



Supplemental test data  
(参考資料)

Date of issue: Jul. 25, 2011

# Test Data

Model Number: OZ-030-15

Model Name: DC POWER SUPPLY

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

OUTPUT: 15 V 2.0A

Minimum load : 0W  
Rated load : 30W

Approved by : Makoto Urasue (QA manager)

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

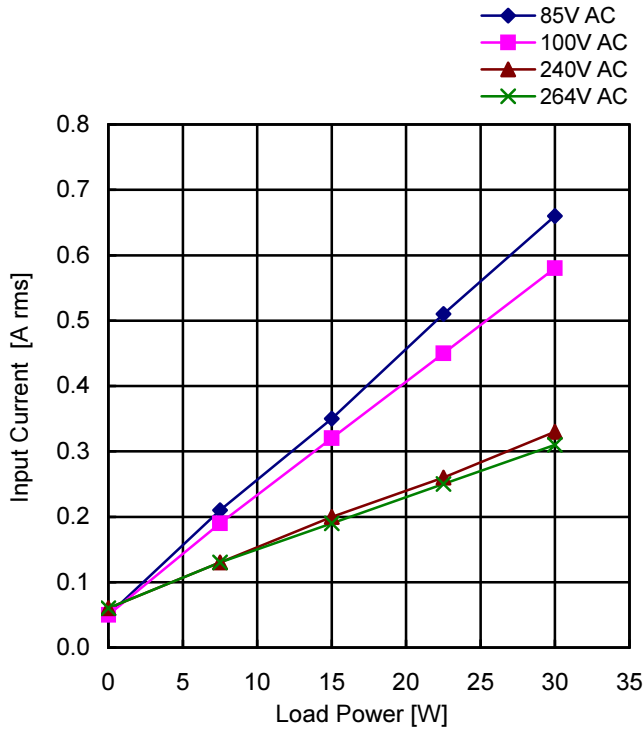
Tested by : Keiichi Sawada (Evaluation test engineer)

**Nipron Co., Ltd.**

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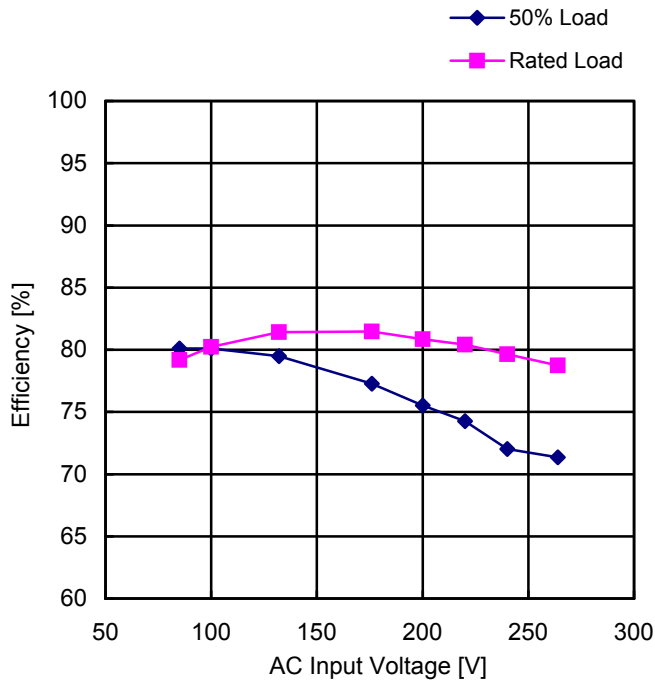
Model	OZ-30-15	Temperature: 25°C
Item	Input Current (by Load Power)	



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	0.05	0.05	0.06	0.06
7.5	0.21	0.19	0.13	0.13
15.0	0.35	0.32	0.20	0.19
22.5	0.51	0.45	0.26	0.25
30.0	0.66	0.58	0.33	0.31

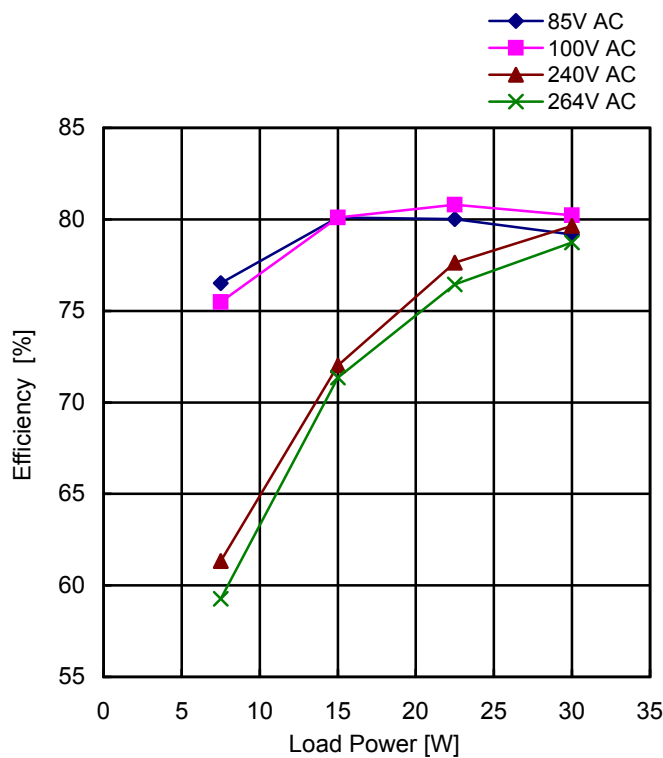
Model	OZ-30-15	Temperature: 25°C
Item	Efficiency	

■ Efficiency(by Input Voltage)



AC Input Voltage [V]	Efficiency [%]	
	50% Load	Rated Load
85	80.10	79.18
100	80.10	80.23
132	79.49	81.42
176	77.27	81.46
200	75.51	80.84
220	74.25	80.40
240	72.02	79.65
264	71.35	78.74

