

TEST DATA OF SNDHS50B24

Regulated DC Power Supply

June 30, 2011

Approved by : Takahiro Yoneda
Takahiro Yoneda Design Manager

Prepared by : Tadashi Arai
Tadashi Arai Design Engineer

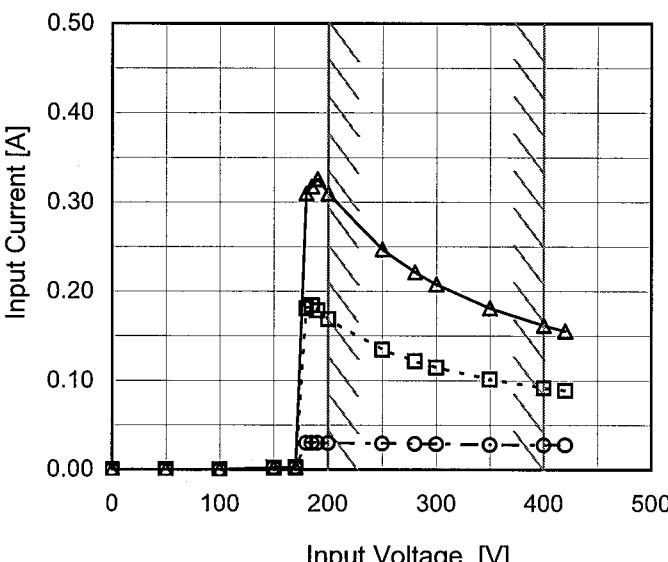
COSEL CO.,LTD.

CONTENTS

1. Input Current (by Input Voltage) · · · · ·	1
2. Input Current (by Load Current) · · · · ·	2
3. Input Power (by Load Current) · · · · ·	3
4. Efficiency (by Input Voltage) · · · · ·	4
5. Efficiency (by Load Current) · · · · ·	5
6. Line Regulation · · · · ·	6
7. Load Regulation · · · · ·	7
8. Dynamic Load Response · · · · ·	8
9. Ripple Voltage (by Load Current) · · · · ·	9
10. Ripple-Noise · · · · ·	10
11. Ripple Voltage (by Ambient Temperature) · · · · ·	11
12. Ambient Temperature Drift · · · · ·	12
13. Output Voltage Accuracy · · · · ·	13
14. Time Lapse Drift · · · · ·	14
15. Rise and Fall Time · · · · ·	15
16. Minimum Input Voltage for Regulated Output Voltage · · · · ·	16
17. Overcurrent Protection · · · · ·	17
18. Overvoltage Protection · · · · ·	18
19. Figure of Testing Circuitry · · · · ·	19

(Final Page 19)

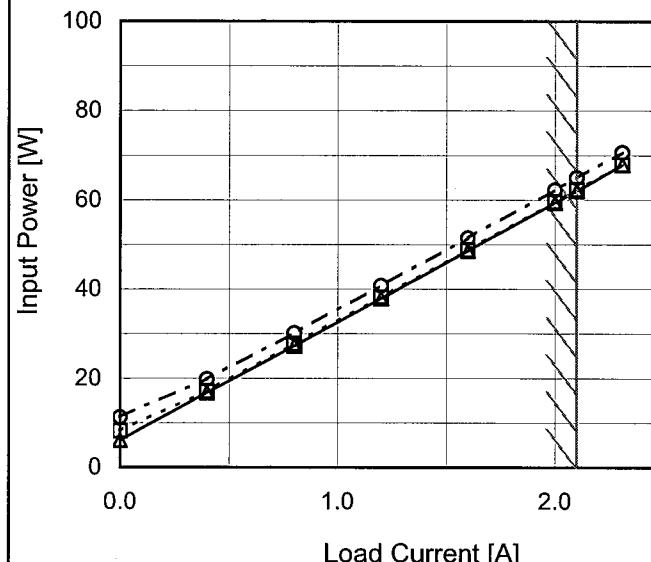
COSEL

Model	SNDHS50B24	Temperature 25°C Testing Circuitry Figure A																																																																																	
Item	Input Current (by Input Voltage)																																																																																		
Object	_____	2. Values																																																																																	
1. Graph	<p style="text-align: center;">—△— Load 100% - - -□- Load 50% - - -○- Load 0%</p>  <p>Note: Slanted line shows the range of the rated input voltage.</p>	<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Load 0%</th> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>50</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>150</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> <tr><td>170</td><td>0.003</td><td>0.003</td><td>0.003</td></tr> <tr><td>180</td><td>0.030</td><td>0.181</td><td>0.310</td></tr> <tr><td>185</td><td>0.030</td><td>0.184</td><td>0.318</td></tr> <tr><td>190</td><td>0.030</td><td>0.179</td><td>0.326</td></tr> <tr><td>200</td><td>0.030</td><td>0.169</td><td>0.310</td></tr> <tr><td>250</td><td>0.030</td><td>0.135</td><td>0.247</td></tr> <tr><td>280</td><td>0.029</td><td>0.122</td><td>0.222</td></tr> <tr><td>300</td><td>0.029</td><td>0.115</td><td>0.208</td></tr> <tr><td>350</td><td>0.028</td><td>0.101</td><td>0.181</td></tr> <tr><td>400</td><td>0.028</td><td>0.092</td><td>0.162</td></tr> <tr><td>420</td><td>0.028</td><td>0.089</td><td>0.156</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> </tbody> </table>			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	0.000	0.000	0.000	150	0.002	0.002	0.002	170	0.003	0.003	0.003	180	0.030	0.181	0.310	185	0.030	0.184	0.318	190	0.030	0.179	0.326	200	0.030	0.169	0.310	250	0.030	0.135	0.247	280	0.029	0.122	0.222	300	0.029	0.115	0.208	350	0.028	0.101	0.181	400	0.028	0.092	0.162	420	0.028	0.089	0.156	--	-	-	-	--	-	-	-	--	-	-	-
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	0.000	0.000	0.000																																																																																
150	0.002	0.002	0.002																																																																																
170	0.003	0.003	0.003																																																																																
180	0.030	0.181	0.310																																																																																
185	0.030	0.184	0.318																																																																																
190	0.030	0.179	0.326																																																																																
200	0.030	0.169	0.310																																																																																
250	0.030	0.135	0.247																																																																																
280	0.029	0.122	0.222																																																																																
300	0.029	0.115	0.208																																																																																
350	0.028	0.101	0.181																																																																																
400	0.028	0.092	0.162																																																																																
420	0.028	0.089	0.156																																																																																
--	-	-	-																																																																																
--	-	-	-																																																																																
--	-	-	-																																																																																

