



TEST DATA OF BRDS120

Regulated DC Power Supply
Jun 18, 2018

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Yoshimichi Hirokawa Design Manager

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COSEL CO.,LTD.

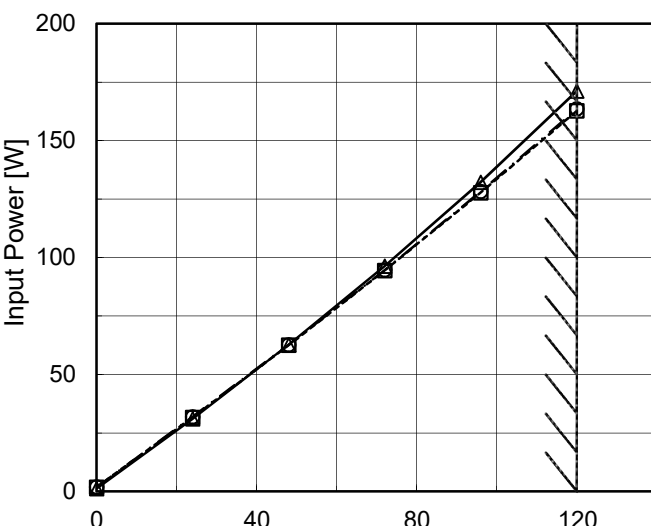
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BC - 11281

Model	BRDS120	Temperature 25°C Testing Circuitry Figure A																																	
Item	Line Regulation																																		
Object	+1.2V120A																																		
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 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>1.203</td><td>1.203</td></tr><tr><td>5.0</td><td>1.203</td><td>1.203</td></tr><tr><td>8.0</td><td>1.201</td><td>1.201</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> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	4.5	1.203	1.203	5.0	1.203	1.203	8.0	1.201	1.201	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%																																	
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5.0	1.203	1.203																																	
8.0	1.201	1.201																																	
10.0	1.201	1.200																																	
12.0	1.201	1.200																																	
14.0	1.201	1.200																																	
--	-	-																																	
--	-	-																																	
--	-	-																																	

Output Voltage [V]

