

TEST DATA OF SUCS1R5053R3

Regulated DC Power Supply
Sep 15, 2004

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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	SUCCS1R5053R3
Item	Input Current (by Input Voltage)
Object	<p>1.Graph</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>

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	0.043	0.661	0.653
3.0	0.037	0.371	0.681
3.3	0.035	0.311	0.687
4.0	0.033	0.248	0.536
4.5	0.032	0.221	0.445
5.0	0.030	0.200	0.390
6.0	0.028	0.169	0.318
7.0	0.027	0.148	0.273
8.0	0.027	0.134	0.240
9.0	0.027	0.122	0.217
10.0	0.027	0.113	0.198
-	-	-	-
-	-	-	-

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Model	SUCS1R5053R3	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Input Current (by Load Current)																																																					
Object	_____																																																					
1.Graph		—△— Input Volt. 4.5V - -□--- Input Volt. 5V - -○--- Input Volt. 9V																																																				
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<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 5[V]</th> <th>Input Volt. 9[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.031</td><td>0.030</td><td>0.026</td></tr> <tr><td>0.08</td><td>0.105</td><td>0.097</td><td>0.067</td></tr> <tr><td>0.16</td><td>0.181</td><td>0.165</td><td>0.103</td></tr> <tr><td>0.24</td><td>0.264</td><td>0.237</td><td>0.140</td></tr> <tr><td>0.32</td><td>0.346</td><td>0.308</td><td>0.177</td></tr> <tr><td>0.40</td><td>0.445</td><td>0.391</td><td>0.215</td></tr> <tr><td>0.44</td><td>0.484</td><td>0.424</td><td>0.235</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>				Load Current [A]	Input Current [A]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	0.00	0.031	0.030	0.026	0.08	0.105	0.097	0.067	0.16	0.181	0.165	0.103	0.24	0.264	0.237	0.140	0.32	0.346	0.308	0.177	0.40	0.445	0.391	0.215	0.44	0.484	0.424	0.235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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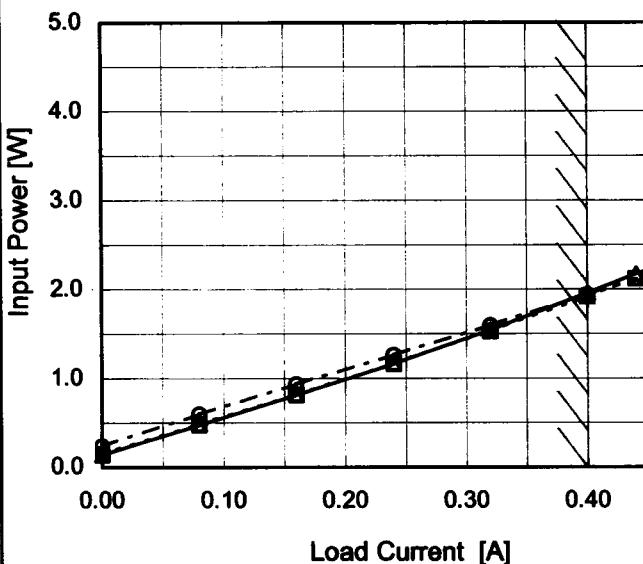
Model SUCS1R5053R3

Item Input Power (by Load Current)

