

TEST DATA OF BRFS120

Regulated DC Power Supply
January 12, 2018

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Yoshimichi Hirokawa Design Manager

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COSEL CO.,LTD.

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(Final Page 18)

Model	BRFS120																																																																																					
Item	Input Current (by Input Voltage)	Temperature	25°C																																																																																			
Object	+1.2V	Testing Circuitry	Figure A																																																																																			
1.Graph		2.Values																																																																																				
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Temperature 25°C
Testing Circuitry Figure A



Load Current [A]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]
0	1.16	1.78	1.86
24	31.03	31.66	31.89
48	62.70	62.48	62.70
72	96.26	94.46	94.65
96	132.21	127.68	128.19
120	171.16	162.69	163.50
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--	-	-	-
--	-	-	-
--	-	-	-

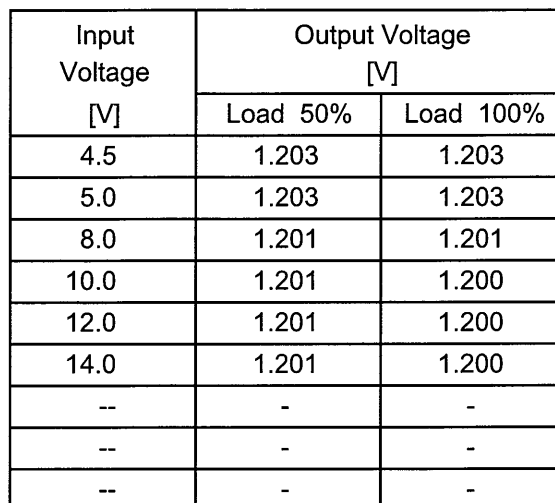
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Model	BRFS120																																
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Object	+1.2V	Testing Circuitry	Figure A																														
1.Graph		2.Values																															
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Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]																															
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Load Current [A]	Efficiency [%]																																																					
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72	90.2	91.7	91.6																																																			
96	87.5	90.4	90.2																																																			
120	84.5	88.8	88.2																																																			
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Temperature 25°C
Testing Circuitry Figure A

2.Values

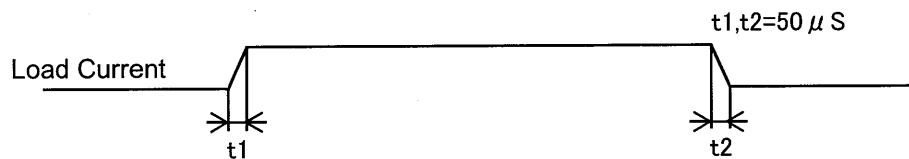


Note: Slanted line shows the range of the rated input voltage.

Model	BRFS120																																																									
Item	Load Regulation	Temperature	25°C																																																							
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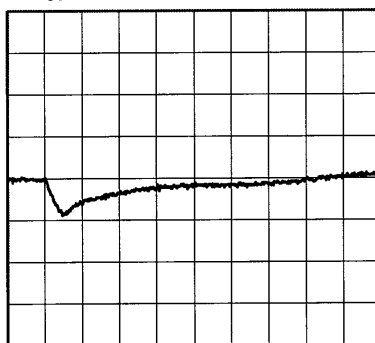
Model	BRFS120	Temperature 25°C Testing Circuitry Figure B
Item	Dynamic Load Response	
Object	+1.2V/120A	

Input Volt. 12 V
Cycle 5 ms

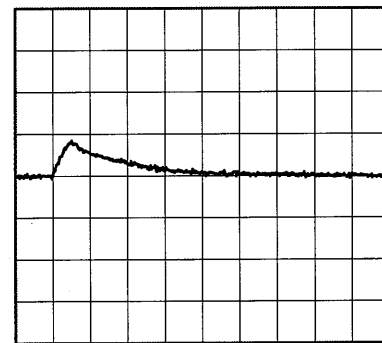


Min. Load (0A) \longleftrightarrow
Load 100% (120A)

100mV/div



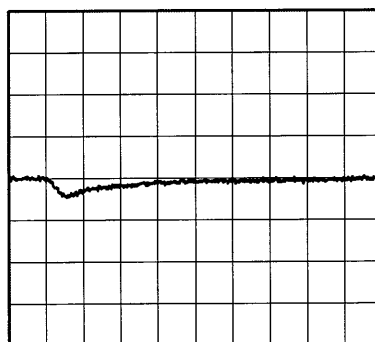
100 μ s/div



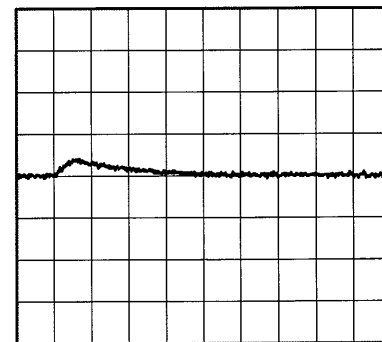
100 μ s/div

Min. Load (0A) \longleftrightarrow
Load 50% (60A)

