

# TEST DATA OF SUS1R50515

Regulated DC Power Supply  
Sep 13, 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	SUS1R50515	Temperature	25°C																																																																							
Item	Input Current (by Input Voltage)	Testing Circuitry	Figure A																																																																							
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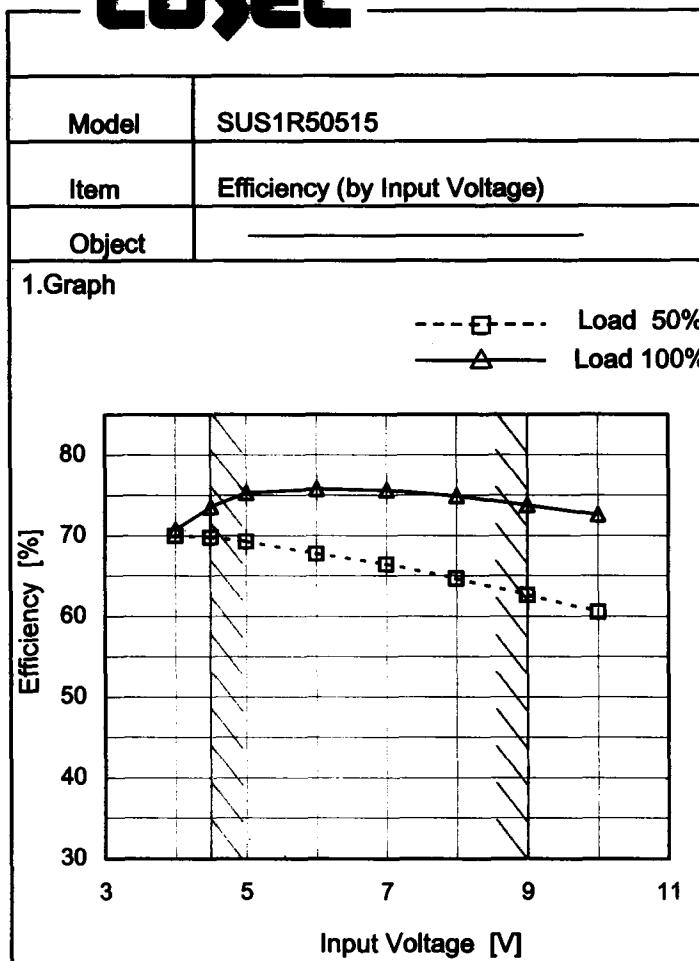
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																						

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Temperature 25°C  
Testing Circuitry Figure A

## 2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
4.0	70.0	70.7
4.5	69.8	73.6
5.0	69.3	75.3
6.0	67.7	75.8
7.0	66.4	75.6
8.0	64.7	74.9
9.0	62.6	73.8
10.0	60.5	72.6
-	-	-

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

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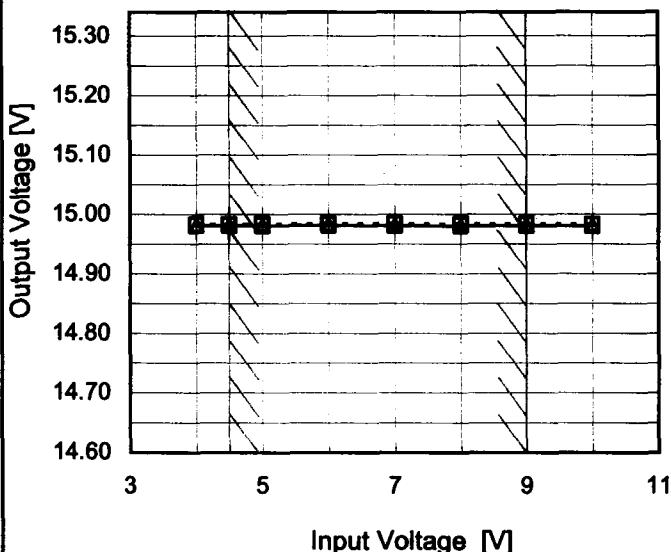
Model SUS1R50515

Item Line Regulation

Object +15V0.1A

## 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%
4.0	14.983	14.981
4.5	14.983	14.981
5.0	14.984	14.981
6.0	14.984	14.981
7.0	14.984	14.981
8.0	14.984	14.981
9.0	14.984	14.981
10.0	14.983	14.981
-	-	-