Object _____

1. Graph

—△— Input Volt. 4.5V
 -□--- Input Volt. 5V
 -○--- Input Volt. 9V

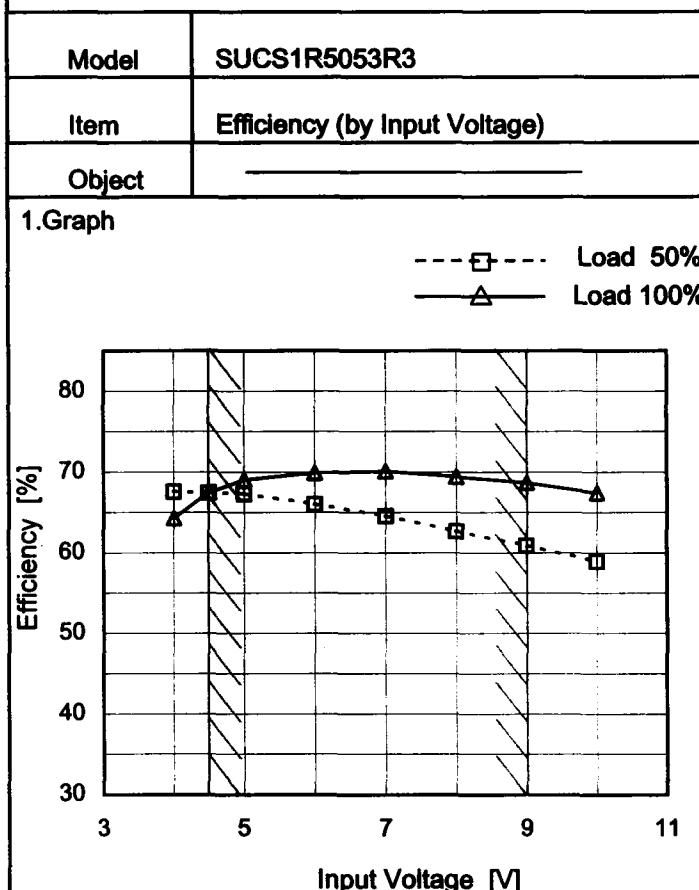


Note: Slanted line shows the range of the rated load current.

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	0.14	0.15	0.24
0.08	0.47	0.49	0.60
0.16	0.81	0.82	0.93
0.24	1.17	1.17	1.26
0.32	1.54	1.53	1.59
0.40	1.96	1.92	1.94
0.44	2.17	2.12	2.11
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
4.0	67.6	64.3
4.5	67.4	67.5
5.0	67.3	69.0
6.0	66.0	69.9
7.0	64.6	70.1
8.0	62.7	69.4
9.0	60.9	68.7
10.0	58.9	67.4
--	-	-

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

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Model	SUCS1R5053R3	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Efficiency (by Load Current)																																																					
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1.Graph	—△— Input Volt. 4.5V - -□--- Input Volt. 5V - -○--- Input Volt. 9V																																																					
	<p>The graph shows efficiency increasing with load current for all input voltages. The 4.5V curve is the highest, followed by 5V, and then 9V. A slanted line from the top right indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>4.5[V] (%)</th> <th>5[V] (%)</th> <th>9[V] (%)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>56.5</td><td>55.1</td><td>44.9</td></tr> <tr><td>0.08</td><td>65.8</td><td>65.4</td><td>57.1</td></tr> <tr><td>0.16</td><td>68.5</td><td>68.5</td><td>63.3</td></tr> <tr><td>0.24</td><td>68.8</td><td>69.4</td><td>66.7</td></tr> <tr><td>0.32</td><td>67.7</td><td>69.2</td><td>68.5</td></tr> <tr><td>0.40</td><td>67.2</td><td>68.9</td><td>69.2</td></tr> </tbody> </table>	Load Current [A]	4.5[V] (%)	5[V] (%)	9[V] (%)	0.00	56.5	55.1	44.9	0.08	65.8	65.4	57.1	0.16	68.5	68.5	63.3	0.24	68.8	69.4	66.7	0.32	67.7	69.2	68.5	0.40	67.2	68.9	69.2	2.Values																								
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Note: Slanted line shows the range of the rated load current.

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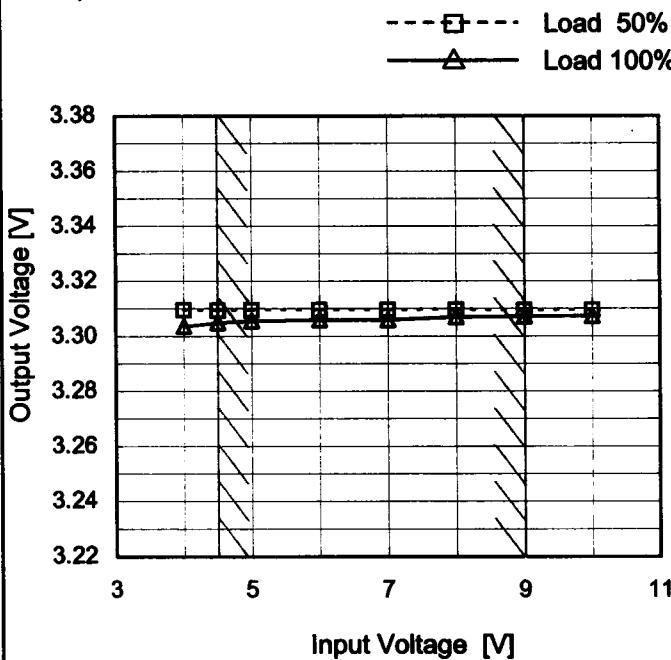
Model SUCS1R5053R3

