



# TEST DATA OF SFS20482R5

Regulated DC Power Supply  
Sep 24, 2004

Approved by : Isao Yasuda Design Manager

Prepared by : Kazuhiro Horii Design Engineer

COSEL CO.,LTD.



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Model		SFS20482R5		Temperature	25°C																																																																							
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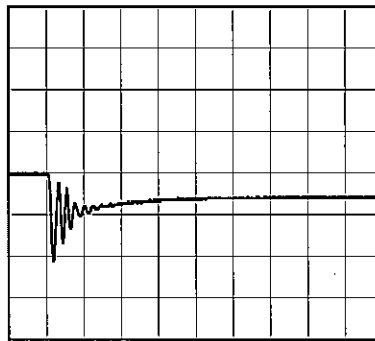
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Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+2.5V7A		

Input Volt. 48 V  
Cycle 1000 mS

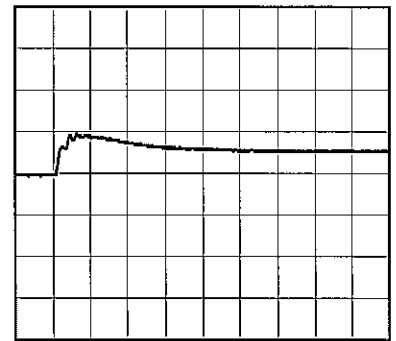
Load Current 7A / 200  $\mu$ s

Min. Load (0A)  $\longleftrightarrow$   
Load 100% (7A)

100mV/div



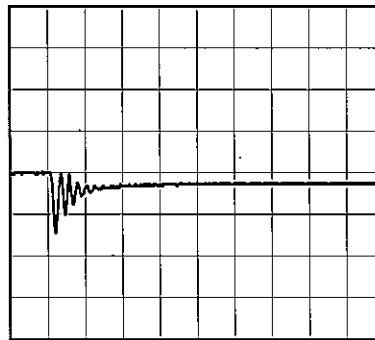
200  $\mu$ s/div



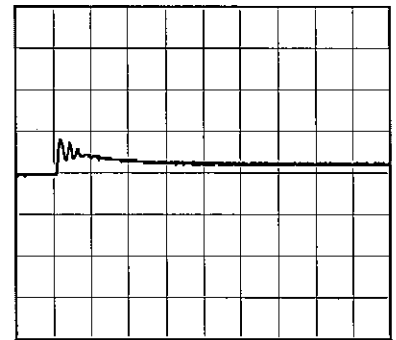
200  $\mu$ s/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (3.5A)

100mV/div



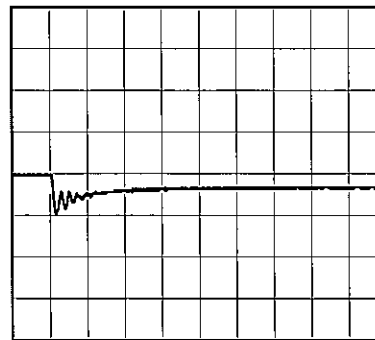
200  $\mu$ s/div



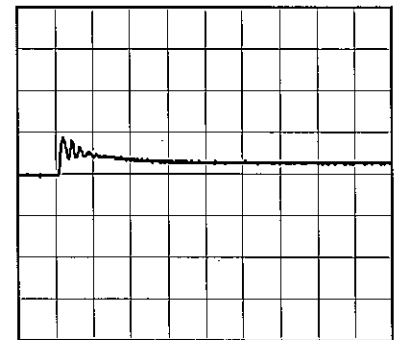
200  $\mu$ s/div

Load 50% (3.5A)  $\longleftrightarrow$   
Load 100% (7A)

