



# TEST DATA OF SUS3123R3

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	SUS3123R3	Temperature	25°C																																																																															
Item	Input Current (by Input Voltage)	Testing Circuitry	Figure A																																																																															
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1. Graph																																																																																		
<p>The graph plots Input Current [A] on the y-axis (0.0 to 1.0) against Input Voltage [V] on the x-axis (0 to 24). Three data series are shown: Load 100% (triangles), Load 50% (squares), and Load 0% (circles). All series show a decreasing trend. A slanted line is drawn through the data points, indicating the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 100% [A]</th> <th>Load 50% [A]</th> <th>Load 0% [A]</th> </tr> </thead> <tbody> <tr><td>3.5</td><td>0.45</td><td>0.45</td><td>0.05</td></tr> <tr><td>4.0</td><td>0.48</td><td>0.38</td><td>0.05</td></tr> <tr><td>5.0</td><td>0.52</td><td>0.25</td><td>0.05</td></tr> <tr><td>6.0</td><td>0.45</td><td>0.20</td><td>0.05</td></tr> <tr><td>8.0</td><td>0.35</td><td>0.15</td><td>0.05</td></tr> <tr><td>10.0</td><td>0.25</td><td>0.10</td><td>0.05</td></tr> <tr><td>12.0</td><td>0.20</td><td>0.08</td><td>0.05</td></tr> <tr><td>14.0</td><td>0.18</td><td>0.07</td><td>0.05</td></tr> <tr><td>16.0</td><td>0.15</td><td>0.06</td><td>0.05</td></tr> <tr><td>18.0</td><td>0.12</td><td>0.05</td><td>0.05</td></tr> <tr><td>20.0</td><td>0.10</td><td>0.04</td><td>0.05</td></tr> </tbody> </table>				Input Voltage [V]	Load 100% [A]	Load 50% [A]	Load 0% [A]	3.5	0.45	0.45	0.05	4.0	0.48	0.38	0.05	5.0	0.52	0.25	0.05	6.0	0.45	0.20	0.05	8.0	0.35	0.15	0.05	10.0	0.25	0.10	0.05	12.0	0.20	0.08	0.05	14.0	0.18	0.07	0.05	16.0	0.15	0.06	0.05	18.0	0.12	0.05	0.05	20.0	0.10	0.04	0.05																															
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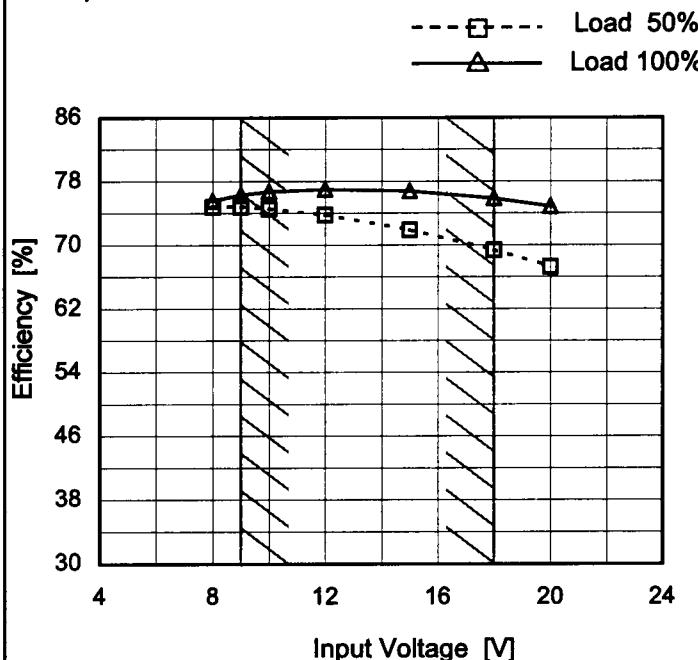
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Model	SUS3123R3
Item	Efficiency (by Input Voltage)
Object	—

## 1. Graph



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

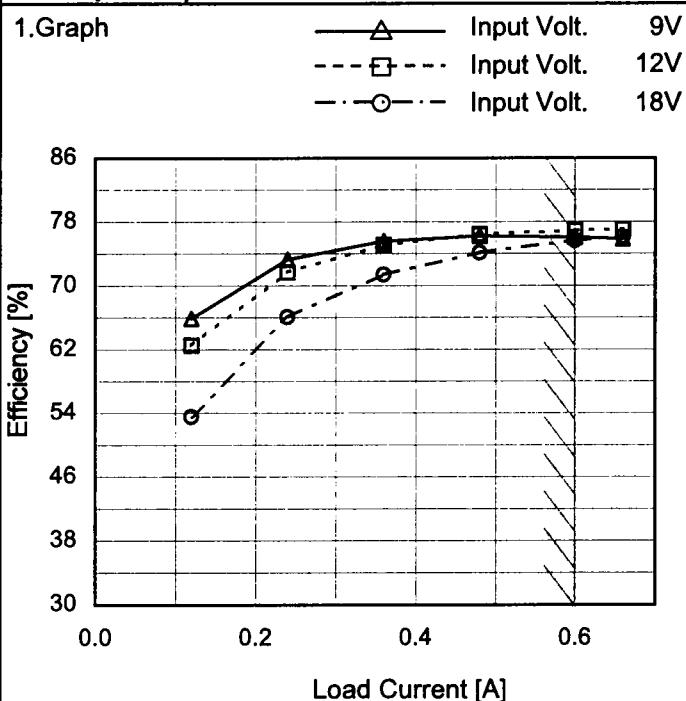
 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8	74.8	75.6
9	74.8	76.3
10	74.6	76.7
12	73.8	77.0
15	71.9	76.8
18	69.4	75.8
20	67.3	74.9
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# COSEL