100mV/div



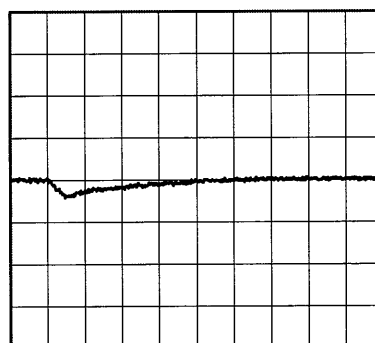
100 μ s/div



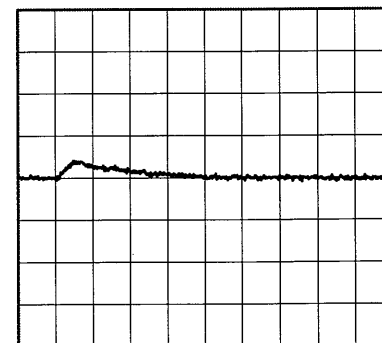
100 μ s/div

Load 50% (60A) \longleftrightarrow
Load 100% (120A)

100mV/div



100 μ s/div



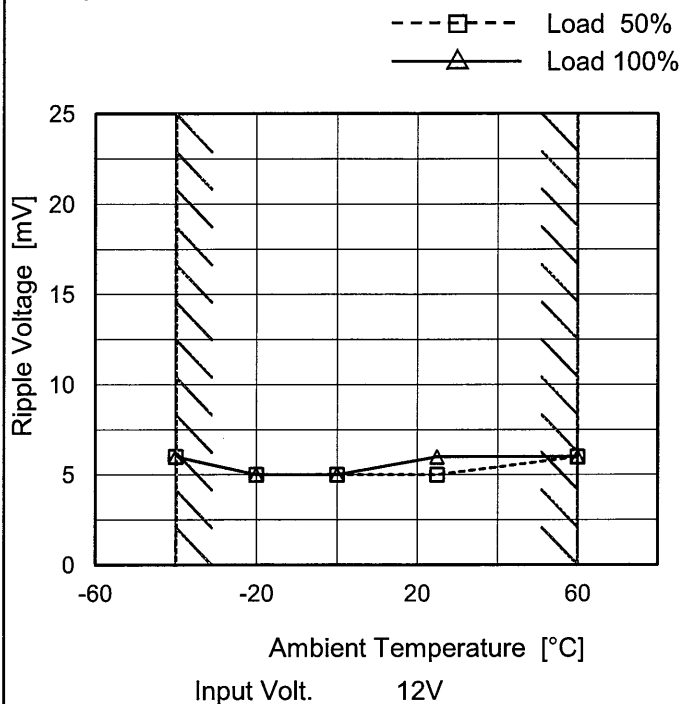
100 μ s/div

Model		BRFS120		Temperature 25°C																																					
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure C																																					
Object		+1.2V120A																																							
1.Graph				2.Values																																					
<div><div><div>—△— Input Volt. 5V</div><div>- -○- - Input Volt. 12V</div></div><table><thead><tr><th>Load Current [A]</th><th>Input Volt. 5 [V]</th><th>Input Volt. 12 [V]</th></tr></thead><tbody><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></tbody></table></div>				Load Current [A]	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]	Input Volt. 5 [V]	Input Volt. 12 [V]																																							
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<div>Measured by 20 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div> <div><div>Ripple [mVp-p]</div></div> <div>Fig.Complex Ripple Wave Form</div>																																									

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Model	BRFS120
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.2V120A

1.Graph



Measured by 20 MHz Oscilloscope.

