



Supplemental test data  
(参考資料)

Date of issue: Jun. 28, 2011

# Test Data

Model Number: OZ-015-5

Model Name: DC POWER SUPPLY

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

OUTPUT: 5 V 3.0A

Minimum load : 0W  
Rated load : 15W

Approved by : Makoto Urasue (QA manager)

Designed by : A. Takeda (R&D engineer)

Tested by : Kehei Sawada (Evaluation test engineer)

**Nipron Co., Ltd.**

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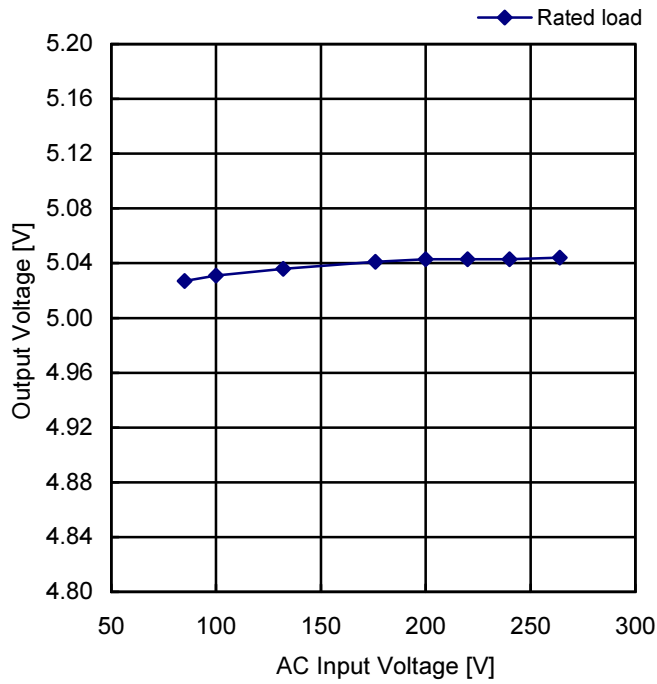
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Model	OZ-15-5	Temperature: 25°C																																					
Item	Input Current (by Load Power)																																						
		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="4">Input Current [A rms]</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>0.03</td> <td>0.03</td> <td>0.04</td> <td>0.04</td> </tr> <tr> <td>3.75</td> <td>0.13</td> <td>0.11</td> <td>0.08</td> <td>0.08</td> </tr> <tr> <td>7.5</td> <td>0.21</td> <td>0.18</td> <td>0.11</td> <td>0.11</td> </tr> <tr> <td>11.25</td> <td>0.29</td> <td>0.26</td> <td>0.15</td> <td>0.14</td> </tr> <tr> <td>15.0</td> <td>0.38</td> <td>0.33</td> <td>0.18</td> <td>0.17</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	0.03	0.03	0.04	0.04	3.75	0.13	0.11	0.08	0.08	7.5	0.21	0.18	0.11	0.11	11.25	0.29	0.26	0.15	0.14	15.0	0.38	0.33	0.18	0.17
Load Power [W]	Input Current [A rms]																																						
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Item	Efficiency																															
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AC Input Voltage [V]	50% Load	Rated Load																														
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15.0	72.01	74.56	78.10	76.91																												

Model	OZ-15-5	Temperature: 25°C
Item	Line Regulation	

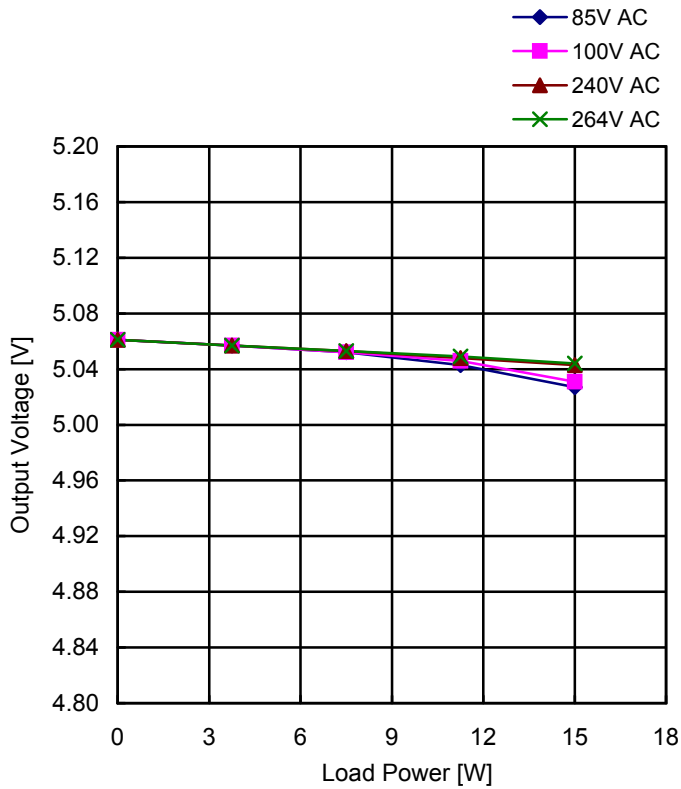
## 5V/3A



AC Input Voltage [V]	Output Voltage [V]
85	5.027
100	5.031
132	5.036
176	5.041
200	5.043
220	5.043
240	5.043
264	5.044