COSEL

Model	SNDHS50B24	Temperature 25°C																																																			
Item	Input Current (by Load Current)	Testing Circuitry Figure A																																																			
Object																																																					
1.Graph	<p>—△— Input Volt. 200V - -□--- Input Volt. 280V - -○--- Input Volt. 400V</p> <table border="1"> <caption>Data points estimated from Figure A</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 280[V]</th> <th>Input Volt. 400[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.030</td><td>0.029</td><td>0.028</td></tr> <tr><td>0.40</td><td>0.084</td><td>0.061</td><td>0.049</td></tr> <tr><td>0.80</td><td>0.137</td><td>0.099</td><td>0.075</td></tr> <tr><td>1.20</td><td>0.189</td><td>0.136</td><td>0.102</td></tr> <tr><td>1.60</td><td>0.243</td><td>0.174</td><td>0.129</td></tr> <tr><td>2.00</td><td>0.297</td><td>0.213</td><td>0.156</td></tr> <tr><td>2.10</td><td>0.311</td><td>0.222</td><td>0.162</td></tr> <tr><td>2.31</td><td>0.339</td><td>0.242</td><td>0.176</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> </tbody> </table>		Load Current [A]	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.00	0.030	0.029	0.028	0.40	0.084	0.061	0.049	0.80	0.137	0.099	0.075	1.20	0.189	0.136	0.102	1.60	0.243	0.174	0.129	2.00	0.297	0.213	0.156	2.10	0.311	0.222	0.162	2.31	0.339	0.242	0.176	--	-	-	-	--	-	-	-	--	-	-	-			
Load Current [A]	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																		
0.00	0.030	0.029	0.028																																																		
0.40	0.084	0.061	0.049																																																		
0.80	0.137	0.099	0.075																																																		
1.20	0.189	0.136	0.102																																																		
1.60	0.243	0.174	0.129																																																		
2.00	0.297	0.213	0.156																																																		
2.10	0.311	0.222	0.162																																																		
2.31	0.339	0.242	0.176																																																		
--	-	-	-																																																		
--	-	-	-																																																		
--	-	-	-																																																		
2.Values	<table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.00</td><td>0.030</td><td>0.029</td><td>0.028</td></tr> <tr><td>0.40</td><td>0.084</td><td>0.061</td><td>0.049</td></tr> <tr><td>0.80</td><td>0.137</td><td>0.099</td><td>0.075</td></tr> <tr><td>1.20</td><td>0.189</td><td>0.136</td><td>0.102</td></tr> <tr><td>1.60</td><td>0.243</td><td>0.174</td><td>0.129</td></tr> <tr><td>2.00</td><td>0.297</td><td>0.213</td><td>0.156</td></tr> <tr><td>2.10</td><td>0.311</td><td>0.222</td><td>0.162</td></tr> <tr><td>2.31</td><td>0.339</td><td>0.242</td><td>0.176</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> </tbody> </table>		Load Current [A]	Input Current [A]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.00	0.030	0.029	0.028	0.40	0.084	0.061	0.049	0.80	0.137	0.099	0.075	1.20	0.189	0.136	0.102	1.60	0.243	0.174	0.129	2.00	0.297	0.213	0.156	2.10	0.311	0.222	0.162	2.31	0.339	0.242	0.176	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Current [A]																																																				
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																		
0.00	0.030	0.029	0.028																																																		
0.40	0.084	0.061	0.049																																																		
0.80	0.137	0.099	0.075																																																		
1.20	0.189	0.136	0.102																																																		
1.60	0.243	0.174	0.129																																																		
2.00	0.297	0.213	0.156																																																		
2.10	0.311	0.222	0.162																																																		
2.31	0.339	0.242	0.176																																																		
--	-	-	-																																																		
--	-	-	-																																																		
--	-	-	-																																																		
Note:	Slanted line shows the range of the rated load current.																																																				

COSEL

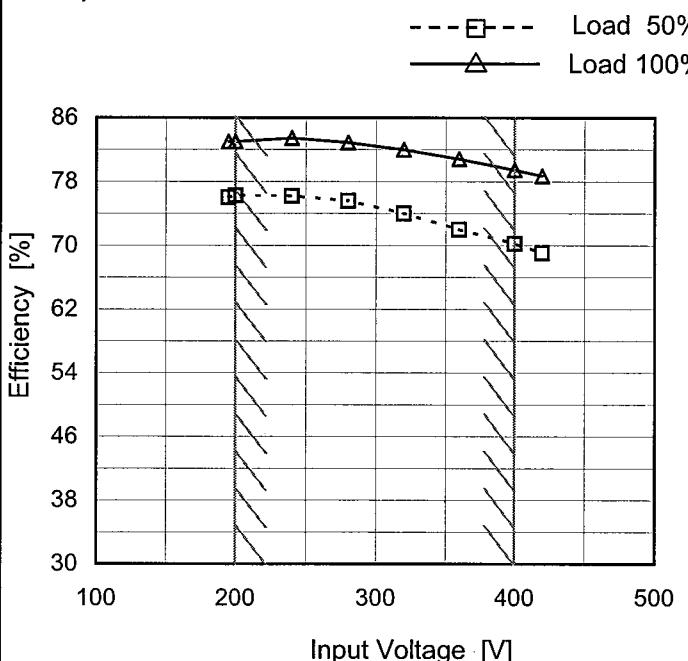
Model	SNDHS50B24	Temperature 25°C Testing Circuitry Figure A																																																					
Item	Input Power (by Load Current)																																																						
Object	—																																																						
1.Graph	—△— Input Volt. 200V ---□--- Input Volt. 280V ---○--- Input Volt. 400V	2.Values																																																					
																																																							
