

# TEST DATA OF SFLS15481R5

Regulated DC Power Supply  
May 10, 2007

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Prepared by : Toshiyuki Tsuri Toshiyuki Tsuri Design Engineer

**COSEL CO.,LTD.**

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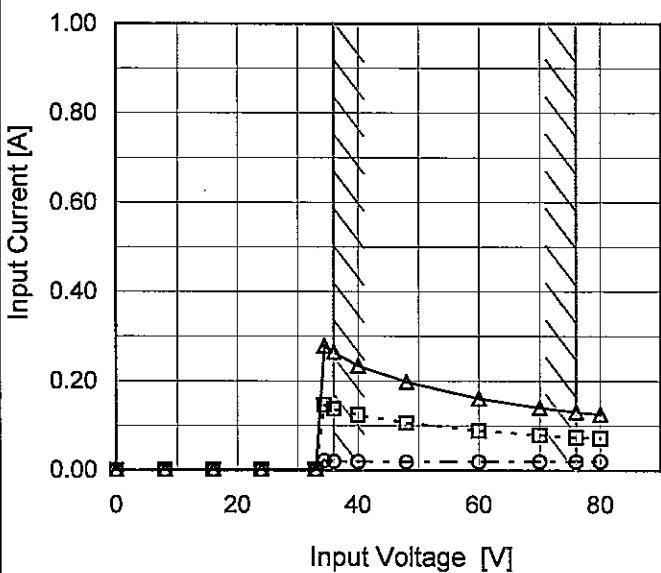
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Model	SFLS15481R5
Item	Input Current (by Input Voltage)
Object	_____

## 1. Graph

—△— Load 100%  
 - - -□--- Load 50%  
 - - -○--- Load 0%



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

Temperature 25°C  
 Testing Circuitry Figure A

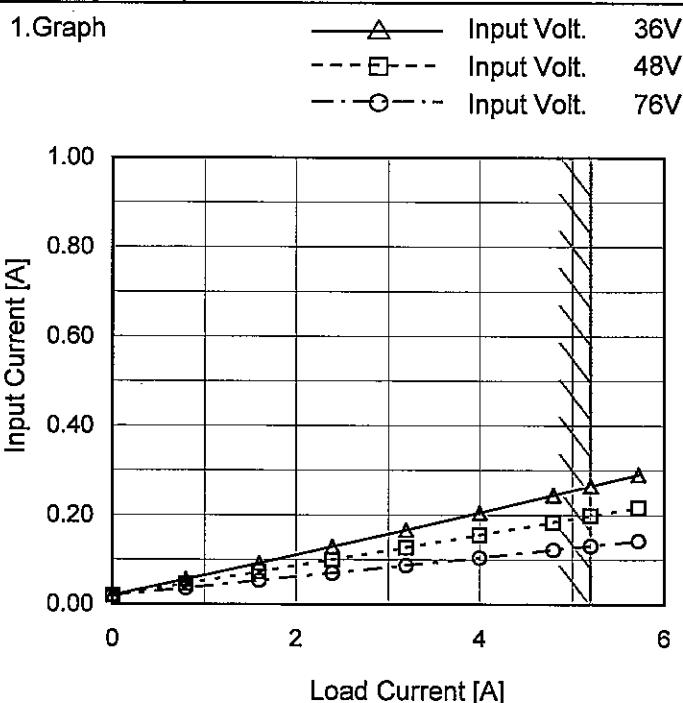
## 2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
8	0.001	0.001	0.001
16	0.001	0.001	0.001
24	0.001	0.001	0.001
33	0.002	0.002	0.002
34	0.022	0.146	0.279
36	0.020	0.138	0.265
40	0.019	0.124	0.234
48	0.019	0.107	0.198
60	0.020	0.089	0.161
70	0.020	0.079	0.140
76	0.020	0.074	0.131
80	0.020	0.072	0.125
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SFLS15481R5
Item	Input Current (by Load Current)
Object	_____

Temperature 25°C  
 Testing Circuitry Figure A



## 2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.020	0.019	0.020
0.80	0.056	0.046	0.036
1.60	0.092	0.073	0.053
2.40	0.129	0.100	0.070
3.20	0.167	0.127	0.087
4.00	0.205	0.155	0.104
4.80	0.245	0.184	0.122
5.20	0.265	0.198	0.131
5.72	0.291	0.217	0.142
--	-	-	-
--	-	-	-

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

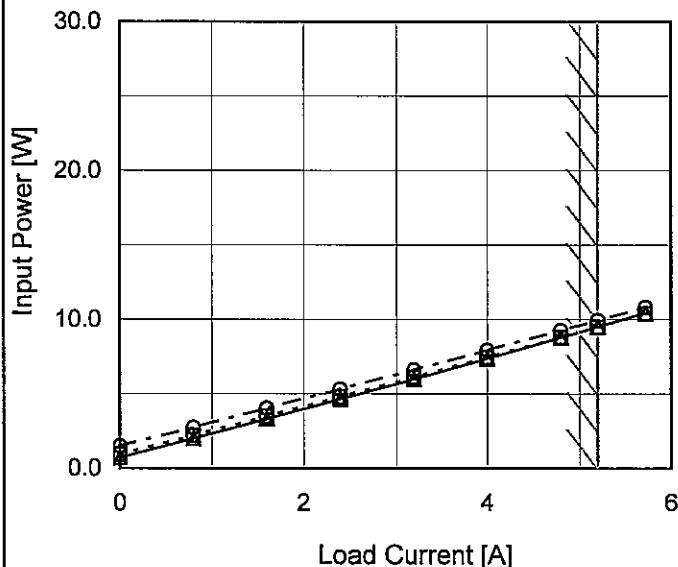
Model SFLS15481R5

Item Input Power (by Load Current)

