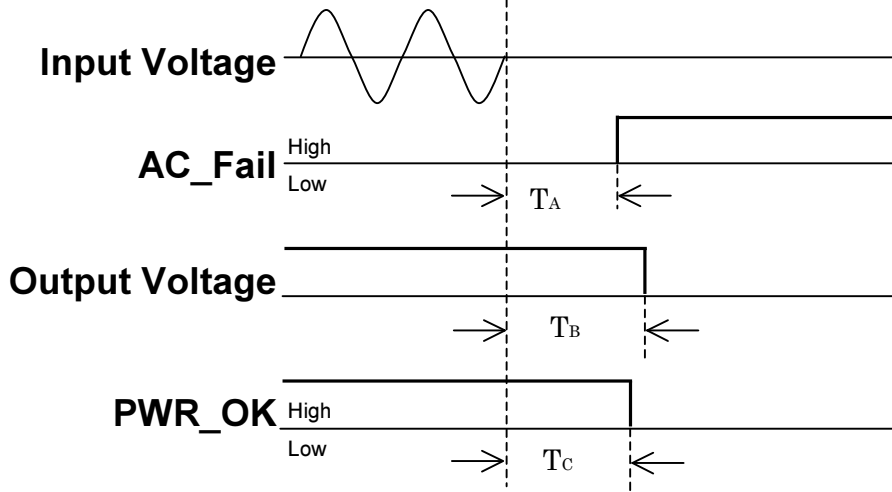
Output Fall Characteristics

Timebase Range: 2ms/div

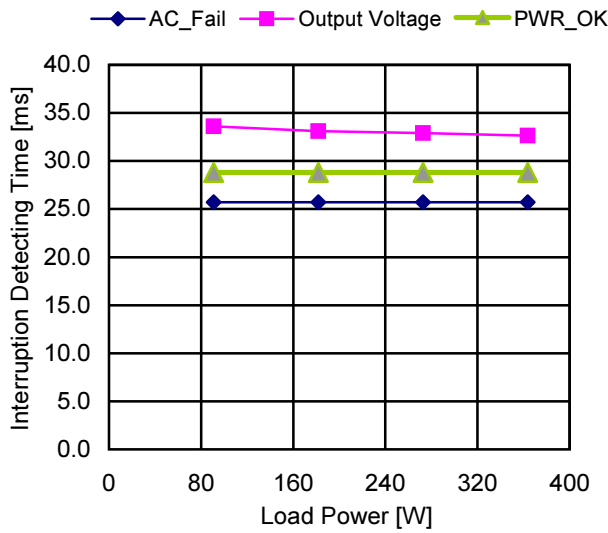


Output Fall Characteristics (magnification)

Model	mGPSA-360-24	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

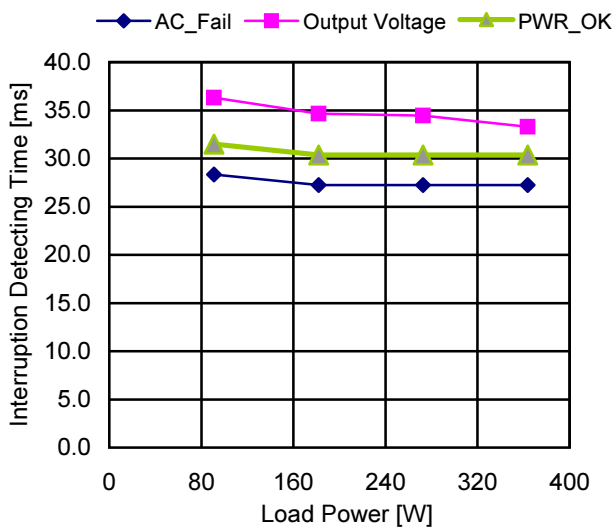


Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
90.9	25.7	33.6	28.8
181.8	25.7	33.1	28.8
272.7	25.7	32.9	28.8
363.6	25.7	32.7	28.8

