

TEST DATA OF SUS1R50512

Regulated DC Power Supply
Sep 13, 2004

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Masahiro Shima
Masahiro Shima Design Engineer

COSEL CO.,LTD.



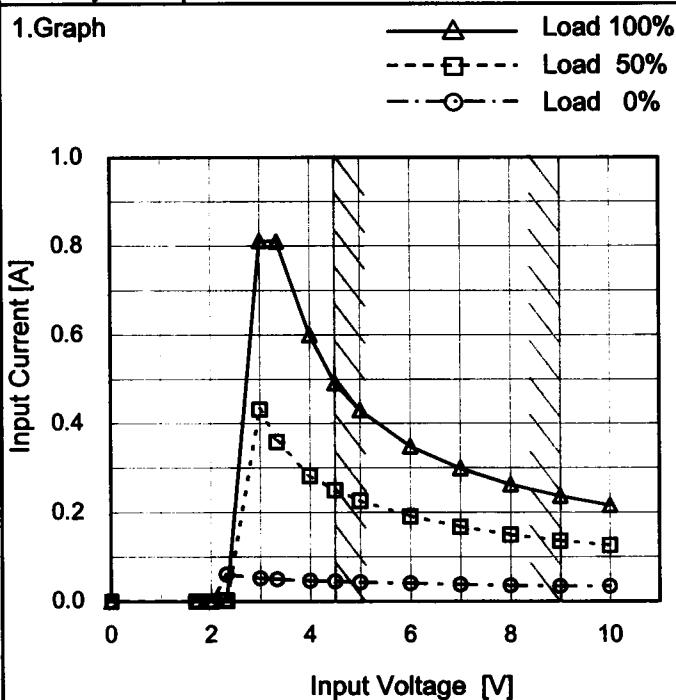
CONTENTS

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)

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Model	SUS1R50512
Item	Input Current (by Input Voltage)
Object	_____