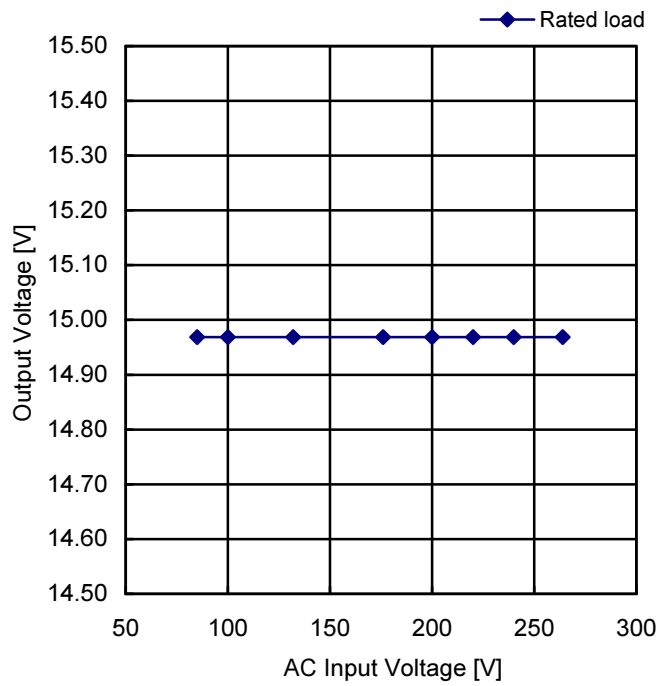
■ Efficiency(by Load Power)



Load Power [W]	Efficiency [%]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
7.5	76.52	75.49	61.34	59.27
15.0	80.10	80.10	72.02	71.35
22.5	80.02	80.80	77.64	76.44
30.0	79.18	80.23	79.65	78.74

Model	OZ-30-15	Temperature: 25°C
Item	Line Regulation	

## 15V/2A

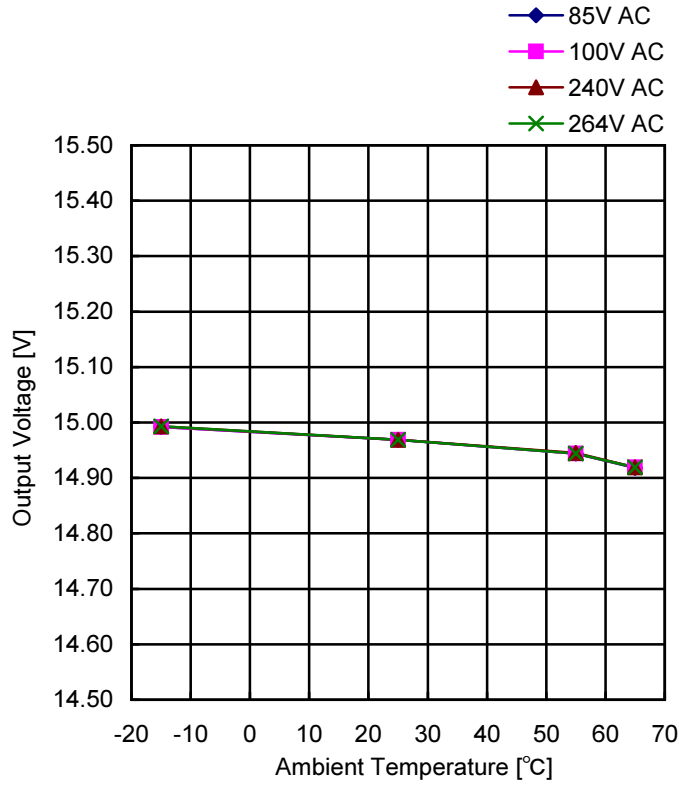


AC Input Voltage [V]	Output Voltage [V]
85	14.969
100	14.969
132	14.969
176	14.969
200	14.969
220	14.969
240	14.969
264	14.969

Model	OZ-30-15	Temperature: 25°C																																																																	
Item	Load Regulation																																																																		
<p><b>15V</b></p> <p>Legend:</p> <ul style="list-style-type: none"> <li>85V AC</li> <li>100V AC</li> <li>240V AC</li> <li>264V AC</li> </ul>		<table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</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>0.0</td> <td>14.974</td> <td>14.974</td> <td>14.974</td> <td>14.973</td> </tr> <tr> <td>7.5</td> <td>14.971</td> <td>14.972</td> <td>14.972</td> <td>14.972</td> </tr> <tr> <td>15.0</td> <td>14.971</td> <td>14.971</td> <td>14.971</td> <td>14.971</td> </tr> <tr> <td>22.5</td> <td>14.970</td> <td>14.970</td> <td>14.970</td> <td>14.970</td> </tr> <tr> <td>30.0</td> <td>14.969</td> <td>14.969</td> <td>14.969</td> <td>14.969</td> </tr> <tr> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Load Power [W]</th> <th colspan="2">Load Condition</th> </tr> <tr> <th colspan="2">Load Current [A]</th> </tr> </thead> <tbody> <tr> <td></td> <td colspan="2">15V</td> </tr> <tr> <td>0.0</td> <td colspan="2">0.00</td> </tr> <tr> <td>7.5</td> <td colspan="2">0.50</td> </tr> <tr> <td>15.0</td> <td colspan="2">1.00</td> </tr> <tr> <td>22.5</td> <td colspan="2">1.50</td> </tr> <tr> <td>30.0</td> <td colspan="2">2.00</td> </tr> <tr> <td>-</td> <td colspan="2">-</td> </tr> </tbody> </table>	Load Power [W]	Output Voltage [V]				Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC	0.0	14.974	14.974	14.974	14.973	7.5	14.971	14.972	14.972	14.972	15.0	14.971	14.971	14.971	14.971	22.5	14.970	14.970	14.970	14.970	30.0	14.969	14.969	14.969	14.969	-	-	-	-	-	Load Power [W]	Load Condition		Load Current [A]			15V		0.0	0.00		7.5	0.50		15.0	1.00		22.5	1.50		30.0	2.00		-	-	
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Model	OZ-30-15
Item	Ambient Temperature Drift