Input Voltage: 240V AC

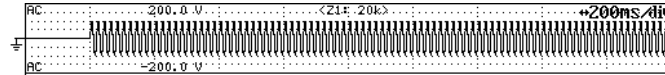


Load Power [W]	Interruption Detecting Time [ms]		
	AC_Fail	Output Voltage	PWR_OK
	T _A	T _B	T _C
90.9	28.4	36.3	31.5
181.8	27.3	34.7	30.4
272.7	27.3	34.5	30.4
363.6	27.3	33.3	30.4

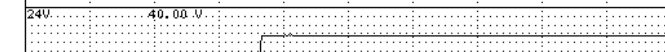
Model	mGPSA-360-24	Temperature: 25°C
Item	Start-Up Voltage	

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

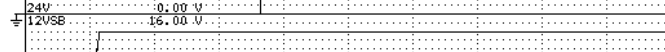
AC Input



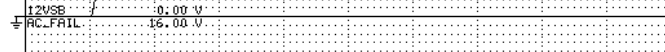
+24V



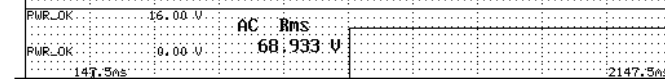
+12VSB



AC_FAIL



PWR_OK



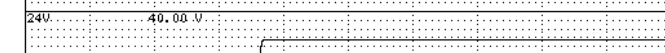
Start-up Voltage: 68.9V AC