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

Temperature 25°C
Testing Circuitry Figure A

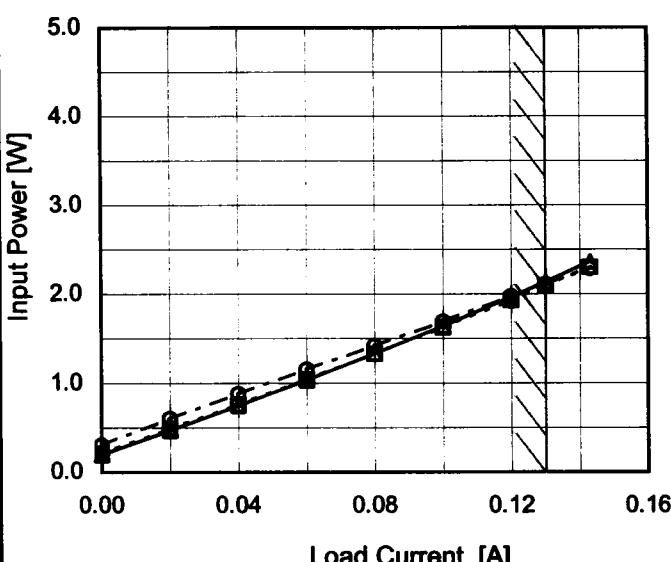
2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
1.7	0.000	0.000	0.000
2.0	0.000	0.000	0.000
2.3	0.060	0.002	0.002
3.0	0.052	0.431	0.812
3.3	0.050	0.359	0.810
4.0	0.046	0.282	0.600
4.5	0.044	0.250	0.491
5.0	0.043	0.226	0.430
6.0	0.040	0.191	0.348
7.0	0.037	0.167	0.300
8.0	0.035	0.150	0.263
9.0	0.034	0.136	0.237
10.0	0.034	0.126	0.216
--	-	-	-
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Model	SUS1R50512	Temperature	25°C																																														
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																														
Object	_____																																																
1.Graph		2.Values																																															
<p>The graph plots Input Current [A] on the y-axis (0.0 to 1.0) against Load Current [A] on the x-axis (0.00 to 0.16). Three curves are shown for Input Volt. 4.5V (triangles), 5V (squares), and 9V (circles). All curves start at (0,0) and increase. A slanted line is drawn through the curves, representing the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 4.5V [A]</th> <th>Input Volt. 5V [A]</th> <th>Input Volt. 9V [A]</th> </tr> </thead> <tbody> <tr><td>0.000</td><td>0.044</td><td>0.043</td><td>0.034</td></tr> <tr><td>0.020</td><td>0.105</td><td>0.098</td><td>0.067</td></tr> <tr><td>0.040</td><td>0.169</td><td>0.153</td><td>0.097</td></tr> <tr><td>0.060</td><td>0.235</td><td>0.212</td><td>0.128</td></tr> <tr><td>0.080</td><td>0.298</td><td>0.267</td><td>0.158</td></tr> <tr><td>0.100</td><td>0.371</td><td>0.330</td><td>0.188</td></tr> <tr><td>0.120</td><td>0.439</td><td>0.387</td><td>0.220</td></tr> <tr><td>0.130</td><td>0.477</td><td>0.420</td><td>0.235</td></tr> <tr><td>0.143</td><td>0.532</td><td>0.466</td><td>0.255</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. 4.5V [A]	Input Volt. 5V [A]	Input Volt. 9V [A]	0.000	0.044	0.043	0.034	0.020	0.105	0.098	0.067	0.040	0.169	0.153	0.097	0.060	0.235	0.212	0.128	0.080	0.298	0.267	0.158	0.100	0.371	0.330	0.188	0.120	0.439	0.387	0.220	0.130	0.477	0.420	0.235	0.143	0.532	0.466	0.255	--	-	-	-	--	-	-	-
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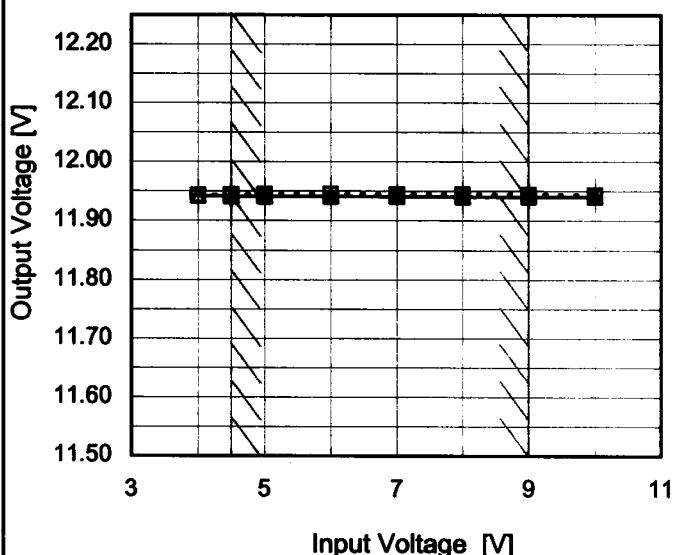
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Model	SUS1R50512
Item	Line Regulation
Object	+12V0.13A

Temperature 25°C
 Testing Circuitry Figure A

1.Graph

---□--- Load 50%
 —△— Load 100%



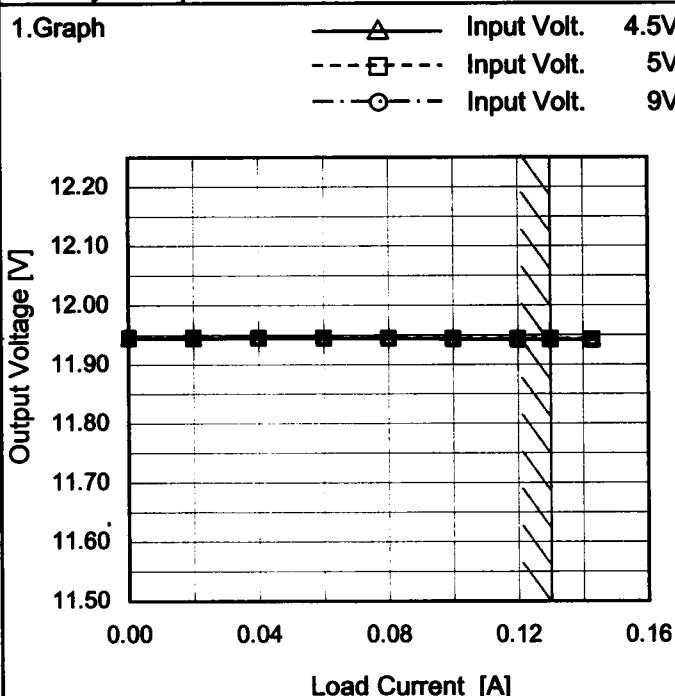
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	11.943	11.942
4.5	11.944	11.941
5.0	11.945	11.941
6.0	11.945	11.941
7.0	11.945	11.941
8.0	11.945	11.941
9.0	11.945	11.941
10.0	11.945	11.941
-	-	-