Model	SUS3123R3
Item	Efficiency (by Load Current)
Object	_____



Temperature 25°C  
Testing Circuitry Figure A

## 2.Values

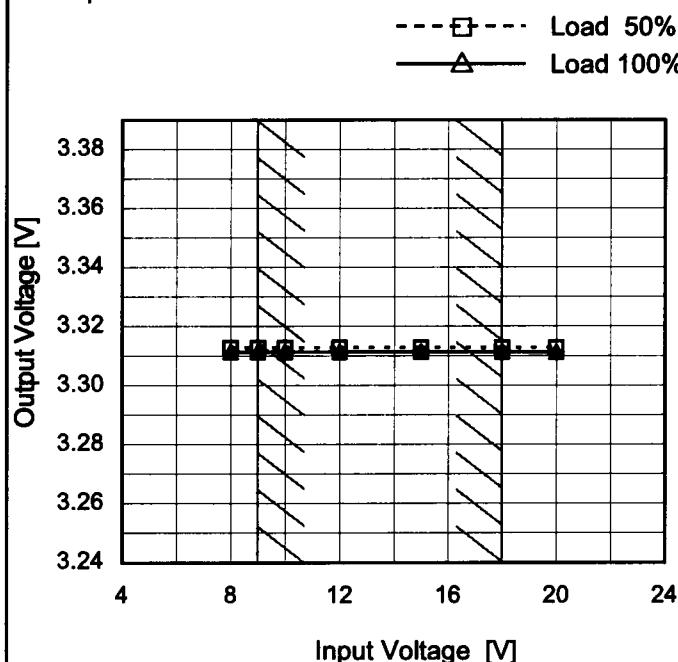
Load Current [A]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	-	-	-
0.12	65.9	62.6	53.6
0.24	73.3	71.7	66.1
0.36	75.6	75.1	71.4
0.48	76.2	76.4	74.1
0.60	76.1	76.9	75.7
0.66	75.9	77.1	76.1
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--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUS3123R3
Item	Line Regulation
Object	+3.3V0.6A