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

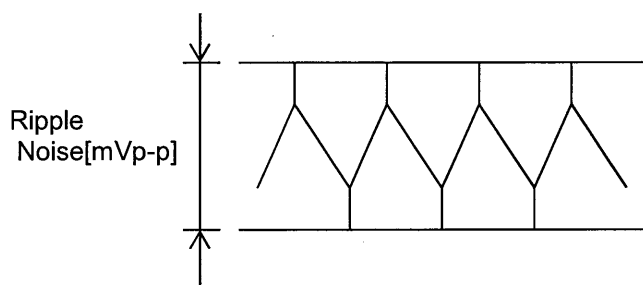


Fig.Complex Ripple Noise Wave Form

Testing Circuitry Figure C

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	BRFS120																																																									
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><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	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		BRFS120	Testing Circuitry Figure A
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

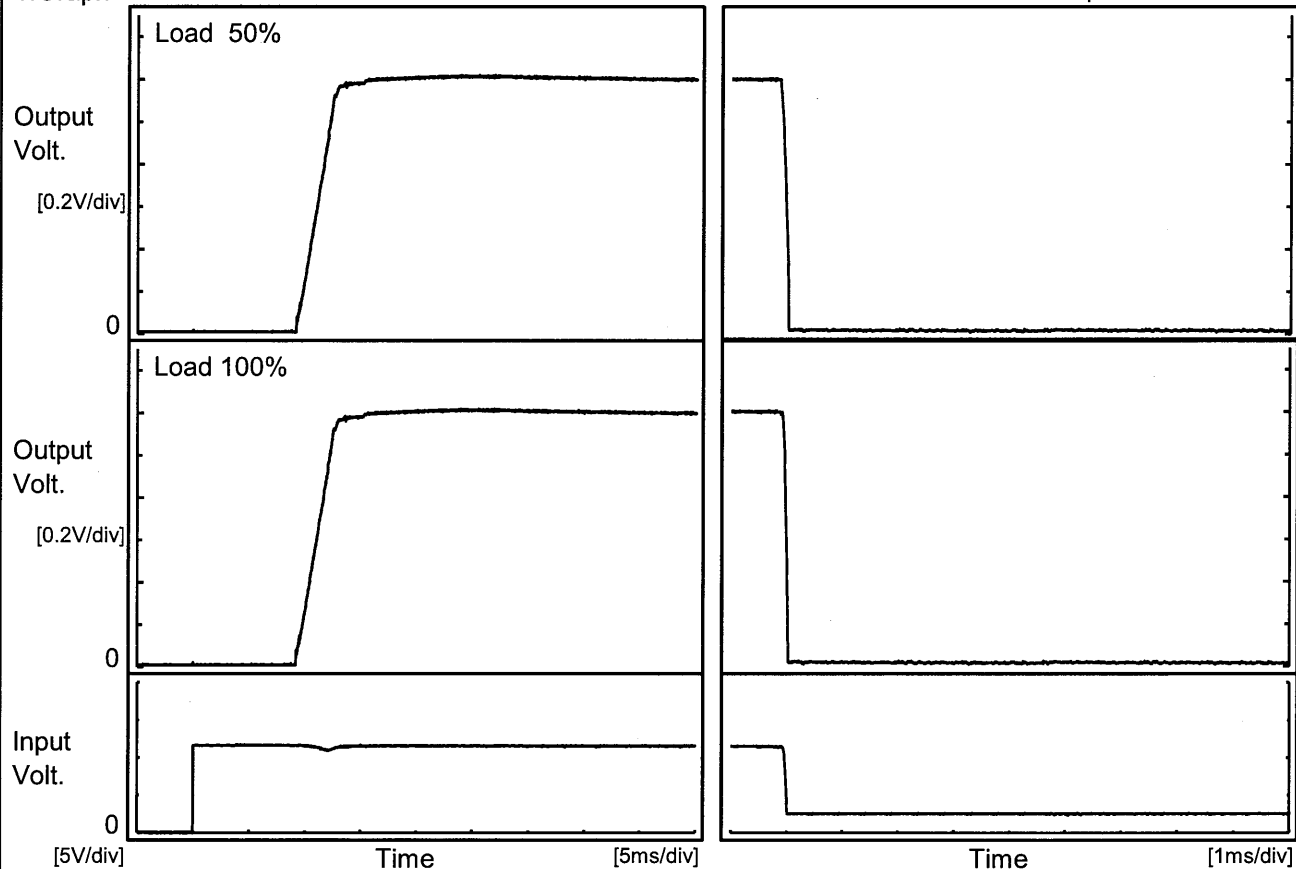
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	4.5	0	1.206	±7	±0.6
Minimum Voltage	-40	14	120	1.193		



