

TEST DATA OF BRDS60S

Regulated DC Power Supply
June 7, 2017

Approved by : Yoshimichi Hirokawa
Yoshimichi Hirokawa Design Manager

Prepared by : Yasuhiro Masuya
Yasuhiro Masuya Design Engineer

COSEL CO.,LTD.



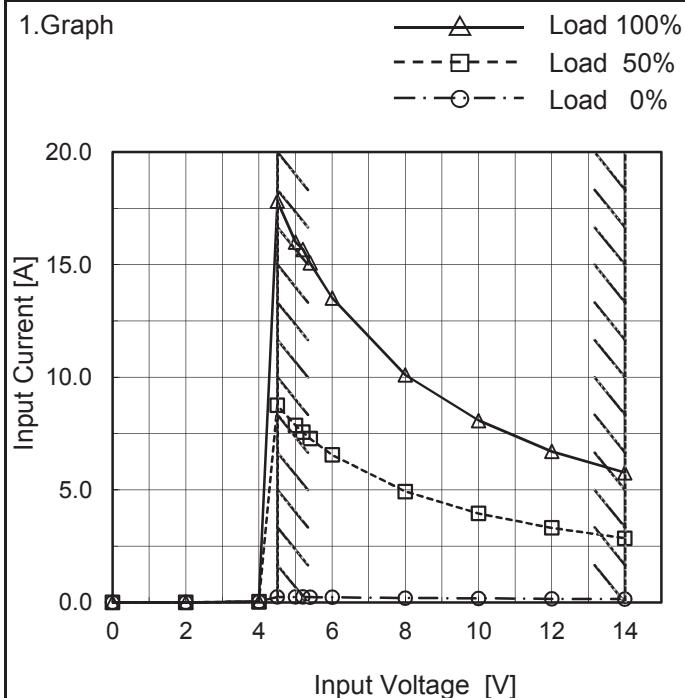
CONTENTS

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.Figure of Testing Circuitry	18

(Final Page 18)

COSEL

Model	BRDS60S
Item	Input Current (by Input Voltage)
Object	+1.2V



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

Temperature 25°C
Testing Circuitry Figure A

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.000	0.000	0.000
4.0	0.034	0.034	0.034
4.5	0.244	8.755	17.818
5.0	0.241	7.862	16.005
5.2	0.241	7.558	15.681
5.4	0.237	7.279	15.075
6.0	0.225	6.551	13.524
8.0	0.196	4.928	10.103
10.0	0.176	3.955	8.081
12.0	0.159	3.311	6.712
14.0	0.147	2.848	5.766
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	BRDS60S	Temperature	25°C																																														
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																														
Object	+1.2V																																																
1.Graph		2.Values																																															
<p>The graph plots Input Current [A] on the y-axis against Load Current [A] on the x-axis. Three curves are shown for different input voltages: 4.5V (solid line with open triangle markers), 12V (dashed line with open square markers), and 14V (dash-dot line with open circle markers). All curves start at (0,0) and increase monotonically. A slanted line is drawn through the points (24, 6.898) and (48, 14.052), representing the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 4.5V [A]</th> <th>Input Volt. 12V [A]</th> <th>Input Volt. 14V [A]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.244</td><td>0.159</td><td>0.147</td></tr> <tr><td>12</td><td>3.500</td><td>1.377</td><td>1.190</td></tr> <tr><td>24</td><td>6.898</td><td>2.658</td><td>2.289</td></tr> <tr><td>36</td><td>10.408</td><td>3.967</td><td>3.410</td></tr> <tr><td>48</td><td>14.052</td><td>5.316</td><td>4.569</td></tr> <tr><td>60</td><td>17.818</td><td>6.712</td><td>5.766</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> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Input Volt. 4.5V [A]	Input Volt. 12V [A]	Input Volt. 14V [A]	0	0.244	0.159	0.147	12	3.500	1.377	1.190	24	6.898	2.658	2.289	36	10.408	3.967	3.410	48	14.052	5.316	4.569	60	17.818	6.712	5.766	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Volt. 4.5V [A]	Input Volt. 12V [A]	Input Volt. 14V [A]																																														
0	0.244	0.159	0.147																																														
12	3.500	1.377	1.190																																														
24	6.898	2.658	2.289																																														
36	10.408	3.967	3.410																																														
48	14.052	5.316	4.569																																														
60	17.818	6.712	5.766																																														
--	-	-	-																																														
--	-	-	-																																														
--	-	-	-																																														
--	-	-	-																																														
--	-	-	-																																														
<p>Note: Slanted line shows the range of the rated load current.</p>																																																	