Model	OZ-15-5	Temperature: 25°C
Item	Load Regulation	

## 5V



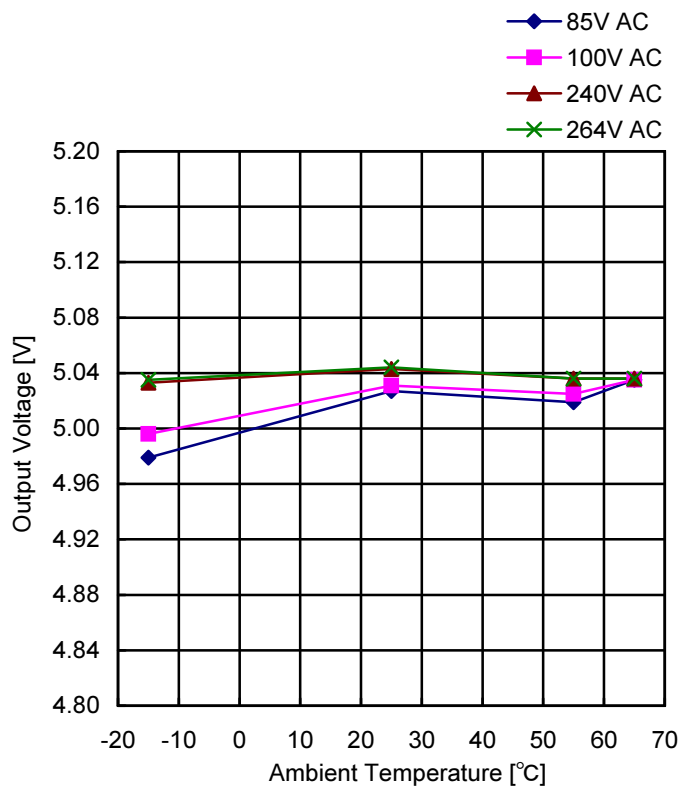
Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	5.061	5.061	5.061	5.061
3.75	5.057	5.057	5.057	5.057
7.5	5.052	5.052	5.053	5.053
11.25	5.043	5.046	5.048	5.049
15.0	5.027	5.031	5.043	5.044
-	-	-	-	-

### Load Condition

Load Power [W]	Load Current [A]
	5V
0.0	0.00
3.75	0.75
7.5	1.50
11.25	2.25
15.0	3.00
-	-

Model	OZ-15-5
Item	Ambient Temperature Drift

## 5V



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	4.979	4.996	5.033	5.035
25	5.027	5.031	5.043	5.044
55	5.019	5.025	5.036	5.036
65	5.035	5.035	5.036	5.036

### Load Condition

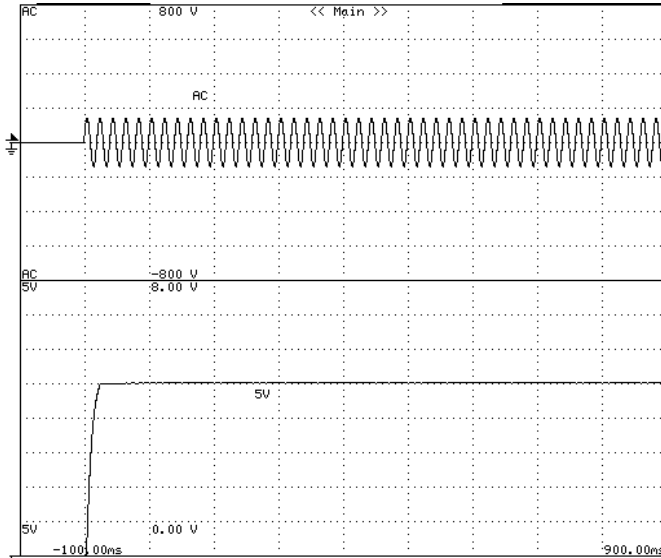
Ambient Temp. (°C)	Load Current [A]
	5V
-15	3.00
25	3.00
55	3.00
65	2.10

Model	OZ-015-5	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

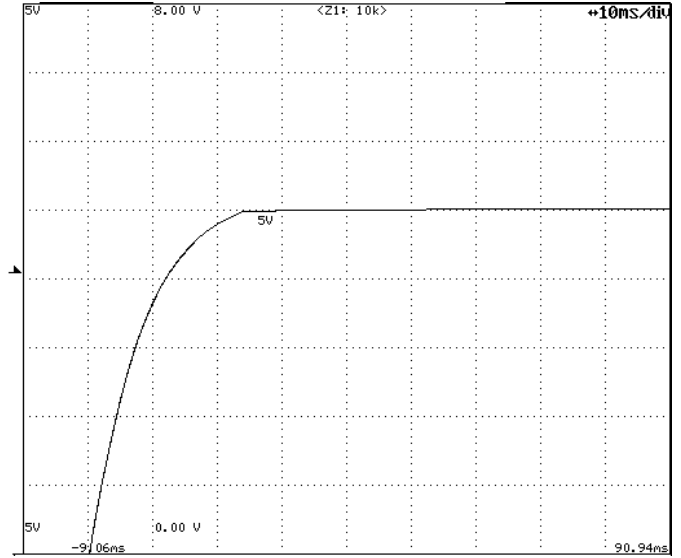
Input: 100V AC  
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 1V/div  
Timebase Range: 10ms/div