		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Power [W]</th> </tr> <tr> <th>Input Volt. 200[V]</th> <th>Input Volt. 280[V]</th> <th>Input Volt. 400[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>6.10</td><td>8.20</td><td>11.30</td></tr> <tr><td>0.40</td><td>16.80</td><td>17.10</td><td>19.80</td></tr> <tr><td>0.80</td><td>27.30</td><td>27.70</td><td>30.20</td></tr> <tr><td>1.20</td><td>37.90</td><td>38.20</td><td>40.80</td></tr> <tr><td>1.60</td><td>48.60</td><td>48.80</td><td>51.50</td></tr> <tr><td>2.00</td><td>59.40</td><td>59.60</td><td>62.30</td></tr> <tr><td>2.10</td><td>62.10</td><td>62.30</td><td>65.00</td></tr> <tr><td>2.31</td><td>67.90</td><td>67.90</td><td>70.70</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> </tbody> </table>			Load Current [A]	Input Power [W]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.00	6.10	8.20	11.30	0.40	16.80	17.10	19.80	0.80	27.30	27.70	30.20	1.20	37.90	38.20	40.80	1.60	48.60	48.80	51.50	2.00	59.40	59.60	62.30	2.10	62.10	62.30	65.00	2.31	67.90	67.90	70.70	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Power [W]																																																						
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																				
0.00	6.10	8.20	11.30																																																				
0.40	16.80	17.10	19.80																																																				
0.80	27.30	27.70	30.20																																																				
1.20	37.90	38.20	40.80																																																				
1.60	48.60	48.80	51.50																																																				
2.00	59.40	59.60	62.30																																																				
2.10	62.10	62.30	65.00																																																				
2.31	67.90	67.90	70.70																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
Note:	Slanted line shows the range of the rated load current.																																																						

COSEL

Model	SNDHS50B24
Item	Efficiency (by Input Voltage)
Object	—

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
195	76.0	83.0
200	76.3	83.0
240	76.2	83.5
280	75.6	82.9
320	74.0	82.0
360	72.0	80.8
400	70.2	79.5
420	69.1	78.7
--	-	-

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

COSEL

Model	SNDHS50B24	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Efficiency (by Load Current)																																																					
Object																																																						
1.Graph		2.Values																																																				
<p>The graph shows efficiency increasing with load current. For a given load current, efficiency is higher at 200V than at 280V or 400V. A vertical shaded band on the right side of the graph represents the rated load current range.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 200[V]</th> <th>Input Volt. 280[V]</th> <th>Input Volt. 400[V]</th> </tr> </thead> <tbody> <tr> <td>0.00</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>0.40</td><td>59.0</td><td>57.8</td><td>50.0</td></tr> <tr> <td>0.80</td><td>72.3</td><td>71.1</td><td>65.3</td></tr> <tr> <td>1.20</td><td>77.9</td><td>77.3</td><td>72.4</td></tr> <tr> <td>1.60</td><td>80.9</td><td>80.6</td><td>76.4</td></tr> <tr> <td>2.00</td><td>82.7</td><td>82.5</td><td>78.9</td></tr> <tr> <td>2.10</td><td>83.1</td><td>82.8</td><td>79.4</td></tr> <tr> <td>2.31</td><td>83.5</td><td>83.5</td><td>80.2</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> </tbody> </table>		Load Current [A]	Efficiency [%]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.00	-	-	-	0.40	59.0	57.8	50.0	0.80	72.3	71.1	65.3	1.20	77.9	77.3	72.4	1.60	80.9	80.6	76.4	2.00	82.7	82.5	78.9	2.10	83.1	82.8	79.4	2.31	83.5	83.5	80.2	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																			
0.00	-	-	-																																																			
0.40	59.0	57.8	50.0																																																			
0.80	72.3	71.1	65.3																																																			
1.20	77.9	77.3	72.4																																																			
1.60	80.9	80.6	76.4																																																			
2.00	82.7	82.5	78.9																																																			
2.10	83.1	82.8	79.4																																																			
2.31	83.5	83.5	80.2																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

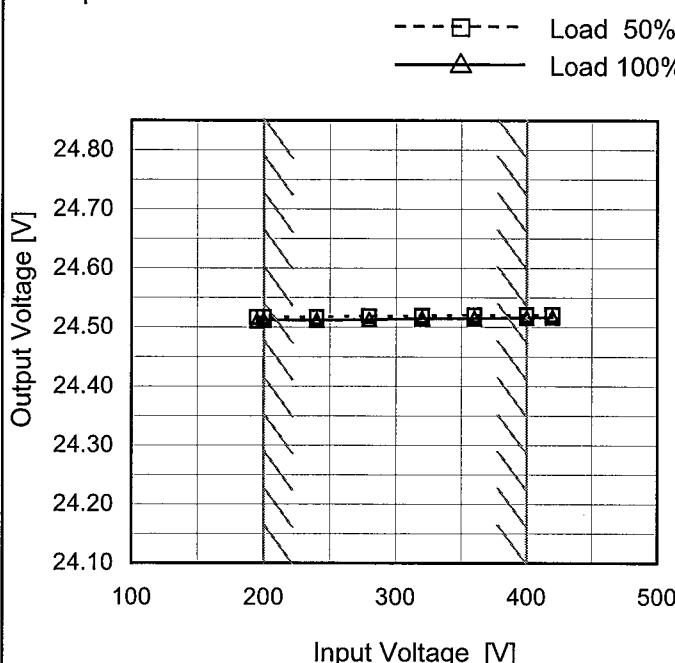
Note: Slanted line shows the range of the rated load current.

