

# TEST DATA OF BRFS40

Regulated DC Power Supply  
March 24, 2015

Approved by : Yoshimichi Hirokawa  
Yoshimichi Hirokawa Design Manager

Prepared by : Yohei Urayama  
Yohei Urayama Design Engineer

**COSEL CO.,LTD.**

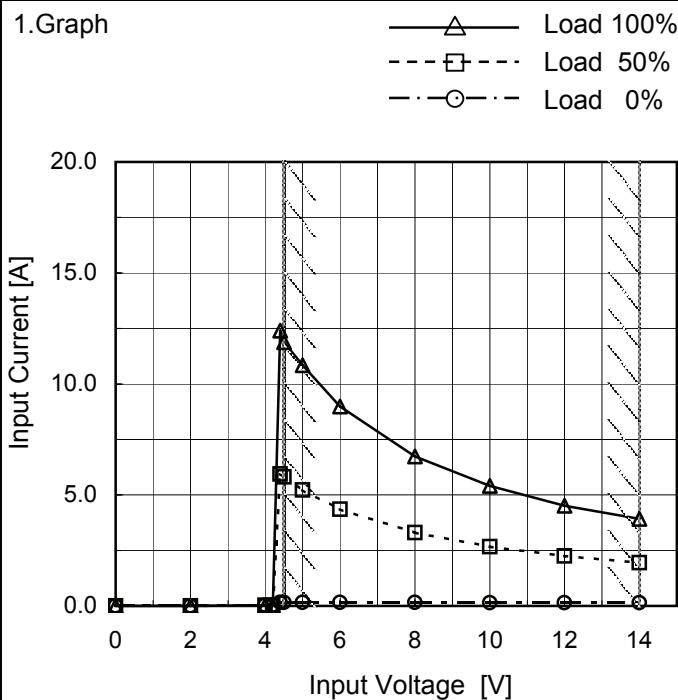
## CONTENTS

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	BRFS40
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	0.005	0.005	0.004
4.0	0.031	0.032	0.032
4.2	0.032	0.032	0.031
4.4	0.165	5.943	12.405
4.5	0.164	5.807	11.879
5.0	0.164	5.220	10.838
6.0	0.162	4.361	8.985
8.0	0.156	3.297	6.728
10.0	0.151	2.665	5.403
12.0	0.147	2.243	4.514
14.0	0.144	1.942	3.919
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

**COSEL**

Model	BRFS40	Temperature	25°C																																																																																																		
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																																																																																		
Object	+1.2V																																																																																																				
1.Graph		2.Values																																																																																																			
<p>1. Graph</p> <ul style="list-style-type: none"> <li>—△— Input Volt. 4.5V</li> <li>- -□- - Input Volt. 12V</li> <li>- -○- - Input Volt. 14V</li> </ul> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <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>0.164</td><td>0.147</td><td>0.144</td></tr> <tr><td>8</td><td>2.333</td><td>0.969</td><td>0.849</td></tr> <tr><td>16</td><td>4.597</td><td>1.811</td><td>1.572</td></tr> <tr><td>24</td><td>6.941</td><td>2.679</td><td>2.316</td></tr> <tr><td>32</td><td>9.366</td><td>3.580</td><td>3.096</td></tr> <tr><td>40</td><td>11.879</td><td>4.514</td><td>3.919</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. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	0.164	0.147	0.144	8	2.333	0.969	0.849	16	4.597	1.811	1.572	24	6.941	2.679	2.316	32	9.366	3.580	3.096	40	11.879	4.514	3.919	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input 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>0</td><td>0.164</td><td>0.147</td><td>0.144</td></tr> <tr><td>8</td><td>2.333</td><td>0.969</td><td>0.849</td></tr> <tr><td>16</td><td>4.597</td><td>1.811</td><td>1.572</td></tr> <tr><td>24</td><td>6.941</td><td>2.679</td><td>2.316</td></tr> <tr><td>32</td><td>9.366</td><td>3.580</td><td>3.096</td></tr> <tr><td>40</td><td>11.879</td><td>4.514</td><td>3.919</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 Current [A]			Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]	0	0.164	0.147	0.144	8	2.333	0.969	0.849	16	4.597	1.811	1.572	24	6.941	2.679	2.316	32	9.366	3.580	3.096	40	11.879	4.514	3.919	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																																																																		
0	0.164	0.147	0.144																																																																																																		
8	2.333	0.969	0.849																																																																																																		
16	4.597	1.811	1.572																																																																																																		
24	6.941	2.679	2.316																																																																																																		
32	9.366	3.580	3.096																																																																																																		
40	11.879	4.514	3.919																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
Load Current [A]	Input Current [A]																																																																																																				
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																																																																		
0	0.164	0.147	0.144																																																																																																		
8	2.333	0.969	0.849																																																																																																		
16	4.597	1.811	1.572																																																																																																		
24	6.941	2.679	2.316																																																																																																		
32	9.366	3.580	3.096																																																																																																		
40	11.879	4.514	3.919																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
--	-	-	-																																																																																																		
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																																					