**COSEL**

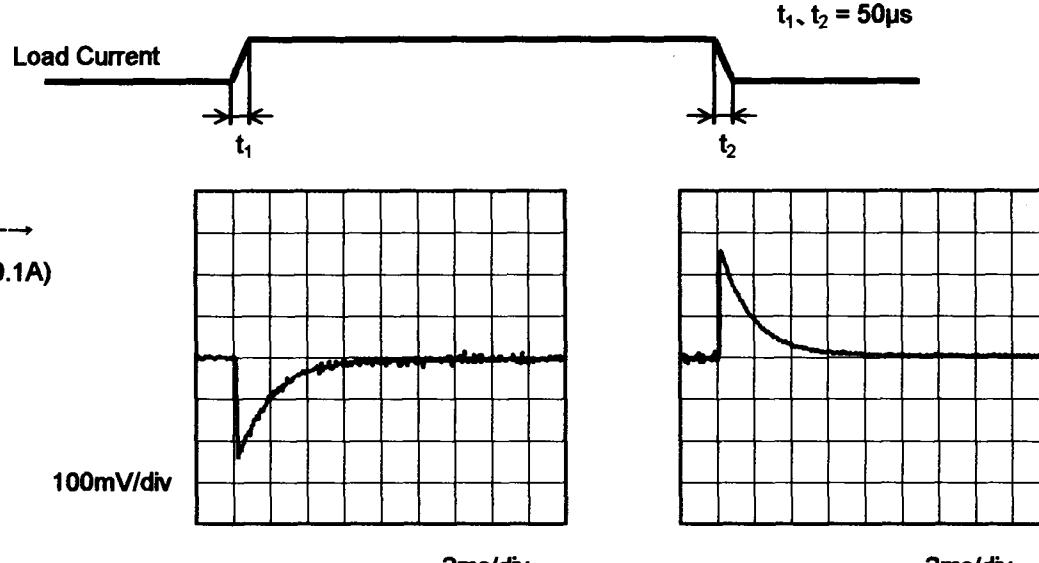
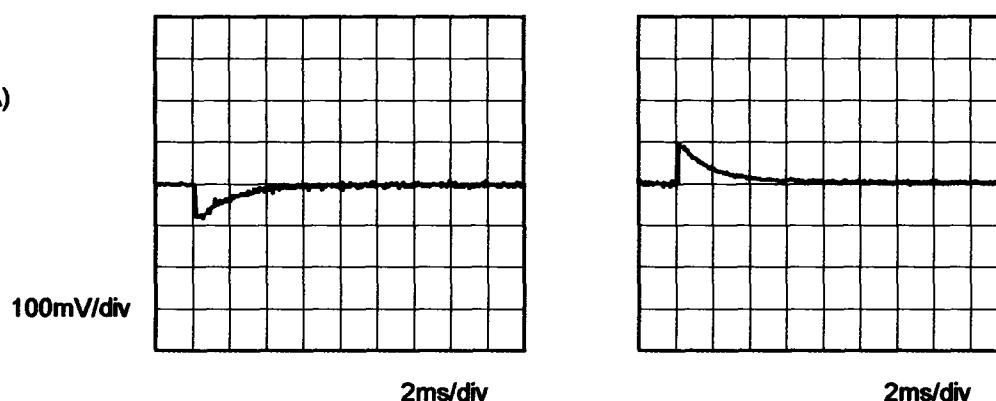
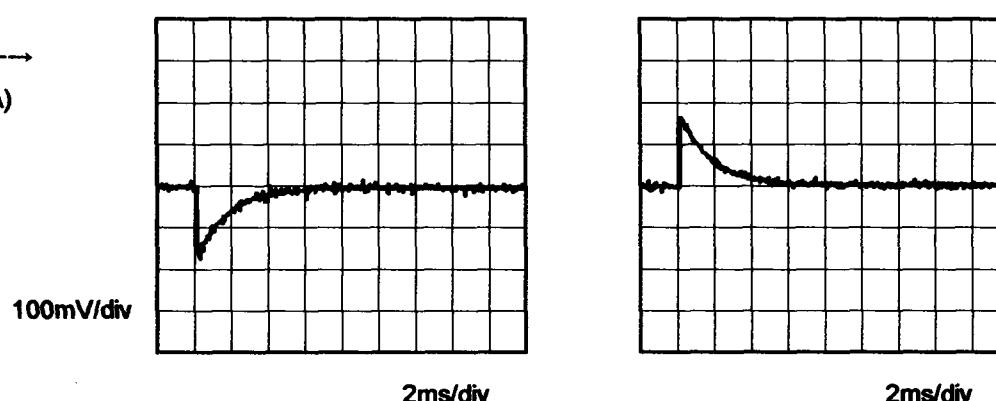
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Model SUS1R50515