## 15V



Ambient Temp. (°C)	Output Voltage [V]			
	Input Voltage 85V AC	Input Voltage 100V AC	Input Voltage 240V AC	Input Voltage 264V AC
-15	14.992	14.992	14.993	14.993
25	14.969	14.969	14.969	14.969
55	14.944	14.944	14.945	14.944
65	14.918	14.919	14.919	14.919

### Load Condition

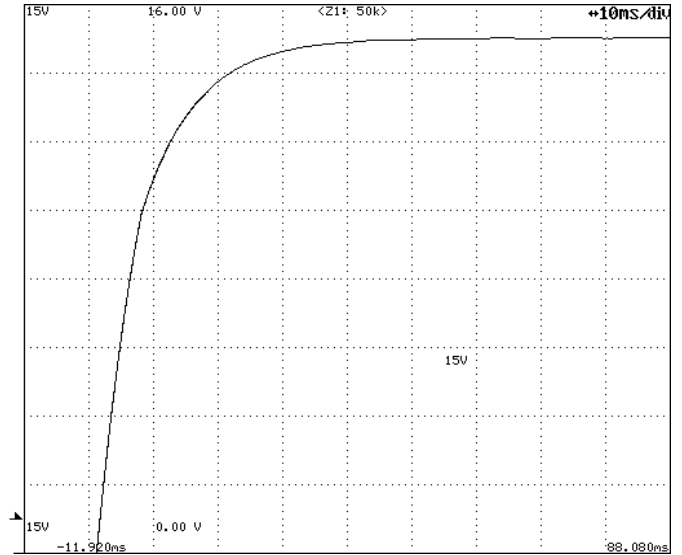
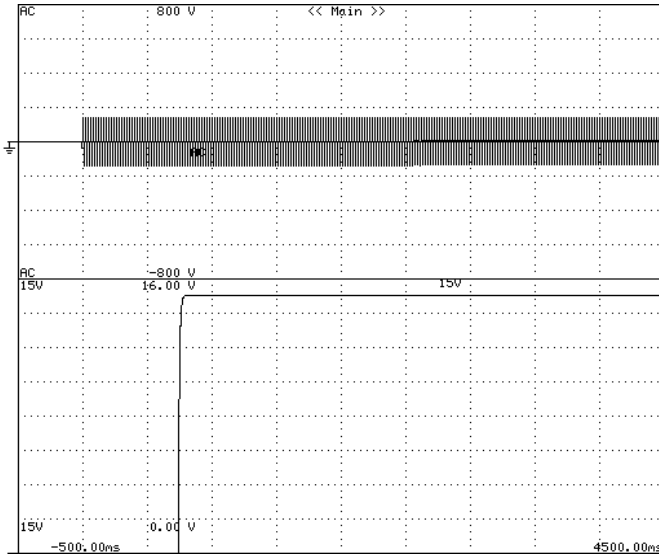
Ambient Temp. (°C)	Load Current [A]
	15V
-15	2.00
25	2.00
55	2.00
65	1.40

Model	OZ-030-15	Temperature: 25°C
Item	Output Rise Characteristics (at AC Power ON)	

Input: 100V AC  
Load: Rated Load

Timebase Range: 500ms/div

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



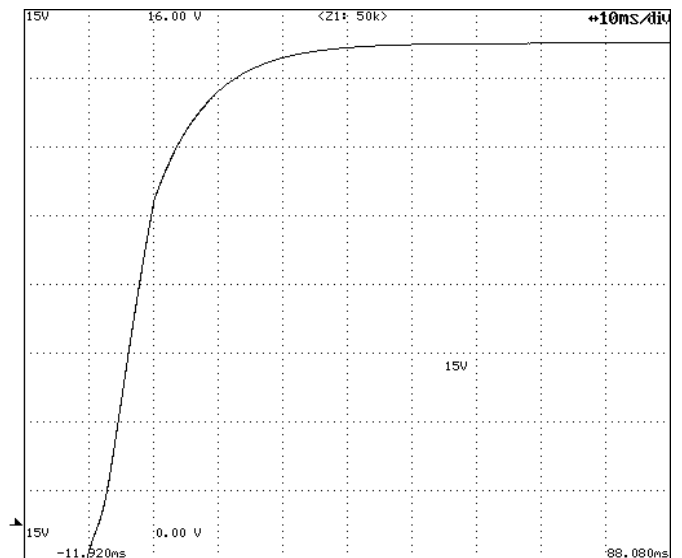
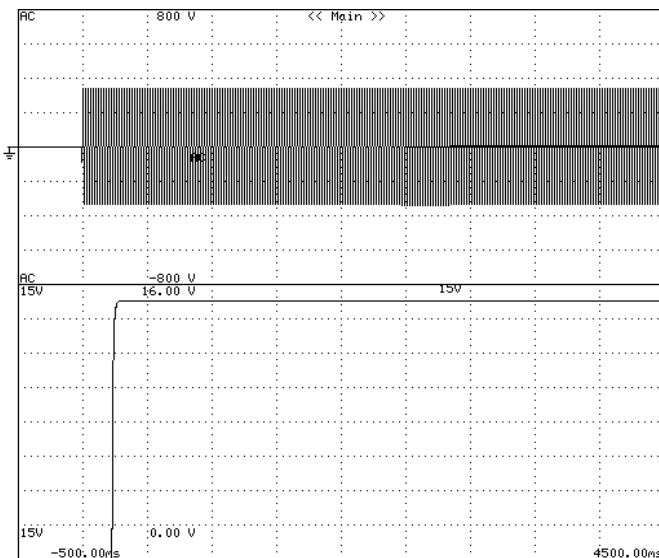
All Output Start-up Sequence

