



# TEST DATA OF SUCS31215

Regulated DC Power Supply  
Mar 10, 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	SUCS31215	Temperature 25°C Testing Circuitry Figure A																																																																																	
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Note: Slanted line shows the range of the rated load current.

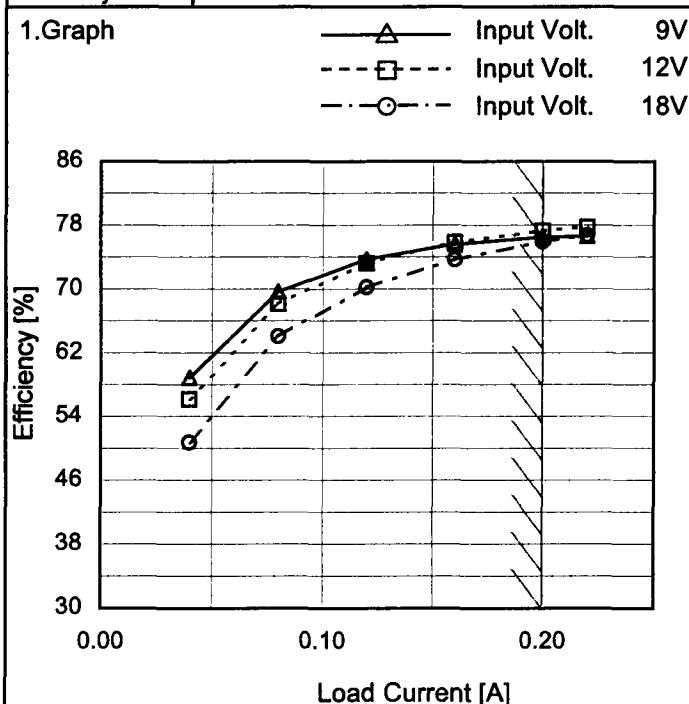
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Model	SUCS31215	Temperature	25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																
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Note: Slanted line shows the range of the rated input voltage.

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Model	SUCS31215
Item	Efficiency (by Load Current)
Object	


 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	-	-	-
0.04	58.9	56.2	50.8
0.08	69.7	68.1	64.1
0.12	73.7	73.3	70.2
0.16	75.6	75.9	73.7
0.20	76.5	77.3	76.0
0.22	76.6	77.8	76.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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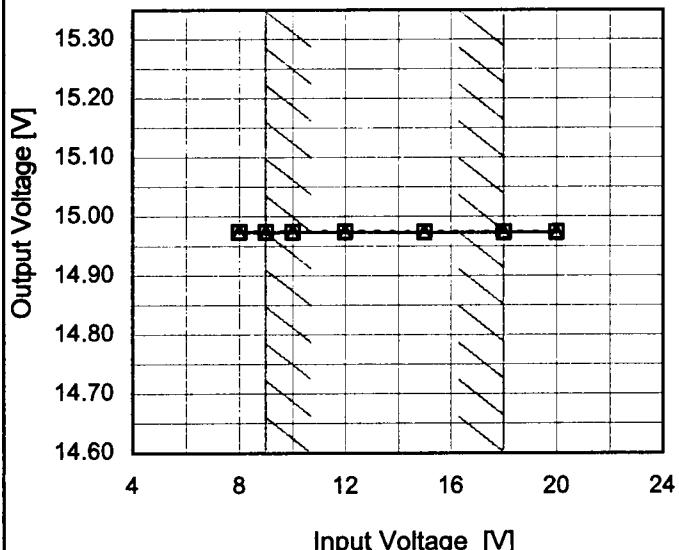
Model SUCS31215

