

TEST DATA OF SUS60505 SUCS60505

Regulated DC Power Supply
Feb 22, 2005

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COSEL CO.,LTD.

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(Final Page 18)

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Model		SUS60505/SUCS60505	
Item		Input Current (by Input Voltage)	
Object			

1.Graph

△

—

Load 100%

□

Load 50%

○

- · -

Load 0%

Input Current [A]

2.50

2.00

1.50

1.00

0.50

0.00

0

2

4

6

8

10

Input Voltage [V]

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

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.00	0.000	0.000	0.000
1.70	0.001	0.001	0.001
2.00	0.001	0.001	0.002
3.00	0.003	0.003	0.003
3.66	0.100	0.443	0.684
3.83	0.096	0.873	1.718
4.00	0.096	0.843	1.673
4.50	0.089	0.748	1.450
5.00	0.083	0.670	1.283
6.00	0.078	0.560	1.054
7.00	0.075	0.488	0.918
8.00	0.075	0.435	0.804
9.00	0.077	0.399	0.716
10.00	0.078	0.369	0.657
--	-	-	-
--	-	-	-

- 2 -

Temperature 25°C
Testing Circuitry Figure A



Load Current [A]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.0	0.40	0.42	0.68
0.2	1.55	1.57	1.87
0.4	2.71	2.73	3.01
0.6	3.94	3.92	4.16
0.8	5.16	5.15	5.31
1.0	6.49	6.40	6.48
1.1	7.16	7.06	7.08
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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Model		SUS60505/SUCS60505		Temperature 25°C																																	
Item		Efficiency (by Input Voltage)		Testing Circuitry Figure A																																	
Object																																					
1.Graph				2.Values																																	
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div>Load 50%</div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div>Load 100%</div></div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>4.0</td><td>76.5</td><td>77.4</td></tr><tr><td>4.5</td><td>76.8</td><td>78.6</td></tr><tr><td>5.0</td><td>76.5</td><td>79.1</td></tr><tr><td>6.0</td><td>75.6</td><td>79.9</td></tr><tr><td>7.0</td><td>74.4</td><td>79.9</td></tr><tr><td>8.0</td><td>72.6</td><td>79.2</td></tr><tr><td>9.0</td><td>70.8</td><td>78.4</td></tr><tr><td>9.5</td><td>69.7</td><td>77.9</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>				Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	4.0	76.5	77.4	4.5	76.8	78.6	5.0	76.5	79.1	6.0	75.6	79.9	7.0	74.4	79.9	8.0	72.6	79.2	9.0	70.8	78.4	9.5	69.7	77.9	--	-	-		
Input Voltage [V]	Efficiency [%]																																				
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COSEL

Model	SUS60505/SUCS60505																																																		
Item	Efficiency (by Load Current)		Temperature 25°C Testing Circuitry Figure A																																																
Object																																																			
1.Graph		2.Values																																																	
<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div>Input Volt. 4.5V Input Volt. 5V Input Volt. 9V</div></div> <table><thead><tr><th>Load Current [A]</th><th>4.5V Efficiency [%]</th><th>5V Efficiency [%]</th><th>9V Efficiency [%]</th></tr></thead><tbody><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.2</td><td>65.6</td><td>64.6</td><td>54.1</td></tr><tr><td>0.4</td><td>74.9</td><td>74.3</td><td>67.3</td></tr><tr><td>0.6</td><td>77.2</td><td>77.5</td><td>73.1</td></tr><tr><td>0.8</td><td>78.6</td><td>78.8</td><td>76.3</td></tr><tr><td>1.0</td><td>78.1</td><td>79.2</td><td>78.3</td></tr><tr><td>1.1</td><td>77.9</td><td>79.0</td><td>78.8</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> <p>Efficiency [%]</p> <p>Load Current [A]</p>		Load Current [A]	4.5V Efficiency [%]	5V Efficiency [%]	9V Efficiency [%]	0.0	-	-	-	0.2	65.6	64.6	54.1	0.4	74.9	74.3	67.3	0.6	77.2	77.5	73.1	0.8	78.6	78.8	76.3	1.0	78.1	79.2	78.3	1.1	77.9	79.0	78.8	—	-	-	-	—	-	-	-	—	-	-	-	—	-	-	-		
Load Current [A]	4.5V Efficiency [%]	5V Efficiency [%]	9V Efficiency [%]																																																
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Note: Slanted line shows the range of the rated load current.																																																			