100mV/div



200  $\mu$ s/div



200  $\mu$ s/div



<p>Model SFS20482R5</p>		<p>Temperature 25°C Testing Circuitry Figure C</p>																																						
<p>Item Ripple Voltage (by Load Current)</p>																																								
<p>Object +2.5V7A</p>																																								
<p>1.Graph</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>—△— Input Volt. 36V</p> <p>-·-○-·- Input Volt. 76V</p> </div> </div>		<p>2.Values</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. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>2</td><td>2</td></tr> <tr><td>1.4</td><td>2</td><td>2</td></tr> <tr><td>2.8</td><td>2</td><td>2</td></tr> <tr><td>4.2</td><td>2</td><td>2</td></tr> <tr><td>5.6</td><td>2</td><td>2</td></tr> <tr><td>7.0</td><td>2</td><td>2</td></tr> <tr><td>7.7</td><td>2</td><td>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> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Load Current [A]	Ripple Voltage [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	2	2	1.4	2	2	2.8	2	2	4.2	2	2	5.6	2	2	7.0	2	2	7.7	2	2	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 36 [V]	Input Volt. 76 [V]																																						
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<p>Measured by 100MHz Ossilloscope. 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 SFS20482R5</p> <p>Item Ripple-Noise</p> <p>Object +2.5V7A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure C</p>																																						
<p>1. Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 36V</p> <p>- -○- - Input Volt. 76V</p> </div> <p>Measured by 100MHz Ossilloscope. 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. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>6</td><td>7</td></tr> <tr><td>1.4</td><td>5</td><td>7</td></tr> <tr><td>2.8</td><td>5</td><td>7</td></tr> <tr><td>4.2</td><td>6</td><td>8</td></tr> <tr><td>5.6</td><td>7</td><td>8</td></tr> <tr><td>7.0</td><td>9</td><td>10</td></tr> <tr><td>7.7</td><td>9</td><td>10</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. 36 [V]	Input Volt. 76 [V]	0.0	6	7	1.4	5	7	2.8	5	7	4.2	6	8	5.6	7	8	7.0	9	10	7.7	9	10	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																							
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<p>Model SFS20482R5</p> <p>Item Ripple Voltage (by Ambient Temp.)</p> <p>Object +2.5V7A</p>		<p>Testing Circuitry Figure C</p>																																						
<p>1.Graph</p> <p>             ---□--- Load 50%              —△— Load 100%         </p> <p>             Y-axis: Ripple Voltage [mV] (0 to 25)              X-axis: Ambient Temperature [°C] (-60 to 100)         </p> <p>Input Volt. 48V</p> <p>Measured by 100MHz Ossilloscope.              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="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-50</td><td>3</td><td>3</td></tr> <tr><td>-40</td><td>3</td><td>3</td></tr> <tr><td>-20</td><td>2</td><td>2</td></tr> <tr><td>0</td><td>2</td><td>2</td></tr> <tr><td>25</td><td>2</td><td>2</td></tr> <tr><td>85</td><td>2</td><td>2</td></tr> <tr><td>90</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> </tbody> </table>	Ambient Temperature [°C]	Ripple Voltage [mV]		Load 50%	Load 100%	-50	3	3	-40	3	3	-20	2	2	0	2	2	25	2	2	85	2	2	90	3	3	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
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Model		SFS20482R5		Testing Circuitry Figure A																																																				
Item		Ambient Temperature Drift																																																						
Object		+2.5V7A																																																						
1.Graph		—△—	Input Volt. 36V	2.Values																																																				
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<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>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. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>-45</td><td>2.492</td><td>2.504</td><td>2.483</td></tr> <tr><td>-40</td><td>2.492</td><td>2.504</td><td>2.484</td></tr> <tr><td>-20</td><td>2.494</td><td>2.504</td><td>2.489</td></tr> <tr><td>0</td><td>2.496</td><td>2.505</td><td>2.495</td></tr> <tr><td>25</td><td>2.494</td><td>2.504</td><td>2.498</td></tr> <tr><td>50</td><td>2.488</td><td>2.500</td><td>2.497</td></tr> <tr><td>85</td><td>2.477</td><td>2.492</td><td>2.486</td></tr> <tr><td>90</td><td>2.476</td><td>2.490</td><td>2.483</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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-45	2.492	2.504	2.483	-40	2.492	2.504	2.484	-20	2.494	2.504	2.489	0	2.496	2.505	2.495	25	2.494	2.504	2.498	50	2.488	2.500	2.497	85	2.477	2.492	2.486	90	2.476	2.490	2.483	--	-	-	-	--	-	-	-	--	-	-	-
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																								



