

# TEST DATA OF SUS6123R3 SUCS6123R3

Regulated DC Power Supply  
Feb 18, 2005

Approved by : Tetsuo Sugimori  
Tetsuo Sugimori Design Manager

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**COSEL CO.,LTD.**



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Item		Input Current (by Load Current)		Testing Circuitry Figure A	
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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>		2.Values	
<div><div><div>Input Current [A]</div><div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div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# COSEL

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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> <div><div><div>Efficiency [%]</div><div>90</div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div></div><div><div>0.0</div><div>0.4</div><div>0.8</div><div>1.2</div><div>1.6</div></div><div><div>0.2</div><div>0.6</div><div>1.0</div><div>1.4</div></div></div> <div><div>Note: Slanted line shows the range of the rated load current.</div></div>		2.Values		<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>0.200</td><td>53.4</td><td>49.6</td><td>40.1</td></tr><tr><td>0.400</td><td>65.2</td><td>62.7</td><td>54.9</td></tr><tr><td>0.600</td><td>69.9</td><td>68.4</td><td>62.4</td></tr><tr><td>0.800</td><td>72.2</td><td>71.4</td><td>66.8</td></tr><tr><td>1.000</td><td>73.5</td><td>73.1</td><td>69.5</td></tr><tr><td>1.200</td><td>73.8</td><td>74.1</td><td>71.3</td></tr><tr><td>1.350</td><td>74.0</td><td>74.5</td><td>72.3</td></tr><tr><td>1.485</td><td>74.0</td><td>74.8</td><td>72.9</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	-	-	-	0.200	53.4	49.6	40.1	0.400	65.2	62.7	54.9	0.600	69.9	68.4	62.4	0.800	72.2	71.4	66.8	1.000	73.5	73.1	69.5	1.200	73.8	74.1	71.3	1.350	74.0	74.5	72.3	1.485	74.0	74.8	72.9	--	-	-	-	--	-	-	-
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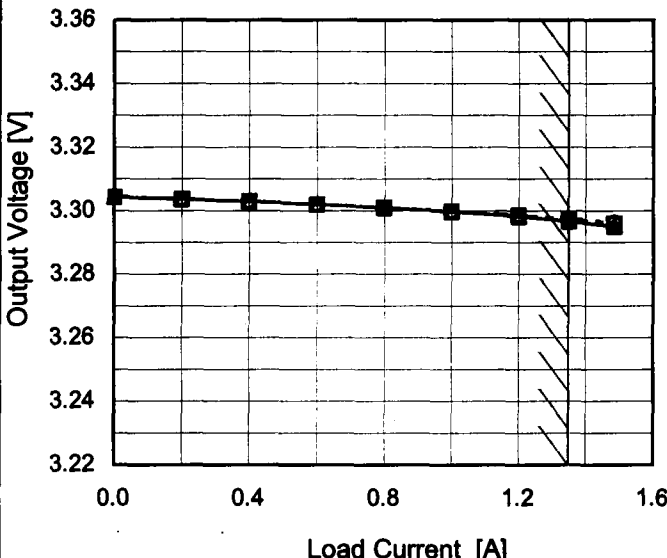
BC-3700

**COSEL**

Model	SUS6123R3/SUCS6123R3																																																																
Item	Line Regulation	Temperature	25°C																																																														
Object	+3.3V1.35A	Testing Circuitry	Figure A																																																														
1.Graph		2.Values																																																															
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**COSEL**