Item Line Regulation

Object +15V0.2A

## 1. Graph

---□--- Load 50%  
 —△— Load 100%



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

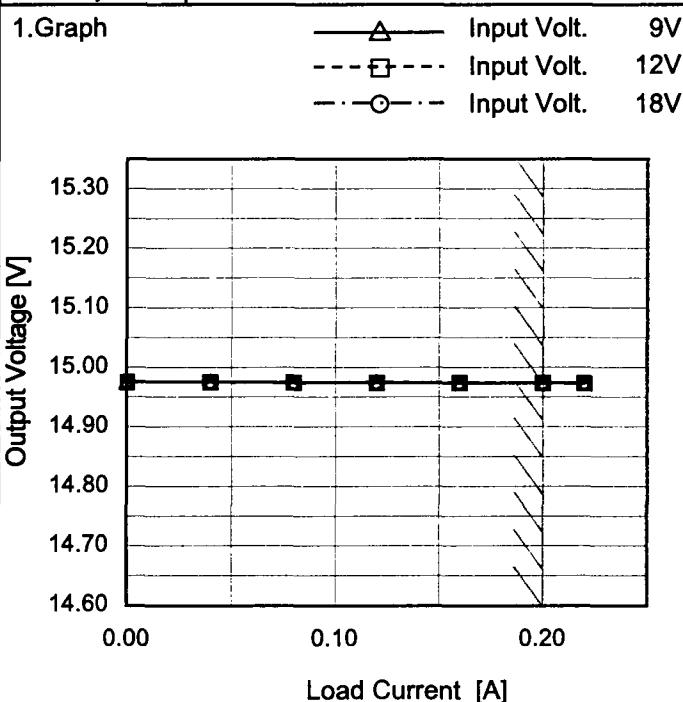
 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	14.974	14.974
9	14.974	14.973
10	14.974	14.973
12	14.975	14.973
15	14.974	14.973
18	14.974	14.973
20	14.974	14.973
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--	-	-

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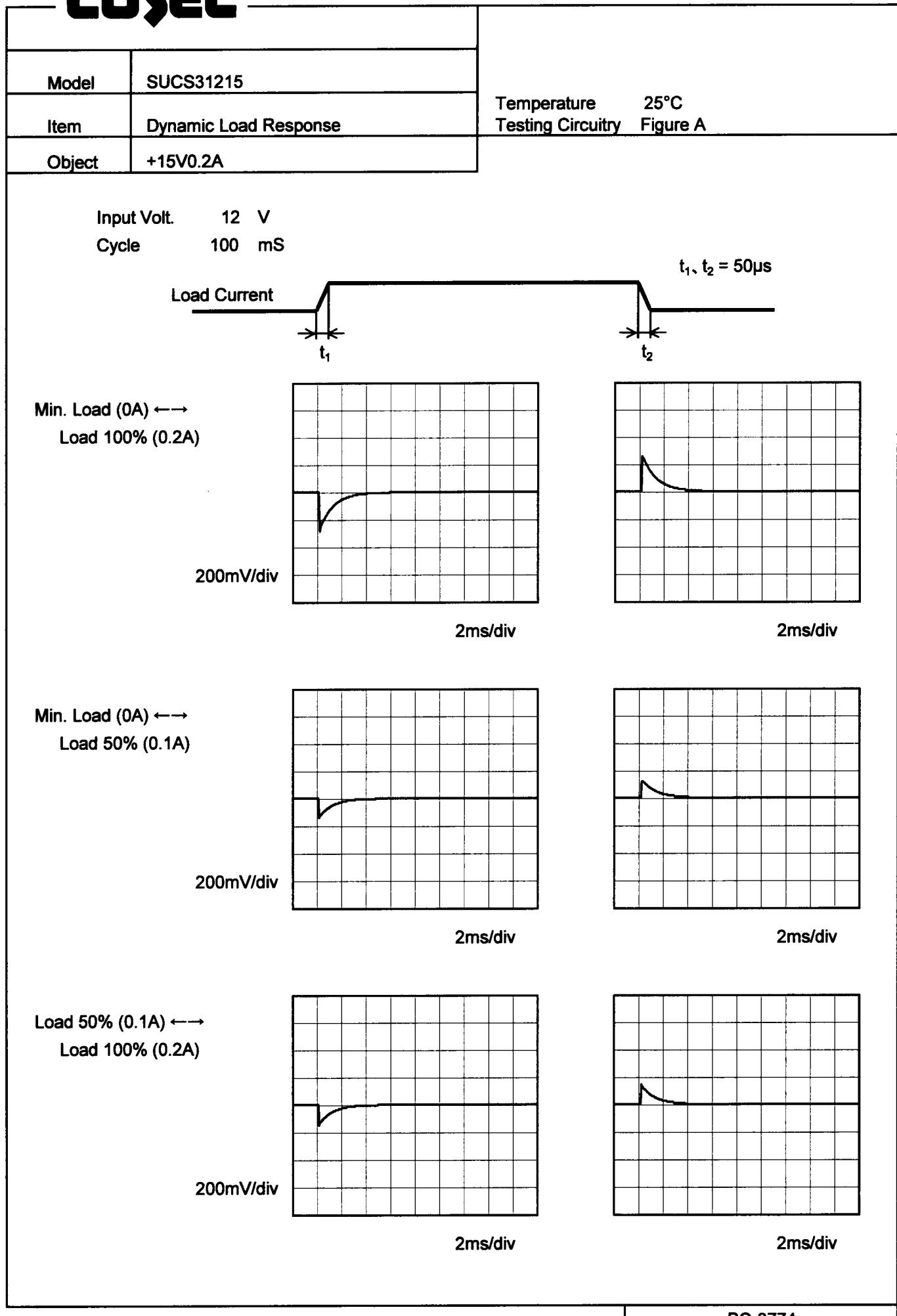
Model	SUCS31215
Item	Load Regulation
Object	+15V0.2A

