



TEST DATA OF SUCS1R54812

Regulated DC Power Supply
Sep 28, 2004

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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

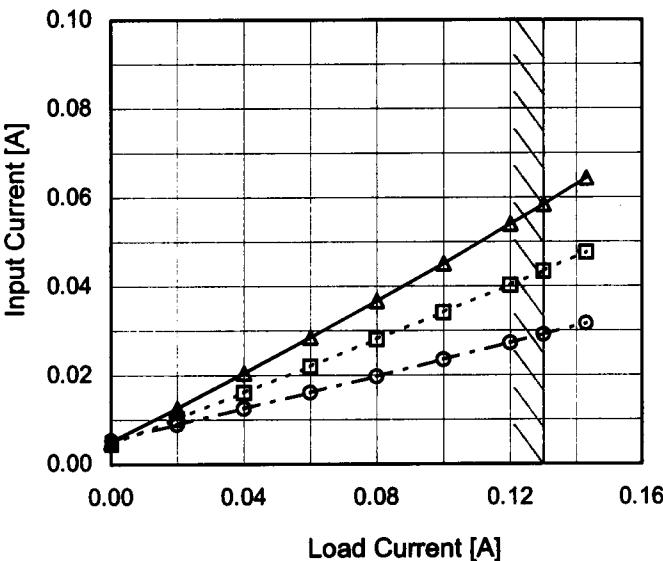
(Final Page 18)

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<p style="text-align: center;"> —△— Load 100% ---□--- Load 50% -○- Load 0% </p> <p>The graph plots Input Current [A] on the Y-axis (0.000 to 0.200) against Input Voltage [V] on the X-axis (0 to 80). Three data series are shown: Load 100% (solid triangles), Load 50% (open squares), and Load 0% (open circles). All series show a sharp increase in current from 0V to approximately 20V, followed by a gradual decrease. A slanted line is drawn through the data points at approximately 16V, 21.6V, 36V, 40V, 48V, 60V, 70V, and 76V.</p>																																																																										
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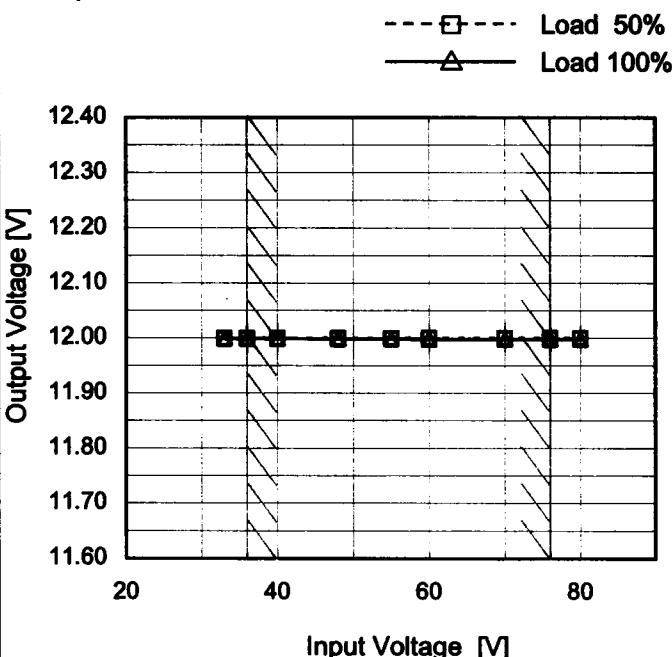
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Item	Line Regulation
Object	+12V0.13A