Model	SUS6123R3/SUCS6123R3																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+3.3V1.35A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div>—△— Input Volt. 9V</div><div>---□--- Input Volt. 12V</div><div>-·-○-·- Input Volt. 18V</div></div>  <p>Output Voltage [V]</p> <p>Load Current [A]</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>3.304</td><td>3.304</td><td>3.305</td></tr><tr><td>0.200</td><td>3.304</td><td>3.304</td><td>3.304</td></tr><tr><td>0.400</td><td>3.303</td><td>3.303</td><td>3.303</td></tr><tr><td>0.600</td><td>3.302</td><td>3.302</td><td>3.302</td></tr><tr><td>0.800</td><td>3.301</td><td>3.301</td><td>3.301</td></tr><tr><td>1.000</td><td>3.300</td><td>3.300</td><td>3.300</td></tr><tr><td>1.200</td><td>3.298</td><td>3.299</td><td>3.298</td></tr><tr><td>1.350</td><td>3.297</td><td>3.297</td><td>3.297</td></tr><tr><td>1.485</td><td>3.295</td><td>3.296</td><td>3.296</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	3.304	3.304	3.305	0.200	3.304	3.304	3.304	0.400	3.303	3.303	3.303	0.600	3.302	3.302	3.302	0.800	3.301	3.301	3.301	1.000	3.300	3.300	3.300	1.200	3.298	3.299	3.298	1.350	3.297	3.297	3.297	1.485	3.295	3.296	3.296	--	-	-	-	--	-	-	-
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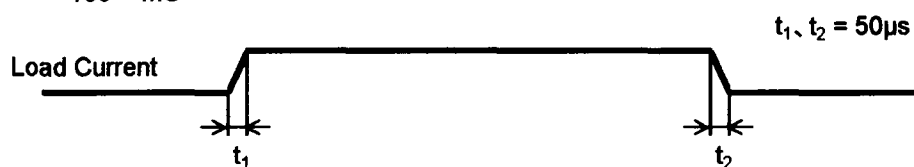
- 7 -

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# COSEL

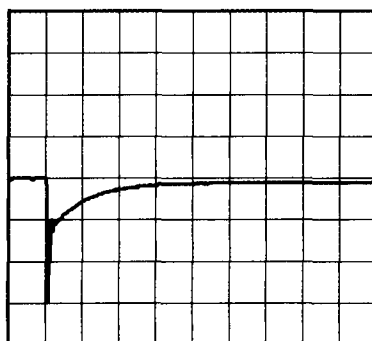
Model	SUS6123R3/SUCS6123R3	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V1.35A		

Input Volt. 12 V  
Cycle 100 mS

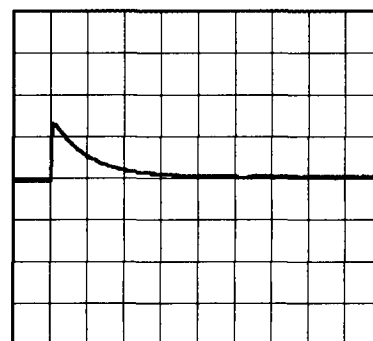


Min. Load (0A)  $\longleftrightarrow$   
Load 100% (1.35A)

100mV/div



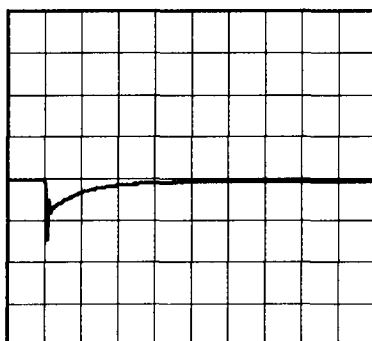
500µs/div



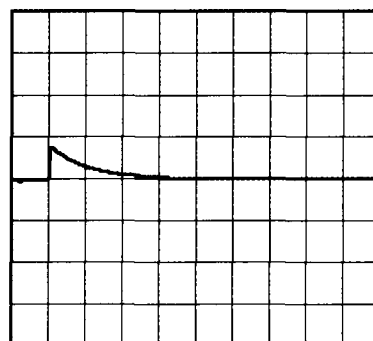
500µs/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (0.675A)