1.26

1.24

1.22

1.20

1.18

1.16

1.14

1.12

4

6

8

10

12

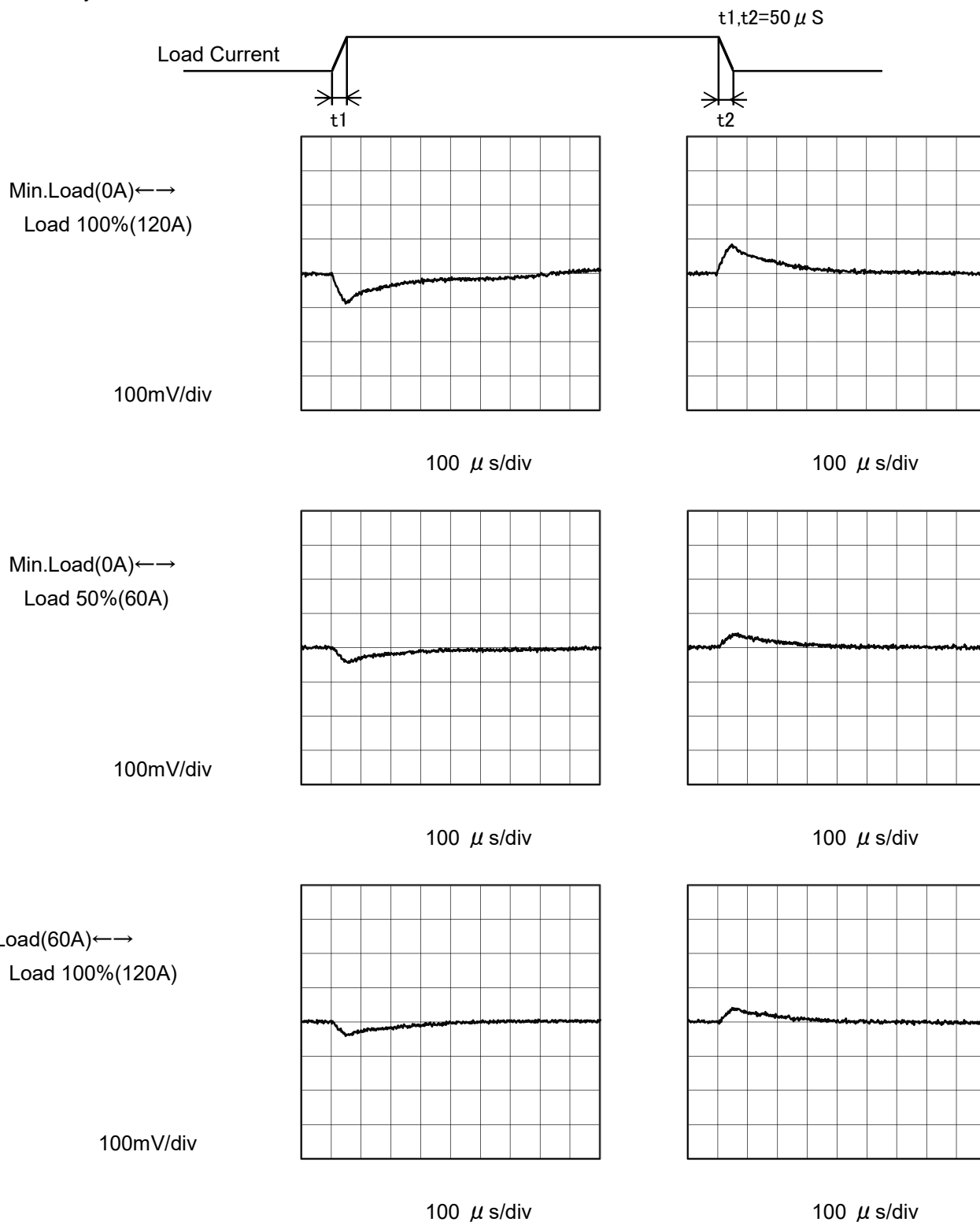
14

Input Voltage [V]

Model	BRDS120																																																					
Item	Load Regulation	Temperature	25°C																																																			
		Testing Circuitry	Figure A																																																			
Object	+1.2V120A																																																					
1.Graph		2.Values																																																				
<div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div>Input Volt.</div><div>4.5V</div></div><div><div>Input Volt.</div><div>12V</div></div><div><div>Input Volt.</div><div>14V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><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><tr><td>0</td><td>1.203</td><td>1.201</td><td>1.201</td></tr><tr><td>24</td><td>1.203</td><td>1.201</td><td>1.201</td></tr><tr><td>48</td><td>1.203</td><td>1.201</td><td>1.201</td></tr><tr><td>72</td><td>1.203</td><td>1.201</td><td>1.200</td></tr><tr><td>96</td><td>1.203</td><td>1.201</td><td>1.200</td></tr><tr><td>120</td><td>1.203</td><td>1.200</td><td>1.200</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></table>		Load Current [A]	Output Voltage [V]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	1.203	1.201	1.201	24	1.203	1.201	1.201	48	1.203	1.201	1.201	72	1.203	1.201	1.200	96	1.203	1.201	1.200	120	1.203	1.200	1.200	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	1.203	1.201	1.201																																																			
24	1.203	1.201	1.201																																																			
48	1.203	1.201	1.201																																																			
72	1.203	1.201	1.200																																																			
96	1.203	1.201	1.200																																																			
120	1.203	1.200	1.200																																																			
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Model	BRDS120	Temperature 25°C Testing Circuitry Figure B
Item	Dynamic Load Response	
Object	+1.2V120A	

