

# TEST DATA OF SUCS1R51212

Regulated DC Power Supply  
Sep 17, 2004

Approved by : Tetsuo Sugimori  
Tetsuo Sugimori Design Manager

Prepared by : Masahiro Shima  
Masahiro Shima Design Engineer

**COSEL CO.,LTD.**

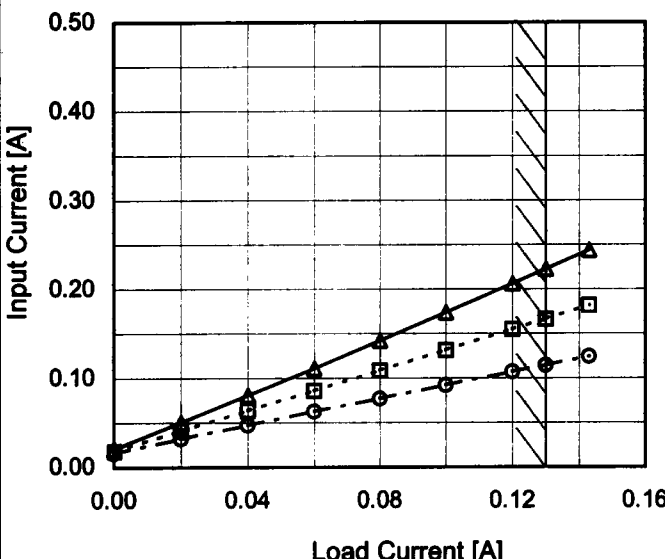
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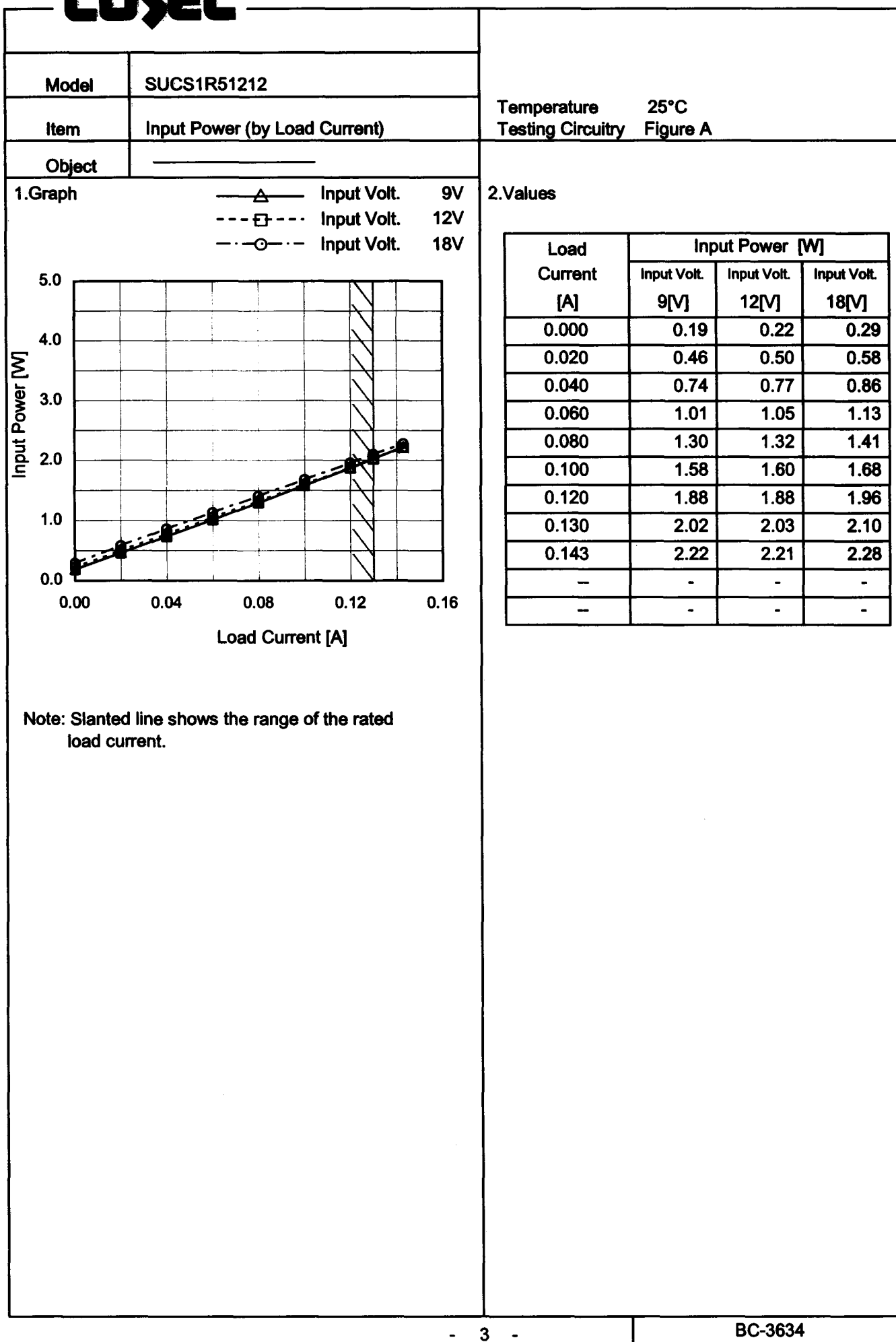


