

TEST DATA OF SUS10053R3 SU CS10053R3

Regulated DC Power Supply
Mar 28, 2005

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Yoshimichi Hirokawa
Yoshimichi Hirokawa Design Engineer

COSEL CO.,LTD.

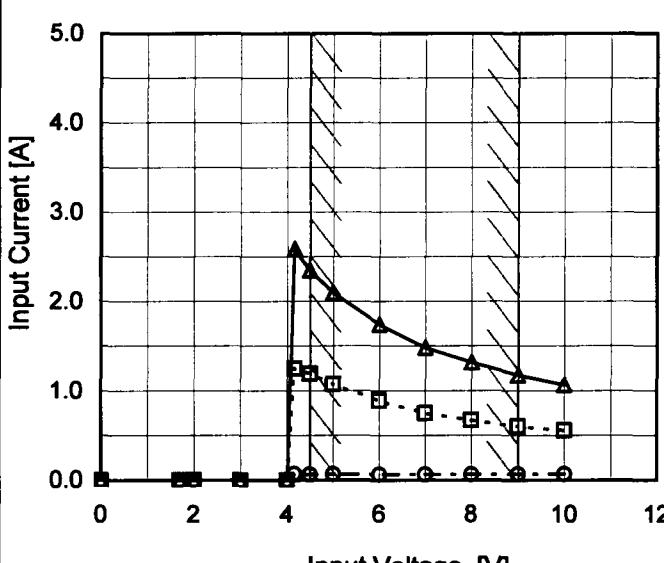


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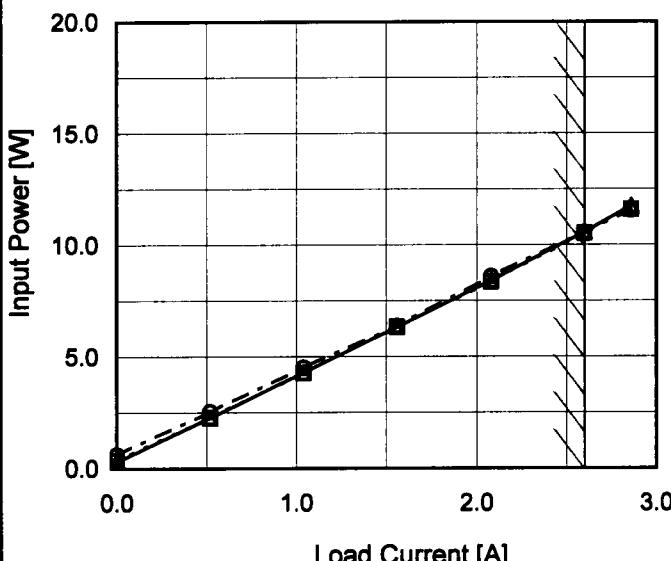
COSEL

