



Supplemental test data  
(参考資料)

Date of issue: Jul. 25, 2011

# Test Data

Model Number: OZ-030-3R3

Model Name: DC POWER SUPPLY

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

OUTPUT: 3.3 V 6.0A

Minimum load : 0W  
Rated load : 19.8W

Approved by : Makoto Urasue (QA manager)

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

Tested by : Kohei Sawada (Evaluation test engineer)

**Nipron Co., Ltd.**

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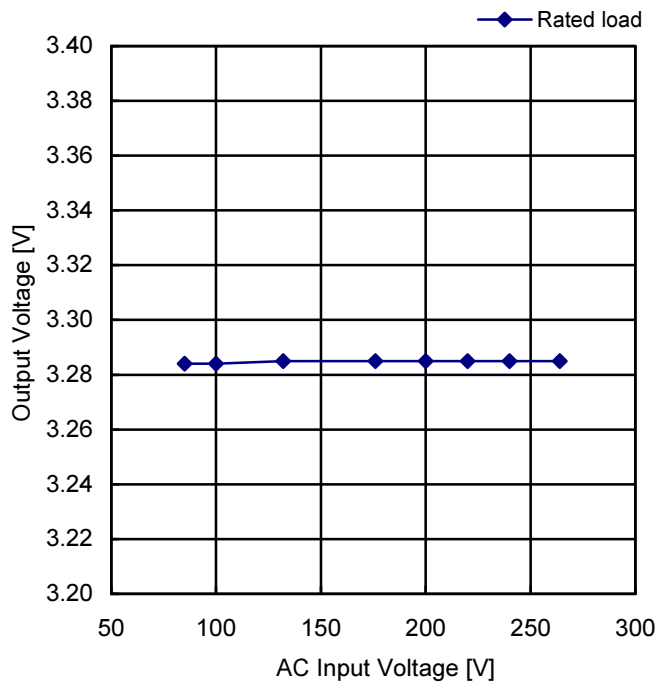
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Model	OZ-30-3R3	Temperature: 25°C																																					
Item	Input Current (by Load Power)																																						
		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="4">Input Current [A rms]</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>0.04</td> <td>0.04</td> <td>0.05</td> <td>0.05</td> </tr> <tr> <td>4.95</td> <td>0.16</td> <td>0.14</td> <td>0.11</td> <td>0.11</td> </tr> <tr> <td>9.9</td> <td>0.27</td> <td>0.24</td> <td>0.16</td> <td>0.15</td> </tr> <tr> <td>14.85</td> <td>0.37</td> <td>0.33</td> <td>0.20</td> <td>0.19</td> </tr> <tr> <td>19.8</td> <td>0.48</td> <td>0.42</td> <td>0.24</td> <td>0.23</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	0.04	0.04	0.05	0.05	4.95	0.16	0.14	0.11	0.11	9.9	0.27	0.24	0.16	0.15	14.85	0.37	0.33	0.20	0.19	19.8	0.48	0.42	0.24	0.23
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	0.04	0.04	0.05	0.05																																			
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AC Input Voltage [V]	50% Load Efficiency [%]	Rated Load Efficiency [%]																														
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Load Power [W]	Efficiency [%]																															
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9.9	75.37	75.78	65.78	64.49																												
14.85	77.45	78.21	74.31	72.83																												
19.8	75.86	77.11	75.61	74.63																												

Model	OZ-30-3R3	Temperature: 25°C
Item	Line Regulation	

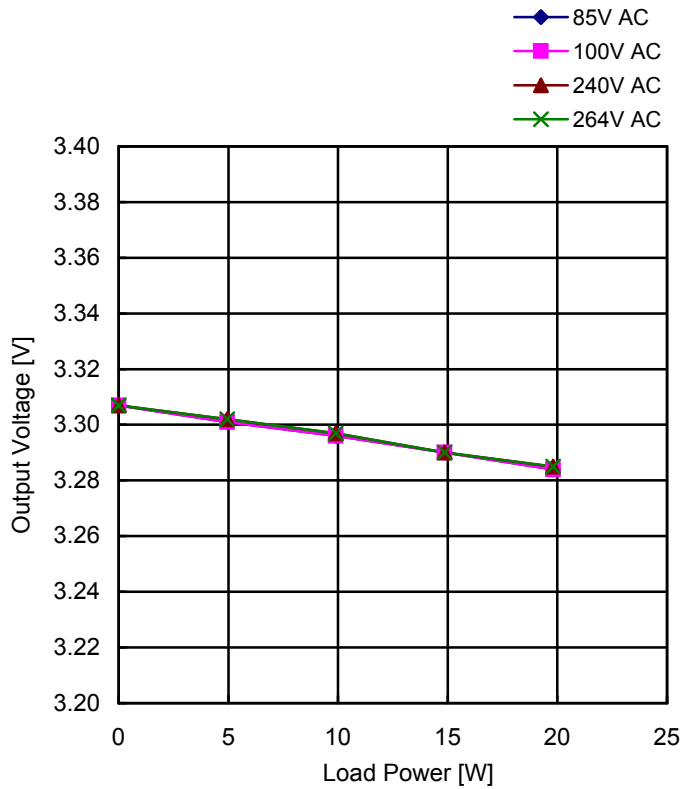
## 3.3V/6A



AC Input Voltage [V]	Output Voltage [V]
85	3.284
100	3.284
132	3.285
176	3.285
200	3.285
220	3.285
240	3.285
264	3.285

