

**TEST DATA OF SFS302412/SFCS302412**

Regulated DC Power Supply  
May.29. 2007

Approved by : Toshiyuki Tsuru  
Toshiyuki Tsuru Design Manager

Prepared by : K. Shibutani  
Kenichi Shibutani Design Engineer

**COSEL CO.,LTD.**

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Model		SFS302412/SFCS302412		Temperature	25°C																																																																							
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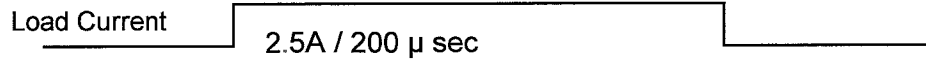




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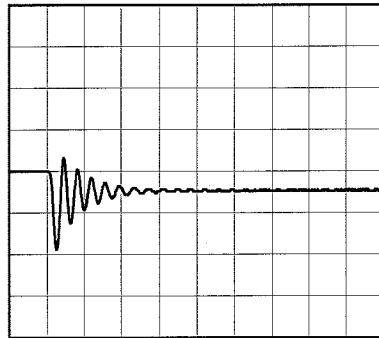
Model	SFS302412/SFCS302412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V2.5A		

Input Volt. 24 V  
 Cycle 1000 mS

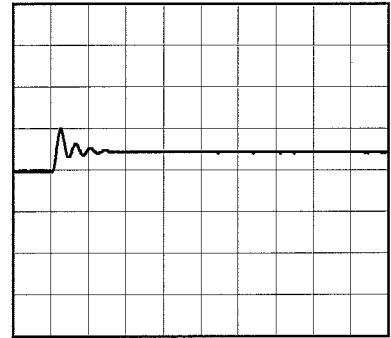
Load Current  2.5A / 200 µ sec

Min. Load (0A) ←→  
 Load 100% (2.5A)

500mV/div



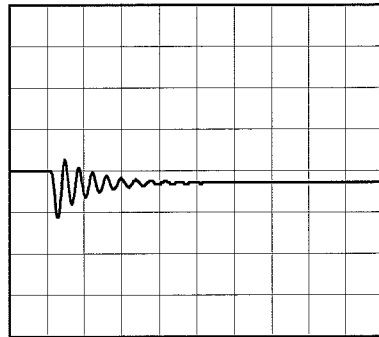
200 µs/div



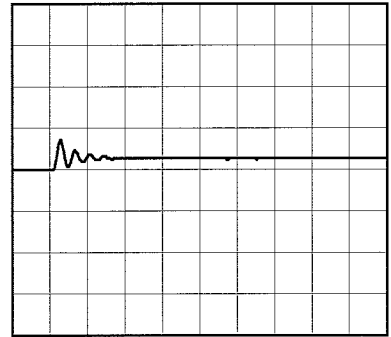
200 µs/div

Min. Load (0A) ←→  
 Load 50% (1.25A)

500mV/div



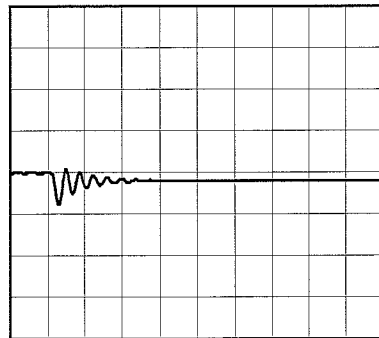
200 µs/div



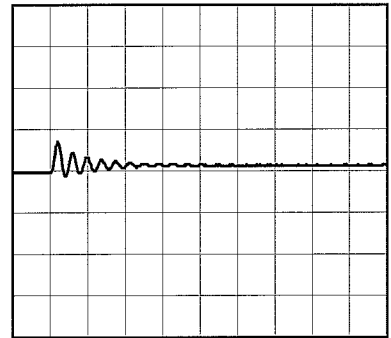
200 µs/div

Load 50% (1.25A) ←→  
 Load 100% (2.5A)