Model	SUS10053R3/SUCCS10053R3		
Item	Input Current (by Input Voltage)		
Object			
1.Graph	<p style="text-align: center;">—△— Load 100% - -□--- Load 50% - -○--- Load 0%</p> 		
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%
0.00	0.000	0.000	0.000
1.70	0.000	0.000	0.000
2.00	0.000	0.000	0.000
3.00	0.000	0.000	0.000
4.00	0.001	0.001	0.000
4.16	0.071	1.249	2.591
4.50	0.066	1.191	2.350
5.00	0.067	1.073	2.098
6.00	0.064	0.891	1.741
7.00	0.063	0.752	1.482
8.00	0.066	0.672	1.319
9.00	0.068	0.604	1.176
10.00	0.069	0.558	1.067
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
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Item	Input Current (by Load Current)	Temperature	25°C																																																			
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1. Graph			
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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	0.31	0.34	0.61
0.52	2.28	2.28	2.55
1.04	4.30	4.26	4.51
1.56	6.32	6.33	6.37
2.08	8.40	8.35	8.59
2.60	10.58	10.52	10.55
2.86	11.75	11.57	11.55
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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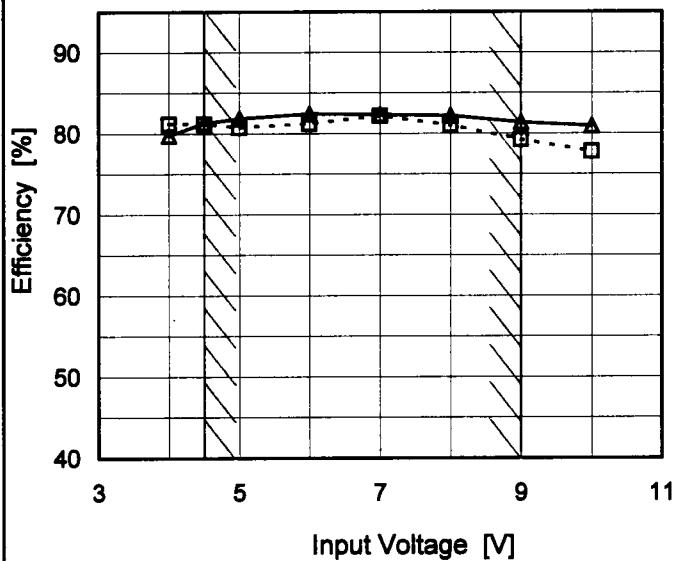
Model SUS10053R3/SUCCS10053R3

Item Efficiency (by Input Voltage)

Object

1. Graph

--- □ --- Load 50%
 —△— Load 100%



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

Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
4.0	81.2	79.7
4.5	81.2	81.3
5.0	80.7	81.8
6.0	81.2	82.4
7.0	82.2	82.3
8.0	81.0	82.2
9.0	79.2	81.4
10.0	77.8	80.9
--	-	-