Model	OZ-30-3R3	Temperature: 25°C
Item	Load Regulation	

## 3.3V

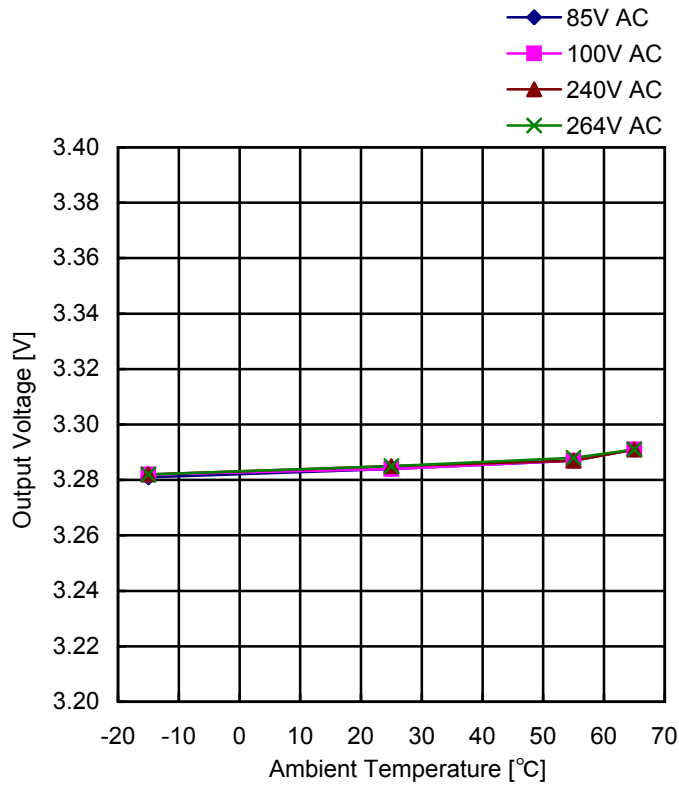


Load Power [W]	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
0.0	3.307	3.307	3.307	3.307
4.95	3.301	3.301	3.302	3.302
9.9	3.296	3.296	3.297	3.297
14.85	3.290	3.290	3.290	3.290
19.8	3.284	3.284	3.285	3.285
-	-	-	-	-

Load Power [W]	Load Condition	
	Load Current [A]	
0.0	0.00	
4.95	1.50	
9.9	3.00	
14.85	4.50	
19.8	6.00	
-	-	

Model	OZ-30-3R3
Item	Ambient Temperature Drift

## 3.3V



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	3.281	3.282	3.282	3.282
25	3.284	3.284	3.285	3.285
55	3.287	3.287	3.287	3.288
65	3.291	3.291	3.291	3.291

### Load Condition

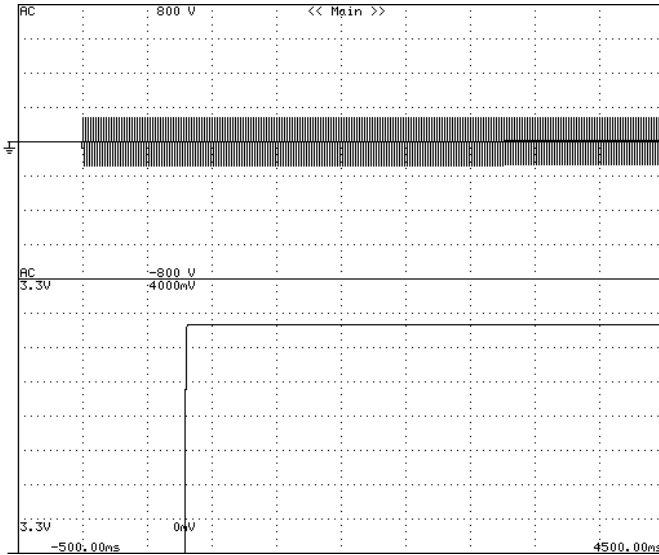
Ambient Temp. (°C)	Load Current [A]
	3.3V
-15	6.00
25	6.00
55	6.00
65	4.20