Object \_\_\_\_\_

1.Graph

—△— Input Volt. 36V  
 - - -□- - Input Volt. 48V  
 - - ○ - - Input Volt. 76V



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

 Temperature 25°C  
 Testing Circuitry Figure A

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.72	0.92	1.49
0.80	2.01	2.20	2.75
1.60	3.31	3.50	4.03
2.40	4.64	4.80	5.32
3.20	5.99	6.11	6.61
4.00	7.38	7.46	7.93
4.80	8.80	8.81	9.27
5.20	9.52	9.49	9.94
5.72	10.46	10.39	10.82
--	-	-	-
--	-	-	-

**COSEL**

Model	SFLS15481R5	Temperature 25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry Figure A																																
Object																																		
1. Graph																																		
<p>The graph plots Efficiency [%] on the y-axis (50 to 100) against Input Voltage [V] on the x-axis (20 to 80). 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>																																		
2. Values																																		
<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>34</td><td>78.3</td><td>80.2</td></tr> <tr><td>36</td><td>79.8</td><td>82.1</td></tr> <tr><td>40</td><td>80.0</td><td>83.0</td></tr> <tr><td>48</td><td>77.7</td><td>82.4</td></tr> <tr><td>55</td><td>75.9</td><td>81.5</td></tr> <tr><td>60</td><td>74.6</td><td>80.9</td></tr> <tr><td>70</td><td>72.1</td><td>79.5</td></tr> <tr><td>76</td><td>70.5</td><td>78.7</td></tr> <tr><td>80</td><td>69.5</td><td>78.2</td></tr> </tbody> </table>			Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	34	78.3	80.2	36	79.8	82.1	40	80.0	83.0	48	77.7	82.4	55	75.9	81.5	60	74.6	80.9	70	72.1	79.5	76	70.5	78.7	80	69.5	78.2
Input Voltage [V]	Efficiency [%]																																	
	Load 50%	Load 100%																																
34	78.3	80.2																																
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<p>Note: Slanted line shows the range of the rated input voltage.</p>																																		

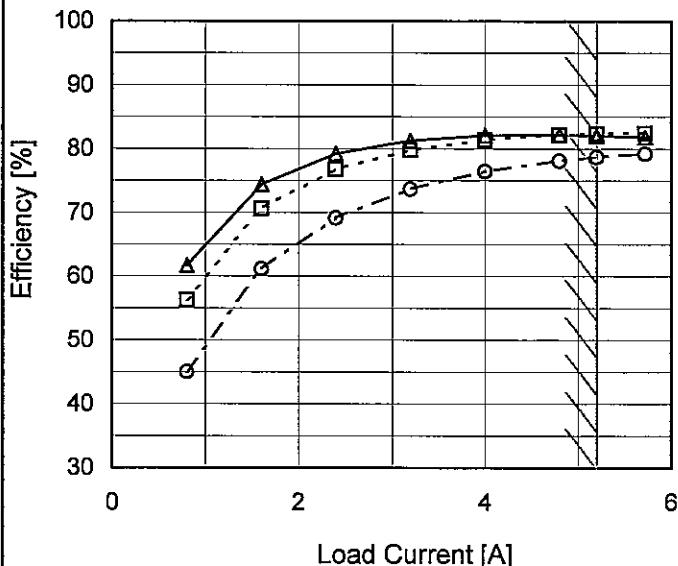
Model SFLS15481R5

Item Efficiency (by Load Current)

Object \_\_\_\_\_

## 1. Graph

—△— Input Volt. 36V  
 - - - □ - - Input Volt. 48V  
 - - ○ - - Input Volt. 76V



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

 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-
0.80	61.7	56.3	45.0
1.60	74.4	70.6	61.2
2.40	79.2	76.8	69.2
3.20	81.3	79.8	73.7
4.00	82.1	81.4	76.4
4.80	82.2	82.2	78.1
5.20	82.1	82.4	78.7
5.72	81.9	82.5	79.2
--	-	-	-
--	-	-	-

Model	SFLS15481R5																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+1.5V5.2A																																	
1.Graph																																		
<p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Legend: --- □--- Load 50% — △ — Load 100%</p>																																		
Note: Slanted line shows the range of the rated input voltage.																																		
2.Values																																		
<table border="1"> <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>34</td><td>1.526</td><td>1.500</td></tr> <tr><td>36</td><td>1.527</td><td>1.501</td></tr> <tr><td>40</td><td>1.528</td><td>1.502</td></tr> <tr><td>48</td><td>1.531</td><td>1.503</td></tr> <tr><td>55</td><td>1.531</td><td>1.504</td></tr> <tr><td>60</td><td>1.531</td><td>1.505</td></tr> <tr><td>70</td><td>1.529</td><td>1.504</td></tr> <tr><td>76</td><td>1.529</td><td>1.505</td></tr> <tr><td>80</td><td>1.530</td><td>1.506</td></tr> </tbody> </table>			Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	34	1.526	1.500	36	1.527	1.501	40	1.528	1.502	48	1.531	1.503	55	1.531	1.504	60	1.531	1.505	70	1.529	1.504	76	1.529	1.505	80	1.530	1.506
Input Voltage [V]	Output Voltage [V]																																	
	Load 50%	Load 100%																																
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70	1.529	1.504																																
76	1.529	1.505																																
80	1.530	1.506																																