1.Graph



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

Temperature 25°C
Testing Circuitry Figure A

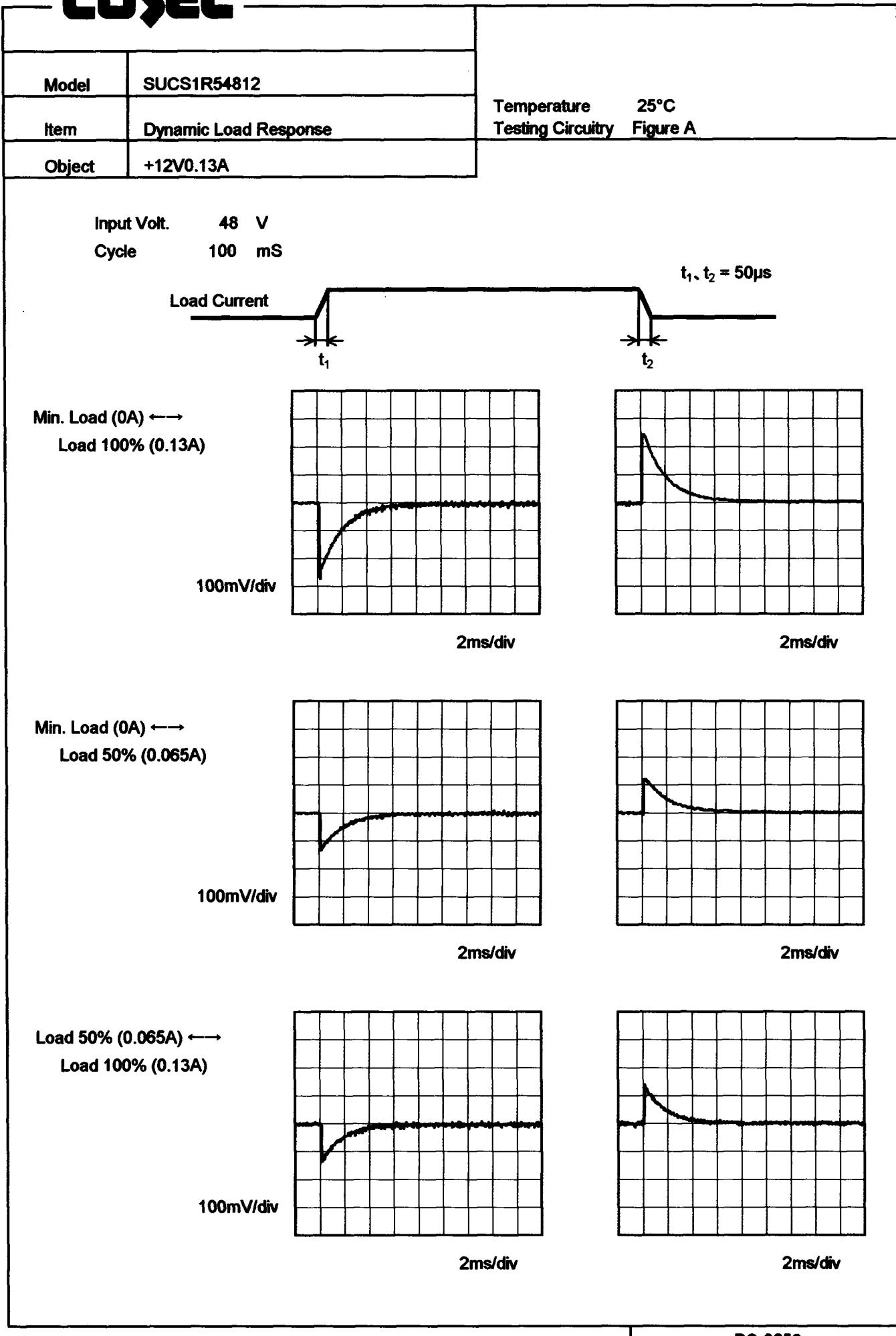
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	12.000	11.999
36	12.000	11.999
40	12.000	11.999
48	12.000	11.999
55	12.000	11.998
60	12.000	11.998
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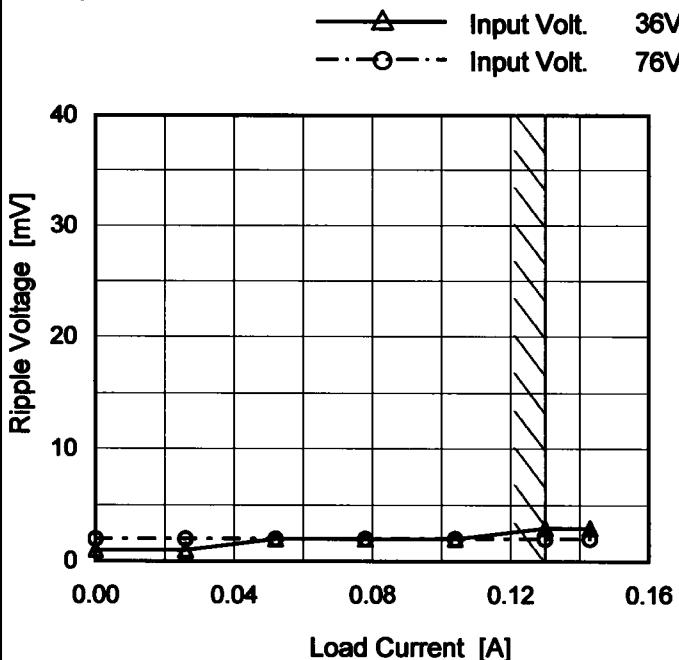
Note: Slanted line shows the range of the rated load current.