<b>COSEL</b>		
Model	SFS20482R5	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+2.5V7A	

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 : 36 - 76V

Load Current : 0 - 7A

\* 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	76	0	2.574	±49	±2.0
Minimum Voltage	85	36	7	2.477		



<b>COSEL</b>																								
Model	SFS20482R5																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+2.5V7A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2.Values</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>2.506</td></tr> <tr><td>0.5</td><td>2.503</td></tr> <tr><td>1.0</td><td>2.503</td></tr> <tr><td>2.0</td><td>2.503</td></tr> <tr><td>3.0</td><td>2.503</td></tr> <tr><td>4.0</td><td>2.503</td></tr> <tr><td>5.0</td><td>2.503</td></tr> <tr><td>6.0</td><td>2.503</td></tr> <tr><td>7.0</td><td>2.503</td></tr> <tr><td>8.0</td><td>2.503</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	2.506	0.5	2.503	1.0	2.503	2.0	2.503	3.0	2.503	4.0	2.503	5.0	2.503	6.0	2.503	7.0	2.503	8.0	2.503
Time since start [H]	Output Voltage [V]																							
0.0	2.506																							
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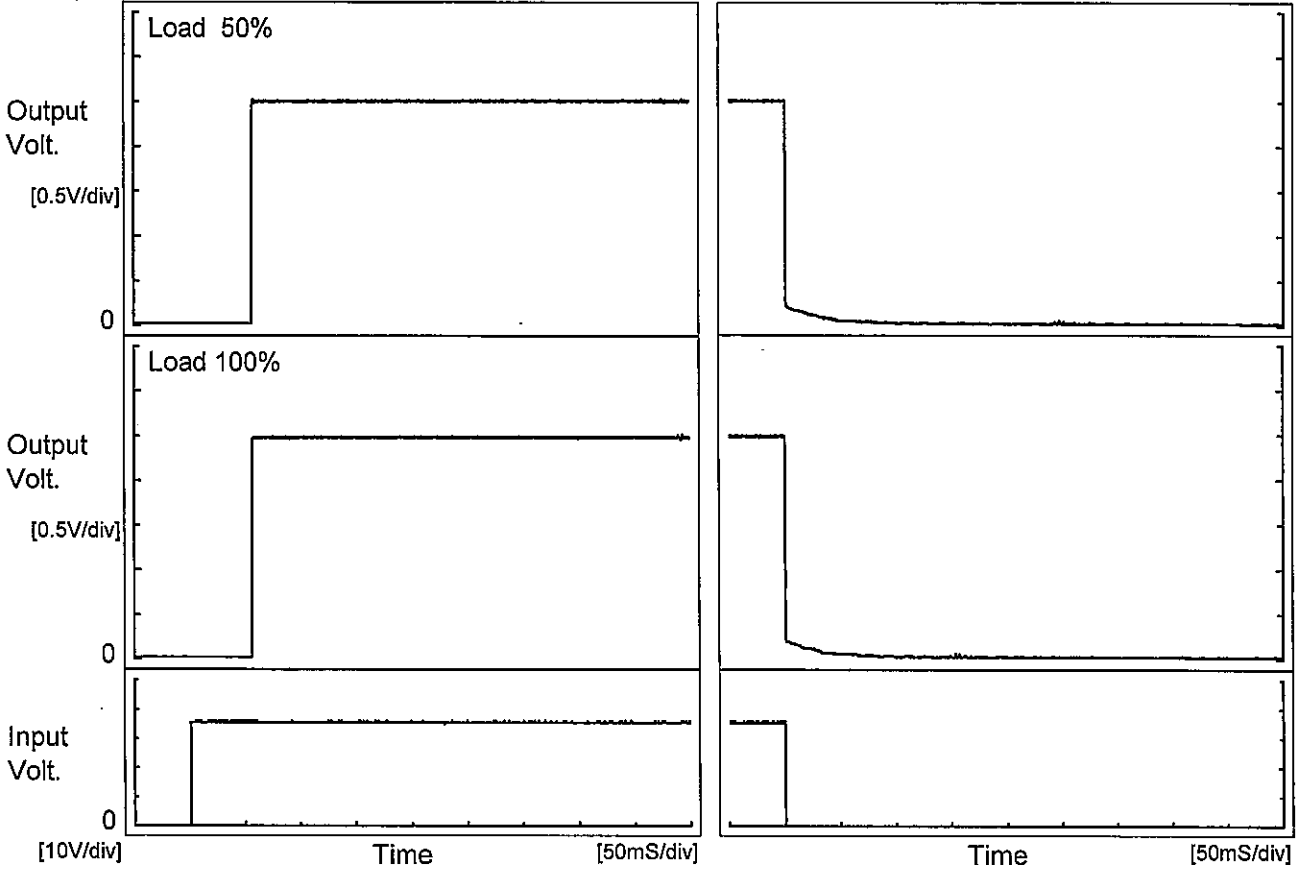