15V DC Output Rise Characteristics

Input: 240V AC  
Load: Rated Load

Timebase Range: 500ms/div

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



All Output Start-up Sequence

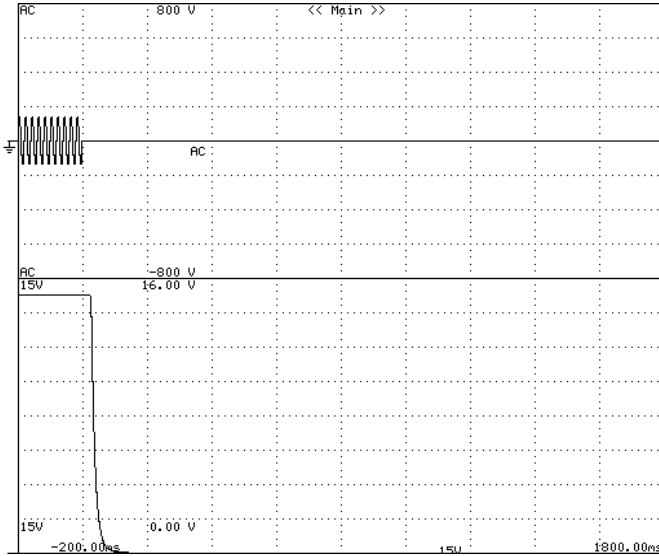
15V DC Output Rise Characteristics



Model	OZ-030-15	Temperature: 25°C
Item	Output Fall Characteristics (at AC Power OFF)	

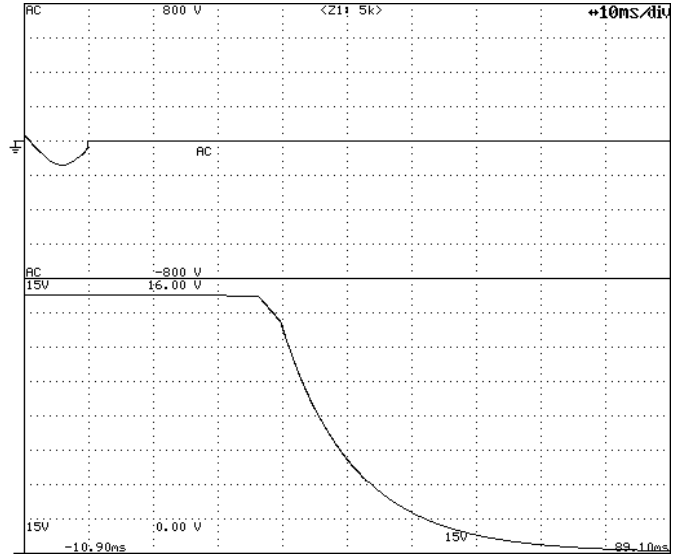
Input: 100V AC  
Load: Rated Load

Timebase Range: 200ms/div



Output Fall Characteristics

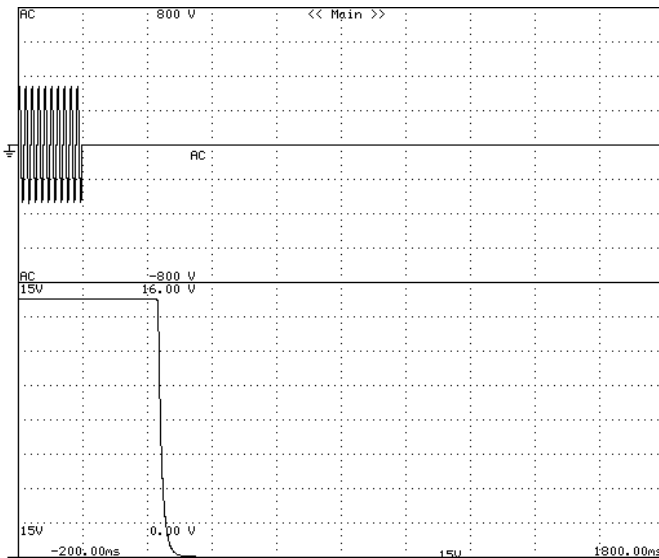
Timebase Range: 10ms/div



Output Fall Characteristics (magnification)

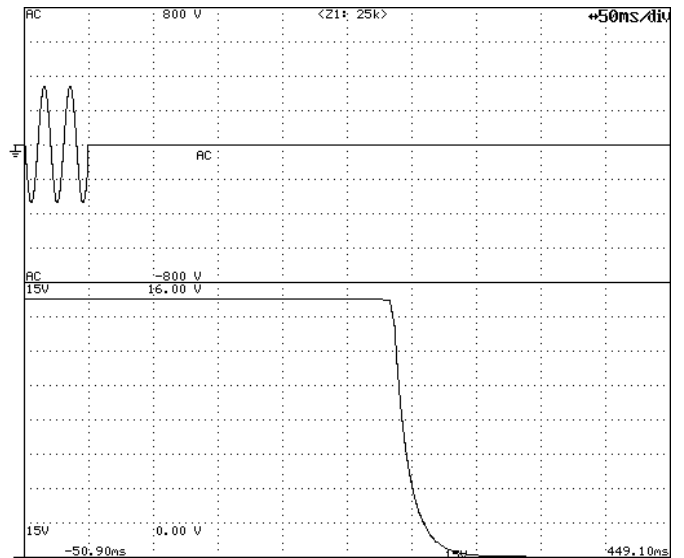
Input: 240V AC  
Load: Rated Load

Timebase Range: 200ms/div



Output Fall Characteristics

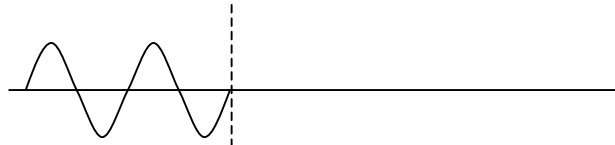
Timebase Range: 50ms/div



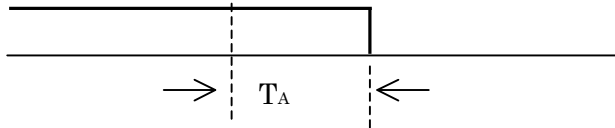
Output Fall Characteristics (magnification)