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Model		SUS60505/SUCS60505	
Item		Line Regulation	
Object		+5V1A	

1.Graph

□

Load 50%

△

Load 100%

Output Voltage [V]

5.12

5.10

5.08

5.06

5.04

5.02

5.00

4.98

3

5

7

9

Input Voltage [V]

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

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	5.065	5.061
4.5	5.065	5.062
5.0	5.065	5.062
6.0	5.065	5.062
7.0	5.065	5.062
8.0	5.065	5.062
9.0	5.065	5.062
9.5	5.065	5.062
—	-	-

2.Values

6

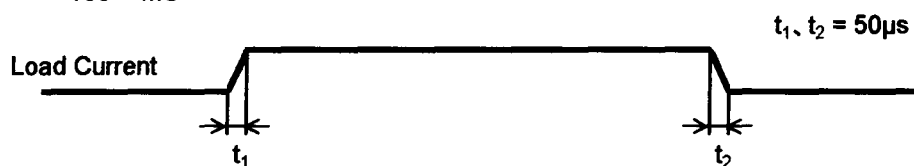
BC-3695

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COSEL

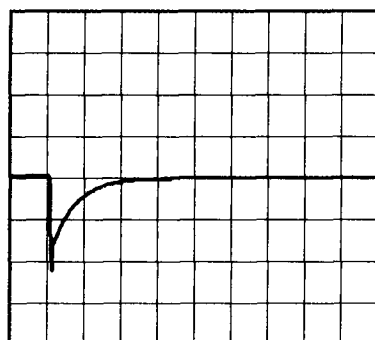
Model	SUS60505/SUCS60505	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V1A		

Input Volt. 5 V
Cycle 100 mS

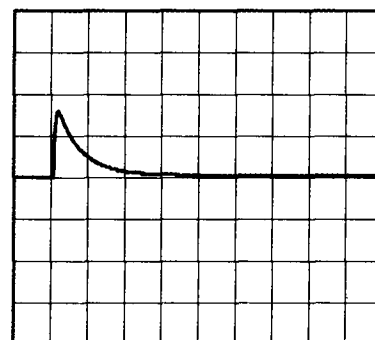


Min. Load (0A) \longleftrightarrow
Load 100% (1A)

100mV/div



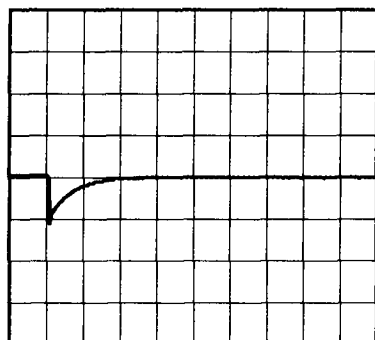
500µs/div



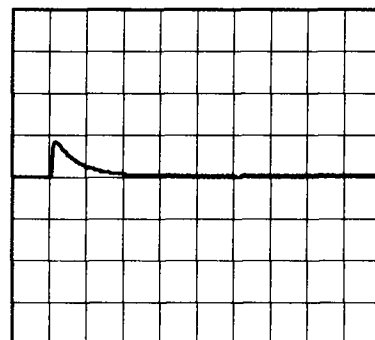
500µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.5A)

100mV/div



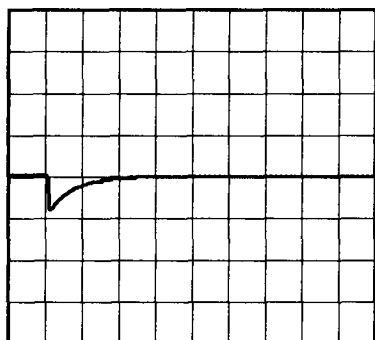
500µs/div



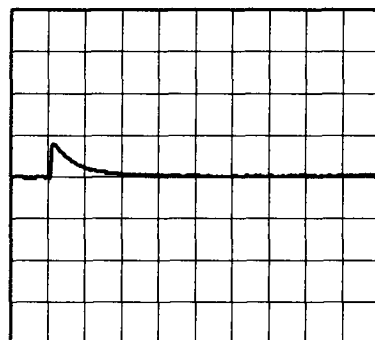
500µs/div

Load 50% (0.5A) \longleftrightarrow
Load 100% (1A)