500mV/div



200 µs/div



200 µs/div



Model		SFS302412/SFCS302412	Temperature		25°C																																						
Item		Ripple Voltage (by Load Current)	Testing Circuitry		Figure C																																						
Object		+12V2.5A																																									
1. Graph			2. Values																																								
<p>                     —△— Input Volt. 18V                      - - -○- - - Input Volt. 36V                 </p> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 18 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>27</td><td>46</td></tr> <tr><td>0.6</td><td>27</td><td>46</td></tr> <tr><td>1.2</td><td>27</td><td>46</td></tr> <tr><td>1.8</td><td>27</td><td>46</td></tr> <tr><td>2.4</td><td>27</td><td>46</td></tr> <tr><td>3.0</td><td>27</td><td>47</td></tr> <tr><td>3.3</td><td>27</td><td>49</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. 18 [V]	Input Volt. 36 [V]	0.0	27	46	0.6	27	46	1.2	27	46	1.8	27	46	2.4	27	46	3.0	27	47	3.3	27	49	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Measured by 100 MHz Oscilloscope.                      Ripple Voltage is shown as p-p in the figure below.                      Note: Slanted line shows the range of the rated load current.</p>																																											
<p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form</p>																																											



<p>Model SFS302412/SFCS302412</p> <p>Item Ripple-Noise</p> <p>Object +12V2.5A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure C</p>																																						
<p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 18V</p> <p>- -○- - Input Volt. 36V</p> </div> <p>Ripple-Noise [mV]</p> <p>Load Current [A]</p> <p>Measured by 100 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 18 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>28</td><td>47</td></tr> <tr><td>0.6</td><td>28</td><td>47</td></tr> <tr><td>1.2</td><td>28</td><td>47</td></tr> <tr><td>1.8</td><td>28</td><td>47</td></tr> <tr><td>2.4</td><td>28</td><td>48</td></tr> <tr><td>3.0</td><td>28</td><td>49</td></tr> <tr><td>3.3</td><td>28</td><td>50</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Load Current [A]	Ripple-Noise [mV]		Input Volt. 18 [V]	Input Volt. 36 [V]	0.0	28	47	0.6	28	47	1.2	28	47	1.8	28	47	2.4	28	48	3.0	28	49	3.3	28	50	--	-	-	--	-	-	--	-	-	--	-	-
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Object	+12V2.5A																																							
<p>1. Graph</p> <p style="text-align: center;">Input Volt. 24V</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-50</td><td>40</td><td>42</td></tr> <tr><td>-40</td><td>39</td><td>41</td></tr> <tr><td>-20</td><td>38</td><td>39</td></tr> <tr><td>0</td><td>37</td><td>39</td></tr> <tr><td>25</td><td>37</td><td>39</td></tr> <tr><td>85</td><td>37</td><td>38</td></tr> <tr><td>90</td><td>36</td><td>37</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]	Ripple Voltage [mV]		Load 50%	Load 100%	-50	40	42	-40	39	41	-20	38	39	0	37	39	25	37	39	85	37	38	90	36	37	--	-	-	--	-	-	--	-	-	--	-	-
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Model		SFS302412/SFCS302412		Testing Circuitry Figure A																																																			
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<p style="text-align: center;">Load 100%</p>			<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>-50</td><td>11.885</td><td>11.868</td><td>11.893</td></tr> <tr><td>-40</td><td>11.904</td><td>11.889</td><td>11.912</td></tr> <tr><td>-20</td><td>11.911</td><td>11.926</td><td>11.942</td></tr> <tr><td>0</td><td>11.922</td><td>11.963</td><td>11.971</td></tr> <tr><td>25</td><td>11.954</td><td>12.000</td><td>11.996</td></tr> <tr><td>40</td><td>11.977</td><td>12.017</td><td>12.006</td></tr> <tr><td>55</td><td>12.002</td><td>12.034</td><td>12.015</td></tr> <tr><td>70</td><td>12.030</td><td>12.051</td><td>12.021</td></tr> <tr><td>85</td><td>12.050</td><td>12.063</td><td>12.021</td></tr> <tr><td>90</td><td>12.058</td><td>12.067</td><td>12.020</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	-50	11.885	11.868	11.893	-40	11.904	11.889	11.912	-20	11.911	11.926	11.942	0	11.922	11.963	11.971	25	11.954	12.000	11.996	40	11.977	12.017	12.006	55	12.002	12.034	12.015	70	12.030	12.051	12.021	85	12.050	12.063	12.021	90	12.058	12.067	12.020	--	-	-	-
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<b>COSEL</b>		
Model	SFS302412/SFCS302412	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V2.5A	