Item Line Regulation

Object +3.3V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

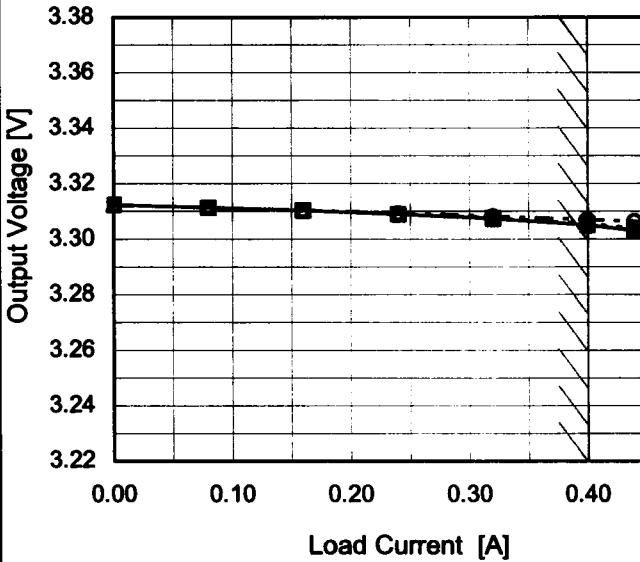


2.Values

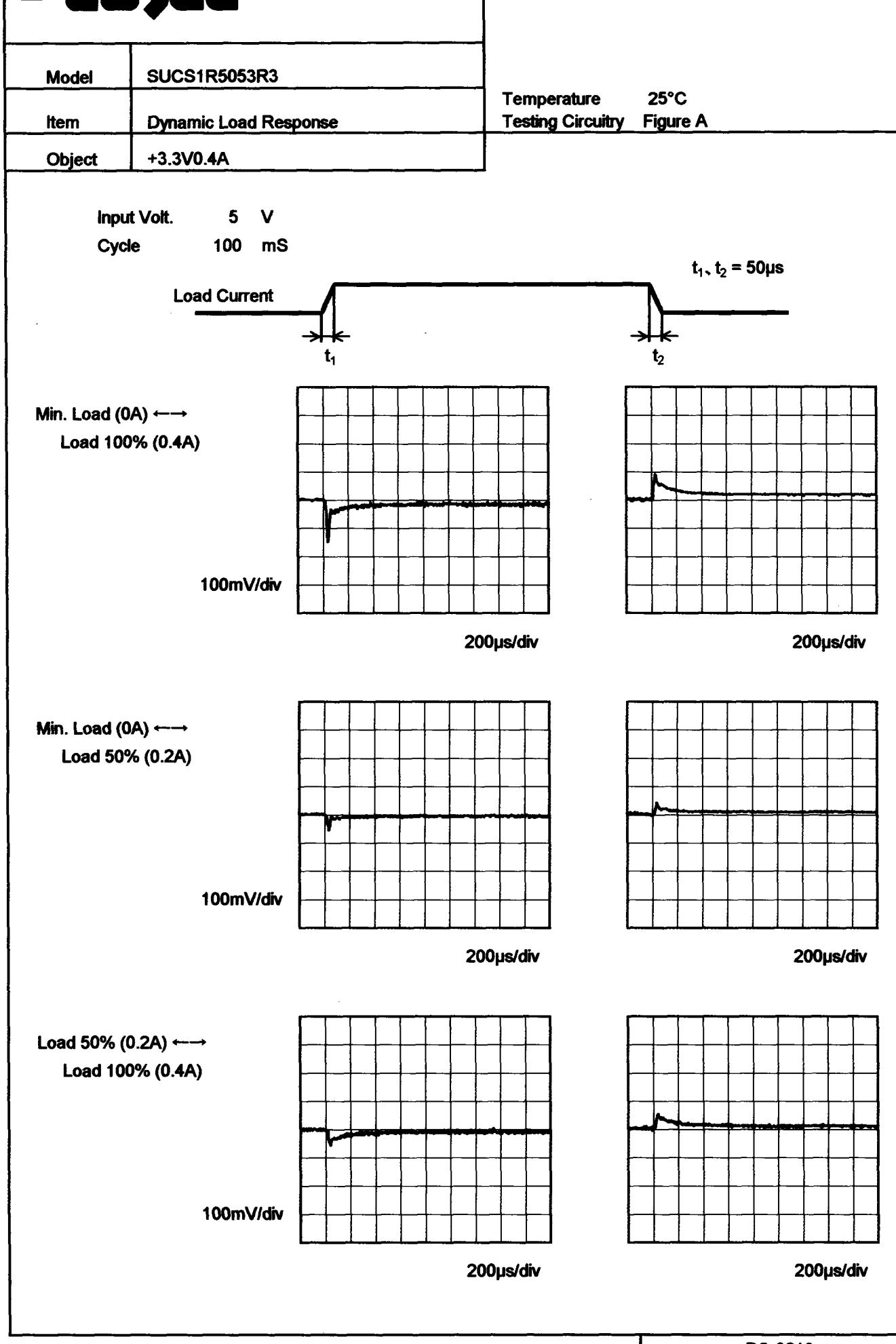
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	3.310	3.304
4.5	3.310	3.305
5.0	3.310	3.306
6.0	3.310	3.306
7.0	3.310	3.306
8.0	3.310	3.307
9.0	3.310	3.307
10.0	3.310	3.307
-	-	-