Temperature 25°C  
 Testing Circuitry Figure A

## 1. Graph

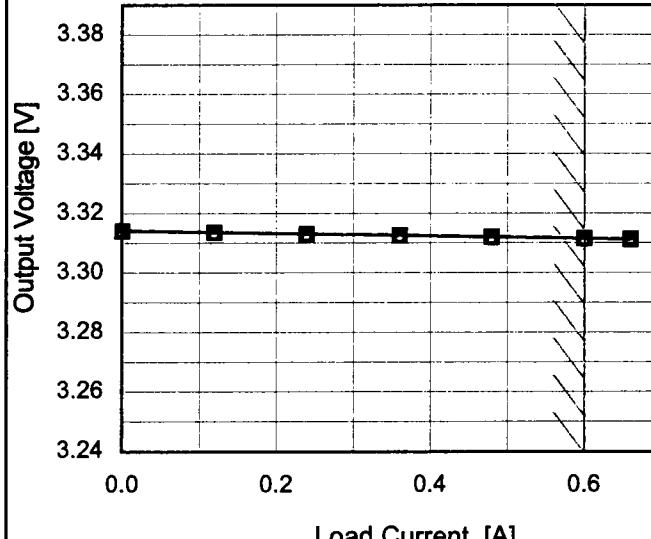


## 2. Values

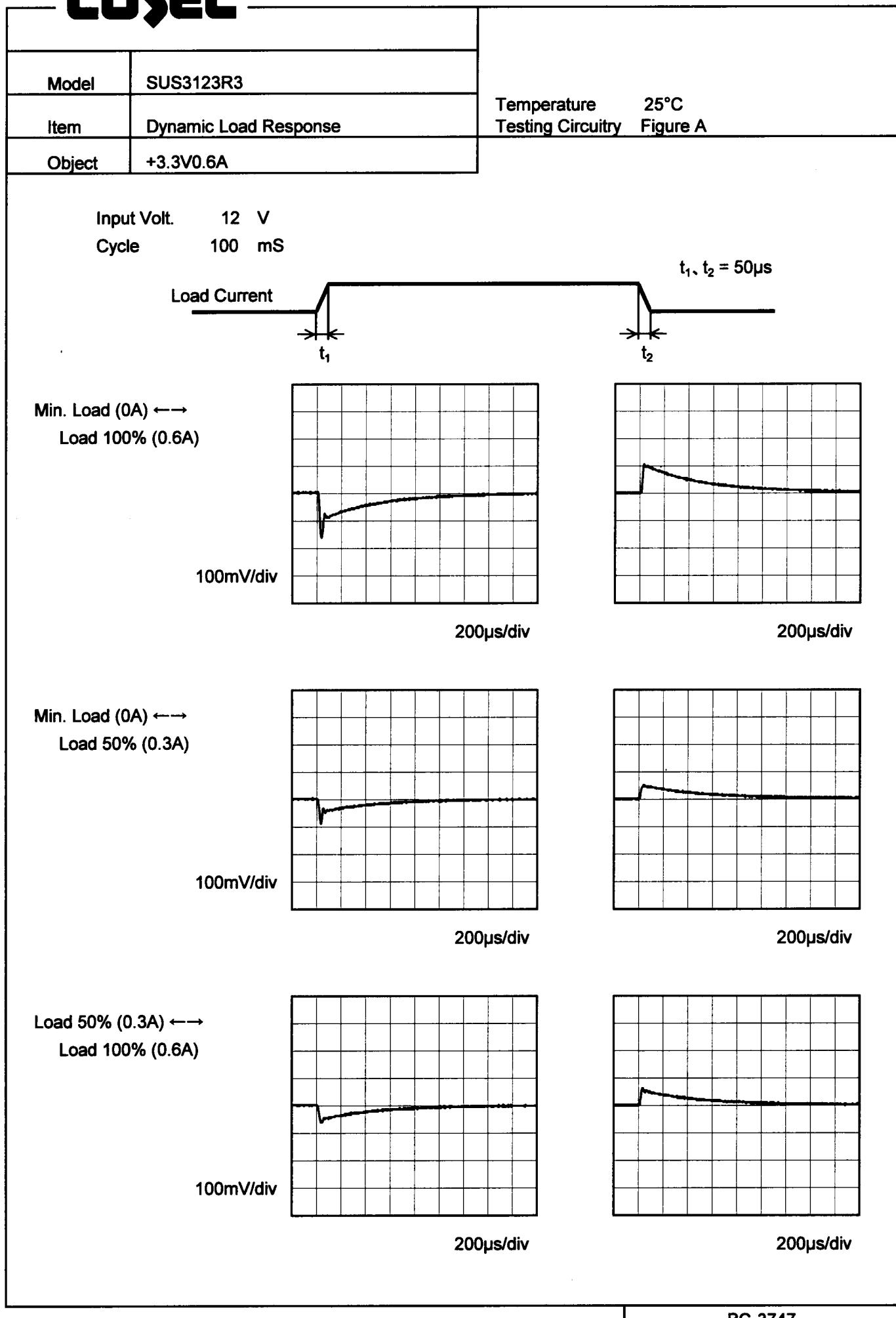
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	3.313	3.311
9	3.313	3.311
10	3.313	3.311
12	3.313	3.311
15	3.313	3.311
18	3.313	3.311
20	3.313	3.311
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Note: Slanted line shows the range of the rated input voltage.

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Object	+3.3V0.6A																																																					
1.Graph	<p style="text-align: center;"> <span style="display: inline-block; width: 15px; height: 10px; border-left: 2px solid black; border-bottom: 2px solid black; transform: rotate(45deg); margin-right: 5px;"></span> Input Volt. 9V  <span style="display: inline-block; width: 15px; height: 10px; border-top: 2px dashed black; border-bottom: 2px dashed black; border-left: 2px solid black; transform: rotate(-45deg); margin-right: 5px;"></span> Input Volt. 12V  <span style="display: inline-block; width: 15px; height: 10px; border-top: 2px dashed black; border-left: 2px solid black; transform: rotate(-135deg); margin-right: 5px;"></span> Input Volt. 18V       </p>  <p>Note: Slanted line shows the range of the rated load current.</p>	2.Values																																																				
			<table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.00</td><td>3.314</td><td>3.314</td><td>3.314</td></tr> <tr><td>0.12</td><td>3.314</td><td>3.314</td><td>3.314</td></tr> <tr><td>0.24</td><td>3.313</td><td>3.313</td><td>3.313</td></tr> <tr><td>0.36</td><td>3.313</td><td>3.313</td><td>3.313</td></tr> <tr><td>0.48</td><td>3.312</td><td>3.312</td><td>3.312</td></tr> <tr><td>0.60</td><td>3.312</td><td>3.312</td><td>3.312</td></tr> <tr><td>0.66</td><td>3.311</td><td>3.311</td><td>3.311</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]	Output Voltage [V]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.00	3.314	3.314	3.314	0.12	3.314	3.314	3.314	0.24	3.313	3.313	3.313	0.36	3.313	3.313	3.313	0.48	3.312	3.312	3.312	0.60	3.312	3.312	3.312	0.66	3.311	3.311	3.311	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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COSEL