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Model	SUCS1R54812
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]

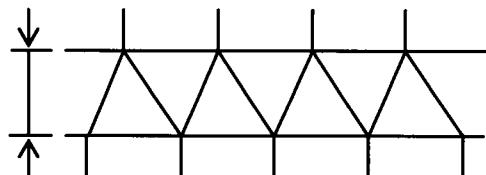


Fig. Complex Ripple Wave Form

Temperature 25°C
Testing Circuitry Figure B

2. Values

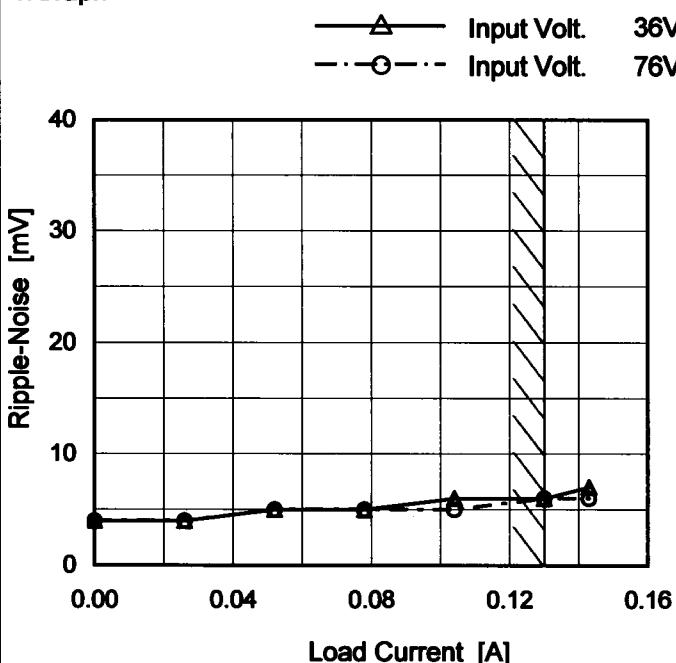
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	1	2
0.026	1	2
0.052	2	2
0.078	2	2
0.104	2	2
0.130	3	2
0.143	3	2
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	SUCS1R54812
Item	Ripple-Noise
Object	+12V0.13A

Temperature 25°C
 Testing Circuitry Figure B

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.

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	4	4
0.026	4	4
0.052	5	5
0.078	5	5
0.104	6	5
0.130	6	6
0.143	7	6
-	-	-
-	-	-
-	-	-
-	-	-