Model		BRFS120	
Item		Time Lapse Drift	
Object		+1.2V120A	
1.Graph		2.Values	
<div><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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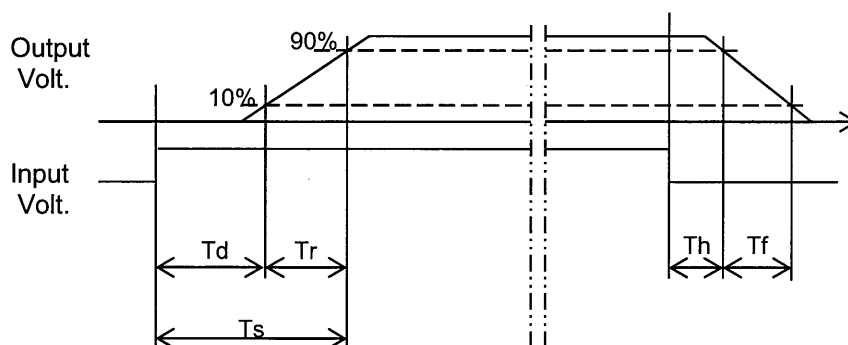
Model	BRFS120		
Item	Rise and Fall Time	Temperature	25°C
Object	+1.2V120A	Testing Circuitry	Figure A

1.Graph



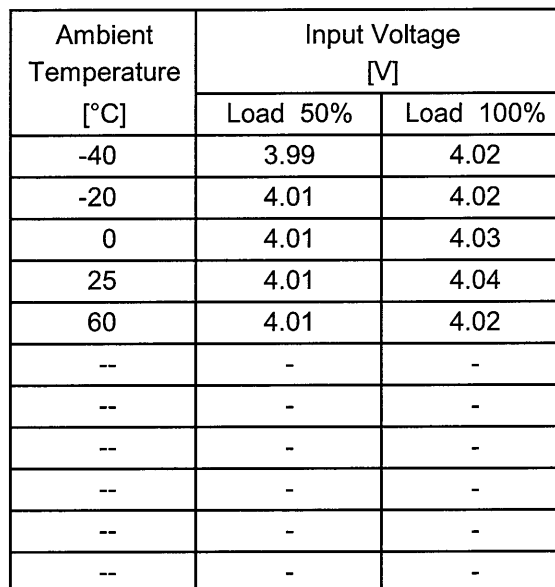
2.Values

		[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



Testing Circuitry Figure A

2.Values



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

Model	BRFS120																																																									
Item	Overcurrent Protection	Temperature	25°C																																																							
Object	+1.2V120A	Testing Circuitry	Figure A																																																							
1.Graph		2.Values																																																								
<div><div><div></div><div>Input Volt. 4.5V</div></div><div><div></div><div>Input Volt. 12V</div></div><div><div></div><div>Input Volt. 14V</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>		<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	-	-	-
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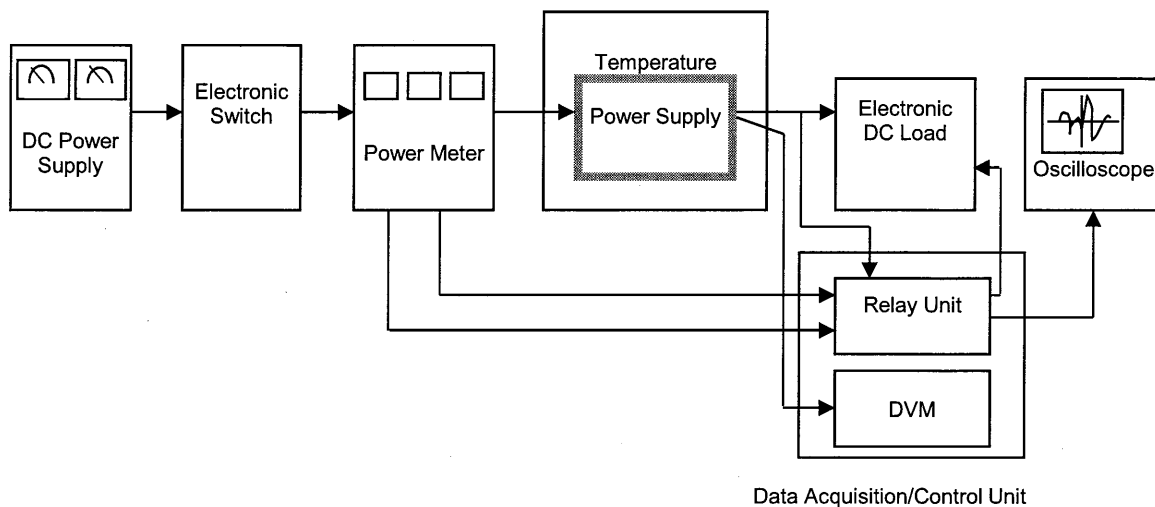


