

Test Data

Model Number: OZP-170-12/15

Model Name: DC POWER SUPPLY

Setting: 15V Output settings

INPUT: 85V – 264V AC, 50 / 60 Hz

OUTPUT: 15 V 11.2A (18.0 A_{peak})

Minimum load : 0W

Rated load :168W

Peak output power: 270W

Approved by : Makoto Urasue (QA manager)

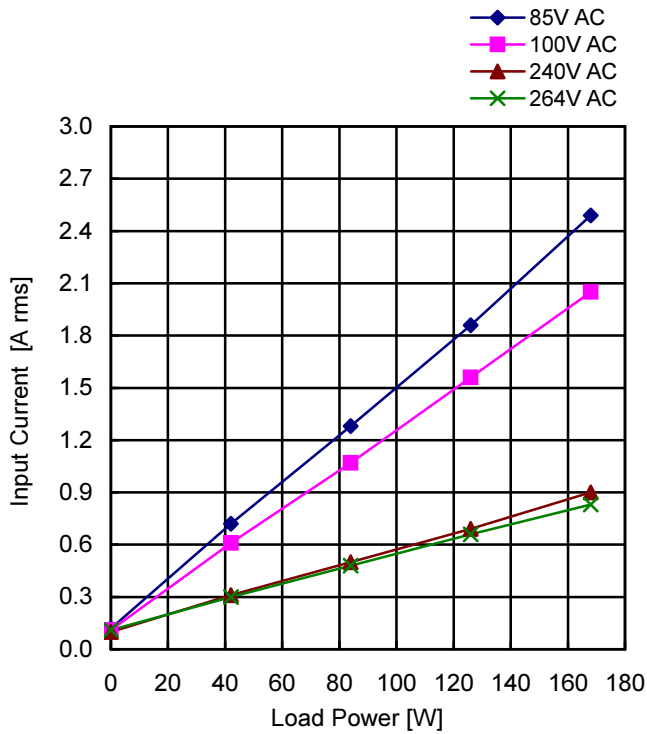
Designed by : Naoki Yamamoto (R&D engineer)

Tested by : hiroyuki Watanabe (Evaluation test engineer)

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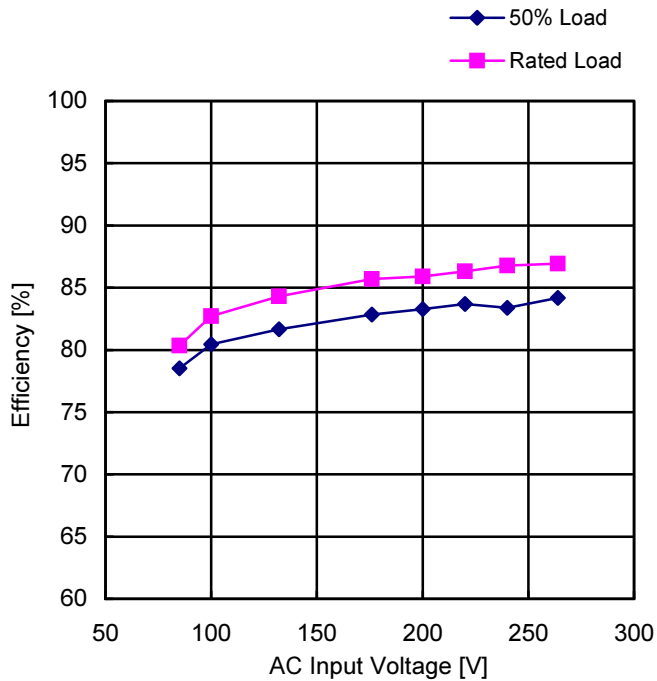
Model	OZP-170-12/15	Temperature: 25°C
Item	Input Current (by Load Power)	Setting: 15V Output Settings



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	0.12	0.11	0.10	0.11
42.0	0.72	0.61	0.31	0.30
84.0	1.28	1.07	0.50	0.48
126.0	1.86	1.56	0.69	0.66
168.0	2.49	2.05	0.90	0.83

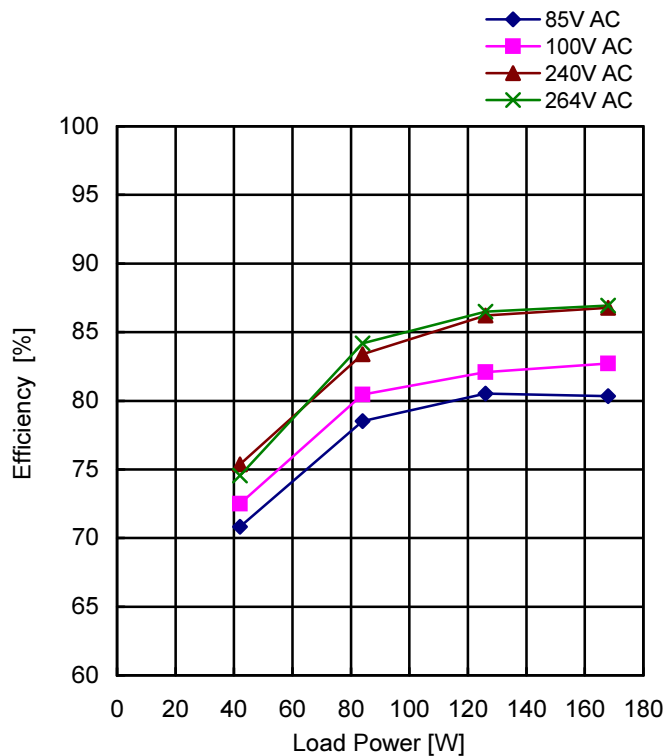
Model	OZP-170-12/15	Temperature: 25°C
Item	Efficiency	Setting: 15V Output Settings

■ Efficiency (by Input Voltage)



AC Input Voltage [V]	Efficiency [%]	
	50% Load	Rated Load
85	78.51	80.35
100	80.46	82.71
132	81.66	84.30
176	82.84	85.70
200	83.28	85.90
220	83.68	86.32
240	83.39	86.77
264	84.19	86.93

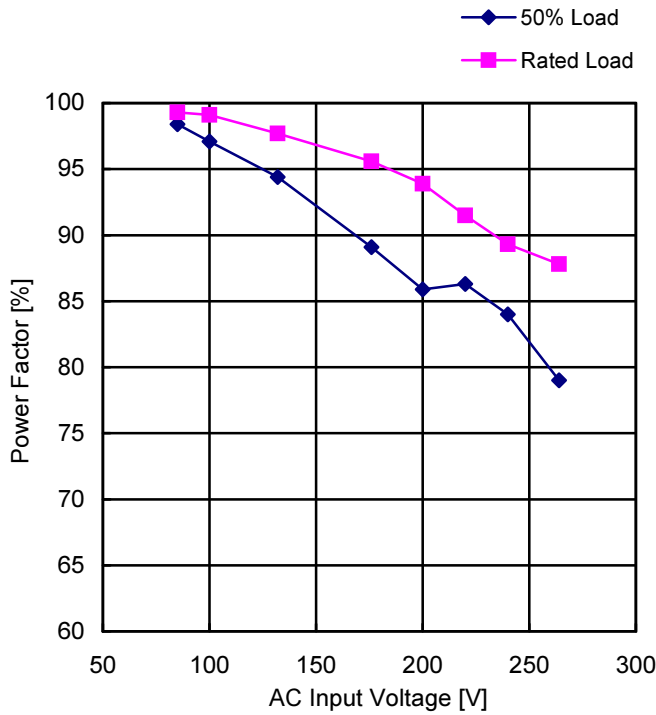
■ Efficiency (by Load Power)



Load Power [W]	Efficiency [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
42.0	70.83	72.49	75.37	74.55
84.0	78.51	80.46	83.39	84.19
126.0	80.52	82.09	86.22	86.49
168.0	80.35	82.71	86.77	86.93

