



# TEST DATA OF SUCS3053R3

Regulated DC Power Supply  
Mar 22, 2005

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Tetsuo Sugimori Design Manager

Prepared by : Hayato Nakatsubo  
Hayato Nakatsubo Design Engineer

**COSEL CO.,LTD.**

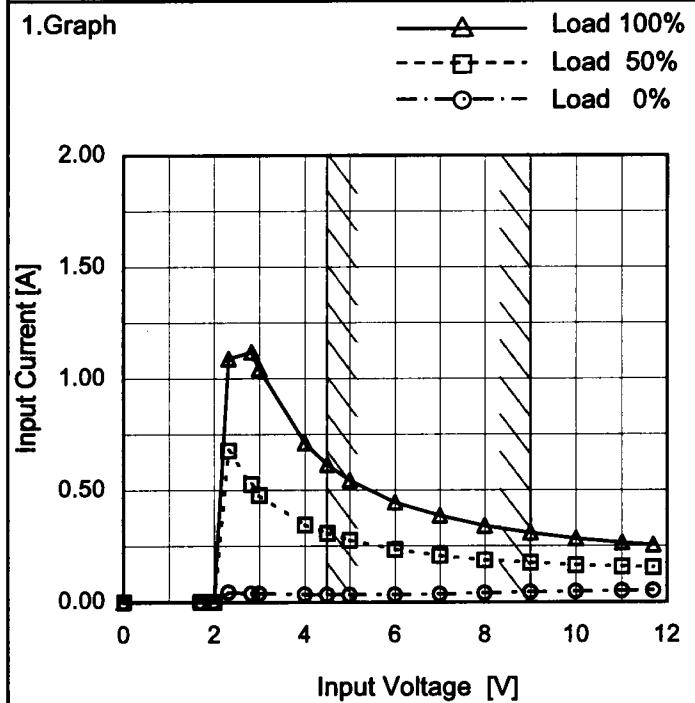
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Model	SUCS3053R3
Item	Input Current (by Input Voltage)
Object	_____



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%
0.00	0.000	0.000	0.000
1.70	0.000	0.000	0.000
2.00	0.000	0.000	0.000
2.32	0.043	0.678	1.089
2.83	0.038	0.527	1.119
3.00	0.037	0.479	1.043
4.00	0.033	0.344	0.711
4.50	0.032	0.307	0.615
5.00	0.031	0.276	0.544
6.00	0.032	0.234	0.446
7.00	0.035	0.206	0.386
8.00	0.039	0.187	0.340
9.00	0.043	0.175	0.308
10.00	0.047	0.164	0.283
11.02	0.049	0.158	0.264
11.70	0.050	0.154	0.254
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Model	SUCS3053R3	Temperature	25°C																																																			
Item	Input Current (by Load Current)	Testing Circuitry	Figure A																																																			
Object	—	—	—																																																			
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<p>—△— Input Volt. 4.5V      - -□--- Input Volt. 5V      - -○--- Input Volt. 9V</p>		<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>0.031</td><td>0.043</td></tr> <tr><td>0.12</td><td>0.139</td><td>0.128</td><td>0.097</td></tr> <tr><td>0.24</td><td>0.250</td><td>0.226</td><td>0.148</td></tr> <tr><td>0.36</td><td>0.367</td><td>0.329</td><td>0.201</td></tr> <tr><td>0.48</td><td>0.489</td><td>0.435</td><td>0.255</td></tr> <tr><td>0.60</td><td>0.618</td><td>0.546</td><td>0.310</td></tr> <tr><td>0.66</td><td>0.685</td><td>0.605</td><td>0.337</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	0.031	0.043	0.12	0.139	0.128	0.097	0.24	0.250	0.226	0.148	0.36	0.367	0.329	0.201	0.48	0.489	0.435	0.255	0.60	0.618	0.546	0.310	0.66	0.685	0.605	0.337	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.