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

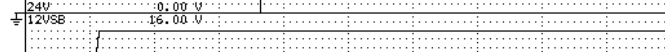
AC Input



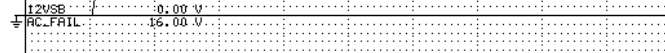
+24V



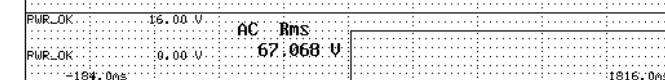
+12VSB



AC_FAIL



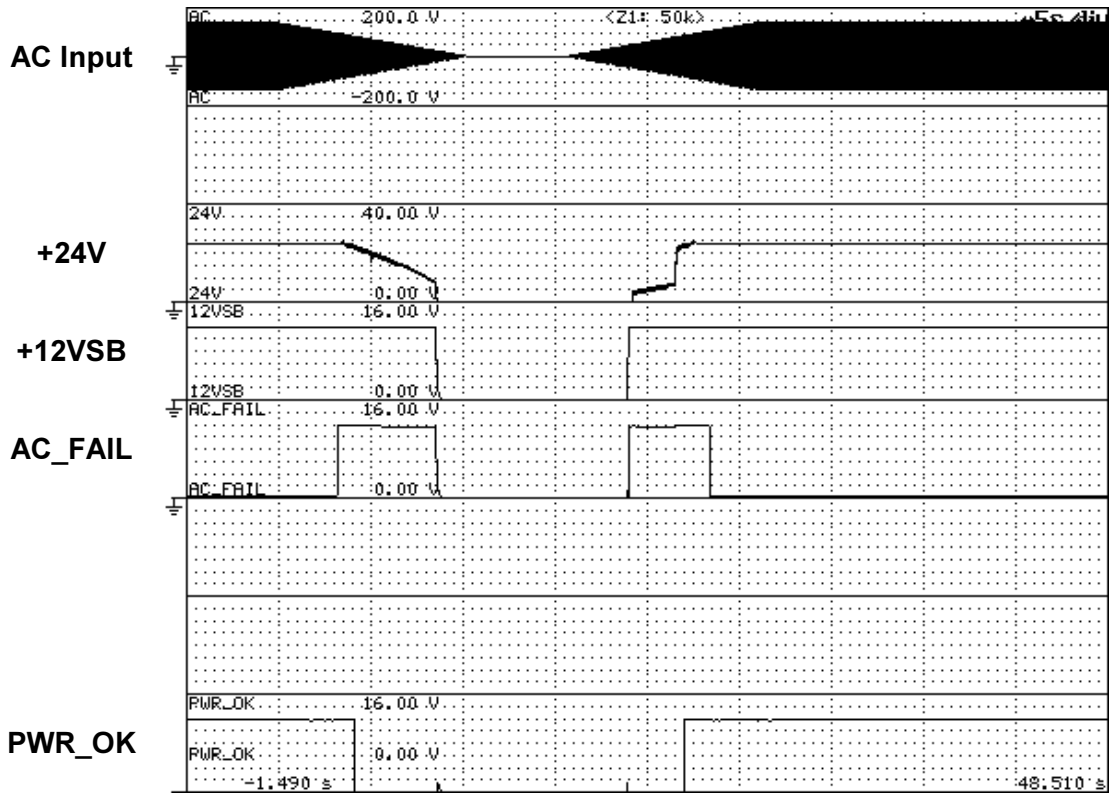
PWR_OK



Start-up Voltage: 67.1V AC

Model	mGPSA-360-24	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

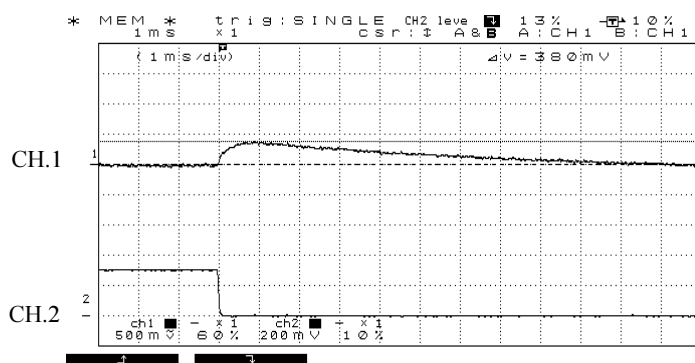
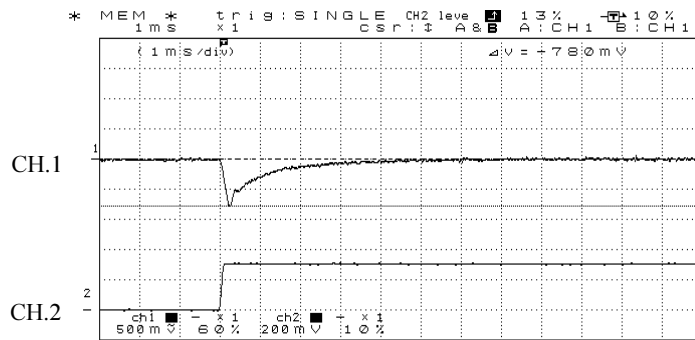
Timebase Range: 5s/div
Load: Rated Load



Sweep Rate: 10Vave/sec

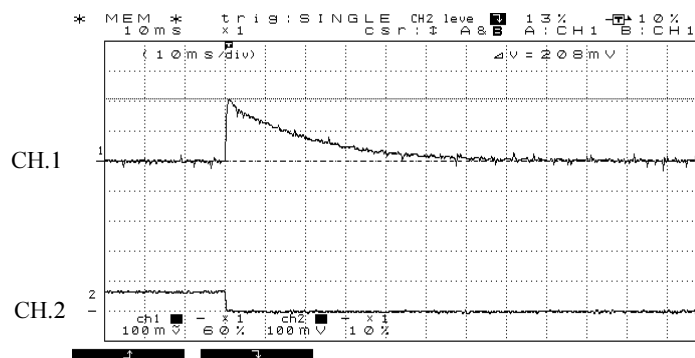
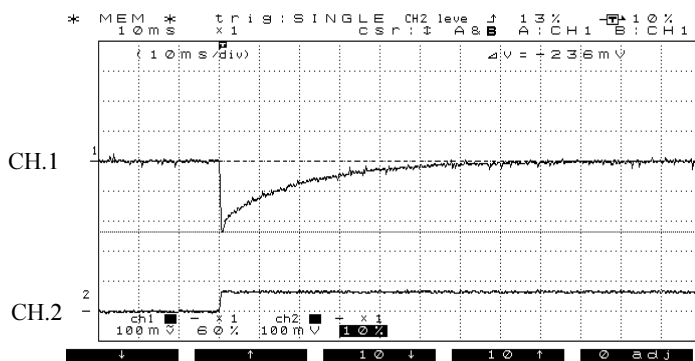
Model	mGPSA-360-24	Temperature: 25°C
Item	Dynamic Load Response	