Model		SUCS1R51212		Temperature 25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>9V</div></div><div><div>---□---</div><div>Input Volt.</div><div>12V</div></div><div><div>---○---</div><div>Input Volt.</div><div>18V</div></div></div>  <p>Note: Slanted line shows the range of the rated load current.</p>		2.Values																																																				
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Model		SUCS1R51212	
Item		Efficiency (by Input Voltage)	
Object			

1.Graph

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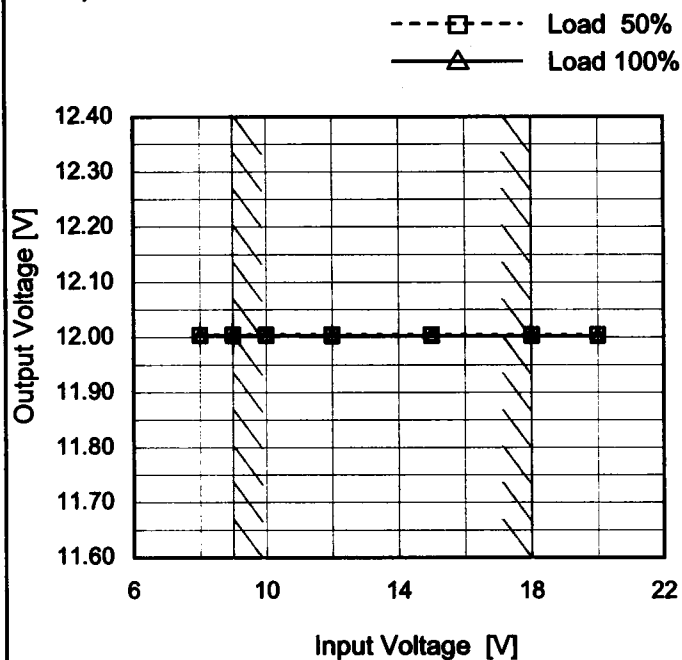
Model		SUCS1R51212		Temperature		25°C																																																		
Item		Efficiency (by Load Current)		Testing Circuitry		Figure A																																																		
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1.Graph		<div><div>—△—</div>Input Volt. 9V</div> <div><div>---□---</div>Input Volt. 12V</div> <div><div>---○---</div>Input Volt. 18V</div>		2.Values																																																				
<div><div>Efficiency [%]</div><div><div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div></div><div><div>0.00</div><div>0.04</div><div>0.08</div><div>0.12</div><div>0.16</div></div><div>Load Current [A]</div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 9[V]</th><th>Input Volt. 12[V]</th><th>Input Volt. 18[V]</th></tr><tr><td>0.000</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.020</td><td>52.8</td><td>48.9</td><td>42.0</td></tr><tr><td>0.040</td><td>65.8</td><td>62.7</td><td>56.2</td></tr><tr><td>0.060</td><td>71.5</td><td>69.2</td><td>64.0</td></tr><tr><td>0.080</td><td>74.4</td><td>73.0</td><td>68.5</td></tr><tr><td>0.100</td><td>76.1</td><td>75.2</td><td>71.6</td></tr><tr><td>0.120</td><td>77.0</td><td>76.8</td><td>73.8</td></tr><tr><td>0.130</td><td>77.4</td><td>77.4</td><td>74.7</td></tr><tr><td>0.143</td><td>77.5</td><td>77.9</td><td>75.7</td></tr><tr><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>-</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Efficiency [%]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.000	-	-	-	0.020	52.8	48.9	42.0	0.040	65.8	62.7	56.2	0.060	71.5	69.2	64.0	0.080	74.4	73.0	68.5	0.100	76.1	75.2	71.6	0.120	77.0	76.8	73.8	0.130	77.4	77.4	74.7	0.143	77.5	77.9	75.7	-	-	-	-	-	-	-	-
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Note: Slanted line shows the range of the rated load current.																																																								