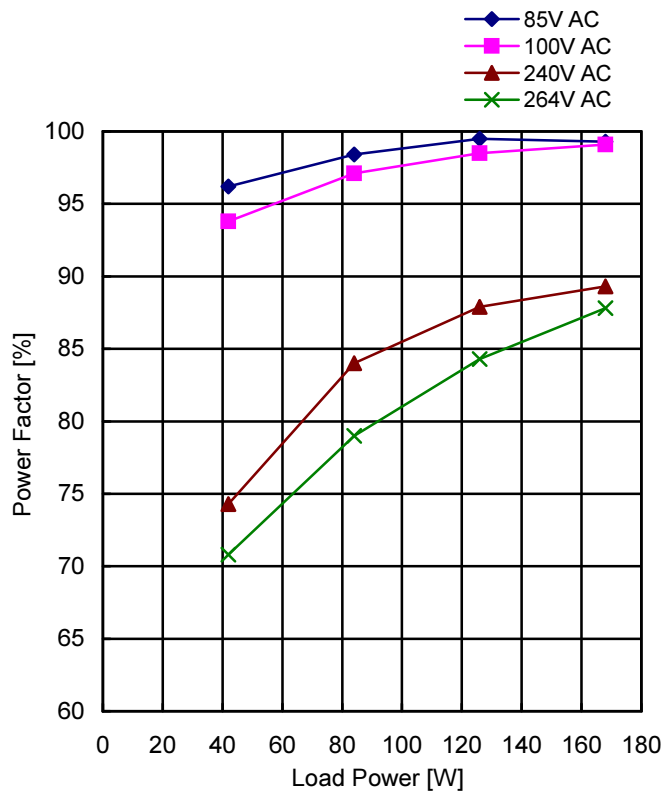
Model	OZP-170-12/15	Temperature: 25°C
Item	Power Factor	Setting: 15V Output Settings

■ Power Factor (by Input Voltage)



AC Input Voltage [V]	Power Factor [%]	
	50% Load	Rated Load
85	98.4	99.3
100	97.1	99.1
132	94.4	97.7
176	89.1	95.6
200	85.9	93.9
220	86.3	91.5
240	84.0	89.3
264	79.0	87.8

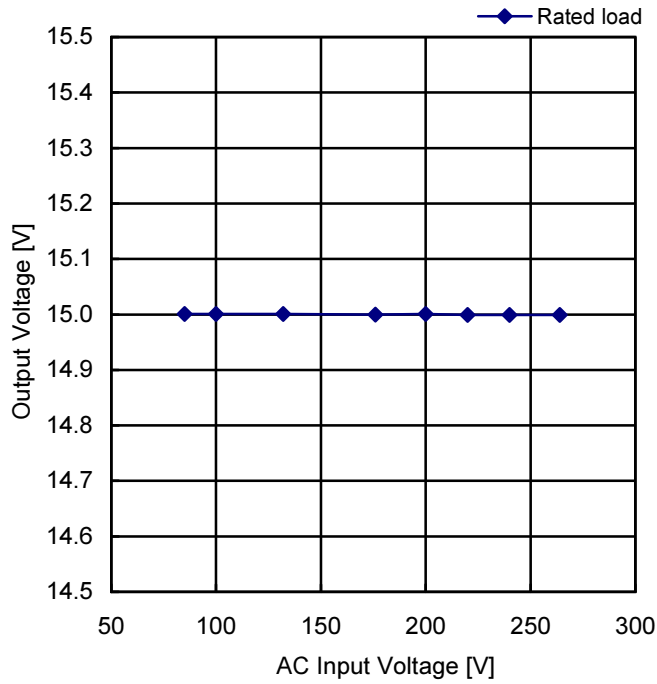
■ Power Factor (by Load Power)



Load Power [W]	Power Factor [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
42.0	96.2	93.8	74.3	70.8
84.0	98.4	97.1	84.0	79.0
126.0	99.5	98.5	87.9	84.3
168.0	99.3	99.1	89.3	87.8

Model	OZP-170-12/15	Temperature: 25°C
Item	Line Regulation	Setting: 15V Output Settings

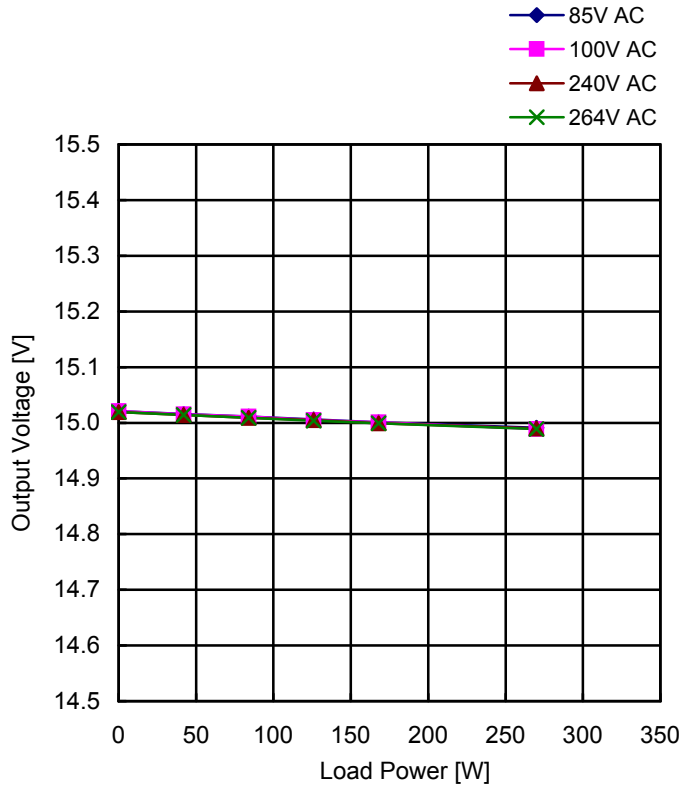
15V/11.2A



AC Input Voltage [V]	Output Voltage [V]
85	15.001
100	15.001
132	15.001
176	15.000
200	15.001
220	14.999
240	14.999
264	14.999

Model	OZP-170-12/15	Temperature: 25°C
Item	Load Regulation	Setting: 15V Output Settings

15V



Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	15.021	15.021	15.019	15.019
42.0	15.016	15.015	15.014	15.014
84.0	15.011	15.011	15.009	15.009
126.0	15.006	15.005	15.005	15.004
168.0	15.001	15.001	14.999	14.999
270.0	14.991	14.989	14.990	14.989

Load Condition

Load Power [W]	Load Current [A]
	15V
0.0	0.00
42.0	2.80
84.0	5.60
126.0	8.40
168.0	11.20
270.0	18.00

