



TEST DATA OF SUCS30505

Regulated DC Power Supply
Mar 22, 2005

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Hayato Nakatsubo Design Engineer

COSEL CO.,LTD.

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(Final Page 18)

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Model

SUCS30505

Item

Input Current (by Input Voltage)

Object

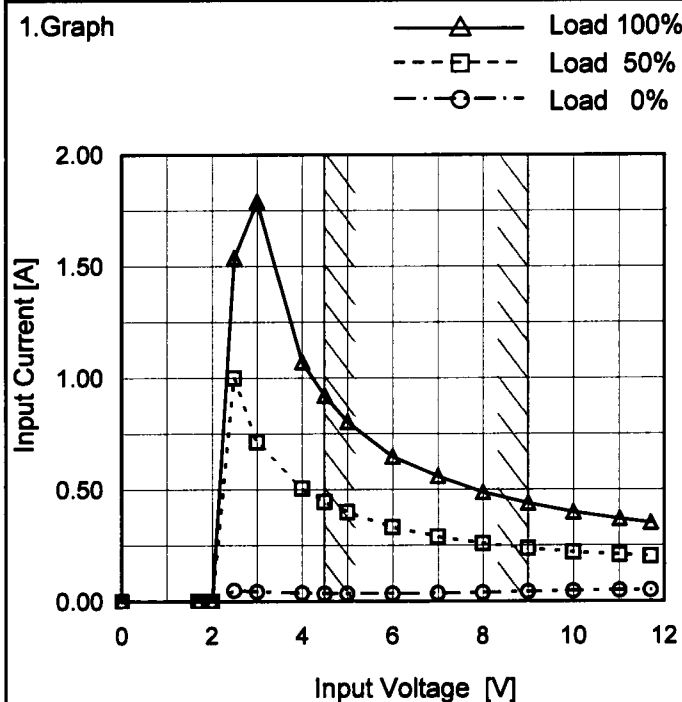
Temperature

25°C

Testing Circuitry

Figure A

1. Graph

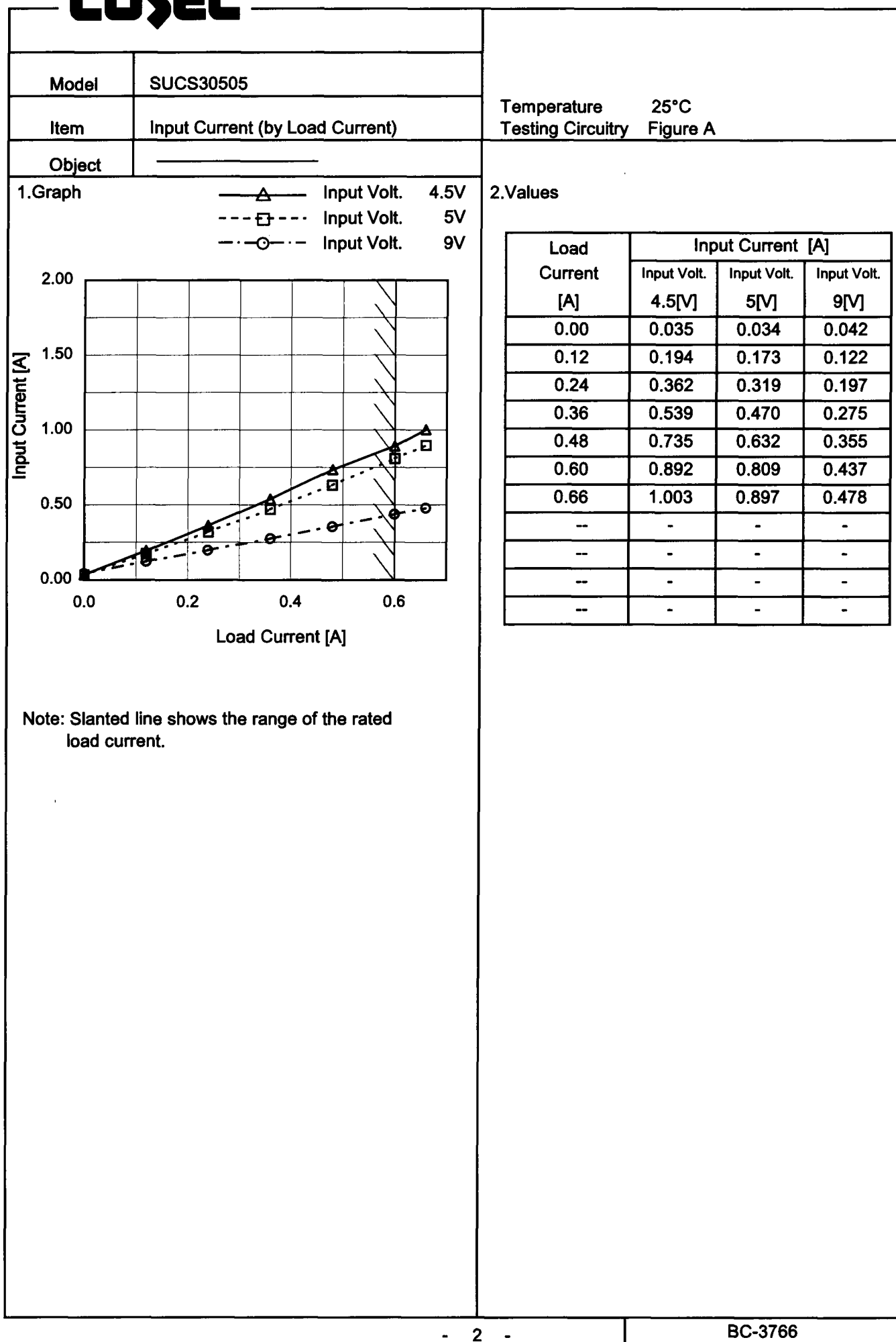


Note: Slanted line shows the range of the rated input voltage.

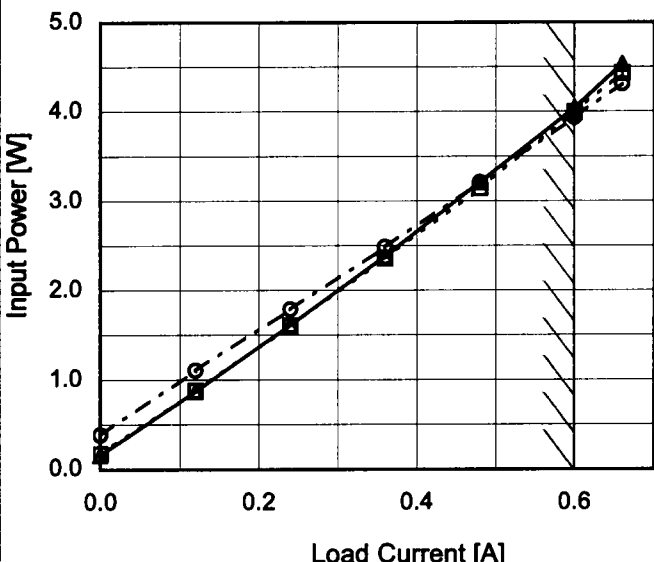
2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.00	0.000	0.000	0.000
1.70	0.000	0.000	0.000
2.00	0.000	0.000	0.000
2.49	0.049	1.000	1.538
3.00	0.044	0.713	1.790
4.00	0.038	0.506	1.073
4.50	0.035	0.446	0.921
5.00	0.035	0.400	0.804
6.00	0.035	0.332	0.648
7.00	0.036	0.289	0.560
8.00	0.039	0.258	0.489
9.00	0.043	0.237	0.439
10.00	0.046	0.220	0.399
11.02	0.049	0.208	0.369
11.70	0.050	0.202	0.352
--	-	-	-
--	-	-	-
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Model	SUCS30505	Temperature 25°C Testing Circuitry Figure A																																																				
Item	Input Power (by Load Current)																																																					
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1.Graph		2.Values																																																				
<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>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</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>0.00</td><td>0.16</td><td>0.17</td><td>0.39</td></tr><tr><td>0.12</td><td>0.87</td><td>0.88</td><td>1.11</td></tr><tr><td>0.24</td><td>1.61</td><td>1.61</td><td>1.79</td></tr><tr><td>0.36</td><td>2.38</td><td>2.36</td><td>2.49</td></tr><tr><td>0.48</td><td>3.21</td><td>3.14</td><td>3.21</td></tr><tr><td>0.60</td><td>4.04</td><td>3.99</td><td>3.94</td></tr><tr><td>0.66</td><td>4.53</td><td>4.43</td><td>4.31</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]	Input Power [W]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	0.00	0.16	0.17	0.39	0.12	0.87	0.88	1.11	0.24	1.61	1.61	1.79	0.36	2.38	2.36	2.49	0.48	3.21	3.14	3.21	0.60	4.04	3.99	3.94	0.66	4.53	4.43	4.31	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model

SUCS30505

Item

Efficiency (by Input Voltage)