Item Dynamic Load Response

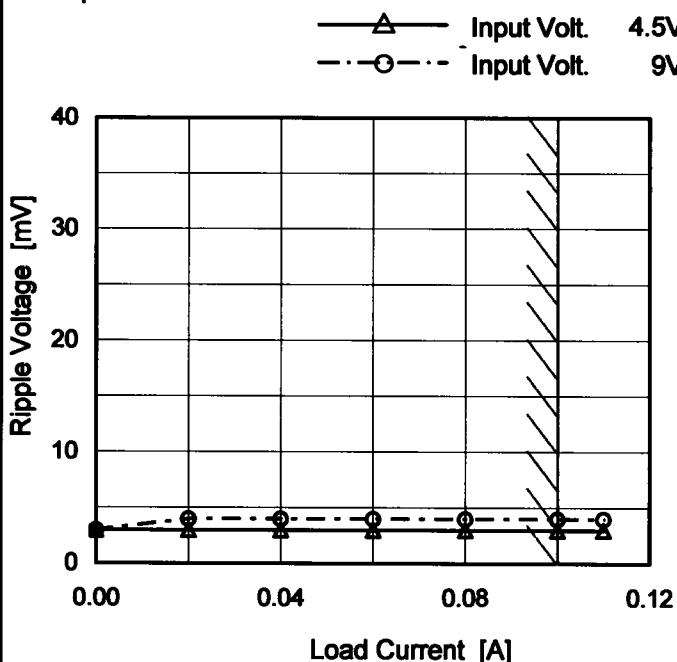
Object +15V0.1A

Temperature 25°C  
Testing Circuitry Figure AInput Volt. 5 V  
Cycle 100 mSMin. Load (0A) ↔  
Load 50% (0.05A)Load 50% (0.05A) ↔  
Load 100% (0.1A)

# COSEL

Model	SUS1R50515
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

## 1. Graph



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.

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	3	3
0.02	3	4
0.04	3	4
0.06	3	4
0.08	3	4
0.10	3	4
0.11	3	4
-	-	-
-	-	-
-	-	-
-	-	-

Ripple [mVp-p]

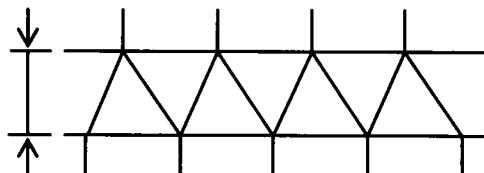


Fig.Complex Ripple Wave Form

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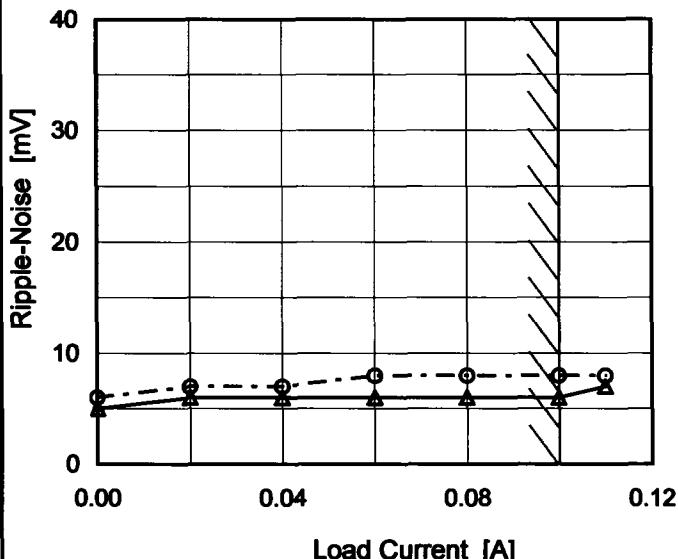
Model SUS1R50515

Item Ripple-Noise

Object +15V0.1A

## 1. Graph

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



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.  
 (The graph shows a slanted line starting at ~0.06A and ending at ~0.11A.)