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

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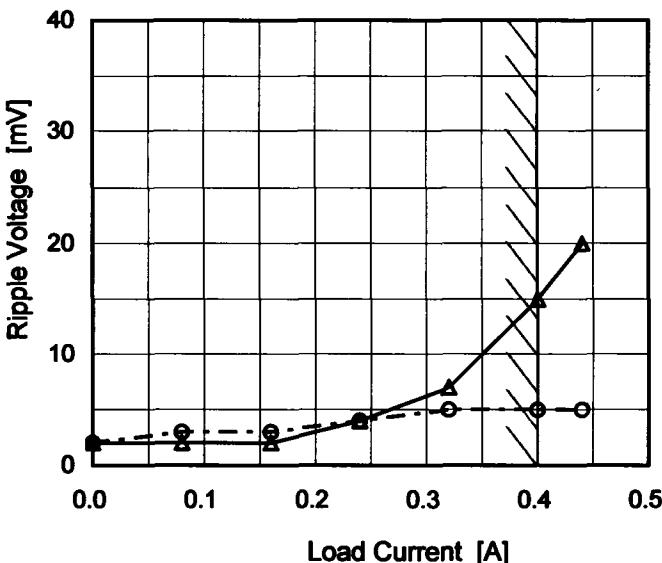
Model SUCS1R5053R3

Item Ripple Voltage (by Load Current)

Object +3.3V0.4A

1. Graph

—△— Input Volt. 4.5V
 -·○--- Input Volt. 9V



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]

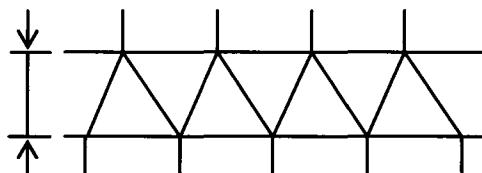


Fig. Complex Ripple Wave Form

Temperature 25°C
Testing Circuitry Figure B

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.00	2	2
0.08	2	3
0.16	2	3
0.24	4	4
0.32	7	5
0.40	15	5
0.44	20	5
-	-	-
-	-	-
-	-	-
-	-	-

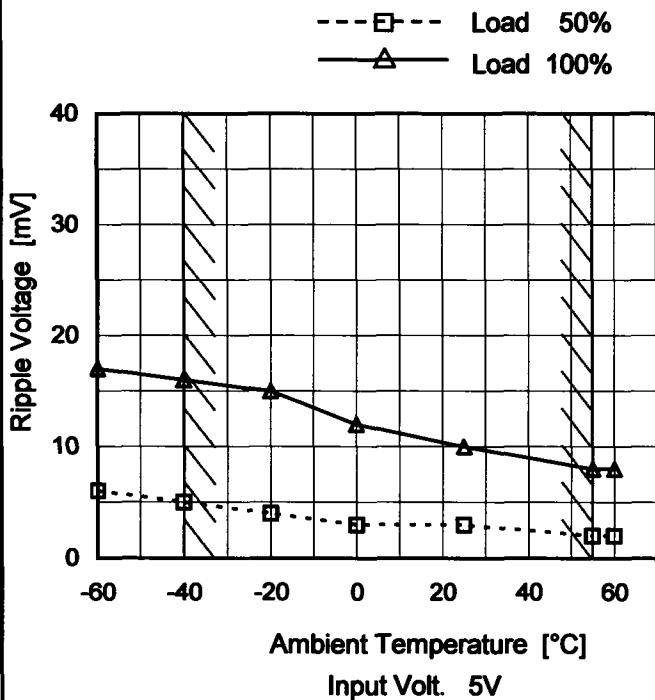
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Model	SUCS1R5053R3	Temperature	25°C																								
Item	Ripple-Noise	Testing Circuitry	Figure B																								
Object	+3.3V0.4A																										
1. Graph			2. Values																								
<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The graph shows two sets of data points: Input Volt. 4.5V (solid line with triangle markers) and Input Volt. 9V (dashed line with circle markers). The x-axis is Load Current [A] from 0.0 to 0.5. The y-axis is Ripple-Noise [mV] from 0 to 40. A slanted line indicates the range of the rated load current.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple-Noise [mV] (Input Volt. 4.5V)</th> <th>Ripple-Noise [mV] (Input Volt. 9V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>4</td><td>4</td></tr> <tr><td>0.08</td><td>6</td><td>5</td></tr> <tr><td>0.16</td><td>7</td><td>6</td></tr> <tr><td>0.24</td><td>8</td><td>7</td></tr> <tr><td>0.32</td><td>9</td><td>7</td></tr> <tr><td>0.40</td><td>17</td><td>8</td></tr> <tr><td>0.44</td><td>22</td><td>9</td></tr> </tbody> </table>				Load Current [A]	Ripple-Noise [mV] (Input Volt. 4.5V)	Ripple-Noise [mV] (Input Volt. 9V)	0.00	4	4	0.08	6	5	0.16	7	6	0.24	8	7	0.32	9	7	0.40	17	8	0.44	22	9
Load Current [A]	Ripple-Noise [mV] (Input Volt. 4.5V)	Ripple-Noise [mV] (Input Volt. 9V)																									
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0.08	6	5																									
0.16	7	6																									
0.24	8	7																									
0.32	9	7																									
0.40	17	8																									
0.44	22	9																									
<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>Fig. Complex Ripple Noise Wave Form</p>																											