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 : 18 - 36V

Load Current : 0 - 2.5A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	85	18	0	12.330	±221	±1.8
Minimum Voltage	-40	24	2.5	11.889		



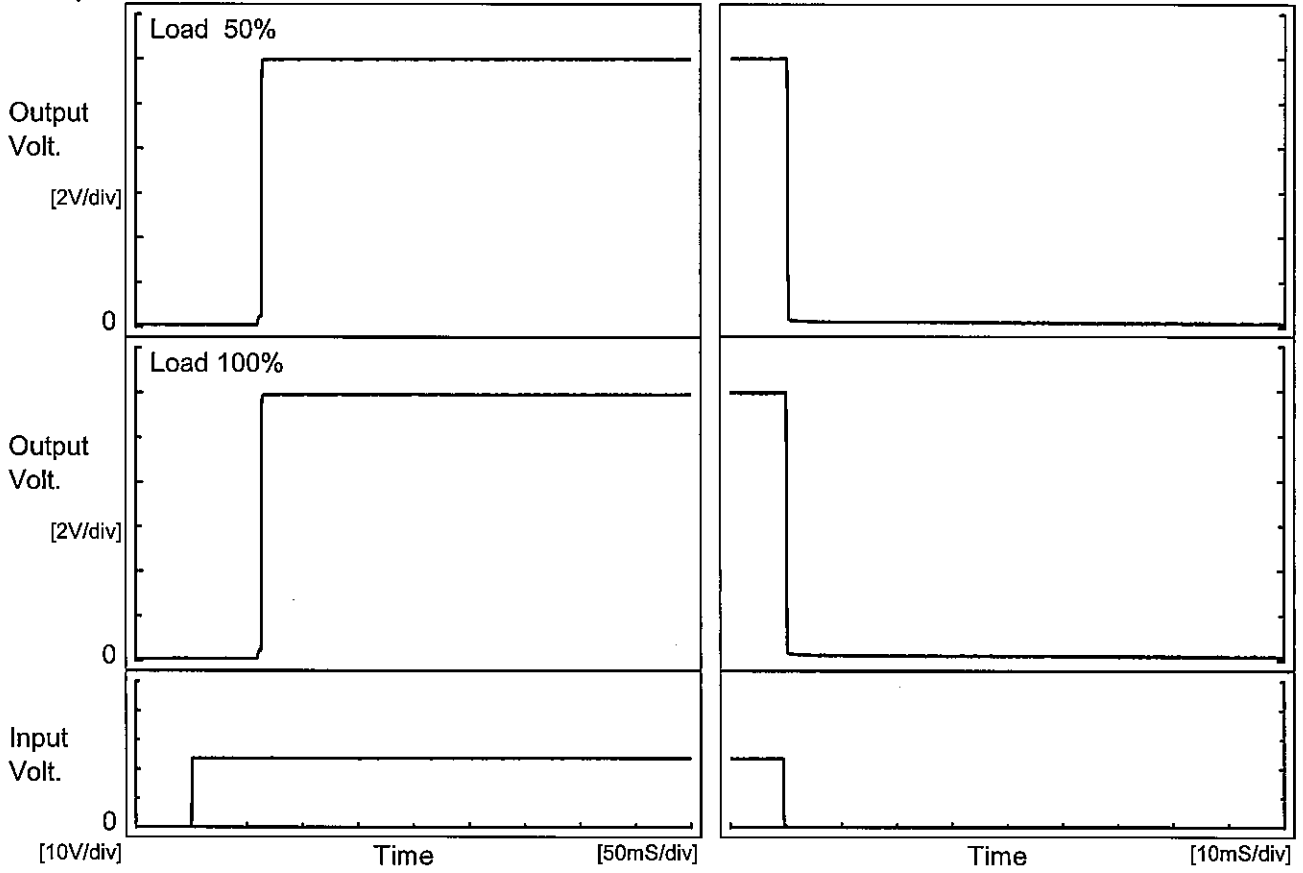
<b>COSEL</b>																								
Model	SFS302412/SFCS302412	Temperature 25°C Testing Circuitry Figure A																						
Item	Time Lapse Drift																							
Object	+12V2.5A																							
1.Graph		2.Values																						
<p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V 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>11.988</td></tr> <tr><td>0.5</td><td>12.005</td></tr> <tr><td>1.0</td><td>12.005</td></tr> <tr><td>2.0</td><td>12.005</td></tr> <tr><td>3.0</td><td>12.005</td></tr> <tr><td>4.0</td><td>12.005</td></tr> <tr><td>5.0</td><td>12.005</td></tr> <tr><td>6.0</td><td>12.005</td></tr> <tr><td>7.0</td><td>12.005</td></tr> <tr><td>8.0</td><td>12.005</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	11.988	0.5	12.005	1.0	12.005	2.0	12.005	3.0	12.005	4.0	12.005	5.0	12.005	6.0	12.005	7.0	12.005	8.0	12.005
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Model	SFS302412/SFCS302412	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V/2.5A		