100mV/div



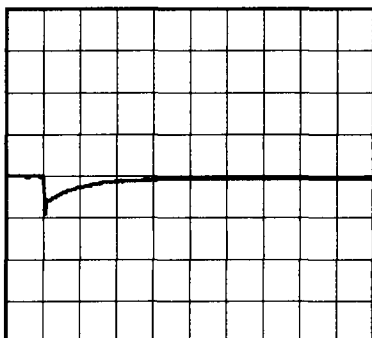
500µs/div



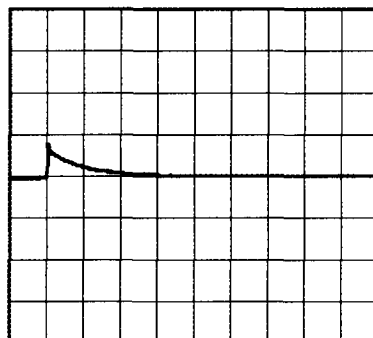
500µs/div

Load 50% (0.675A)  $\longleftrightarrow$   
Load 100% (1.35A)

100mV/div

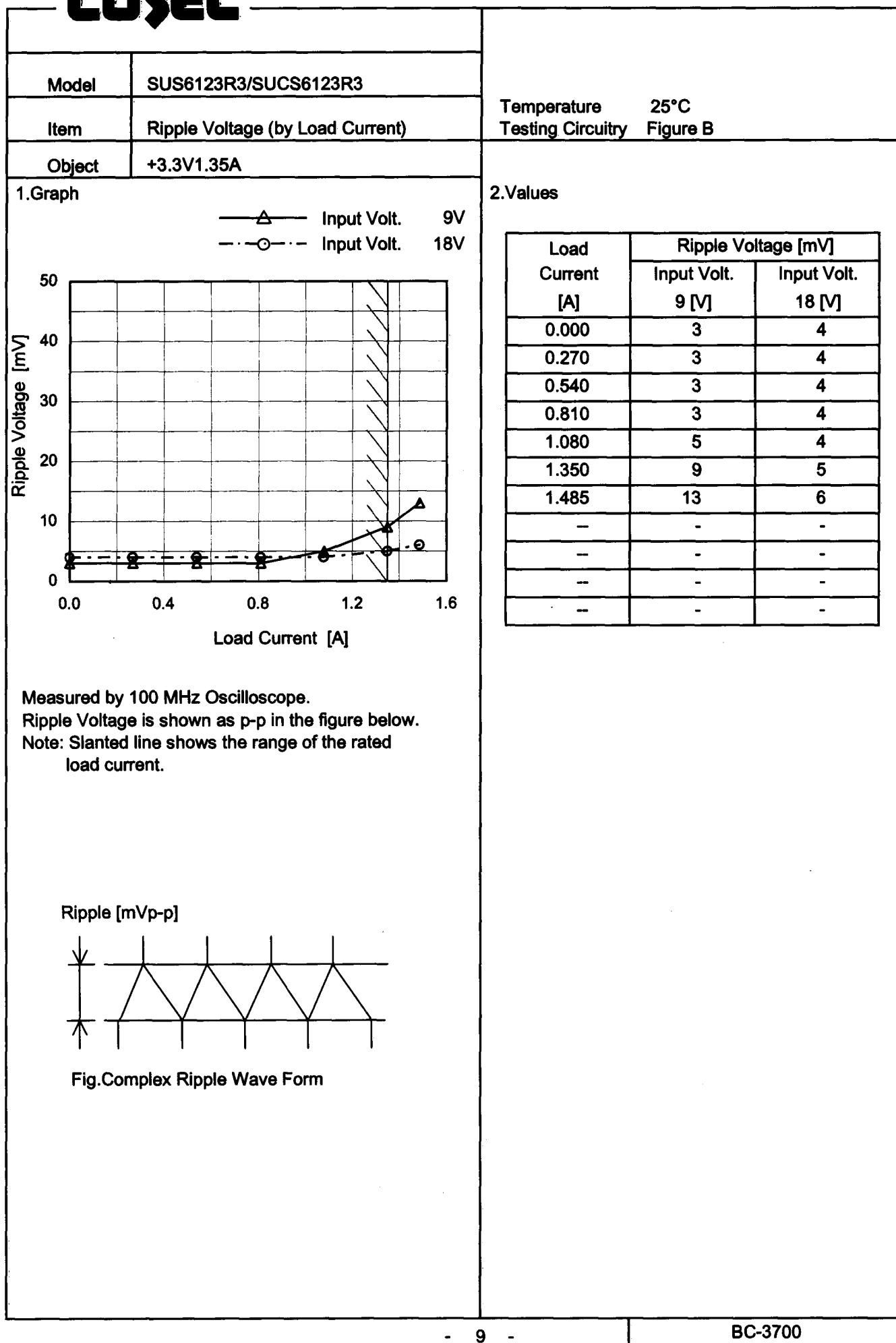


500µs/div

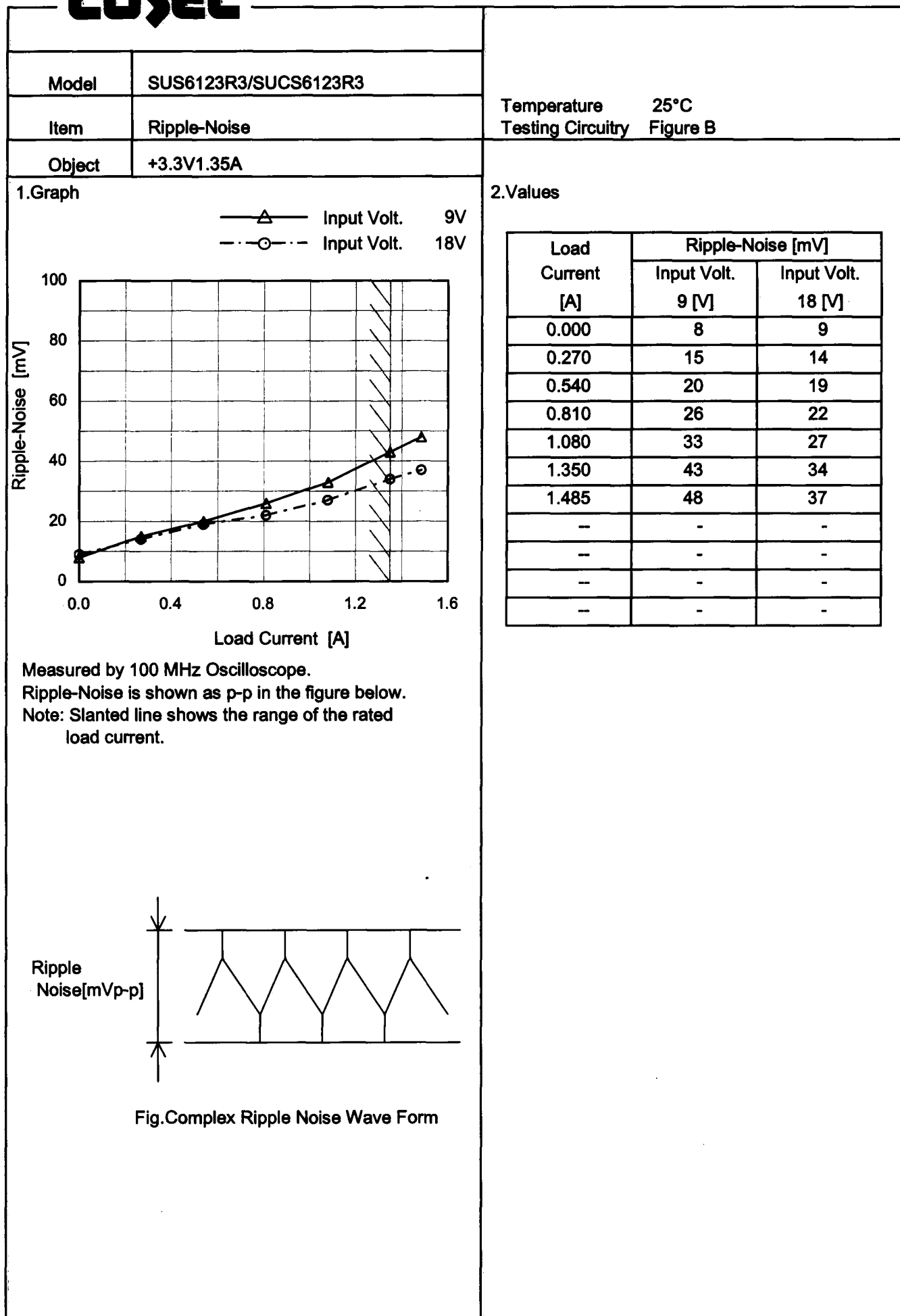


500µs/div

# COSEL



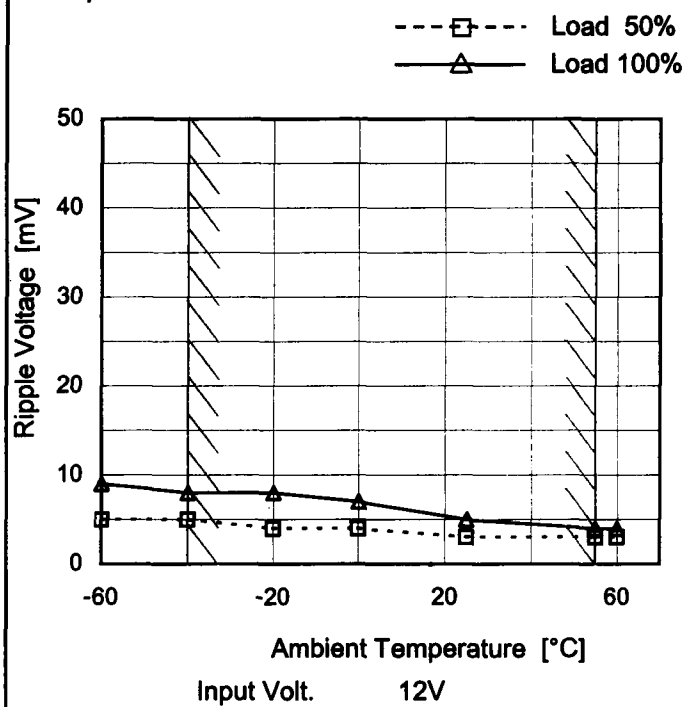
# COSEL



# COSEL

Model	SUS6123R3/SUCS6123R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V1.35A

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	5	9
-40	5	8
-20	4	8
0	4	7
25	3	5
55	3	4
60	3	4
--	-	-
--	-	-
--	-	-
--	-	-

# COSEL

Model		SUS6123R3/SUCS6123R3																																																				
Item		Ambient Temperature Drift																																																				