**COSEL**

Model	BRFS40	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"> <li>Input Volt. 4.5V</li> <li>Input Volt. 12V</li> <li>Input Volt. 14V</li> </ul>		<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>0.74</td> <td>1.77</td> <td>2.02</td> </tr> <tr> <td>8</td> <td>10.49</td> <td>11.63</td> <td>11.89</td> </tr> <tr> <td>16</td> <td>20.65</td> <td>21.72</td> <td>22.00</td> </tr> <tr> <td>24</td> <td>31.20</td> <td>32.13</td> <td>32.41</td> </tr> <tr> <td>32</td> <td>42.14</td> <td>42.95</td> <td>43.32</td> </tr> <tr> <td>40</td> <td>53.47</td> <td>54.13</td> <td>54.86</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	0.74	1.77	2.02	8	10.49	11.63	11.89	16	20.65	21.72	22.00	24	31.20	32.13	32.41	32	42.14	42.95	43.32	40	53.47	54.13	54.86	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Power [W]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	0.74	1.77	2.02																																																			
8	10.49	11.63	11.89																																																			
16	20.65	21.72	22.00																																																			
24	31.20	32.13	32.41																																																			
32	42.14	42.95	43.32																																																			
40	53.47	54.13	54.86																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

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

**COSEL**

Model	BRFS40	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 data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a general downward trend as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>4.5</td><td>92.6</td><td>89.5</td></tr> <tr><td>5.0</td><td>92.6</td><td>89.8</td></tr> <tr><td>8.0</td><td>91.2</td><td>89.5</td></tr> <tr><td>10.0</td><td>90.2</td><td>89.0</td></tr> <tr><td>12.0</td><td>89.2</td><td>88.4</td></tr> <tr><td>14.0</td><td>88.3</td><td>87.2</td></tr> </tbody> </table>				Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	4.5	92.6	89.5	5.0	92.6	89.8	8.0	91.2	89.5	10.0	90.2	89.0	12.0	89.2	88.4	14.0	88.3	87.2
Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]																						
4.5	92.6	89.5																						
5.0	92.6	89.8																						
8.0	91.2	89.5																						
10.0	90.2	89.0																						
12.0	89.2	88.4																						
14.0	88.3	87.2																						
<p>Note: Slanted line shows the range of the rated input voltage.</p>																								

**COSEL**

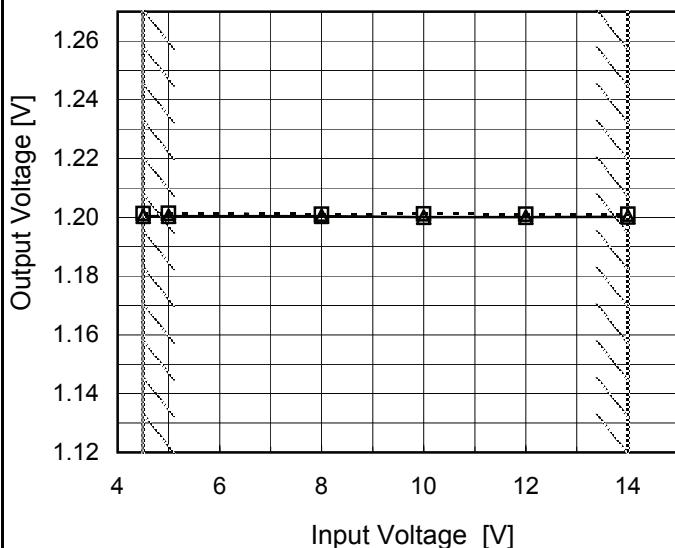
Model	BRFS40	Temperature	25°C																																																			
Item	Efficiency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+1.2V																																																					
1.Graph		2.Values																																																				
<p>The graph plots Efficiency [%] on the Y-axis (44 to 100) against Load Current [A] on the X-axis (0 to 40). Three data series are shown: Input Volt. 4.5V (solid line with open triangle markers), Input Volt. 12V (dashed line with open square markers), and Input Volt. 14V (dash-dot line with open circle markers). All curves show efficiency decreasing as load current increases beyond the rated range (indicated by a slanted line).</p>		<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>8</td><td>91.2</td><td>82.3</td><td>80.5</td></tr> <tr> <td>16</td><td>92.9</td><td>88.3</td><td>87.1</td></tr> <tr> <td>24</td><td>92.2</td><td>89.5</td><td>88.8</td></tr> <tr> <td>32</td><td>91.1</td><td>89.4</td><td>88.6</td></tr> <tr> <td>40</td><td>89.5</td><td>88.4</td><td>87.2</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	-	-	-	8	91.2	82.3	80.5	16	92.9	88.3	87.1	24	92.2	89.5	88.8	32	91.1	89.4	88.6	40	89.5	88.4	87.2	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]																																																			
0	-	-	-																																																			
8	91.2	82.3	80.5																																																			
16	92.9	88.3	87.1																																																			
24	92.2	89.5	88.8																																																			
32	91.1	89.4	88.6																																																			
40	89.5	88.4	87.2																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
<p>Note: Slanted line shows the range of the rated load current.</p>																																																						