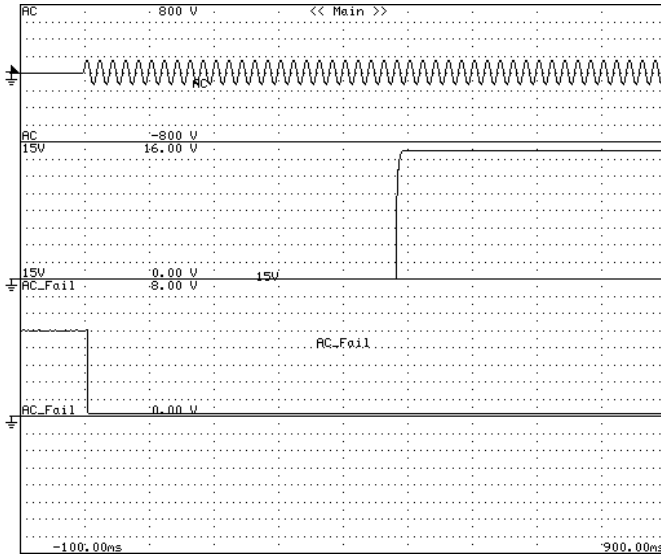
Model	OZP-170-12/15	Setting: 15V Output Settings																																													
Item	Ambient Temperature Drift																																														
<p>15V</p> <p>Legend: ◆ 85V AC ■ 100V AC ▲ 240V AC × 264V AC</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. (°C)</th> <th colspan="4">Output Voltage [V]</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>-15</td> <td>15.078</td> <td>15.078</td> <td>15.074</td> <td>15.075</td> </tr> <tr> <td>25</td> <td>15.001</td> <td>15.001</td> <td>14.999</td> <td>14.999</td> </tr> <tr> <td>45</td> <td>14.954</td> <td>14.955</td> <td>14.952</td> <td>14.951</td> </tr> <tr> <td>65</td> <td>14.911</td> <td>14.910</td> <td>14.910</td> <td>14.910</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Load Condition</th> </tr> <tr> <th rowspan="2">Ambient Temp. (°C)</th> <th>Load Current [A]</th> </tr> <tr> <th>15V</th> </tr> </thead> <tbody> <tr> <td>-15</td> <td>11.20</td> </tr> <tr> <td>25</td> <td>11.20</td> </tr> <tr> <td>45</td> <td>11.20</td> </tr> <tr> <td>65</td> <td>7.33</td> </tr> </tbody> </table>				Ambient Temp. (°C)	Output Voltage [V]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	-15	15.078	15.078	15.074	15.075	25	15.001	15.001	14.999	14.999	45	14.954	14.955	14.952	14.951	65	14.911	14.910	14.910	14.910	Load Condition		Ambient Temp. (°C)	Load Current [A]	15V	-15	11.20	25	11.20	45	11.20	65	7.33
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45	11.20																																														
65	7.33																																														

Model	OZP-170-12/15	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	Setting: 15V Output Settings

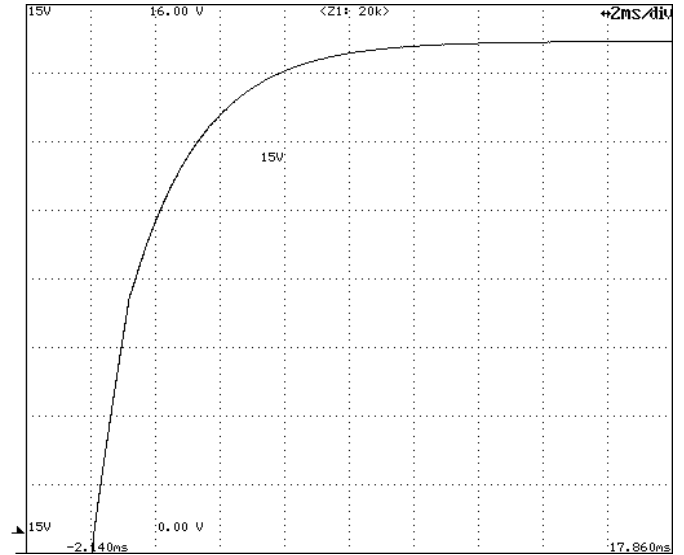
Input: 100V AC
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence

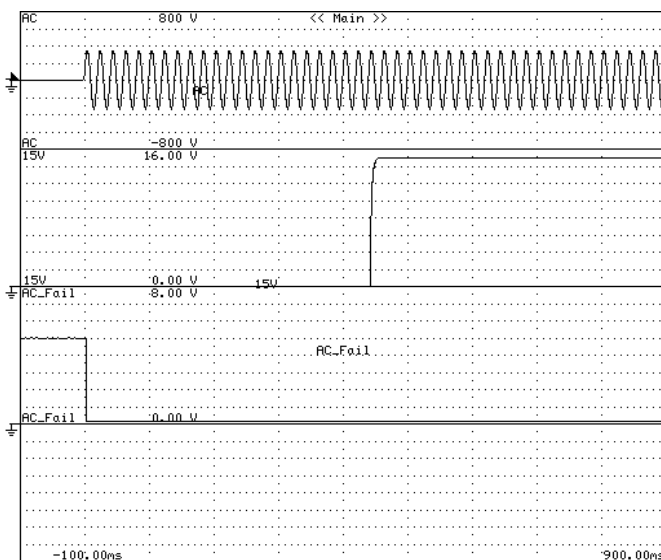


15V DC Output Rise Characteristics

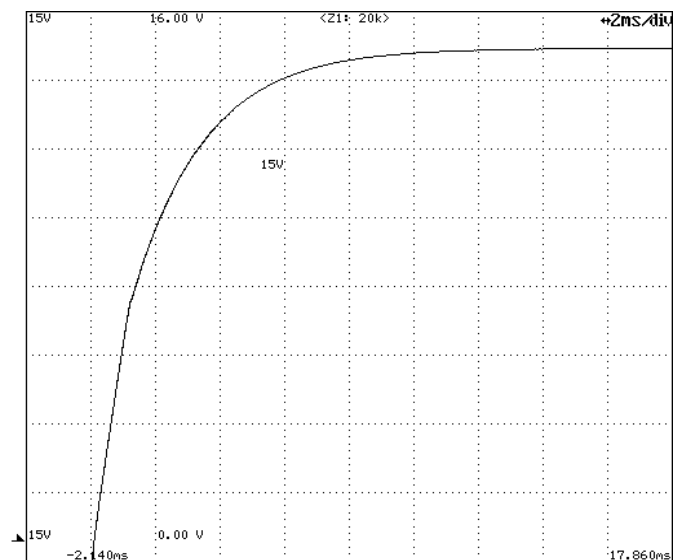
Input: 240V AC
Load: Rated Load

Timebase Range: 100ms/div

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



All Output Start-up Sequence



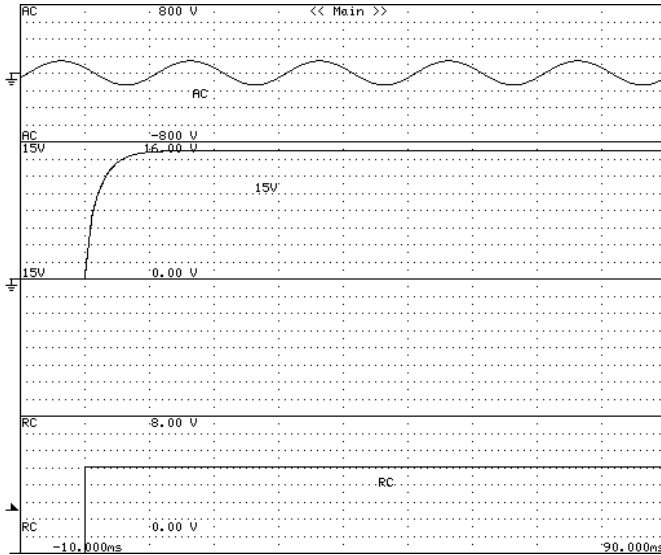
15V DC Output Rise Characteristics

Model	OZP-170-12/15	Temperature: 25°C
Item	Output Rise Characteristics (at Remote ON)	Setting: 15V Output Settings