 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	6
0.02	6	7
0.04	6	7
0.06	6	8
0.08	6	8
0.10	6	8
0.11	7	8
-	-	-
-	-	-
-	-	-
-	-	-

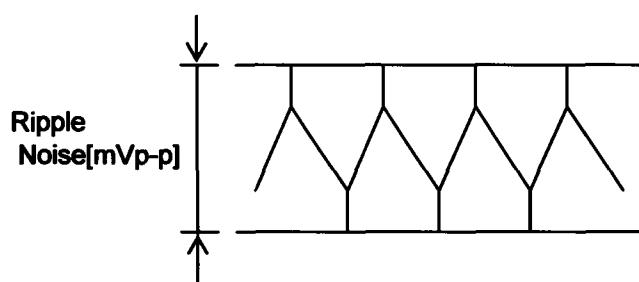
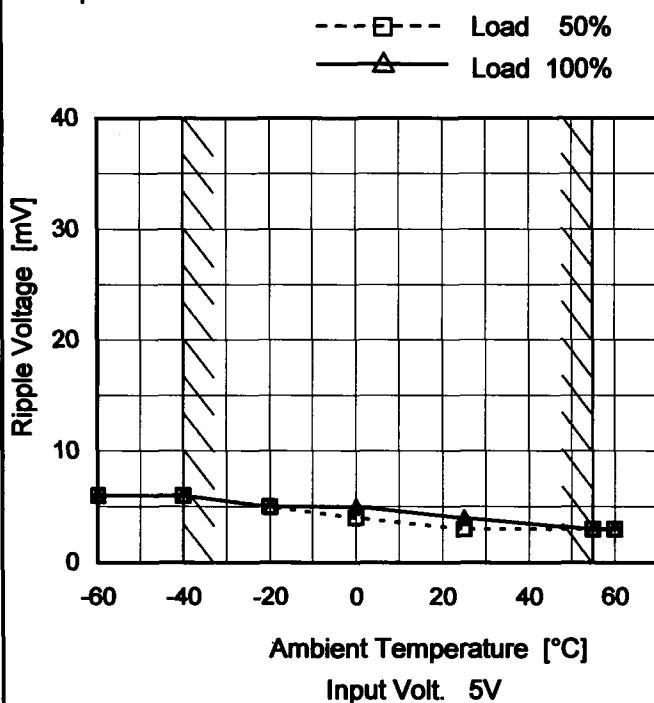


Fig.Complex Ripple Noise Wave Form

# COSEL

Model	SUS1R50515
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

## 1. Graph



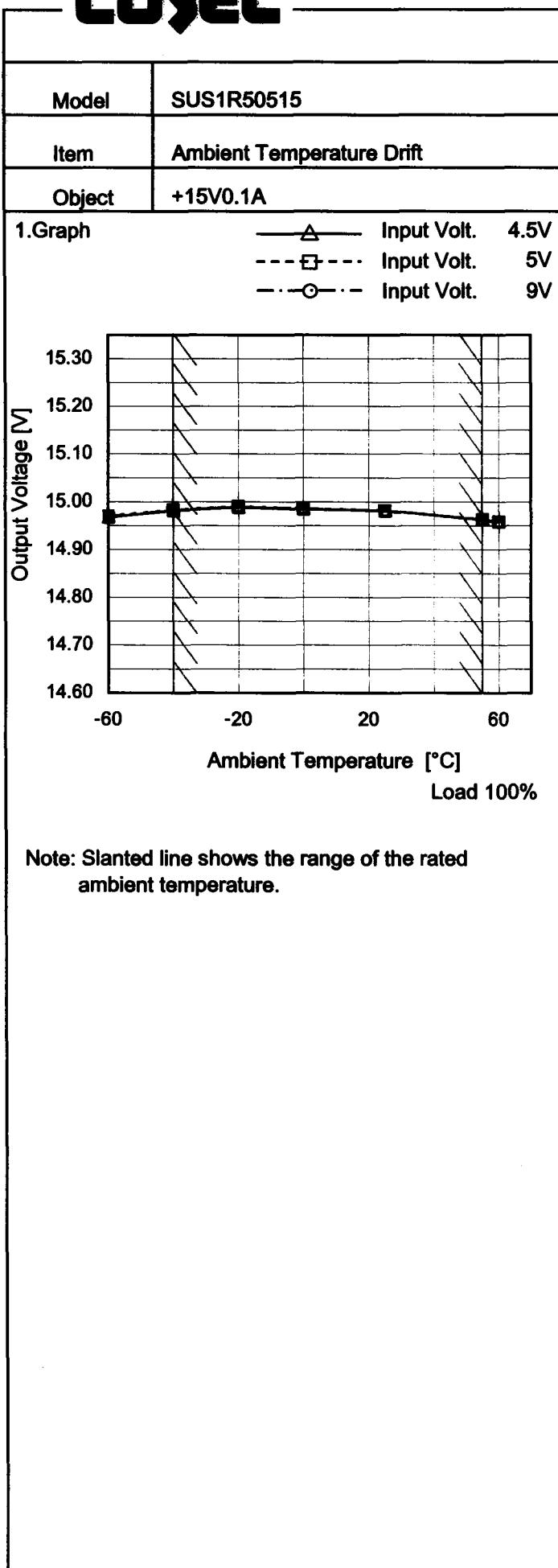
Measured by 100 MHz Oscilloscope.