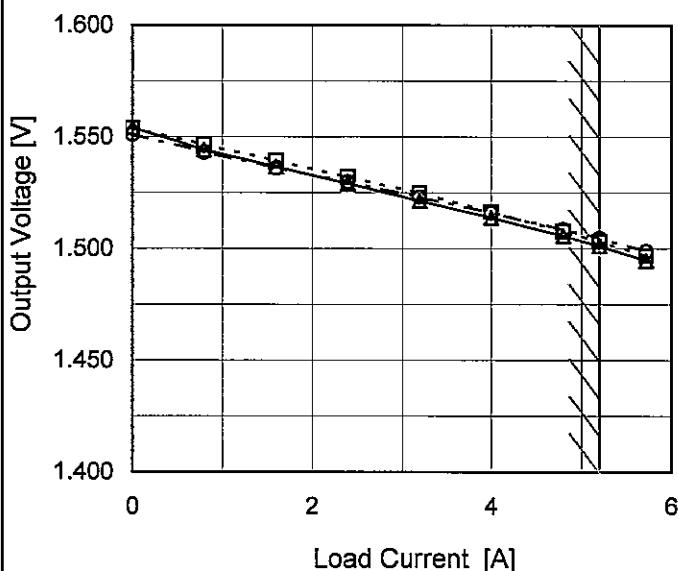
Model SFLS15481R5

Item Load Regulation

Object +1.5V5.2A

## 1.Graph

—△— Input Volt. 36V  
 - - - □--- Input Volt. 48V  
 - - ○--- Input Volt. 76V



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

Temperature 25°C  
 Testing Circuitry Figure A

## 2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	1.554	1.554	1.551
0.80	1.544	1.546	1.543
1.60	1.537	1.539	1.536
2.40	1.529	1.532	1.530
3.20	1.521	1.525	1.523
4.00	1.514	1.517	1.516
4.80	1.506	1.508	1.509
5.20	1.501	1.503	1.505
5.72	1.495	1.497	1.499
--	-	-	-
--	-	-	-

Model	SFLS15481R5	Temperature Testing Circuitry Figure A	25°C
Item	Dynamic Load Response		
Object	+1.5V5.2A		

Input Volt. 48 V  
Cycle 1000 mS

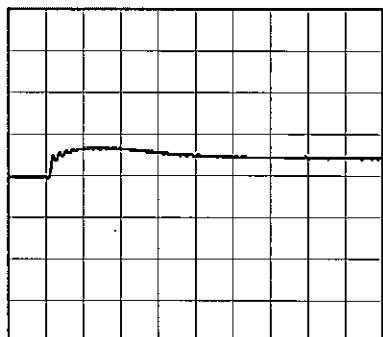
Load Current 5.2A / 200  $\mu$  sec

Min. Load (0A)  $\longleftrightarrow$   
Load 100% (5.2A)

100mV/div



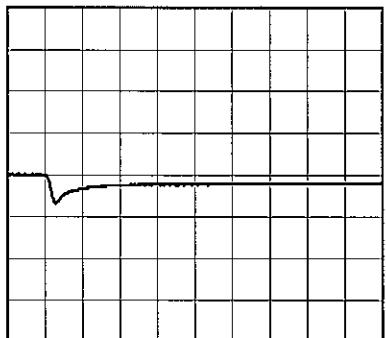
200  $\mu$ s/div



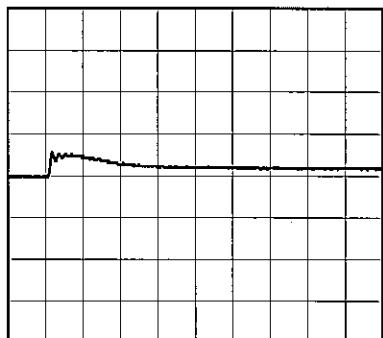
200  $\mu$ s/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (2.6A)

100mV/div



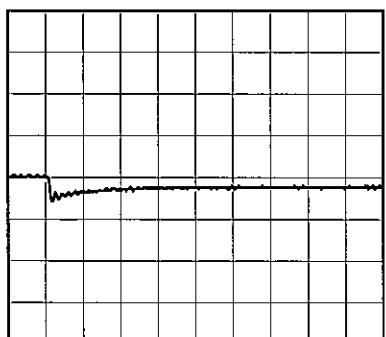
200  $\mu$ s/div



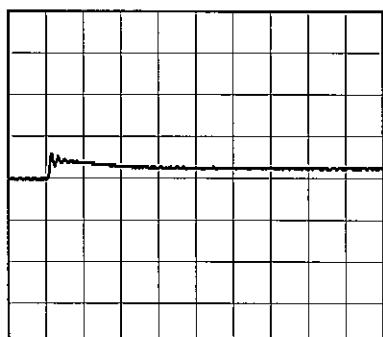
200  $\mu$ s/div

Load 50% (2.6A)  $\longleftrightarrow$   
Load 100% (5.2A)