COSEL

Model	SNDHS50B24
Item	Line Regulation
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



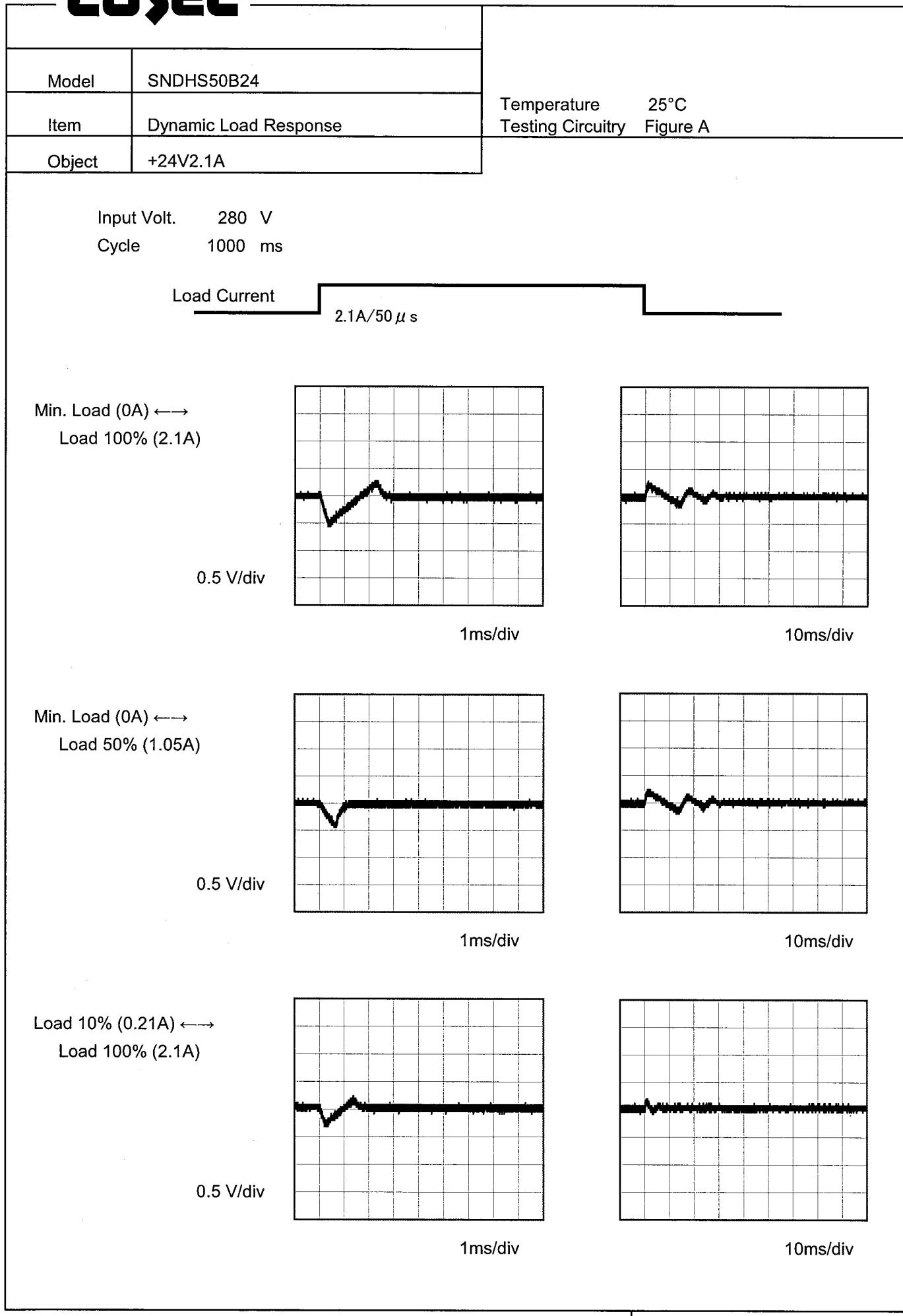
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
195	24.517	24.511
200	24.517	24.512
240	24.517	24.512
280	24.519	24.514
320	24.519	24.515
360	24.520	24.516
400	24.521	24.517
420	24.521	24.517
--	-	-

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

COSEL

Model	SNDHS50B24	Temperature 25°C Testing Circuitry Figure A																																																					
Item	Load Regulation																																																						
Object	+24V2.1A																																																						
1.Graph	<p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 200V Input Volt. 280V Input Volt. 400V 	2.Values																																																					
		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 200[V]</th> <th>Input Volt. 280[V]</th> <th>Input Volt. 400[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>24.528</td><td>24.529</td><td>24.531</td></tr> <tr><td>0.40</td><td>24.515</td><td>24.516</td><td>24.519</td></tr> <tr><td>0.80</td><td>24.513</td><td>24.514</td><td>24.517</td></tr> <tr><td>1.20</td><td>24.511</td><td>24.512</td><td>24.515</td></tr> <tr><td>1.60</td><td>24.509</td><td>24.511</td><td>24.514</td></tr> <tr><td>2.00</td><td>24.507</td><td>24.509</td><td>24.512</td></tr> <tr><td>2.10</td><td>24.507</td><td>24.509</td><td>24.511</td></tr> <tr><td>2.31</td><td>24.506</td><td>24.508</td><td>24.510</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> </tbody> </table>			Load Current [A]	Output Voltage [V]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.00	24.528	24.529	24.531	0.40	24.515	24.516	24.519	0.80	24.513	24.514	24.517	1.20	24.511	24.512	24.515	1.60	24.509	24.511	24.514	2.00	24.507	24.509	24.512	2.10	24.507	24.509	24.511	2.31	24.506	24.508	24.510	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																						
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																				
0.00	24.528	24.529	24.531																																																				
0.40	24.515	24.516	24.519																																																				
0.80	24.513	24.514	24.517																																																				
1.20	24.511	24.512	24.515																																																				
1.60	24.509	24.511	24.514																																																				
2.00	24.507	24.509	24.512																																																				
2.10	24.507	24.509	24.511																																																				
2.31	24.506	24.508	24.510																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
Note:	Slanted line shows the range of the rated load current.																																																						