Model	SFS20482R5	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+2.5V7A		

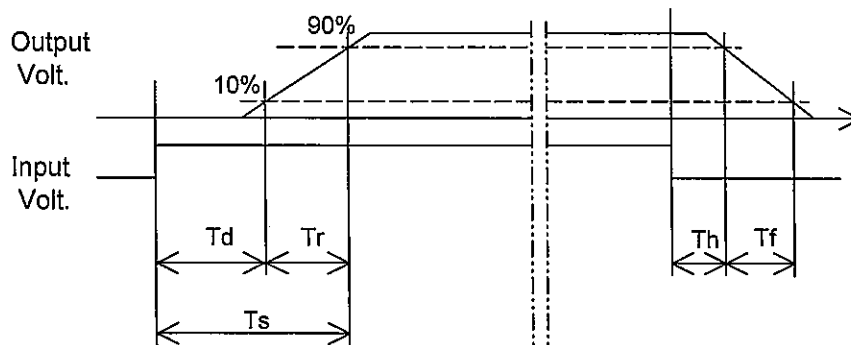
1. Graph

Input Volt. 36 V



2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		56.5	0.2	56.7	0.3	0.5
100 %		56.5	0.2	56.7	0.3	0.5





<p>Model SFS20482R5</p> <p>Item Minimum Input Voltage for Regulated Output Voltage</p> <p>Object +2.5V7A</p>		<p>Testing Circuitry Figure A</p>																																						
<p>1.Graph</p> <p>---□--- Load 50%</p> <p>—△— Load 100%</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="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-45</td><td>32.4</td><td>32.5</td></tr> <tr><td>-40</td><td>32.3</td><td>32.5</td></tr> <tr><td>-20</td><td>32.6</td><td>32.5</td></tr> <tr><td>0</td><td>32.6</td><td>32.7</td></tr> <tr><td>25</td><td>32.6</td><td>32.7</td></tr> <tr><td>50</td><td>32.8</td><td>32.8</td></tr> <tr><td>85</td><td>33.0</td><td>33.0</td></tr> <tr><td>90</td><td>33.0</td><td>33.0</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> </tbody> </table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-45	32.4	32.5	-40	32.3	32.5	-20	32.6	32.5	0	32.6	32.7	25	32.6	32.7	50	32.8	32.8	85	33.0	33.0	90	33.0	33.0	--	-	-	--	-	-	--	-	-
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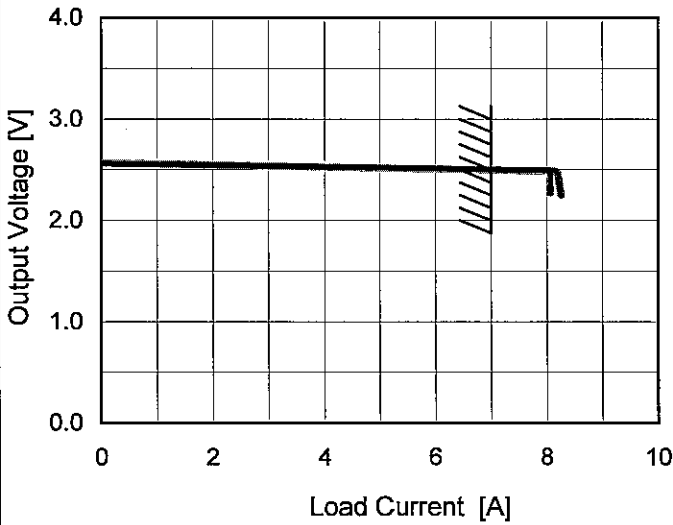