Model	OZ-030-15	Temperature: 25°C
Item	Instantaneous Interruption Compensation (by Load Power)	

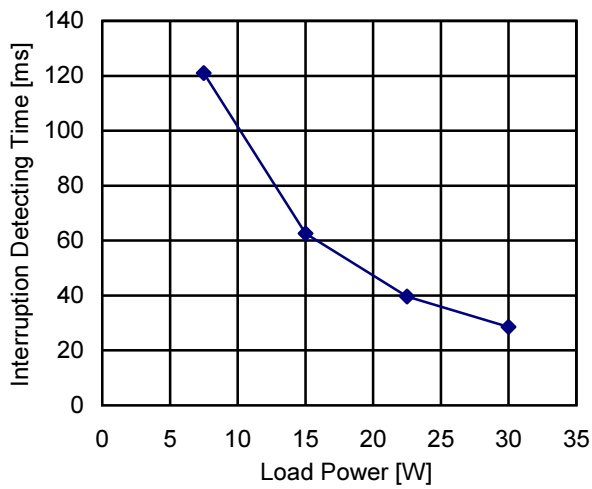
**Input Voltage**



**Output Voltage**

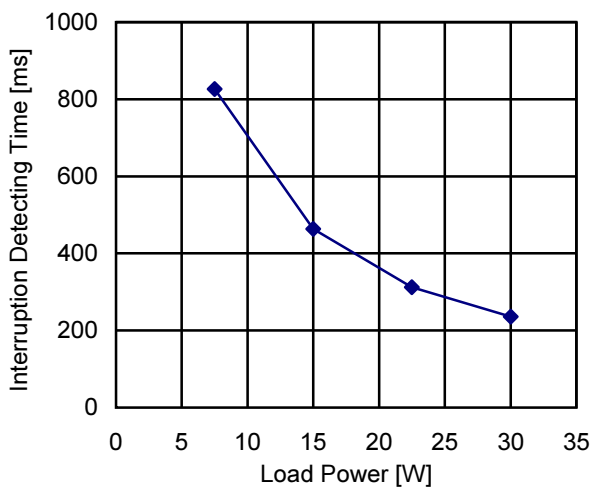


### Input Voltage:100V AC



Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	T <sub>A</sub>
7.5	121.0
15.0	62.6
22.5	39.6
30.0	28.6

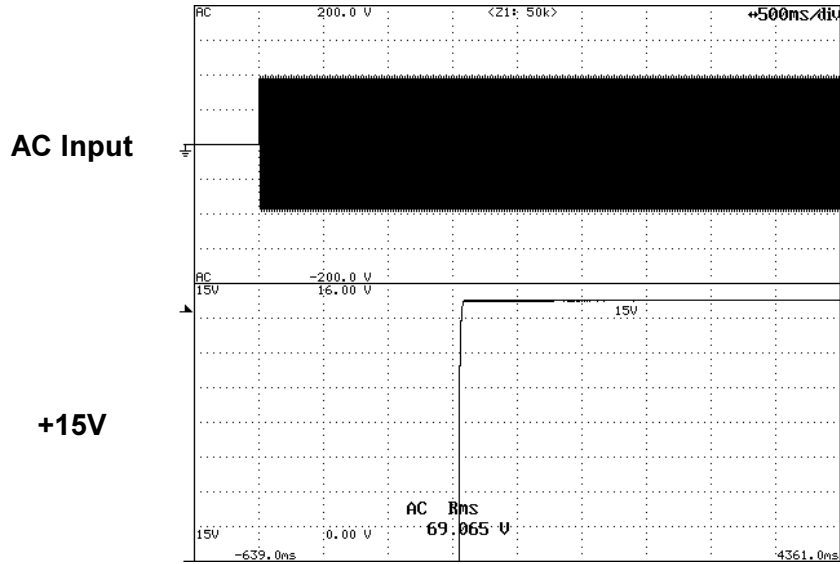
### Input Voltage:240V AC



Load Power [W]	Interruption Detecting Time [ms]
	Ouput Voltage
	T <sub>A</sub>
7.5	826.2
15.0	463.3
22.5	312.5
30.0	235.8

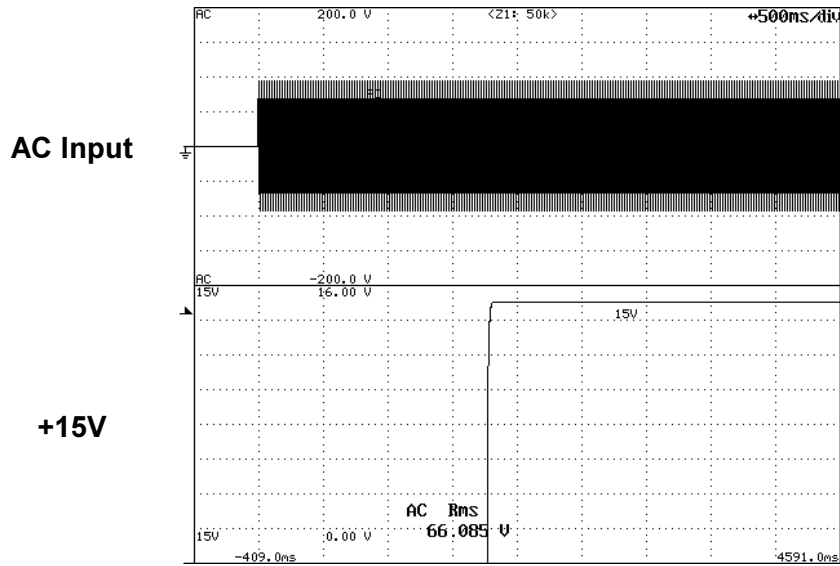
Model	OZ-030-15	Temperature: 25°C
Item	Start-Up Voltage	