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Model	SUCS1R51212
Item	Line Regulation
Object	+12V0.13A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	12.005	12.004
9	12.005	12.004
10	12.005	12.004
12	12.005	12.003
15	12.005	12.003
18	12.005	12.003
20	12.005	12.003
—	—	—
—	—	—



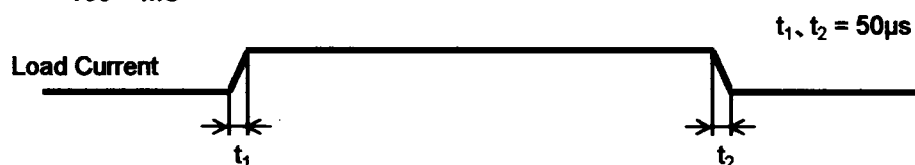
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Item	Load Regulation	Temperature	25°C																																																			
Object	+12V0.13A	Testing Circuitry	Figure A																																																			
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<div><div><div>—△—</div><div>Input Volt.</div><div>9V</div></div><div><div>---□---</div><div>Input Volt.</div><div>12V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>18V</div></div></div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 9[V]</th><th>Input Volt. 12[V]</th><th>Input Volt. 18[V]</th></tr><tr><td>0.000</td><td>12.006</td><td>12.006</td><td>12.007</td></tr><tr><td>0.020</td><td>12.006</td><td>12.006</td><td>12.006</td></tr><tr><td>0.040</td><td>12.005</td><td>12.006</td><td>12.006</td></tr><tr><td>0.060</td><td>12.005</td><td>12.006</td><td>12.006</td></tr><tr><td>0.080</td><td>12.005</td><td>12.005</td><td>12.005</td></tr><tr><td>0.100</td><td>12.005</td><td>12.005</td><td>12.005</td></tr><tr><td>0.120</td><td>12.004</td><td>12.005</td><td>12.005</td></tr><tr><td>0.130</td><td>12.004</td><td>12.004</td><td>12.004</td></tr><tr><td>0.143</td><td>12.004</td><td>12.004</td><td>12.004</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Output Voltage [V]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.000	12.006	12.006	12.007	0.020	12.006	12.006	12.006	0.040	12.005	12.006	12.006	0.060	12.005	12.006	12.006	0.080	12.005	12.005	12.005	0.100	12.005	12.005	12.005	0.120	12.004	12.005	12.005	0.130	12.004	12.004	12.004	0.143	12.004	12.004	12.004	--	-	-	-	--	-	-	-
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Model	SUCS1R51212	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V0.13A		

Input Volt. 12 V  
Cycle 100 mS

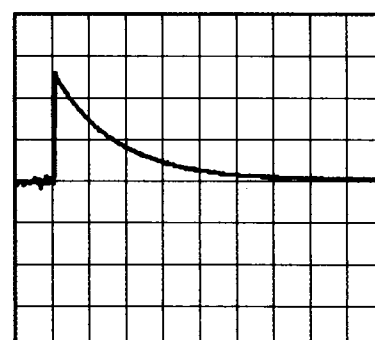


Min. Load (0A)  $\longleftrightarrow$   
Load 100% (0.13A)

100mV/div



2ms/div



2ms/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (0.065A)