All Output Start-up Sequence

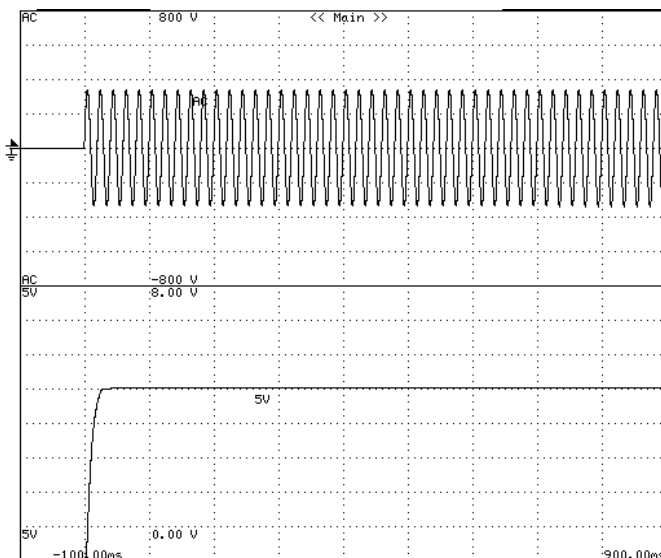


5V DC Output Rise Characteristics

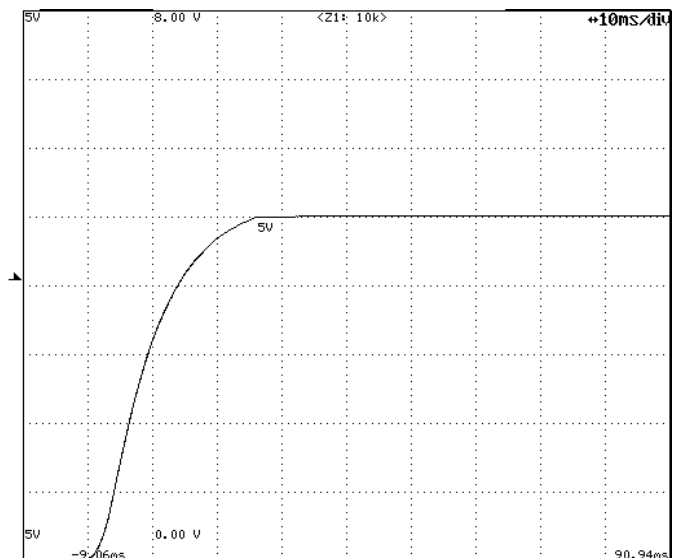
Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div

Vertical Sensitivity: 1V/div  
Timebase Range: 10ms/div



All Output Start-up Sequence



5V DC Output Rise Characteristics

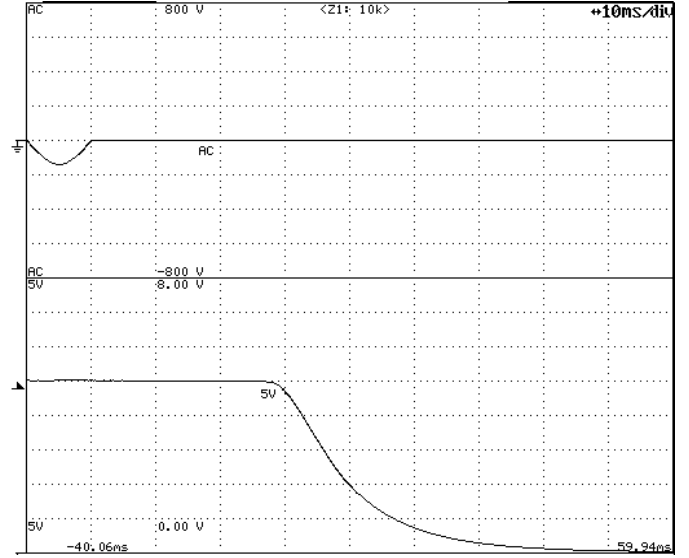
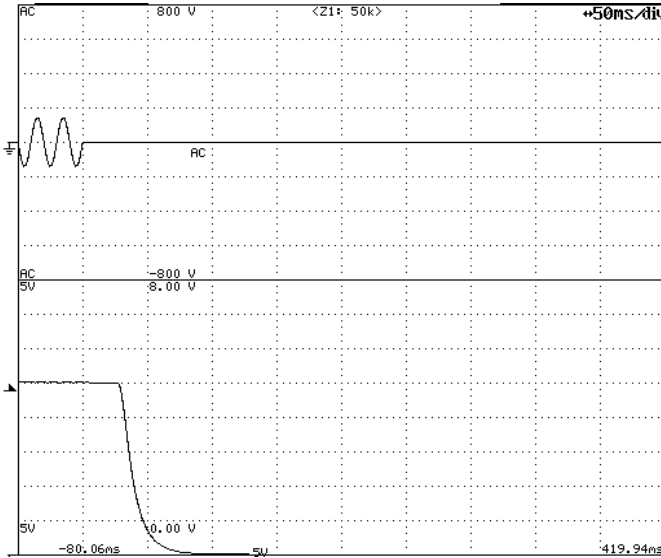