Model	OZ-030-3R3	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

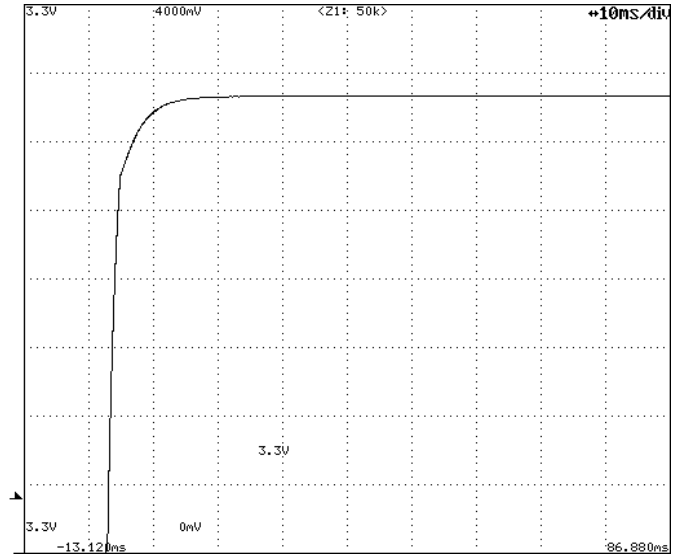
Input: 100V AC  
Load: Rated Load

Timebase Range: 500ms/div

Vertical Sensitivity: 0.5V/div  
Timebase Range: 10ms/div



All Output Start-up Sequence

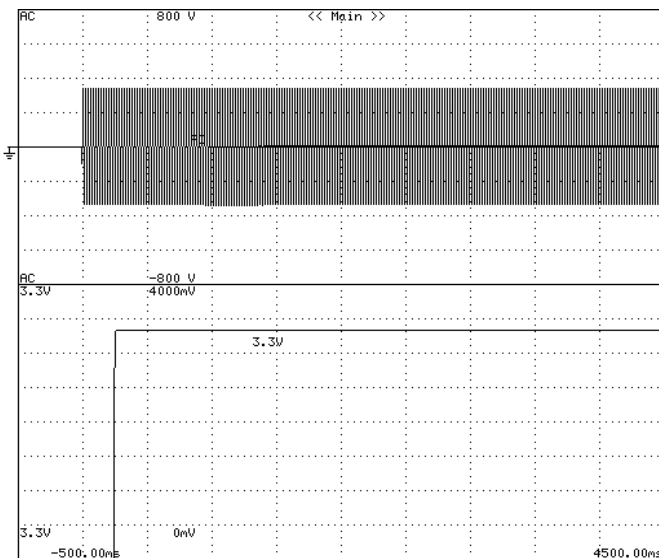


3.3V DC Output Rise Characteristics

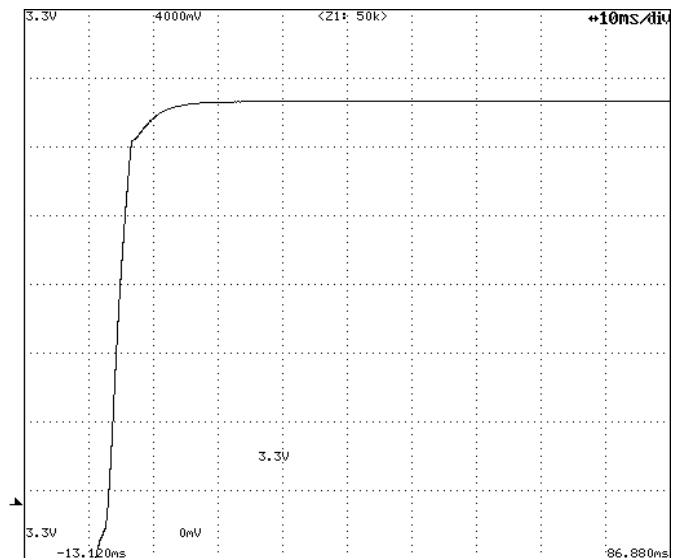
Input: 240V AC  
Load: Rated Load

Timebase Range: 500ms/div

Vertical Sensitivity: 0.5V/div  
Timebase Range: 10ms/div



All Output Start-up Sequence



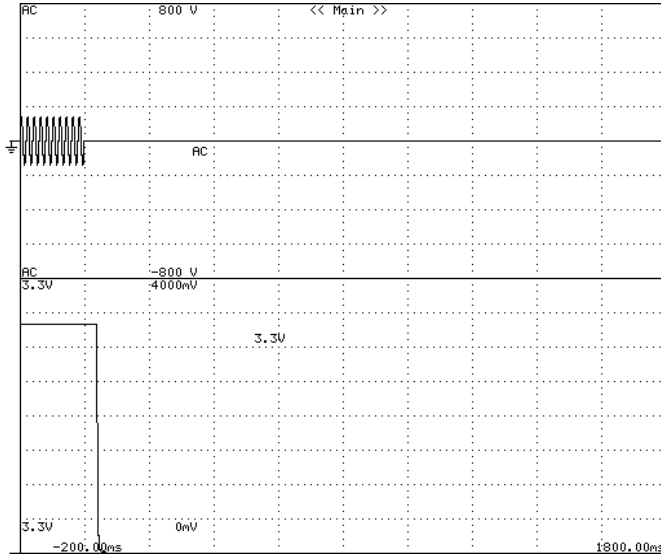
3.3V DC Output Rise Characteristics



Model	OZ-030-3R3	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

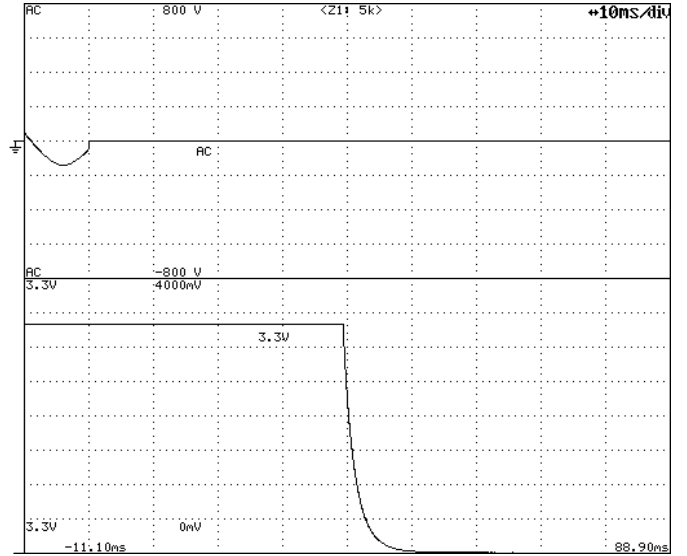
Input: 100V AC  
Load: Rated Load