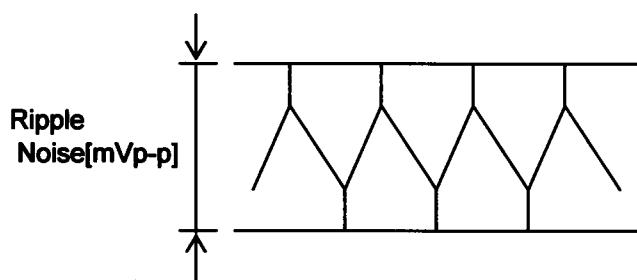


Fig.Complex Ripple Noise Wave Form

COSEL

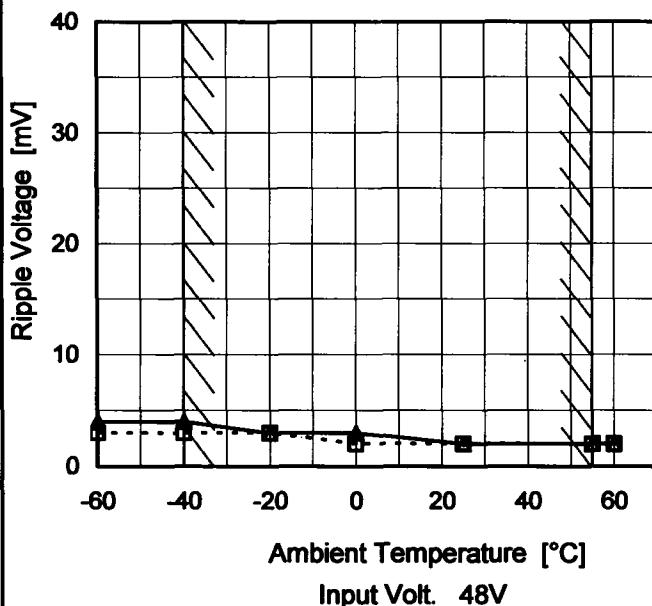
Model SUCS1R54812

Item Ripple Voltage (by Ambient Temp.)

Object +12V0.13A

1. Graph

--- □ --- Load 50%
 —△— Load 100%



Measured by 100 MHz Oscilloscope.

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

Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	4
-40	3	4
-20	3	3
0	2	3
25	2	2
55	2	2
60	2	2
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	SUCS1R54812																																																					
Item	Ambient Temperature Drift																																																					
Object	+12V0.13A																																																					
1.Graph	<p style="text-align: center;"> Input Volt. 36V Input Volt. 48V Input Volt. 76V </p> <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: center;">Load 100%</p>																																																					
Testing Circuitry	Figure A																																																					
2.Values	<table border="1" style="width: 100%; border-collapse: collapse;"> <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>-60</td><td>11.993</td><td>11.994</td><td>11.994</td></tr> <tr><td>-40</td><td>12.002</td><td>12.003</td><td>12.002</td></tr> <tr><td>-20</td><td>12.007</td><td>12.007</td><td>12.007</td></tr> <tr><td>0</td><td>12.007</td><td>12.006</td><td>12.005</td></tr> <tr><td>25</td><td>12.000</td><td>11.999</td><td>11.998</td></tr> <tr><td>55</td><td>11.985</td><td>11.984</td><td>11.982</td></tr> <tr><td>60</td><td>11.981</td><td>11.980</td><td>11.979</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]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-60	11.993	11.994	11.994	-40	12.002	12.003	12.002	-20	12.007	12.007	12.007	0	12.007	12.006	12.005	25	12.000	11.999	11.998	55	11.985	11.984	11.982	60	11.981	11.980	11.979	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
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Note: Slanted line shows the range of the rated ambient temperature.



Model	SUCS1R54812	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
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 : 36 - 76V