Model	OZ-015-5	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

Input: 100V AC  
Load: Rated Load

Timebase Range: 50ms/div

Timebase Range: 10ms/div



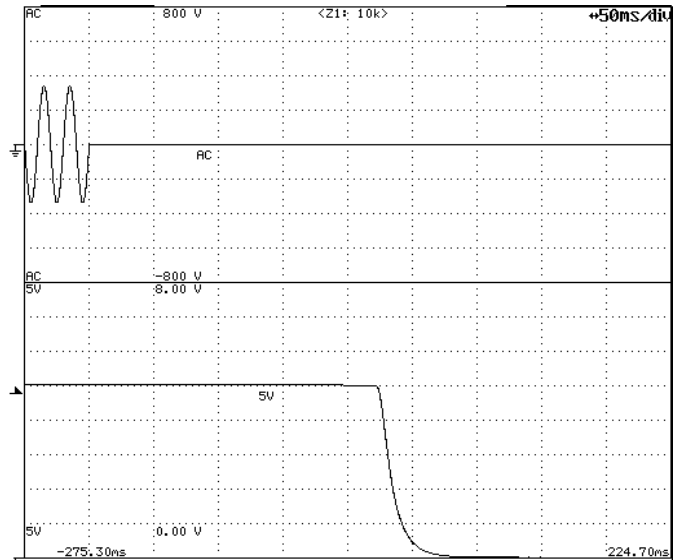
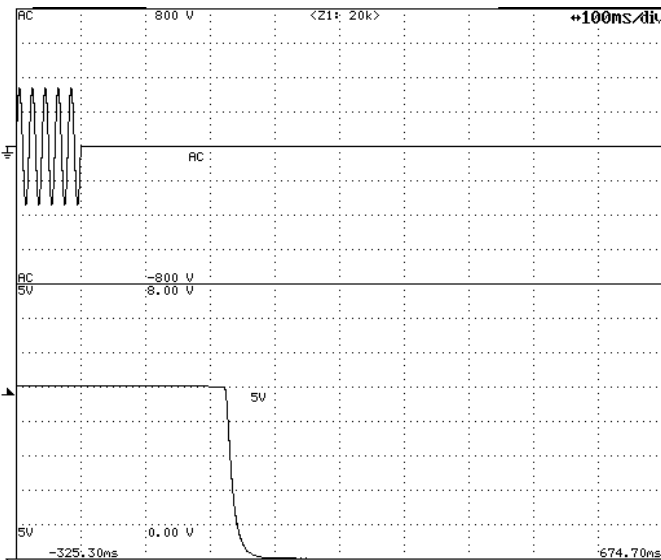
Output Fall Characteristics

Output Fall Characteristics (magnification)

Input: 240V AC  
Load: Rated Load

Timebase Range: 100ms/div

Timebase Range: 50ms/div

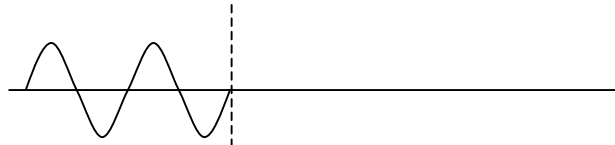


Output Fall Characteristics

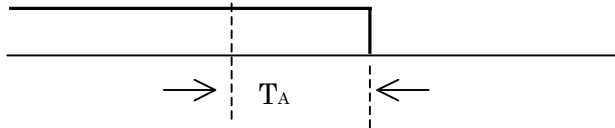
Output Fall Characteristics (magnification)

Model	OZ-015-5	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

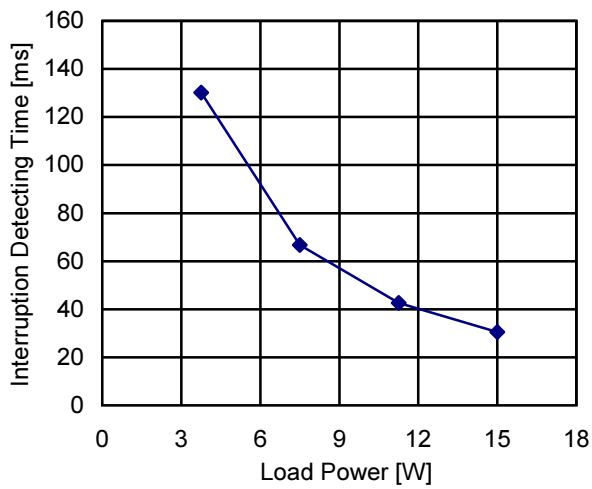
**Input Voltage**



**Output Voltage**

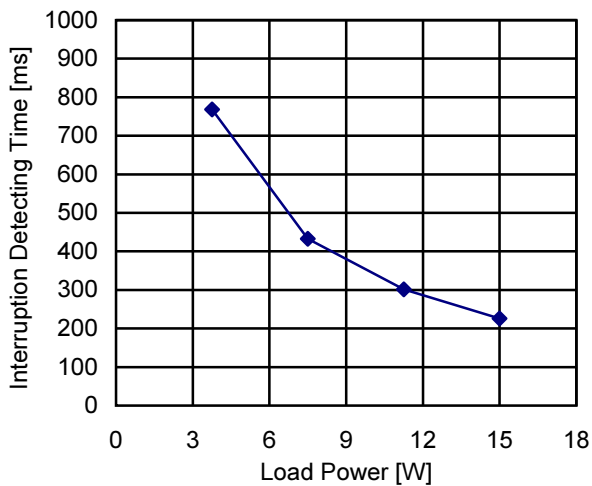


### Input Voltage:100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Output Voltage
	$T_A$
3.75	130.2
7.5	66.8
11.25	42.6
15.0	30.5