COSEL

Model	BRDS60S	Temperature	25°C																																																			
Item	Input Power (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+1.2V																																																					
1.Graph			2.Values																																																			
<p>Input Power [W]</p> <p>Load Current [A]</p> <p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 4.5V Input Volt. 12V Input Volt. 14V 			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Power [W]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 14[V]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1.10</td> <td>1.91</td> <td>2.06</td> </tr> <tr> <td>12</td> <td>15.70</td> <td>16.55</td> <td>16.68</td> </tr> <tr> <td>24</td> <td>30.96</td> <td>31.89</td> <td>32.06</td> </tr> <tr> <td>36</td> <td>46.75</td> <td>47.53</td> <td>47.74</td> </tr> <tr> <td>48</td> <td>63.09</td> <td>63.72</td> <td>63.93</td> </tr> <tr> <td>60</td> <td>80.18</td> <td>80.54</td> <td>80.72</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Load Current [A]	Input Power [W]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	1.10	1.91	2.06	12	15.70	16.55	16.68	24	30.96	31.89	32.06	36	46.75	47.53	47.74	48	63.09	63.72	63.93	60	80.18	80.54	80.72	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Power [W]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	1.10	1.91	2.06																																																			
12	15.70	16.55	16.68																																																			
24	30.96	31.89	32.06																																																			
36	46.75	47.53	47.74																																																			
48	63.09	63.72	63.93																																																			
60	80.18	80.54	80.72																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

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

COSEL

Model	BRDS60S	Temperature	25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																
Object	+1.2V																																		
1.Graph			2.Values																																
<p>The graph plots Efficiency [%] on the y-axis (44 to 100) against Input Voltage [V] on the x-axis (4 to 14). Two sets of curves are shown: one for Load 50% (dashed line with square markers) and one for Load 100% (solid line with triangle markers). Both sets of curves show efficiency remaining relatively constant around 92% across the input voltage range. Slanted lines on the graph indicate the rated input voltage range.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>4.5</td> <td>92.8</td> <td>89.8</td> </tr> <tr> <td>5.0</td> <td>92.8</td> <td>89.9</td> </tr> <tr> <td>8.0</td> <td>92.0</td> <td>89.9</td> </tr> <tr> <td>10.0</td> <td>91.4</td> <td>89.7</td> </tr> <tr> <td>12.0</td> <td>91.0</td> <td>89.4</td> </tr> <tr> <td>14.0</td> <td>90.4</td> <td>89.2</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>	Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	4.5	92.8	89.8	5.0	92.8	89.9	8.0	92.0	89.9	10.0	91.4	89.7	12.0	91.0	89.4	14.0	90.4	89.2	--	-	-	--	-	-	--	-	-
Input Voltage [V]	Efficiency [%]																																		
	Load 50%	Load 100%																																	
4.5	92.8	89.8																																	
5.0	92.8	89.9																																	
8.0	92.0	89.9																																	
10.0	91.4	89.7																																	
12.0	91.0	89.4																																	
14.0	90.4	89.2																																	
--	-	-																																	
--	-	-																																	
--	-	-																																	

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

COSEL

Model	BRDS60S	Temperature	25°C																																																			
Item	Efficiency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+1.2V																																																					
1.Graph		2.Values																																																				
		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 14[V]</th> </tr> </thead> <tbody> <tr> <td>0</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>12</td><td>91.7</td><td>87.1</td><td>86.4</td></tr> <tr> <td>24</td><td>93.0</td><td>90.4</td><td>89.9</td></tr> <tr> <td>36</td><td>92.4</td><td>90.9</td><td>90.5</td></tr> <tr> <td>48</td><td>91.3</td><td>90.4</td><td>90.1</td></tr> <tr> <td>60</td><td>89.8</td><td>89.4</td><td>89.2</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> <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. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	-	-	-	12	91.7	87.1	86.4	24	93.0	90.4	89.9	36	92.4	90.9	90.5	48	91.3	90.4	90.1	60	89.8	89.4	89.2	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	-	-	-																																																			
12	91.7	87.1	86.4																																																			
24	93.0	90.4	89.9																																																			
36	92.4	90.9	90.5																																																			
48	91.3	90.4	90.1																																																			
60	89.8	89.4	89.2																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
<p>Note: Slanted line shows the range of the rated load current.</p>																																																						