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



**Start-up Voltage: 69.1V AC**

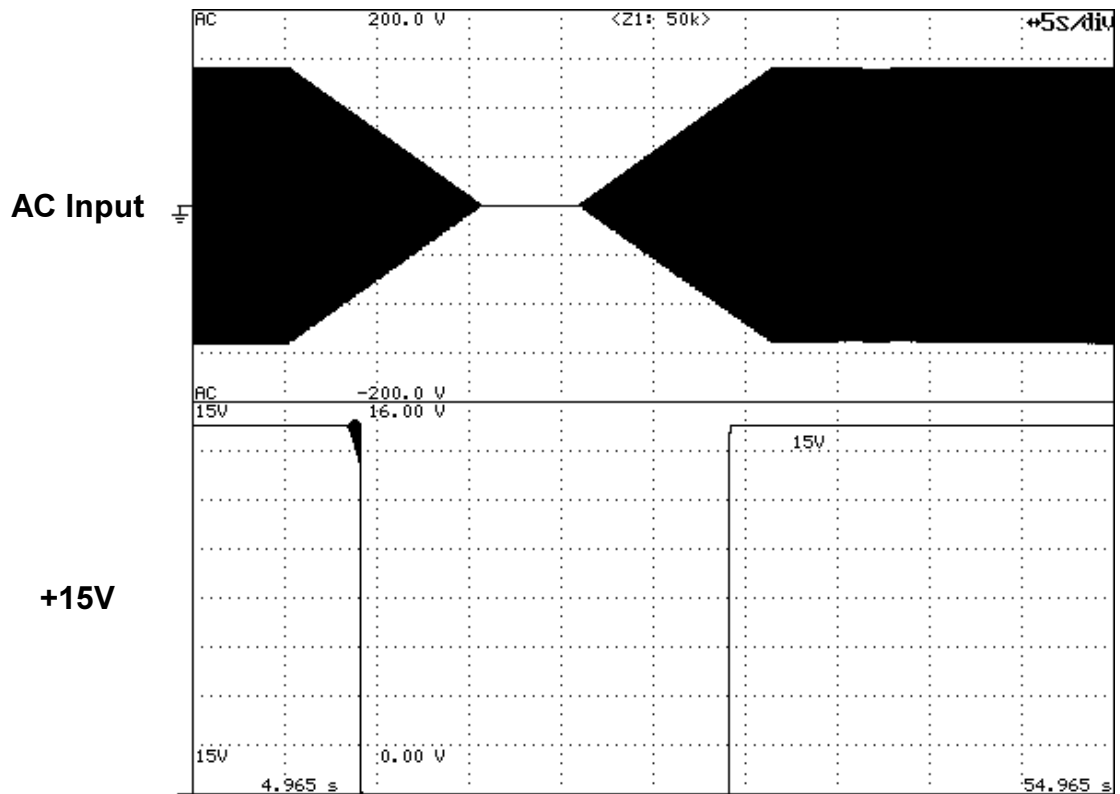
**Timebase Range: 500ms/div  
Load: Minimum Load**



**Start-up Voltage: 66.1V AC**

Model	OZ-030-15	Temperature: 25°C
Item	Input Voltage Sweep Up/Down	

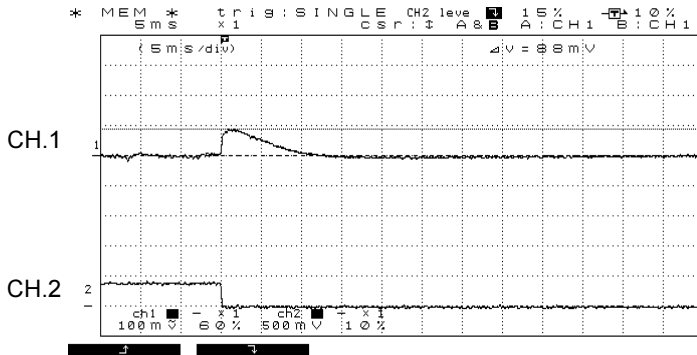
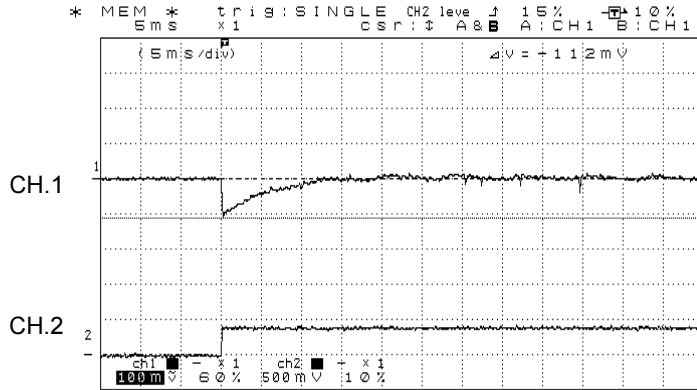
Timebase Range: 5s/div  
Load: Rated Load