+24V DC Output Transient Response Waveforms



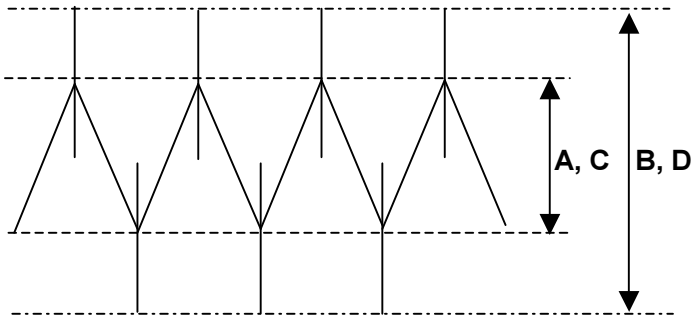
Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 500mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 10A/div
Timebase Range	1ms/div
Condition	Input: 100V AC Load: Rated Load (Other output)
Note: Rated Load(15A) \Rightarrow Minimum load(0A)	

12VSB Output Transient Response Waveforms



Waveform 2	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/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(0.3A) \Rightarrow Minimum load(0A)	

Model	mGPSA-360-24	Load: Rated Load
Item	Ripple / Noise Voltage	



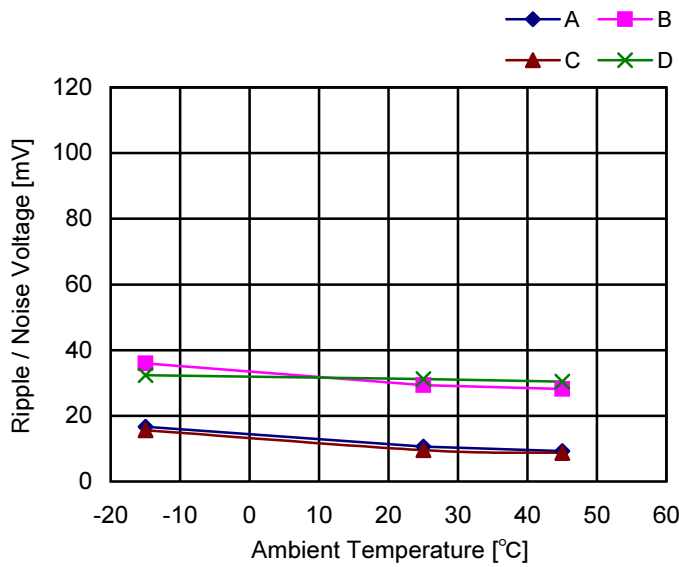
at 100V AC

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

at 240V AC

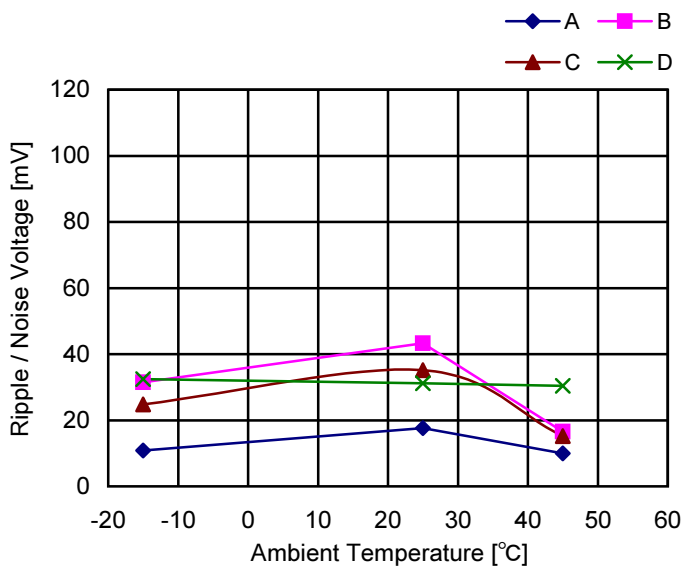
C: Ripple Voltage (mV_{P-P})
 D: Noise Voltage (mV_{P-P})

24V



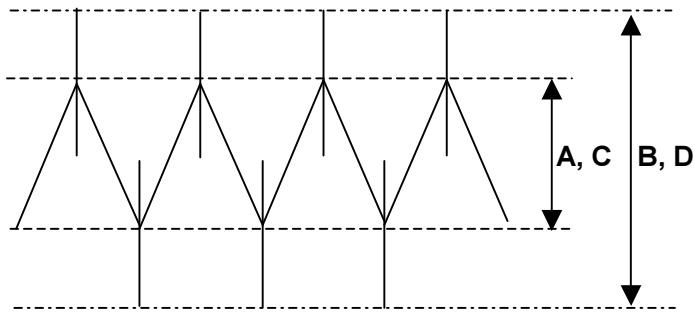
Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	16.7	36.0	15.6	32.4
25	10.6	29.3	9.6	31.2
45	9.3	28.2	8.7	30.4

12VSB



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	10.8	31.5	10.1	24.8
25	17.6	43.3	16.4	35.2
45	10.0	16.6	9.4	15.2