Figure A

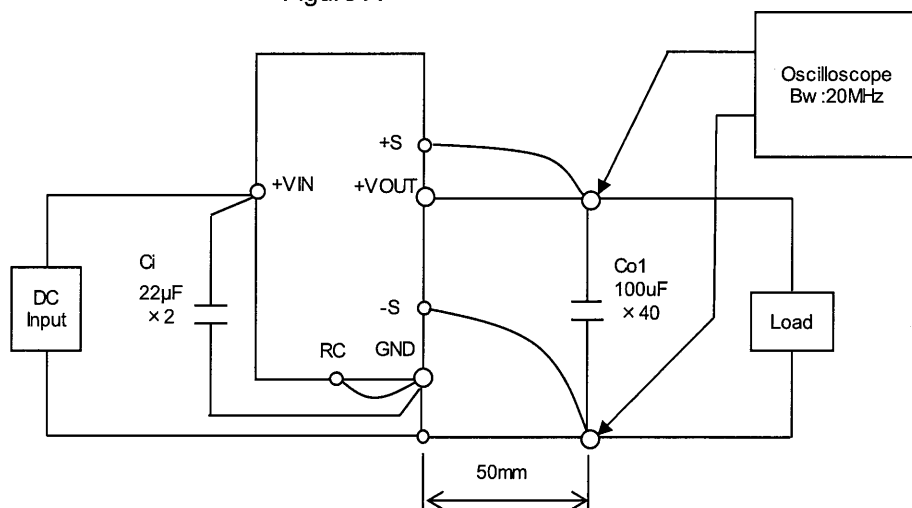


Figure B

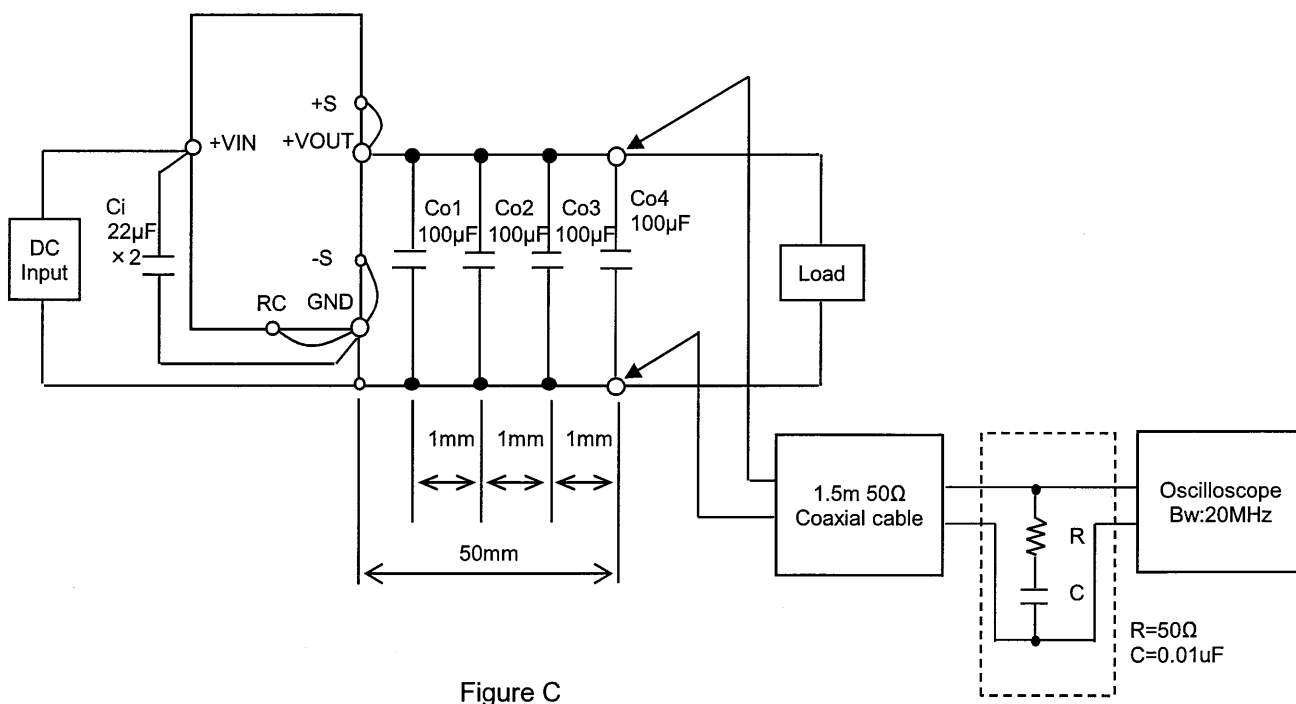


Figure C