100mV/div



500µs/div



500µs/div

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Model		SUS60505/SUCS60505		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B																																							
Object		+5V1A																																									
1.Graph				2.Values																																							
<div><div><div>—△— Input Volt. 4.5V</div><div>-·-○-·- Input Volt. 9V</div></div><div>Ripple Voltage [mV]</div><div>Load Current [A]</div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 4.5 [V]</th><th>Input Volt. 9 [V]</th></tr><tr><td>0.0</td><td>4</td><td>5</td></tr><tr><td>0.2</td><td>4</td><td>5</td></tr><tr><td>0.4</td><td>4</td><td>5</td></tr><tr><td>0.6</td><td>4</td><td>4</td></tr><tr><td>0.8</td><td>4</td><td>4</td></tr><tr><td>1.0</td><td>7</td><td>4</td></tr><tr><td>1.1</td><td>10</td><td>4</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 Voltage [mV]		Input Volt. 4.5 [V]	Input Volt. 9 [V]	0.0	4	5	0.2	4	5	0.4	4	5	0.6	4	4	0.8	4	4	1.0	7	4	1.1	10	4	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																										
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<div>Measured by 100 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div>																																											
<div><div>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div>																																											

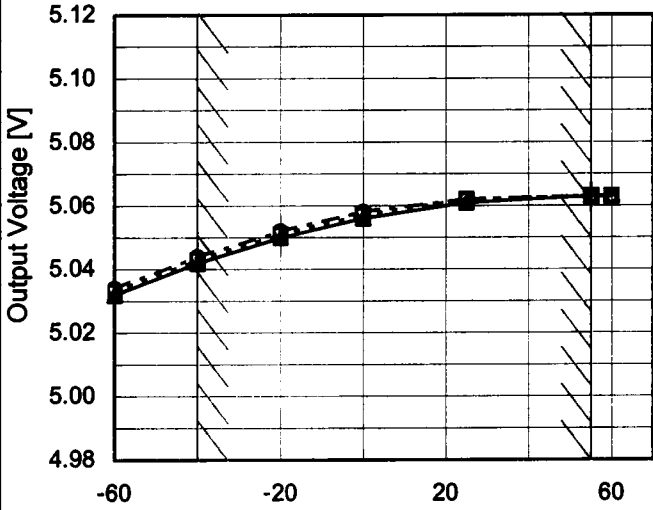
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Model	SUS60505/SUCS60505	Temperature25°C Testing CircuitryFigure B																																							
Item	Ripple-Noise																																								
Object	+5V1A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.4.5V</div></div><div><div>- -○- -</div><div>Input Volt.9V</div></div></div> <p>Ripple-Noise [mV]</p> <p>Load Current [A]</p> <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>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 4.5 [V]</th><th>Input Volt. 9 [V]</th></tr><tr><td>0.0</td><td>4</td><td>6</td></tr><tr><td>0.2</td><td>11</td><td>11</td></tr><tr><td>0.4</td><td>15</td><td>14</td></tr><tr><td>0.6</td><td>20</td><td>17</td></tr><tr><td>0.8</td><td>25</td><td>20</td></tr><tr><td>1.0</td><td>30</td><td>24</td></tr><tr><td>1.1</td><td>34</td><td>25</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. 4.5 [V]	Input Volt. 9 [V]	0.0	4	6	0.2	11	11	0.4	15	14	0.6	20	17	0.8	25	20	1.0	30	24	1.1	34	25	—	-	-	—	-	-	—	-	-	—	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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<p>Ripple Noise[mVp-p]</p> <p>Fig.Complex Ripple Noise Wave Form</p>																																									