**COSEL**

Model	BRFS40
Item	Line Regulation
Object	+1.2V40A

 Temperature 25°C  
 Testing Circuitry Figure A

## 1. Graph

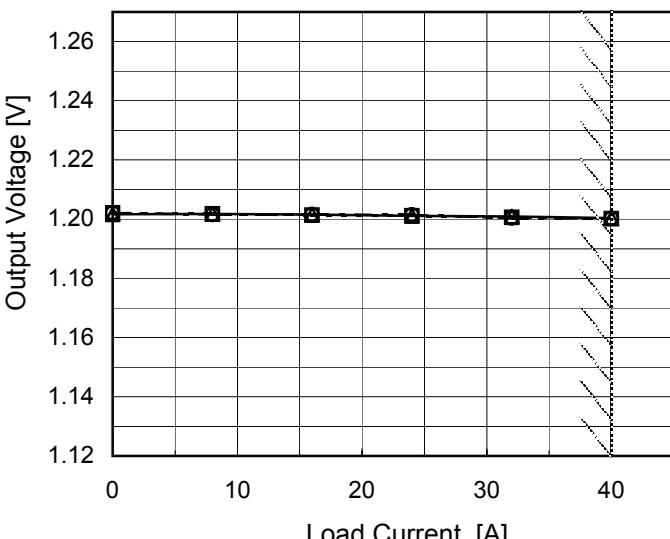
 --- □ --- Load 50%  
 —△— Load 100%


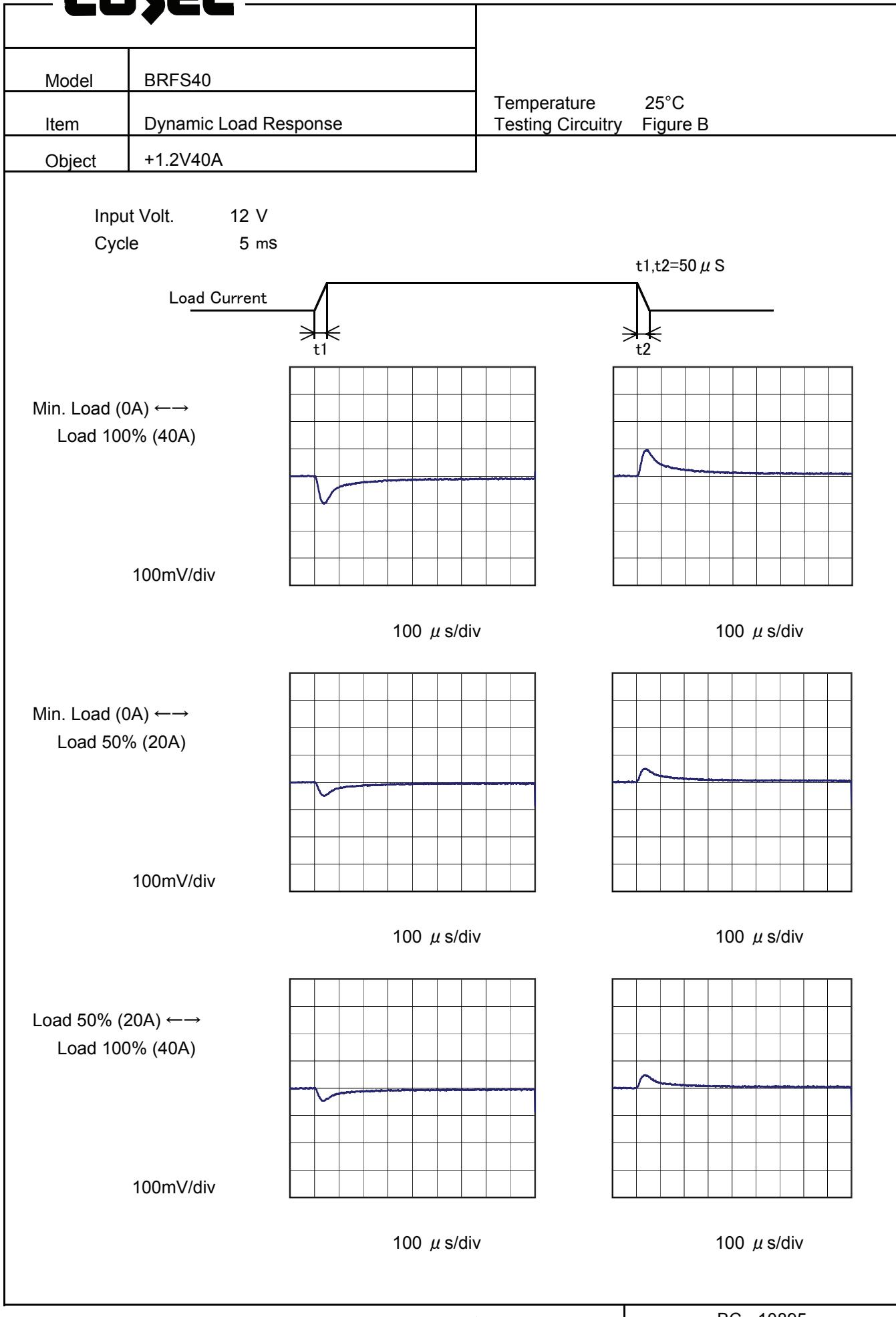
## 2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.5	1.201	1.200
5.0	1.201	1.200
8.0	1.201	1.200
10.0	1.201	1.200
12.0	1.201	1.200
14.0	1.201	1.200
--	-	-
--	-	-
--	-	-