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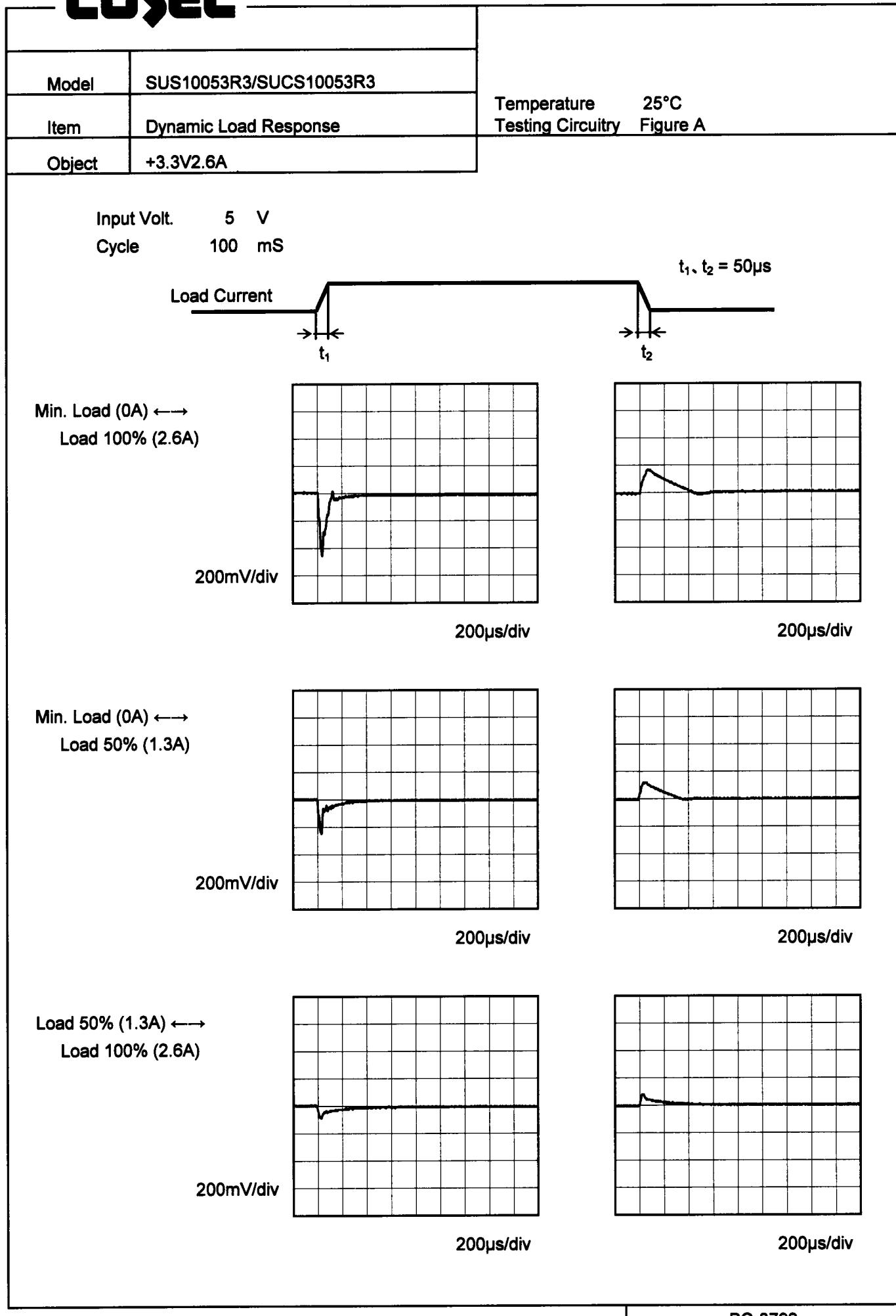
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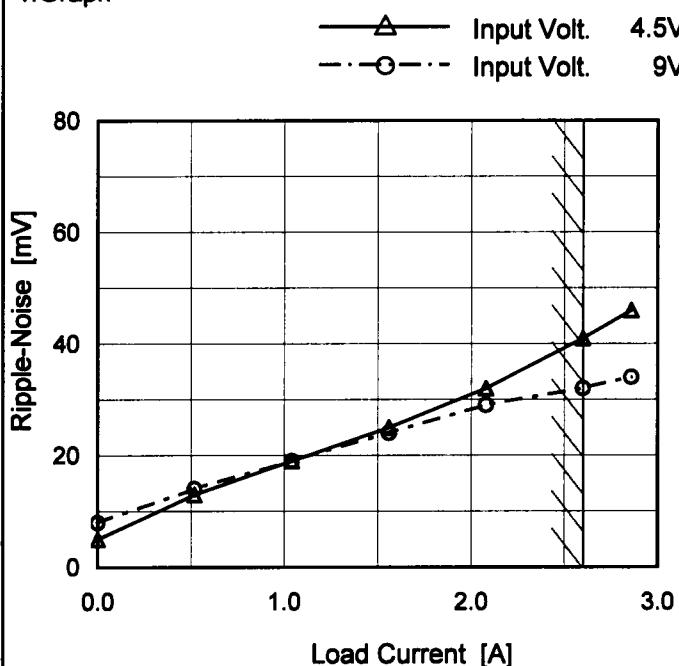
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<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two curves: one for Input Volt. 4.5V (solid line with triangle markers) and one for Input Volt. 9V (dashed line with circle markers). The x-axis represents Load Current [A] from 0.0 to 3.0. The y-axis represents Ripple Voltage [mV] from 0 to 80. Both curves show an increase in ripple voltage as load current increases. A slanted line on the right side of the graph indicates the rated load current range.</p>																																								
2.Values																																								
<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 4.5 [V]</th> <th>Input Volt. 9 [V]</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>2</td> <td>2</td> </tr> <tr> <td>0.52</td> <td>6</td> <td>6</td> </tr> <tr> <td>1.04</td> <td>8</td> <td>9</td> </tr> <tr> <td>1.56</td> <td>12</td> <td>12</td> </tr> <tr> <td>2.08</td> <td>15</td> <td>13</td> </tr> <tr> <td>2.60</td> <td>19</td> <td>15</td> </tr> <tr> <td>2.86</td> <td>20</td> <td>16</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV]		Input Volt. 4.5 [V]	Input Volt. 9 [V]	0.00	2	2	0.52	6	6	1.04	8	9	1.56	12	12	2.08	15	13	2.60	19	15	2.86	20	16	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
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<p>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.</p> <p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																								

COSEL

Model	SUS10053R3/SUCCS10053R3
Item	Ripple-Noise
Object	+3.3V2.6A

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.