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Model		SUS60505/SUCS60505																																																				
Item		Ambient Temperature Drift																																																				
Object		+5V1A																																																				
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>4.5V</div></div><div><div>---□---</div><div>Input Volt.</div><div>5V</div></div><div><div>---○---</div><div>Input Volt.</div><div>9V</div></div></div>  <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																				
2.Values		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 4.5[V]</th><th>Input Volt. 5[V]</th><th>Input Volt. 9[V]</th></tr><tr><td>-60</td><td>5.032</td><td>5.033</td><td>5.034</td></tr><tr><td>-40</td><td>5.042</td><td>5.043</td><td>5.044</td></tr><tr><td>-20</td><td>5.050</td><td>5.051</td><td>5.052</td></tr><tr><td>0</td><td>5.056</td><td>5.057</td><td>5.058</td></tr><tr><td>25</td><td>5.061</td><td>5.062</td><td>5.062</td></tr><tr><td>55</td><td>5.063</td><td>5.063</td><td>5.063</td></tr><tr><td>60</td><td>5.063</td><td>5.063</td><td>5.063</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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	-60	5.032	5.033	5.034	-40	5.042	5.043	5.044	-20	5.050	5.051	5.052	0	5.056	5.057	5.058	25	5.061	5.062	5.062	55	5.063	5.063	5.063	60	5.063	5.063	5.063	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		SUS60505/SUCS60505	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+5V1A	

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 - 1A

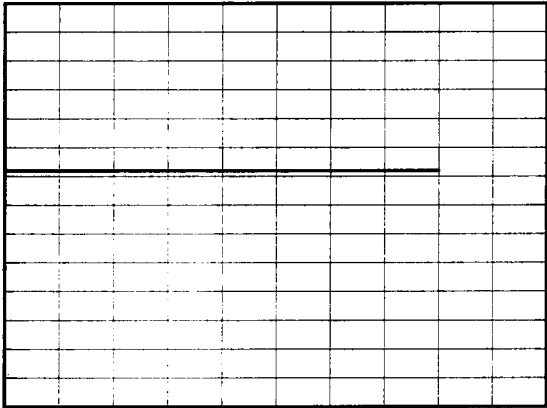
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

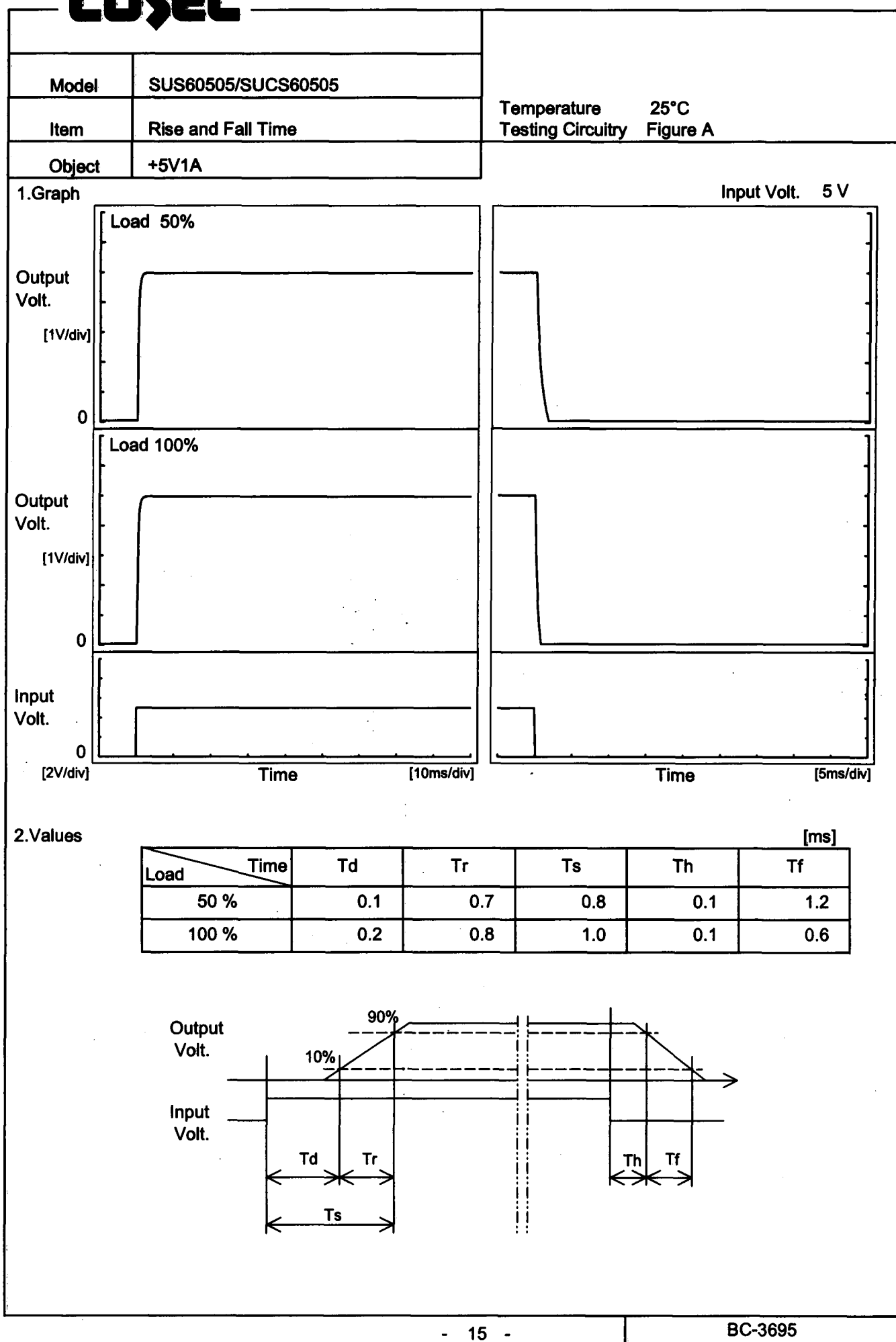
* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	5.069	±14	±0.3
Minimum Voltage	-40	4.5	1	5.042		