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Model	SUCS1R5053R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V0.4A

1. Graph



Measured by 100 MHz Oscilloscope.

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

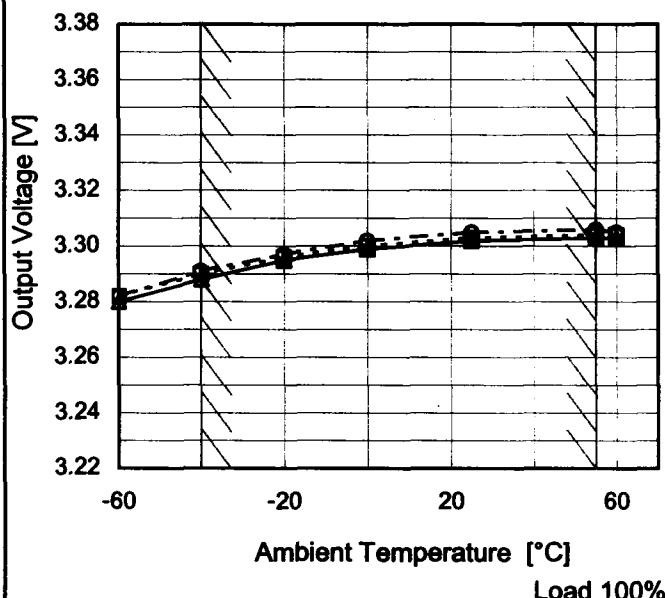
Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	6	17
-40	5	16
-20	4	15
0	3	12
25	3	10
55	2	8
60	2	8
-	-	-
-	-	-
-	-	-
-	-	-

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Model **SUCS1R5053R3**
Item **Ambient Temperature Drift**
Object **+3.3V0.4A**
1.Graph

—△— Input Volt. 4.5V
 - -□--- Input Volt. 5V
 - -○--- Input Volt. 9V



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

Testing Circuitry Figure A
2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	3.280	3.282	3.282
-40	3.288	3.290	3.291
-20	3.295	3.296	3.297
0	3.299	3.300	3.302
25	3.302	3.303	3.305
55	3.303	3.304	3.306
60	3.303	3.304	3.305
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—



Model	SUCS1R5053R3	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+3.3V0.4A	

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 - 0.4A

* 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

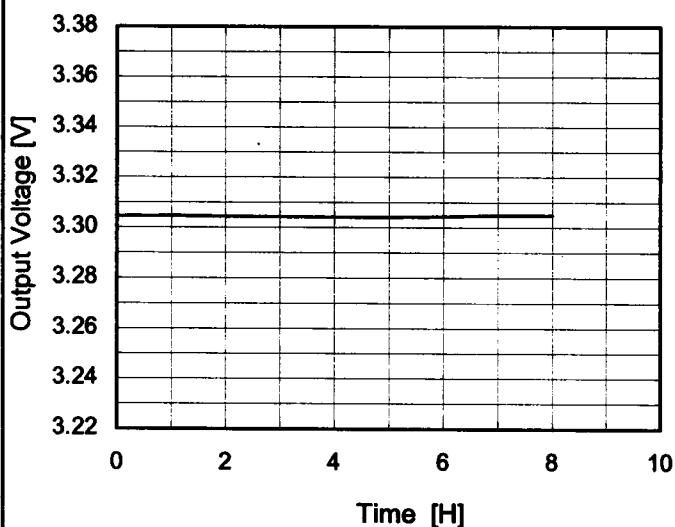
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	3.311	± 12	± 0.4
Minimum Voltage	-40	4.5	0.4	3.288		

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Model	SUCS1R5053R3
Item	Time Lapse Drift
Object	+3.3V0.4A