Model	mGPSA-360-24	Temperature: 25°C
Item	Ripple / Noise Voltage	



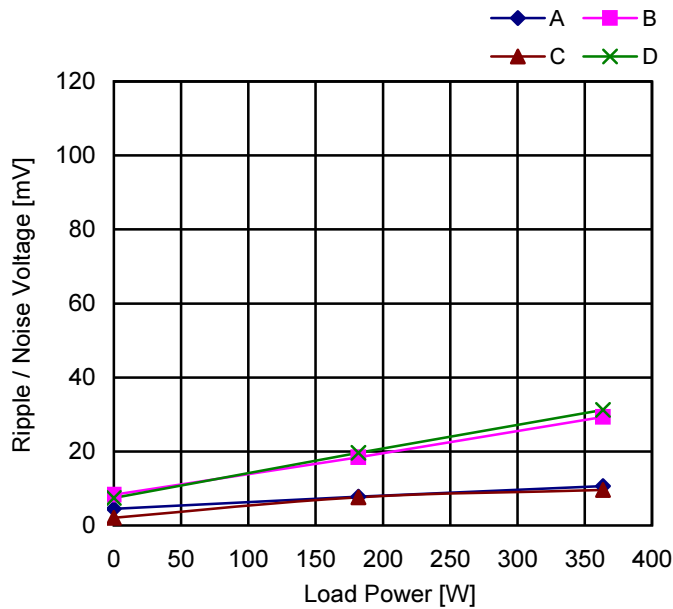
at 100V AC

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

at 240V AC

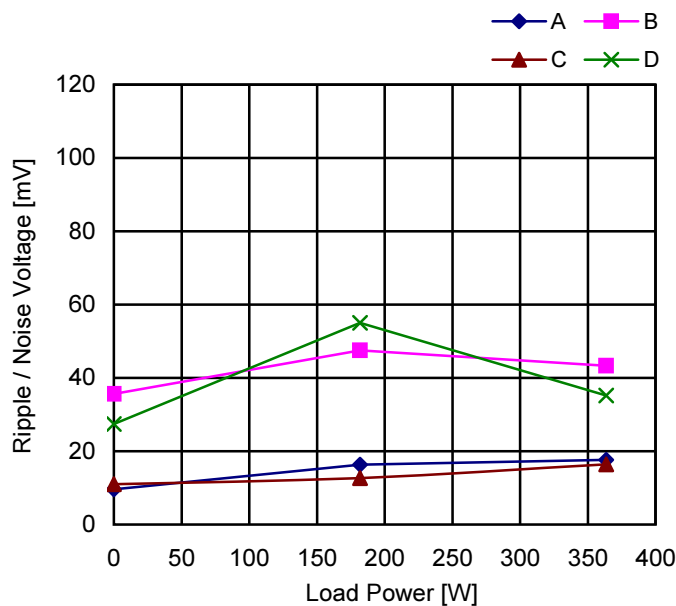
C: Ripple Voltage (mV_{P-P})
D: Noise Voltage (mV_{P-P})

24V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	4.5	8.3	2.1	7.4
181.8	7.8	18.4	7.6	19.6
363.6	10.6	29.3	9.6	31.2

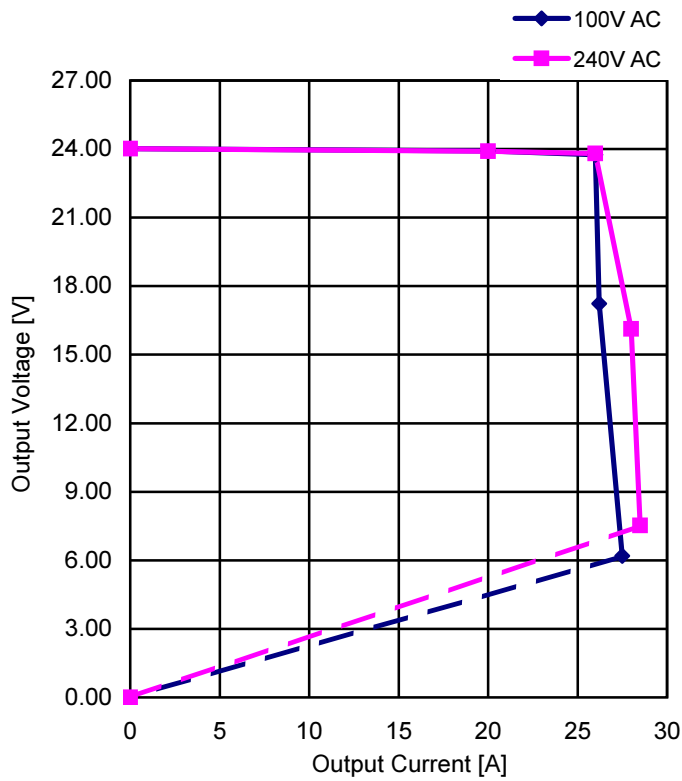
12VSB



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	9.6	35.6	11.0	27.4
181.8	16.3	47.5	12.7	55.0
363.6	17.6	43.3	16.4	35.2

