

# TEST DATA OF SNDHS250B24

Regulated DC Power Supply  
June 18, 2011

Approved by : Takahiro Yoneda  
Takahiro Yoneda Design Manager

Prepared by : Tadashi Arai  
Tadashi Arai Design Engineer

**COSEL CO.,LTD.**

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(Final Page 19)

Model

SNDHS250B24

Item

Input Current (by Input Voltage)

Object

1.Graph

—△—

Load 100%

---□---

Load 50%

-○-

Load 0%

Input Current [A]

2.00

1.50

1.00

0.50

0.00

0

100

200

300

400

500

Input Voltage [V]

Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
50	0.000	0.000	0.000
100	0.002	0.002	0.002
150	0.000	0.000	0.000
170	0.000	0.000	0.000
180	0.000	0.000	0.000
190	0.011	0.000	1.517
195	0.011	0.734	1.475
200	0.011	0.713	1.435
250	0.011	0.568	1.140
280	0.011	0.511	1.022
300	0.011	0.479	0.955
350	0.011	0.415	0.825
400	0.011	0.368	0.726
420	0.008	0.352	0.694
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--	-	-	-

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Model		SNDHS250B24		Temperature 25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div>—△—</div>Input Volt. 200V</div> <div><div>---□---</div>Input Volt. 280V</div> <div><div>-·-○-·-</div>Input Volt. 400V</div>		2.Values																																																				
<div><div>Input Current [A]</div><div></div><div>Load Current [A]</div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>0.0</td><td>0.011</td><td>0.010</td><td>0.011</td></tr><tr><td>2.0</td><td>0.290</td><td>0.205</td><td>0.148</td></tr><tr><td>4.0</td><td>0.551</td><td>0.394</td><td>0.286</td></tr><tr><td>6.0</td><td>0.816</td><td>0.584</td><td>0.419</td></tr><tr><td>8.5</td><td>1.156</td><td>0.824</td><td>0.589</td></tr><tr><td>10.5</td><td>1.437</td><td>1.021</td><td>0.726</td></tr><tr><td>11.5</td><td>1.581</td><td>1.122</td><td>0.796</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Input Current [A]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.0	0.011	0.010	0.011	2.0	0.290	0.205	0.148	4.0	0.551	0.394	0.286	6.0	0.816	0.584	0.419	8.5	1.156	0.824	0.589	10.5	1.437	1.021	0.726	11.5	1.581	1.122	0.796	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-		
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1.Graph		<div><div>—△—</div>Input Volt. 200V</div> <div><div>---□---</div>Input Volt. 280V</div> <div><div>-·-○-·-</div>Input Volt. 400V</div> <p>Input Power [W]</p> <p>Load Current [A]</p>		2.Values																																																				
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Item		Efficiency (by Input Voltage)		Testing Circuitry		Figure A																																	
Object																																							
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Note: Slanted line shows the range of the rated load current.																																																						

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Model	SNDHS250B24																																
Item	Line Regulation	Temperature	25°C																														
Object	+24V10.5A	Testing Circuitry	Figure A																														
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>195</td><td>24.531</td><td>24.530</td></tr><tr><td>200</td><td>24.530</td><td>24.530</td></tr><tr><td>240</td><td>24.530</td><td>24.530</td></tr><tr><td>280</td><td>24.529</td><td>24.530</td></tr><tr><td>320</td><td>24.529</td><td>24.531</td></tr><tr><td>360</td><td>24.529</td><td>24.531</td></tr><tr><td>400</td><td>24.529</td><td>24.532</td></tr><tr><td>420</td><td>24.529</td><td>24.532</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	195	24.531	24.530	200	24.530	24.530	240	24.530	24.530	280	24.529	24.530	320	24.529	24.531	360	24.529	24.531	400	24.529	24.532	420	24.529	24.532	--	-	-		
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360	24.529	24.531																															
400	24.529	24.532																															
420	24.529	24.532																															
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Model		SNDHS250B24		Temperature 25°C																																																				
Item		Load Regulation		Testing Circuitry Figure A																																																				
Object		+24V10.5A																																																						
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>200V</div></div><div><div>---□---</div><div>Input Volt.</div><div>280V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>400V</div></div></div> <div><p>Output Voltage [V]</p><p>Load Current [A]</p></div>		2.Values																																																				
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Note: Slanted line shows the range of the rated load current.																																																								