Object		+3.3V1.35A																																																				
1.Graph		2.Values																																																				
<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> <div><p>Output Voltage [V]</p><p>Ambient Temperature [°C]</p><p>Load 100%</p></div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</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>-60</td><td>3.291</td><td>3.292</td><td>3.292</td></tr><tr><td>-40</td><td>3.294</td><td>3.296</td><td>3.296</td></tr><tr><td>-20</td><td>3.296</td><td>3.297</td><td>3.297</td></tr><tr><td>0</td><td>3.297</td><td>3.298</td><td>3.298</td></tr><tr><td>25</td><td>3.296</td><td>3.297</td><td>3.297</td></tr><tr><td>55</td><td>3.294</td><td>3.294</td><td>3.293</td></tr><tr><td>60</td><td>3.293</td><td>3.293</td><td>3.293</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></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	-60	3.291	3.292	3.292	-40	3.294	3.296	3.296	-20	3.296	3.297	3.297	0	3.297	3.298	3.298	25	3.296	3.297	3.297	55	3.294	3.294	3.293	60	3.293	3.293	3.293	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		SUS6123R3/SUCS6123R3	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+3.3V1.35A	

### 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 - 1.35A

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

\* 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	18	0	3.305	±6	±0.2
Minimum Voltage	55	18	1.35	3.293		