Load Current : 0 - 0.13A

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

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

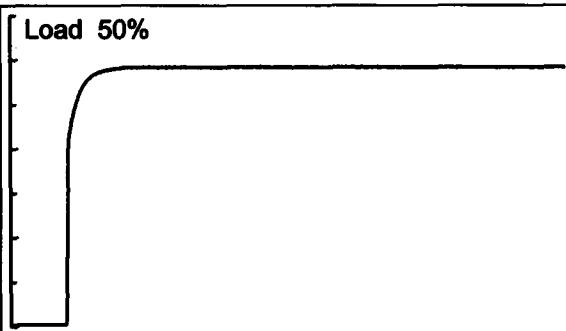
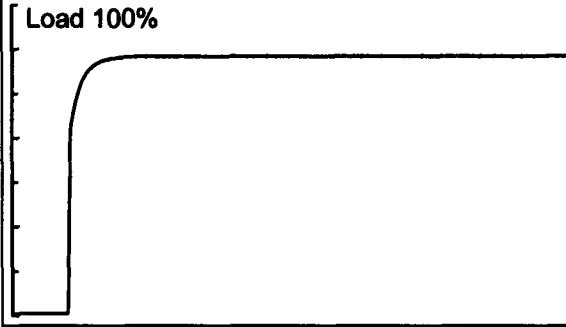
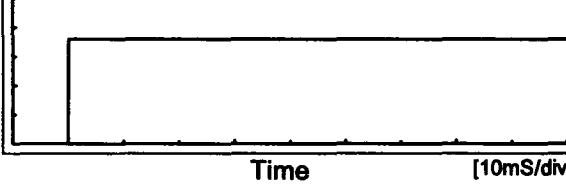
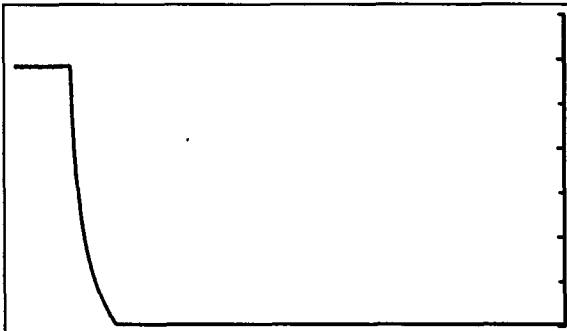
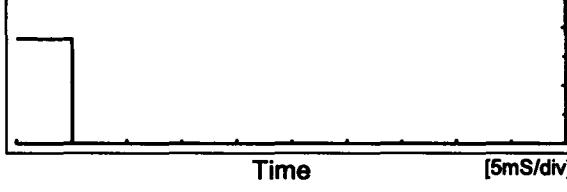
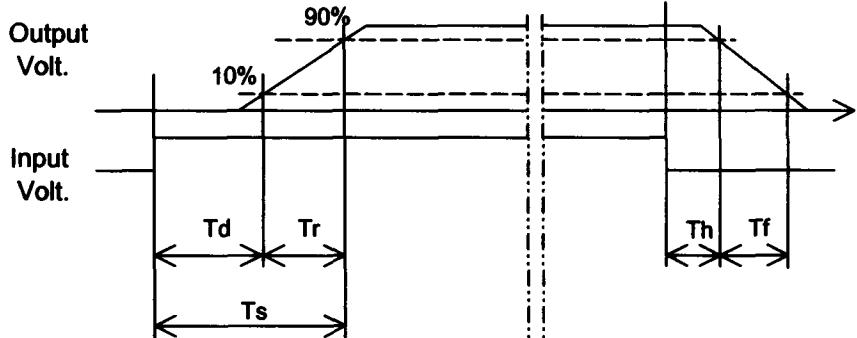
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	76	0	12.012	± 15	± 0.1
Minimum Voltage	55	76	0.13	11.982		

COSEL

Model	SUCS1R54812	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V0.13A																								
1.Graph			2.Values																						
<p>Output Voltage [mV]</p> <p>Time [H]</p> <p>Input Volt. 48V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [mV]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.004</td></tr> <tr><td>0.5</td><td>11.999</td></tr> <tr><td>1.0</td><td>11.999</td></tr> <tr><td>2.0</td><td>11.999</td></tr> <tr><td>3.0</td><td>11.999</td></tr> <tr><td>4.0</td><td>11.999</td></tr> <tr><td>5.0</td><td>11.999</td></tr> <tr><td>6.0</td><td>11.999</td></tr> <tr><td>7.0</td><td>11.999</td></tr> <tr><td>8.0</td><td>11.999</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [mV]	0.0	12.004	0.5	11.999	1.0	11.999	2.0	11.999	3.0	11.999	4.0	11.999	5.0	11.999	6.0	11.999	7.0	11.999	8.0	11.999
Time since start [H]	Output Voltage [mV]																								
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COSEL