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Model	SUCS3053R3	Temperature 25°C																																																			
Item	Input Power (by Load Current)	Testing Circuitry Figure A																																																			
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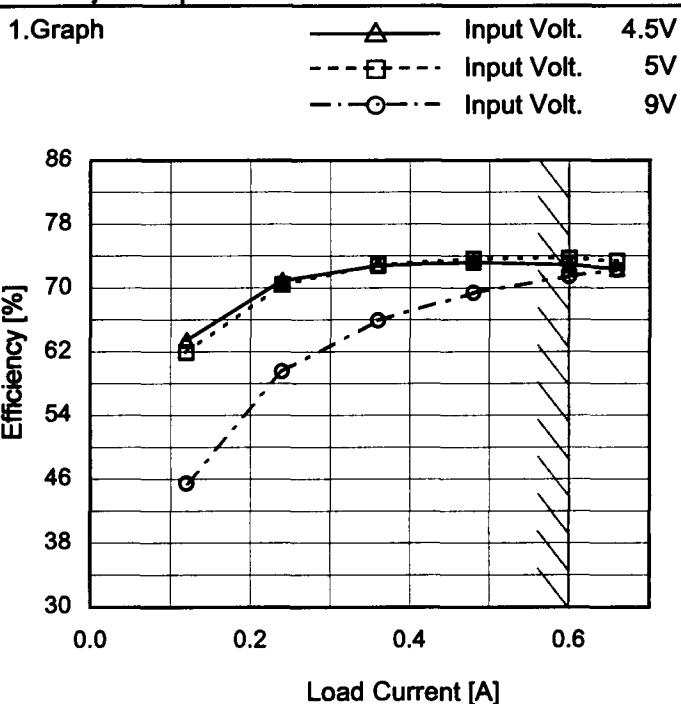
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Model	SUCS3053R3	Temperature	25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																
Object	—																																		
1.Graph																																			
<p>The graph plots Efficiency [%] on the y-axis (30 to 86) against Input Voltage [V] on the x-axis (3 to 9). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show efficiency decreasing as input voltage increases. A slanted line indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>4.0</td><td>72.5</td><td>71.5</td></tr> <tr><td>4.5</td><td>72.6</td><td>73.2</td></tr> <tr><td>5.0</td><td>72.3</td><td>73.9</td></tr> <tr><td>6.0</td><td>70.8</td><td>74.3</td></tr> <tr><td>7.0</td><td>68.9</td><td>74.1</td></tr> <tr><td>8.0</td><td>66.1</td><td>73.2</td></tr> <tr><td>9.0</td><td>63.4</td><td>71.7</td></tr> <tr><td>9.5</td><td>61.4</td><td>71.0</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>				Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	4.0	72.5	71.5	4.5	72.6	73.2	5.0	72.3	73.9	6.0	70.8	74.3	7.0	68.9	74.1	8.0	66.1	73.2	9.0	63.4	71.7	9.5	61.4	71.0	--	-	-		
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<p>Note: Slanted line shows the range of the rated input voltage.</p>																																			

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Model	SUCS3053R3
Item	Efficiency (by Load Current)
Object	_____

Temperature 25°C  
Testing Circuitry Figure A



## 2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	-	-	-
0.12	63.5	61.9	45.5
0.24	70.9	70.4	59.5
0.36	72.8	72.9	65.9
0.48	73.2	73.7	69.4
0.60	72.9	73.7	71.4
0.66	72.4	73.4	72.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

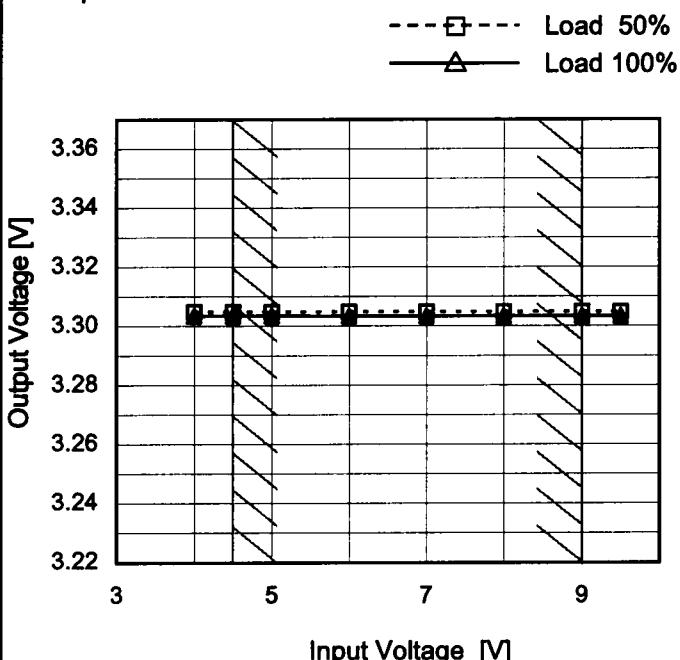
Note: Slanted line shows the range of the rated load current.