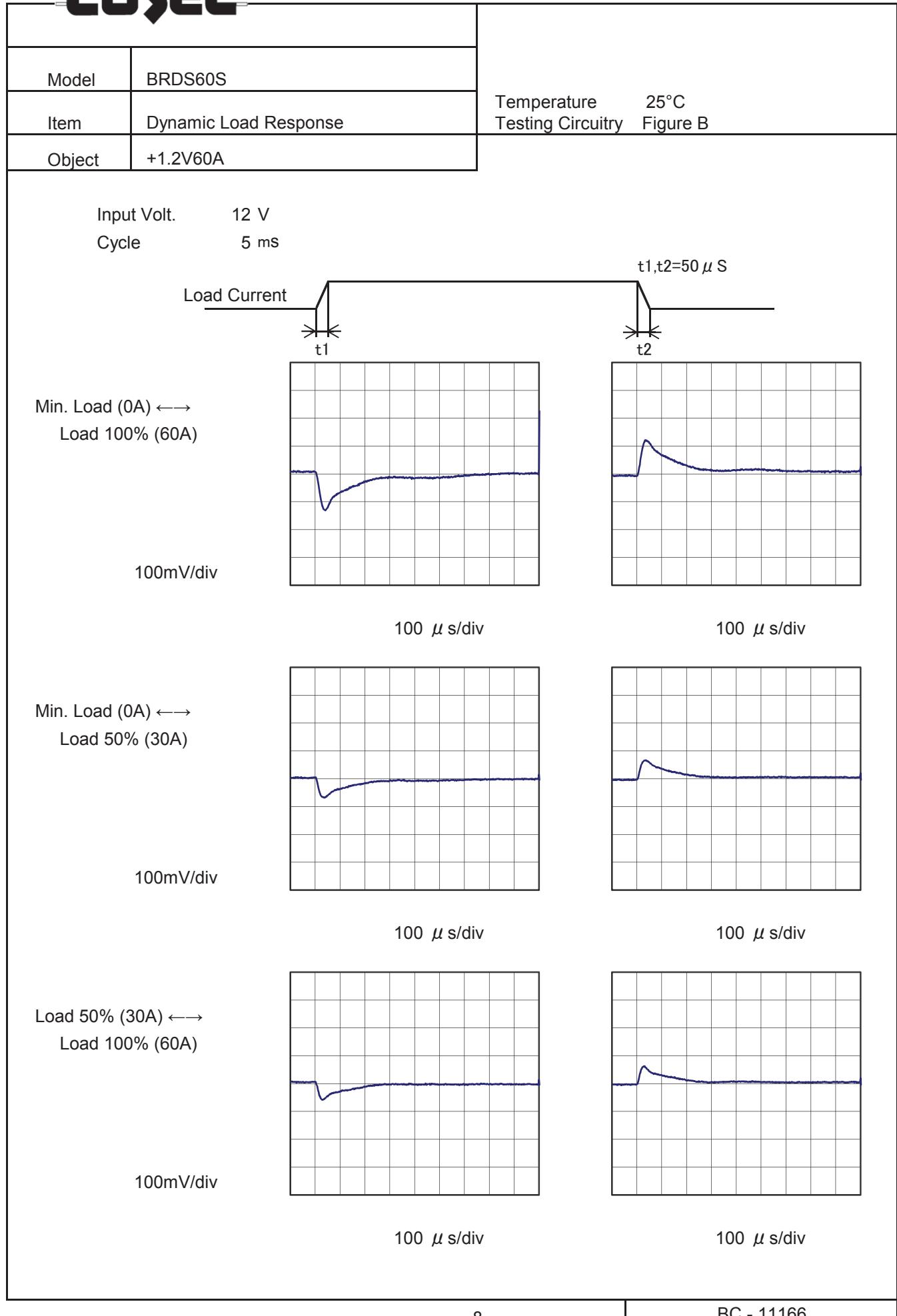
COSEL

Model	BRDS60S	Temperature	25°C																																
Item	Line Regulation	Testing Circuitry	Figure A																																
Object	+1.2V60A																																		
1. Graph		2. Values																																	
<p>Legend: - - - □ - - Load 50% — ▲ — Load 100%</p>		<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>4.5</td><td>1.200</td><td>1.200</td></tr> <tr> <td>5.0</td><td>1.200</td><td>1.200</td></tr> <tr> <td>8.0</td><td>1.200</td><td>1.200</td></tr> <tr> <td>10.0</td><td>1.201</td><td>1.200</td></tr> <tr> <td>12.0</td><td>1.201</td><td>1.200</td></tr> <tr> <td>14.0</td><td>1.201</td><td>1.200</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>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	4.5	1.200	1.200	5.0	1.200	1.200	8.0	1.200	1.200	10.0	1.201	1.200	12.0	1.201	1.200	14.0	1.201	1.200	--	-	-	--	-	-	--	-	-
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
4.5	1.200	1.200																																	
5.0	1.200	1.200																																	
8.0	1.200	1.200																																	
10.0	1.201	1.200																																	
12.0	1.201	1.200																																	
14.0	1.201	1.200																																	
--	-	-																																	
--	-	-																																	
--	-	-																																	
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																			