100mV/div



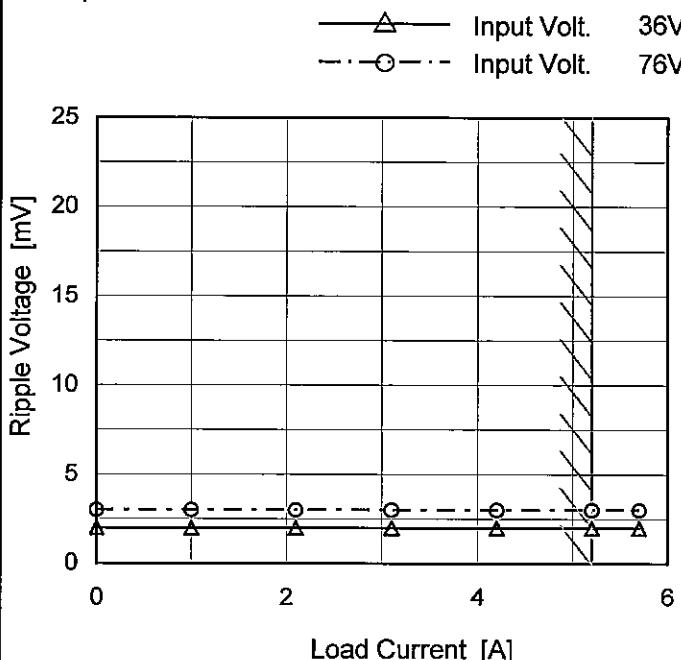
200  $\mu$ s/div



200  $\mu$ s/div

Model	SFLS15481R5
Item	Ripple Voltage (by Load Current)
Object	+1.5V5.2A

## 1. Graph



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.

Temperature 25°C  
Testing Circuitry Figure C

## 2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	2	3
1.0	2	3
2.1	2	3
3.1	2	3
4.2	2	3
5.2	2	3
5.7	2	3
—	-	-
—	-	-
—	-	-
—	-	-

Ripple [mVp-p]

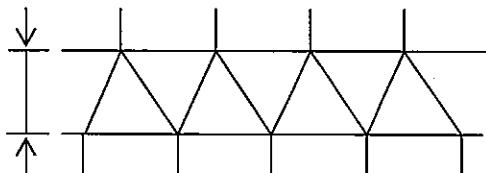
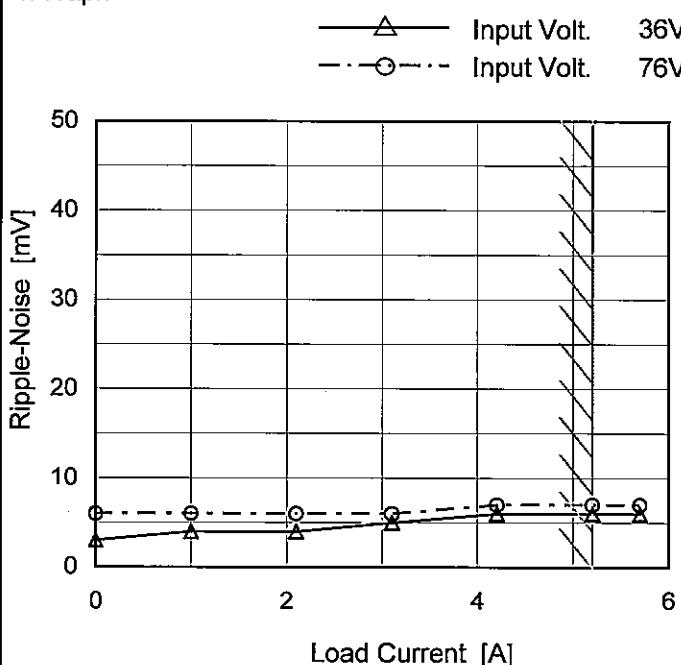


Fig.Complex Ripple Wave Form

Model	SFLS15481R5
Item	Ripple-Noise
Object	+1.5V5.2A

## 1. Graph



Measured by 100 MHz Oscilloscope.

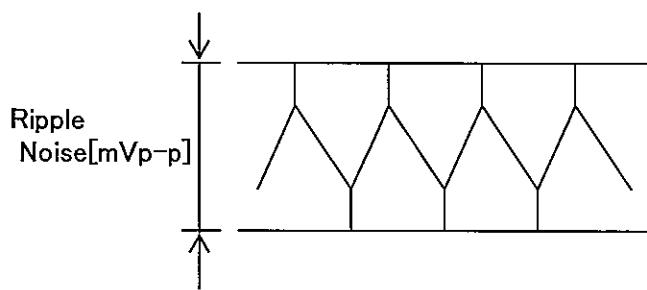
Ripple-Noise is shown as p-p in the figure below.

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

Temperature 25°C  
Testing Circuitry Figure C

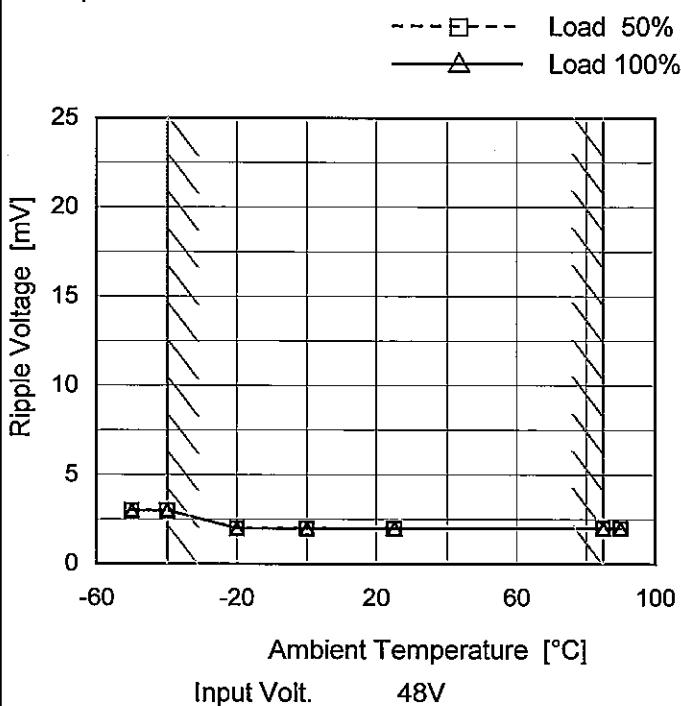
## 2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	3	6
1.0	4	6
2.1	4	6
3.1	5	6
4.2	6	7
5.2	6	7
5.7	6	7
--	-	-
--	-	-
--	-	-
--	-	-



Model	SFLS15481R5
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.5V5.2A

## 1. Graph



Measured by 100 MHz Oscilloscope.