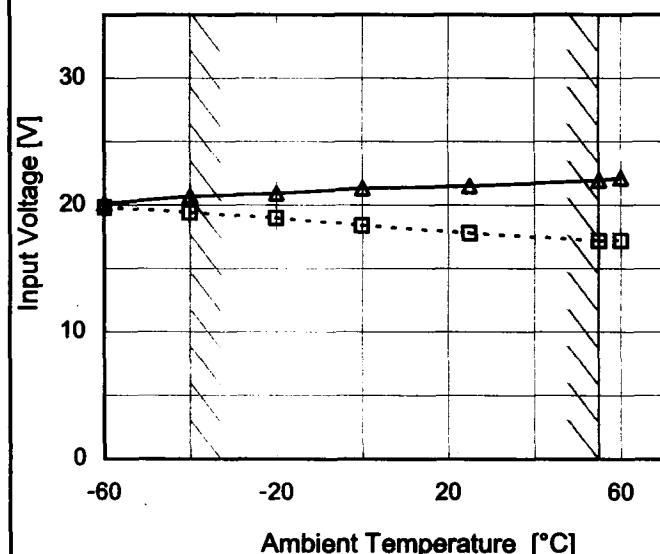
Model	SUCS1R54812	Temperature Testing Circuitry	25°C Figure A																					
Item	Rise and Fall Time																							
Object	+12V0.13A																							
1. Graph			Input Volt. 36 V																					
 <p>Output Volt. [2V/div]</p> <p>Load 50%</p>																								
 <p>Output Volt. [2V/div]</p> <p>Load 100%</p>																								
 <p>Input Volt. [10V/div]</p>																								
 <p>Time [10mS/div]</p>																								
 <p>Time [5mS/div]</p>																								
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2. Values			[mS]																					
<table border="1"> <thead> <tr> <th>Load</th> <th>Time</th> <th>Td</th> <th>Tr</th> <th>Ts</th> <th>Th</th> <th>Tf</th> </tr> </thead> <tbody> <tr> <td>50 %</td> <td></td> <td>0.1</td> <td>3.2</td> <td>3.3</td> <td>0.1</td> <td>2.9</td> </tr> <tr> <td>100 %</td> <td></td> <td>0.1</td> <td>3.3</td> <td>3.4</td> <td>0.1</td> <td>1.5</td> </tr> </tbody> </table>			Load	Time	Td	Tr	Ts	Th	Tf	50 %		0.1	3.2	3.3	0.1	2.9	100 %		0.1	3.3	3.4	0.1	1.5	
Load	Time	Td	Tr	Ts	Th	Tf																		
50 %		0.1	3.2	3.3	0.1	2.9																		
100 %		0.1	3.3	3.4	0.1	1.5																		
 <p>Output Volt.</p> <p>Input Volt.</p> <p>Td</p> <p>Tr</p> <p>Ts</p> <p>Th</p> <p>Tf</p>																								

COSEL

Model	SUCS1R54812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.13A

1. Graph

---□--- Load 50%
—△— Load 100%



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	19.9	20.2
-40	19.5	20.7
-20	19.0	21.0
0	18.4	21.4
25	17.8	21.6
55	17.2	22.0
60	17.3	22.2
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	SUCS1R54812
Item	Overcurrent Protection
Object	+12V0.13A

1. Graph

Output Voltage [V]

Load Current [A]

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

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]
12.0	0.13	0.13	0.13
11.4	0.21	0.20	0.18
10.8	0.22	0.21	0.19
9.6	0.23	0.22	0.20
8.4	0.25	0.24	0.21
7.2	0.26	0.25	0.22
6.0	0.28	0.26	0.24
4.8	0.30	0.27	0.25
3.6	0.31	0.28	0.25
2.4	0.31	0.28	0.26
1.2	0.30	0.27	0.26
0.0	0.36	0.30	0.30