Sweep Rate: 10Vave/sec

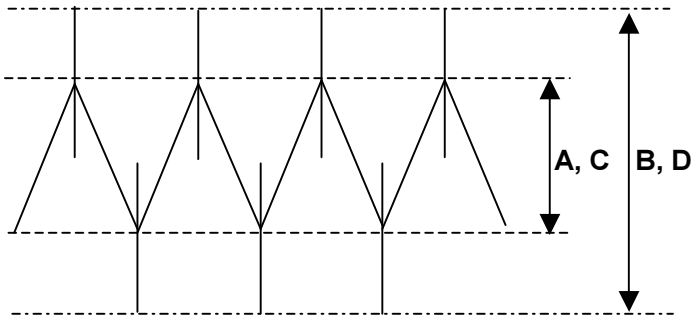
Model	OZ-030-15	Temperature: 25°C
Item	Dynamic Load Response	

## +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: 2.5A/div
Timebase Range	5ms/div
Conditions	Input: 100V AC
Note: Rated Load(2A) ⇒ Minimum load(0A)	

Model	OZ-30-15	Load: Rated Load
Item	Ambient Temperature Drift	



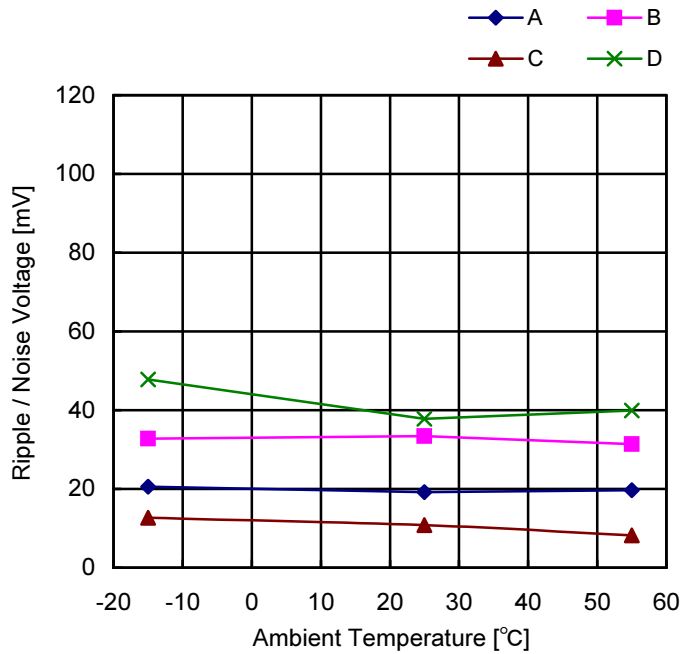
**at 100V AC**

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

**at 240V AC**

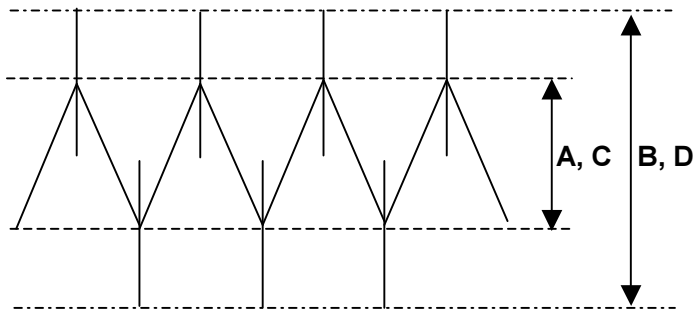
C: Ripple Voltage (mV<sub>P-P</sub>)  
 D: Noise Voltage (mV<sub>P-P</sub>)

## 15V



Ambient Temp. [°C]	Ripple / Noise Voltage [mV]			
	A	B	C	D
-15	20.6	32.8	12.7	47.8
25	19.2	33.4	10.8	37.8
55	19.7	31.4	8.2	39.9

Model	OZ-30-15	Temperature: 25°C
Item	Ambient Temperature Drift	



**at 100V AC**

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

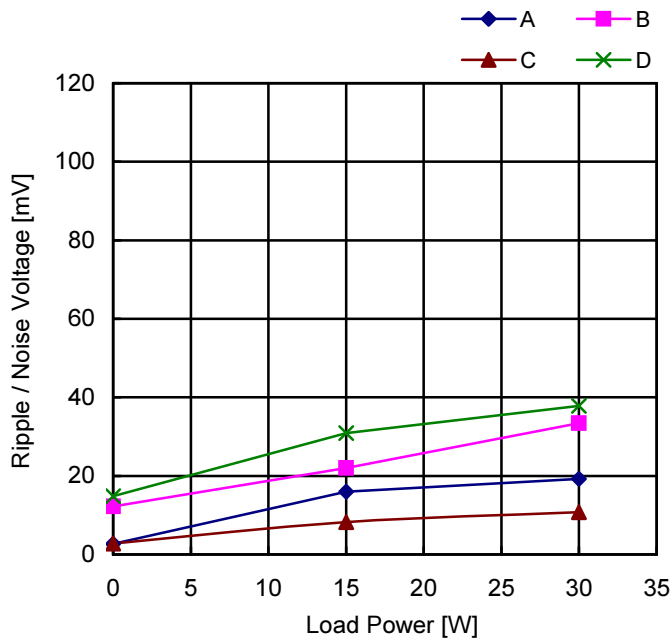
B: Noise Voltage (mV<sub>P-P</sub>)