Temperature 25°C
 Testing Circuitry Figure A

1. Graph



Input Volt. 5V
 Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	3.304
0.5	3.305
1.0	3.305
2.0	3.305
3.0	3.304
4.0	3.304
5.0	3.304
6.0	3.304
7.0	3.305
8.0	3.305

COSEL

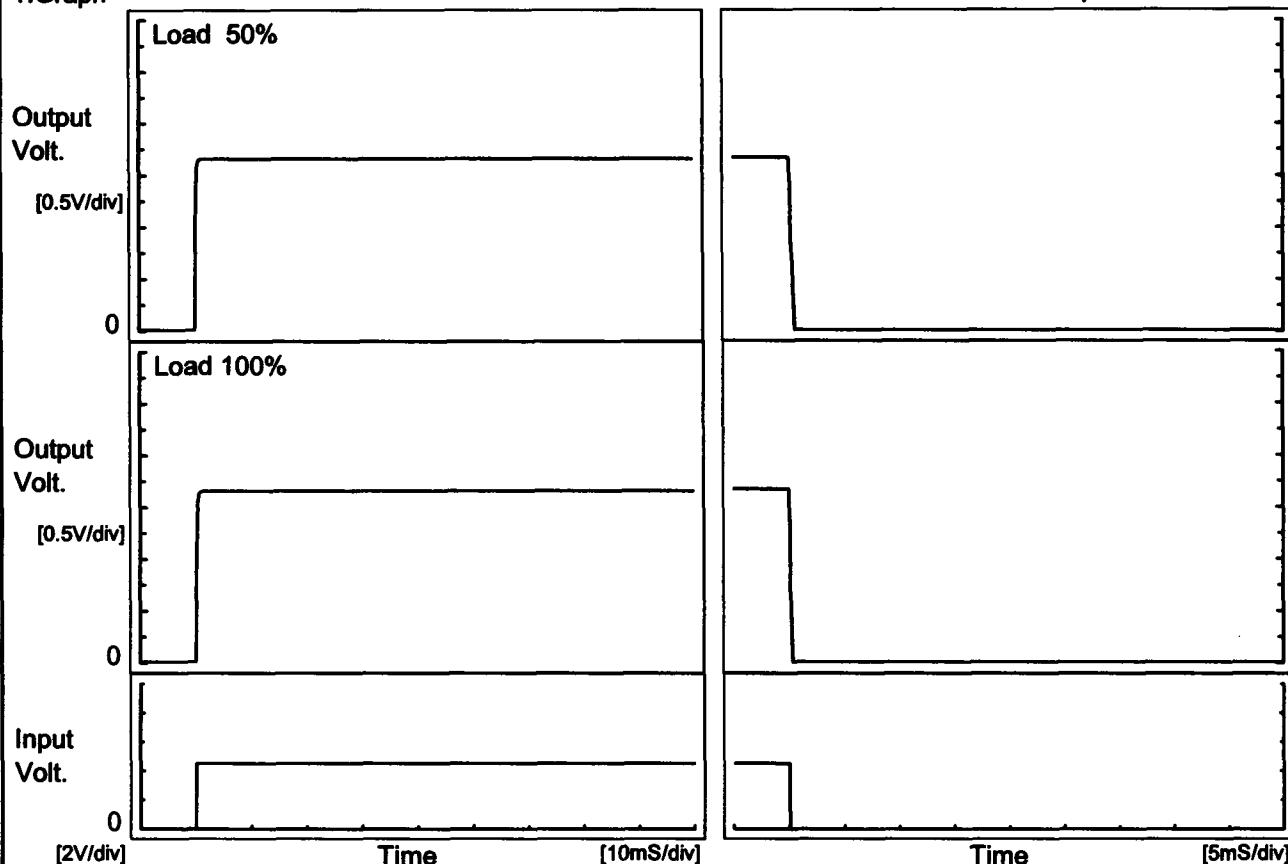
Model SUCS1R5053R3

Item Rise and Fall Time

Object +3.3V0.4A

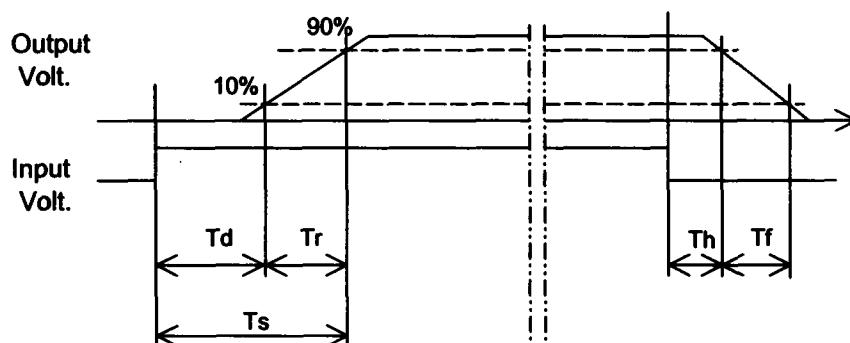
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