# COSEL

Model	SUCCS3053R3
Item	Line Regulation
Object	+3.3V0.6A

Temperature 25°C  
Testing Circuitry Figure A

## 1.Graph



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

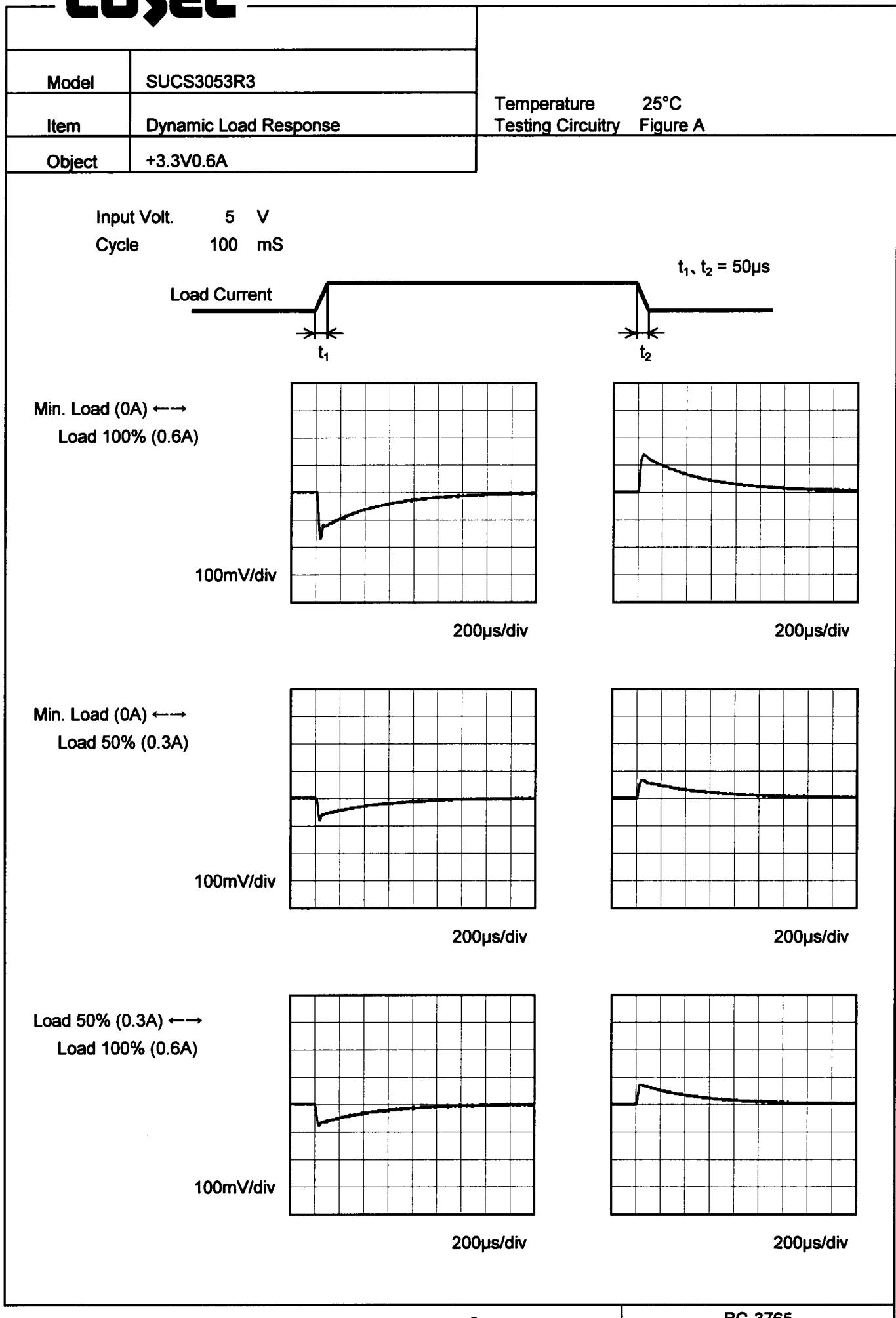
## 2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	3.305	3.304
4.5	3.305	3.304
5.0	3.305	3.304
6.0	3.305	3.303
7.0	3.305	3.303
8.0	3.305	3.303
9.0	3.305	3.303
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# COSEL