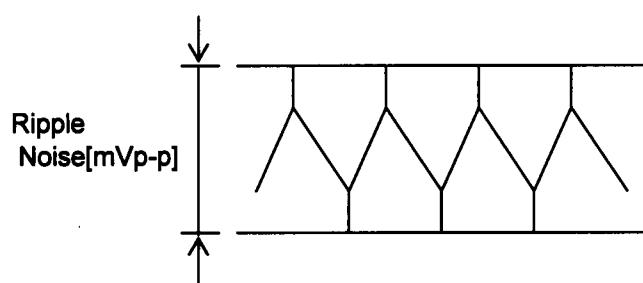


Fig. Complex Ripple Noise Wave Form

Temperature 25°C
Testing Circuitry Figure B

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.00	5	8
0.52	13	14
1.04	19	19
1.56	25	24
2.08	32	29
2.60	41	32
2.86	46	34
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

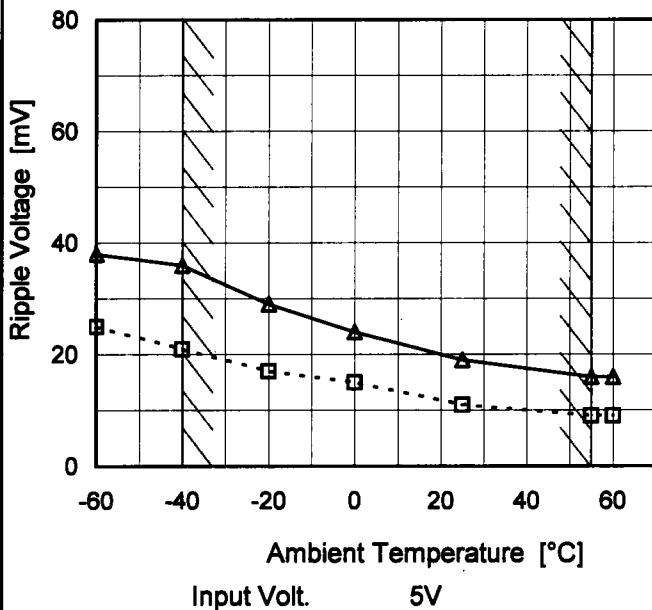
Model SUS10053R3/SUCCS10053R3

Item Ripple Voltage (by Ambient Temp.)

Object +3.3V2.6A

1. Graph

--□-- Load 50%
—△— Load 100%



Input Volt. 5V

Measured by 100 MHz Oscilloscope.

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

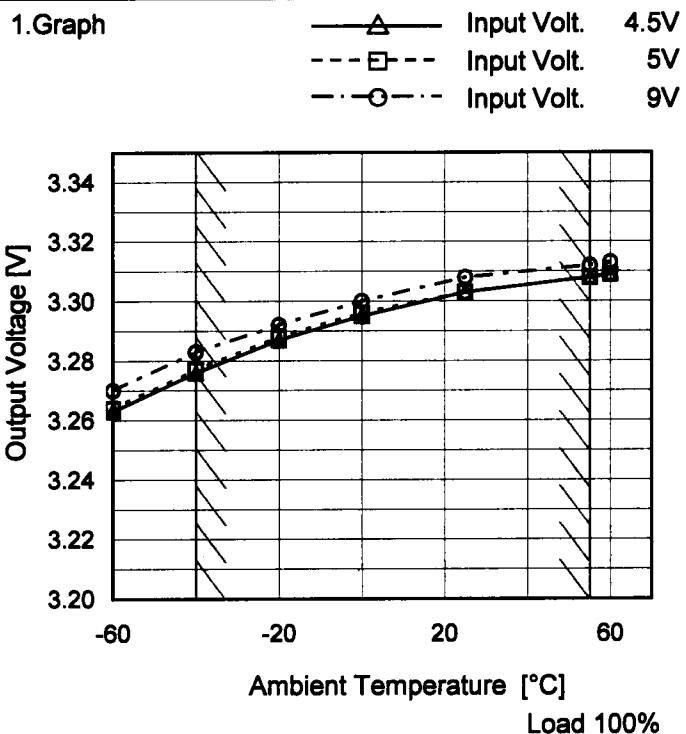
Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	25	38
-40	21	36
-20	17	29
0	15	24
25	11	19
55	9	16
60	9	16
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUS10053R3/SUCS10053R3
Item	Ambient Temperature Drift
Object	+3.3V2.6A



