

TEST DATA OF SUS1R5123R3

Regulated DC Power Supply
Sep 16, 2004

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Masahiro Shima Design Engineer

COSEL CO.,LTD.

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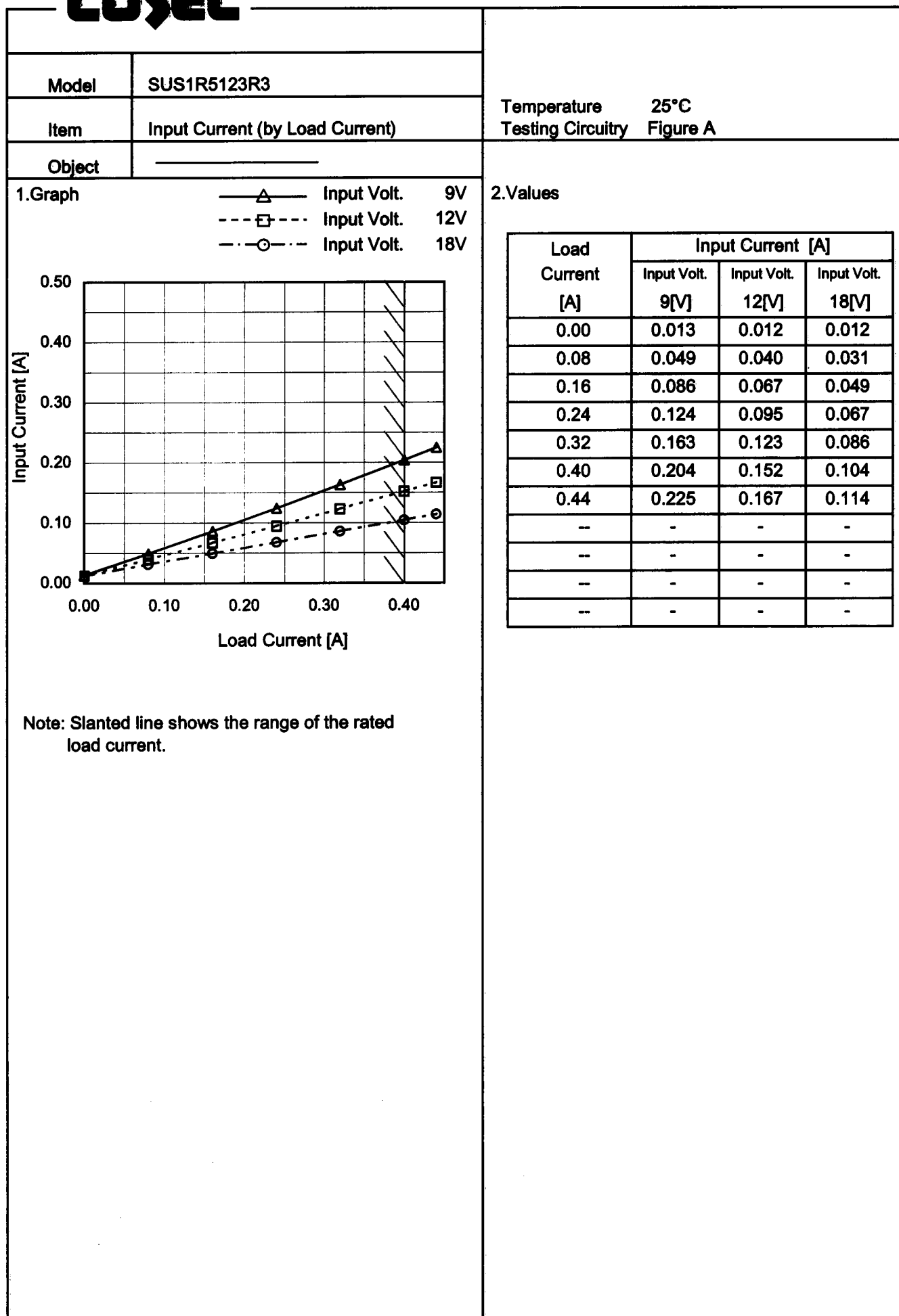
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(Final Page 18)