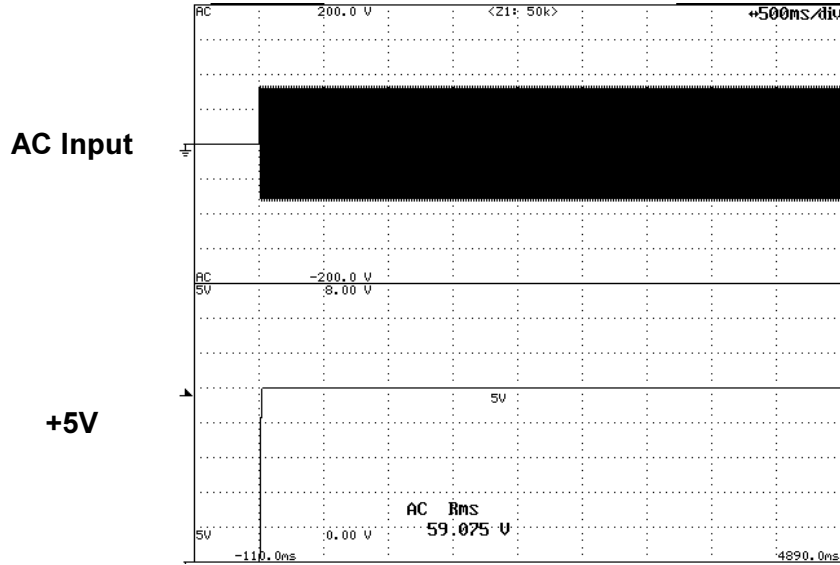
### Input Voltage:240V AC



Load Power [W]	Interruption Detecting Time [ms]
	Output Voltage
	$T_A$
3.75	768.6
7.5	432.6
11.25	301.4
15.0	226.0

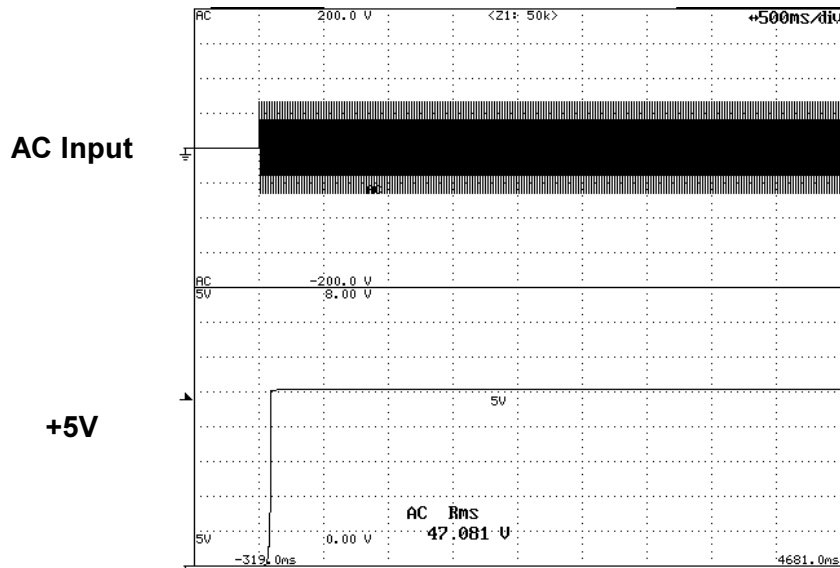
Model	OZ-015-5	Temperature: 25°C
Item	Start-Up Voltage	

**Timebase Range: 500ms/div  
Load: Rated Load**



**Start-up Voltage: 59.075V AC**

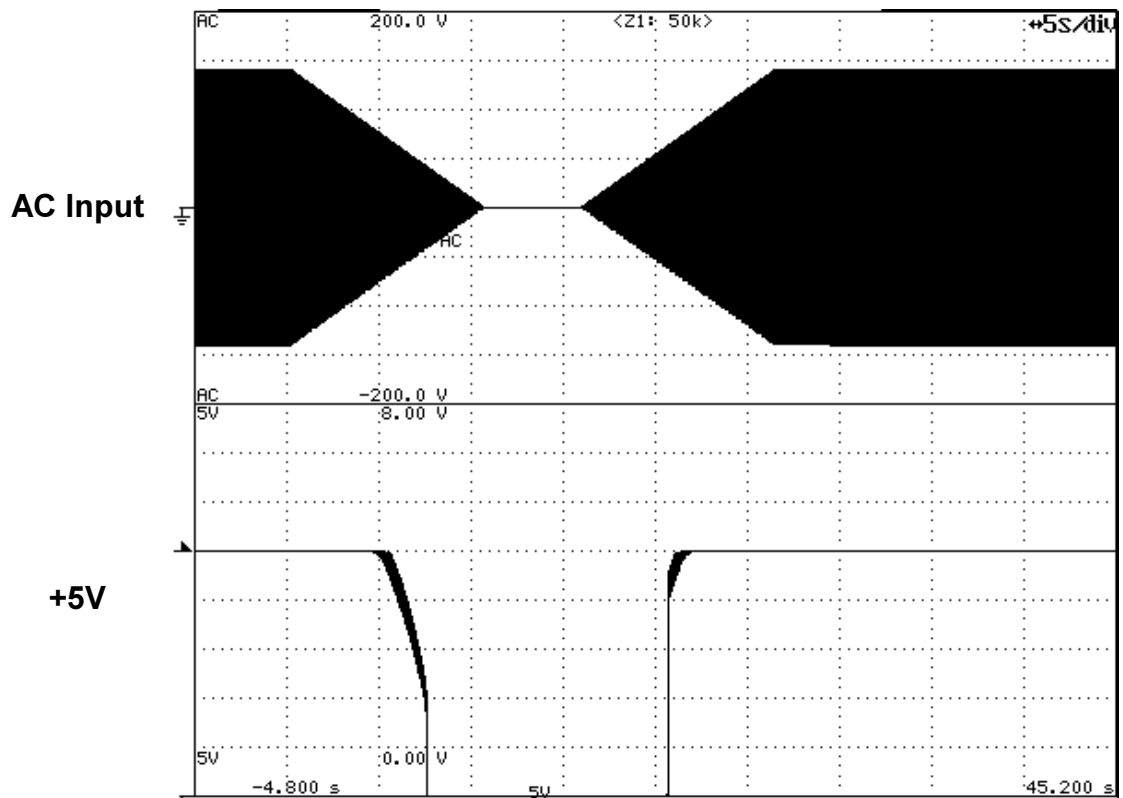
**Timebase Range: 500ms/div  
Load: Minimum Load**