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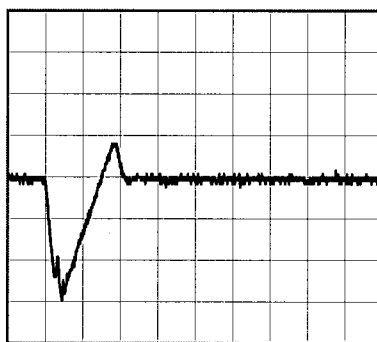
Model	SNDHS250B24	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+24V10.5A	

Input Volt. 280 V  
Cycle 1000 ms

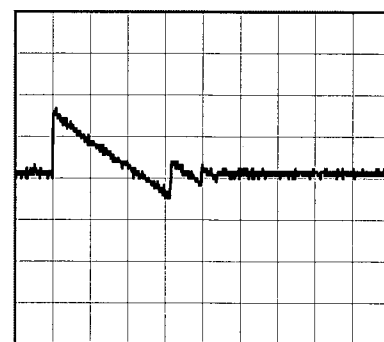
Load Current 10.5A/50  $\mu$ s

Min. Load (0A)  $\longleftrightarrow$   
Load 100% (10.5A)

0.5 V/div



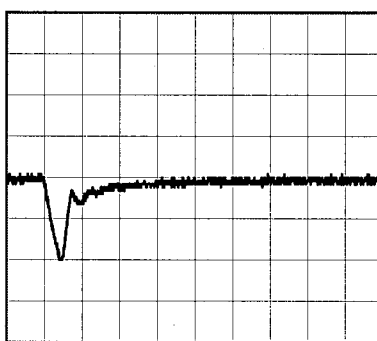
1ms/div



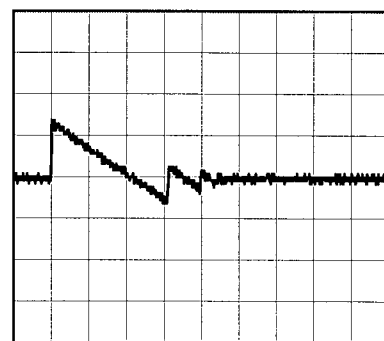
40ms/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (5.25A)

0.5 V/div



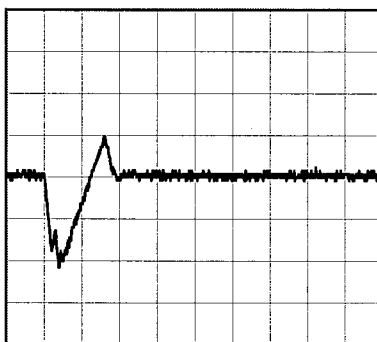
1ms/div



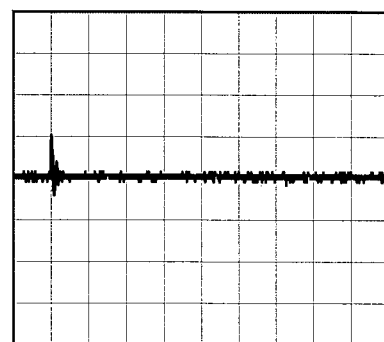
40ms/div

Load 10% (1.05A)  $\longleftrightarrow$   
Load 100% (10.5A)

0.5 V/div



1ms/div



40ms/div

Model		SNDHS250B24		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B																																							
Object		+24V10.5A																																									
1.Graph				2.Values																																							
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Model	SNDHS250B24																																																																												
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Model	SNDHS250B24																																								
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry    Figure B																																							
Object	+24V10.5A																																								
1.Graph		2.Values																																							
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Model	SNDHS250B24		
Item	Output Voltage Accuracy		Testing Circuitry    Figure A
Object	+24V10.5A		