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Model	SUS1R5123R3																																																																									
Item	Input Current (by Input Voltage)	Temperature	25°C																																																																							
Object		Testing Circuitry	Figure A																																																																							
1.Graph		2.Values																																																																								
<div><div>—△— Load 100%</div><div>---□--- Load 50%</div><div>---○--- Load 0%</div></div> <p>Note: Slanted line shows the range of the rated input voltage.</p>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Load 0%</th><th>Load 50%</th><th>Load 100%</th></tr><tr><td>0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>2.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>2.2</td><td>0.034</td><td>0.001</td><td>0.001</td></tr><tr><td>3.8</td><td>0.018</td><td>0.296</td><td>0.295</td></tr><tr><td>4.0</td><td>0.018</td><td>0.280</td><td>0.294</td></tr><tr><td>6.0</td><td>0.015</td><td>0.157</td><td>0.315</td></tr><tr><td>8.0</td><td>0.014</td><td>0.117</td><td>0.230</td></tr><tr><td>9.0</td><td>0.013</td><td>0.105</td><td>0.203</td></tr><tr><td>10.0</td><td>0.013</td><td>0.095</td><td>0.182</td></tr><tr><td>12.0</td><td>0.012</td><td>0.080</td><td>0.152</td></tr><tr><td>14.0</td><td>0.012</td><td>0.071</td><td>0.131</td></tr><tr><td>16.0</td><td>0.012</td><td>0.064</td><td>0.116</td></tr><tr><td>18.0</td><td>0.012</td><td>0.059</td><td>0.105</td></tr><tr><td>20.0</td><td>0.012</td><td>0.055</td><td>0.096</td></tr><tr><td>—</td><td>-</td><td>-</td><td>-</td></tr><tr><td>—</td><td>-</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Input Current [A]			Load 0%	Load 50%	Load 100%	0	0.000	0.000	0.000	2.0	0.000	0.000	0.000	2.2	0.034	0.001	0.001	3.8	0.018	0.296	0.295	4.0	0.018	0.280	0.294	6.0	0.015	0.157	0.315	8.0	0.014	0.117	0.230	9.0	0.013	0.105	0.203	10.0	0.013	0.095	0.182	12.0	0.012	0.080	0.152	14.0	0.012	0.071	0.131	16.0	0.012	0.064	0.116	18.0	0.012	0.059	0.105	20.0	0.012	0.055	0.096	—	-	-	-	—	-	-	-
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Temperature 25°C
Testing Circuitry Figure A



Load Current [A]	Input Power [W]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	0.12	0.15	0.22
0.08	0.44	0.47	0.56
0.16	0.77	0.80	0.89
0.24	1.11	1.13	1.22
0.32	1.45	1.46	1.54
0.40	1.80	1.80	1.87
0.44	1.99	1.98	2.04
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model		SUS1R5123R3	
Item		Efficiency (by Input Voltage)	
Object			

1.Graph

Load 50%

Load 100%

Efficiency [%]

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Item		Efficiency (by Load Current)																																																				
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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>Efficiency [%]</p> <p>Load Current [A]</p>		<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>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.08</td><td>59.3</td><td>55.5</td><td>46.8</td></tr><tr><td>0.16</td><td>68.3</td><td>65.9</td><td>59.0</td></tr><tr><td>0.24</td><td>71.4</td><td>69.9</td><td>65.0</td></tr><tr><td>0.32</td><td>72.6</td><td>72.0</td><td>68.2</td></tr><tr><td>0.40</td><td>72.9</td><td>72.9</td><td>70.2</td></tr><tr><td>0.44</td><td>72.8</td><td>73.2</td><td>70.9</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>		Load Current [A]	Efficiency [%]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.00	-	-	-	0.08	59.3	55.5	46.8	0.16	68.3	65.9	59.0	0.24	71.4	69.9	65.0	0.32	72.6	72.0	68.2	0.40	72.9	72.9	70.2	0.44	72.8	73.2	70.9	—	-	-	-	—	-	-	-	—	-	-	-	—	-	-	-
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Model	SUS1R5123R3																																
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Object	+3.3V0.4A	Testing Circuitry	Figure A																														
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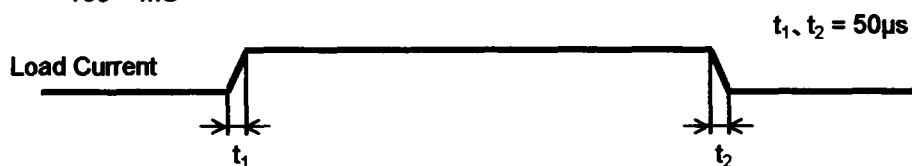
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BC-3629