**Timebase Range: 200ms/div**



Output Fall Characteristics

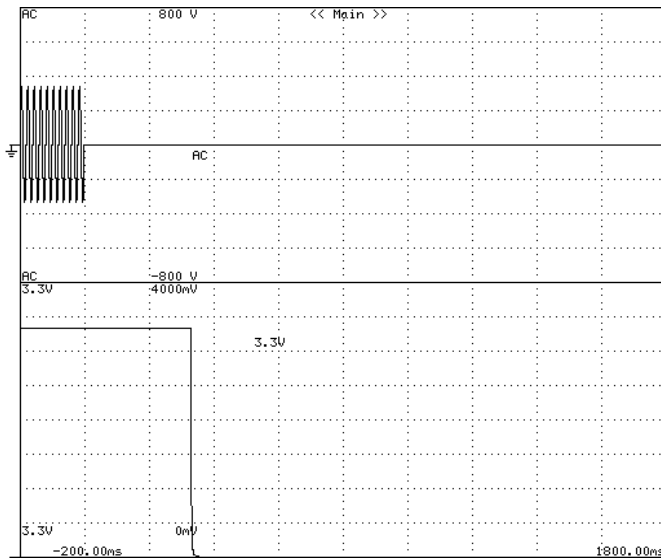
**Timebase Range: 10ms/div**



Output Fall Characteristics (magnification)

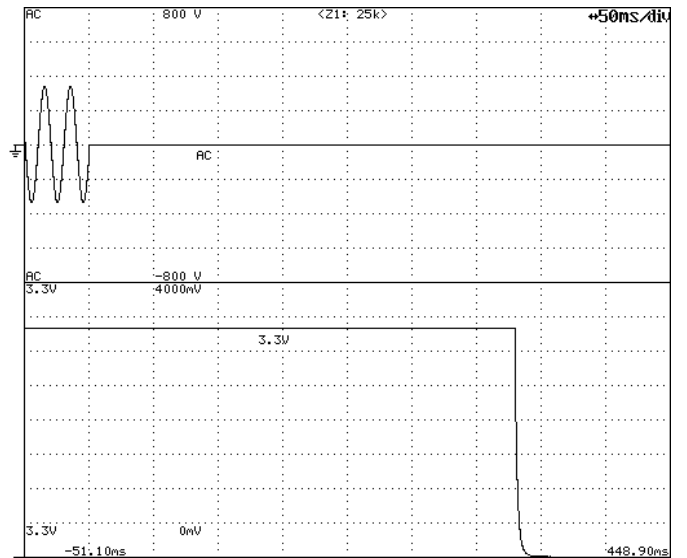
Input: 240V AC  
Load: Rated Load

**Timebase Range: 200ms/div**



Output Fall Characteristics

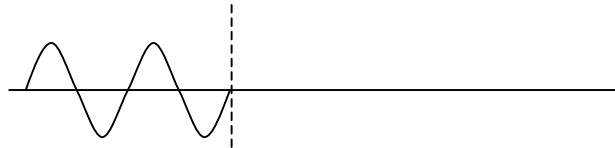
**Timebase Range: 50ms/div**



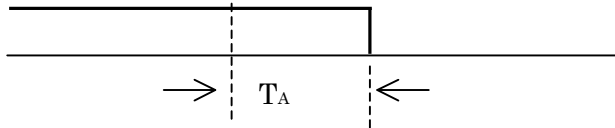
Output Fall Characteristics (magnification)

Model	OZ-030-3R3	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

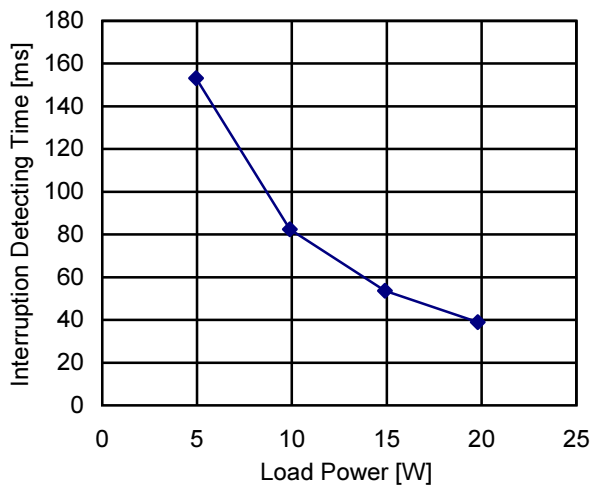
**Input Voltage**



**Output Voltage**

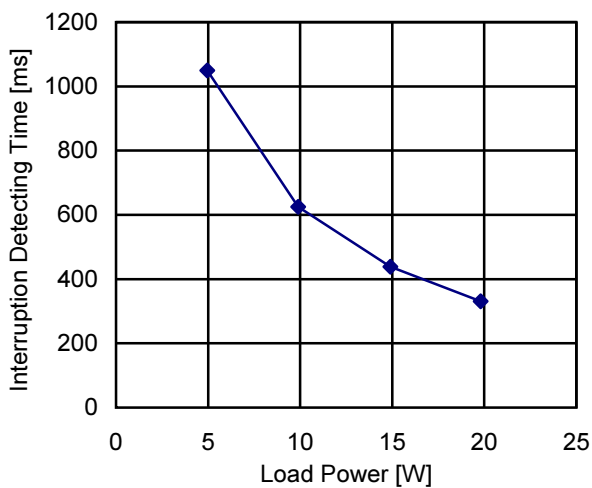


### Input Voltage: 100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Output Voltage
	T <sub>A</sub>
4.95	153.2
9.9	82.4
14.9	53.7
19.8	38.9