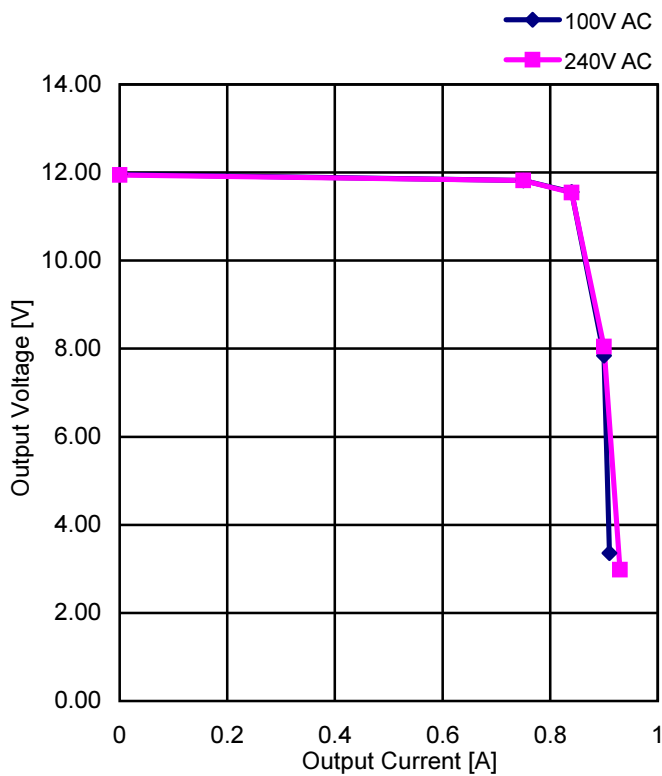
Model	mGPSA-360-24	Temperature: 25°C
Item	Over-Current Protection	

V-I Characteristics of 24V 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	24.01	0.00	24.02
20.00	23.92	20.00	23.91
26.00	23.75	26.00	23.81
26.20	17.24	28.00	16.13
27.50	6.19	28.50	7.52

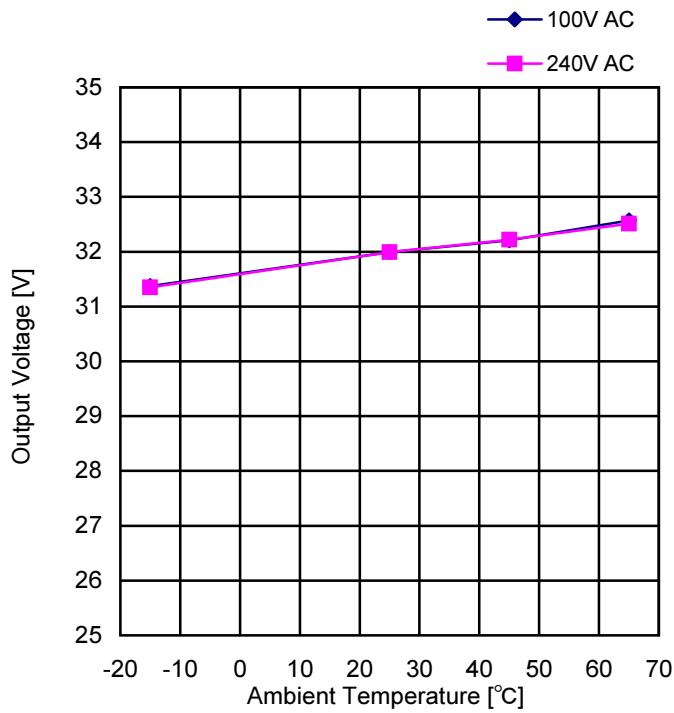
V-I Characteristics of 12VSB O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	11.96	0.00	11.94