Model	SUCS3053R3	Temperature Testing Circuitry	25°C Figure A																																																			
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1.Graph	<p>—△— Input Volt. 4.5V      - - -□- - Input Volt. 5V      - - ○ - Input Volt. 9V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>																																																					
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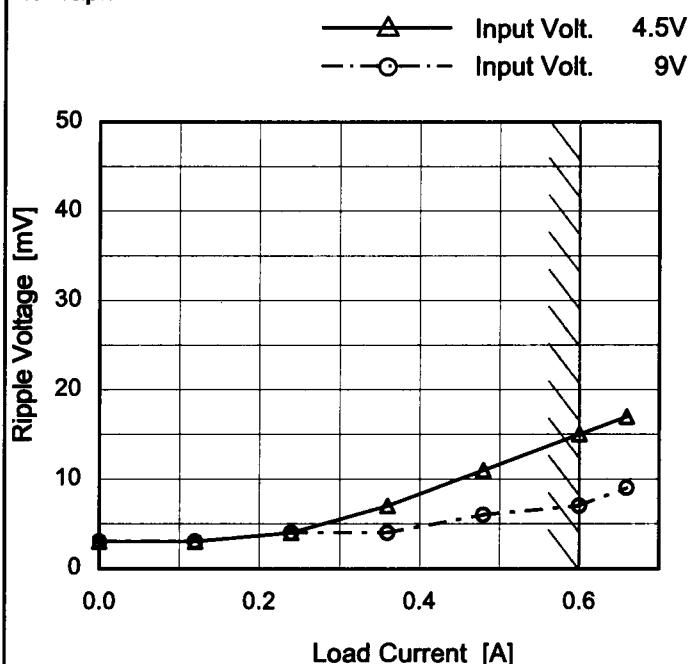


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Model	SUCS3053R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V0.6A

Temperature 25°C  
Testing Circuitry Figure B

## 1.Graph



## 2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.00	3	3
0.12	3	3
0.24	4	4
0.36	7	4
0.48	11	6
0.60	15	7
0.66	17	9
--	-	-
--	-	-
--	-	-
--	-	-

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]

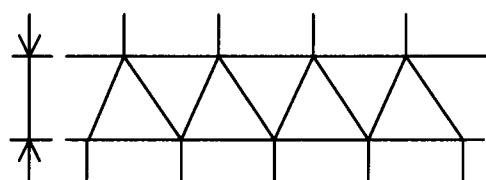


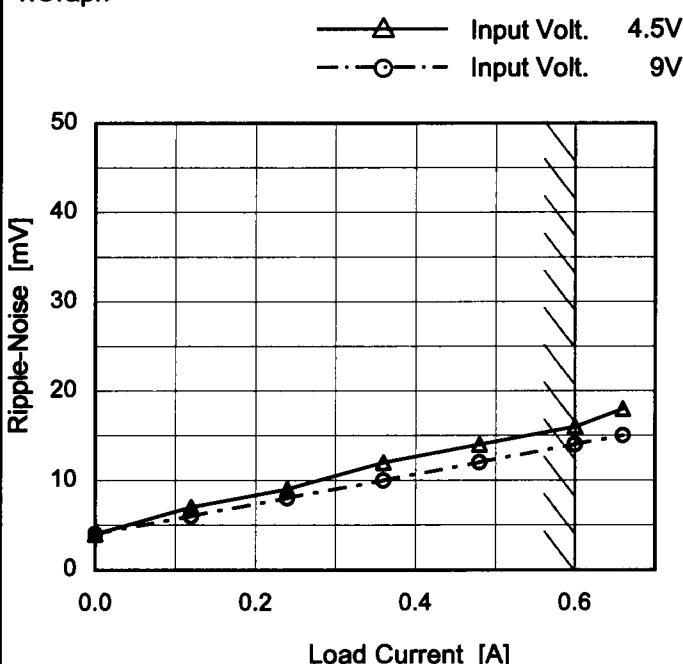
Fig.Complex Ripple Wave Form

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Model	SUCS3053R3
Item	Ripple-Noise
Object	+3.3V0.6A

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. 4.5 [V]	Input Volt. 9 [V]
0.00	4	4
0.12	7	6
0.24	9	8
0.36	12	10
0.48	14	12
0.60	16	14
0.66	18	15
--	-	-
--	-	-
--	-	-
--	-	-