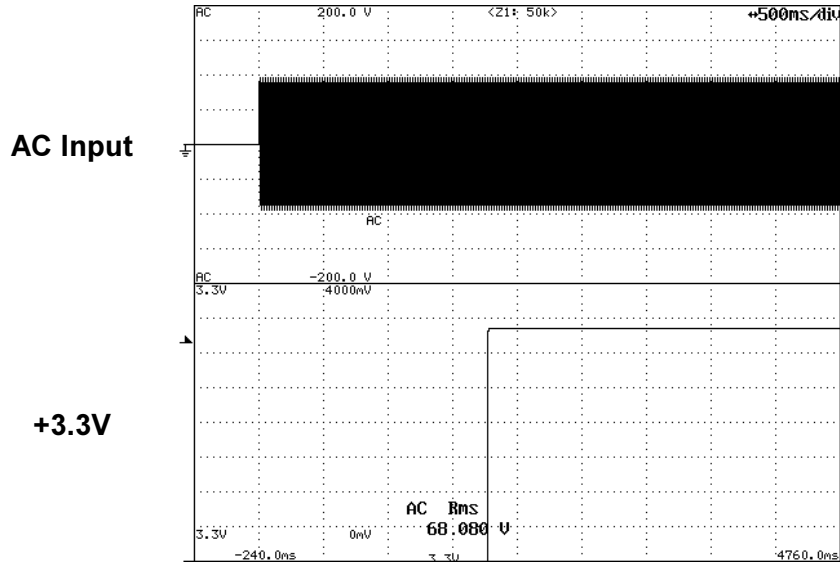
### Input Voltage: 240V AC



Load Power [W]	Interruption Detecting Time [ms]
	Output Voltage
	T <sub>A</sub>
4.95	1049.2
9.9	625.4
14.9	438.4
19.8	330.8

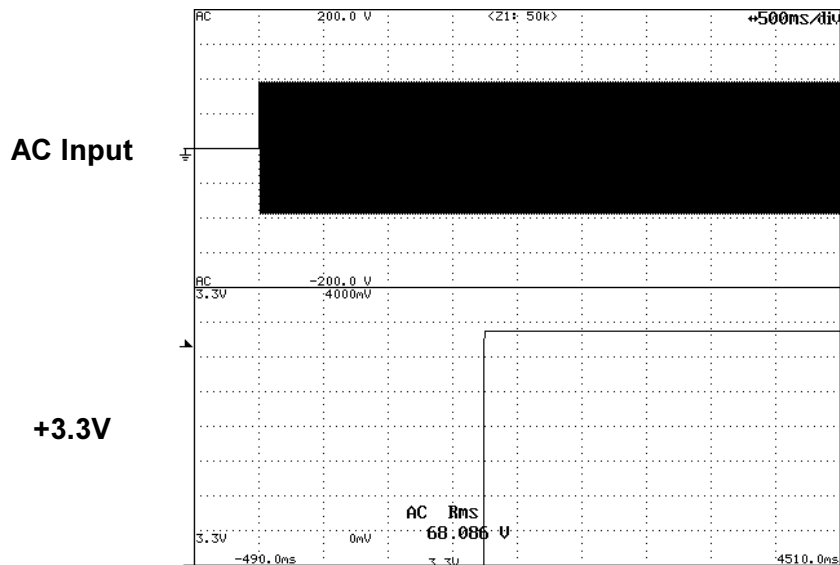
Model	OZ-030-3R3	Temperature: 25°C
Item	Start-Up Voltage	