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Model	SUS60505/SUCS60505																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+5V1A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><div><div>5.12</div><div>5.10</div><div>5.08</div><div>5.06</div><div>5.04</div><div>5.02</div><div>5.00</div><div>4.98</div></div><div><div>0246810</div></div><div>Time [H]</div><div>Input Volt. 5V</div><div>Load 100%</div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.064</td></tr><tr><td>0.5</td><td>5.062</td></tr><tr><td>1.0</td><td>5.062</td></tr><tr><td>2.0</td><td>5.062</td></tr><tr><td>3.0</td><td>5.062</td></tr><tr><td>4.0</td><td>5.062</td></tr><tr><td>5.0</td><td>5.062</td></tr><tr><td>6.0</td><td>5.062</td></tr><tr><td>7.0</td><td>5.062</td></tr><tr><td>8.0</td><td>5.062</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.064	0.5	5.062	1.0	5.062	2.0	5.062	3.0	5.062	4.0	5.062	5.0	5.062	6.0	5.062	7.0	5.062	8.0	5.062
Time since start [H]	Output Voltage [V]																								
0.0	5.064																								
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2.0	5.062																								
3.0	5.062																								
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COSEL

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Model	SUS60505/SUCS60505																																						
Item	Minimum Input Voltage for Regulated Output Voltage		Testing Circuitry Figure A																																				
Object	+5V1A																																						
1.Graph		2.Values																																					
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Ambient Temperature [°C]</th><th>Load 50% [V]</th><th>Load 100% [V]</th></tr></thead><tbody><tr><td>-60</td><td>3.8</td><td>3.9</td></tr><tr><td>-40</td><td>3.7</td><td>3.8</td></tr><tr><td>-20</td><td>3.6</td><td>3.6</td></tr><tr><td>0</td><td>3.4</td><td>3.5</td></tr><tr><td>25</td><td>3.3</td><td>3.4</td></tr><tr><td>55</td><td>3.2</td><td>3.2</td></tr><tr><td>60</td><td>3.2</td><td>3.2</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></tbody></table> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		Ambient Temperature [°C]	Load 50% [V]	Load 100% [V]	-60	3.8	3.9	-40	3.7	3.8	-20	3.6	3.6	0	3.4	3.5	25	3.3	3.4	55	3.2	3.2	60	3.2	3.2	—	-	-	—	-	-	—	-	-	—	-	-		
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—	-	-																																					
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—	-	-																																					

Temperature 25°C
Testing Circuitry Figure A



Output Voltage [V]	Load Current [A]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
5.00	1.00	1.00	1.00
4.75	1.36	1.42	1.38
4.50	1.38	1.45	1.39
4.00	1.44	1.50	1.41
3.50	1.49	1.54	1.42
3.00	1.56	1.60	1.45
2.50	1.60	1.64	1.47
2.00	1.64	1.67	1.48
1.50	1.65	1.67	1.48
1.00	1.62	1.63	1.45
0.50	1.49	1.52	1.37
0.00	1.17	1.19	1.14