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

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Model	SUS1R50512
Item	Load Regulation
Object	+12V0.13A

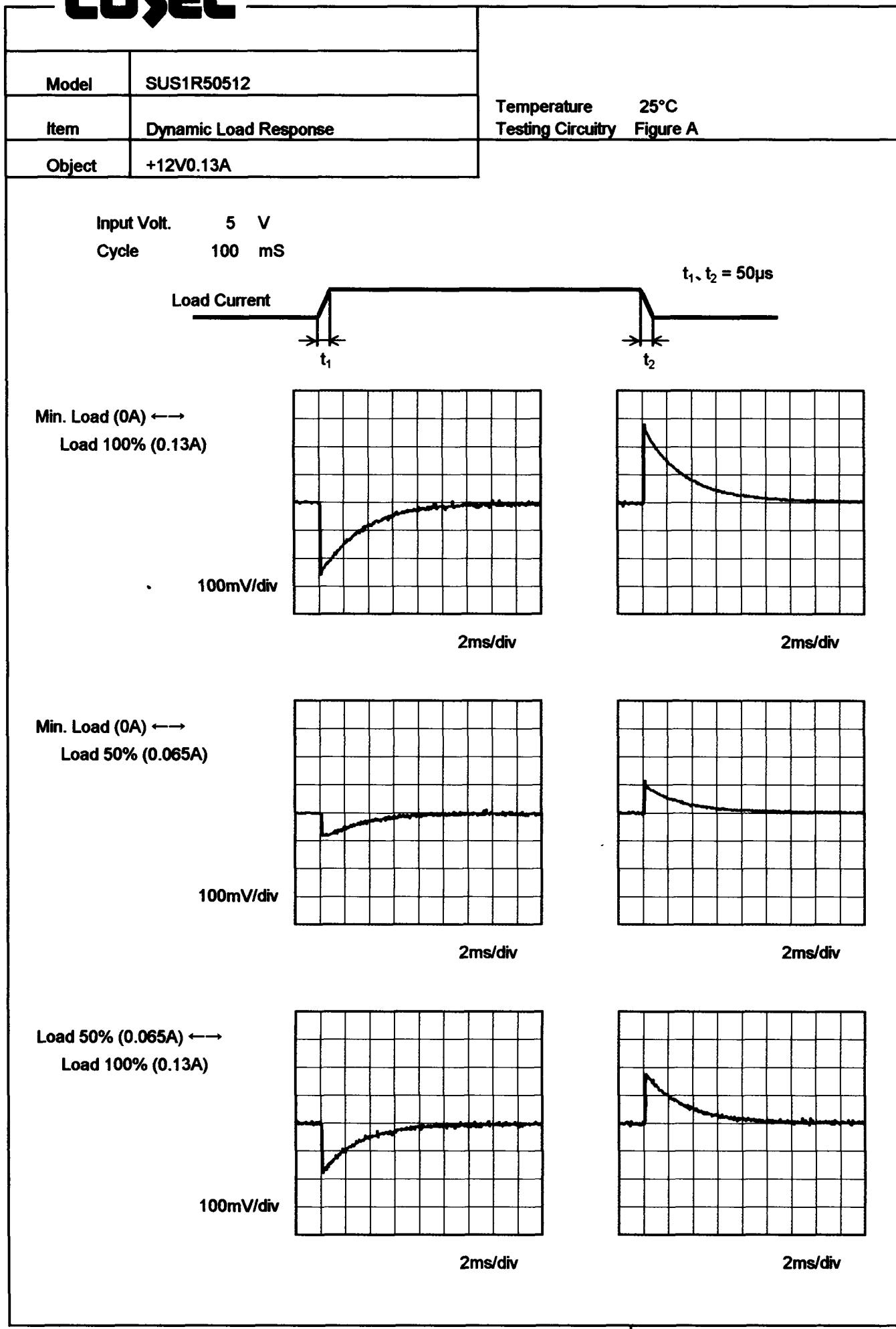


Note: Slanted line shows the range of the rated load current.

Temperature 25°C
Testing Circuitry Figure A

2.Values

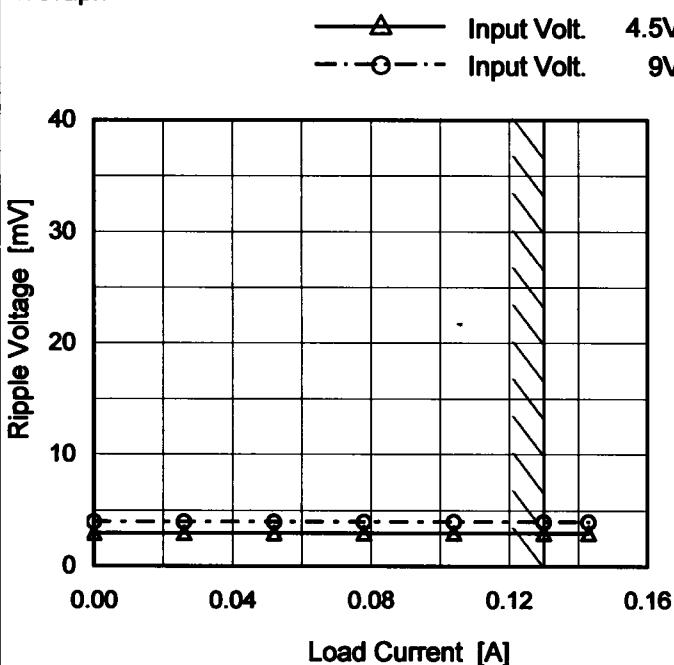
Load Current [A]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	11.944	11.946	11.946
0.020	11.944	11.946	11.946
0.040	11.945	11.946	11.945
0.060	11.944	11.946	11.945
0.080	11.944	11.945	11.945
0.100	11.943	11.945	11.944
0.120	11.943	11.944	11.943
0.130	11.942	11.944	11.943
0.143	11.942	11.943	11.943
-	-	-	-
-	-	-	-

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Model	SUS1R50512
Item	Ripple Voltage (by Load Current)
Object	+12V0.13A

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.

Ripple [mVp-p]

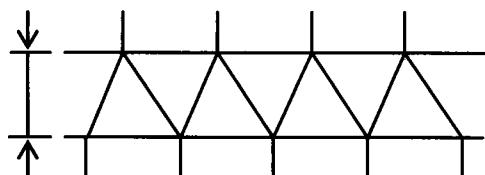


Fig.Complex Ripple Wave Form

Temperature 25°C
Testing Circuitry Figure B

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.000	3	4
0.026	3	4
0.052	3	4
0.078	3	4
0.104	3	4
0.130	3	4
0.143	3	4
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model SUS1R50512