COSEL

Model	BRDS60S	Temperature	25°C																																																			
Item	Load Regulation	Testing Circuitry	Figure A																																																			
Object	+1.2V60A																																																					
1.Graph	<p>Output Voltage [V]</p> <p>Load Current [A]</p> <ul style="list-style-type: none"> — □ — Input Volt. 4.5V - - □ - - Input Volt. 12V - · ○ - - Input Volt. 14V 																																																					
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. 4.5[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 14[V]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1.200</td> <td>1.201</td> <td>1.201</td> </tr> <tr> <td>12</td> <td>1.200</td> <td>1.201</td> <td>1.201</td> </tr> <tr> <td>24</td> <td>1.200</td> <td>1.201</td> <td>1.201</td> </tr> <tr> <td>36</td> <td>1.200</td> <td>1.200</td> <td>1.200</td> </tr> <tr> <td>48</td> <td>1.200</td> <td>1.200</td> <td>1.200</td> </tr> <tr> <td>60</td> <td>1.200</td> <td>1.200</td> <td>1.200</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Load Current [A]	Output Voltage [V]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	1.200	1.201	1.201	12	1.200	1.201	1.201	24	1.200	1.201	1.201	36	1.200	1.200	1.200	48	1.200	1.200	1.200	60	1.200	1.200	1.200	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	1.200	1.201	1.201																																																			
12	1.200	1.201	1.201																																																			
24	1.200	1.201	1.201																																																			
36	1.200	1.200	1.200																																																			
48	1.200	1.200	1.200																																																			
60	1.200	1.200	1.200																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note:	Slanted line shows the range of the rated load current.																																																					

COSEL



COSEL

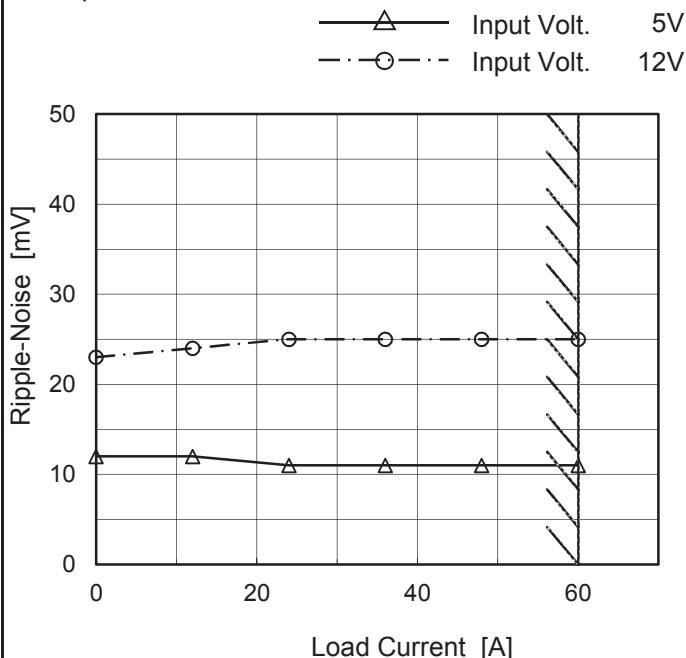
Model	BRDS60S																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure C																																						
Object	+1.2V60A																																							
1.Graph																																								
<p>—△— Input Volt. 5V -·○--- Input Volt. 12V</p> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</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. 5 [V]</th> <th>Input Volt. 12 [V]</th> </tr> </thead> <tbody> <tr><td>0</td><td>2</td><td>3</td></tr> <tr><td>12</td><td>3</td><td>3</td></tr> <tr><td>24</td><td>3</td><td>3</td></tr> <tr><td>36</td><td>3</td><td>3</td></tr> <tr><td>48</td><td>3</td><td>3</td></tr> <tr><td>60</td><td>3</td><td>3</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> <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. 5 [V]	Input Volt. 12 [V]	0	2	3	12	3	3	24	3	3	36	3	3	48	3	3	60	3	3	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 5 [V]	Input Volt. 12 [V]																																						
0	2	3																																						
12	3	3																																						
24	3	3																																						
36	3	3																																						
48	3	3																																						
60	3	3																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Measured by 20 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	BRDS60S
Item	Ripple-Noise
Object	+1.2V60A

 Temperature 25°C
 Testing Circuitry Figure C

1.Graph



Measured by 20 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. 5 [V]	Input Volt. 12 [V]
0	12	23
12	12	24
24	11	25
36	11	25
48	11	25
60	11	25
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