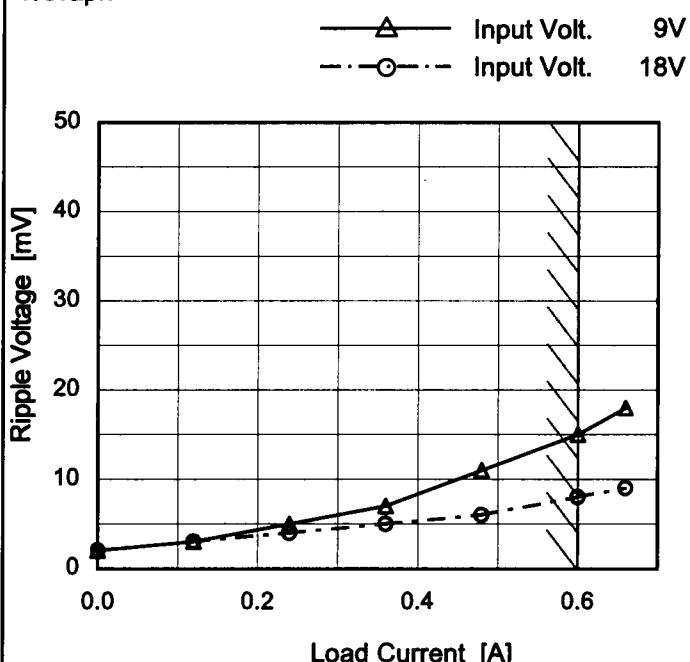


**COSEL**

Model	SUS3123R3
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. 9 [V]	Input Volt. 18 [V]
0.00	2	2
0.12	3	3
0.24	5	4
0.36	7	5
0.48	11	6
0.60	15	8
0.66	18	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]