0.75	11.82	0.75	11.82
0.84	11.56	0.84	11.54
0.90	7.84	0.90	8.05
0.91	3.36	0.93	2.98

Model	mGPSA-360-24	Load: Minimum Load
Item	Over-Voltage Protection	

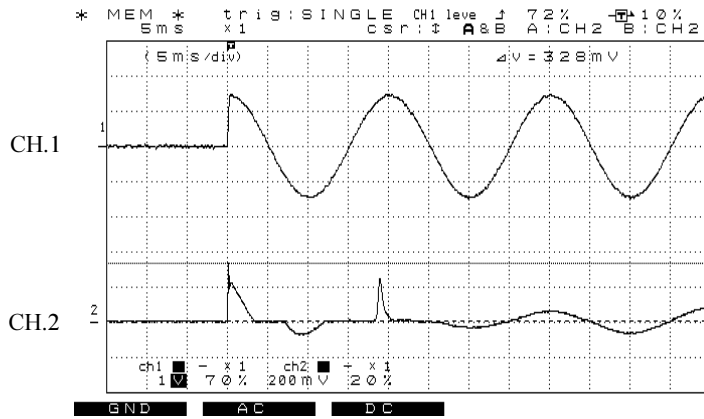
24V



Ambient Temp. [°C]	Output Voltage[V]	
	Input Voltage 100V AC	Input Voltage 240V AC
-15	31.37	31.35
25	31.99	31.99
45	32.21	32.22
65	32.57	32.51