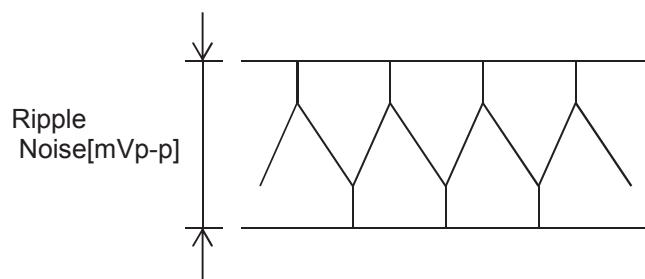


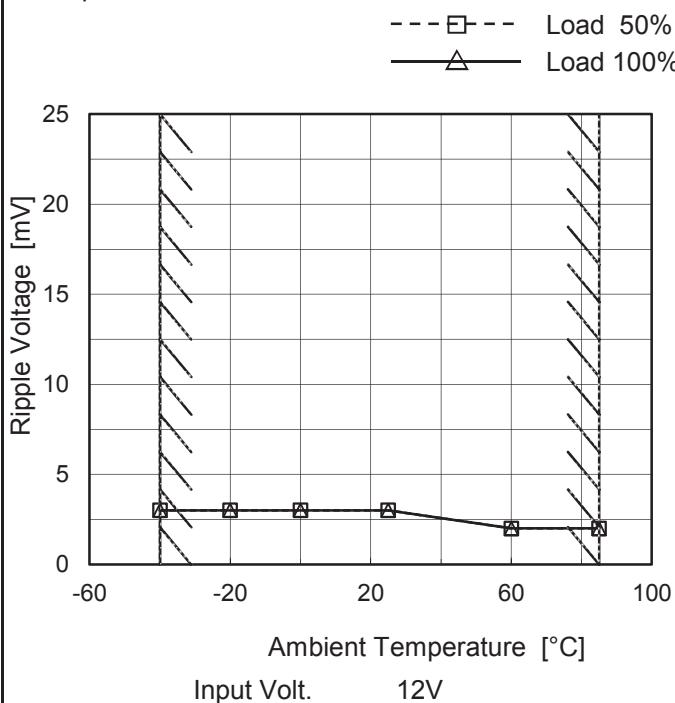
Fig.Complex Ripple Noise Wave Form

COSEL

Model	BRDS60S
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.2V60A

Testing Circuitry Figure C

1. Graph



2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	3	3
-20	3	3
0	3	3
25	3	3
60	2	2
85	2	2
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 20 MHz Oscilloscope.

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

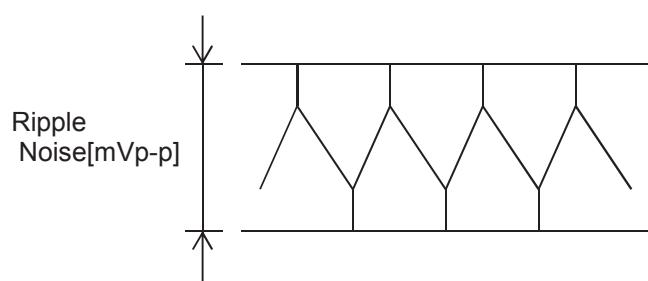


Fig.Complex Ripple Noise Wave Form

COSEL

Model	BRDS60S																																																						
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																					
Object	+1.2V60A																																																						
1.Graph	<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <ul style="list-style-type: none"> — ▲ — Input Volt. 4.5V - - □ - - Input Volt. 12V - - ○ - - Input Volt. 14V 																																																						
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 14[V]</th> </tr> </thead> <tbody> <tr> <td>-40</td><td>1.204</td><td>1.203</td><td>1.203</td></tr> <tr> <td>-20</td><td>1.203</td><td>1.203</td><td>1.202</td></tr> <tr> <td>0</td><td>1.202</td><td>1.201</td><td>1.202</td></tr> <tr> <td>25</td><td>1.200</td><td>1.200</td><td>1.200</td></tr> <tr> <td>60</td><td>1.197</td><td>1.197</td><td>1.198</td></tr> <tr> <td>85</td><td>1.193</td><td>1.193</td><td>1.193</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> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>				Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	-40	1.204	1.203	1.203	-20	1.203	1.203	1.202	0	1.202	1.201	1.202	25	1.200	1.200	1.200	60	1.197	1.197	1.198	85	1.193	1.193	1.193	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																						
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																				
-40	1.204	1.203	1.203																																																				
-20	1.203	1.203	1.202																																																				
0	1.202	1.201	1.202																																																				
25	1.200	1.200	1.200																																																				
60	1.197	1.197	1.198																																																				
85	1.193	1.193	1.193																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
Note:	Slanted line shows the range of the rated ambient temperature.																																																						



Model	BRDS60S	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+1.2V60A	

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 : -40 - 85°C

Input Voltage : 4.5 - 14V

Load Current : 0 - 60A

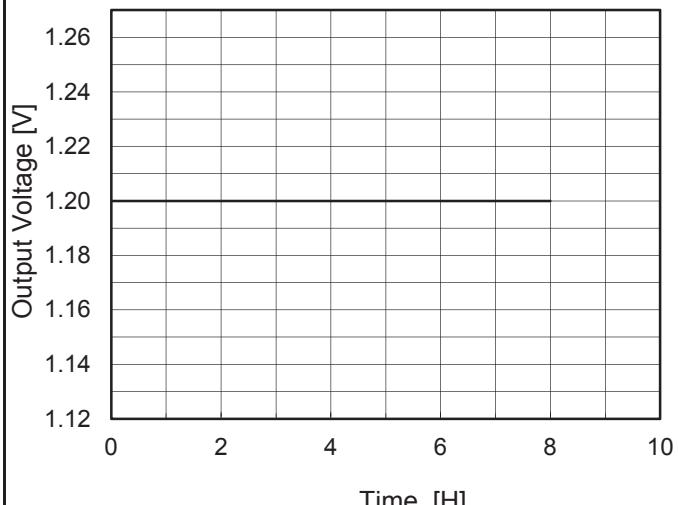
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	4.5	60	1.204	± 6	± 0.5
Minimum Voltage	85	14	60	1.193		