Model	SUS1R5123R3	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+3.3V0.4A	

Input Volt. 12 V
Cycle 100 mS

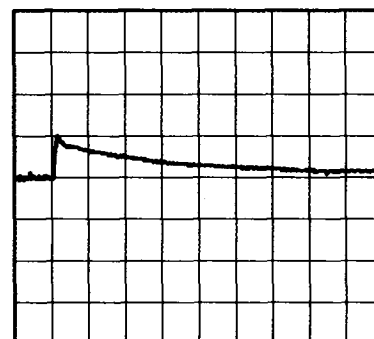


Min. Load (0A) \longleftrightarrow
Load 100% (0.4A)

100mV/div



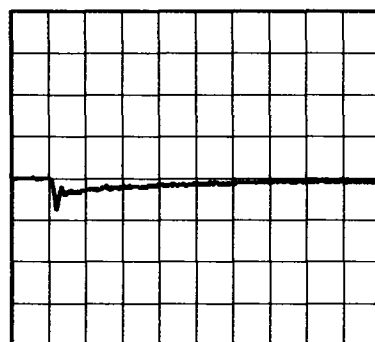
200µs/div



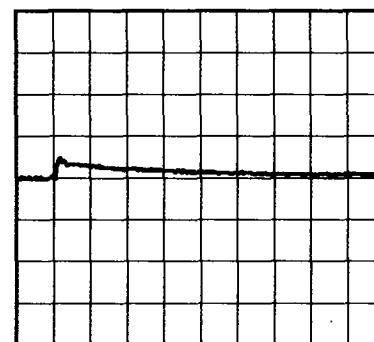
200µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.2A)

100mV/div



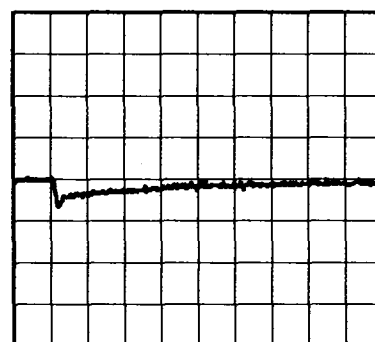
200µs/div



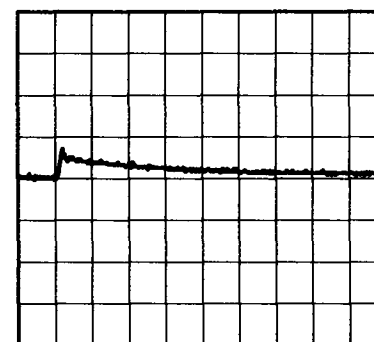
200µs/div

Load 50% (0.2A) \longleftrightarrow
Load 100% (0.4A)

100mV/div



200µs/div



200µs/div

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Model

SUS1R5123R3

Item

Ripple Voltage (by Load Current)

Object

+3.3V0.4A

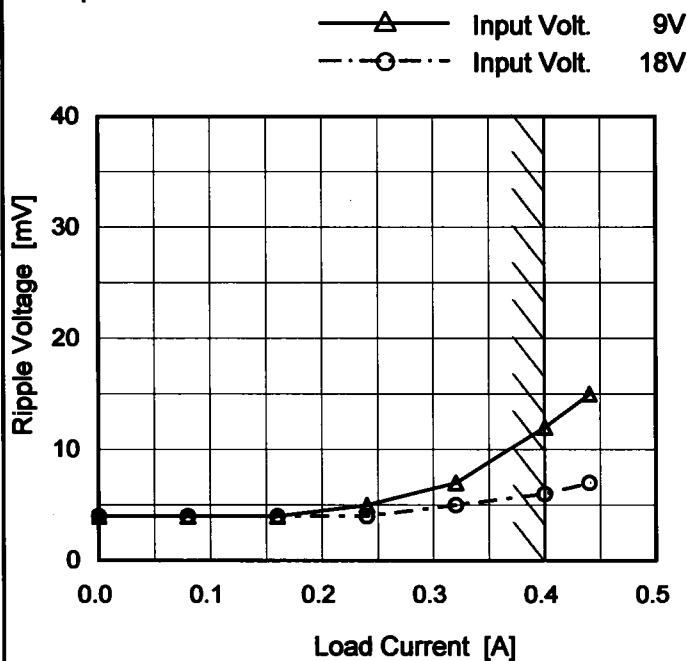
Temperature

25°C

Testing Circuitry

Figure B

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.