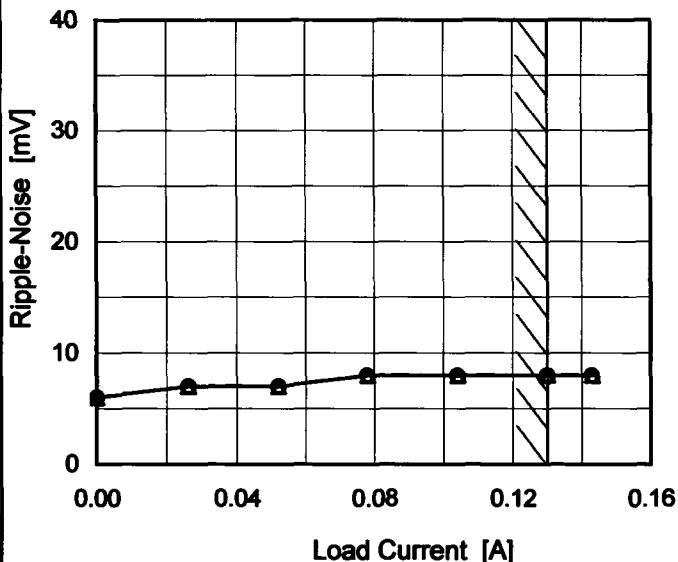
Item Ripple-Noise

Object +12V0.13A

Temperature 25°C
Testing Circuitry Figure B

1. Graph

—▲— Input Volt. 4.5V
 - -○--- Input Volt. 9V



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.000	6	6
0.026	7	7
0.052	7	7
0.078	8	8
0.104	8	8
0.130	8	8
0.143	8	8
--	-	-
--	-	-
--	-	-
--	-	-

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.

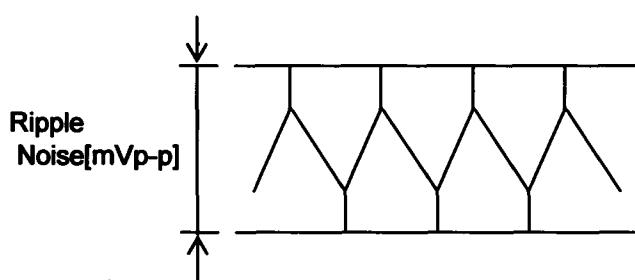


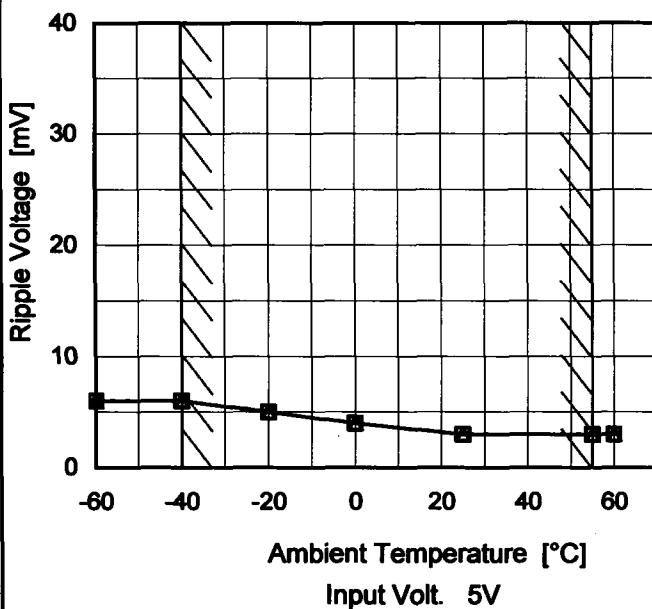
Fig.Complex Ripple Noise Wave Form

COSEL

Model	SUS1R50512
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.13A

1. Graph

--- □ --- Load 50%
 —△— Load 100%



Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	6	6
-40	6	6
-20	5	5
0	4	4
25	3	3
55	3	3
60	3	3
—	—	—
—	—	—
—	—	—
--	—	—

Measured by 100 MHz Oscilloscope.