Input Volt. 12 V
Cycle 5 ms



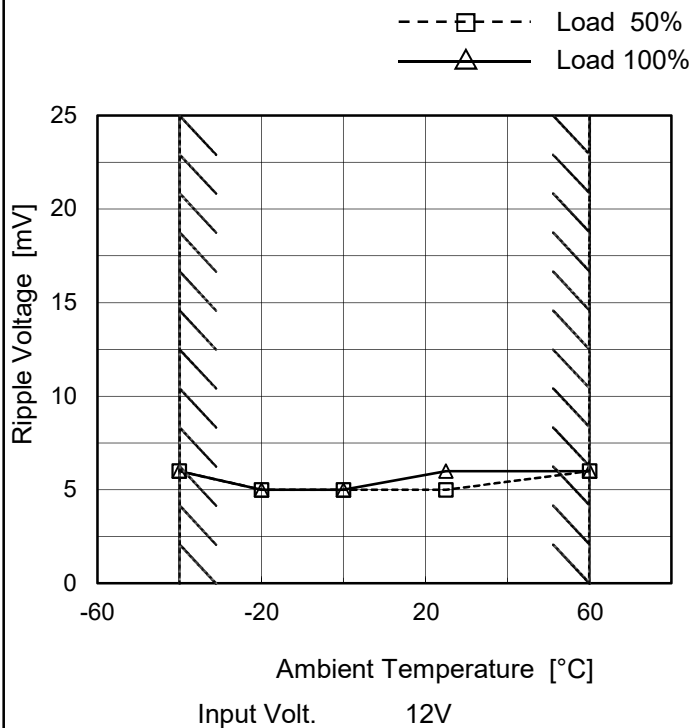
Model		BRDS120		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure C																																							
Object		+1.2V120A																																									
1.Graph				2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>5V</div></div><div><div>- - ○ - -</div><div>Input Volt.</div><div>12V</div></div></div> <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>				<table><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><tr><td>0</td><td>3</td><td>5</td></tr><tr><td>24</td><td>3</td><td>5</td></tr><tr><td>48</td><td>3</td><td>5</td></tr><tr><td>72</td><td>3</td><td>5</td></tr><tr><td>96</td><td>3</td><td>5</td></tr><tr><td>120</td><td>3</td><td>6</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></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 5 [V]	Input Volt. 12 [V]	0	3	5	24	3	5	48	3	5	72	3	5	96	3	5	120	3	6	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																										
	Input Volt. 5 [V]	Input Volt. 12 [V]																																									
0	3	5																																									
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48	3	5																																									
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96	3	5																																									
120	3	6																																									
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<p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																											

Model		BRDS120																																										
Item		Ripple-Noise																																										
Object		+1.2V120A																																										
1.Graph		2.Values																																										
<div><div><div><div><div></div><div></div></div><div>Input Volt.</div><div>5V</div></div><div><div><div></div><div></div></div><div>Input Volt.</div><div>12V</div></div></div><div><p>Ripple-Noise [mV]</p><p>Load Current [A]</p></div></div> <div><p>Measured by 20 MHz Oscilloscope.</p><p>Ripple-Noise is shown as p-p in the figure below.</p><p>Note: Slanted line shows the range of the rated load current.</p><div><div><div></div><div></div></div><div>Ripple Noise[mVp-p]</div><div></div></div><p>Fig.Complex Ripple Noise Wave Form</p></div> <td colspan="2"><div><div>Temperature</div><div>25°C</div></div><div><div>Testing Circuitry</div><div>Figure C</div></div></td>		<div><div>Temperature</div><div>25°C</div></div> <div><div>Testing Circuitry</div><div>Figure C</div></div>																																										
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 5 [V]</th><th>Input Volt. 12 [V]</th></tr><tr><td>0</td><td>16</td><td>19</td></tr><tr><td>24</td><td>20</td><td>20</td></tr><tr><td>48</td><td>17</td><td>22</td></tr><tr><td>72</td><td>19</td><td>22</td></tr><tr><td>96</td><td>18</td><td>23</td></tr><tr><td>120</td><td>17</td><td>23</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><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 5 [V]	Input Volt. 12 [V]	0	16	19	24	20	20	48	17	22	72	19	22	96	18	23	120	17	23	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																											
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48	17	22																																										
72	19	22																																										
96	18	23																																										
120	17	23																																										
--	-	-																																										
--	-	-																																										
--	-	-																																										
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--	-	-																																										
--	-	-																																										

Model	BRDS120
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.2V120A

Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.