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	4	4
0.08	4	4
0.16	4	4
0.24	5	4
0.32	7	5
0.40	12	6
0.44	15	7
-	-	-
-	-	-
-	-	-
-	-	-

Ripple [mVp-p]

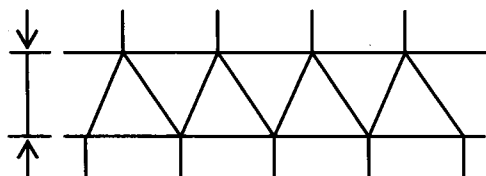


Fig. Complex Ripple Wave Form

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Model	SUS1R5123R3																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+3.3V0.4A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div><div><div></div><div>—△—</div><div>Input Volt.</div><div>9V</div></div><div><div></div><div>---○---</div><div>Input Volt.</div><div>18V</div></div></div><div><p>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.</p></div></div><div><div><div><div></div><div>Ripple Noise[mVp-p]</div></div><div></div></div><div>Fig.Complex Ripple Noise Wave Form</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 9 [V]</th><th>Input Volt. 18 [V]</th></tr><tr><td>0.00</td><td>5</td><td>6</td></tr><tr><td>0.08</td><td>8</td><td>8</td></tr><tr><td>0.16</td><td>10</td><td>10</td></tr><tr><td>0.24</td><td>12</td><td>11</td></tr><tr><td>0.32</td><td>15</td><td>12</td></tr><tr><td>0.40</td><td>16</td><td>13</td></tr><tr><td>0.44</td><td>17</td><td>14</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-Noise [mV]		Input Volt. 9 [V]	Input Volt. 18 [V]	0.00	5	6	0.08	8	8	0.16	10	10	0.24	12	11	0.32	15	12	0.40	16	13	0.44	17	14	—	-	-	—	-	-	—	-	-	—	-	-
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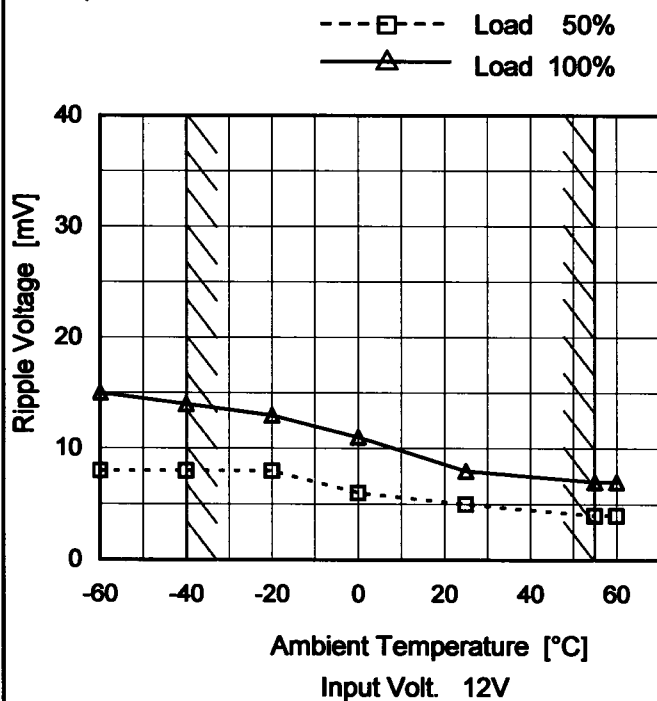
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Model SUS1R5123R3

Item Ripple Voltage (by Ambient Temp.)

Object +3.3V0.4A

Testing Circuitry Figure B

1. Graph


Measured by 100 MHz Oscilloscope.

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

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	8	15
-40	8	14
-20	8	13
0	6	11
25	5	8
55	4	7
60	4	7
—	—	—
—	—	—
—	—	—
—	—	—

Testing Circuitry Figure A



Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	3.277	3.278	3.279
-40	3.284	3.284	3.285
-20	3.288	3.288	3.289
0	3.291	3.291	3.292
25	3.292	3.292	3.293
55	3.290	3.290	3.291
60	3.289	3.290	3.290
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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		Testing Circuitry Figure A
Model	SUS1R5123R3	
Item	Output Voltage Accuracy	
Object	+3.3V0.4A	