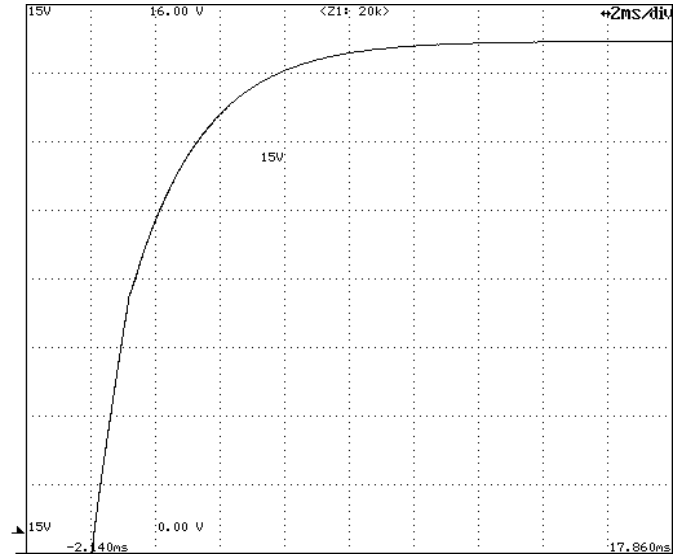
Input: 100V AC
Load: Rated Load

Timebase Range: 10ms/div

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



All Output Start-up Sequence

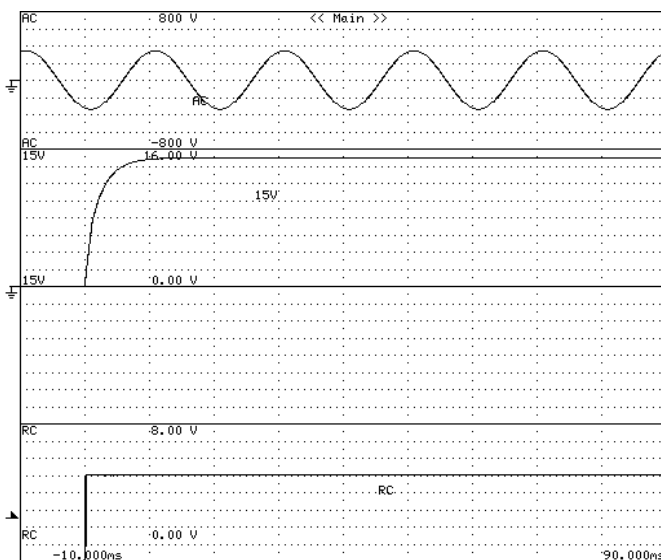


15V DC Output Rise Characteristics

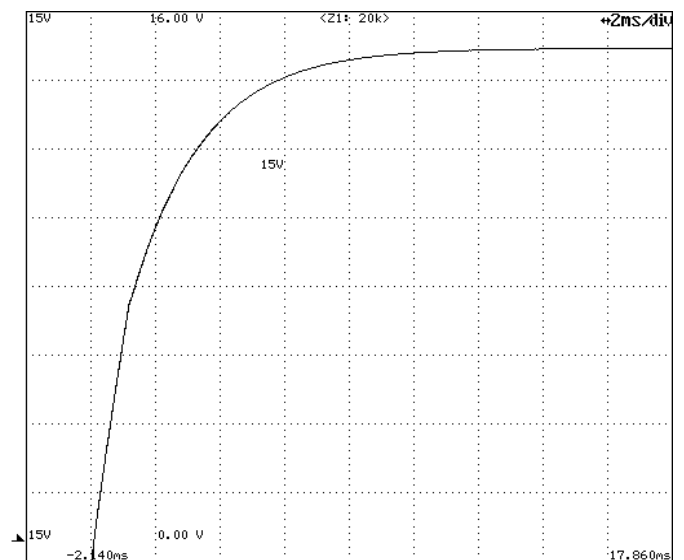
Input: 240V AC
Load: Rated Load

Timebase Range: 10ms/div

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



All Output Start-up Sequence

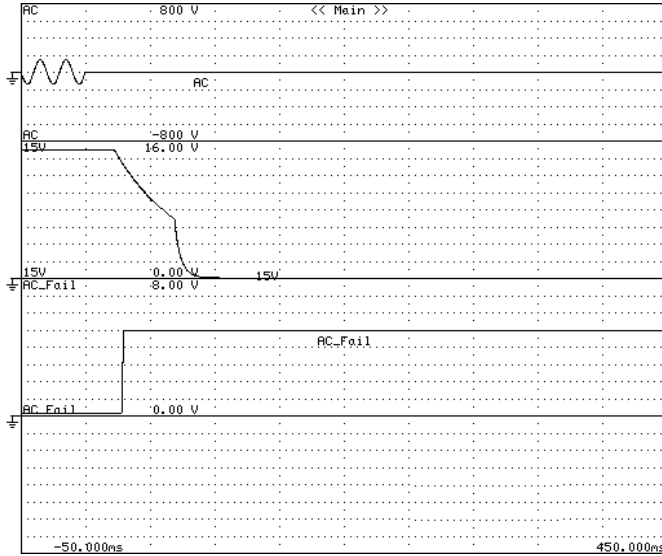


15V DC Output Rise Characteristics

Model	OZP-170-12/15	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	Setting: 15V Output Settings

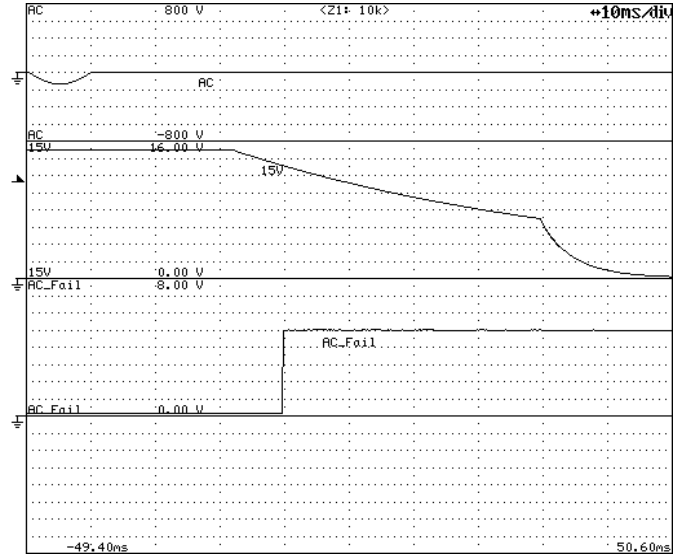
Input: 100V AC
Load: Rated Load

Timebase Range: 50ms/div



Output Fall Characteristics

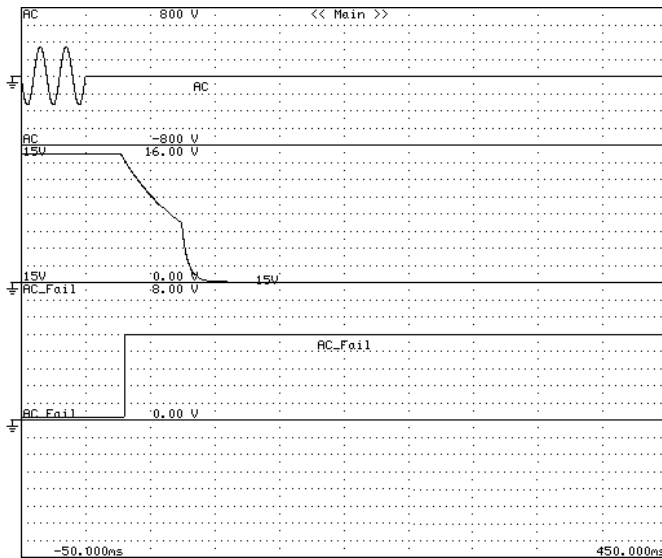
Timebase Range: 10ms/div



Output Fall Characteristics (magnification)