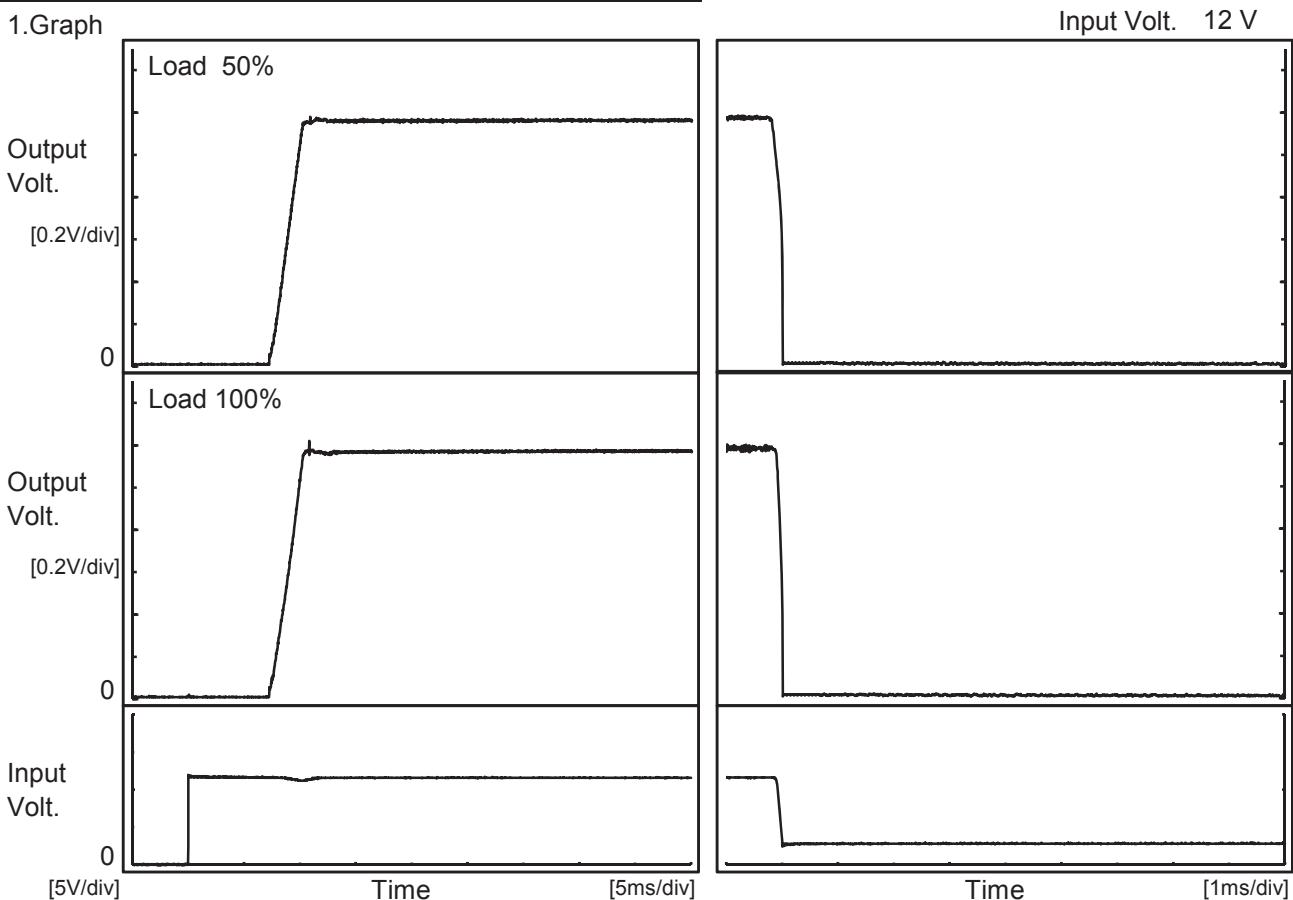
COSEL

Model	BRDS60S	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+1.2V60A																								
1. Graph			2. Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 12V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>1.200</td></tr> <tr><td>0.5</td><td>1.200</td></tr> <tr><td>1.0</td><td>1.200</td></tr> <tr><td>2.0</td><td>1.200</td></tr> <tr><td>3.0</td><td>1.200</td></tr> <tr><td>4.0</td><td>1.200</td></tr> <tr><td>5.0</td><td>1.200</td></tr> <tr><td>6.0</td><td>1.200</td></tr> <tr><td>7.0</td><td>1.200</td></tr> <tr><td>8.0</td><td>1.200</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	1.200	0.5	1.200	1.0	1.200	2.0	1.200	3.0	1.200	4.0	1.200	5.0	1.200	6.0	1.200	7.0	1.200	8.0	1.200
Time since start [H]	Output Voltage [V]																								
0.0	1.200																								
0.5	1.200																								
1.0	1.200																								
2.0	1.200																								
3.0	1.200																								
4.0	1.200																								
5.0	1.200																								
6.0	1.200																								
7.0	1.200																								
8.0	1.200																								