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

**COSEL**

Model	BRFS40	Temperature	25°C																																															
Item	Load Regulation	Testing Circuitry	Figure A																																															
Object	+1.2V40A																																																	
1.Graph		—△— 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>1.202</td> <td>1.202</td> <td>1.202</td> </tr> <tr> <td>8</td> <td>1.202</td> <td>1.202</td> <td>1.202</td> </tr> <tr> <td>16</td> <td>1.202</td> <td>1.201</td> <td>1.202</td> </tr> <tr> <td>24</td> <td>1.201</td> <td>1.201</td> <td>1.201</td> </tr> <tr> <td>32</td> <td>1.201</td> <td>1.201</td> <td>1.200</td> </tr> <tr> <td>40</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	1.202	1.202	1.202	8	1.202	1.202	1.202	16	1.202	1.201	1.202	24	1.201	1.201	1.201	32	1.201	1.201	1.200	40	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	1.202	1.202	1.202																																															
8	1.202	1.202	1.202																																															
16	1.202	1.201	1.202																																															
24	1.201	1.201	1.201																																															
32	1.201	1.201	1.200																																															
40	1.200	1.200	1.200																																															
--	-	-	-																																															
--	-	-	-																																															
--	-	-	-																																															
--	-	-	-																																															
Note: Slanted line shows the range of the rated load current.																																																		

**COSEL**

**COSEL**

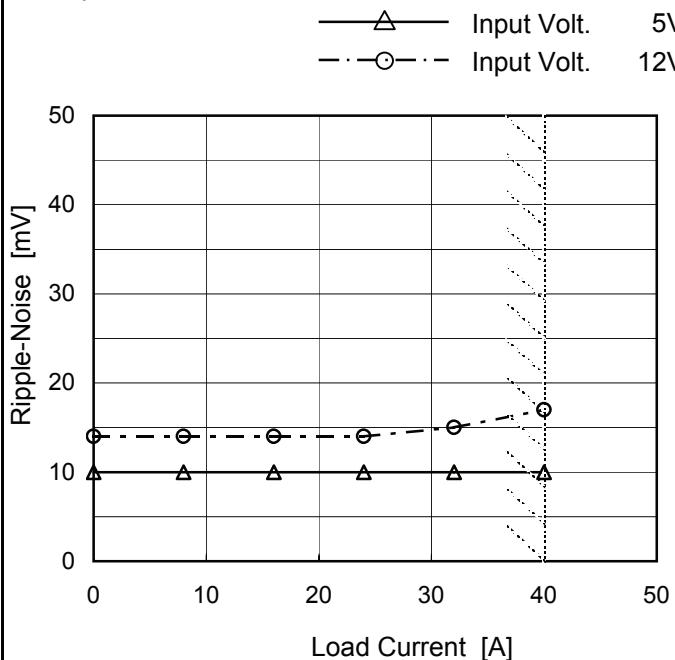
Model	BRFS40																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure C																																						
Object	+1.2V40A																																							
1.Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 25 mV, and the X-axis ranges from 0 to 50 A. Two sets of data points are plotted: Input Volt. 5V (solid triangles) and Input Volt. 12V (open circles). A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (5V)</th> <th>Ripple Voltage [mV] (12V)</th> </tr> </thead> <tbody> <tr><td>0</td><td>5.0</td><td>4.0</td></tr> <tr><td>8</td><td>4.0</td><td>5.0</td></tr> <tr><td>16</td><td>4.0</td><td>5.0</td></tr> <tr><td>24</td><td>4.0</td><td>5.0</td></tr> <tr><td>32</td><td>4.0</td><td>5.0</td></tr> <tr><td>40</td><td>4.0</td><td>5.0</td></tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV] (5V)	Ripple Voltage [mV] (12V)	0	5.0	4.0	8	4.0	5.0	16	4.0	5.0	24	4.0	5.0	32	4.0	5.0	40	4.0	5.0																	
Load Current [A]	Ripple Voltage [mV] (5V)	Ripple Voltage [mV] (12V)																																						
0	5.0	4.0																																						
8	4.0	5.0																																						
16	4.0	5.0																																						
24	4.0	5.0																																						
32	4.0	5.0																																						
40	4.0	5.0																																						
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>5.0</td><td>4.0</td></tr> <tr><td>8</td><td>4.0</td><td>5.0</td></tr> <tr><td>16</td><td>4.0</td><td>5.0</td></tr> <tr><td>24</td><td>4.0</td><td>5.0</td></tr> <tr><td>32</td><td>4.0</td><td>5.0</td></tr> <tr><td>40</td><td>4.0</td><td>5.0</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	5.0	4.0	8	4.0	5.0	16	4.0	5.0	24	4.0	5.0	32	4.0	5.0	40	4.0	5.0	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 5 [V]	Input Volt. 12 [V]																																						
0	5.0	4.0																																						
8	4.0	5.0																																						
16	4.0	5.0																																						
24	4.0	5.0																																						
32	4.0	5.0																																						
40	4.0	5.0																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<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	BRFS40
Item	Ripple-Noise
Object	+1.2V40A

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	10	14
8	10	14
16	10	14
24	10	14
32	10	15
40	10	17
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