 Temperature 25°C  
 Testing Circuitry Figure A


## 2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	14.976	14.975	14.976
0.04	14.975	14.975	14.975
0.08	14.975	14.975	14.975
0.12	14.974	14.974	14.975
0.16	14.974	14.974	14.974
0.20	14.974	14.974	14.973
0.22	14.973	14.973	14.974
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

**COSEL**

**COSEL**

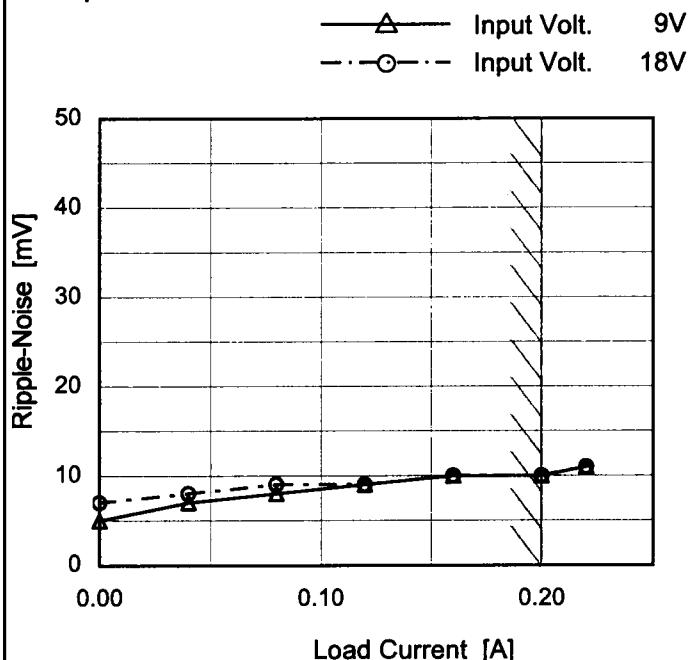
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Item	Ripple Voltage (by Load Current)	Temperature      25°C Testing Circuitry      Figure B																																						
Object	+15V0.2A																																							
1.Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two curves: one for Input Volt. 9V (solid line with triangle markers) and one for Input Volt. 18V (dashed line with circle markers). The x-axis is Load Current [A] from 0.00 to 0.20. The y-axis is Ripple Voltage [mV] from 0 to 50. Both curves show a slight increase in ripple voltage as load current increases. A slanted line on the graph indicates the range of the rated load current.</p>																																								
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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>Oscilloscope trace showing a complex ripple wave form. The vertical axis is labeled "Ripple [mVp-p]" and the horizontal axis represents time. The trace shows a periodic, multi-frequency triangular wave pattern.</p>																																								
<p>Fig.Complex Ripple Wave Form</p>																																								

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Model	SUCS31215
Item	Ripple-Noise
Object	+15V0.2A