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



**Start-up Voltage: 68.080V AC**

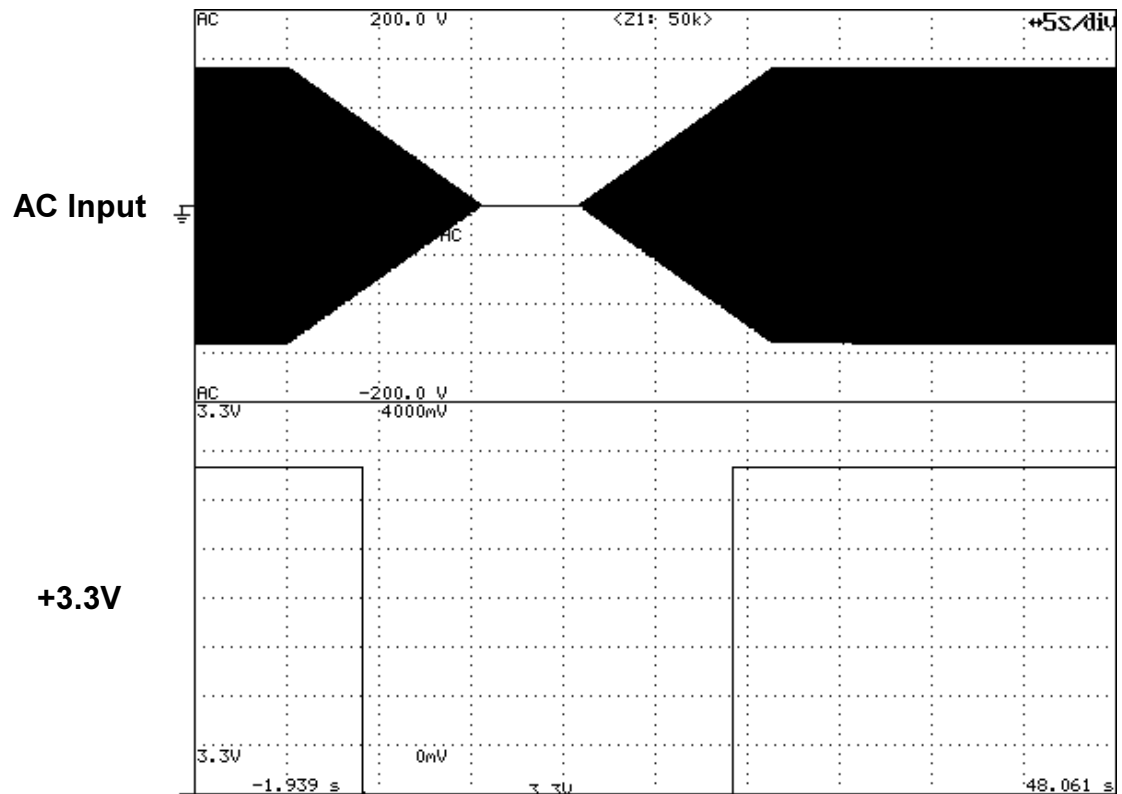
**Timebase Range: 500ms/div  
Load: Minimum Load**



**Start-up Voltage: 68.086V AC**

Model	OZ-030-3R3	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

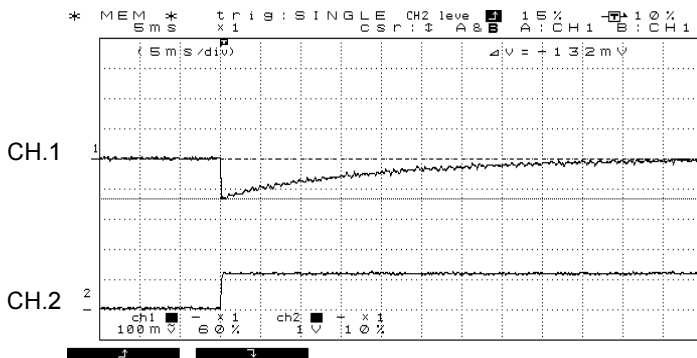
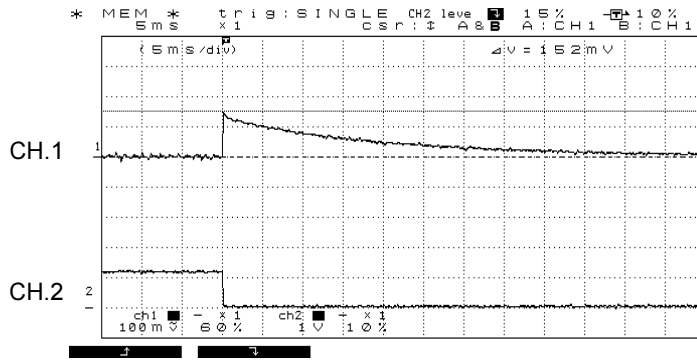
Timebase Range: 5s/div  
Load: Rated Load



Sweep Rate: 10Vave/sec

Model	OZ-030-3R3	Temperature: 25°C
Item	Dynamic Load Response	

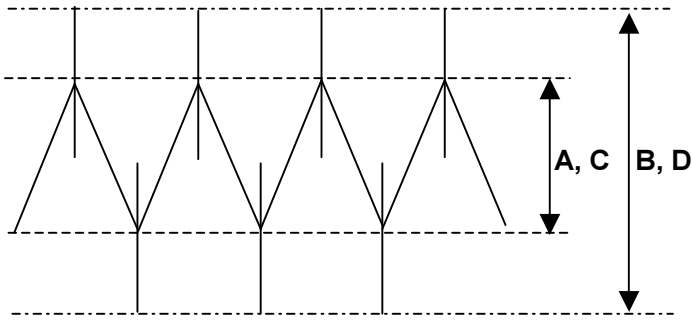
## +3.3V DC Output Transient Response Waveforms



### Waveform 1

CH1	Measuring Point: DC Output Voltage
	Vertical Sensitivity: 100mV/div
CH2	Measuring Point: DC Output Current
	Vertical Sensitivity: 5A/div
Timebase Range	5ms/div
Condition	Input: 100V AC
Note: Rated Load(6A) $\Rightarrow$ Minimum load(0A)	