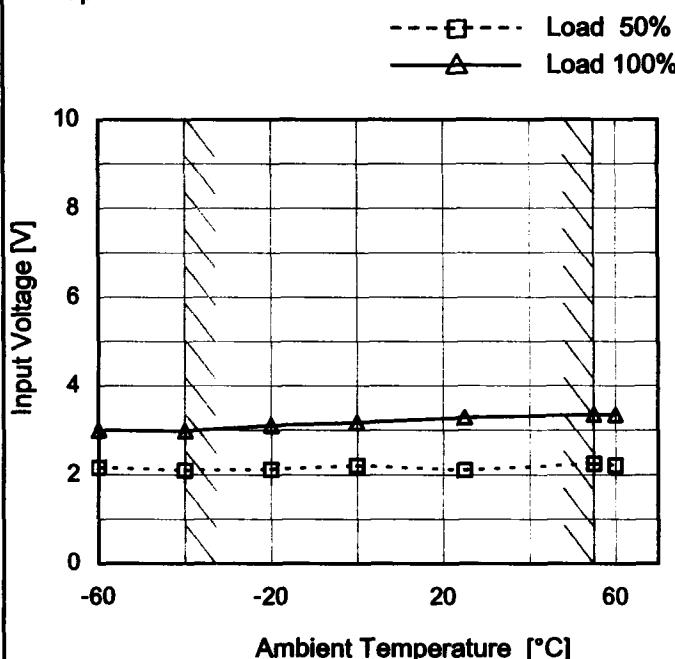
Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	0.4	0.5	0.1	1.0
100 %		0.1	0.4	0.5	0.0	0.5



COSEL

Model	SUCS1R5053R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V0.4A

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	3.0
-40	2.1	3.0
-20	2.2	3.2
0	2.2	3.2
25	2.1	3.3
55	2.3	3.4
60	2.3	3.4
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	SUCS1R5053R3	Temperature	25°C																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																							
Object	+3.3V0.4A	2.Values																																																								
1.Graph																																																										
<p style="text-align: center;"> Input Volt. 4.5V Input Volt. 5V Input Volt. 9V </p> <p>The graph plots Output Voltage [V] on the Y-axis (0.0 to 4.0) against Load Current [A] on the X-axis (0.0 to 1.0). Three curves are shown for different input voltages: 4.5V (top), 5V (middle), and 9V (bottom). All curves show a sharp drop in output voltage as load current increases beyond the rated value. A shaded rectangular area highlights the range of rated load current, which is between approximately 0.4A and 0.8A for all three input voltages.</p>																																																										
<p>The graph plots Output Voltage [V] on the Y-axis (0.0 to 4.0) against Load Current [A] on the X-axis (0.0 to 1.0). Three curves are shown for different input voltages: 4.5V (top), 5V (middle), and 9V (bottom). All curves show a sharp drop in output voltage as load current increases beyond the rated value. A shaded rectangular area highlights the range of rated load current, which is between approximately 0.4A and 0.8A for all three input voltages.</p>																																																										
<p>Note: Slanted line shows the range of the rated load current.</p>																																																										
<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 5[V]</th> <th>Input Volt. 9[V]</th> </tr> </thead> <tbody> <tr><td>3.300</td><td>0.40</td><td>0.40</td><td>0.40</td></tr> <tr><td>3.135</td><td>0.57</td><td>0.60</td><td>0.57</td></tr> <tr><td>2.970</td><td>0.58</td><td>0.61</td><td>0.58</td></tr> <tr><td>2.640</td><td>0.61</td><td>0.65</td><td>0.59</td></tr> <tr><td>2.310</td><td>0.64</td><td>0.68</td><td>0.61</td></tr> <tr><td>1.980</td><td>0.69</td><td>0.72</td><td>0.61</td></tr> <tr><td>1.650</td><td>0.72</td><td>0.74</td><td>0.62</td></tr> <tr><td>1.320</td><td>0.74</td><td>0.77</td><td>0.62</td></tr> <tr><td>0.990</td><td>0.76</td><td>0.79</td><td>0.60</td></tr> <tr><td>0.660</td><td>0.78</td><td>0.79</td><td>0.58</td></tr> <tr><td>0.330</td><td>0.77</td><td>0.77</td><td>0.54</td></tr> <tr><td>0.000</td><td>0.76</td><td>0.82</td><td>0.56</td></tr> </tbody> </table>				Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	3.300	0.40	0.40	0.40	3.135	0.57	0.60	0.57	2.970	0.58	0.61	0.58	2.640	0.61	0.65	0.59	2.310	0.64	0.68	0.61	1.980	0.69	0.72	0.61	1.650	0.72	0.74	0.62	1.320	0.74	0.77	0.62	0.990	0.76	0.79	0.60	0.660	0.78	0.79	0.58	0.330	0.77	0.77	0.54	0.000	0.76	0.82	0.56
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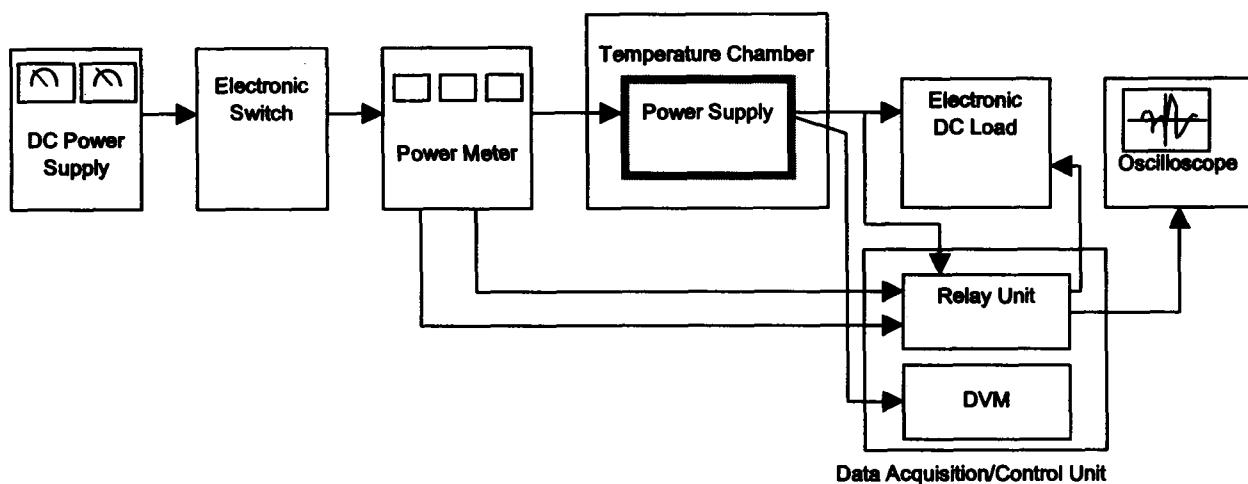