**COSEL**

Model	SUS6123R3/SUCS6123R3																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+3.3V1.35A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><div><div>3.36</div><div>3.34</div><div>3.32</div><div>3.30</div><div>3.28</div><div>3.26</div><div>3.24</div><div>3.22</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div><div><div>Output Voltage [V]</div><div>Time [H]</div></div><div><div>Input Volt.</div><div>12V</div></div><div><div>Load</div><div>100%</div></div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>3.298</td></tr><tr><td>0.5</td><td>3.296</td></tr><tr><td>1.0</td><td>3.296</td></tr><tr><td>2.0</td><td>3.296</td></tr><tr><td>3.0</td><td>3.296</td></tr><tr><td>4.0</td><td>3.296</td></tr><tr><td>5.0</td><td>3.296</td></tr><tr><td>6.0</td><td>3.296</td></tr><tr><td>7.0</td><td>3.296</td></tr><tr><td>8.0</td><td>3.296</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	3.298	0.5	3.296	1.0	3.296	2.0	3.296	3.0	3.296	4.0	3.296	5.0	3.296	6.0	3.296	7.0	3.296	8.0	3.296
Time since start [H]	Output Voltage [V]																								
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6.0	3.296																								
7.0	3.296																								
8.0	3.296																								

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BC-3700

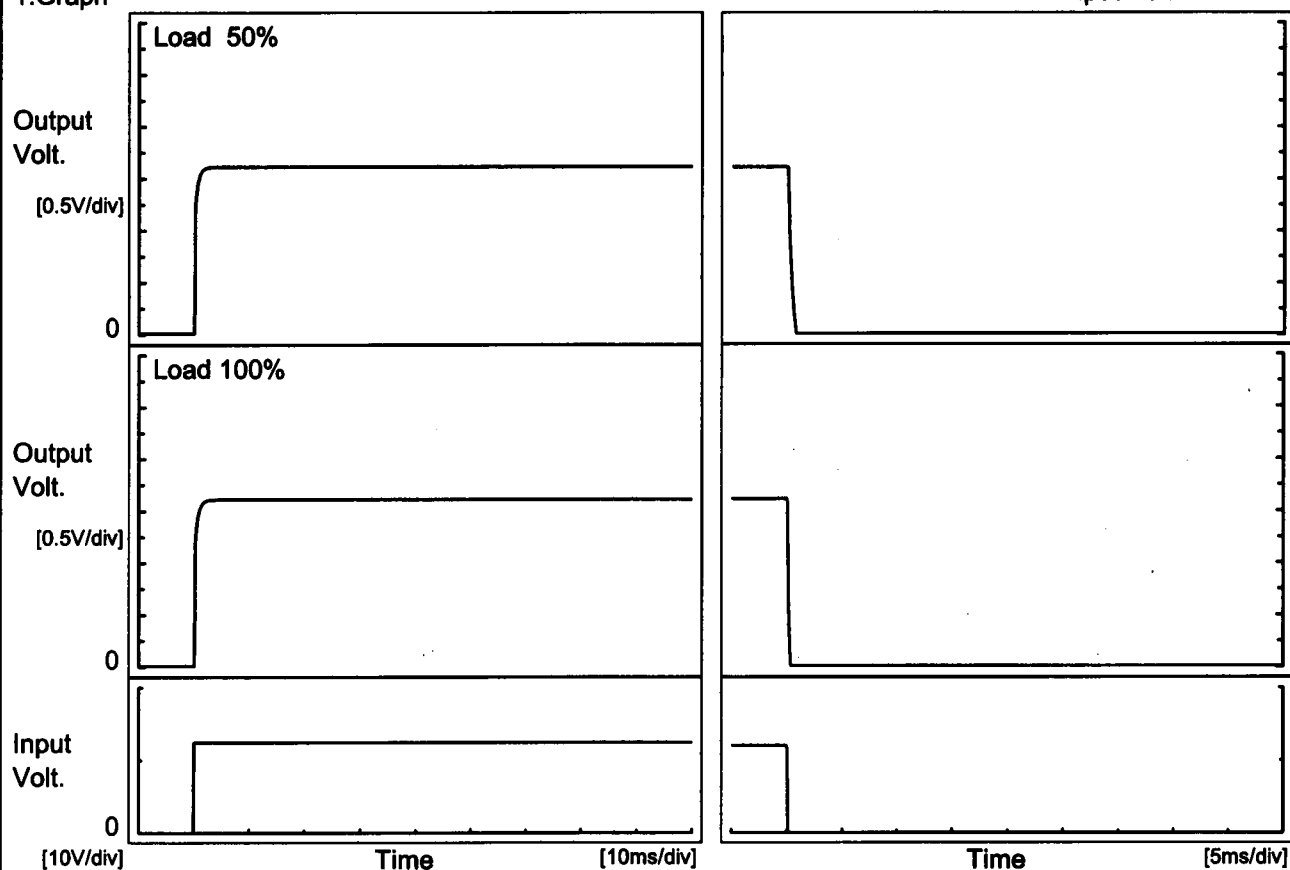


**COSEL**

Model	SUS6123R3/SUCS6123R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V1.35A		

## 1.Graph

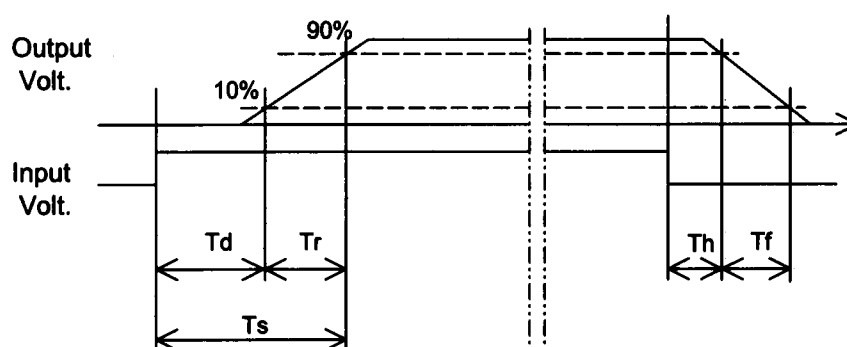
Input Volt. 12 V



## 2.Values

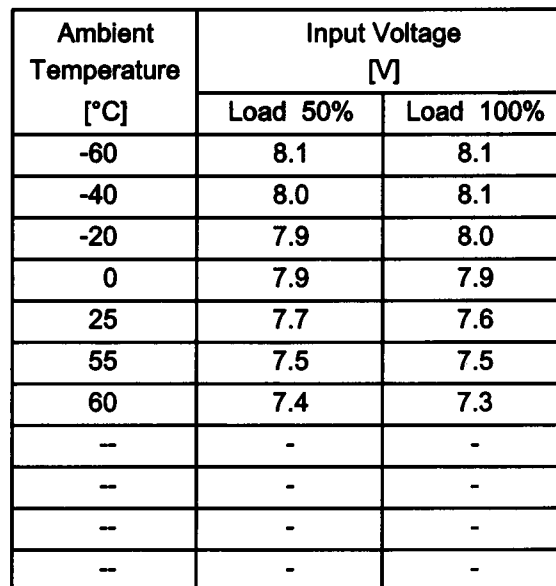
[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	0.8	1.0	0.1	0.6
100 %	0.2	0.9	1.1	0.1	0.2



### Testing Circuitry Figure A

## 2.Values



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

Temperature 25°C  
Testing Circuitry Figure A



Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
3.30	1.35	1.35	1.35
3.14	1.89	2.05	2.13
2.97	1.91	2.06	2.14
2.64	1.95	2.08	2.15
2.31	1.98	2.10	2.15
1.98	2.16	2.30	2.35
1.65	2.21	2.33	2.38
1.32	2.24	2.33	2.38
0.99	2.25	2.30	2.34
0.66	2.21	2.23	2.26
0.33	2.12	2.13	2.15
0.00	2.00	1.98	2.14