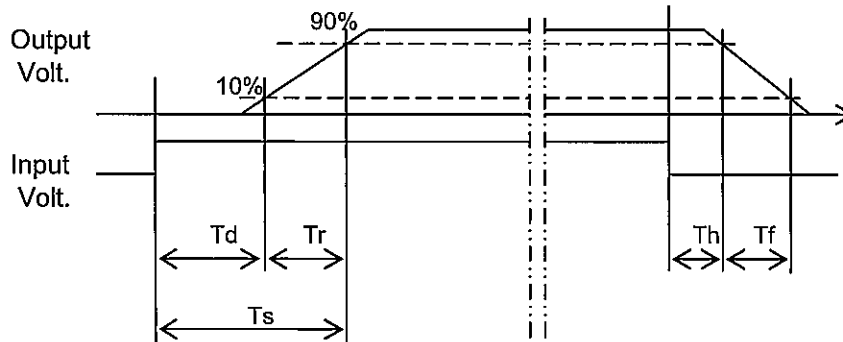
1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		61.8	0.6	62.4	0.1	0.6
100 %		61.8	0.6	62.4	0.1	0.4

[mS]





<b>COSEL</b>																																								
Model	SFS302412/SFCS302412																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+12V2.5A																																							
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Object	+12V2.5A																																																												
<p>1.Graph <span style="float:right">—△— Input Volt. 24V</span></p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: right;">Load 0%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 24[V]</th> <th>Input Volt.</th> <th>Input Volt.</th> </tr> </thead> <tbody> <tr> <td>-40</td> <td>15.7</td> <td>-</td> <td>-</td> </tr> <tr> <td>25</td> <td>15.6</td> <td>-</td> <td>-</td> </tr> <tr> <td>85</td> <td>15.4</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> <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]	Operating Point [V]			Input Volt. 24[V]	Input Volt.	Input Volt.	-40	15.7	-	-	25	15.6	-	-	85	15.4	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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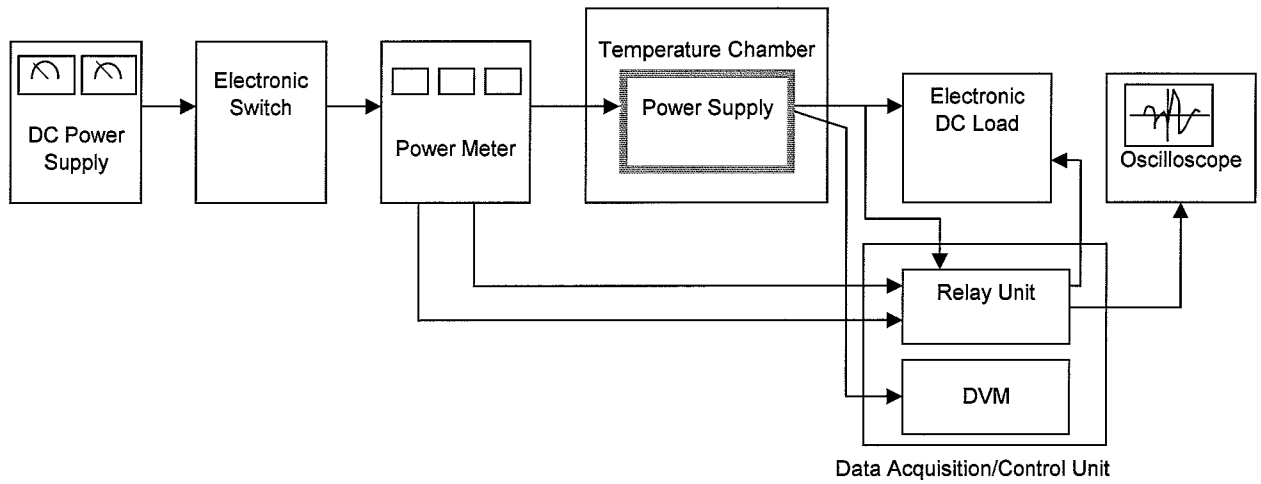