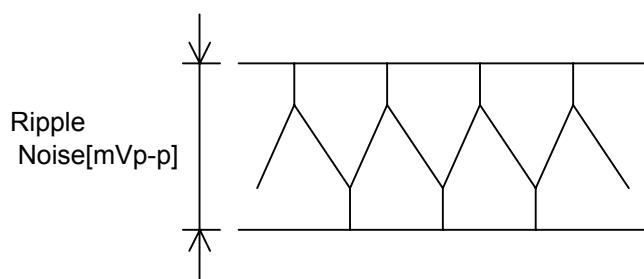
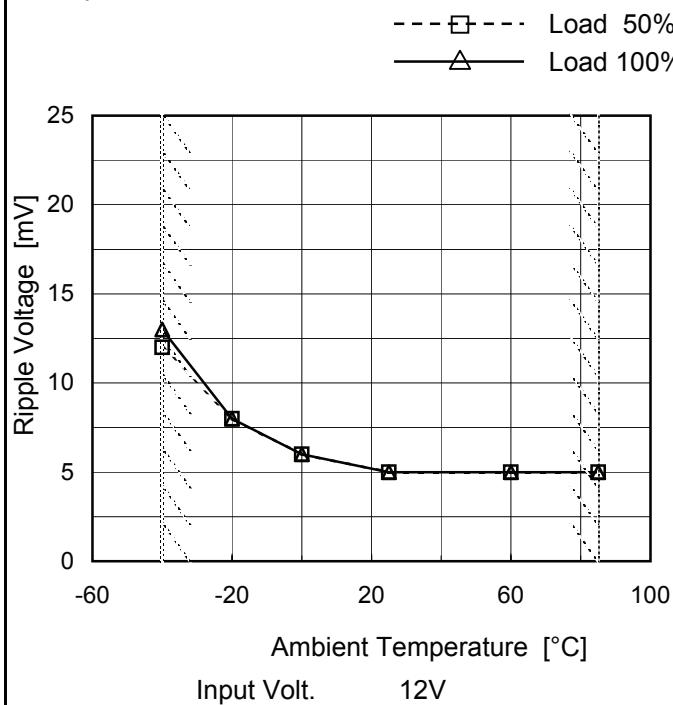


Fig.Complex Ripple Noise Wave Form

**COSEL**

Model	BRFS40
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.2V40A

## 1.Graph



Measured by 20 MHz Oscilloscope.

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

Testing Circuitry Figure C

## 2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	12.0	13.0
-20	8.0	8.0
0	6.0	6.0
25	5.0	5.0
60	5.0	5.0
85	5.0	5.0
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Ripple [mVp-p]

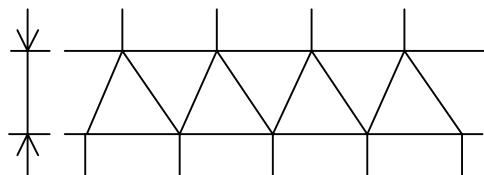
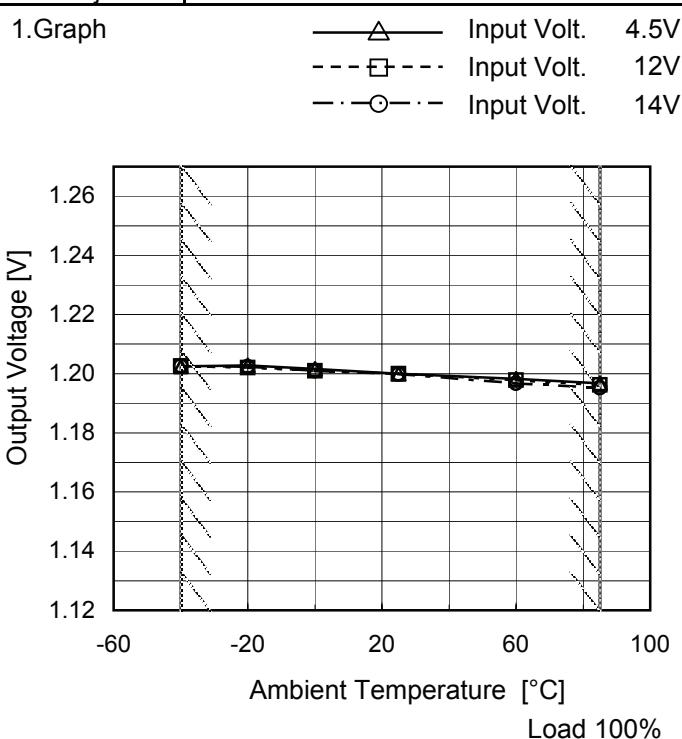


Fig.Complex Ripple Wave Form

**COSEL**

Model	BRFS40
Item	Ambient Temperature Drift
Object	+1.2V40A



Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 12[V]	Input Volt. 14[V]
-40	1.203	1.203	1.203
-20	1.203	1.202	1.202
0	1.202	1.201	1.201
25	1.200	1.200	1.200
60	1.198	1.198	1.197
85	1.197	1.196	1.195
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	BRFS40	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+1.2V40A	