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

COSEL

<p>Model SUS1R50512</p> <p>Item Ambient Temperature Drift</p> <p>Object +12V0.13A</p> <p>1. Graph</p> <table border="0"> <tr> <td>— ▲ — Input Volt. 4.5V</td><td>— □ — Input Volt. 5V</td><td>— ○ — Input Volt. 9V</td></tr> </table> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>				— ▲ — Input Volt. 4.5V	— □ — Input Volt. 5V	— ○ — Input Volt. 9V																																																
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Model	SUS1R50512	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V0.13A	

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 - 55°C

Input Voltage : 4.5 - 9V

Load Current : 0 - 0.13A

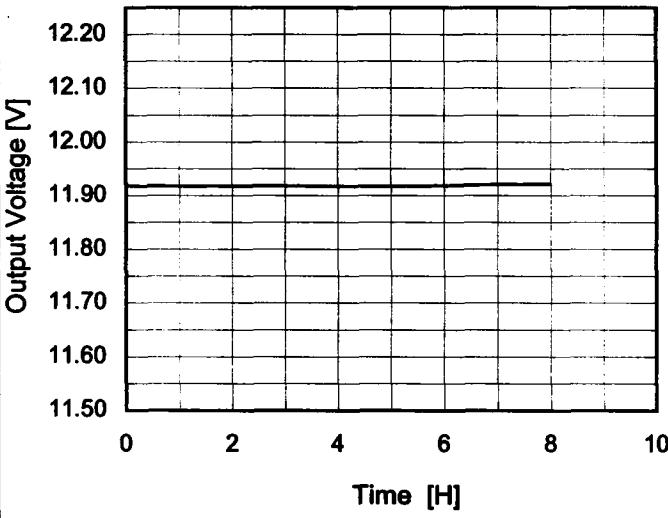
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

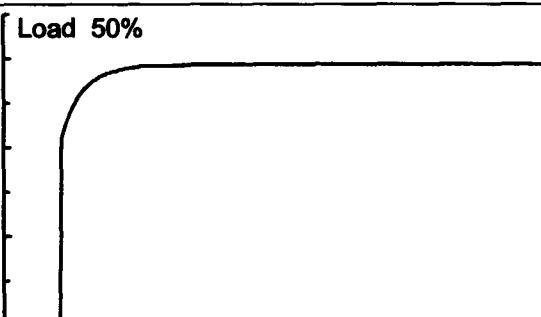
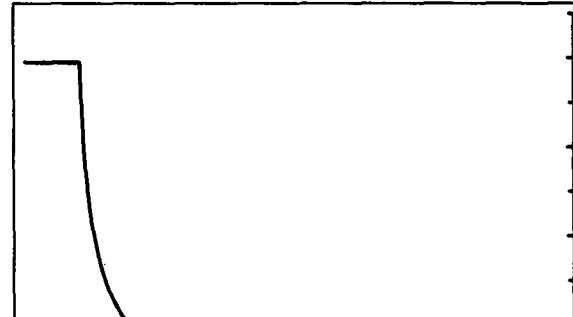
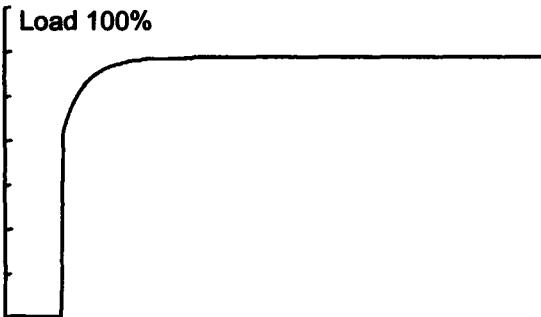
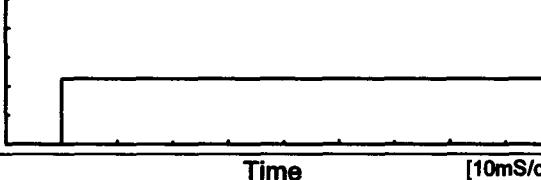
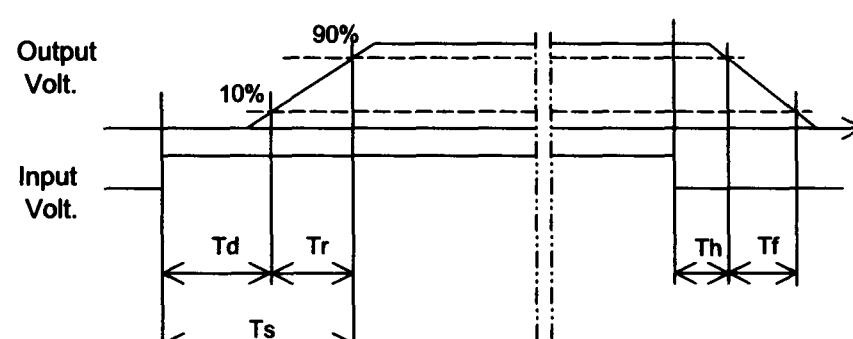
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	5	0	11.959	±20	±0.2
Minimum Voltage	55	9	0.13	11.920		