100mV/div



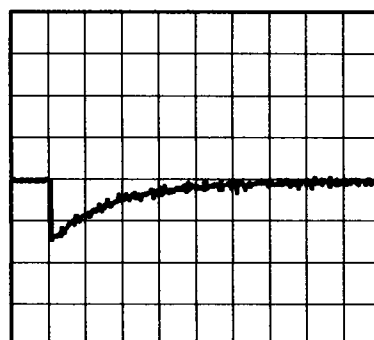
2ms/div



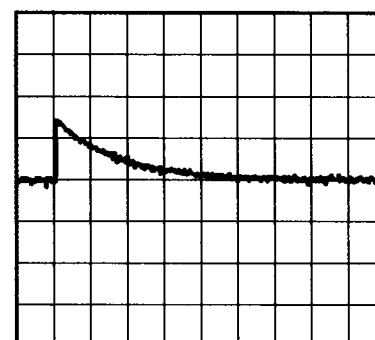
2ms/div

Load 50% (0.065A)  $\longleftrightarrow$   
Load 100% (0.13A)

100mV/div



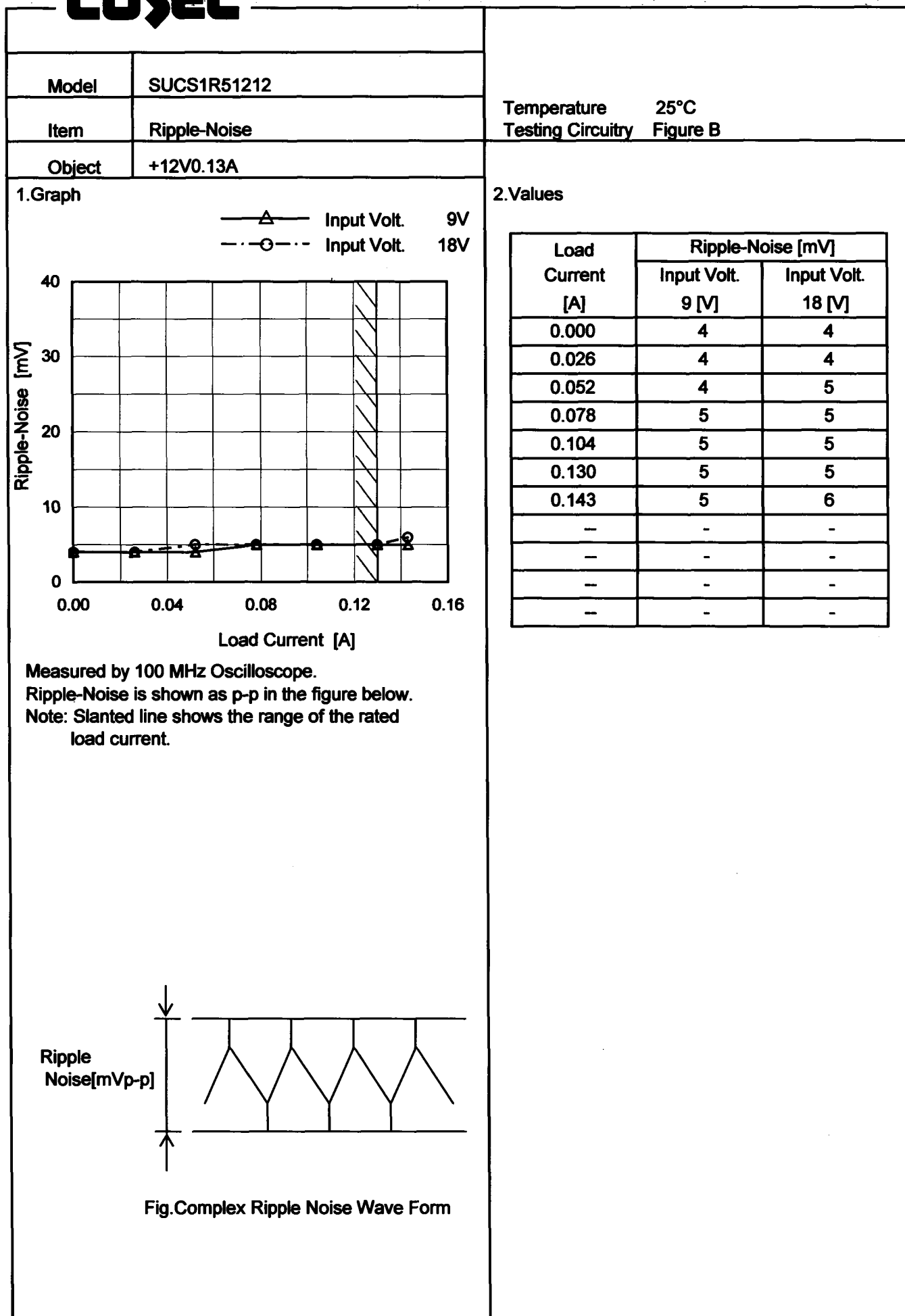
2ms/div



2ms/div

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Model	SUCS1R51212																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+12V0.13A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div><div></div><div>Input Volt.</div><div>9V</div></div><div><div></div><div>Input Volt.</div><div>18V</div></div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 9 [V]</th><th>Input Volt. 18 [V]</th></tr><tr><td>0.000</td><td>2</td><td>2</td></tr><tr><td>0.026</td><td>2</td><td>2</td></tr><tr><td>0.052</td><td>2</td><td>2</td></tr><tr><td>0.078</td><td>2</td><td>2</td></tr><tr><td>0.104</td><td>2</td><td>2</td></tr><tr><td>0.130</td><td>2</td><td>2</td></tr><tr><td>0.143</td><td>2</td><td>2</td></tr><tr><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 9 [V]	Input Volt. 18 [V]	0.000	2	2	0.026	2	2	0.052	2	2	0.078	2	2	0.104	2	2	0.130	2	2	0.143	2	2	—	—	—	—	—	—	—	—	—	—	—	—
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<p>Measured by 100 MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																									
<div><div><div>Ripple [mVp-p]</div><div><p>Fig.Complex Ripple Wave Form</p></div></div></div>																																									

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Model		SUCS1R51212	
Item		Ripple Voltage (by Ambient Temp.)	
Object		+12V0.13A	
1.Graph		2.Values	

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□

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Load 50%

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△

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Load 100%

40

30

20

10

0

-60

-40

-20

0

20

40

60

Ambient Temperature [°C]

Input Volt. 12V

Measured by 100 MHz Oscilloscope.

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

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	3
-40	3	3
-20	3	3
0	2	2
25	2	2
55	1	1
60	1	1
-	-	-
-	-	-
-	-	-
-	-	-

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### Testing Circuitry Figure A



Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	11.999	11.999	11.999
-40	12.009	12.009	12.009
-20	12.014	12.013	12.013
0	12.013	12.013	12.012
25	12.005	12.004	12.003
55	11.988	11.987	11.986
60	11.984	11.983	11.982
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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		Testing Circuitry Figure A
Model	SUCS1R51212	
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 : 9 - 18V