Figure A

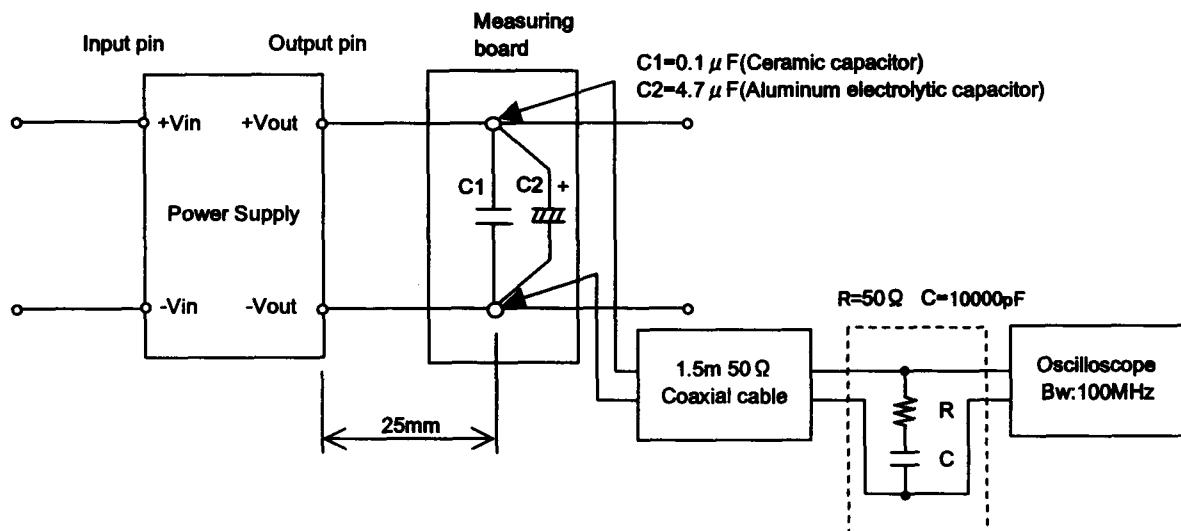


Figure B (Ripple and Ripple noise Characteristic)