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

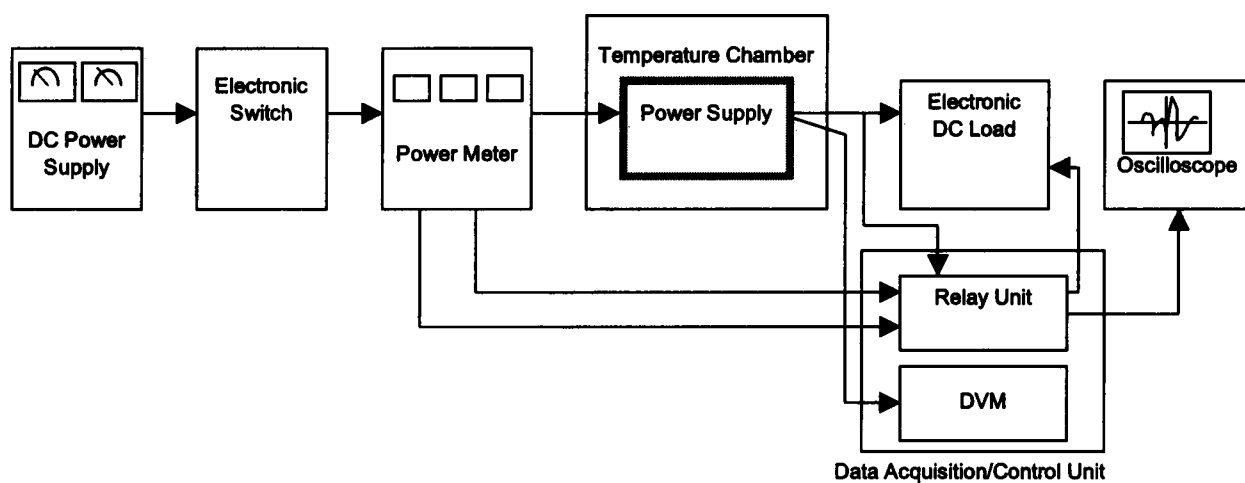


Figure A

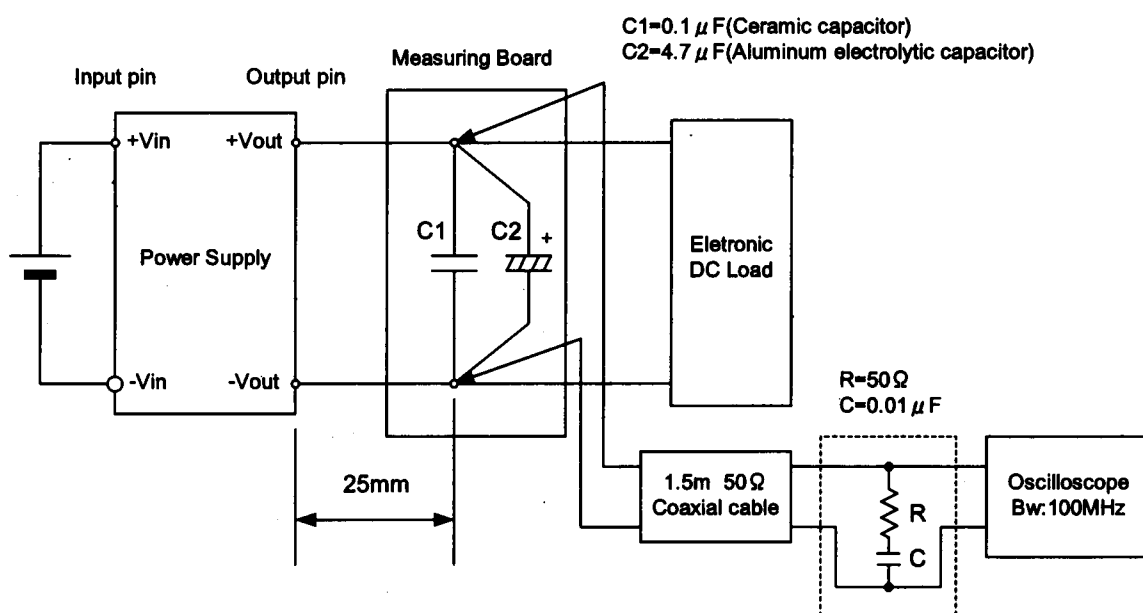


Figure B (Ripple and Ripple noise Characteristic)