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 - 0.4A

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

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

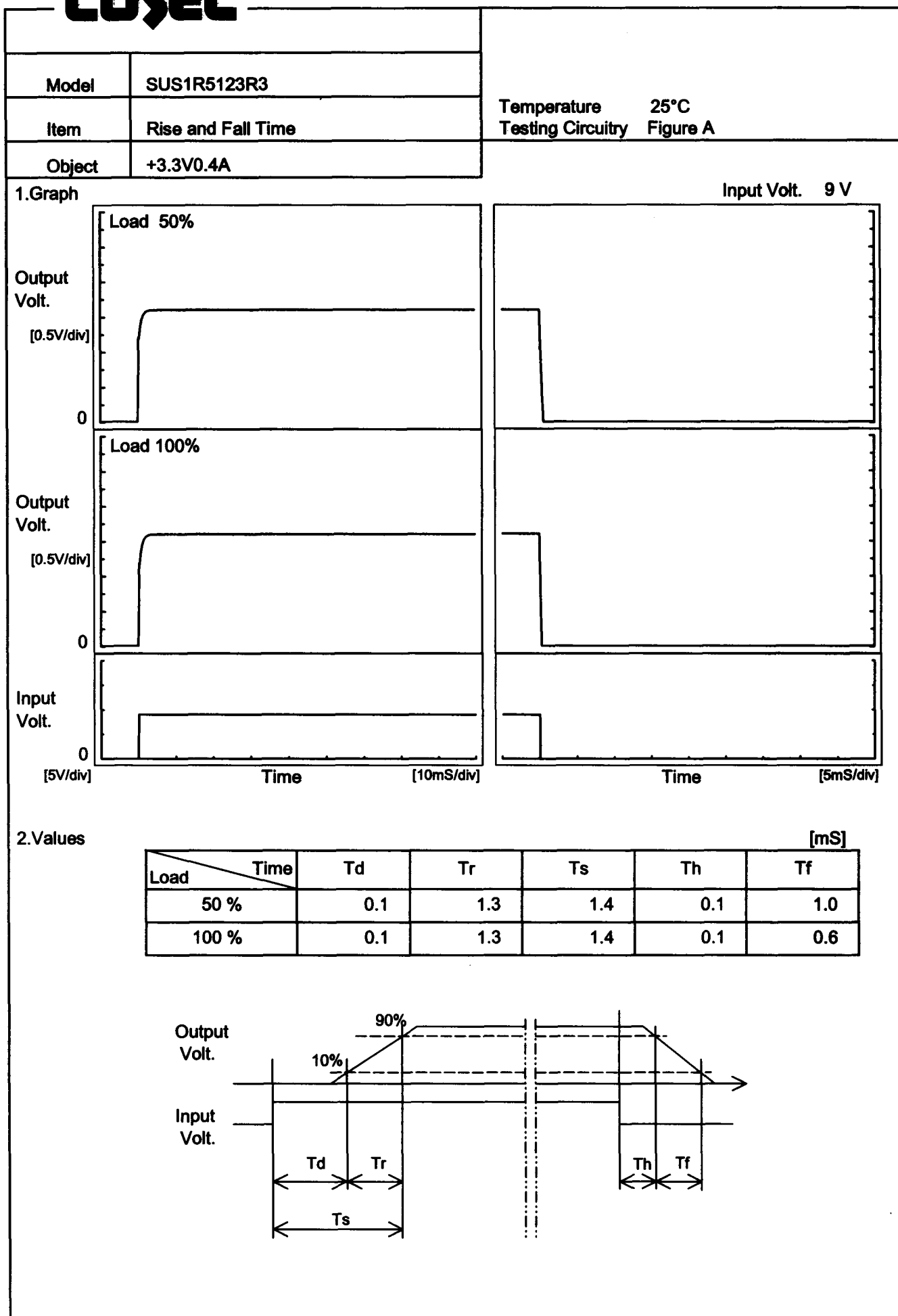
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	18	0	3.297	±7	±0.2
Minimum Voltage	-40	9	0.4	3.284		