Model	SFS20482R5
Item	Overcurrent Protection
Object	+2.5V7A

Temperature 25°C  
Testing Circuitry Figure A

1. Graph

\_\_\_\_\_ Input Volt. 36V  
 \_\_\_\_\_ Input Volt. 48V  
 \_\_\_\_\_ Input Volt. 76V



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

When the output voltage fell to less than 2.25V, the unit shuts off the output by operating low voltage protection.

2. Values

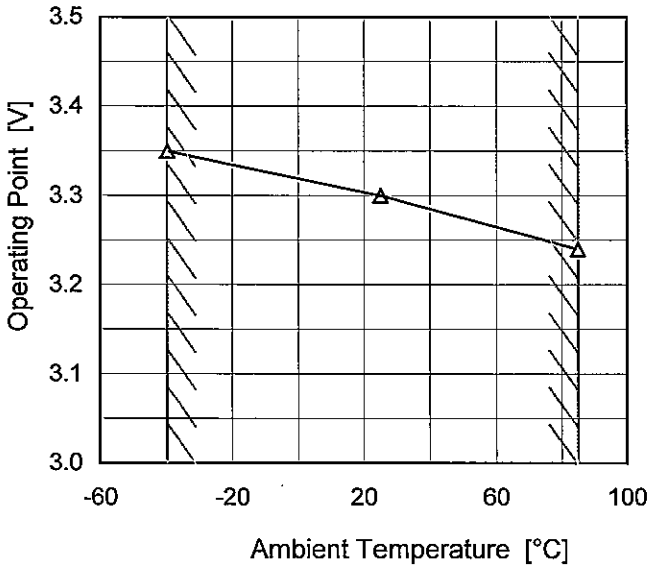
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
2.500	7.02	7.16	7.03
2.375	8.05	8.07	8.22
2.250	8.03	8.07	8.26
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	SFS20482R5
Item	Oversvoltage Protection
Object	+2.5V7A

Testing Circuitry Figure A

1. Graph —△— Input Volt. 48V



Load 0%

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

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 48[V]	Input Volt.	Input Volt.
-40	3.35	-	-
25	3.30	-	-
85	3.24	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