COSEL

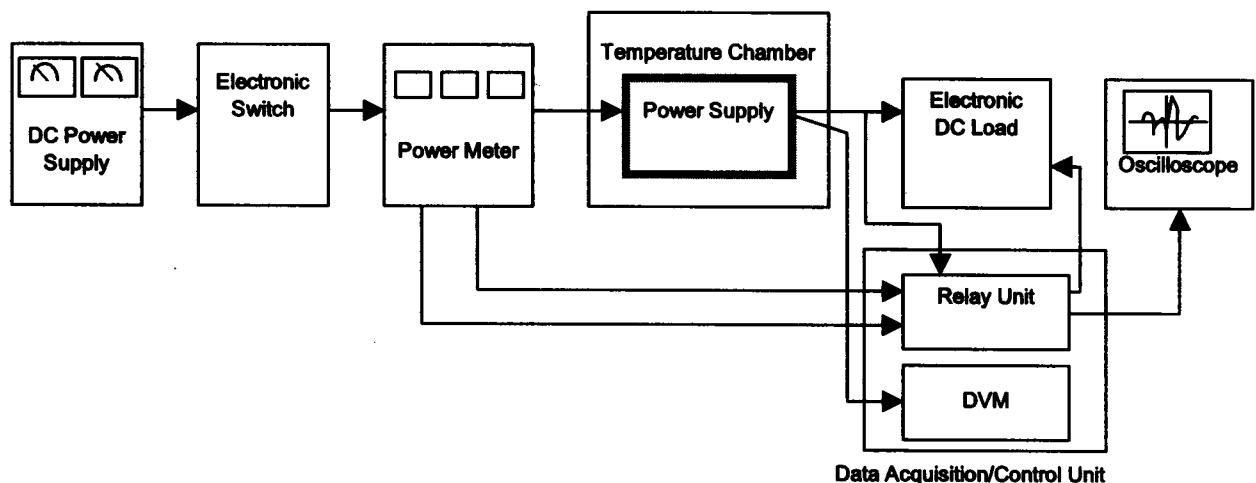


Figure A

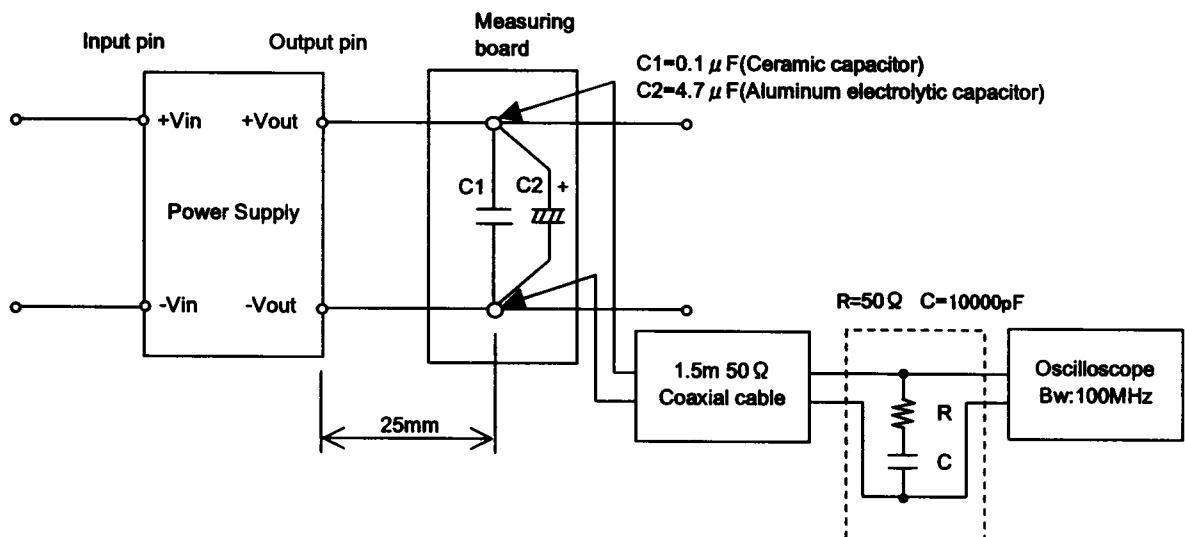


Figure B (Ripple and Ripple noise Characteristic)