Load Current : 0 - 0.13A

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

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

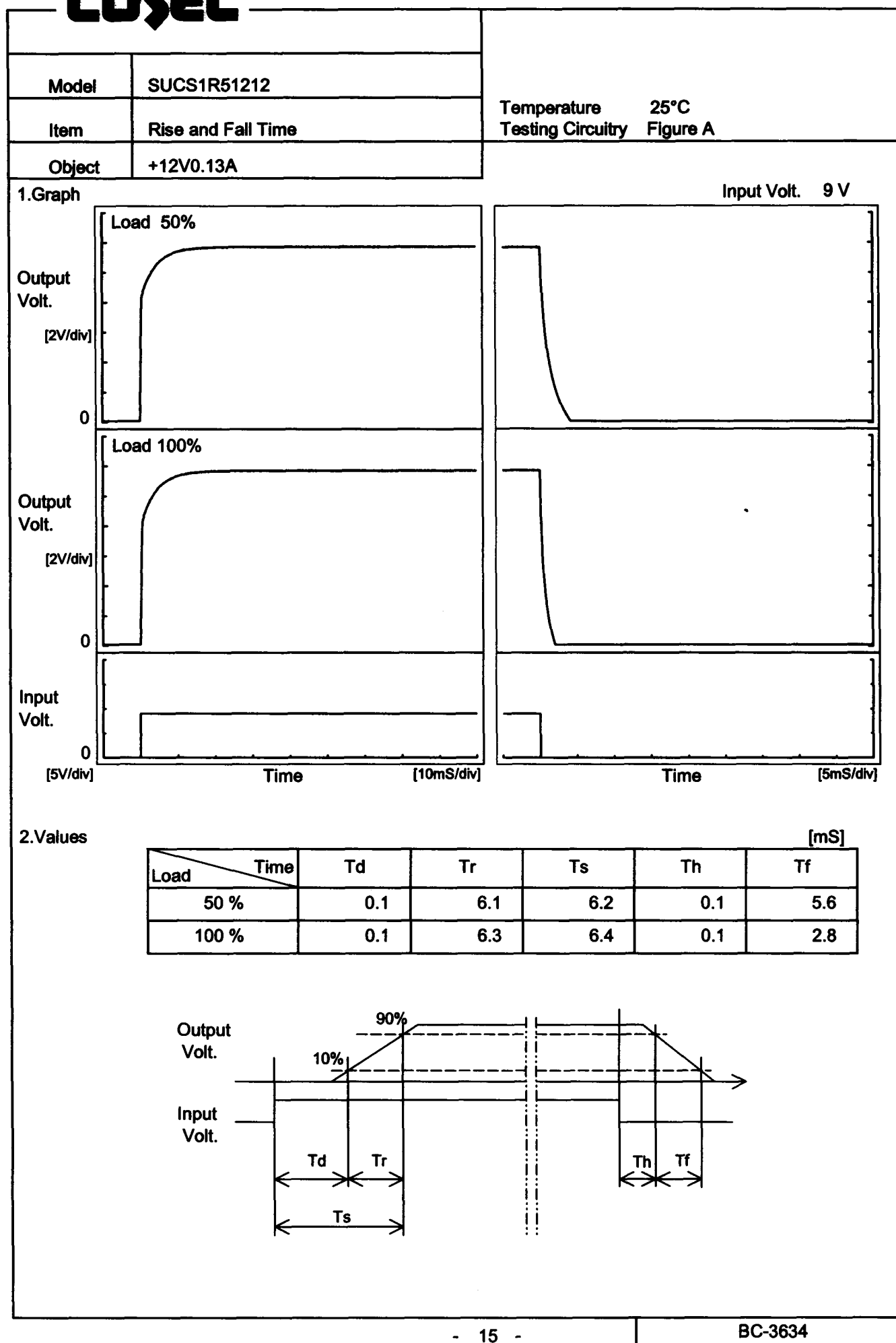
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-20	12	0	12.016	±15	±0.1
Minimum Voltage	55	18	0.13	11.986		

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Model	SUCS1R51212		
Item	Time Lapse Drift	Temperature	25°C
Object	+12V0.13A	Testing Circuitry	Figure A
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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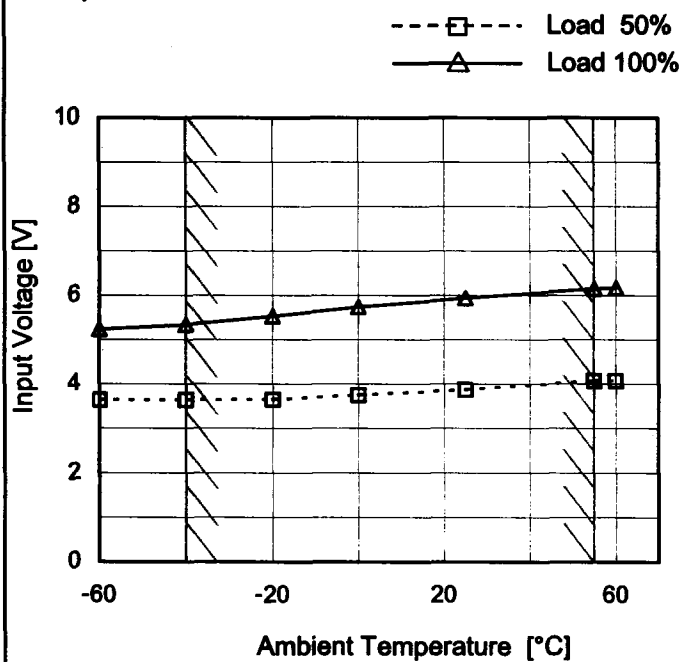


**COSEL**

# COSEL

Model	SUCS1R51212
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	3.7	5.3
-40	3.7	5.4
-20	3.7	5.6
0	3.8	5.8
25	3.9	6.0
55	4.1	6.2
60	4.1	6.2
—	—	—
—	—	—
—	—	—
—	—	—