COSEL

COSEL

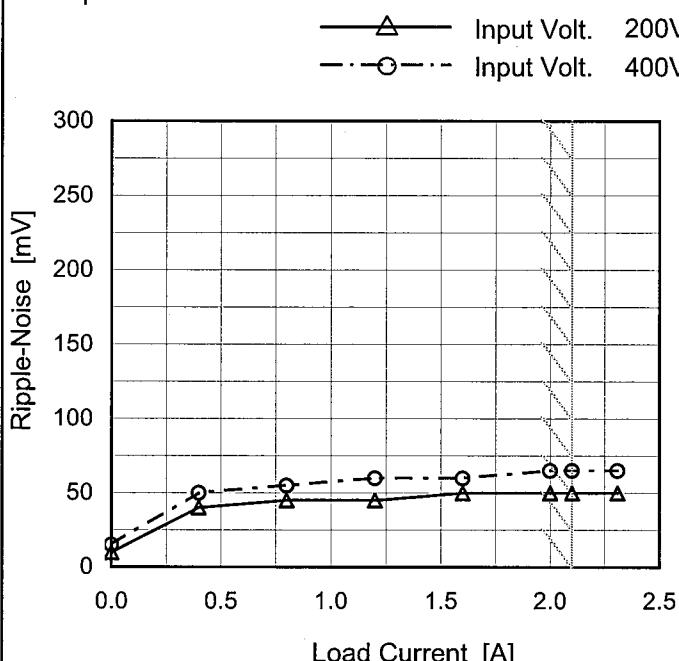
Model	SNDHS50B24																																							
Item	Ripple Voltage (by Load Current)	Temperature Testing Circuitry 25°C Figure B																																						
Object	+24V2.1A																																							
1.Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 300 mV, and the X-axis ranges from 0.0 to 2.5 A. Two curves are plotted: Input Volt. 200V (solid line with open triangles) and Input Volt. 400V (dashed line with open circles). Both curves remain relatively flat until a load current of about 1.5A, after which they rise sharply. A slanted line on the graph indicates the rated load current range from 0.40A to 2.10A.</p>																																								
2.Values																																								
<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 200 [V]</th> <th>Input Volt. 400 [V]</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>5</td> <td>10</td> </tr> <tr> <td>0.40</td> <td>35</td> <td>45</td> </tr> <tr> <td>0.80</td> <td>35</td> <td>45</td> </tr> <tr> <td>1.20</td> <td>35</td> <td>45</td> </tr> <tr> <td>1.60</td> <td>35</td> <td>45</td> </tr> <tr> <td>2.00</td> <td>40</td> <td>50</td> </tr> <tr> <td>2.10</td> <td>40</td> <td>50</td> </tr> <tr> <td>2.31</td> <td>40</td> <td>50</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV]		Input Volt. 200 [V]	Input Volt. 400 [V]	0.00	5	10	0.40	35	45	0.80	35	45	1.20	35	45	1.60	35	45	2.00	40	50	2.10	40	50	2.31	40	50	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 200 [V]	Input Volt. 400 [V]																																						
0.00	5	10																																						
0.40	35	45																																						
0.80	35	45																																						
1.20	35	45																																						
1.60	35	45																																						
2.00	40	50																																						
2.10	40	50																																						
2.31	40	50																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Measured by 100 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																								

COSEL

Model	SNDHS50B24
Item	Ripple-Noise
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.

Ripple-Noise is shown as p-p in the figure below.

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.00	10	15
0.40	40	50
0.80	45	55
1.20	45	60
1.60	50	60
2.00	50	65
2.10	50	65
2.31	50	65
--	-	-
--	-	-
--	-	-

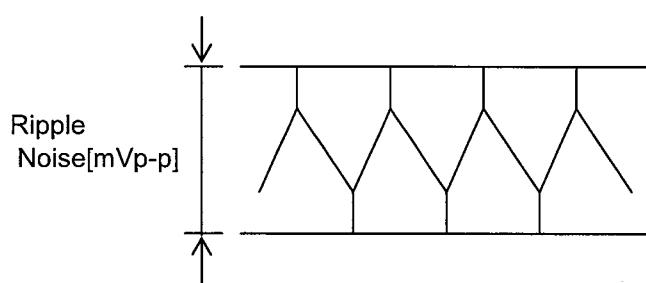
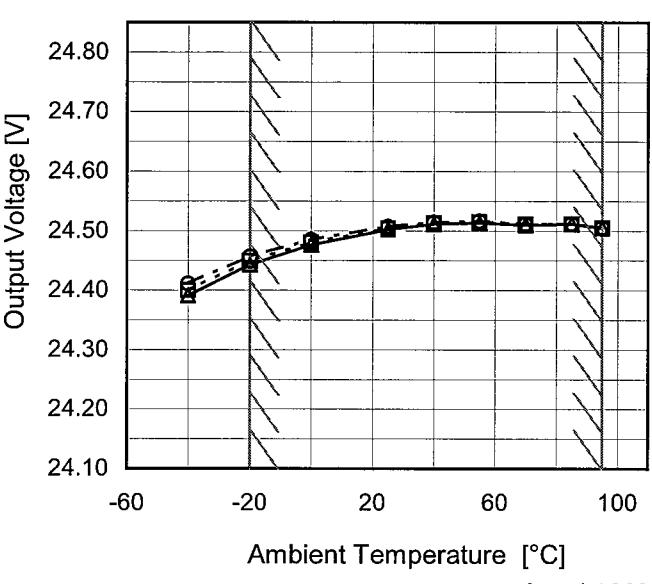