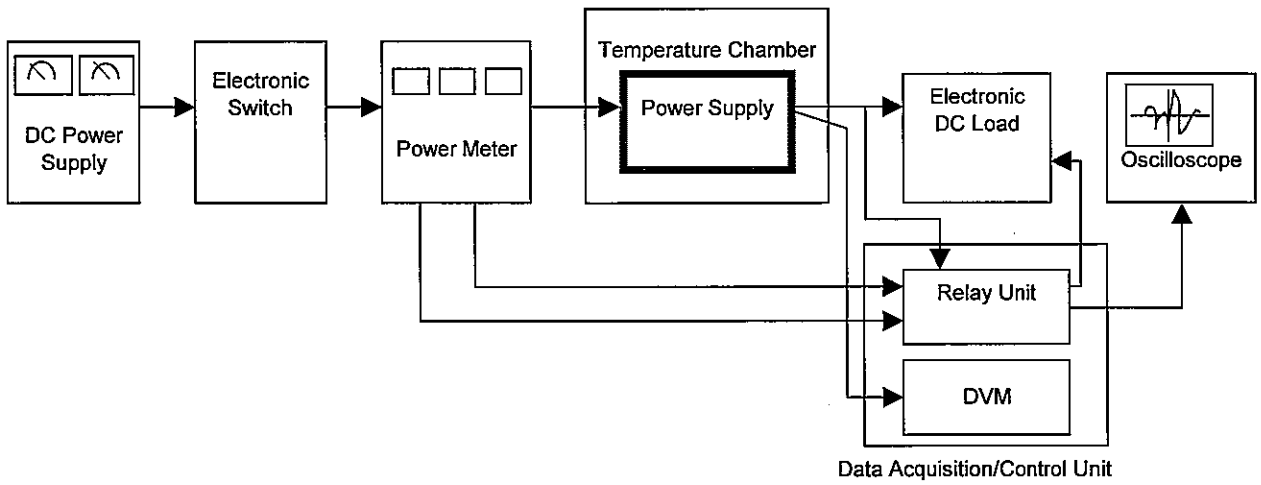


Figure A

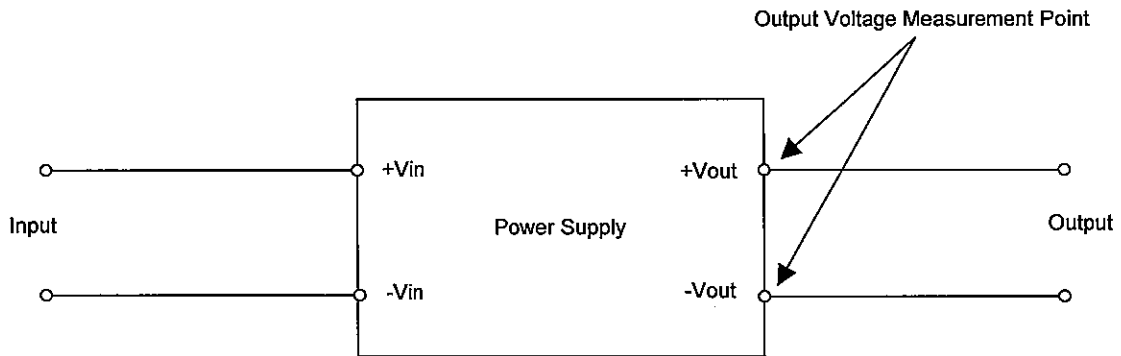


Figure B (General Electric Characteristic)

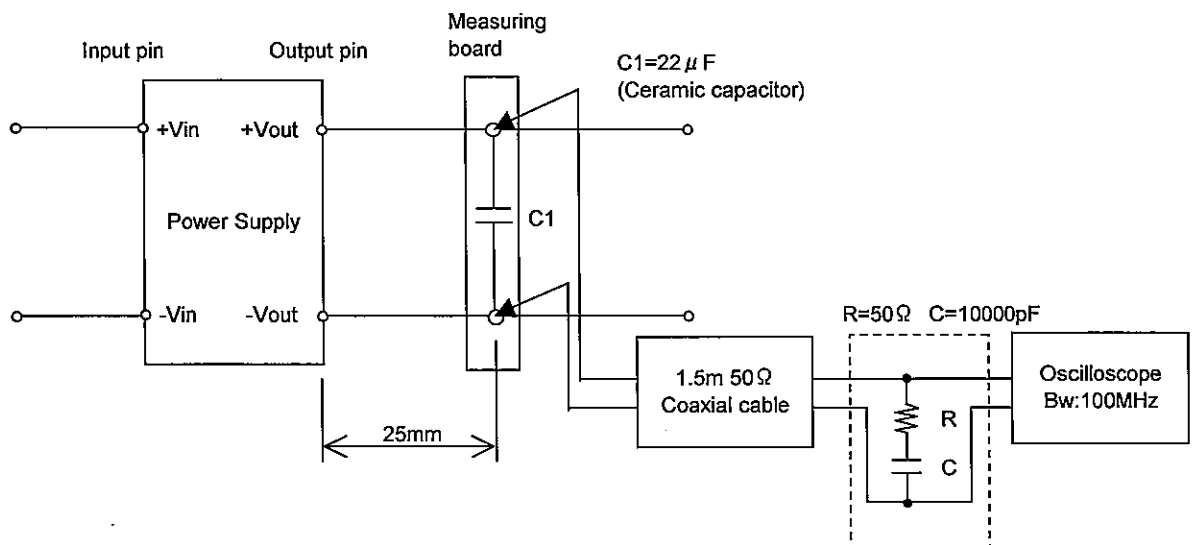


Figure C (Ripple and Ripple noise Characteristic)