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Model	SUS1R5123R3		
Item	Time Lapse Drift	Temperature	25°C
Object	+3.3V0.4A	Testing Circuitry	Figure A
1.Graph		2.Values	
<div><div><div>Output Voltage 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		Testing Circuitry Figure A																																						
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Note: Slanted line shows the range of the rated ambient temperature.																																								
		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-60</td><td>3.6</td><td>5.1</td></tr><tr><td>-40</td><td>3.6</td><td>5.3</td></tr><tr><td>-20</td><td>3.6</td><td>5.4</td></tr><tr><td>0</td><td>3.6</td><td>5.6</td></tr><tr><td>25</td><td>3.7</td><td>5.7</td></tr><tr><td>55</td><td>3.8</td><td>6.0</td></tr><tr><td>60</td><td>3.9</td><td>6.0</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>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-60	3.6	5.1	-40	3.6	5.3	-20	3.6	5.4	0	3.6	5.6	25	3.7	5.7	55	3.8	6.0	60	3.9	6.0	—	-	-	—	-	-	—	-	-	—	-	-
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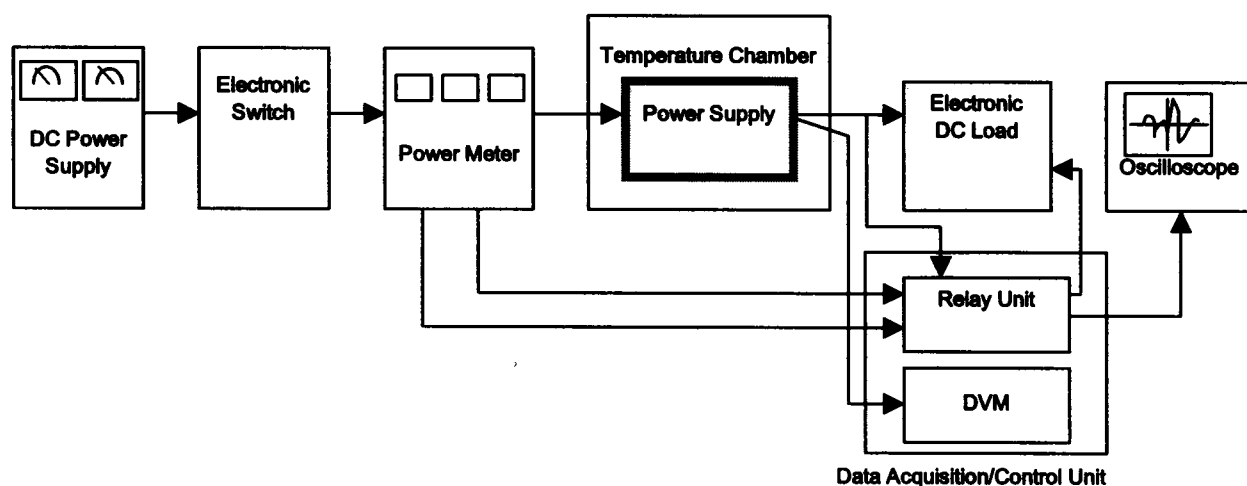


Figure A

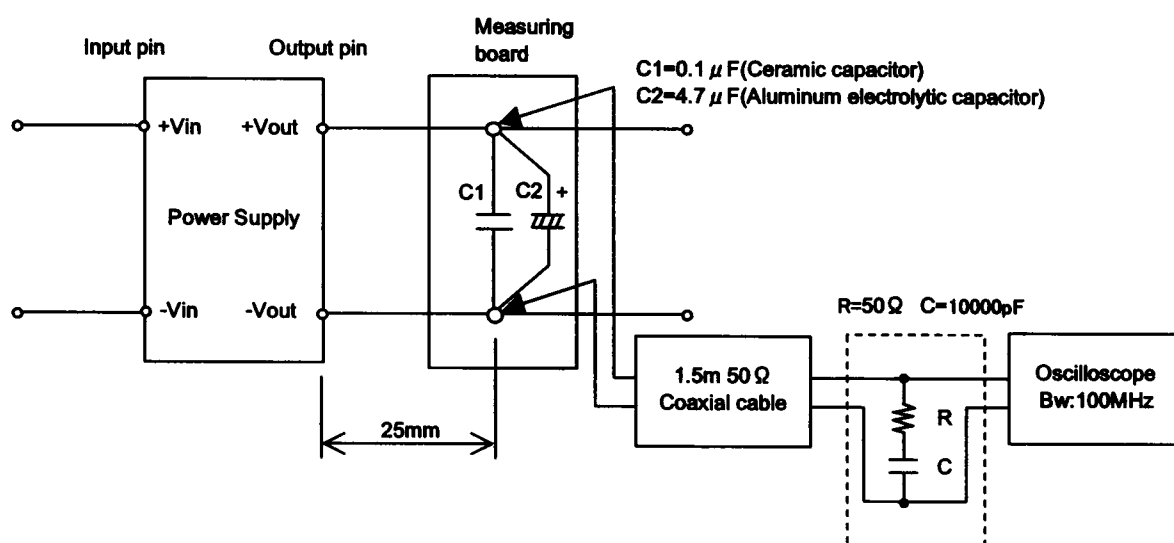


Figure B (Ripple and Ripple noise Characteristic)