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

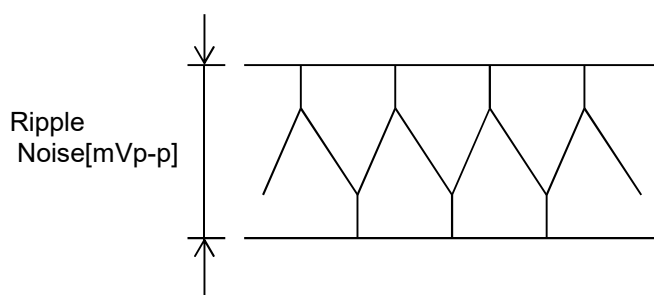


Fig.Complex Ripple Noise Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	6	6
-20	5	5
0	5	5
25	5	6
60	6	6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Model	BRDS120																																																					
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																				
Object	+1.2V120A																																																					
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>4.5V</div></div><div><div>---□---</div><div>Input Volt.</div><div>12V</div></div><div><div>---○---</div><div>Input Volt.</div><div>14V</div></div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</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="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><tr><td>-40</td><td>1.195</td><td>1.195</td><td>1.193</td></tr><tr><td>-20</td><td>1.199</td><td>1.196</td><td>1.193</td></tr><tr><td>0</td><td>1.201</td><td>1.200</td><td>1.197</td></tr><tr><td>25</td><td>1.203</td><td>1.200</td><td>1.200</td></tr><tr><td>60</td><td>1.205</td><td>1.201</td><td>1.199</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	-40	1.195	1.195	1.193	-20	1.199	1.196	1.193	0	1.201	1.200	1.197	25	1.203	1.200	1.200	60	1.205	1.201	1.199	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
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		Testing Circuitry Figure A
Model	BRDS120	
Item	Output Voltage Accuracy	
Object	+1.2V120A	