Model	OZ-30-3R3	Load: Rated Load
Item	Ambient Temperature Drift	



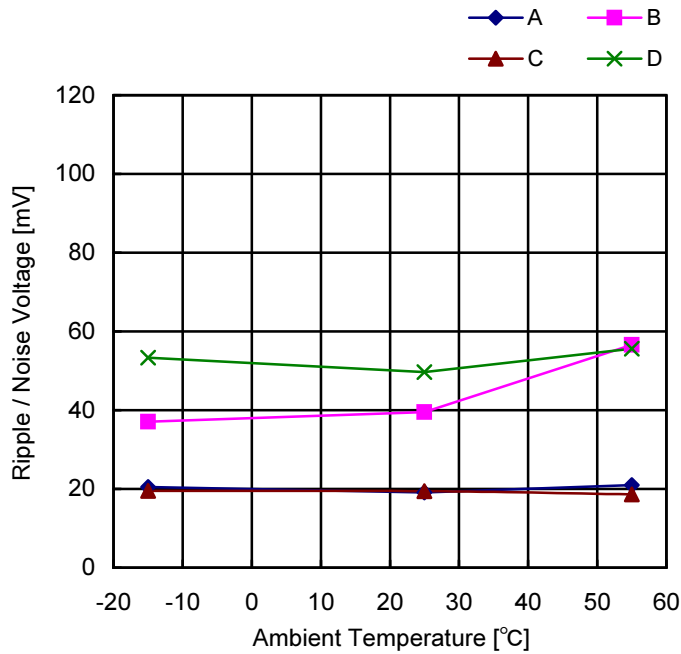
**at 100V AC**

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

**at 240V AC**

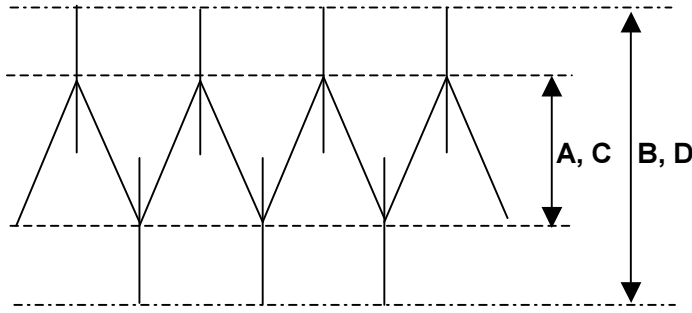
C: Ripple Voltage (mV<sub>P-P</sub>)  
D: Noise Voltage (mV<sub>P-P</sub>)

### 3.3V



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	20.5	37.1	19.5	53.3
25	19.1	39.5	19.4	49.7
55	21.0	56.6	18.6	55.6

Model	OZ-30-3R3	Temperature: 25°C
Item	Ambient Temperature Drift	



**at 100V AC**

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

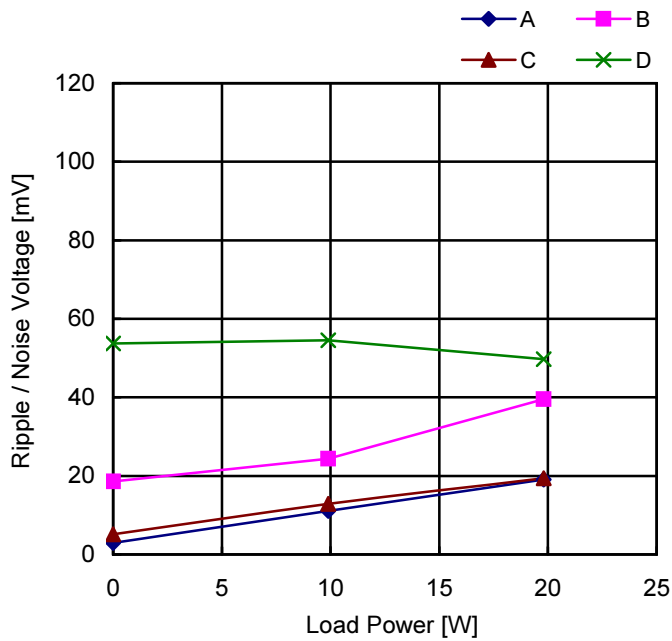
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

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

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

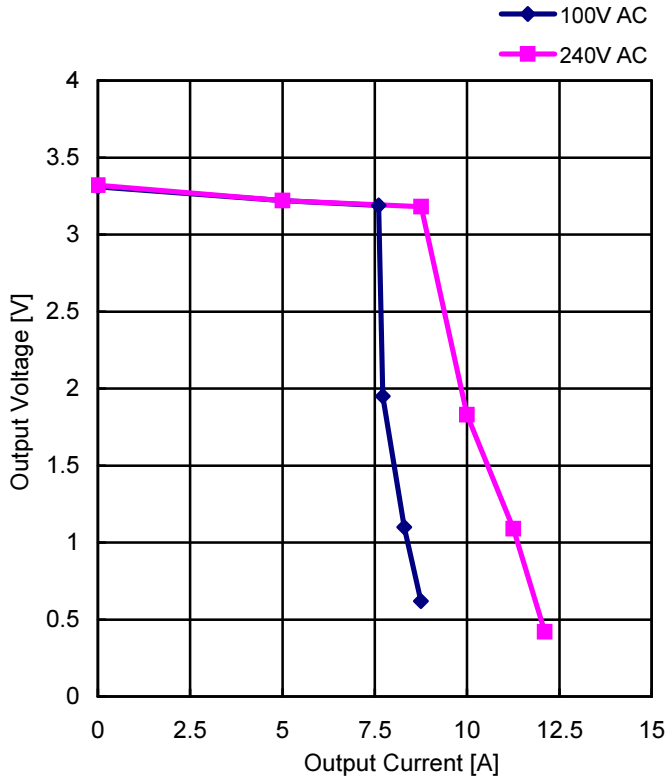
### 3.3V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	2.9	18.6	5.2	53.7
9.9	11.1	24.4	12.9	54.5
19.8	19.1	39.5	19.4	49.7