### 1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -20 - 95°C

Input Voltage : 200 - 400V

Load Current : 0 - 10.5A

\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* Output Voltage Accuracy (Ratio) =  $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	95	400	10.5	24.553	±42	±0.2
Minimum Voltage	-20	200	10.5	24.470		



Model		SNDHS250B24	
Item		Time Lapse Drift	
Object		+24V10.5A	
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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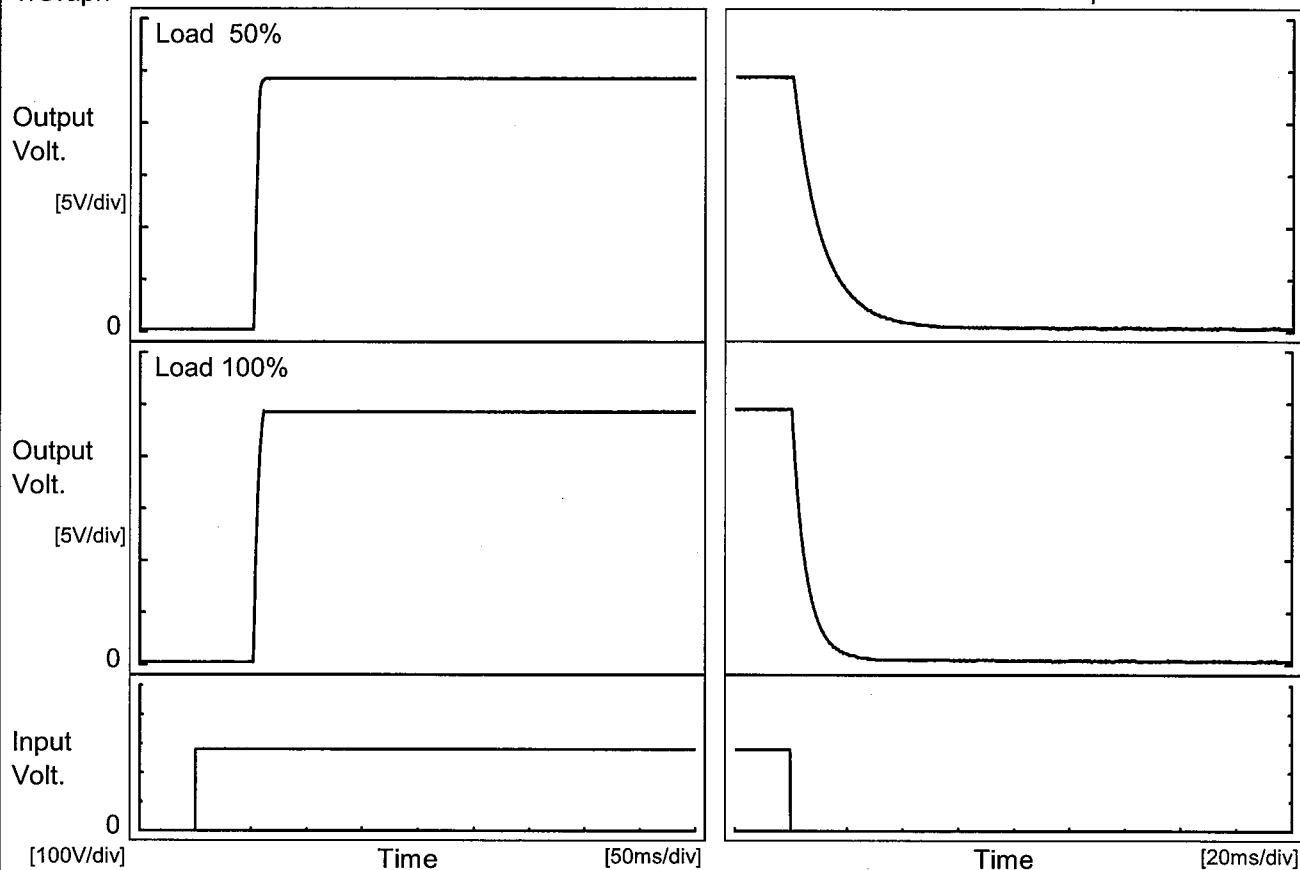