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 - 60°C

Input Voltage : 4.5 - 14V

Load Current : 0 - 120A

* 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

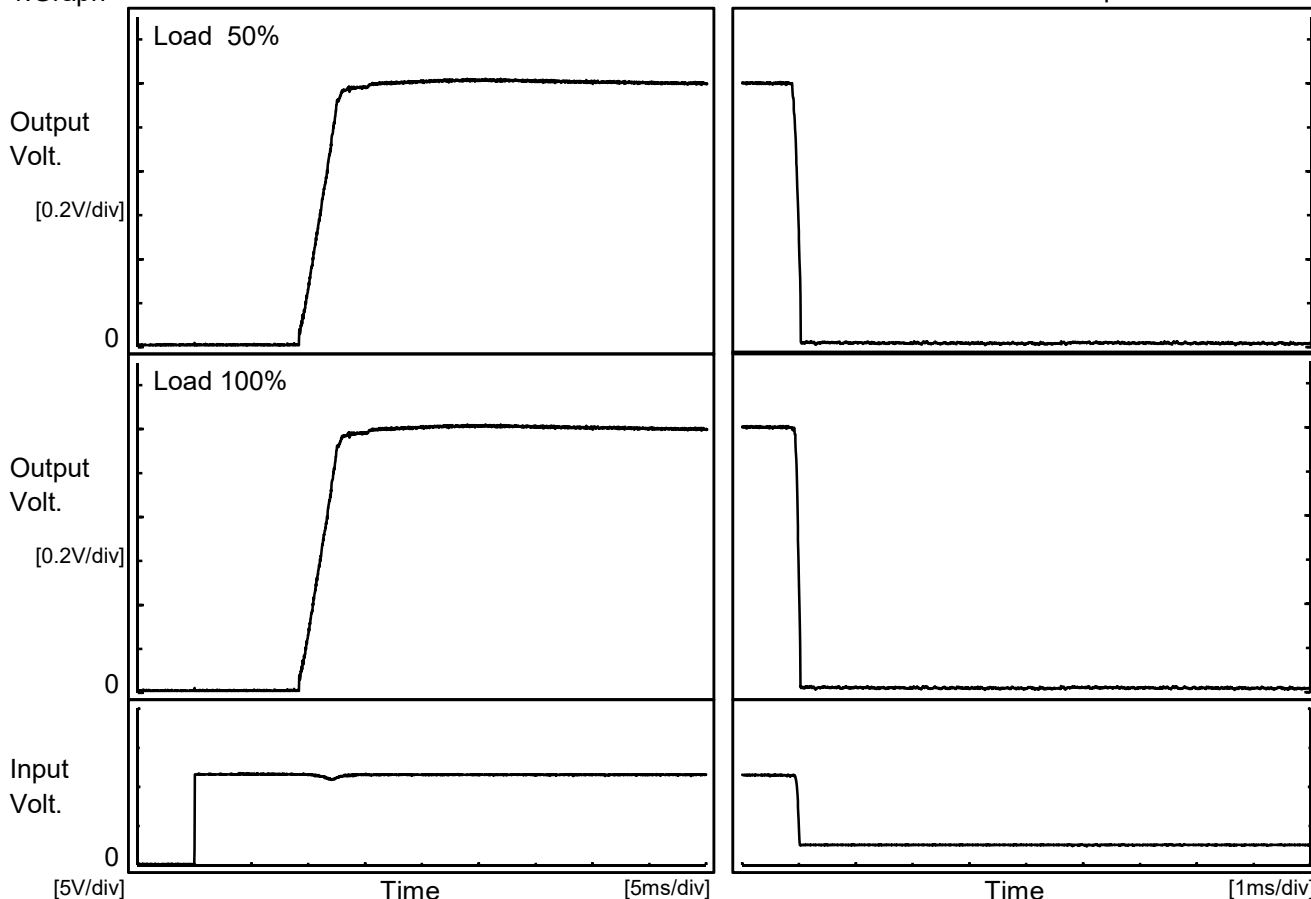
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	4.5	0	1.206	±7	±0.6
Minimum Voltage	-40	14	120	1.193		



Model	BRDS120																								
Item	Time Lapse Drift	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+1.2V120A																								
1.Graph		2.Values																							
<div><div><div>Output Voltage [V]</div><div><div><div></div></div></div><div>Time [H]</div></div><div>Input Volt. 12V</div><div>Load 100%</div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>1.202</td></tr><tr><td>0.5</td><td>1.202</td></tr><tr><td>1.0</td><td>1.202</td></tr><tr><td>2.0</td><td>1.202</td></tr><tr><td>3.0</td><td>1.202</td></tr><tr><td>4.0</td><td>1.202</td></tr><tr><td>5.0</td><td>1.202</td></tr><tr><td>6.0</td><td>1.202</td></tr><tr><td>7.0</td><td>1.202</td></tr><tr><td>8.0</td><td>1.202</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	1.202	0.5	1.202	1.0	1.202	2.0	1.202	3.0	1.202	4.0	1.202	5.0	1.202	6.0	1.202	7.0	1.202	8.0	1.202
Time since start [H]	Output Voltage [V]																								
0.0	1.202																								
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8.0	1.202																								

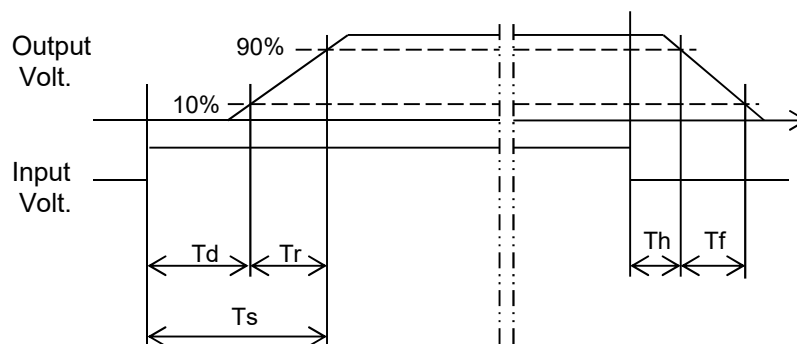
Model	BRDS120	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+1.2V120A		