Fig.Complex Ripple Noise Wave Form

COSEL

Model	SNDHS50B24	Testing Circuitry Figure B																																						
Item	Ripple Voltage (by Ambient Temp.)																																							
Object	+24V2.1A																																							
1. Graph		2. Values																																						
<p>Graph showing Ripple Voltage [mV] vs Ambient Temperature [°C]. The Y-axis ranges from 0 to 300 mV, and the X-axis ranges from -60 to 100 °C. Two data series are plotted: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a slight increase in ripple voltage as ambient temperature increases. A slanted line indicates the rated ambient temperature range from approximately -20°C to 70°C.</p> <p>Ambient Temperature [°C]</p> <p>Input Volt. 280V</p>																																								
<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>-40</td> <td>45</td> <td>45</td> </tr> <tr> <td>-20</td> <td>45</td> <td>45</td> </tr> <tr> <td>0</td> <td>40</td> <td>40</td> </tr> <tr> <td>25</td> <td>40</td> <td>45</td> </tr> <tr> <td>40</td> <td>40</td> <td>40</td> </tr> <tr> <td>55</td> <td>40</td> <td>45</td> </tr> <tr> <td>70</td> <td>40</td> <td>45</td> </tr> <tr> <td>85</td> <td>40</td> <td>40</td> </tr> <tr> <td>95</td> <td>35</td> <td>40</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Ambient Temperature [°C]	Ripple Voltage [mV]		Load 50%	Load 100%	-40	45	45	-20	45	45	0	40	40	25	40	45	40	40	40	55	40	45	70	40	45	85	40	40	95	35	40	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
	Load 50%	Load 100%																																						
-40	45	45																																						
-20	45	45																																						
0	40	40																																						
25	40	45																																						
40	40	40																																						
55	40	45																																						
70	40	45																																						
85	40	40																																						
95	35	40																																						
--	-	-																																						
--	-	-																																						

COSEL

Model	SNDHS50B24
Item	Ambient Temperature Drift
Object	+24V2.1A
1.Graph	
<p style="text-align: center;"> △ Input Volt. 200V □ Input Volt. 280V ○ Input Volt. 400V </p>  <p style="text-align: center;">Load 100%</p>	
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>	

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-40	24.392	24.400	24.411
-20	24.443	24.449	24.457
0	24.477	24.481	24.486
25	24.502	24.504	24.507
40	24.512	24.513	24.514
55	24.514	24.515	24.517
70	24.510	24.511	24.512
85	24.512	24.512	24.512
95	24.505	24.505	24.506
--	-	-	-
--	-	-	-



Model	SNDHS50B24	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+24V2.1A	

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 - 2.1A

* Output Voltage Accuracy = \pm (Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2. Values

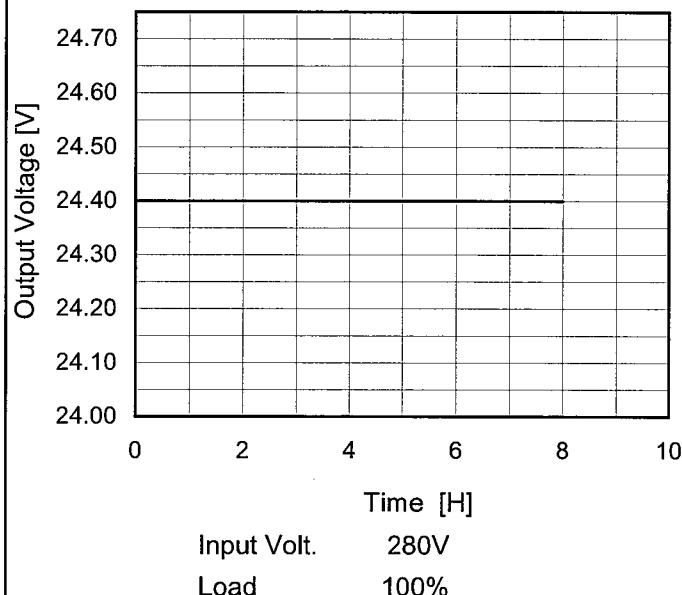
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	400	0	24.538	±48	±0.2
Minimum Voltage	-20	200	2.1	24.443		

COSEL

Model	SNDHS50B24
Item	Time Lapse Drift
Object	+24V2.1A

Temperature 25°C
 Testing Circuitry Figure A

1.Graph



2.Values

Time since start [H]	Output Voltage [V]
0.0	24.400
0.5	24.400
1.0	24.400
2.0	24.400
3.0	24.400
4.0	24.400
5.0	24.400
6.0	24.400
7.0	24.400
8.0	24.400