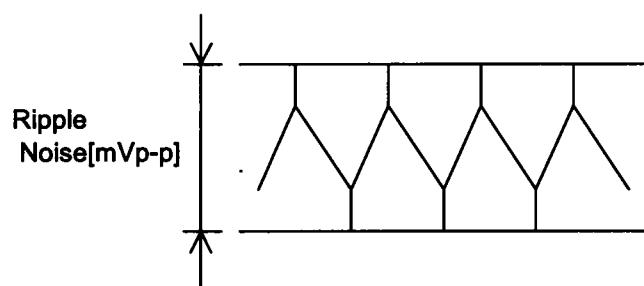


Fig.Complex Ripple Noise Wave Form

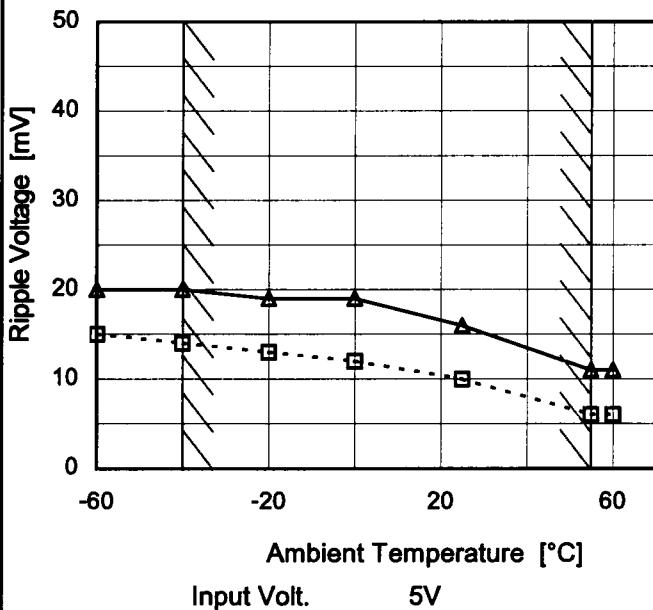
**COSEL**
**Model** SUCS3053R3

**Item** Ripple Voltage (by Ambient Temp.)

**Object** +3.3V0.6A

**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	15	20
-40	14	20
-20	13	19
0	12	19
25	10	16
55	6	11
60	6	11
--	-	-
--	-	-
--	-	-
--	-	-

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Model	SUCS3053R3	Testing Circuitry Figure A			
Item	Ambient Temperature Drift				
Object	+3.3V0.6A				
1.Graph	<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Legend:</p> <ul style="list-style-type: none"> <li>Input Volt. 4.5V</li> <li>Input Volt. 5V</li> <li>Input Volt. 9V</li> </ul>	2.Values			
		Ambient Temperature [°C]	Output Voltage [V]		
			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	3.289	3.290	3.290		
-40	3.297	3.298	3.298		
-20	3.303	3.303	3.303		
0	3.305	3.305	3.305		
25	3.305	3.305	3.304		
55	3.300	3.300	3.300		
60	3.300	3.299	3.299		
--	-	-	-		
--	-	-	-		
--	-	-	-		
--	-	-	-		

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



Model	SUCS3053R3	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+3.3V0.6A	

### 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 - 0.6A

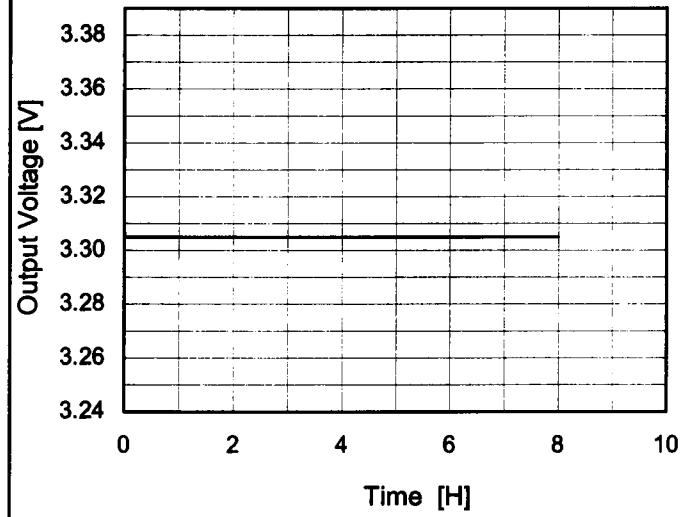
\* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	0	9	0	3.308	±6	±0.2
Minimum Voltage	-40	4.5	0.6	3.297		

**COSEL**

Model	SUCS3053R3	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+3.3V0.6A																								
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>3.307</td></tr> <tr><td>0.5</td><td>3.305</td></tr> <tr><td>1.0</td><td>3.305</td></tr> <tr><td>2.0</td><td>3.305</td></tr> <tr><td>3.0</td><td>3.305</td></tr> <tr><td>4.0</td><td>3.305</td></tr> <tr><td>5.0</td><td>3.305</td></tr> <tr><td>6.0</td><td>3.305</td></tr> <tr><td>7.0</td><td>3.305</td></tr> <tr><td>8.0</td><td>3.305</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	3.307	0.5	3.305	1.0	3.305	2.0	3.305	3.0	3.305	4.0	3.305	5.0	3.305	6.0	3.305	7.0	3.305	8.0	3.305
Time since start [H]	Output Voltage [V]																								
0.0	3.307																								
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5.0	3.305																								
6.0	3.305																								
7.0	3.305																								
8.0	3.305																								