COSEL

Model	SUS1R50512	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V0.13A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 5V 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>11.926</td></tr> <tr><td>0.5</td><td>11.918</td></tr> <tr><td>1.0</td><td>11.918</td></tr> <tr><td>2.0</td><td>11.918</td></tr> <tr><td>3.0</td><td>11.918</td></tr> <tr><td>4.0</td><td>11.918</td></tr> <tr><td>5.0</td><td>11.918</td></tr> <tr><td>6.0</td><td>11.919</td></tr> <tr><td>7.0</td><td>11.922</td></tr> <tr><td>8.0</td><td>11.922</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	11.926	0.5	11.918	1.0	11.918	2.0	11.918	3.0	11.918	4.0	11.918	5.0	11.918	6.0	11.919	7.0	11.922	8.0	11.922
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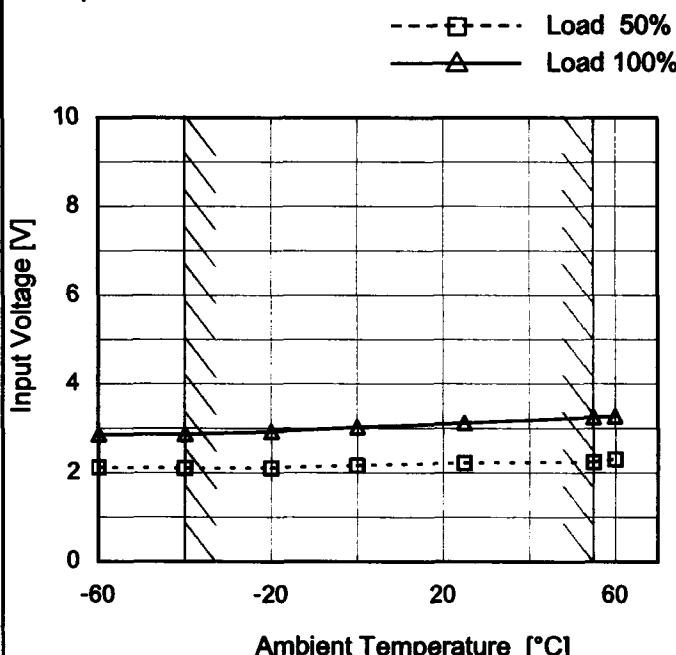
COSEL

Model	SUS1R50512	Temperature Testing Circuitry	25°C Figure A																					
Item	Rise and Fall Time																							
Object	+12V0.13A																							
1. Graph																								
<p>Output Volt. [2V/div]</p>  <p>Load 50%</p>			<p>Input Volt. 4.5 V</p> 																					
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 <p>Output Volt.</p> <p>Input Volt.</p> <p>90%</p> <p>10%</p> <p>Td Tr Ts Th Tf</p>																								

COSEL

Model	SUS1R50512
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.13A

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%
-60	2.2	2.9
-40	2.1	2.9
-20	2.1	3.0
0	2.2	3.1
25	2.3	3.2
55	2.3	3.3
60	2.3	3.3
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	SUS1R50512	Temperature	25°C																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																							
Object	+12V0.13A																																																									
1. Graph	<p>Input Volt. 4.5V Input Volt. 5V Input Volt. 9V</p>																																																									
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COSEL