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	6
-40	6	6
-20	5	5
0	4	5
25	3	4
55	3	3
60	3	3
—	—	—
—	—	—
—	—	—
—	—	—

**COSEL**


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	14.968	14.970	14.969
-40	14.982	14.983	14.982
-20	14.989	14.990	14.989
0	14.985	14.986	14.986
25	14.982	14.982	14.981
55	14.963	14.963	14.962
60	14.959	14.959	14.957
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-



Model	SUS1R50515	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V0.1A	

### 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 - 0.1A

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

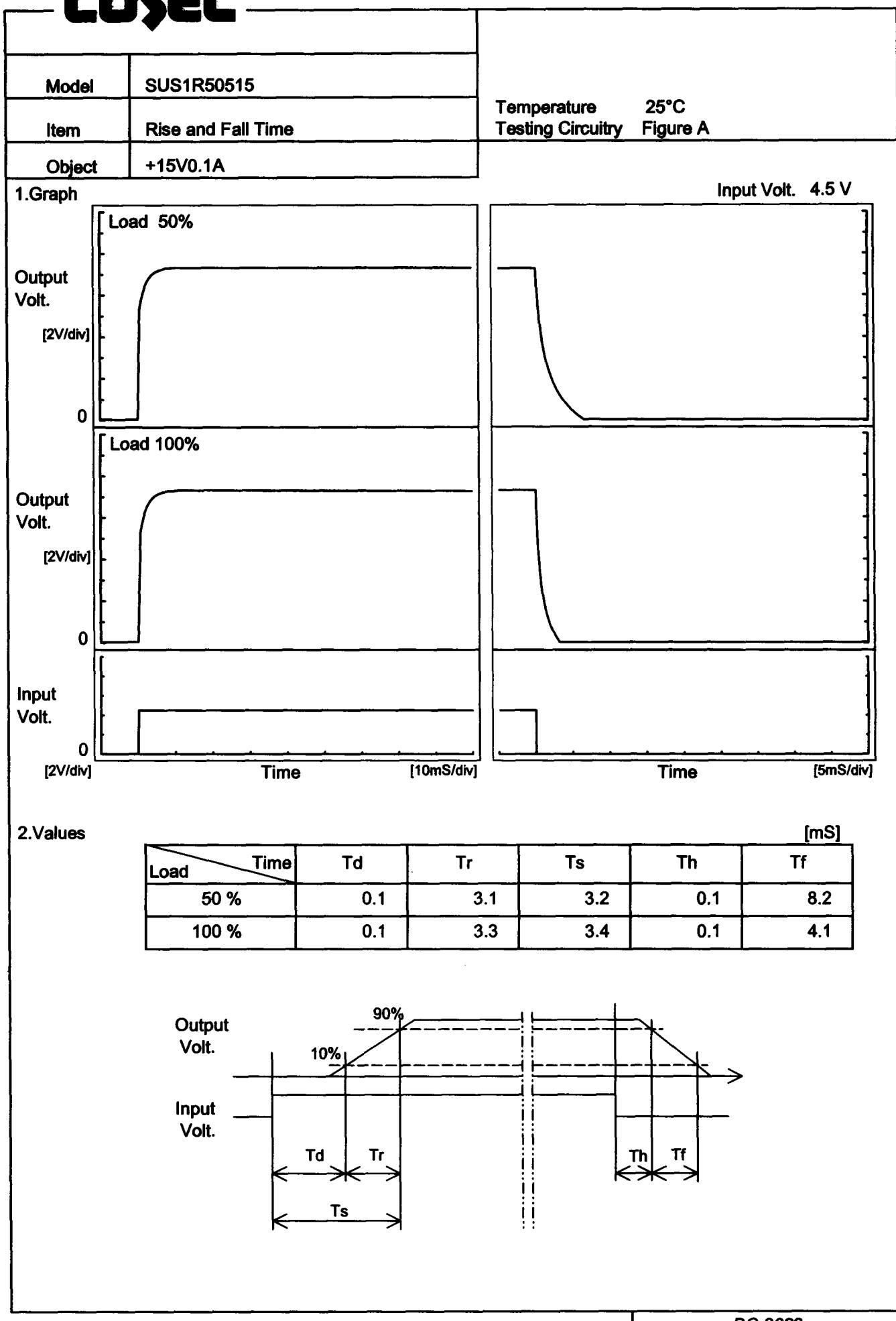
$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	4.5	0	14.992	$\pm 15$	$\pm 0.1$
Minimum Voltage	55	9	0.1	14.962		