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	3.263	3.264	3.270
-40	3.276	3.277	3.283
-20	3.287	3.288	3.292
0	3.295	3.296	3.300
25	3.303	3.303	3.308
55	3.308	3.308	3.312
60	3.309	3.309	3.313
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	SUS10053R3/SUCCS10053R3	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V2.6A	

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 - 2.6A

* 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

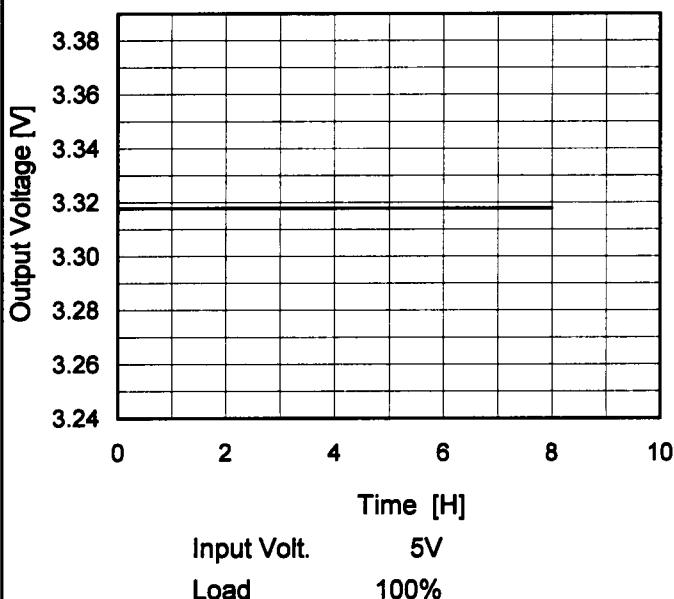
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	4.5	0	3.327	± 26	± 0.8
Minimum Voltage	-40	4.5	2.6	3.276		

COSEL

Model	SUS10053R3/SUCS10053R3
Item	Time Lapse Drift
Object	+3.3V2.6A

Temperature 25°C
 Testing Circuitry Figure A

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	3.316
0.5	3.318
1.0	3.318
2.0	3.318
3.0	3.318
4.0	3.318
5.0	3.318
6.0	3.318
7.0	3.318
8.0	3.318