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. 9 [V]	Input Volt. 18 [V]
0.00	5	7
0.04	7	8
0.08	8	9
0.12	9	9
0.16	10	10
0.20	10	10
0.22	11	11
--	-	-
--	-	-
--	-	-
--	-	-

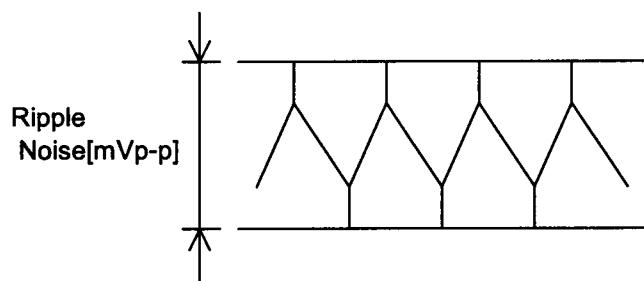
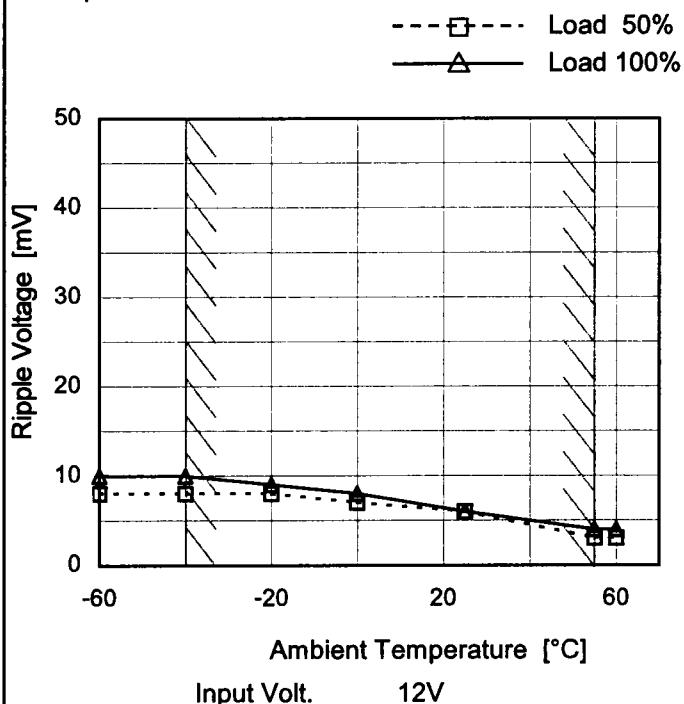


Fig.Complex Ripple Noise Wave Form

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Model	SUCS31215
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

## 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	8	10
-40	8	10
-20	8	9
0	7	8
25	6	6
55	3	4
60	3	4
--	-	-
--	-	-
--	-	-
--	-	-

**COSEL**

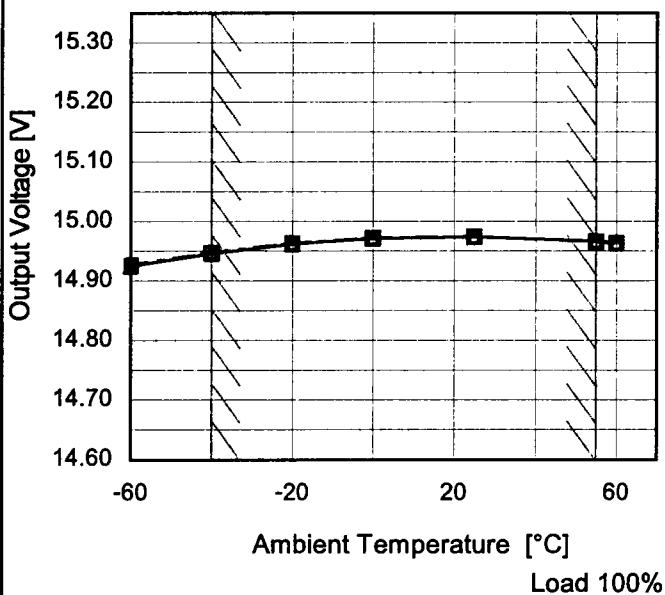
Model SUCS31215

Item Ambient Temperature Drift

Object +15V0.2A

1.Graph

—△— Input Volt. 9V  
 - - - □ - - Input Volt. 12V  
 - - ○ - - Input Volt. 18V



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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	14.925	14.926	14.927
-40	14.946	14.947	14.948
-20	14.962	14.963	14.963
0	14.971	14.972	14.972
25	14.974	14.974	14.974
55	14.967	14.966	14.966
60	14.964	14.963	14.963
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	SUCS31215	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V0.2A	