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

Testing Circuitry Figure C

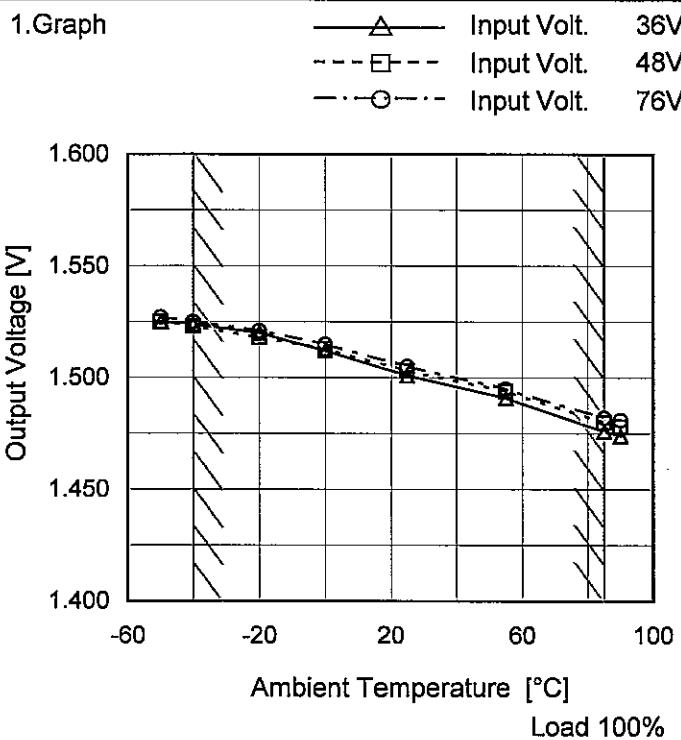
## 2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	3	3
-40	3	3
-20	2	2
0	2	2
25	2	2
85	2	2
90	2	2
--	-	-
--	-	-
--	-	-
--	-	-

Model SFLS15481R5

Item Ambient Temperature Drift

Object +1.5V5.2A



Testing Circuitry Figure A

## 2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-50	1.525	1.525	1.527
-40	1.524	1.523	1.525
-20	1.520	1.518	1.521
0	1.512	1.513	1.515
25	1.501	1.503	1.505
55	1.491	1.494	1.495
85	1.476	1.480	1.482
90	1.474	1.478	1.481
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	SFLS15481R5	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+1.5V5.2A	

### 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 ~ 5.2A

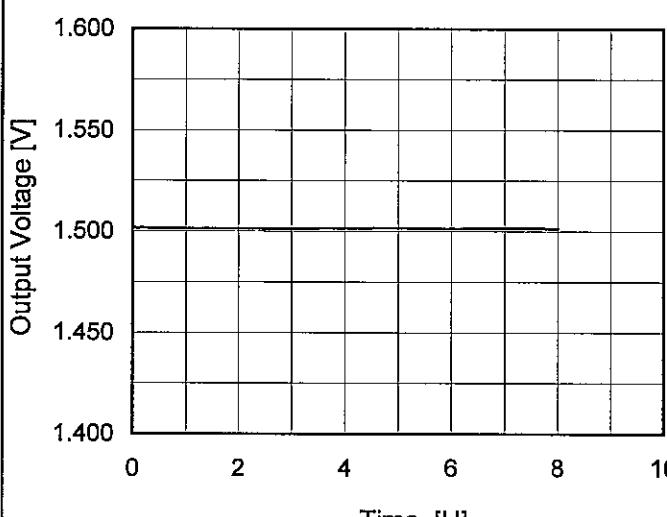
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	1.555	±40	±2.7
Minimum Voltage	85	36	5.2	1.476		