**Start-up Voltage: 47.081V AC**

Model	OZ-015-5	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

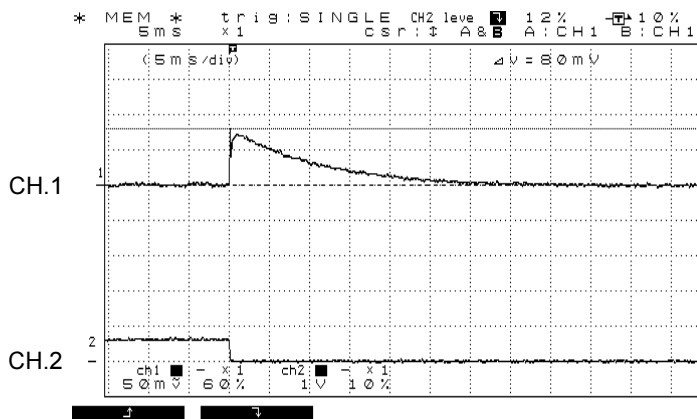
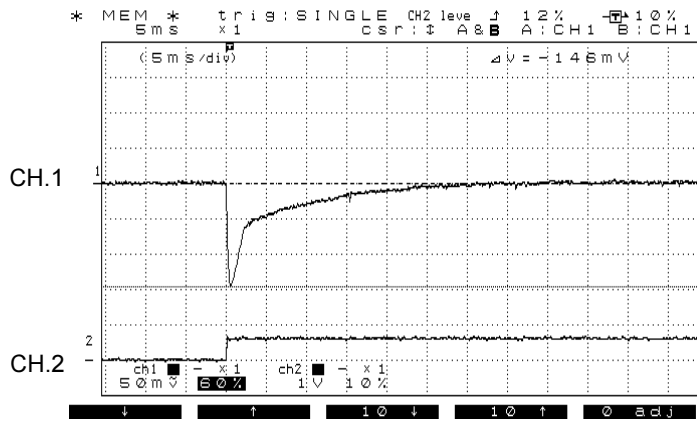
Timebase Range: 5s/div  
Load: Rated Load



Sweep Rate: 10Vave/sec

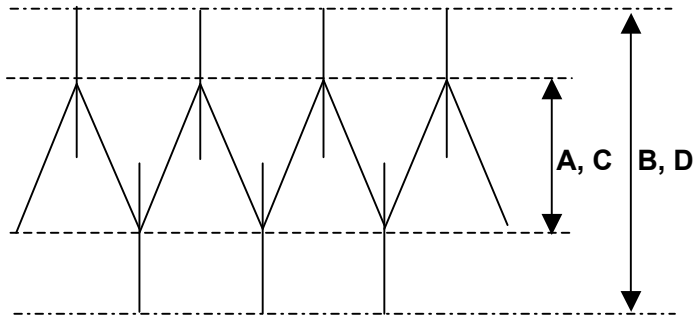
Model	OZ-015-5	Temperature: 25°C
Item	Dynamic Load Response	

## +5V DC Output Transient Response Waveforms



Waveform 1	
CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 50mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Rated Load(3A) ⇒ Minimum load(0A)	

Model	OZ-15-5	Load: Rated Load
Item	Ambient Temperature Drift	



**at 100V AC**

A: Ripple Voltage (mV<sub>P-P</sub>)