### 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 - 0.2A

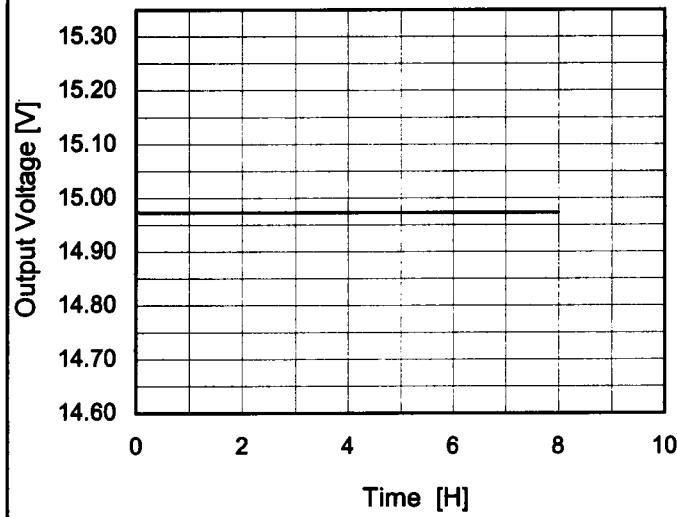
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	9	0	14.977	$\pm 16$	$\pm 0.1$
Minimum Voltage	-40	9	0.2	14.946		

**COSEL**

Model	SUCS31215	Temperature Testing Circuitry 25°C Figure A																						
Item	Time Lapse Drift																							
Object	+15V0.2A																							
1.Graph		2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 12V 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>14.975</td></tr> <tr><td>0.5</td><td>14.973</td></tr> <tr><td>1.0</td><td>14.973</td></tr> <tr><td>2.0</td><td>14.973</td></tr> <tr><td>3.0</td><td>14.973</td></tr> <tr><td>4.0</td><td>14.973</td></tr> <tr><td>5.0</td><td>14.973</td></tr> <tr><td>6.0</td><td>14.973</td></tr> <tr><td>7.0</td><td>14.973</td></tr> <tr><td>8.0</td><td>14.973</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	14.975	0.5	14.973	1.0	14.973	2.0	14.973	3.0	14.973	4.0	14.973	5.0	14.973	6.0	14.973	7.0	14.973	8.0	14.973
Time since start [H]	Output Voltage [V]																							
0.0	14.975																							
0.5	14.973																							
1.0	14.973																							
2.0	14.973																							
3.0	14.973																							
4.0	14.973																							
5.0	14.973																							
6.0	14.973																							
7.0	14.973																							
8.0	14.973																							