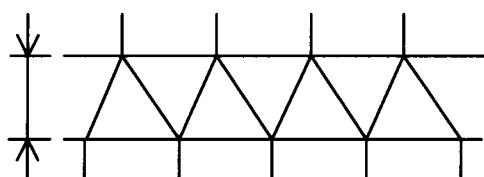


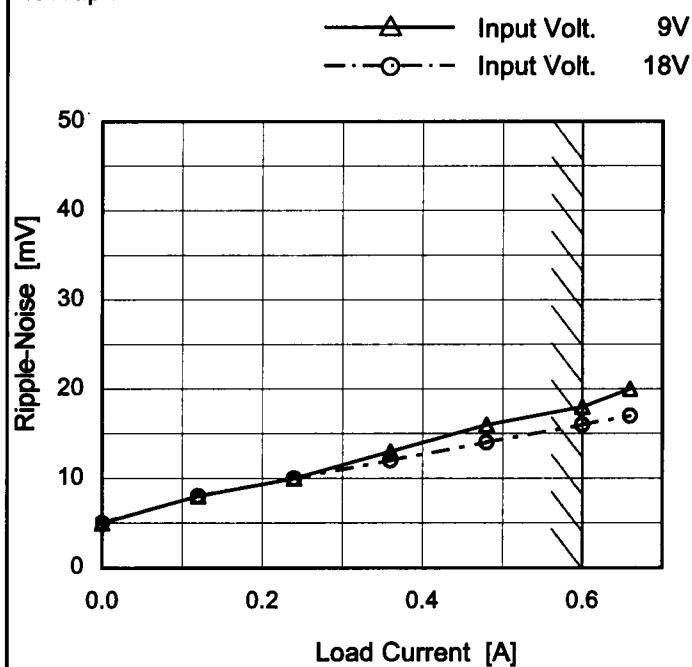
Fig.Complex Ripple Wave Form

**COSEL**

Model	SUS3123R3
Item	Ripple-Noise
Object	+3.3V0.6A

Temperature 25°C  
Testing Circuitry Figure B

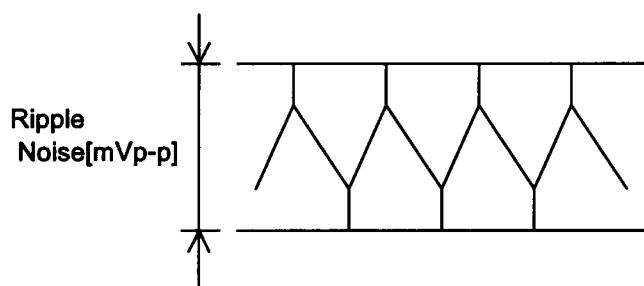
## 1.Graph



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

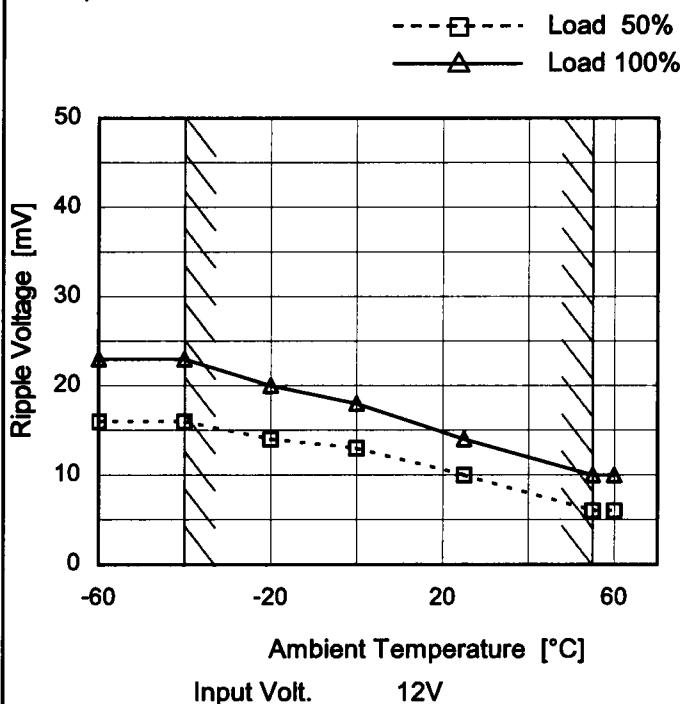
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	5	5
0.12	8	8
0.24	10	10
0.36	13	12
0.48	16	14
0.60	18	16
0.66	20	17
--	-	-
--	-	-
--	-	-
--	-	-



**COSEL**

Model	SUS3123R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V0.6A

## 1. Graph



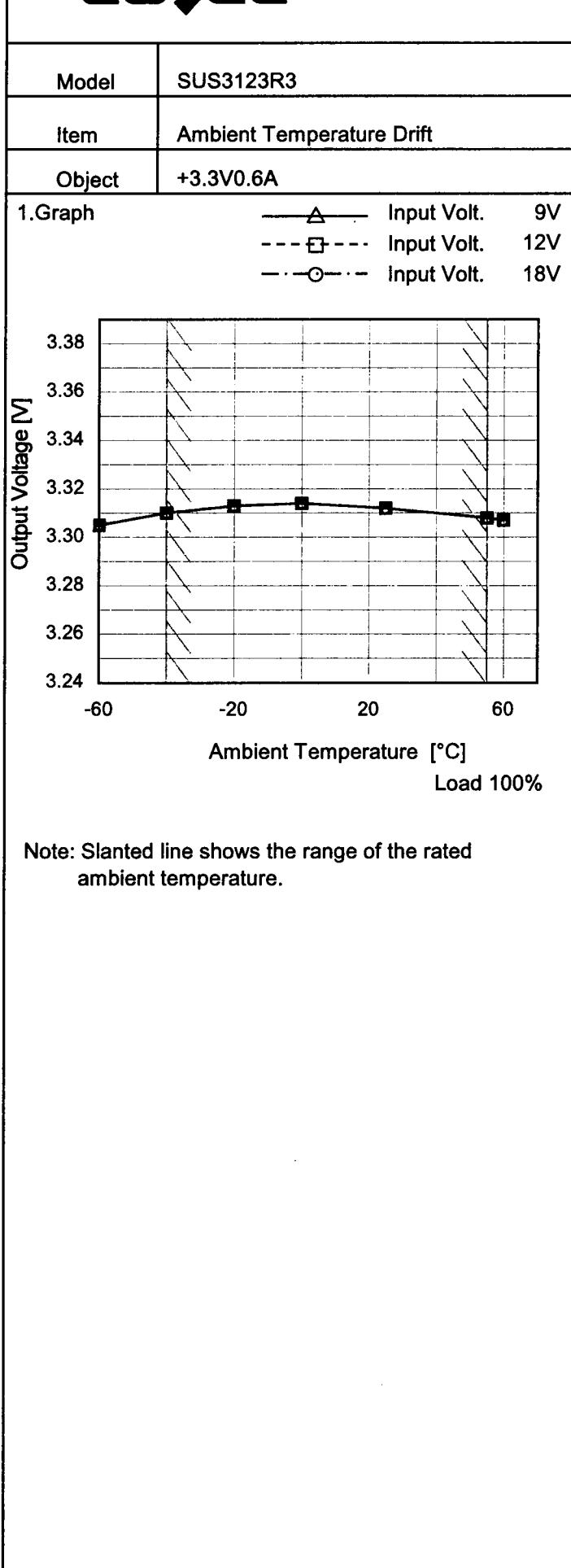
Measured by 100 MHz Oscilloscope.

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	16	23
-40	16	23
-20	14	20
0	13	18
25	10	14
55	6	10
60	6	10
--	-	-
--	-	-
--	-	-
--	-	-

**COSEL**


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	3.305	3.305	3.305
-40	3.310	3.310	3.310
-20	3.313	3.313	3.313
0	3.314	3.314	3.314
25	3.312	3.312	3.312
55	3.308	3.308	3.308
60	3.307	3.307	3.307
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	SUS3123R3	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 : 9 - 18V