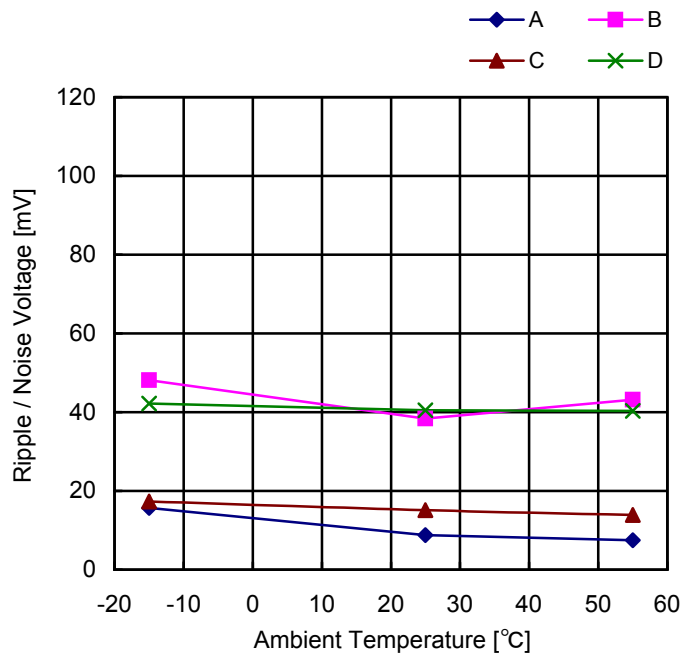
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

C: Ripple Voltage (mV<sub>P-P</sub>)

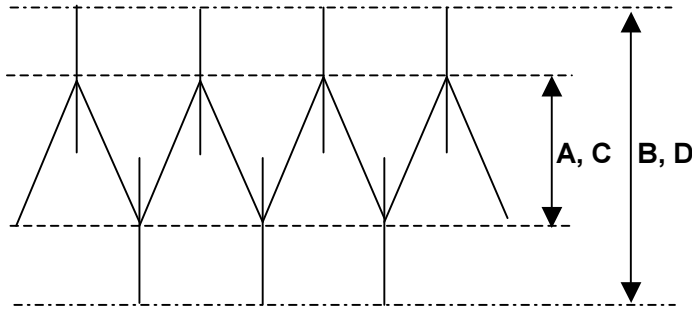
D: Noise Voltage (mV<sub>P-P</sub>)

## 5V



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	15.7	48.1	17.3	42.2
25	8.8	38.4	15.1	40.5
55	7.5	43.2	13.9	40.3

Model	OZ-15-5	Temperature: 25°C
Item	Ambient Temperature Drift	



**at 100V AC**

A: Ripple Voltage (mV<sub>P-P</sub>)

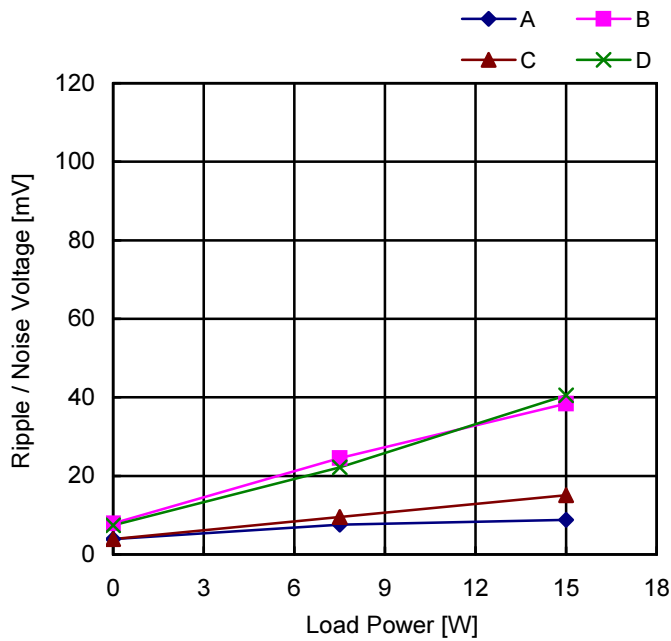
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

C: Ripple Voltage (mV<sub>P-P</sub>)

D: Noise Voltage (mV<sub>P-P</sub>)

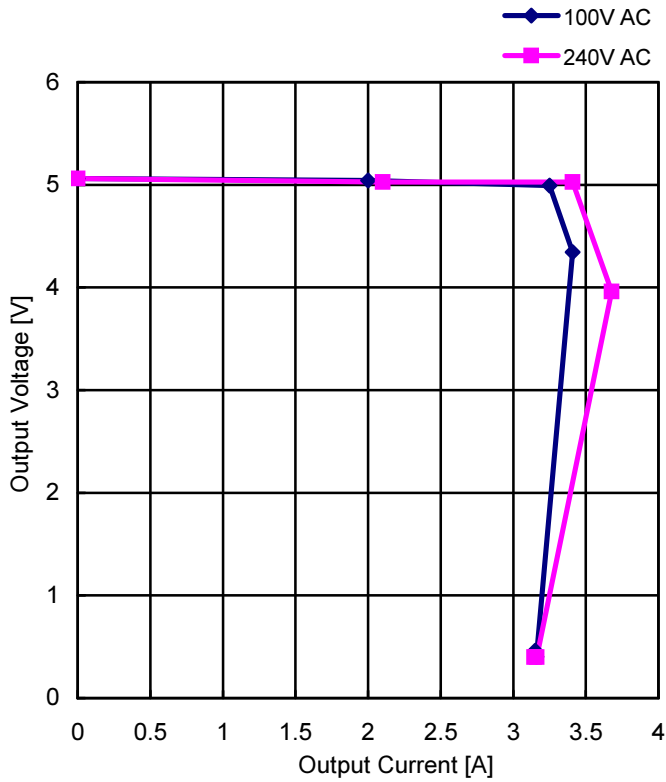
## 5V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	3.9	7.9	3.9	7.4
7.5	7.6	24.5	9.5	22.2
15.0	8.8	38.4	15.1	40.5