COSEL

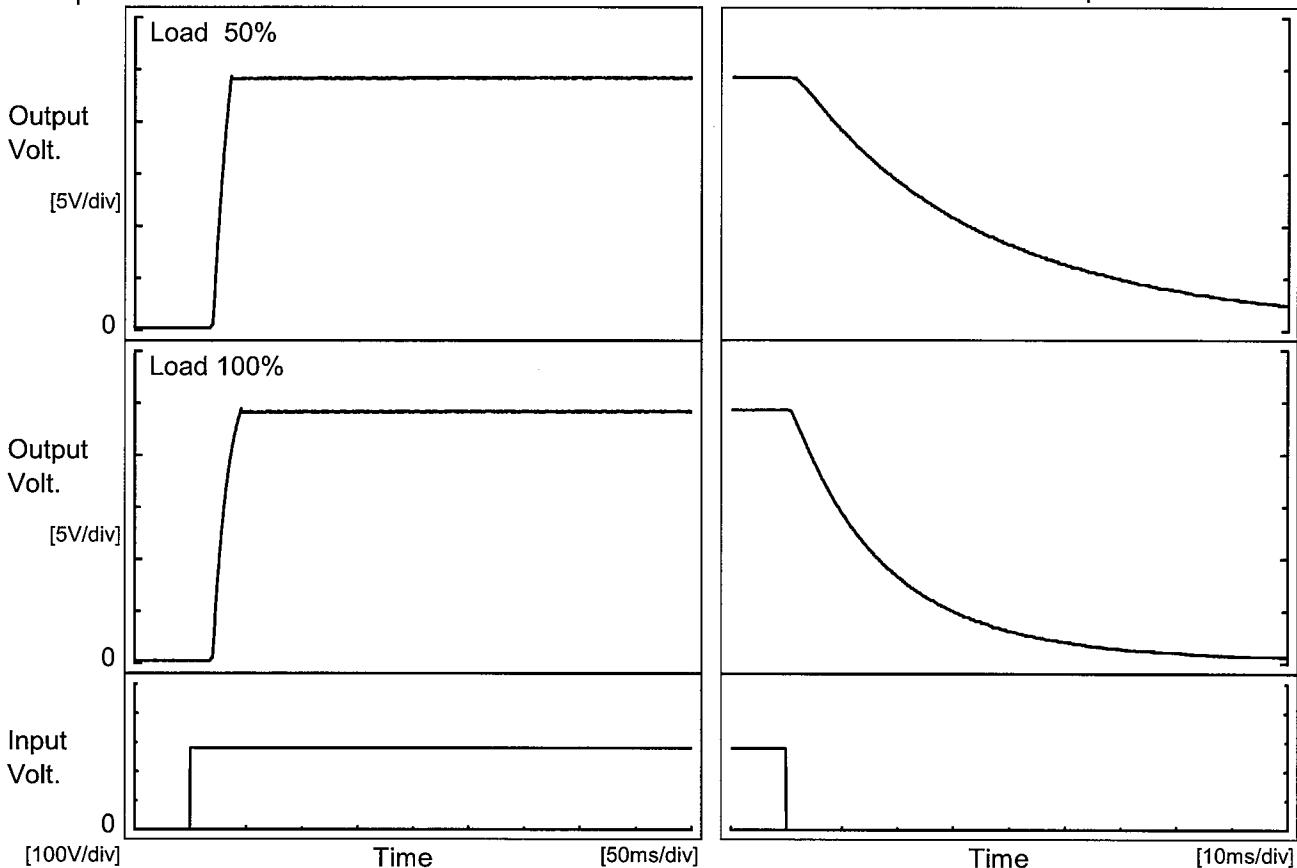
Model SNDHS50B24

Item Rise and Fall Time

Object +24V2.1A

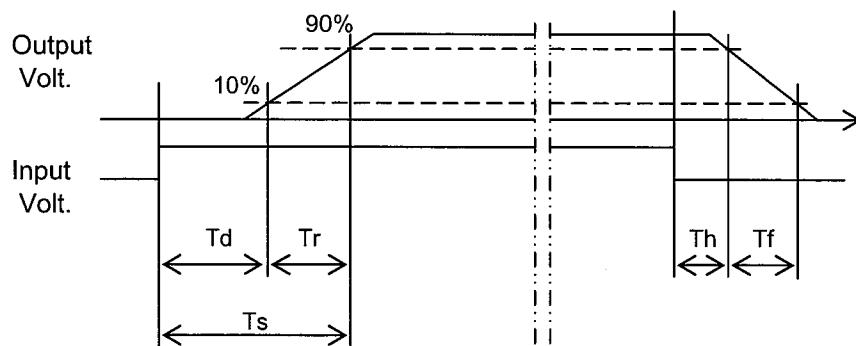
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		21.3	12.8	34.1	5.6	82.0
100 %		21.5	17.8	39.3	2.9	41.6



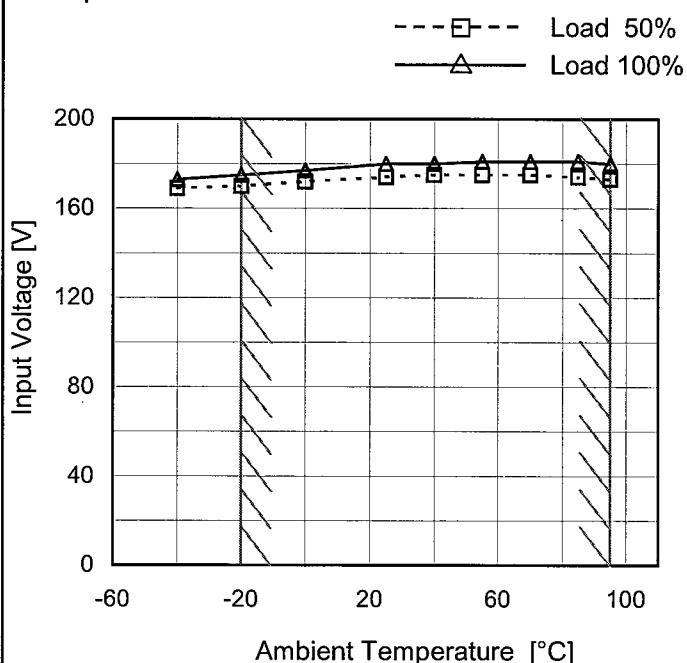
COSEL

Model SNDHS50B24

Item Minimum Input Voltage
for Regulated Output Voltage

Object +24V2.1A

1. Graph



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	169	173
-20	170	175
0	172	177
25	174	180
40	175	180
55	175	181
70	175	181
85	174	181
95	173	180
--	-	-
--	-	-

Note: Slanted line shows the range of the rated ambient temperature.

COSEL

Model	SNDHS50B24	Temperature Testing Circuitry 25°C Figure A
Item	Overcurrent Protection	
Object	+24V2.1A	

1. Graph

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
22.8	2.64	2.73	2.83
21.6	2.65	2.76	2.86
19.2	2.71	2.82	2.90
16.8	2.76	2.86	2.90
14.4	2.77	2.90	2.86
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Note: Slanted line shows the range of the rated load current.

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
22.8	2.64	2.73	2.83
21.6	2.65	2.76	2.86
19.2	2.71	2.82	2.90
16.8	2.76	2.86	2.90
14.4	2.77	2.90	2.86
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Intermittent operation occurs when the output voltage is from 14.4V to 0V.