**COSEL**

Model	SUS1R50515	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+15V0.1A																								
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>14.958</td></tr> <tr><td>0.5</td><td>14.952</td></tr> <tr><td>1.0</td><td>14.952</td></tr> <tr><td>2.0</td><td>14.952</td></tr> <tr><td>3.0</td><td>14.952</td></tr> <tr><td>4.0</td><td>14.952</td></tr> <tr><td>5.0</td><td>14.952</td></tr> <tr><td>6.0</td><td>14.953</td></tr> <tr><td>7.0</td><td>14.956</td></tr> <tr><td>8.0</td><td>14.957</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	14.958	0.5	14.952	1.0	14.952	2.0	14.952	3.0	14.952	4.0	14.952	5.0	14.952	6.0	14.953	7.0	14.956	8.0	14.957
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Model	SUS1R50515																																												
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>	<p>- 16 -</p>																																												

**COSEL**

Model	SUS1R50515	Temperature Testing Circuitry	25°C Figure A																																																							
Item	Overcurrent Protection																																																									
Object	+15V0.1A																																																									
1.Graph	<p>Input Volt. 4.5V Input Volt. 5V Input Volt. 9V</p> <p>The graph plots Output Voltage [V] on the y-axis (0 to 20) against Load Current [A] on the x-axis (0.00 to 0.40). 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 a certain point. A slanted line is drawn across the graph, starting from approximately (0.10A, 15V) and ending at (0.20A, 0V), indicating the range of the rated load current.</p>																																																									
2.Values	<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>15.0</td><td>0.10</td><td>0.10</td><td>0.10</td></tr> <tr><td>14.3</td><td>0.15</td><td>0.16</td><td>0.16</td></tr> <tr><td>13.5</td><td>0.15</td><td>0.17</td><td>0.16</td></tr> <tr><td>12.0</td><td>0.17</td><td>0.18</td><td>0.17</td></tr> <tr><td>10.5</td><td>0.18</td><td>0.19</td><td>0.17</td></tr> <tr><td>9.0</td><td>0.19</td><td>0.20</td><td>0.18</td></tr> <tr><td>7.5</td><td>0.21</td><td>0.21</td><td>0.18</td></tr> <tr><td>6.0</td><td>0.22</td><td>0.22</td><td>0.18</td></tr> <tr><td>4.5</td><td>0.23</td><td>0.23</td><td>0.18</td></tr> <tr><td>3.0</td><td>0.23</td><td>0.23</td><td>0.17</td></tr> <tr><td>1.5</td><td>0.22</td><td>0.22</td><td>0.16</td></tr> <tr><td>0.0</td><td>0.26</td><td>0.29</td><td>0.27</td></tr> </tbody> </table>			Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	15.0	0.10	0.10	0.10	14.3	0.15	0.16	0.16	13.5	0.15	0.17	0.16	12.0	0.17	0.18	0.17	10.5	0.18	0.19	0.17	9.0	0.19	0.20	0.18	7.5	0.21	0.21	0.18	6.0	0.22	0.22	0.18	4.5	0.23	0.23	0.18	3.0	0.23	0.23	0.17	1.5	0.22	0.22	0.16	0.0	0.26	0.29	0.27
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Note: Slanted line shows the range of the rated load current.