Model	OZ-30-3R3	Temperature: 25°C
Item	Over-Current Protection	

## V-I Characteristics of 3.3V O.C.P

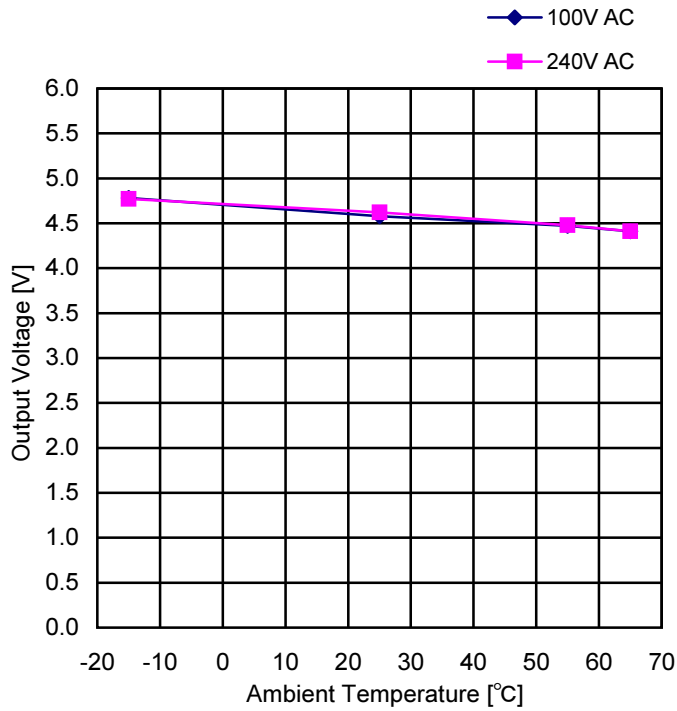


Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	3.31	0.00	3.32
5.00	3.22	5.00	3.22
7.60	3.19	8.76	3.18
7.72	1.95	10.00	1.83
8.30	1.10	11.25	1.09
8.75	0.62	12.10	0.42



Model	OZ-030-3R3	Load: Minimum Load
Item	Over-Voltage Protection	

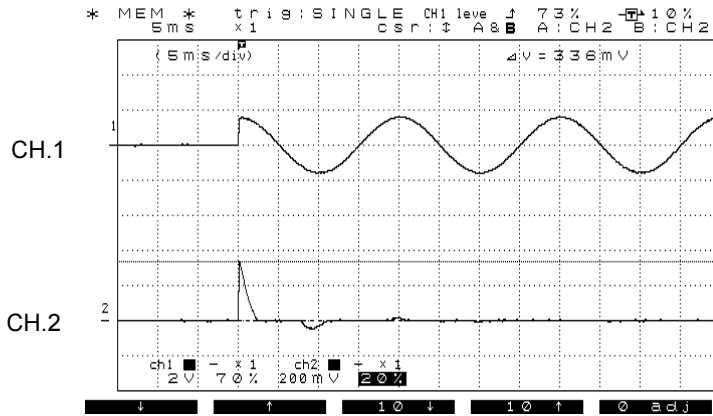
**+3.3V**



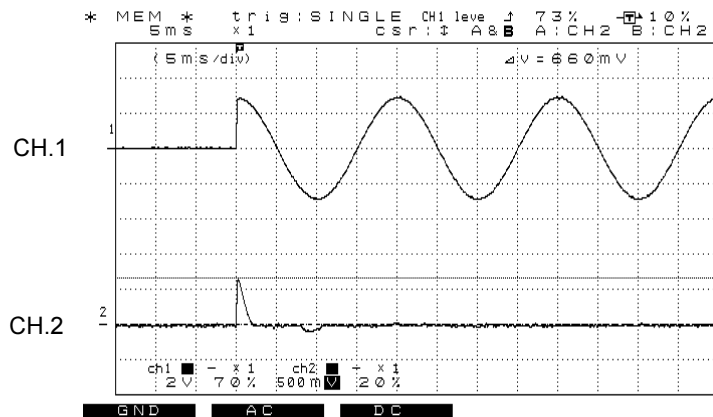
Ambient Temp. [°C]	Output Voltage	
	100V AC	240V AC
-15	4.78	4.77
25	4.58	4.62
55	4.47	4.48
65	4.41	4.41

Model	OZ-030-3R3	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: 16.8A	



DATA 2	
CH1	Measuring Point: AC Input Voltage
	Range: 200V/div
CH2	Measuring Point: AC Input Current
	Range: 25A/div
Temporal Axis	5ms/div
Conditions	Input: 200V AC Load: Rated Load
Note: Inrush Current: 33.0A	

Model	OZ-030-3R3	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>0.15</td> </tr> <tr> <td>132</td> <td>0.19</td> </tr> <tr> <td>176</td> <td>0.25</td> </tr> <tr> <td>200</td> <td>0.29</td> </tr> <tr> <td>220</td> <td>0.32</td> </tr> <tr> <td>240</td> <td>0.35</td> </tr> <tr> <td>264</td> <td>0.38</td> </tr> </tbody> </table>	AC Input Voltage [V]	Leakage Current [mA]	85	0.12	100	0.15	132	0.19	176	0.25	200	0.29	220	0.32	240	0.35	264	0.38
AC Input Voltage [V]	Leakage Current [mA]																			
85	0.12																			
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