**BC-3634**

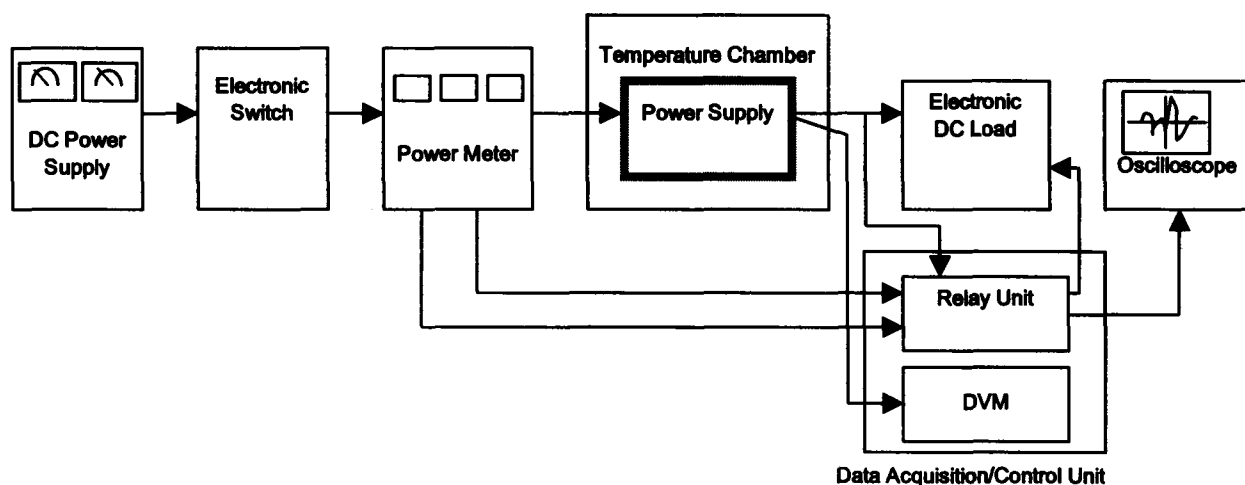


Figure A

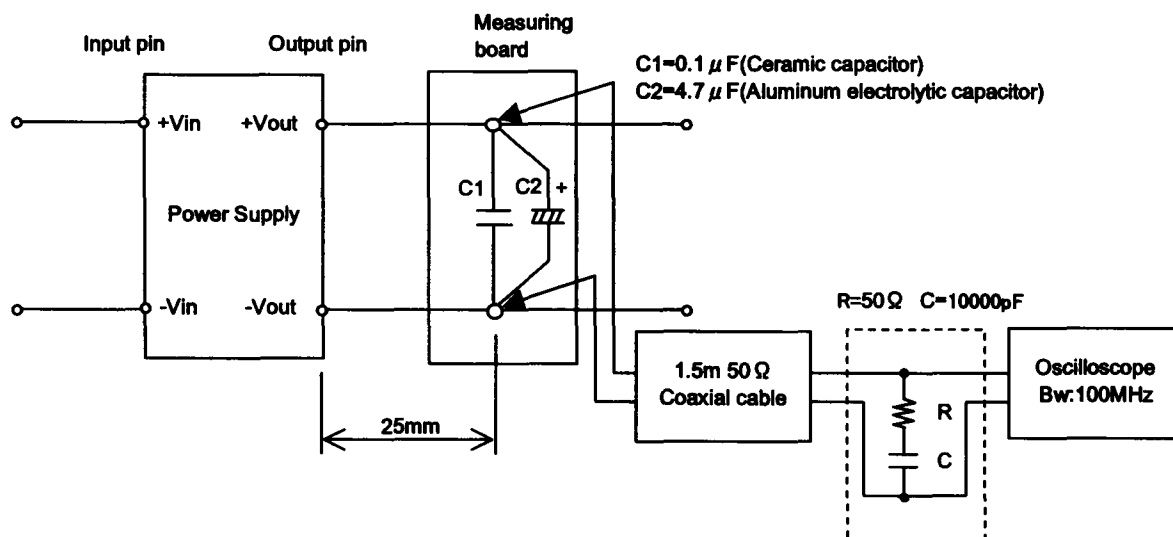


Figure B (Ripple and Ripple noise Characteristic)