Model	OZ-15-5	Temperature: 25°C
Item	Over-Current Protection	

## V-I Characteristics of 5V O.C.P

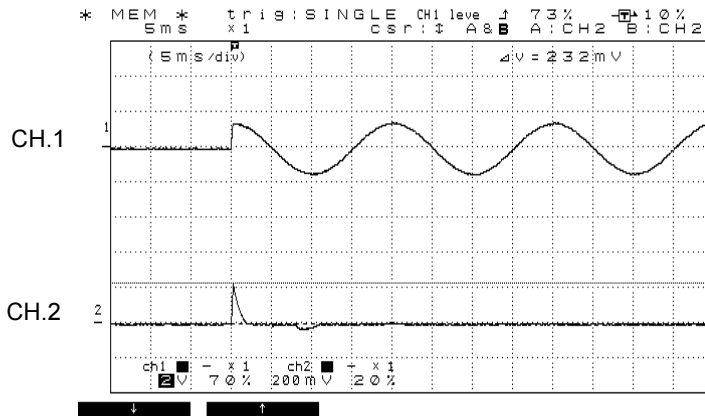


Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	5.06	0.00	5.06
2.00	5.04	2.10	5.03
3.25	4.99	3.41	5.03
3.41	4.34	3.68	3.96
3.16	0.40	3.16	0.40
3.15	0.46	3.14	0.40

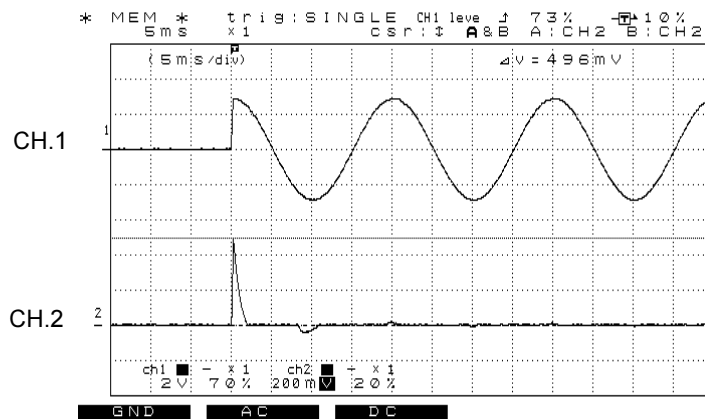


Model	OZ-015-5	Temperature: 25°C
Item	Inrush Current	Load: Rated Load

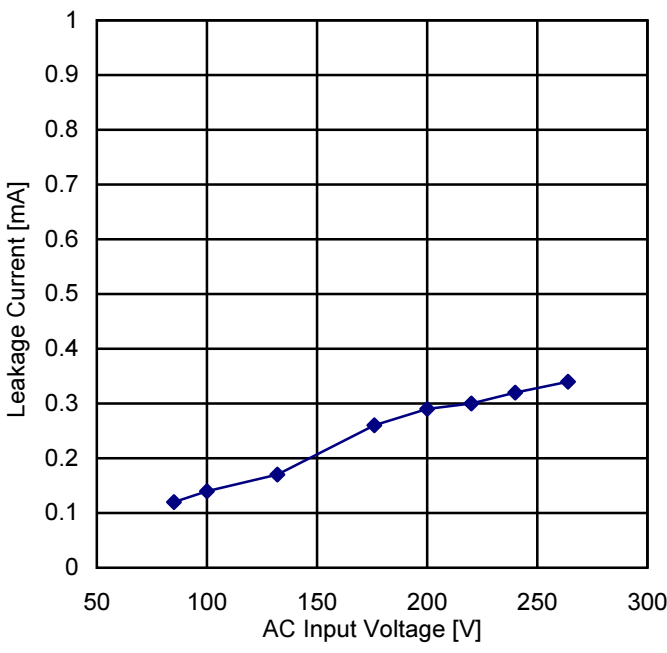
## Inrush Current Waveforms



DATA 1	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 10A/div
Temporal Axis	5ms/div
Conditions	Input: 100V AC Load: Rated Load
Note: Inrush Current: 11.6A	



DATA 2	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 10A/div
Temporal Axis	5ms/div
Conditions	Input: 200V AC Load: Rated Load
Note: Inrush Current: 24.8A	

Model	OZ-015-5	Load: Rated Load																		
Item	Leakage Current																			
		<table border="1"> <thead> <tr> <th>AC Input Voltage [V]</th> <th>Leakage Current [mA]</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>0.12</td> </tr> <tr> <td>100</td> <td>0.14</td> </tr> <tr> <td>132</td> <td>0.17</td> </tr> <tr> <td>176</td> <td>0.26</td> </tr> <tr> <td>200</td> <td>0.29</td> </tr> <tr> <td>220</td> <td>0.30</td> </tr> <tr> <td>240</td> <td>0.32</td> </tr> <tr> <td>264</td> <td>0.34</td> </tr> </tbody> </table>	AC Input Voltage [V]	Leakage Current [mA]	85	0.12	100	0.14	132	0.17	176	0.26	200	0.29	220	0.30	240	0.32	264	0.34
AC Input Voltage [V]	Leakage Current [mA]																			
85	0.12																			
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264	0.34																			