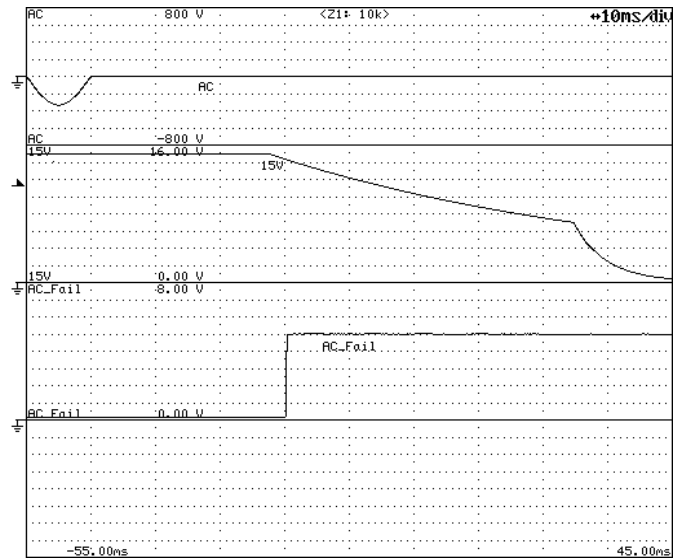
Input: 240V AC
Load: Rated Load

Timebase Range: 50ms/div



Output Fall Characteristics

Timebase Range: 10ms/div

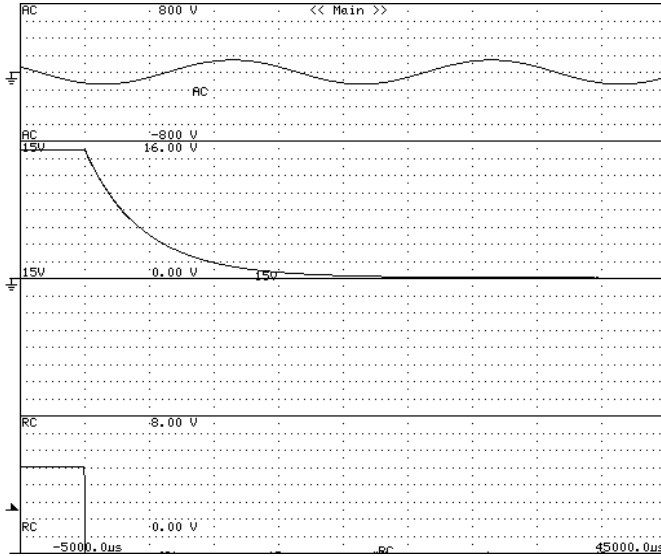


Output Fall Characteristics (magnification)

Model	OZP-170-12/15	Temperature: 25°C
Item	Output Fall Characteristics (at Remote OFF)	Setting: 15V Output Settings

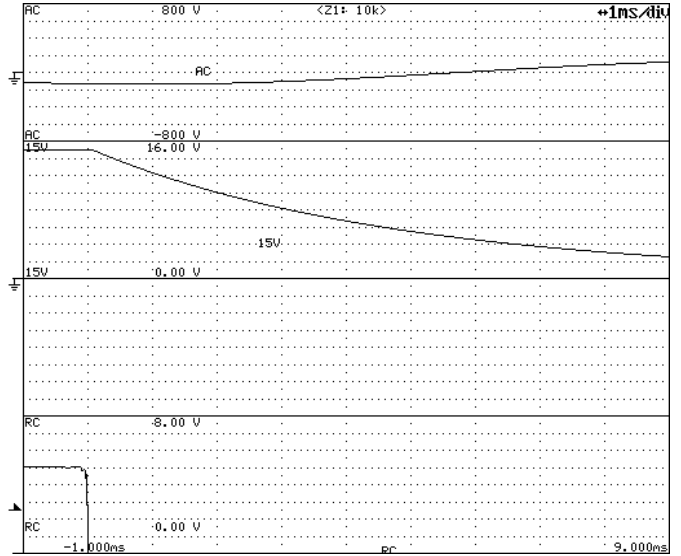
Input: 100V AC
Load: Rated Load

Timebase Range: 5ms/div



Output Fall Characteristics

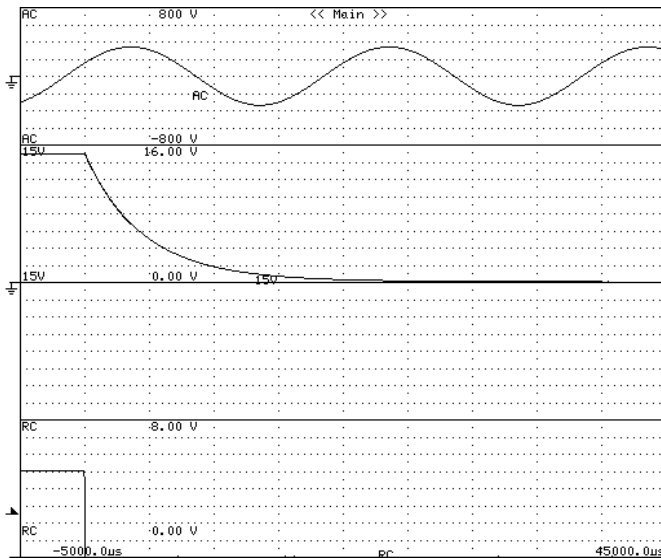
Timebase Range: 1ms/div



Output Fall Characteristics (magnification)

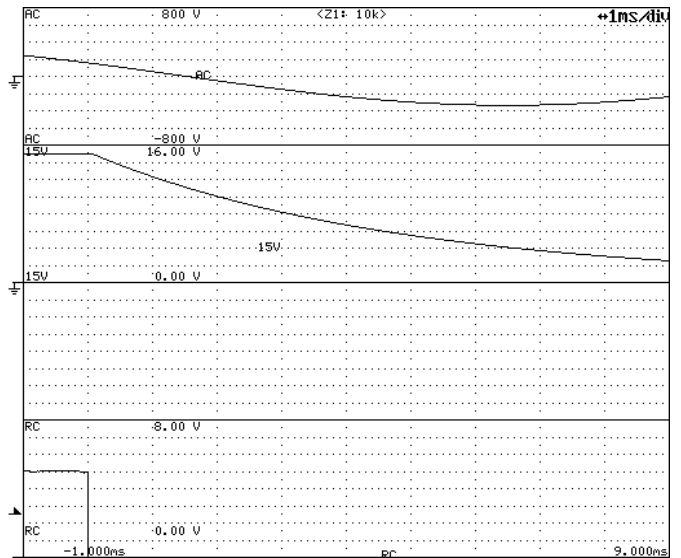
Input: 240V AC
Load: Rated Load

Timebase Range: 5ms/div



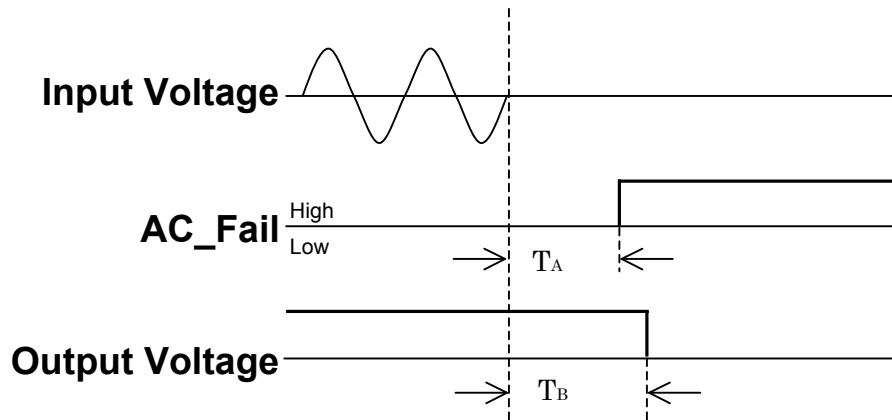
Output Fall Characteristics

Timebase Range: 1ms/div

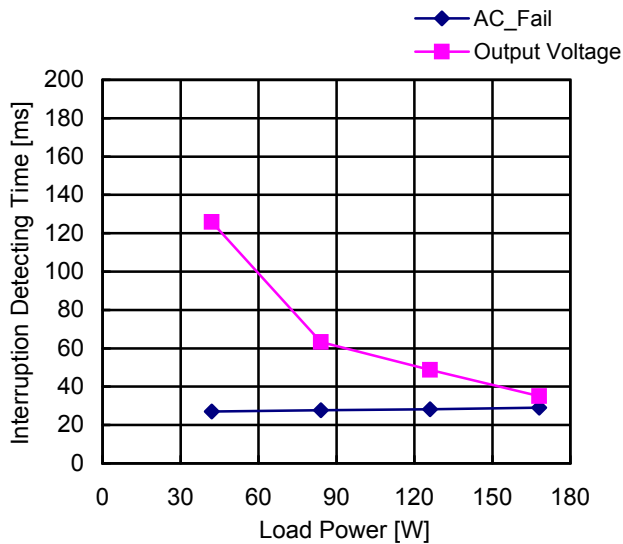


Output Fall Characteristics (magnification)