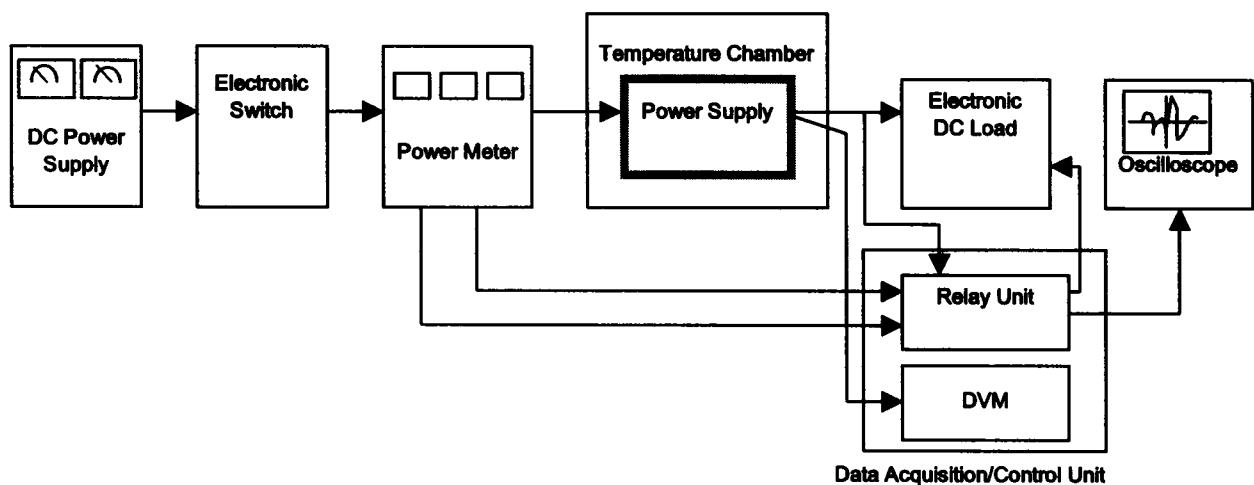


Figure A

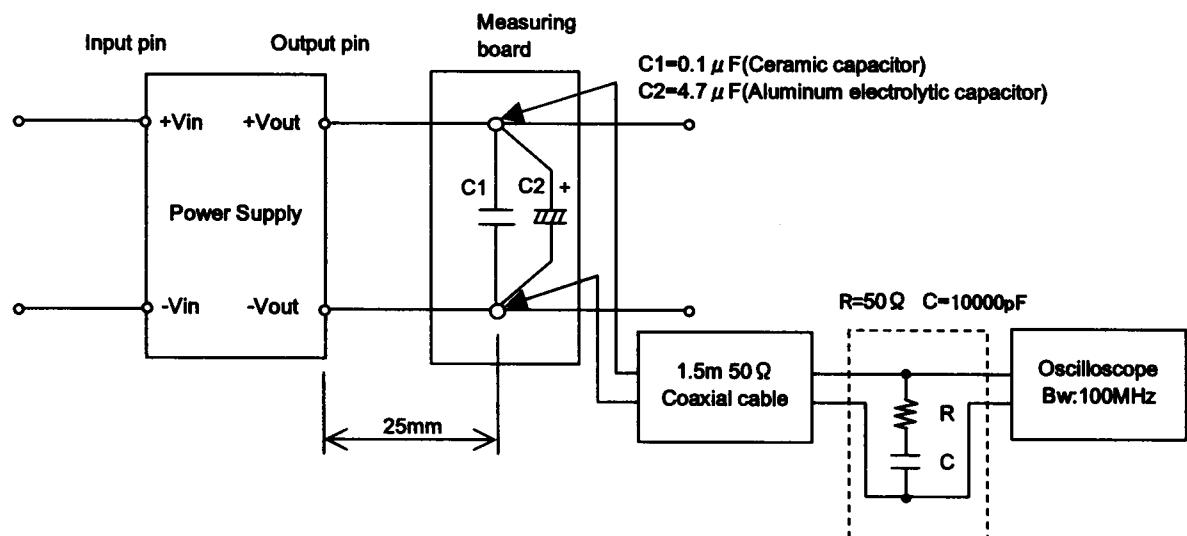


Figure B (Ripple and Ripple noise Characteristic)