# COSEL

Model	SNDHS250B24	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+24V10.5A		

## 1.Graph

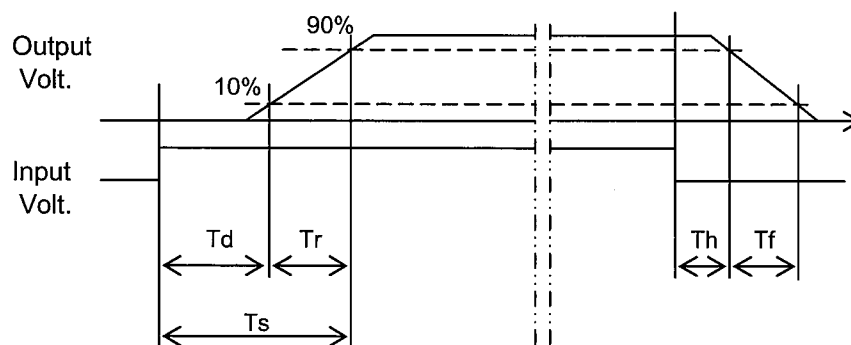
Input Volt. 280 V



## 2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	53.0	4.0	57.0	1.7	23.4
100 %	53.0	6.0	59.0	0.9	11.8



Model	SNDHS250B24																																						
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry    Figure A																																					
Object	+24V10.5A																																						
1.Graph		2.Values																																					
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Ambient Temperature [°C]</th><th>Load 50% [V]</th><th>Load 100% [V]</th></tr></thead><tbody><tr><td>-40</td><td>166</td><td>170</td></tr><tr><td>-20</td><td>166</td><td>171</td></tr><tr><td>0</td><td>166</td><td>170</td></tr><tr><td>25</td><td>166</td><td>171</td></tr><tr><td>40</td><td>166</td><td>172</td></tr><tr><td>55</td><td>165</td><td>172</td></tr><tr><td>70</td><td>165</td><td>172</td></tr><tr><td>85</td><td>165</td><td>173</td></tr><tr><td>95</td><td>165</td><td>173</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Ambient Temperature [°C]	Load 50% [V]	Load 100% [V]	-40	166	170	-20	166	171	0	166	170	25	166	171	40	166	172	55	165	172	70	165	172	85	165	173	95	165	173	--	-	-	--	-	-		
Ambient Temperature [°C]	Load 50% [V]	Load 100% [V]																																					
-40	166	170																																					
-20	166	171																																					
0	166	170																																					
25	166	171																																					
40	166	172																																					
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70	165	172																																					
85	165	173																																					
95	165	173																																					
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Note: Slanted line shows the range of the rated ambient temperature.																																							