Model	OZP-170-12/15	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	Setting: 15V Output Settings

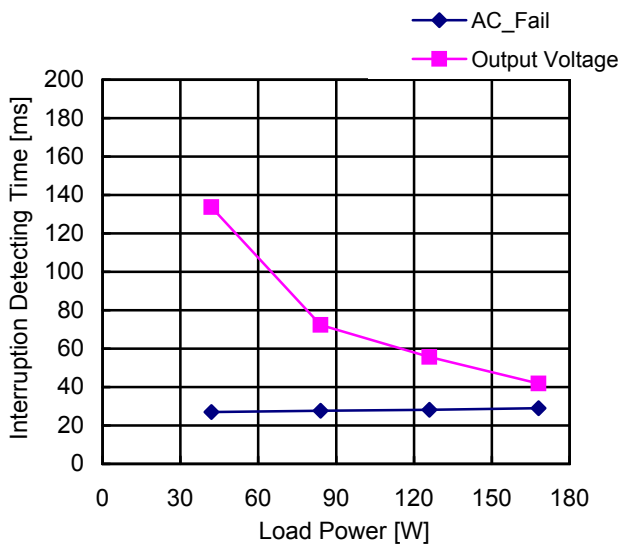


Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]	
	AC_Fail	Output Voltage
	T_A	T_B
42.0	27.0	125.9
84.0	27.7	63.2
126.0	28.2	48.8
168.0	29.0	35.1

Input Voltage: 240V AC



Load Power [W]	Interruption Detecting Time [ms]	
	AC_Fail	Output Voltage
	T_A	T_B
42.0	27.0	133.7
84.0	27.7	72.4
126.0	28.2	55.7
168.0	29.0	41.9

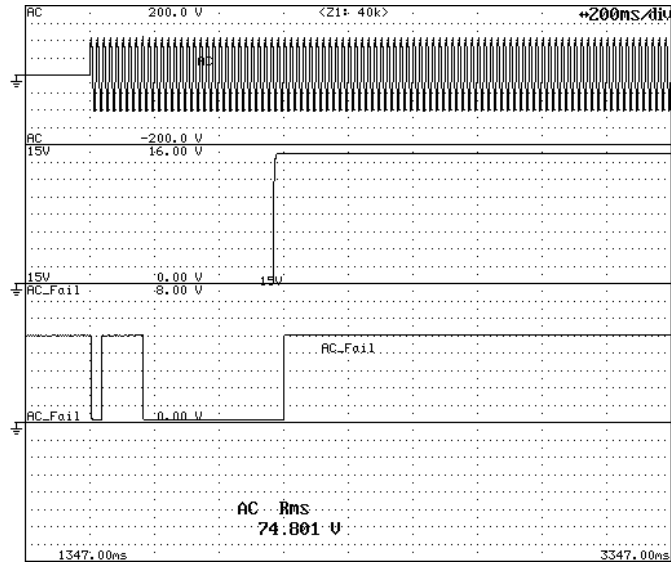
Model	OZP-170-12/15	Temperature: 25°C
Item	Start-Up Voltage	Setting: 15V Output Settings

Timebase Range: 200ms/div
Load: Rated Load

AC Input

+15V

AC_FAIL



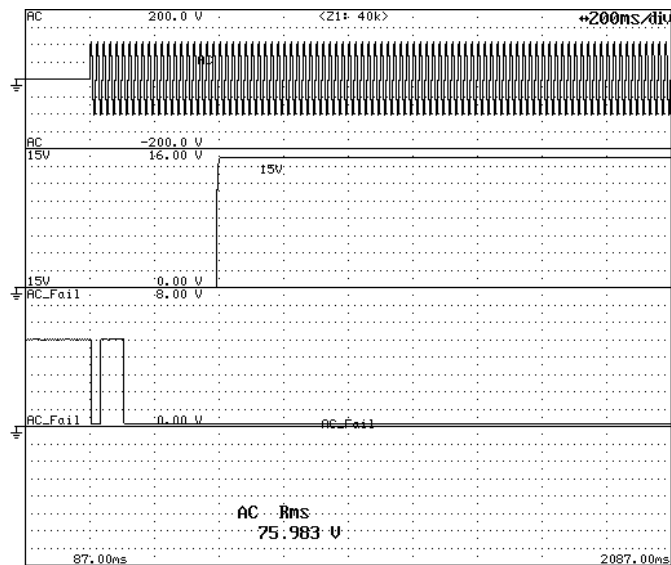
Start-up Voltage: 74.8V AC

Timebase Range: 200ms/div
Load: Minimum Load

AC Input

+15V

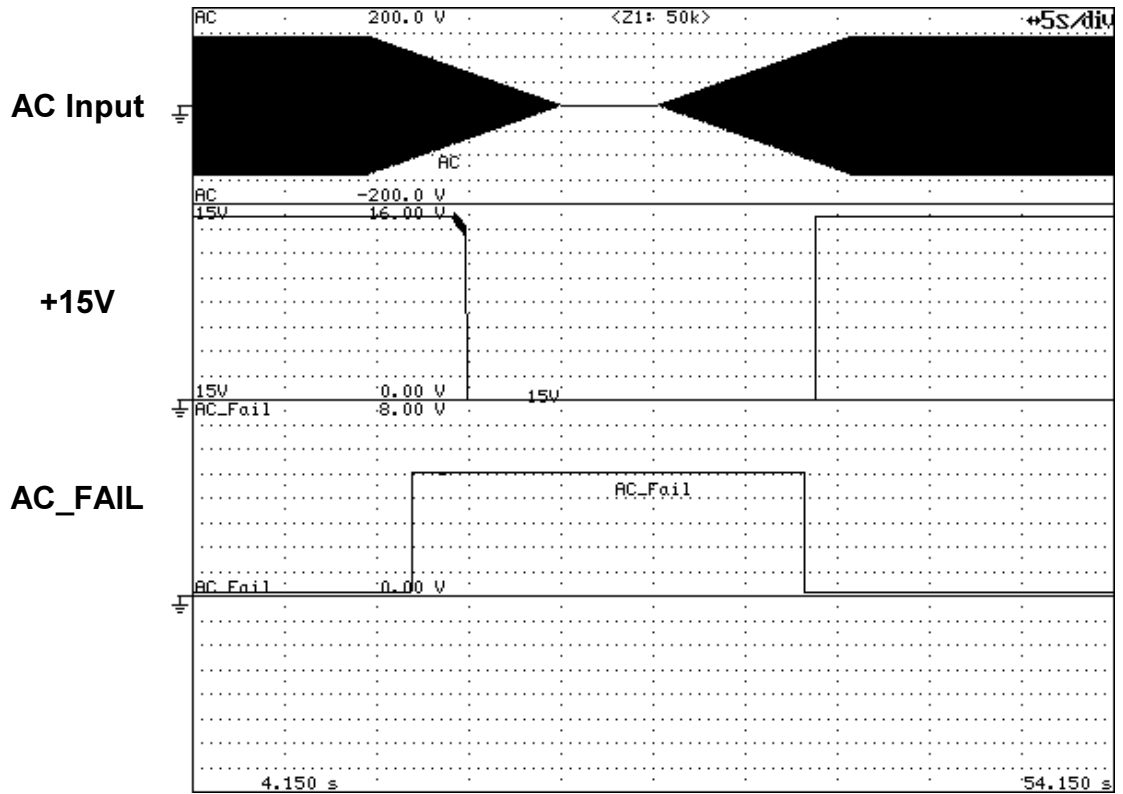
AC_FAIL



Start-up Voltage: 76.0V AC

Model	OZP-170-12/15	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	Setting: 15V Output Settings