Load Current : 0 - 0.6A

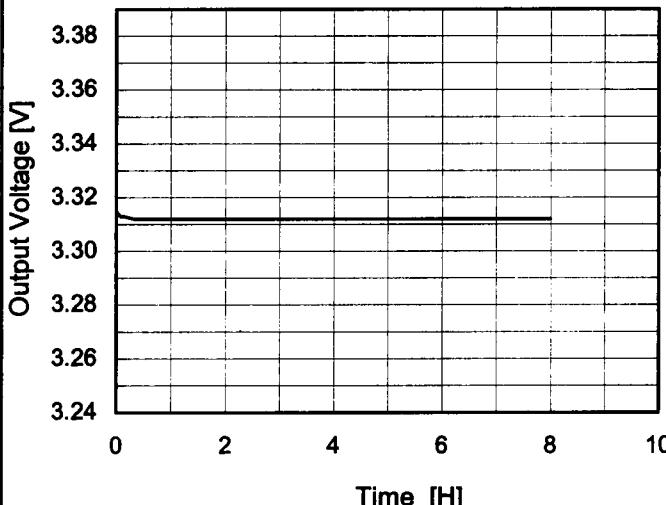
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	0	9	0	3.317	$\pm 5$	$\pm 0.2$
Minimum Voltage	55	18	0.6	3.308		

**COSEL**

Model	SUS3123R3	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+3.3V0.6A																								
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>3.315</td></tr> <tr><td>0.5</td><td>3.312</td></tr> <tr><td>1.0</td><td>3.312</td></tr> <tr><td>2.0</td><td>3.312</td></tr> <tr><td>3.0</td><td>3.312</td></tr> <tr><td>4.0</td><td>3.312</td></tr> <tr><td>5.0</td><td>3.312</td></tr> <tr><td>6.0</td><td>3.312</td></tr> <tr><td>7.0</td><td>3.312</td></tr> <tr><td>8.0</td><td>3.312</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	3.315	0.5	3.312	1.0	3.312	2.0	3.312	3.0	3.312	4.0	3.312	5.0	3.312	6.0	3.312	7.0	3.312	8.0	3.312
Time since start [H]	Output Voltage [V]																								
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5.0	3.312																								
6.0	3.312																								
7.0	3.312																								
8.0	3.312																								