**COSEL**

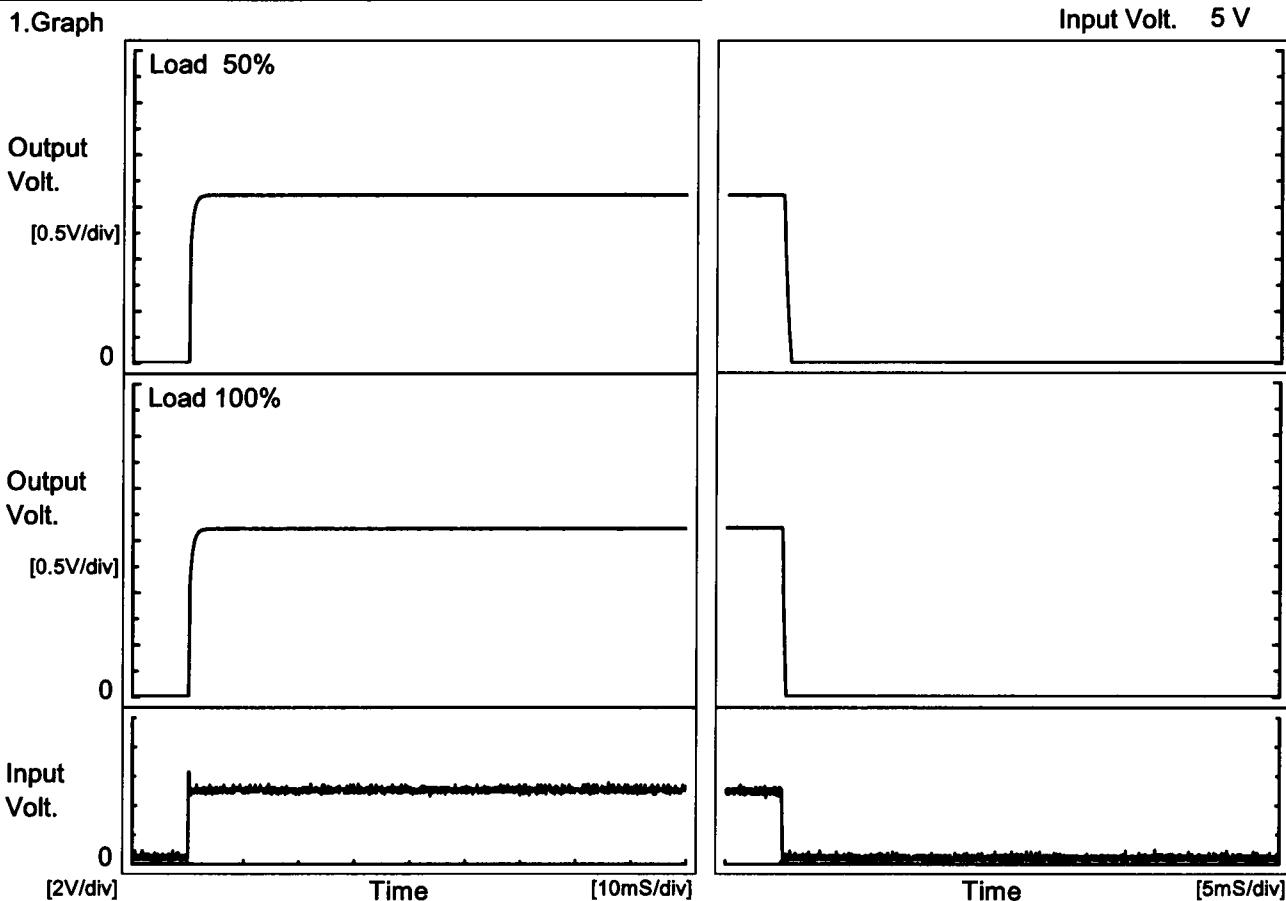
Model SUCS3053R3

Item Rise and Fall Time

Object +3.3V0.6A

Temperature 25°C  
Testing Circuitry Figure A

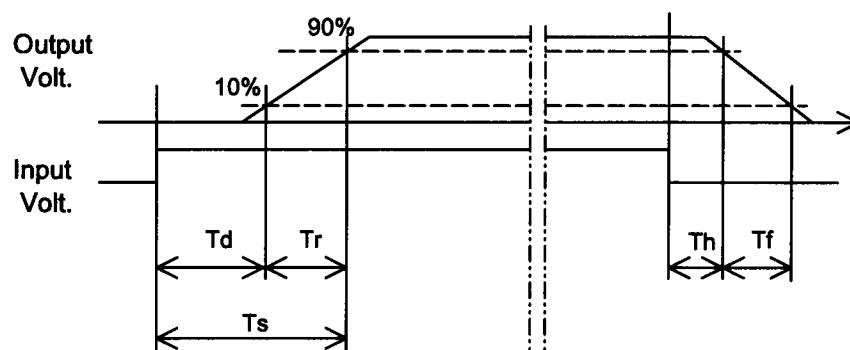
## 1.Graph



## 2.Values

[mS]