**COSEL**

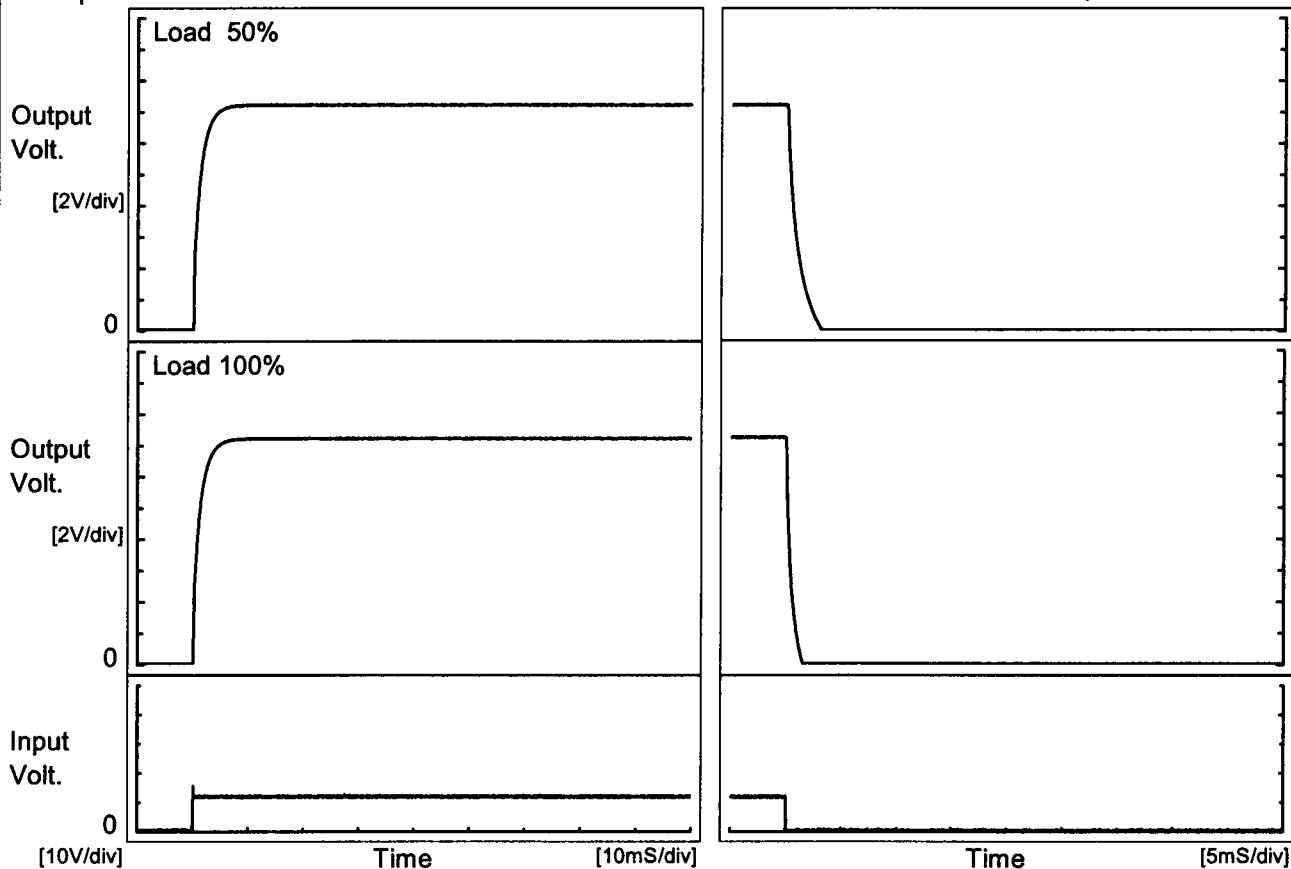
Model SUCS31215

Item Rise and Fall Time

Object +15V0.2A

Temperature 25°C  
Testing Circuitry Figure A

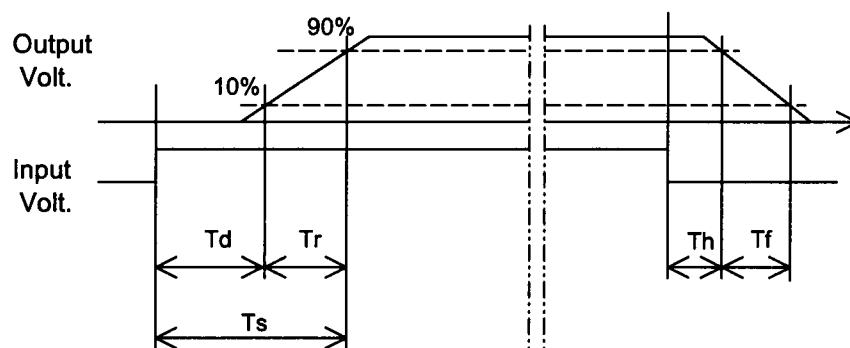
## 1. Graph



## 2. Values

[mS]

Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	3.5	3.6	0.1	2.1
100 %		0.1	3.6	3.7	0.1	1.0



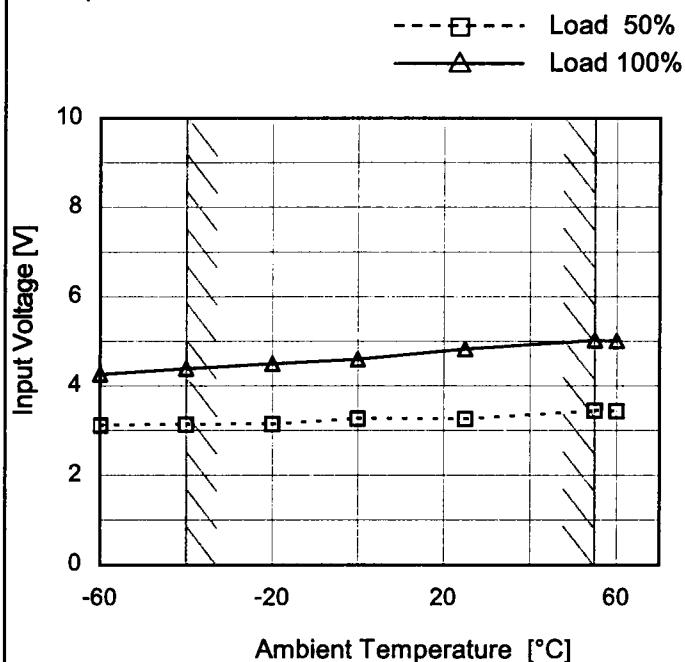
**COSEL**

Model SUCS31215

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +15V0.2A

## 1.Graph



Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.2	4.3
-40	3.2	4.4
-20	3.2	4.5
0	3.3	4.6
25	3.3	4.9
55	3.5	5.1
60	3.5	5.1
--	-	-
--	-	-
--	-	-
--	-	-

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

**COSEL**

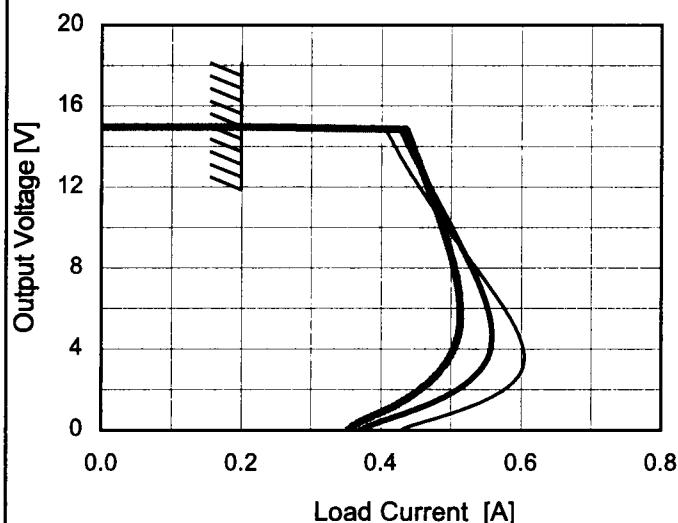
Model SUCS31215

Item Overcurrent Protection

Object +15V0.2A

## 1. Graph

— Input Volt. 9V  
 — Input Volt. 12V  
 — Input Volt. 18V



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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
15.0	0.20	0.20	0.20
14.3	0.41	0.44	0.44
13.5	0.43	0.45	0.45
12.0	0.45	0.47	0.47
10.5	0.48	0.49	0.48
9.0	0.52	0.52	0.50
7.5	0.55	0.54	0.51
6.0	0.58	0.55	0.51
4.5	0.60	0.56	0.51
3.0	0.60	0.54	0.49
1.5	0.55	0.48	0.44
0.0	0.43	0.37	0.35