COSEL

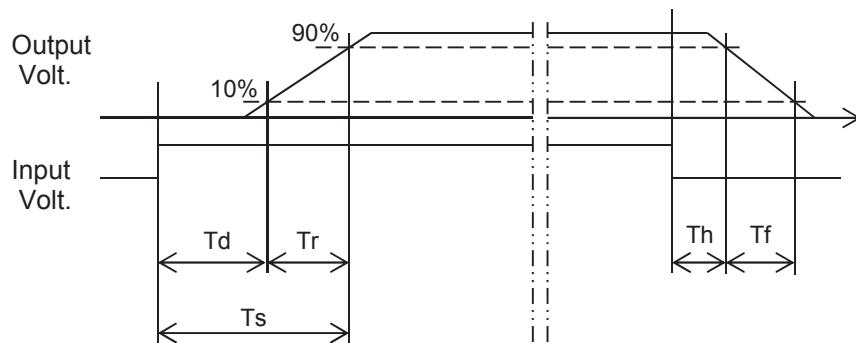
Model	BRDS60S	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+1.2V60A		

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		7.7	2.4	10.1	0.1	0.4	
100 %		7.7	2.6	10.3	0.1	0.3	



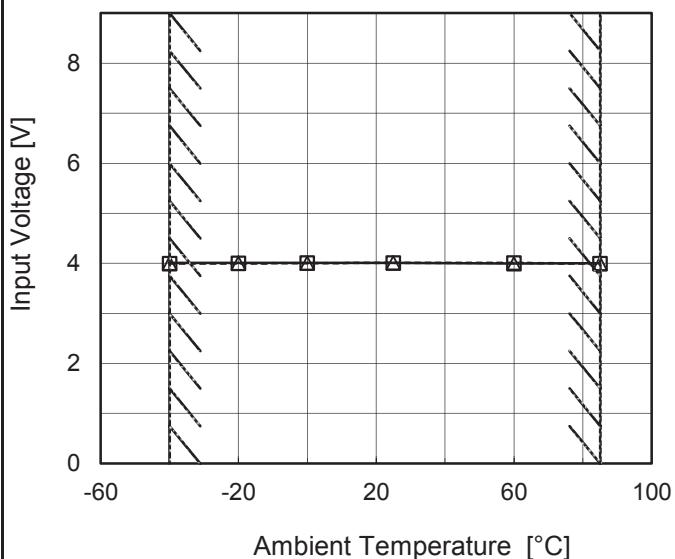
COSEL

Model	BRDS60S
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+1.2V60A

Testing Circuitry Figure A

1. Graph

--- □ --- Load 50%
— ▲ — Load 100%



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	4.00	4.01
-20	4.00	4.01
0	4.01	4.01
25	4.01	4.01
60	4.01	4.00
85	4.00	4.00
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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

COSEL

Model	BRDS60S	Temperature	25°C																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																							
Object	+1.2V60A																																																									
1.Graph	<p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Input Volt. 4.5V</p> <p>Input Volt. 12V</p> <p>Input Volt. 14V</p>																																																									
Note:	<p>Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when overcurrent protection is activated.</p>																																																									
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 14[V]</th> </tr> </thead> <tbody> <tr><td>1.20</td><td>72.11</td><td>72.11</td><td>71.49</td></tr> <tr><td>1.14</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.08</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.96</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.84</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.72</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.60</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.48</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.36</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.24</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.12</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	1.20	72.11	72.11	71.49	1.14	-	-	-	1.08	-	-	-	0.96	-	-	-	0.84	-	-	-	0.72	-	-	-	0.60	-	-	-	0.48	-	-	-	0.36	-	-	-	0.24	-	-	-	0.12	-	-	-	0.00	-	-	-
Output Voltage [V]	Load Current [A]																																																									
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																							
1.20	72.11	72.11	71.49																																																							
1.14	-	-	-																																																							
1.08	-	-	-																																																							
0.96	-	-	-																																																							
0.84	-	-	-																																																							
0.72	-	-	-																																																							
0.60	-	-	-																																																							
0.48	-	-	-																																																							
0.36	-	-	-																																																							
0.24	-	-	-																																																							
0.12	-	-	-																																																							
0.00	-	-	-																																																							