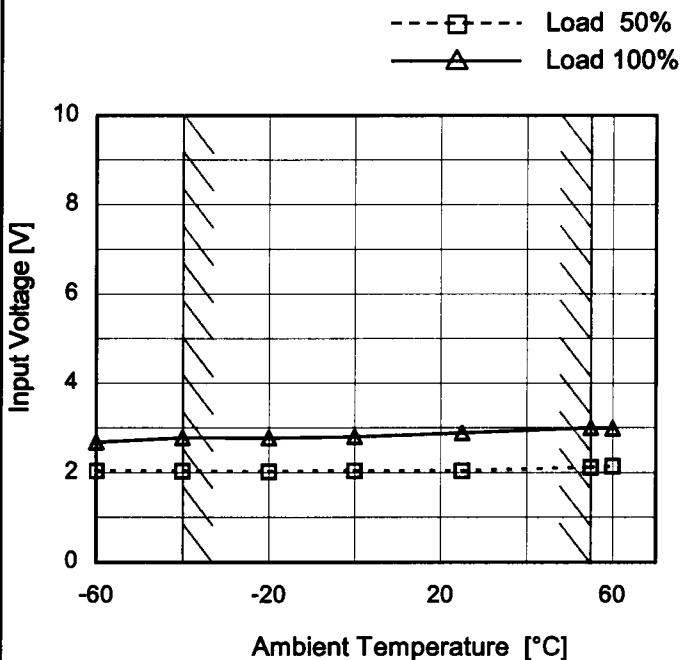
Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	1.0	1.1	0.1	0.6
100 %		0.1	1.1	1.2	0.1	0.3



**COSEL**

Model	SUCS3053R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V0.6A

## 1. Graph



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

## Testing Circuitry Figure A

## 2. Values

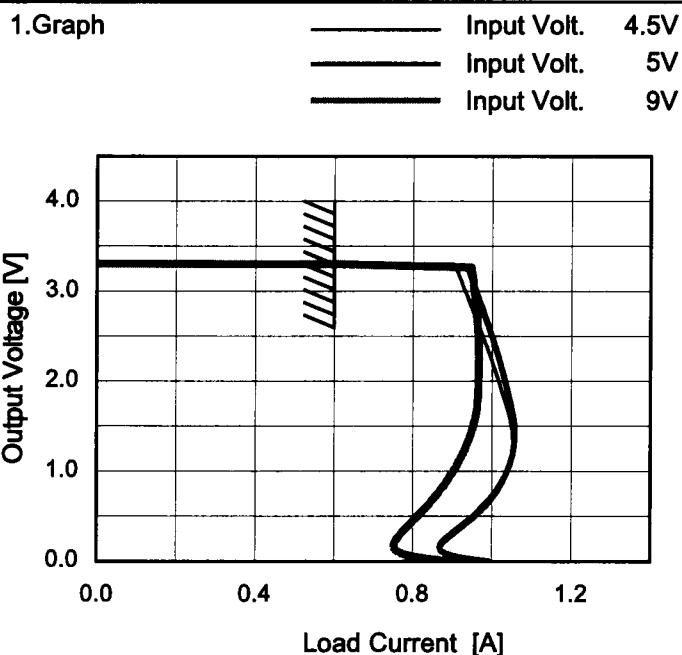
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.1	2.7
-40	2.1	2.8
-20	2.1	2.8
0	2.1	2.8
25	2.1	2.9
55	2.2	3.0
60	2.2	3.0
--	-	-
--	-	-
--	-	-
--	-	-

**COSEL**

Model SUCS3053R3

Item Overcurrent Protection

Object +3.3V0.6A



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	0.60	0.60	0.60
3.14	0.92	0.95	0.95
2.97	0.93	0.96	0.96
2.64	0.96	0.99	0.96
2.31	0.99	1.01	0.97
1.98	1.02	1.04	0.97
1.65	1.04	1.05	0.96
1.32	1.05	1.06	0.94
0.99	1.04	1.04	0.90
0.66	1.00	0.99	0.85
0.33	0.91	0.92	0.77
0.00	0.96	0.99	0.90