**COSEL**

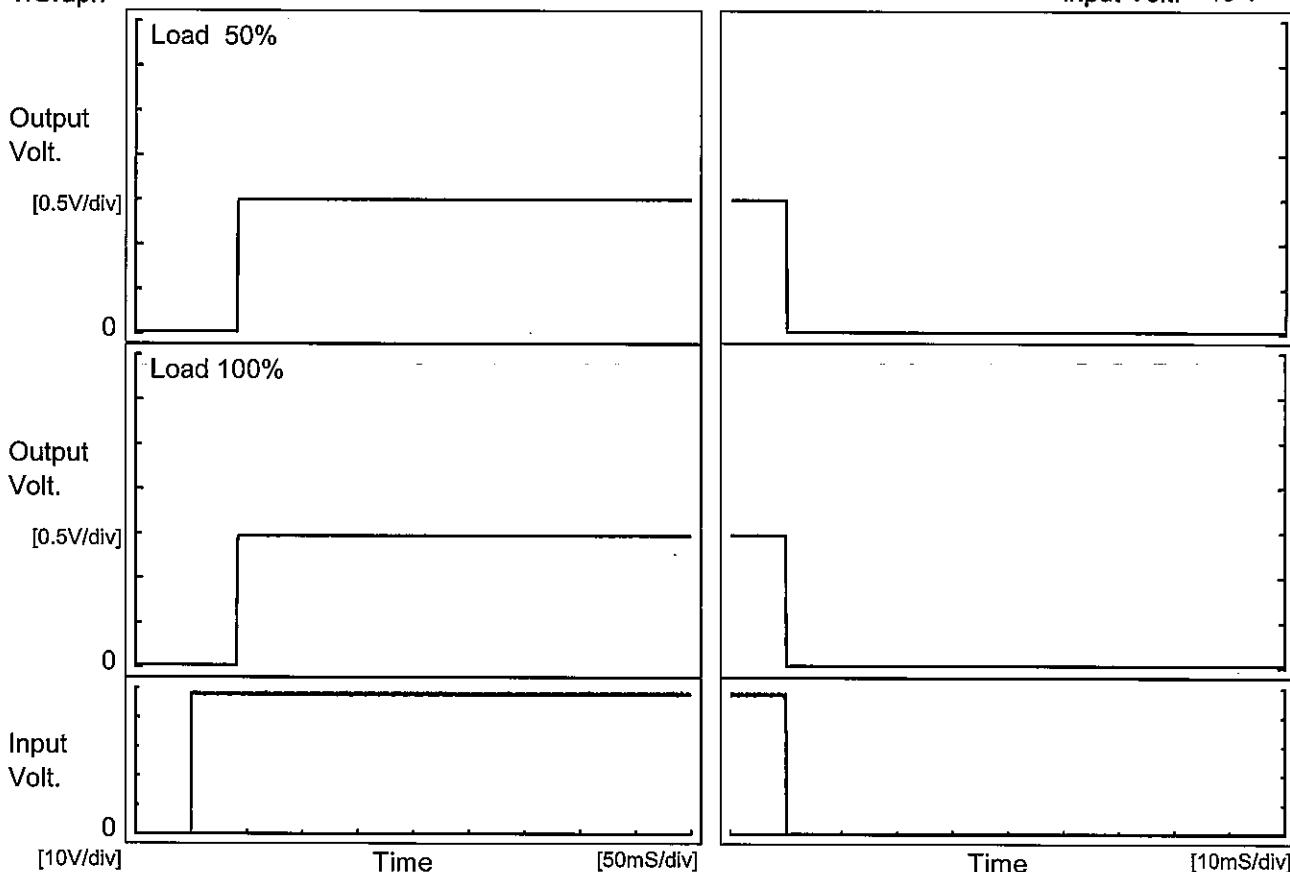
Model	SFLS15481R5	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+1.5V5.2A																								
1. Graph																									
 <p>The graph plots Output Voltage [V] on the Y-axis (ranging from 1.400 to 1.600) against Time [H] on the X-axis (ranging from 0 to 10). A single horizontal line is drawn at approximately 1.502V, representing the output voltage over an 8-hour period. The grid lines are spaced at 0.1V intervals vertically and 2 hours horizontally.</p> <p>Input Volt.      48V Load            100%</p>																									
2. Values																									
<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>1.502</td></tr> <tr><td>0.5</td><td>1.502</td></tr> <tr><td>1.0</td><td>1.502</td></tr> <tr><td>2.0</td><td>1.502</td></tr> <tr><td>3.0</td><td>1.502</td></tr> <tr><td>4.0</td><td>1.502</td></tr> <tr><td>5.0</td><td>1.502</td></tr> <tr><td>6.0</td><td>1.502</td></tr> <tr><td>7.0</td><td>1.502</td></tr> <tr><td>8.0</td><td>1.502</td></tr> </tbody> </table>				Time since start [H]	Output Voltage [V]	0.0	1.502	0.5	1.502	1.0	1.502	2.0	1.502	3.0	1.502	4.0	1.502	5.0	1.502	6.0	1.502	7.0	1.502	8.0	1.502
Time since start [H]	Output Voltage [V]																								
0.0	1.502																								
0.5	1.502																								
1.0	1.502																								
2.0	1.502																								
3.0	1.502																								
4.0	1.502																								
5.0	1.502																								
6.0	1.502																								
7.0	1.502																								
8.0	1.502																								

**COSEL**

Model	SFLS15481R5
Item	Rise and Fall Time
Object	+1.5V5.2A

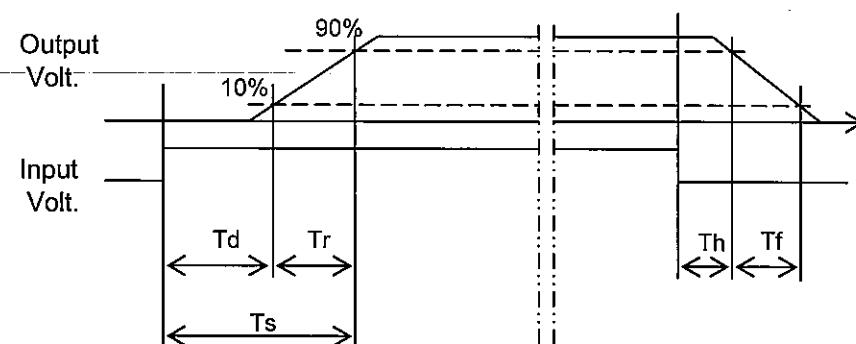
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		41.3	0.4	41.7	0.0	0.1	
100 %		41.0	0.5	41.5	0.0	0.1	