1.Graph



2.Values

		[ms]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		9.5	2.9	12.4	0.1	0.3
100 %		9.5	3.0	12.5	0.1	0.3



BC - 11281

Model	BRDS120	Temperature 25°C Testing Circuitry Figure A																																																								
Item	Overcurrent Protection																																																									
Object	+1.2V120A																																																									
1.Graph		2.Values																																																								
<div><div><div><div></div><div>△</div></div><div>Input Volt. 4.5V</div></div><div><div><div></div><div>□</div></div><div>Input Volt. 12V</div></div><div><div><div></div><div>○</div></div><div>Input Volt. 14V</div></div></div> <div><p>Note: Slanted line shows the range of the rated load current.</p><p>Intermittent operation occurs when overcurrent protection is activated.</p></div>		<table><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><tr><td>1.20</td><td>146.67</td><td>143.59</td><td>143.13</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></table>		Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	1.20	146.67	143.59	143.13	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]																																																									
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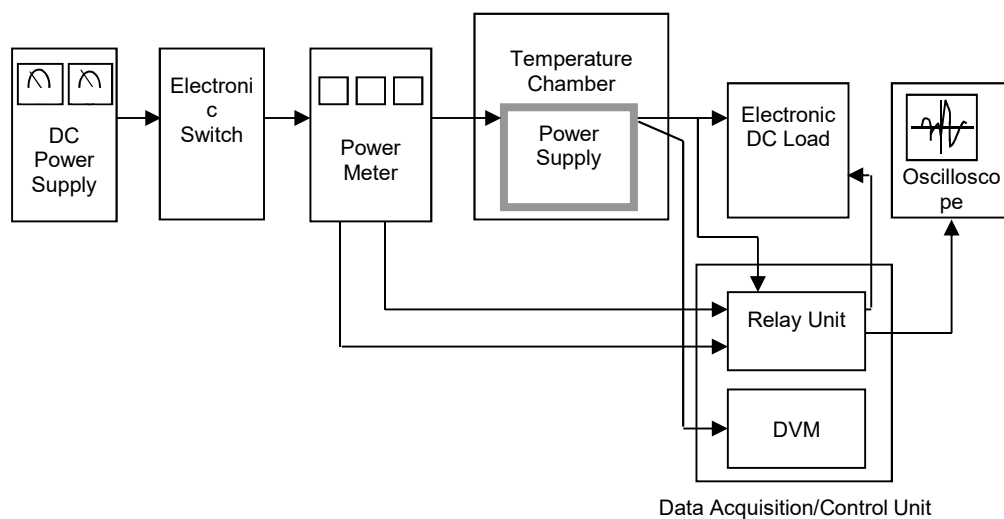