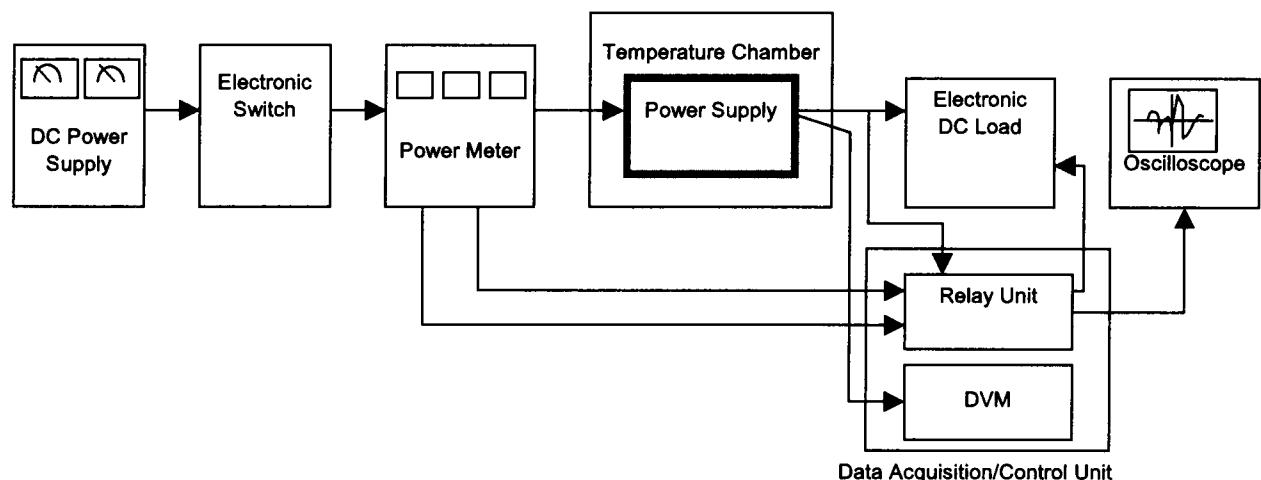


Figure A

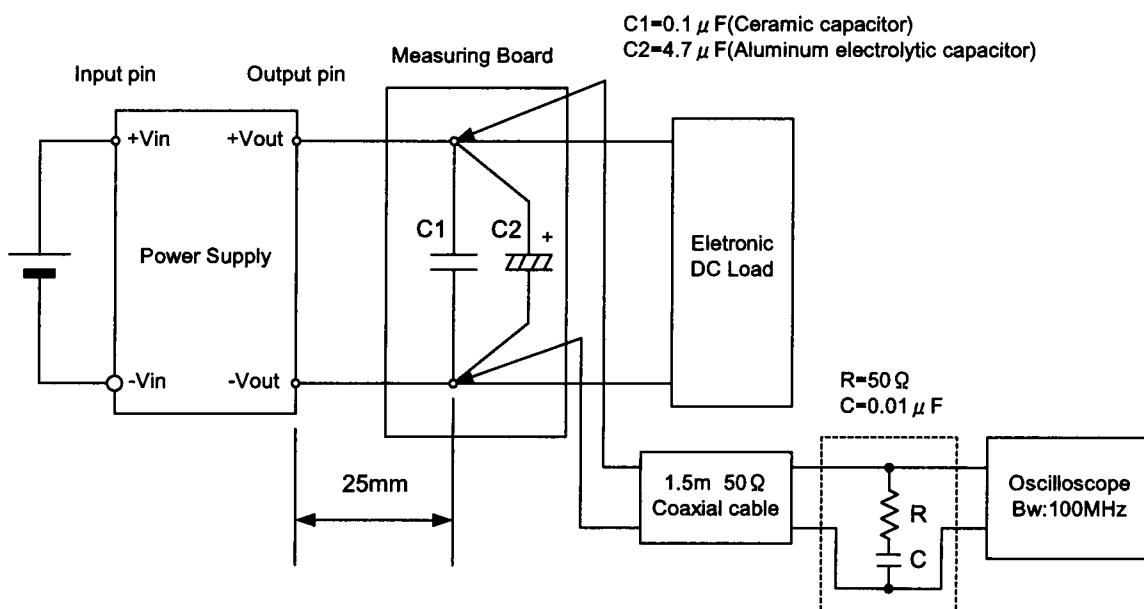


Figure B (Ripple and Ripple noise Characteristic)