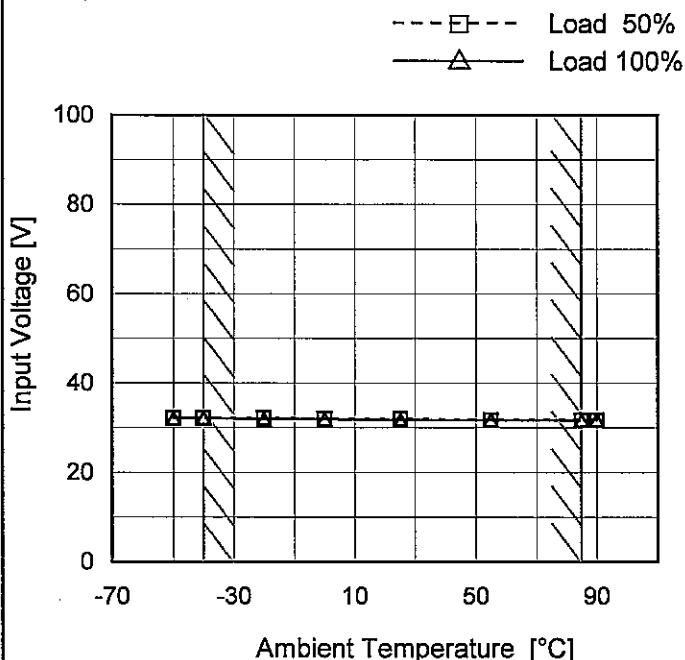


Model SF15481R5

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +1.5V5.2A

## 1. Graph



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

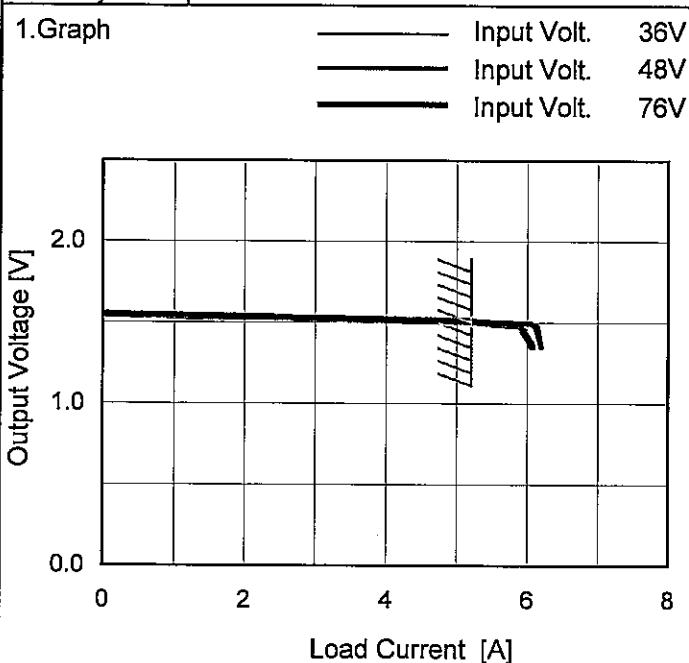
Testing Circuitry Figure A

## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	32.2	32.2
-40	32.3	32.2
-20	32.3	32.0
0	32.1	32.0
25	32.1	31.8
55	31.8	31.8
85	31.8	31.8
90	31.8	31.8
--	-	-
--	-	-
--	-	-

Model	SFLS15481R5
Item	Overcurrent Protection
Object	+1.5V5.2A

## 1. Graph



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

When the output voltage fell to less than 1.40V ,the unit shuts off the output by operating low voltage protection .

Temperature 25°C  
Testing Circuitry Figure A

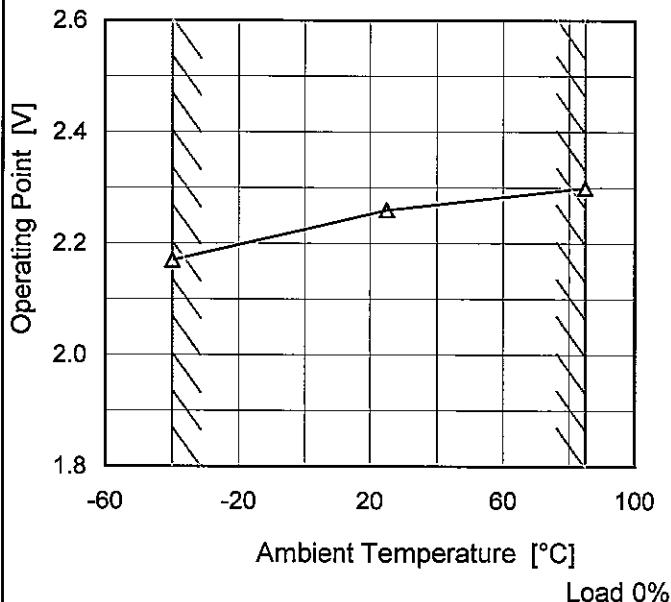
## 2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
1.50	5.25	5.25	5.26
1.43	6.18	6.15	5.98
1.35	6.21	6.20	6.07
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	SFLS15481R5
Item	Overvoltage Protection
Object	+1.5V5.2A

1. Graph

—△— Input Volt. 48V



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 48[V]	Input Volt.	Input Volt.
-40	2.17	-	-
25	2.26	-	-
85	2.30	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