Figure A

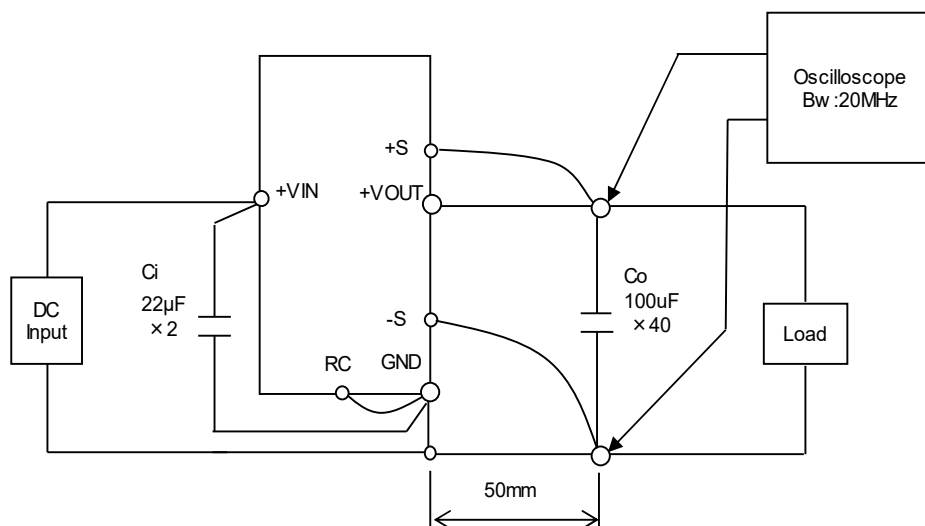


Figure B

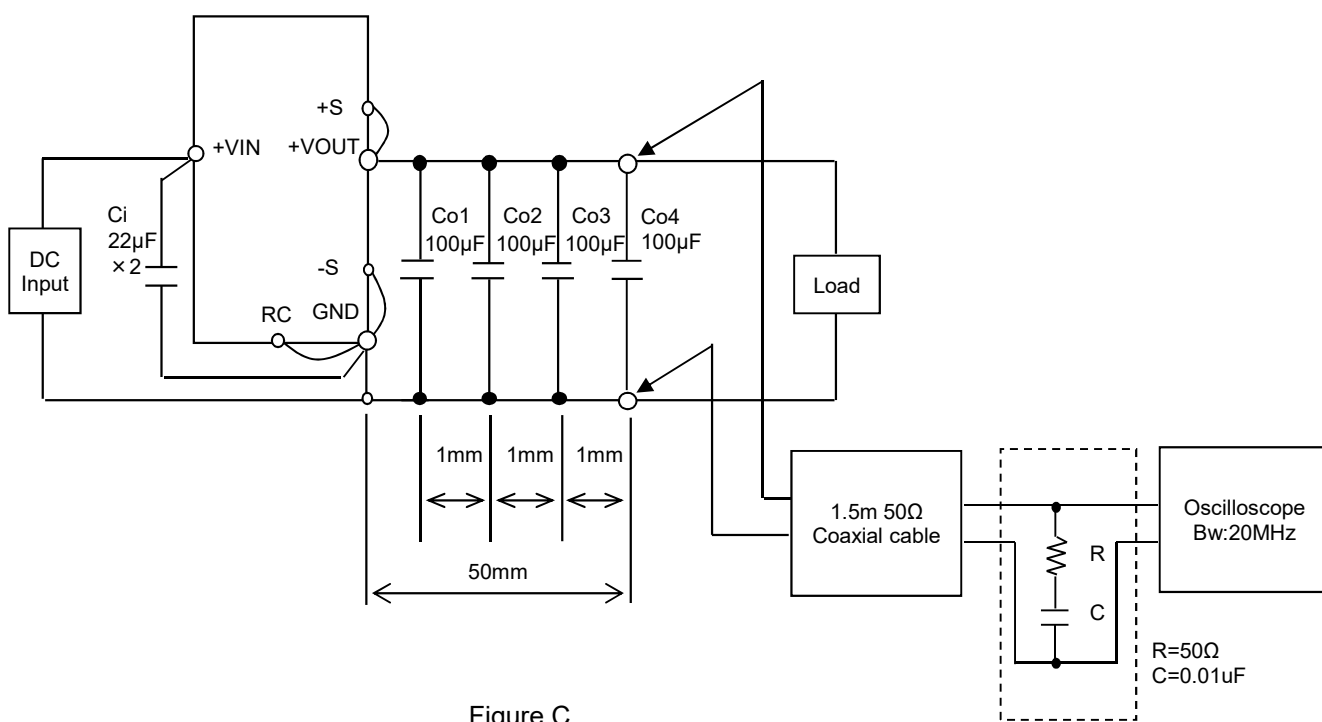


Figure C