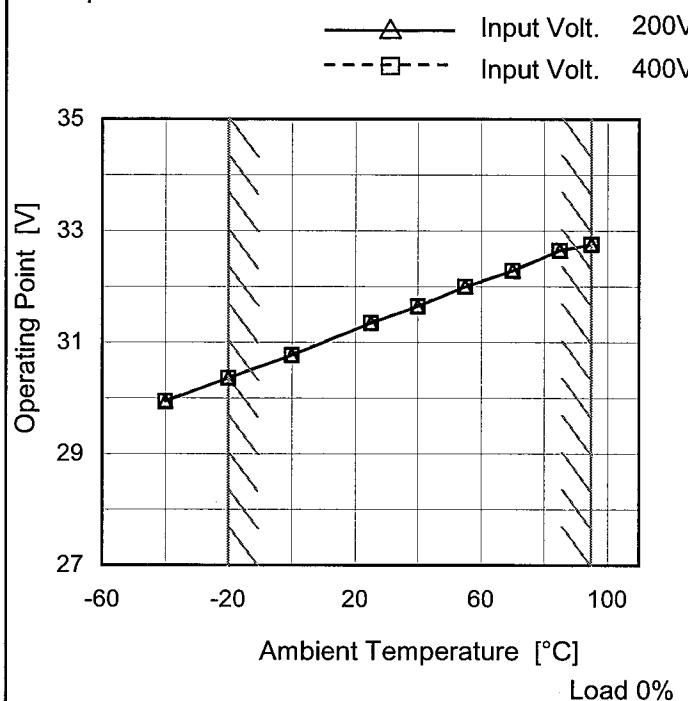
COSEL

Model SNDHS50B24

Item Overvoltage Protection

Object +24V2.1A

1. Graph



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 200[V]	Input Volt. 400[V]
-40	29.94	29.94
-20	30.36	30.36
0	30.77	30.77
25	31.35	31.35
40	31.65	31.65
55	32.00	32.00
70	32.29	32.29
85	32.65	32.65
95	32.76	32.76
--	-	-
--	-	-

Note: Slanted line shows the range of the rated ambient temperature.

COSEL

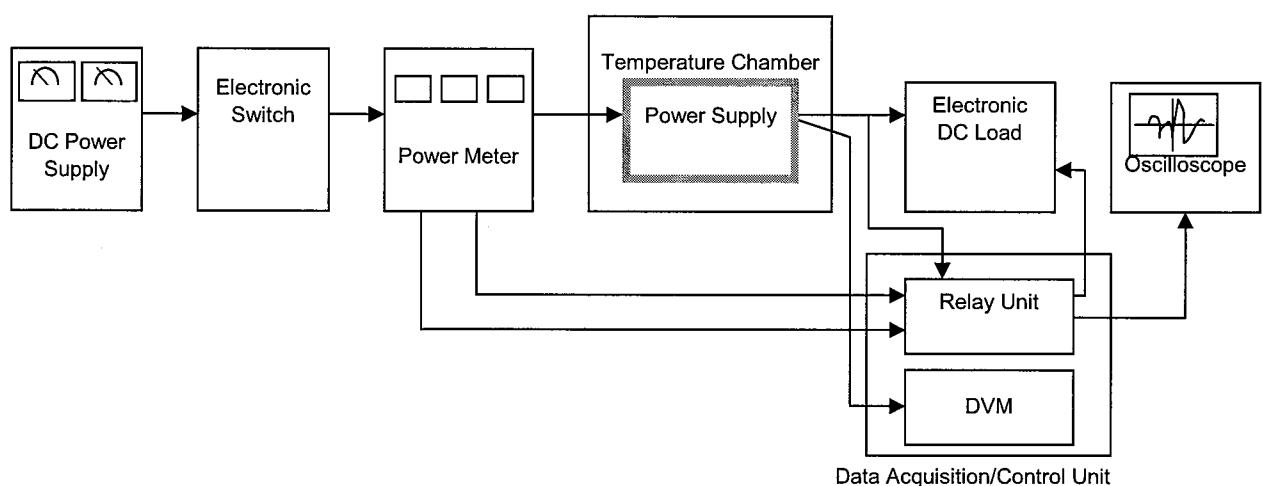


Figure A

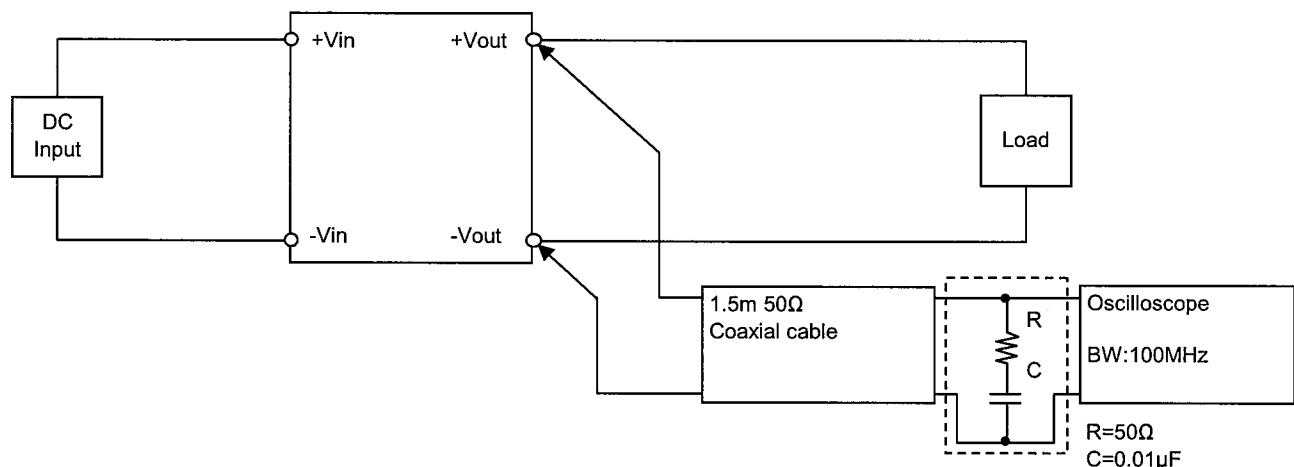


Figure B (Ripple and Ripple noise Characteristic)