COSEL

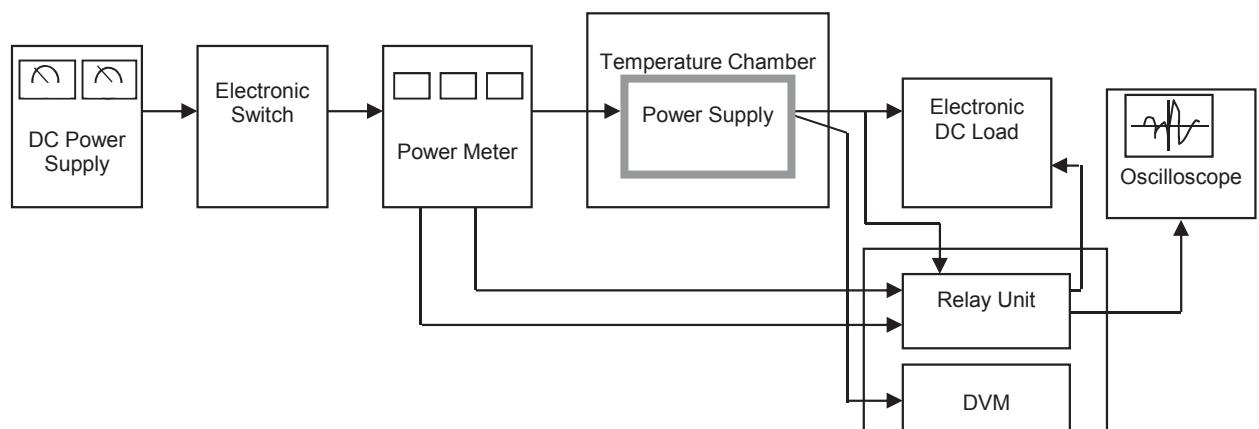


Figure A

Data Acquisition/Control Unit

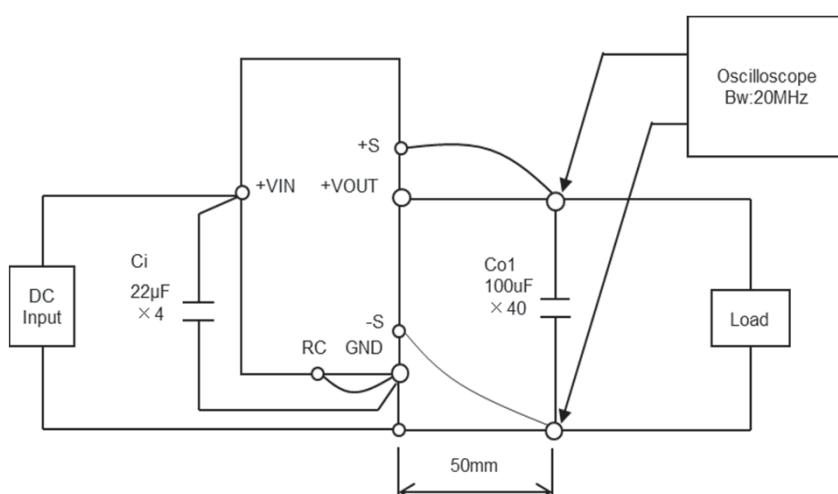


Figure B

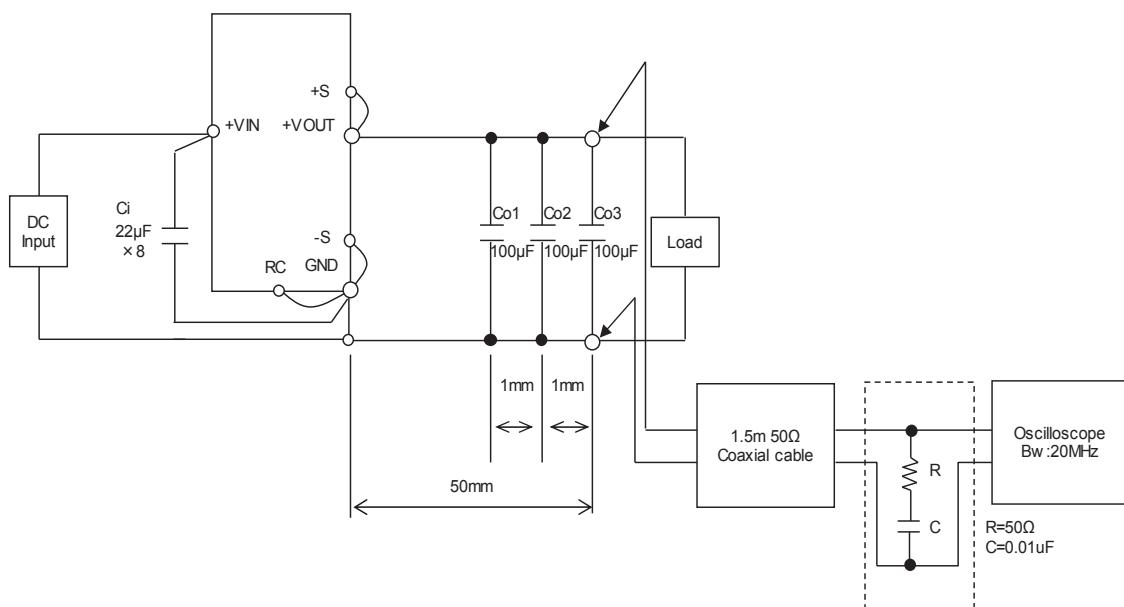


Figure C