BC-10596

Model	SNDHS250B24																																								
Item	Overvoltage Protection	Testing Circuitry    Figure A																																							
Object	+24V10.5A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt. 200V</div></div><div><div>---□---</div><div>Input Volt. 400V</div></div></div> <p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Operating Point [V]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>-40</td><td>29.77</td><td>29.77</td></tr><tr><td>-20</td><td>29.88</td><td>29.88</td></tr><tr><td>0</td><td>29.94</td><td>29.94</td></tr><tr><td>25</td><td>29.94</td><td>29.94</td></tr><tr><td>40</td><td>29.94</td><td>29.94</td></tr><tr><td>55</td><td>30.07</td><td>30.07</td></tr><tr><td>70</td><td>30.07</td><td>30.07</td></tr><tr><td>85</td><td>30.07</td><td>30.07</td></tr><tr><td>95</td><td>30.07</td><td>30.07</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Operating Point [V]		Input Volt. 200[V]	Input Volt. 400[V]	-40	29.77	29.77	-20	29.88	29.88	0	29.94	29.94	25	29.94	29.94	40	29.94	29.94	55	30.07	30.07	70	30.07	30.07	85	30.07	30.07	95	30.07	30.07	--	-	-	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
	Input Volt. 200[V]	Input Volt. 400[V]																																							
-40	29.77	29.77																																							
-20	29.88	29.88																																							
0	29.94	29.94																																							
25	29.94	29.94																																							
40	29.94	29.94																																							
55	30.07	30.07																																							
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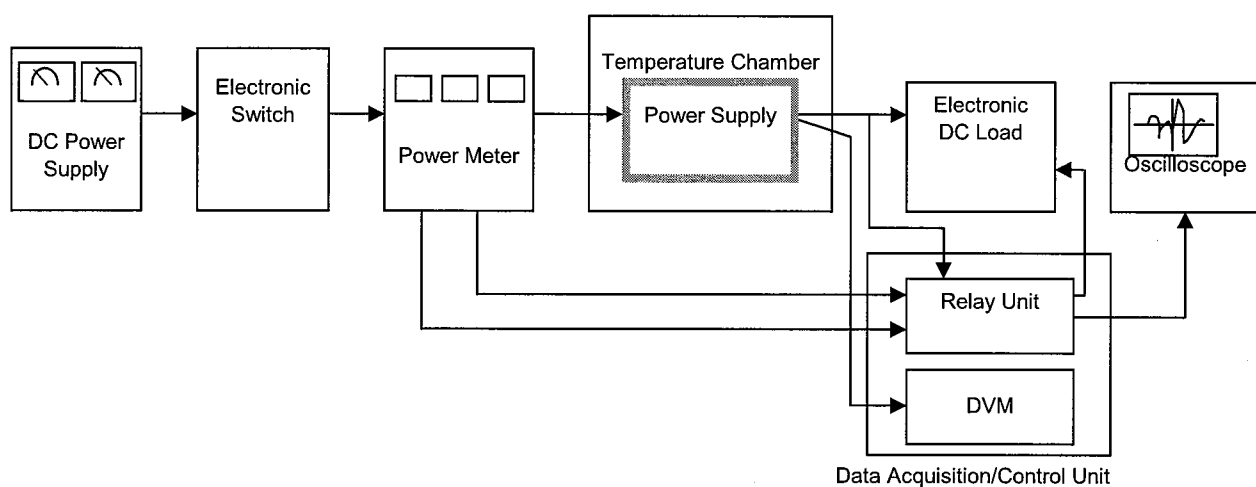


Figure A

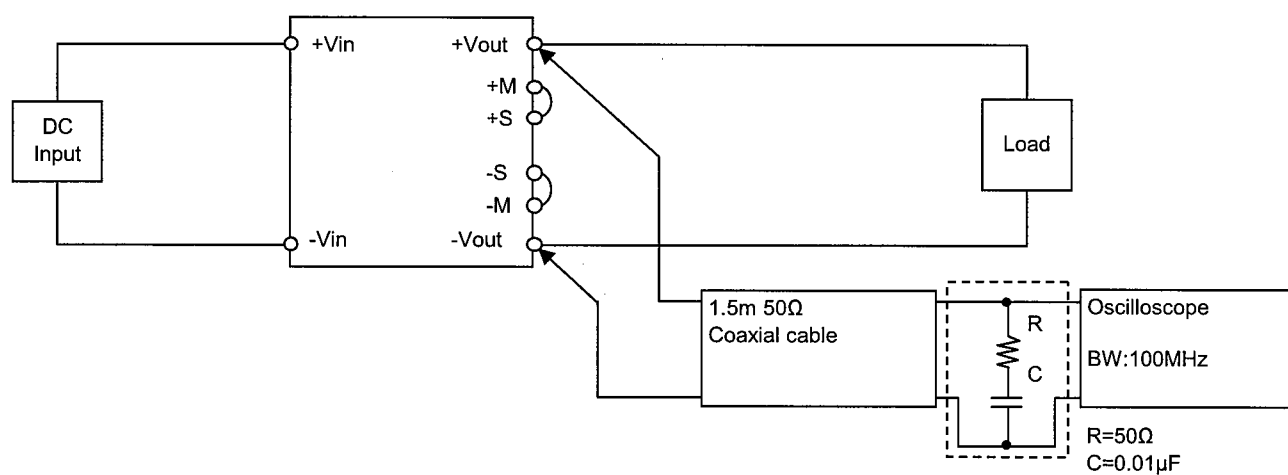


Figure B (Ripple and Ripple noise Characteristic)