**COSEL**

Model SUS3123R3

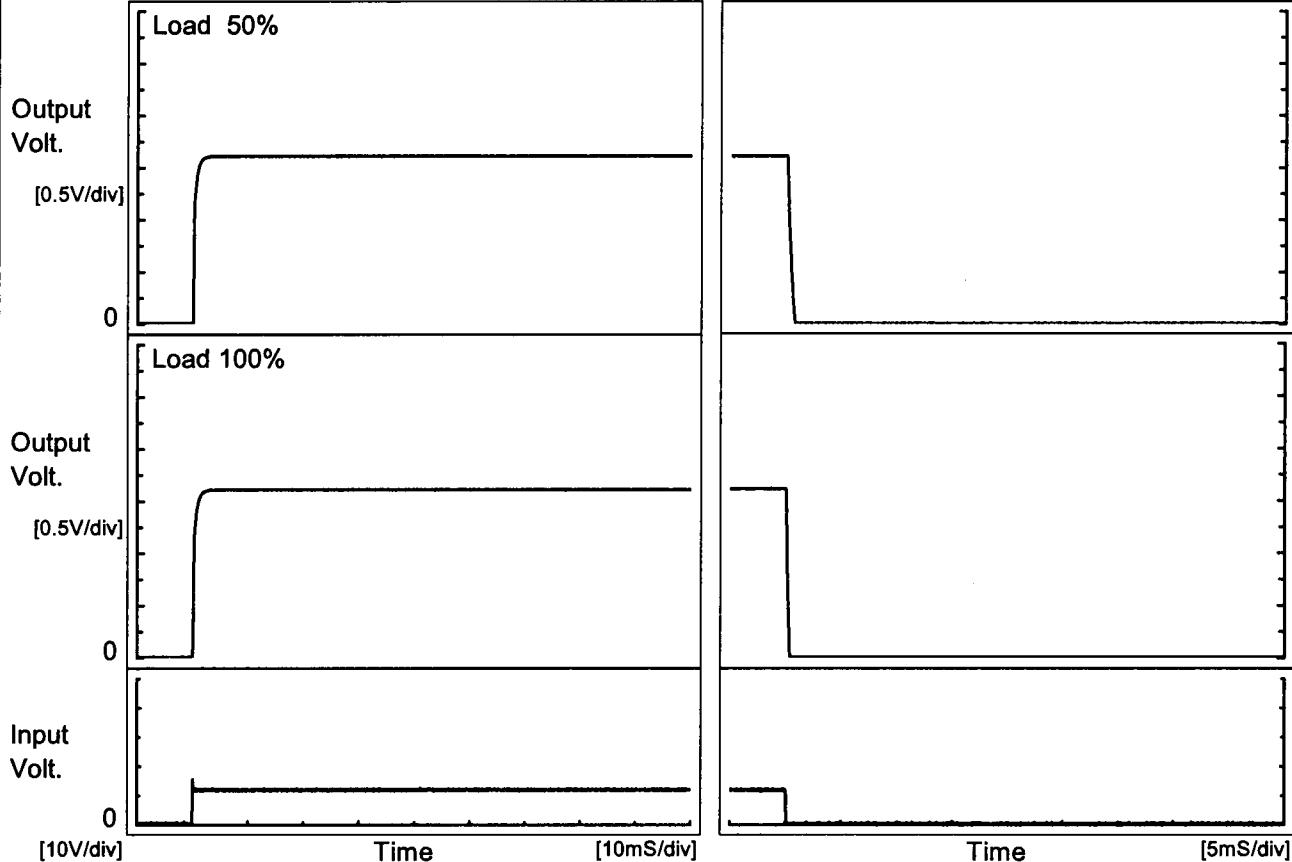
Item Rise and Fall Time

Object +3.3V0.6A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph

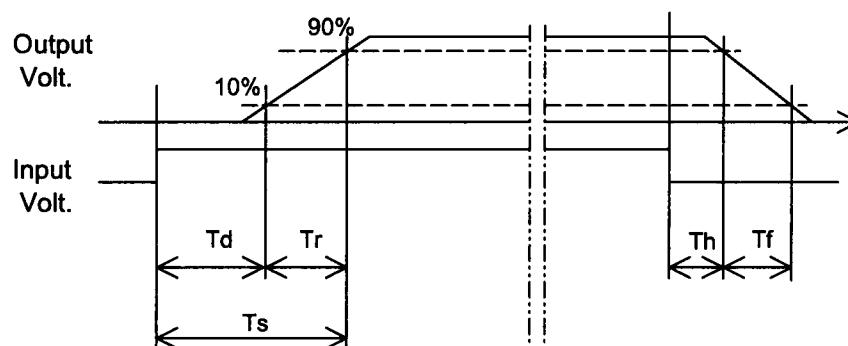
Input Volt. 12 V



## 2. Values

[mS]

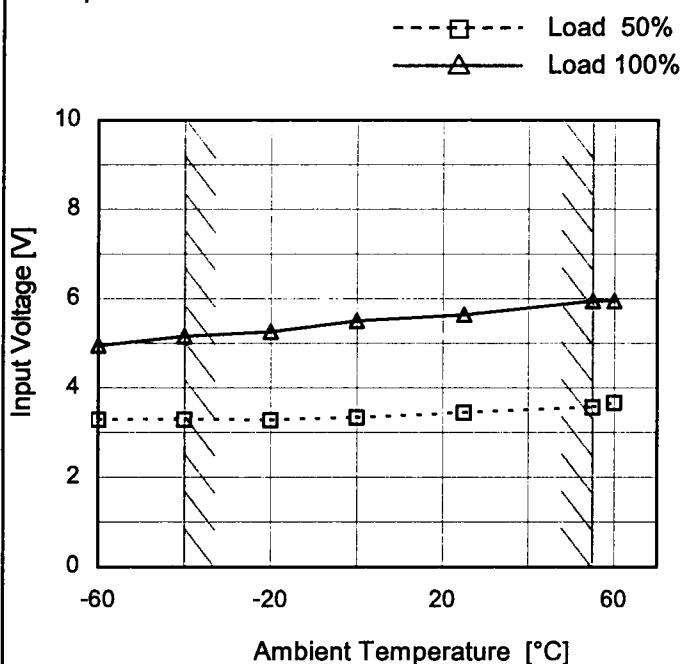
Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	1.0	1.1	0.1	0.6
100 %		0.1	1.0	1.1	0.1	0.3



**COSEL**

Model	SUS3123R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V0.6A

## 1.Graph



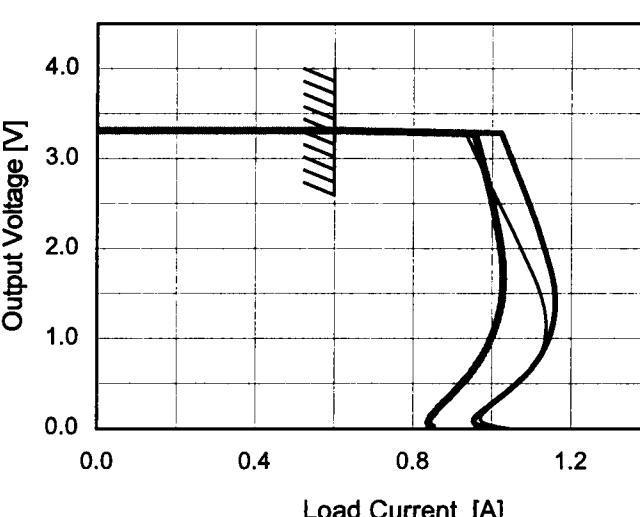
Note: Slanted line shows the range of the rated ambient temperature.

## Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.3	5.0
-40	3.3	5.2
-20	3.3	5.3
0	3.4	5.5
25	3.5	5.7
55	3.6	6.0
60	3.7	6.0
--	-	-
--	-	-
--	-	-
--	-	-

**COSEL**

Model	SUS3123R3
Item	Overcurrent Protection
Object	+3.3V0.6A
1.Graph	
<p style="text-align: center;">     ————— Input Volt. 9V      ————— Input Volt. 12V      ————— Input Volt. 18V   </p>  <p>Note: Slanted line shows the range of the rated load current.</p>	

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]
3.30	0.60	0.60	0.60
3.14	0.95	1.04	0.97
2.97	0.97	1.05	0.97
2.64	1.00	1.08	0.99
2.31	1.04	1.11	1.01
1.98	1.08	1.14	1.02
1.65	1.11	1.16	1.03
1.32	1.13	1.16	1.02
0.99	1.14	1.15	1.00
0.66	1.10	1.10	0.95
0.33	1.02	1.02	0.89
0.00	1.05	0.98	0.85

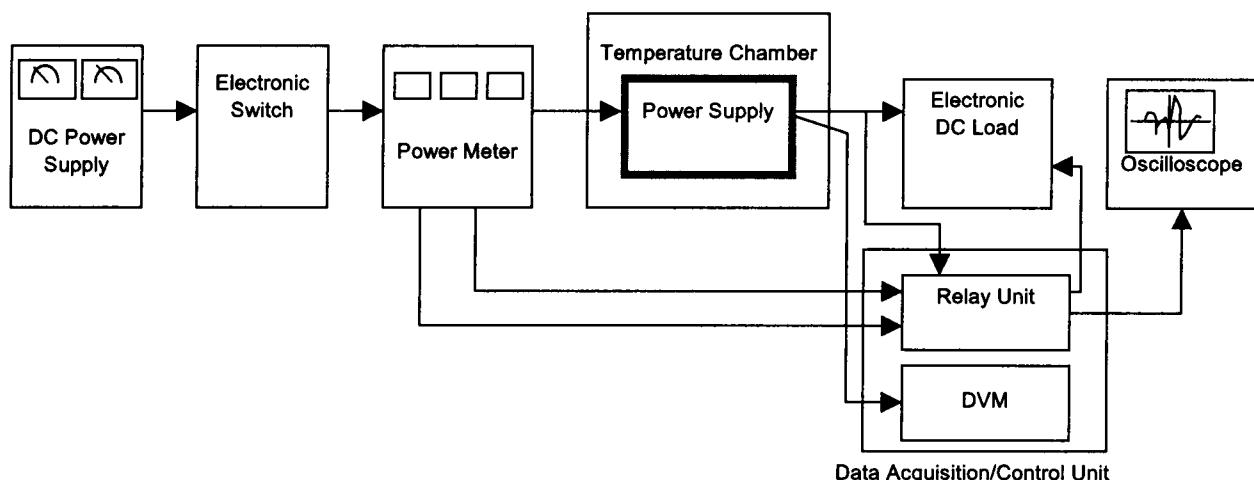


Figure A

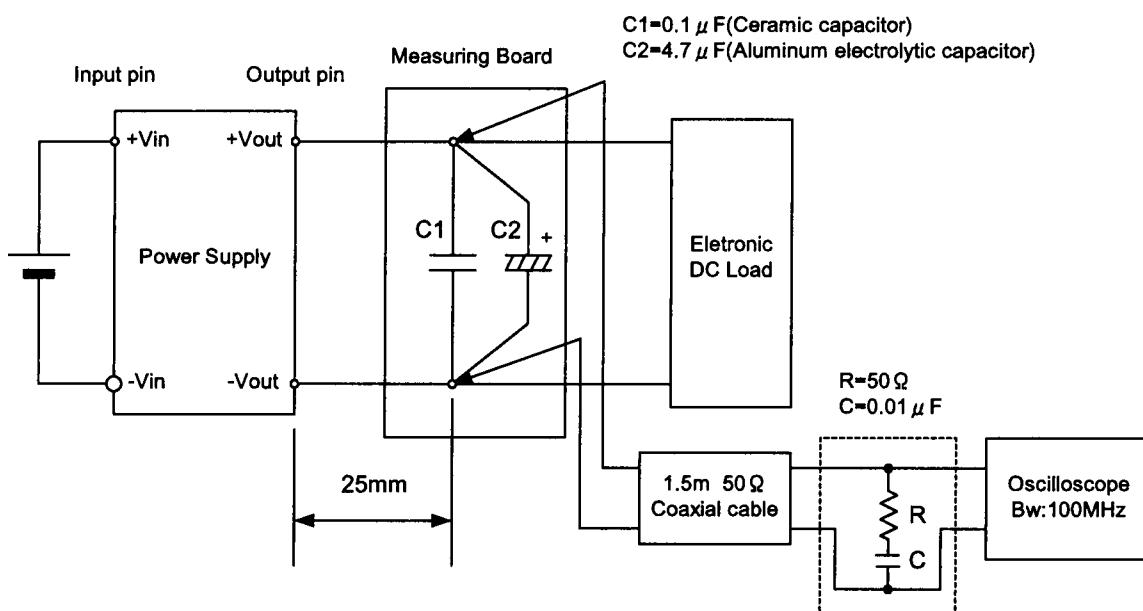


Figure B (Ripple and Ripple noise Characteristic)