**at 240V AC**

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

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

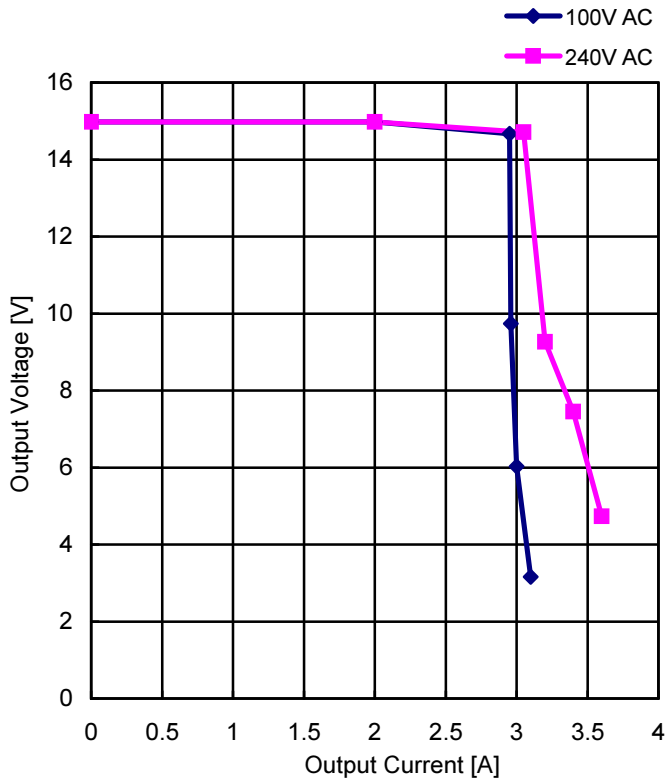
## 15V



Load Power [W]	Ripple / Noise Voltage [mV]			
	A	B	C	D
0	2.7	12.2	2.8	14.8
15.0	16.0	22.0	8.3	30.9
30.0	19.2	33.4	10.8	37.8

Model	OZ-30-15	Temperature: 25°C
Item	Over-Current Protection	

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

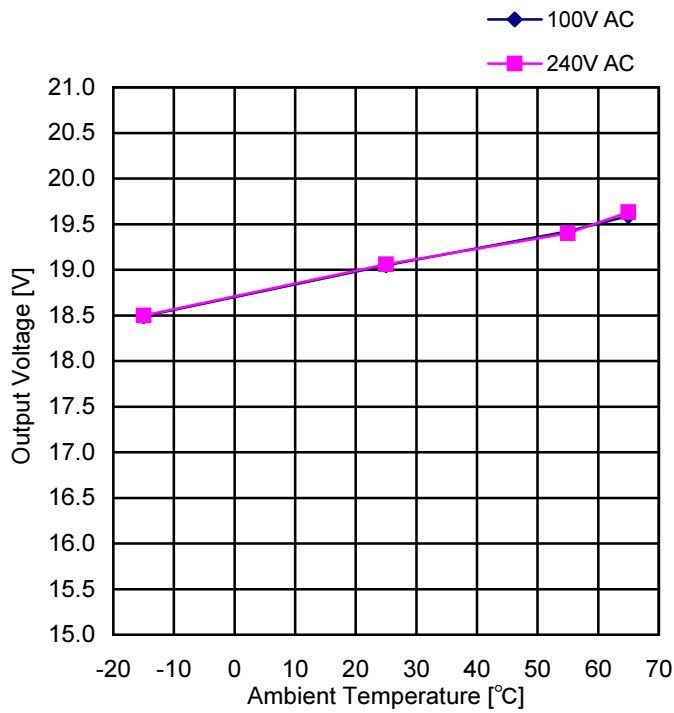


Input Voltage: 100V AC		Input Voltage: 240V AC	
Output Current [A]	Output Voltage [V]	Output Current [A]	Output Voltage [V]
0.00	14.98	0.00	14.98
2.00	14.98	2.00	14.98
2.95	14.67	3.05	14.71
2.96	9.74	3.20	9.26
3.00	6.03	3.40	7.45
3.10	3.16	3.60	4.73



Model	OZ-030-15	Load: Minimum Load
Item	Over-Voltage Protection	

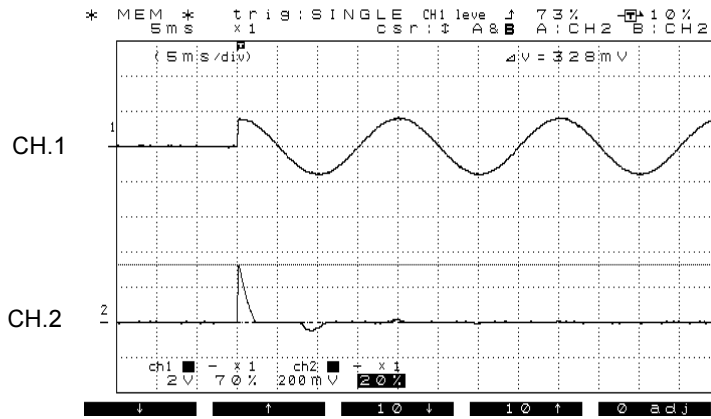
**+15V**



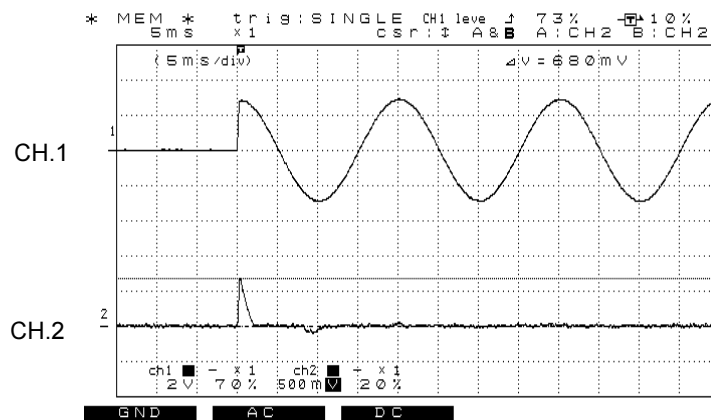
Ambient Temp. [°C]	Output Voltage	
	100V AC	240V AC
-15	18.49	18.50
25	19.05	19.06
55	19.42	19.40
65	19.59	19.63

Model	OZ-030-15	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: 16.4A	



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: 34.0A	

Model	OZ-030-15	Load: Rated Load																																				
Item	Leakage Current																																					
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