Figure A

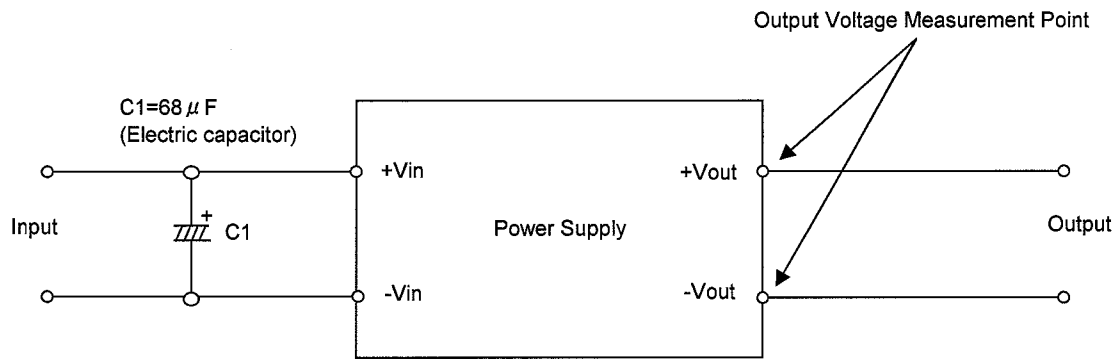


Figure B (General Electric Characteristic)

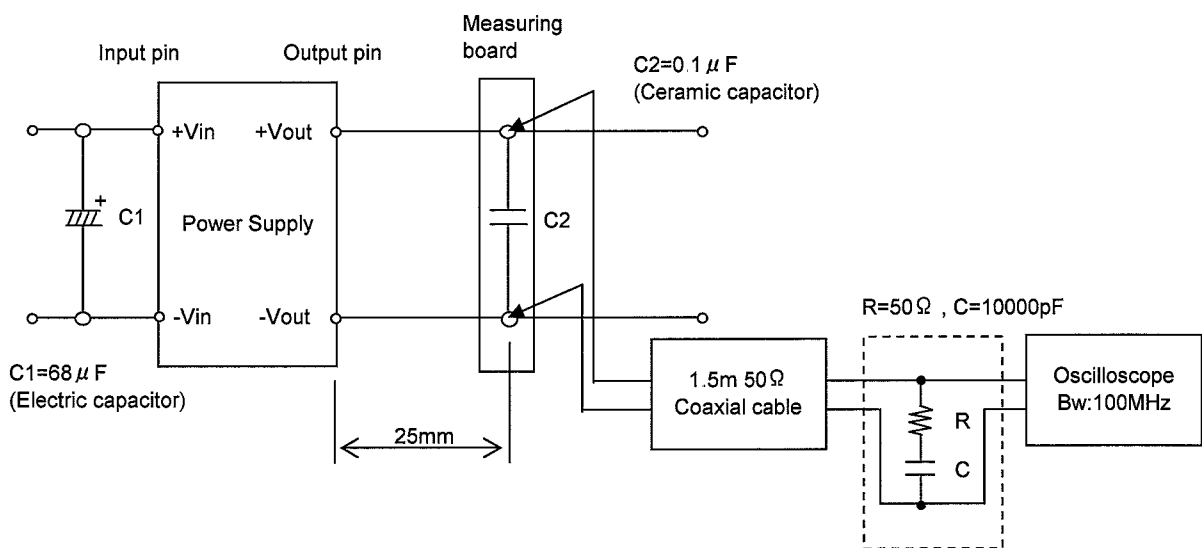


Figure C (Ripple and Ripple noise Characteristic)