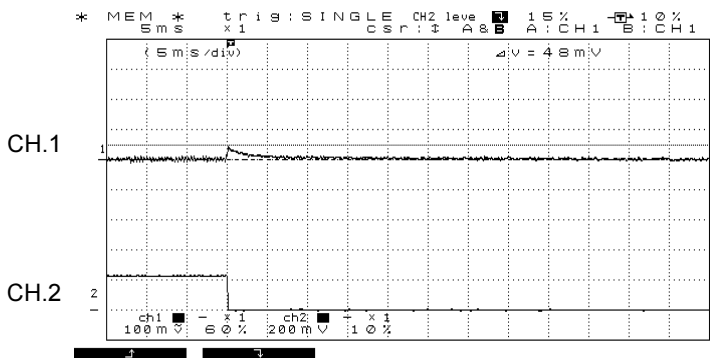
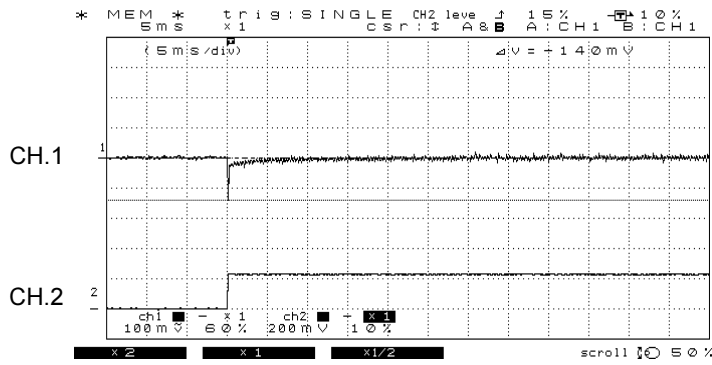
Timebase Range: 5s/div
Load: Rated Load



Sweep Rate: 10Vave/sec

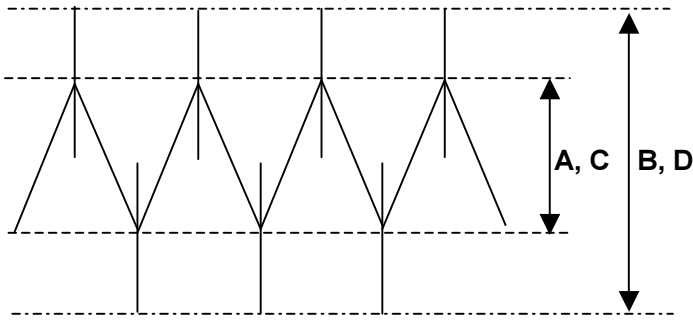
Model	OZP-170-12/15	Temperature: 25°C
Item	Dynamic Load Response	Setting: 15V Output Settings

+15V DC Output Transient Response Waveforms



Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 10A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Rated Load(11.2A) ⇒ Minimum load(0A)	

Model	OZP-170-12/15	Load: Rated Load
Item	Ripple / Noise Voltage	Setting: 15V Output Settings



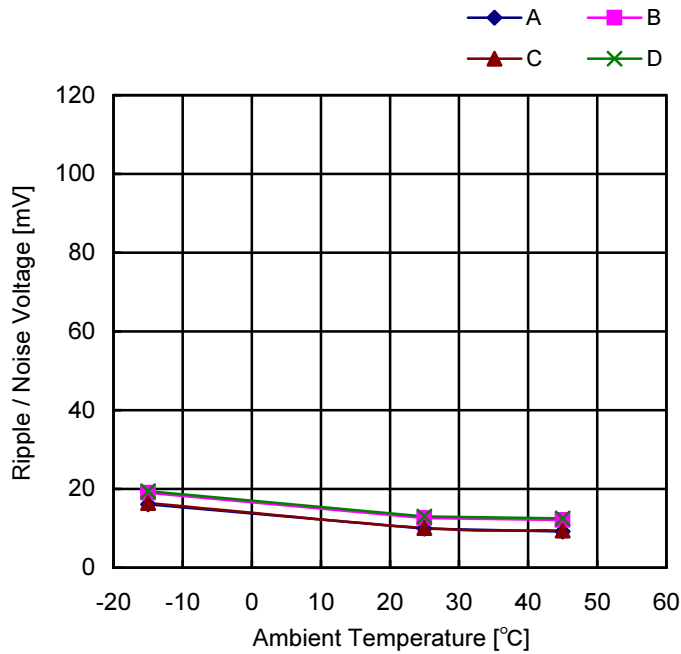
at 100V AC

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

at 240V AC

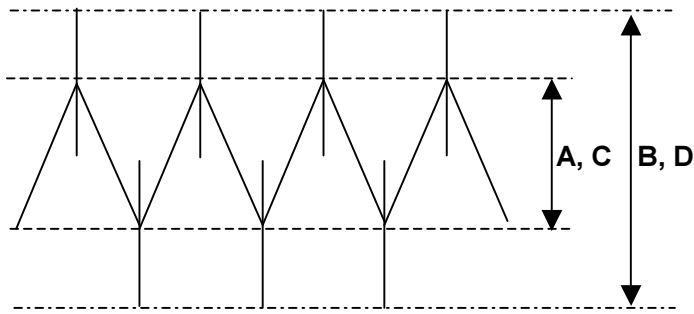
C: Ripple Voltage (mV_{P-P})
D: Noise Voltage (mV_{P-P})

15V



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	16.1	19.0	16.4	19.4
25	9.9	12.6	10.1	13.0
45	9.2	12.1	9.4	12.5

Model	OZP-170-12/15	Temperature: 25°C
Item	Ripple / Noise Voltage	Setting: 15V Output Settings



at 100V AC

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

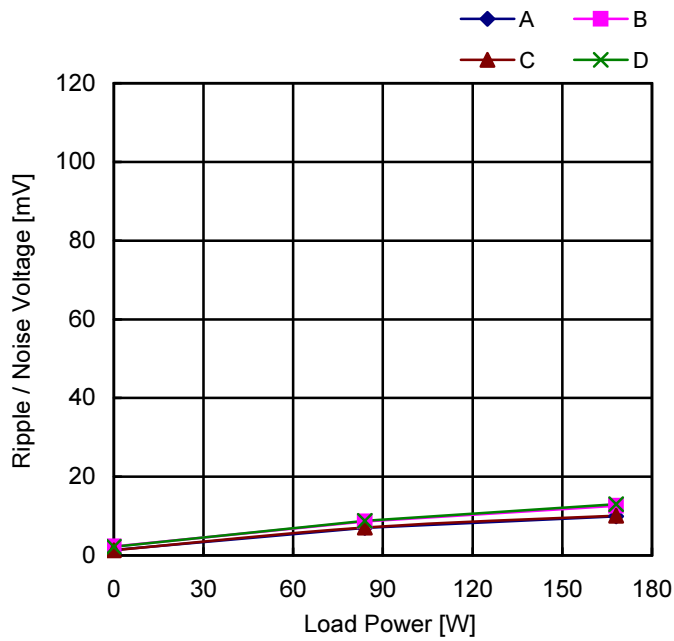
B: Noise Voltage (mV_{P-P})