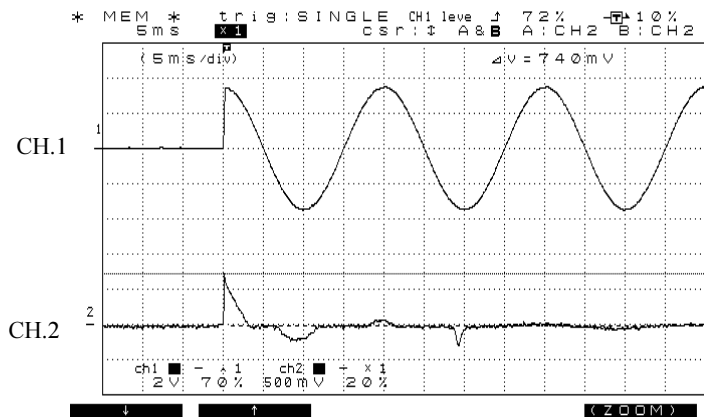
Model	mGPSA-360-24	Temperature: 25°C
Item	Inrush Current	Load: Rated Load

Inrush Current Waveforms



Waveform 1

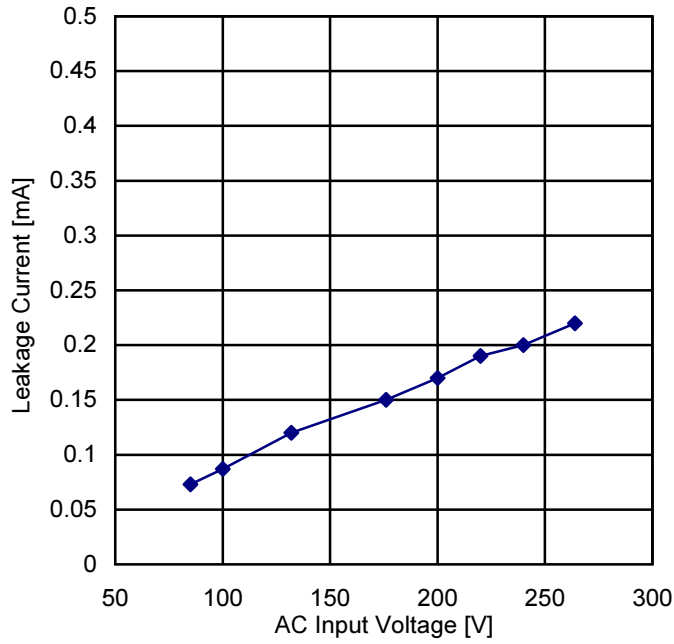
CH1	Measuring Point:	AC Input Voltage
	Range:	100V/div
CH2	Measuring Point:	AC Input Current
	Range:	10A/div
Timebase Range	5ms/div	
Conditions	Input: 100V AC Load: Rated Load	
Note: Inrush Current: 16.4A		



Waveform 2

CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	25A/div
Timebase Range	5ms/div	
Conditions	Input: 240V AC Load: Rated Load	
Note: Inrush Current: 37.0A		

Model	mGPSA-360-24	Load: Rated Load
Item	Leakage Current	Temperature: 25°C



AC Input Voltage [V]	Leakage Current [mA]
85	0.07
100	0.09
132	0.12
176	0.15
200	0.17
220	0.19
240	0.20
264	0.22