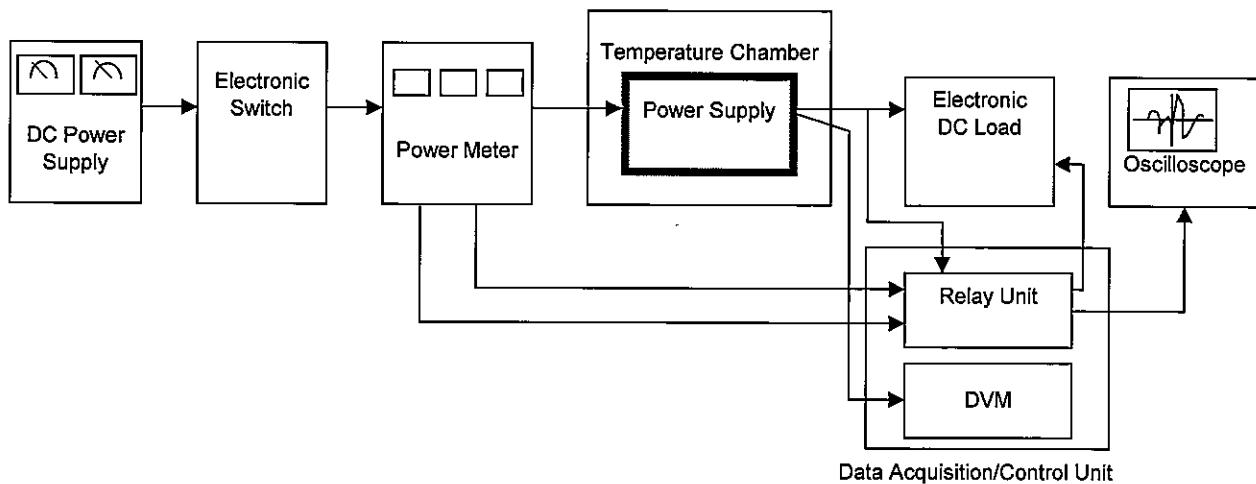


Figure A

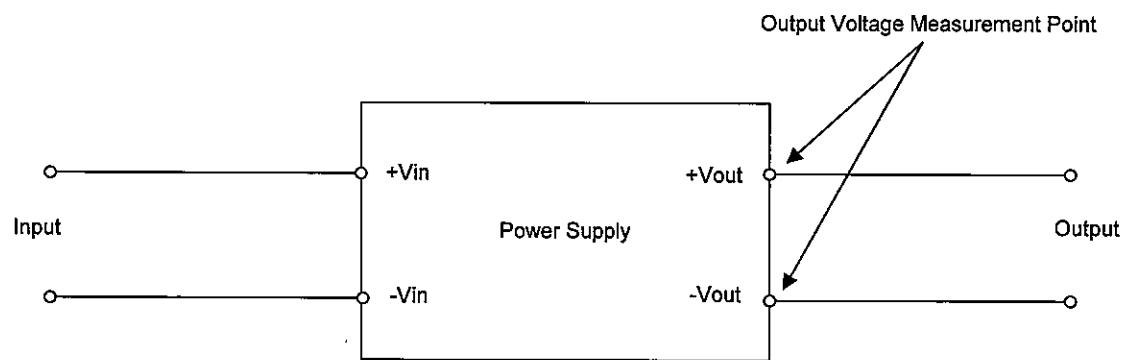


Figure B (General Electric Characteristic)

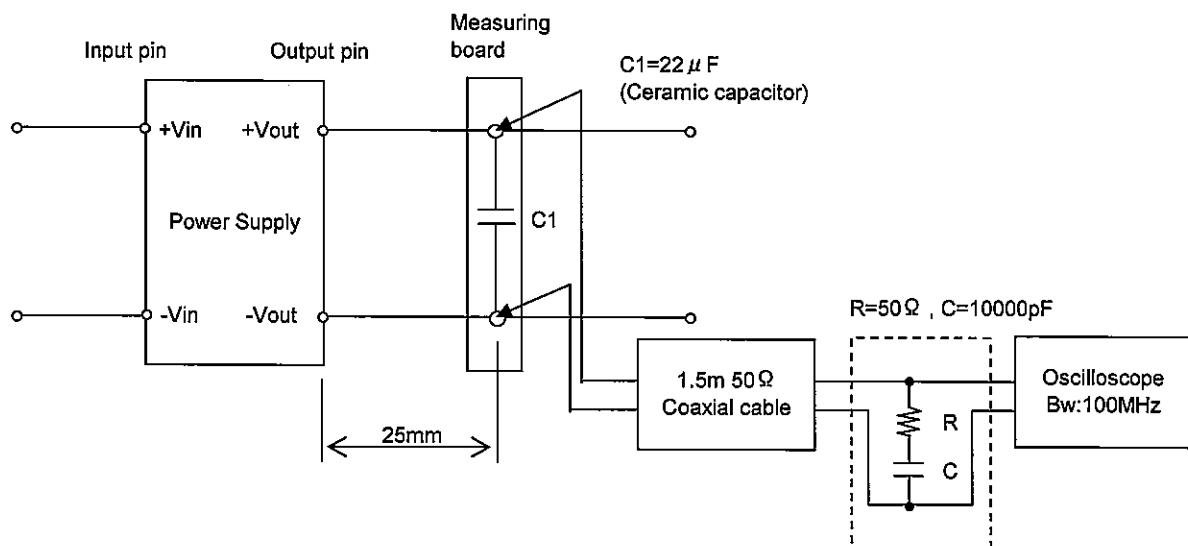


Figure C (Ripple and Ripple noise Characteristic)