### 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 - 40A

\* 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

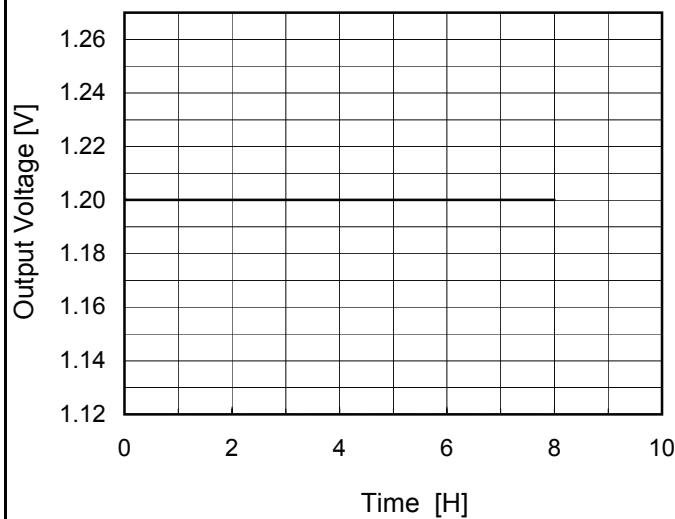
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	14	0	1.204	±6	±0.5
Minimum Voltage	85	4.5	0	1.193		

**COSEL**

Model	BRFS40
Item	Time Lapse Drift
Object	+1.2V40A

Temperature 25°C  
Testing Circuitry Figure A

## 1.Graph



## 2.Values

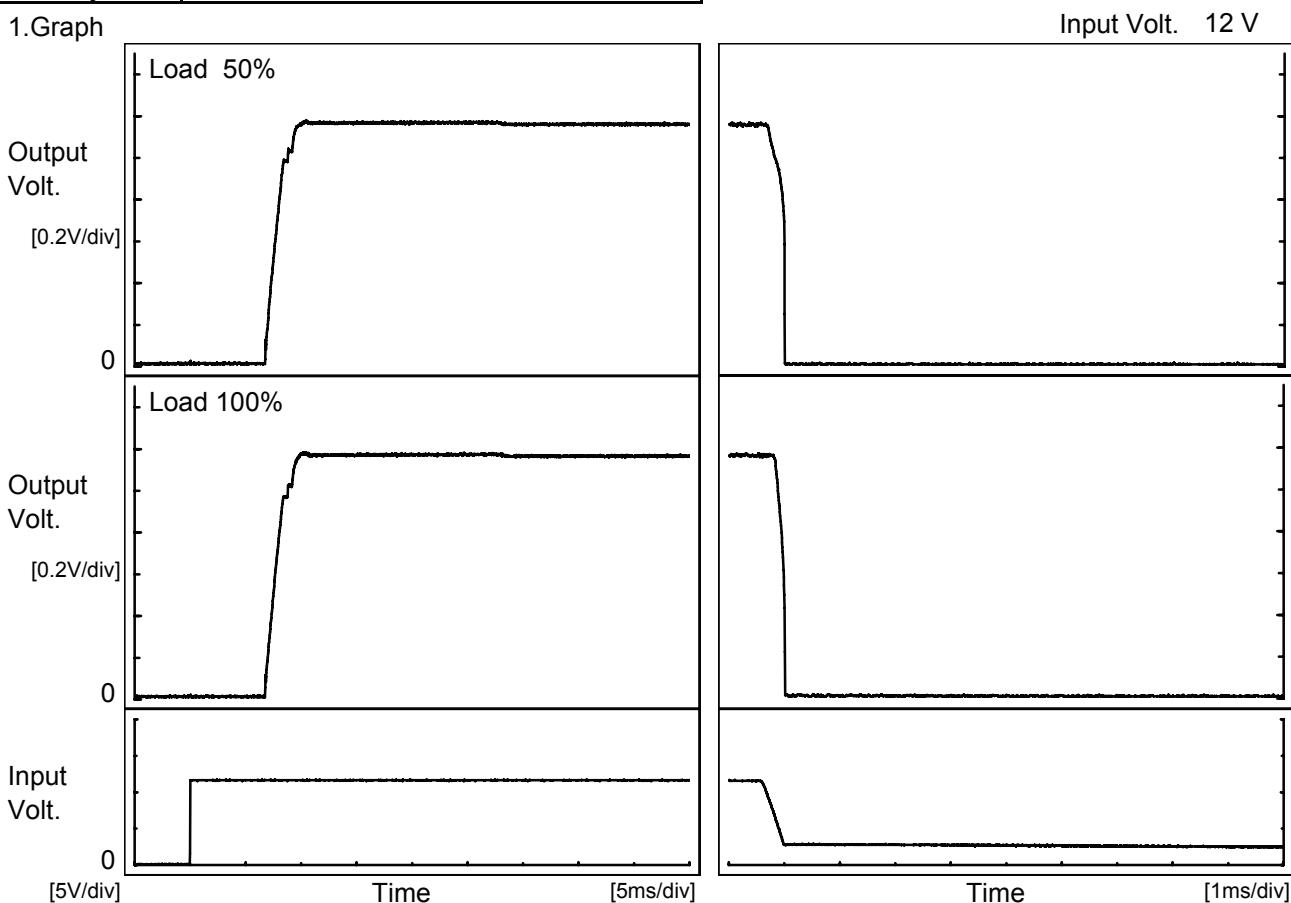
Time since start [H]	Output Voltage [V]
0.0	1.200
0.5	1.200
1.0	1.200
2.0	1.200
3.0	1.200
4.0	1.200
5.0	1.200
6.0	1.200
7.0	1.200
8.0	1.200