COSEL

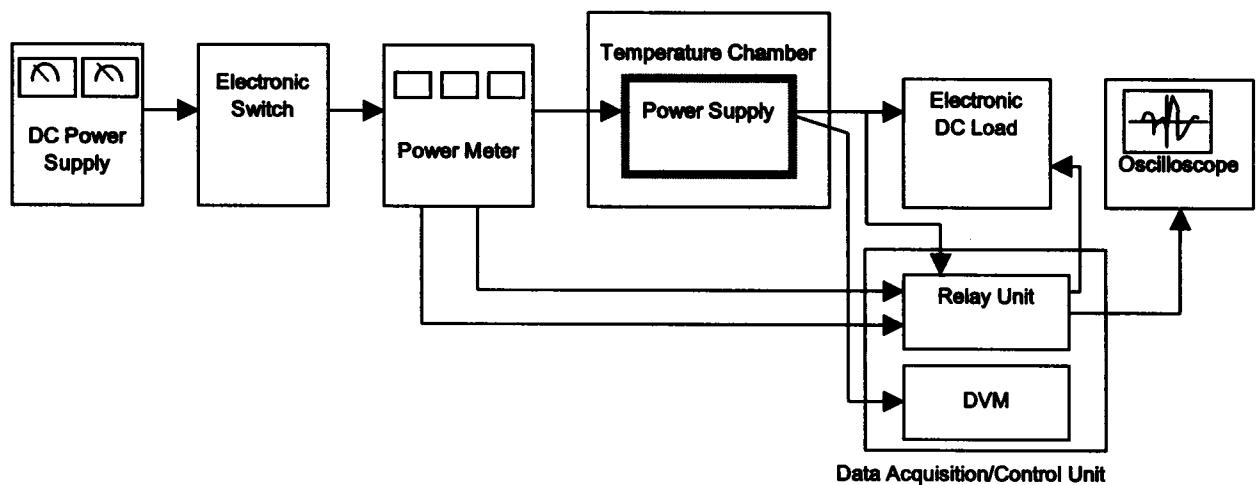


Figure A

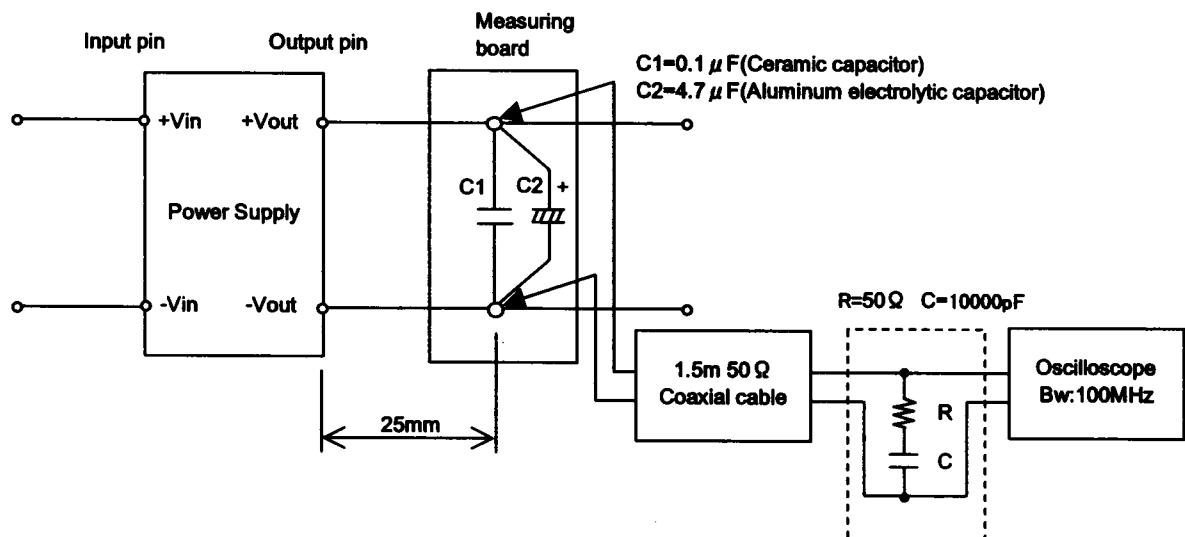


Figure B (Ripple and Ripple noise Characteristic)