COSEL

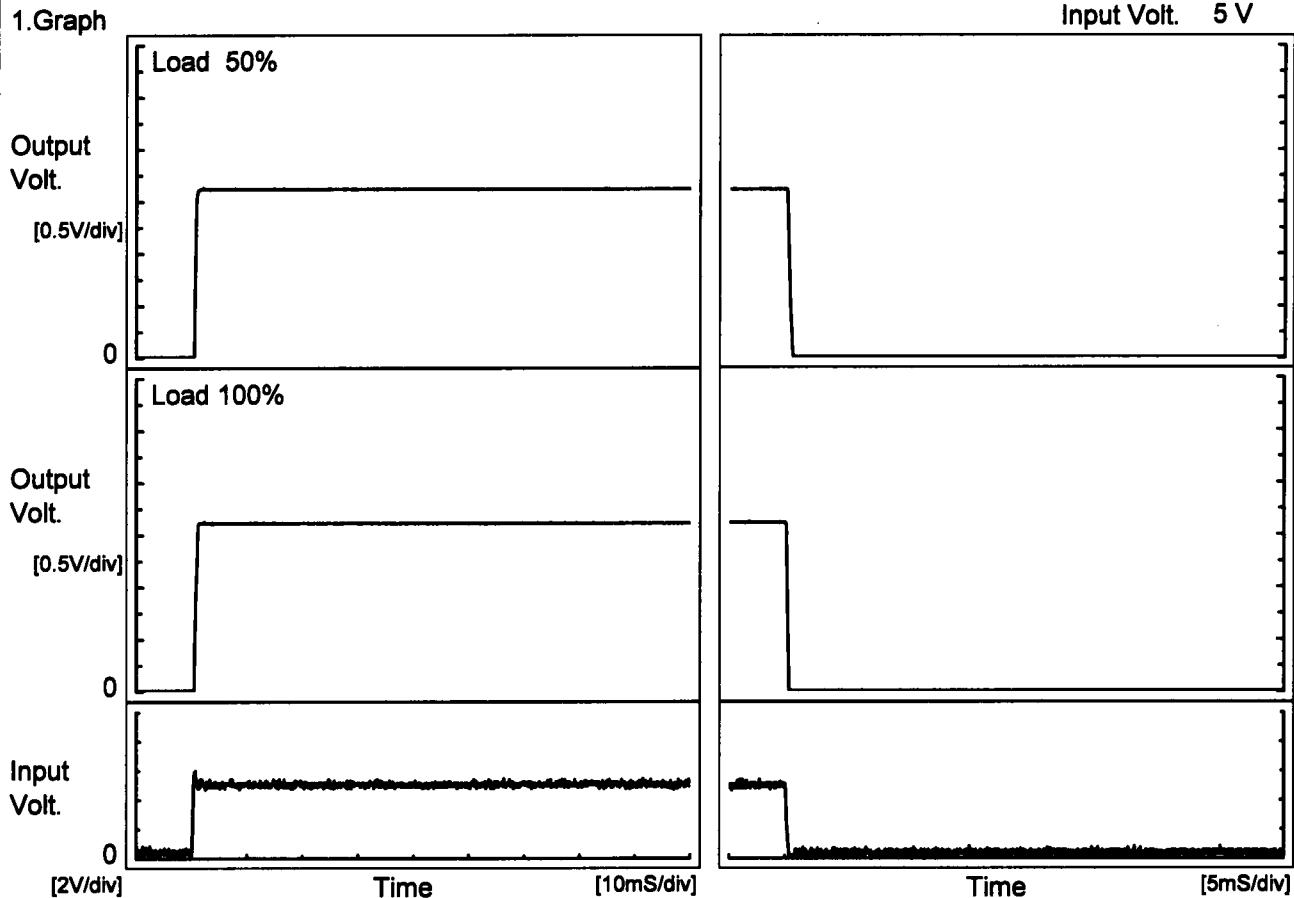
Model SUS10053R3/SUCCS10053R3

Temperature 25°C
Testing Circuitry Figure A

Item Rise and Fall Time

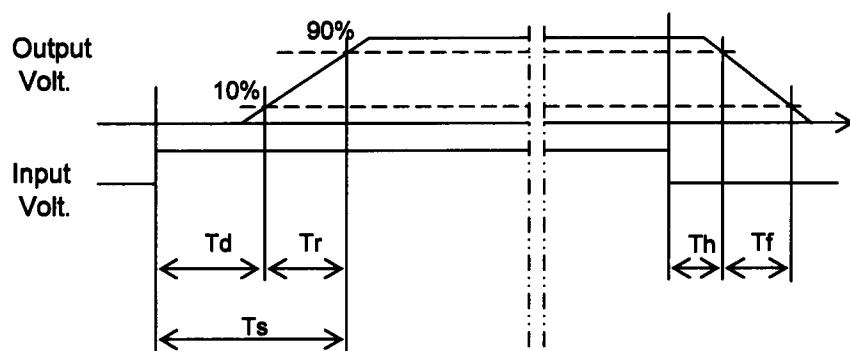
Object +3.3V2.6A

1. Graph



2. Values

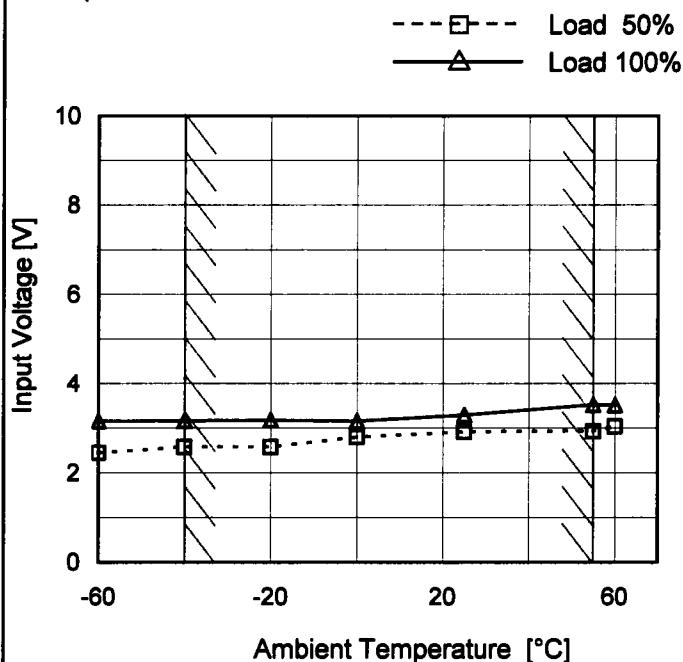
Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		0.5	0.4	0.9	0.2	0.4	
100 %		0.4	0.7	1.1	0.1	0.2	



COSEL

Model	SUS10053R3/SUCS10053R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V2.6A

1. Graph



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

Testing Circuitry Figure A

2. Values

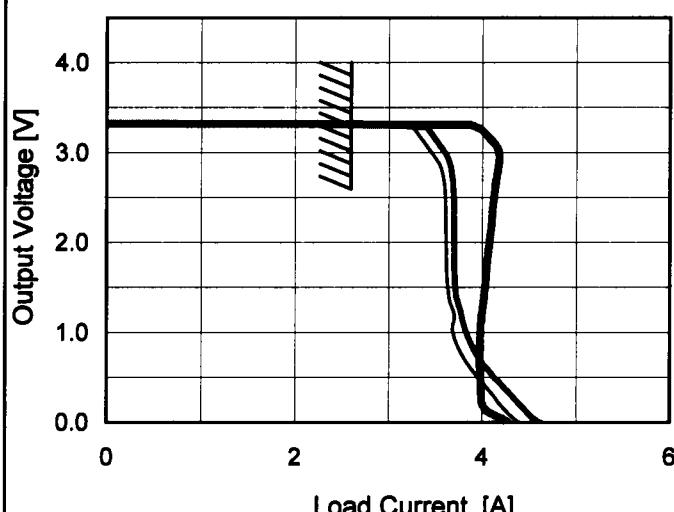
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.5	3.2
-40	2.6	3.2
-20	2.6	3.2
0	2.8	3.2
25	3.0	3.3
55	3.0	3.6
60	3.1	3.6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUS10053R3/SUCS10053R3
Item	Overcurrent Protection
Object	+3.3V2.6A

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

Output Voltage [V]	Load Current [A]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
3.30	2.94	2.91	3.88
3.14	3.37	3.51	4.12
2.97	3.48	3.61	4.18
2.64	3.60	3.69	4.14
2.31	3.61	3.70	4.10
1.98	3.62	3.70	4.07
1.65	3.62	3.70	4.04
1.32	3.66	3.75	4.01
0.99	3.69	3.83	3.98
0.66	3.82	4.01	3.98
0.33	4.09	4.27	3.99
0.00	4.40	4.70	4.28