**COSEL**

Model	BRFS40
Item	Rise and Fall Time
Object	+1.2V40A

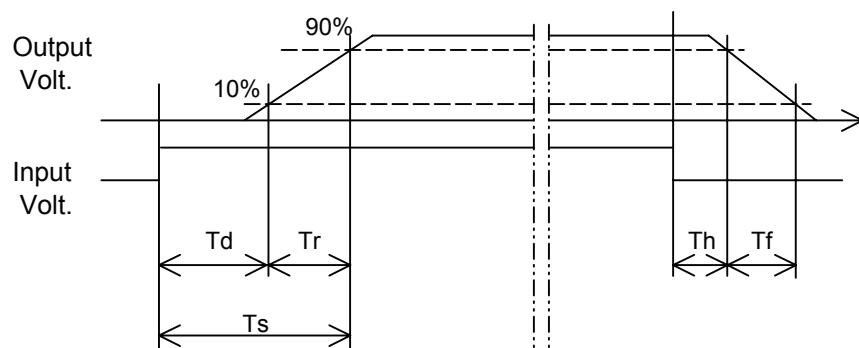
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		6.9	2.4	9.3	0.1	0.4	
100 %		6.9	2.4	9.3	0.1	0.2	



**COSEL**

Model	BRFS40	Testing Circuitry Figure A																																							
Item	Minimum Input Voltage for Regulated Output Voltage																																								
Object	+1.2V40A																																								
1.Graph																																									
<p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Legend:</p> <ul style="list-style-type: none"> <li>---□--- Load 50%</li> <li>—△— Load 100%</li> </ul>			2.Values																																						
<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>-40</td><td>4.03</td><td>4.03</td></tr> <tr> <td>-20</td><td>4.03</td><td>4.03</td></tr> <tr> <td>0</td><td>4.03</td><td>4.03</td></tr> <tr> <td>25</td><td>4.02</td><td>4.03</td></tr> <tr> <td>60</td><td>4.02</td><td>4.02</td></tr> <tr> <td>85</td><td>4.00</td><td>4.01</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>				Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-40	4.03	4.03	-20	4.03	4.03	0	4.03	4.03	25	4.02	4.03	60	4.02	4.02	85	4.00	4.01	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																								
	Load 50%	Load 100%																																							
-40	4.03	4.03																																							
-20	4.03	4.03																																							
0	4.03	4.03																																							
25	4.02	4.03																																							
60	4.02	4.02																																							
85	4.00	4.01																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																									



Model	BRFS40	Temperature	25°C																																																										
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																										
Object	+1.2V40A																																																												
1.Graph		—△— Input Volt. 4.5V —□— Input Volt. 12V —○— Input Volt. 14V																																																											
		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.</th> <th>Input Volt.</th> <th>Input Volt.</th> </tr> <tr> <th>4.5[V]</th> <th>12[V]</th> <th>14[V]</th> </tr> </thead> <tbody> <tr> <td>1.20</td> <td>50.36</td> <td>49.55</td> <td>49.16</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.	Input Volt.	Input Volt.	4.5[V]	12[V]	14[V]	1.20	50.36	49.55	49.16	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.	Input Volt.	Input Volt.																																																										
4.5[V]	12[V]	14[V]																																																											
1.20	50.36	49.55	49.16																																																										
1.14	-	-	-																																																										
1.08	-	-	-																																																										
0.96	-	-	-																																																										
0.84	-	-	-																																																										
0.72	-	-	-																																																										
0.60	-	-	-																																																										
0.48	-	-	-																																																										
0.36	-	-	-																																																										
0.24	-	-	-																																																										
0.12	-	-	-																																																										
0.00	-	-	-																																																										

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

Intermittent operation occurs when overcurrent protection is activated.