COSEL

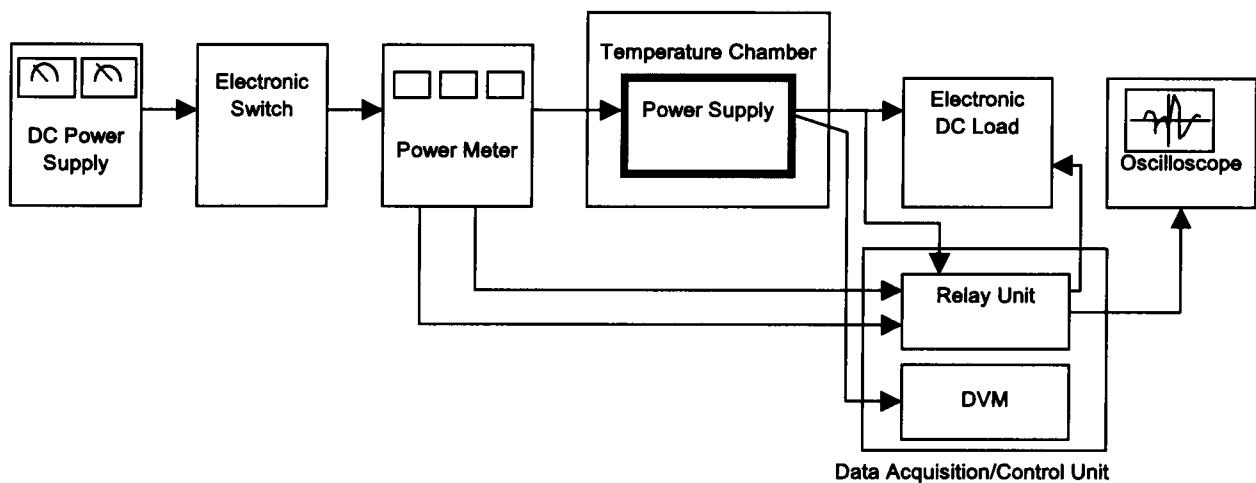


Figure A

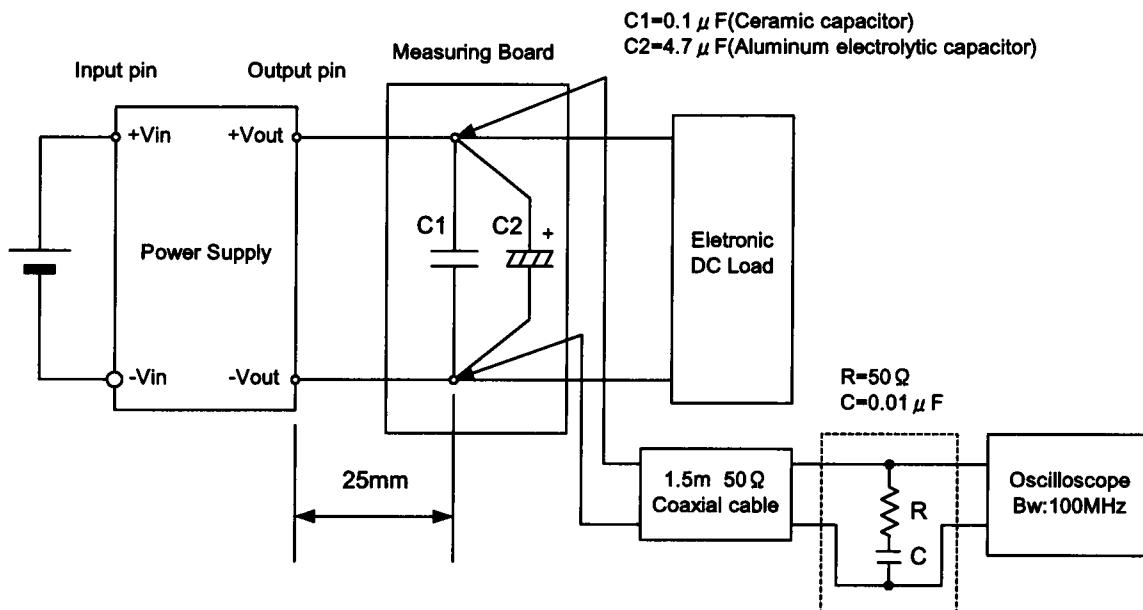


Figure B (Ripple and Ripple noise Characteristic)