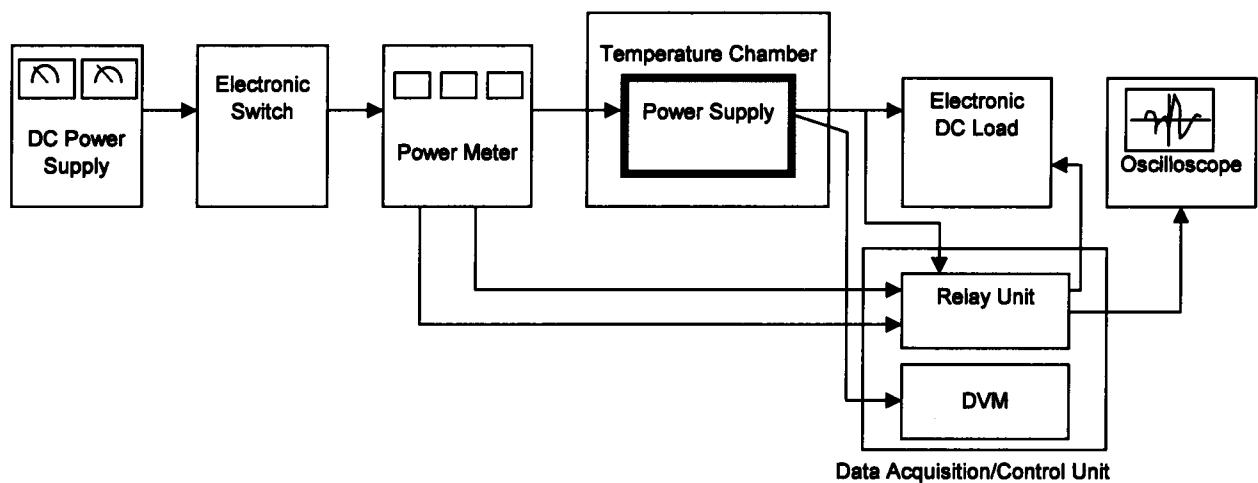


Figure A

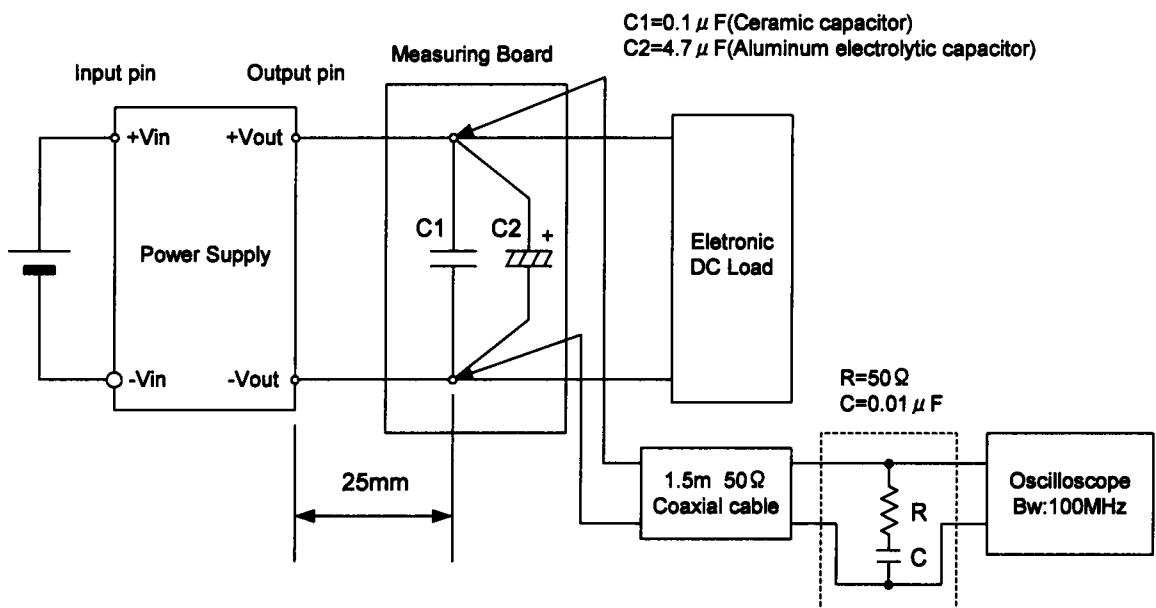


Figure B(Ripple and Ripple noise Characteristic)