at 240V AC

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

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

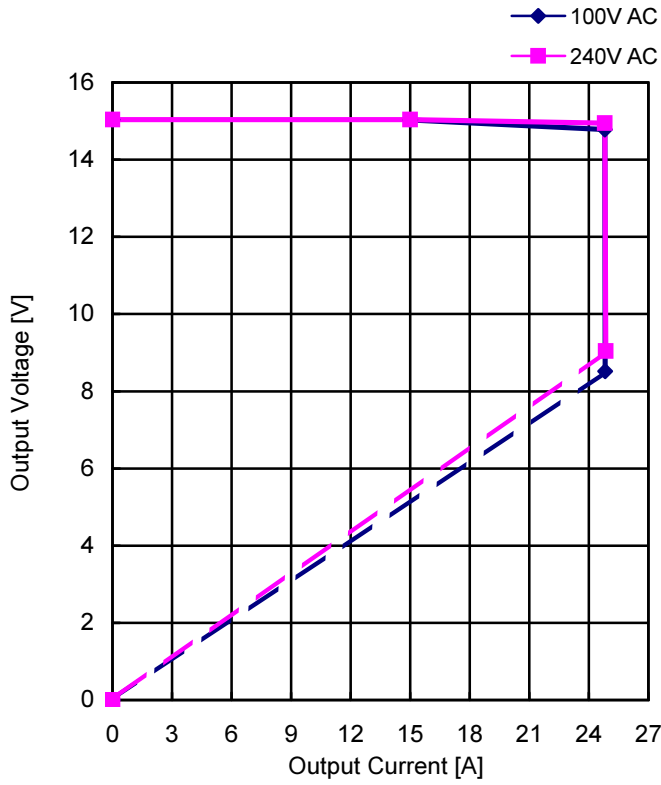
15V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	1.4	2.3	1.3	2.2
84	7.0	8.6	7.1	8.8
168	9.9	12.6	10.1	13.0

Model	OZP-170-12/15	Temperature: 25°C
Item	Over-Current Protection	Setting: 15V Output Settings

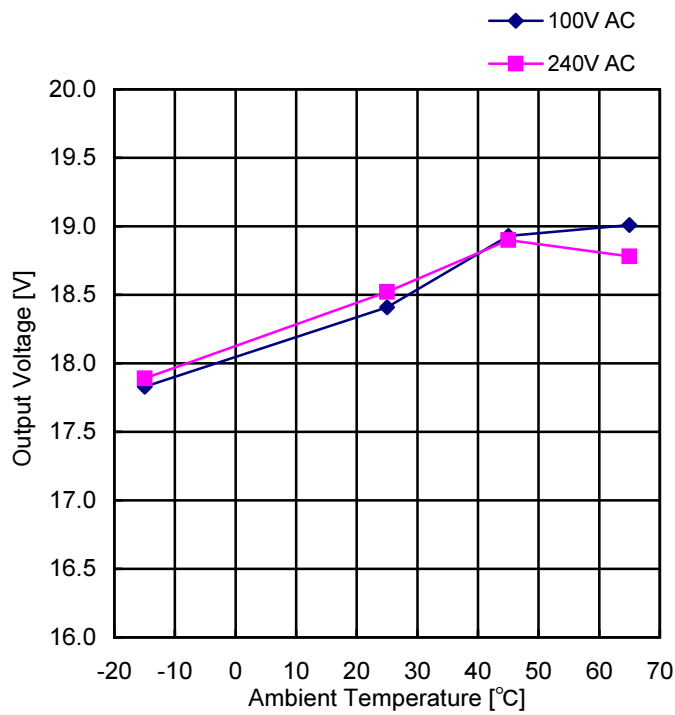
V-I Characteristics of 15V O.C.P



Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	15.04	0.00	15.04
15.00	15.03	15.00	15.04
24.80	14.78	24.80	14.95
24.82	8.52	24.86	9.04

Model	OZP-170-12/15	Load: Minimum Load Temperature: 25°C
Item	Over-Voltage Protection	Setting: 15V Output Settings

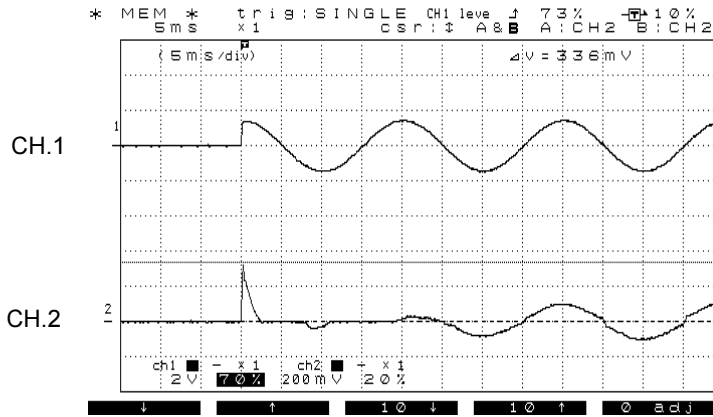
15V



Ambient Temp. [°C]	Output Voltage	
	Input Voltage 100V AC	Input Voltage 240V AC
-15	17.83	17.89
25	18.41	18.52
45	18.93	18.90
65	19.01	18.78

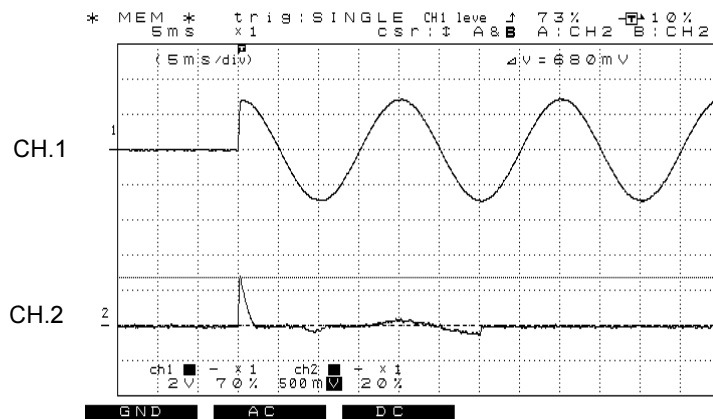
Model	OZP-170-12/15	Temperature: 25°C	Load: Rated Load
Item	Inrush Current	Setting: 15V Output Settings	

Inrush Current Waveforms



Waveform 1

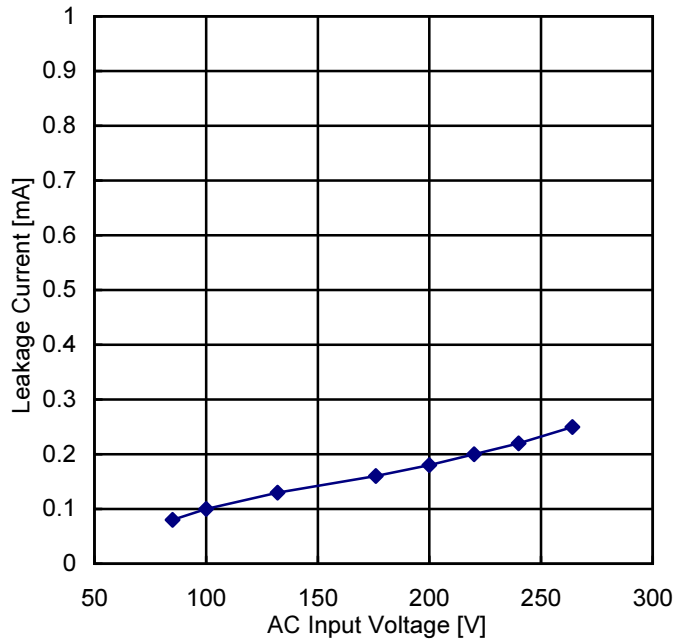
CH1	Measuring Point:	AC Input Voltage
	Range:	200V/div
CH2	Measuring Point:	AC Input Current
	Range:	10A/div
Timebase Range	5ms/div	
Conditions	Input: 100V AC Load: Rated Load	
Note: Inrush Current: 16.8A		



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: 200V AC Load: Rated Load	
Note: Inrush Current: 34.0A		

Model	OZP-170-12/15	Load: Rated Load
Item	Leakage Current	Setting: 15V Output Settings



AC Input Voltage [V]	Leakage Current [mA]
85	0.08
100	0.10
132	0.13
176	0.16
200	0.18
220	0.20
240	0.22
264	0.25