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

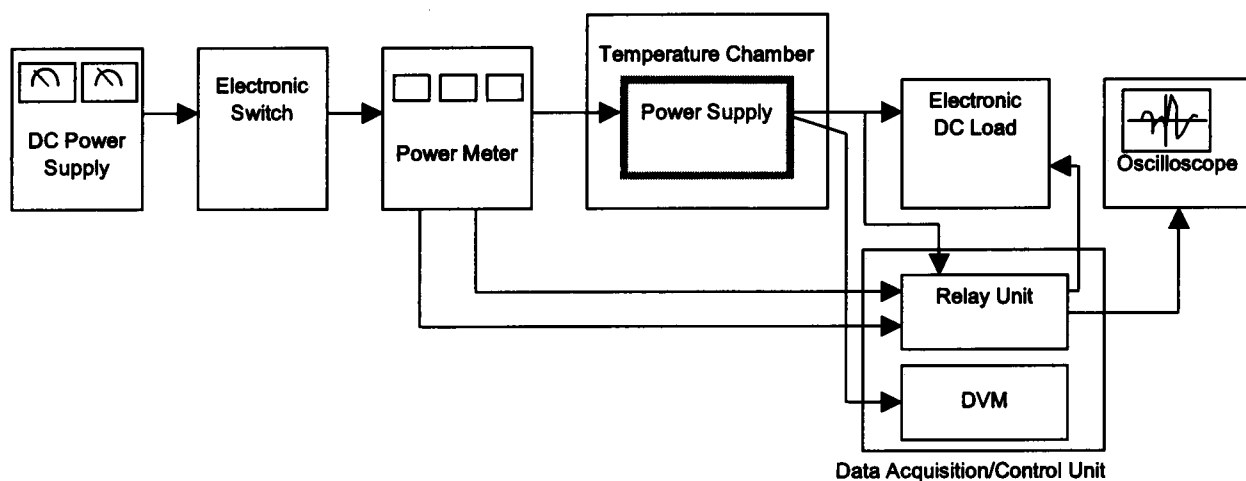


Figure A

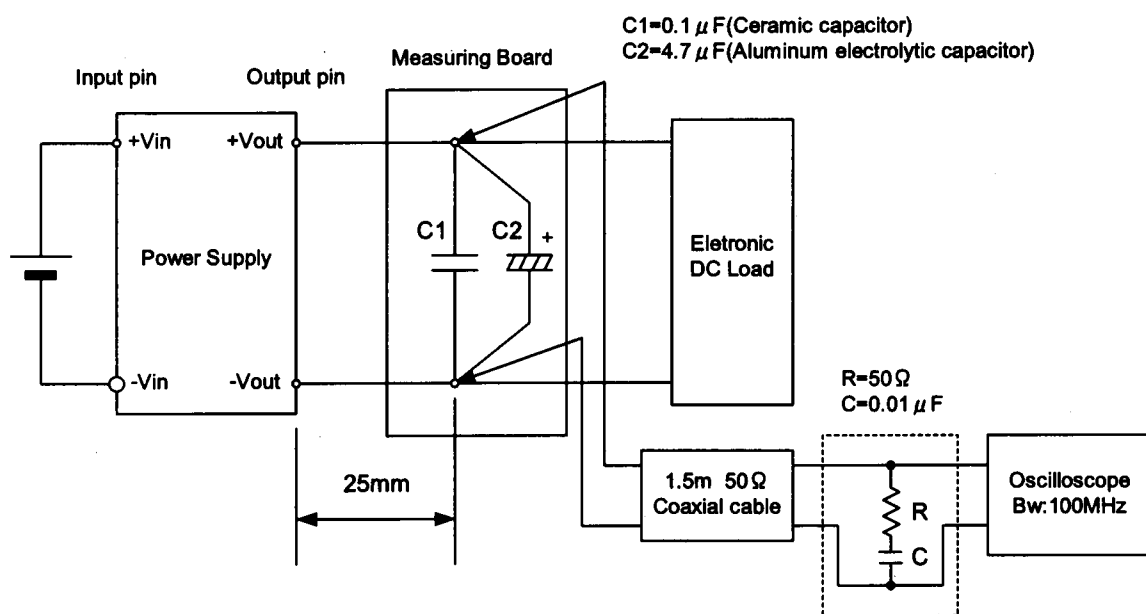


Figure B (Ripple and Ripple noise Characteristic)