COSEL

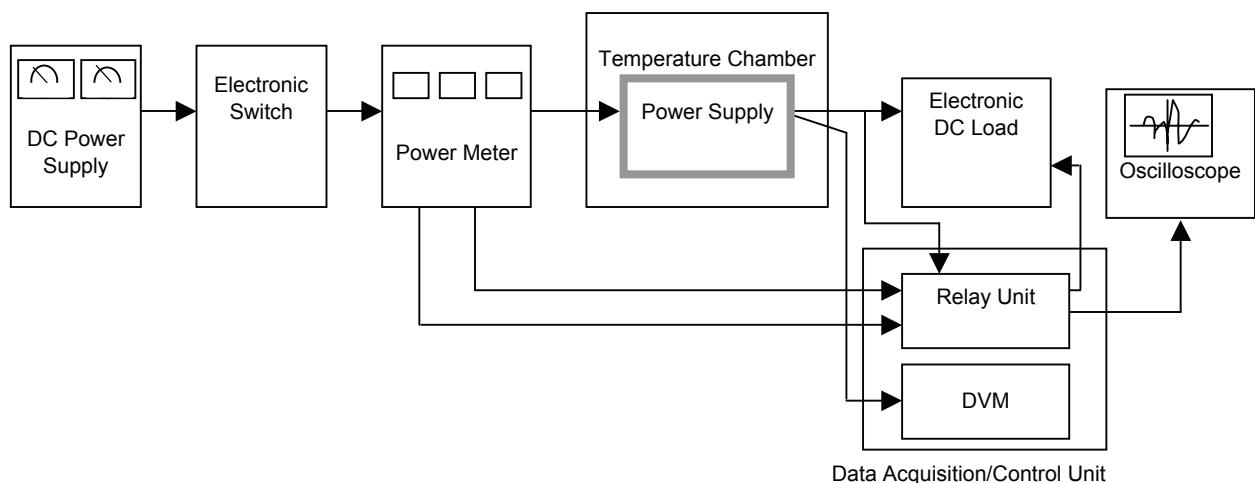


Figure A

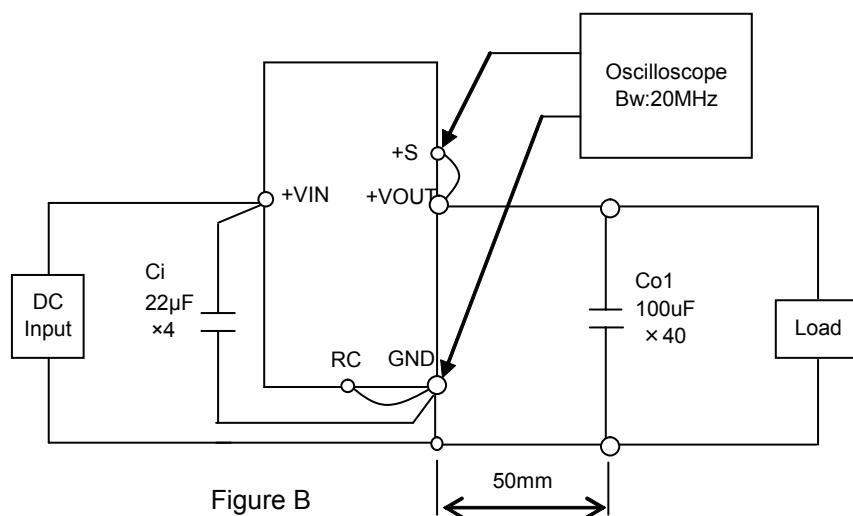


Figure B

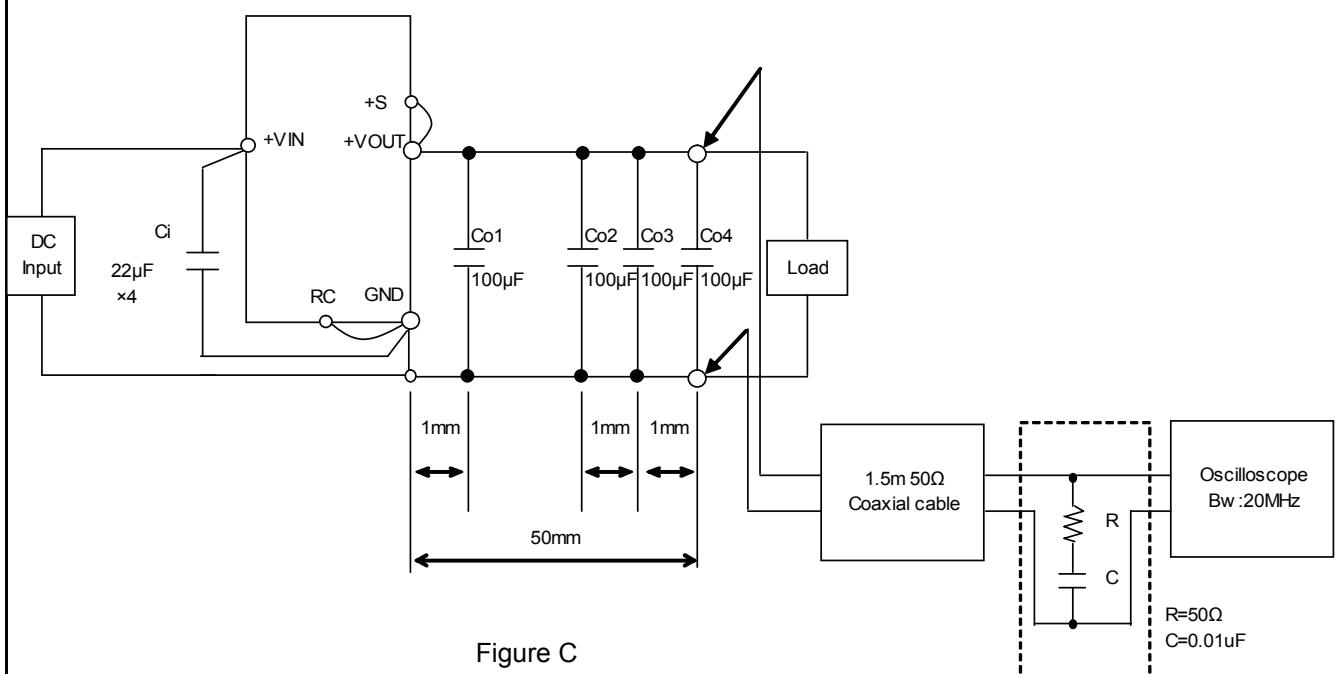


Figure C