Object

1.Graph

Load 50%

Load 100%

Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
4.0	75.6	72.0
4.5	76.3	74.2
5.0	76.6	76.0
6.0	76.4	77.7
7.0	75.1	78.1
8.0	73.3	77.7
9.0	71.2	77.1
9.5	69.6	76.6
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Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
4.0	75.6	72.0
4.5	76.3	74.2
5.0	76.6	76.0
6.0	76.4	77.7
7.0	75.1	78.1
8.0	73.3	77.7
9.0	71.2	77.1
9.5	69.6	76.6
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Model	SUCS30505	Temperature 25°C Testing Circuitry Figure A																																																				
Item	Efficiency (by Load Current)																																																					
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<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> <table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</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>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.12</td><td>69.6</td><td>68.7</td><td>54.7</td></tr><tr><td>0.24</td><td>75.1</td><td>75.4</td><td>67.7</td></tr><tr><td>0.36</td><td>76.1</td><td>76.9</td><td>72.9</td></tr><tr><td>0.48</td><td>75.3</td><td>76.9</td><td>75.4</td></tr><tr><td>0.60</td><td>74.9</td><td>75.7</td><td>76.8</td></tr><tr><td>0.66</td><td>73.3</td><td>75.0</td><td>77.2</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>Note: Slanted line shows the range of the rated load current.</p>		Load Current [A]	Efficiency [%]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	0.00	-	-	-	0.12	69.6	68.7	54.7	0.24	75.1	75.4	67.7	0.36	76.1	76.9	72.9	0.48	75.3	76.9	75.4	0.60	74.9	75.7	76.8	0.66	73.3	75.0	77.2	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-		
Load Current [A]	Efficiency [%]																																																					
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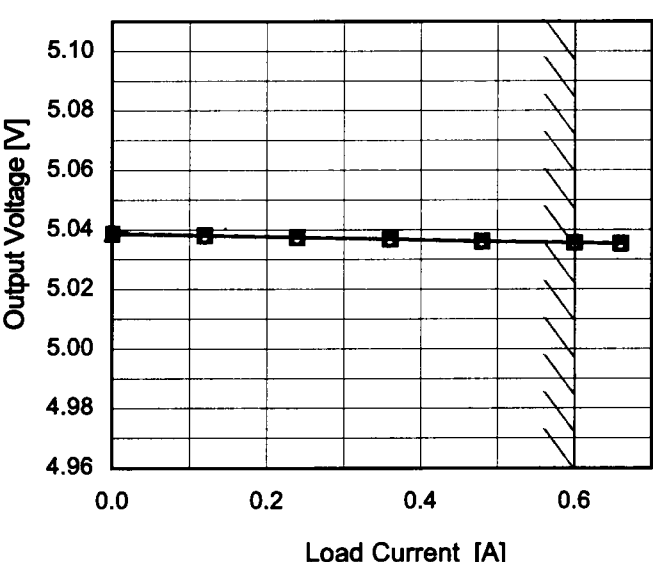
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Model	SUCS30505																																
Item	Line Regulation	Temperature	25°C																														
Object	+5V0.6A	Testing Circuitry	Figure A																														
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>4.0</td><td>5.037</td><td>5.036</td></tr><tr><td>4.5</td><td>5.037</td><td>5.036</td></tr><tr><td>5.0</td><td>5.037</td><td>5.036</td></tr><tr><td>6.0</td><td>5.037</td><td>5.036</td></tr><tr><td>7.0</td><td>5.037</td><td>5.036</td></tr><tr><td>8.0</td><td>5.037</td><td>5.036</td></tr><tr><td>9.0</td><td>5.037</td><td>5.036</td></tr><tr><td>9.5</td><td>5.037</td><td>5.036</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	4.0	5.037	5.036	4.5	5.037	5.036	5.0	5.037	5.036	6.0	5.037	5.036	7.0	5.037	5.036	8.0	5.037	5.036	9.0	5.037	5.036	9.5	5.037	5.036	--	-	-		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
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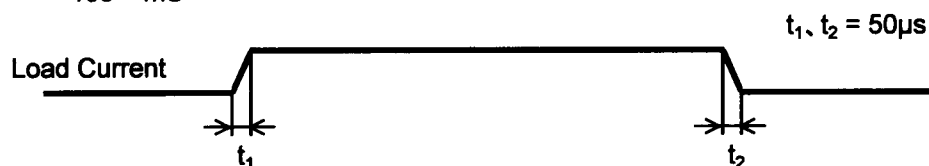
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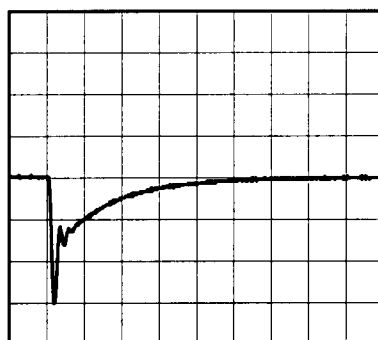
Model	SUCS30505	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V0.6A		

Input Volt. 5 V
Cycle 100 mS

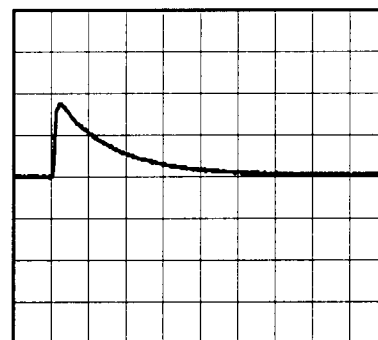


Min. Load (0A) \longleftrightarrow
Load 100% (0.6A)

100mV/div



200µs/div



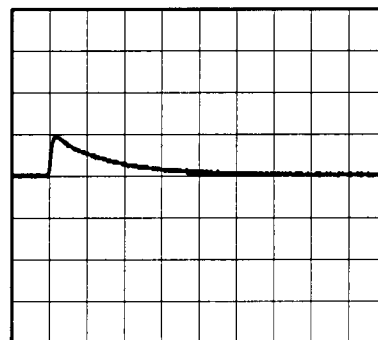
200µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.3A)

100mV/div



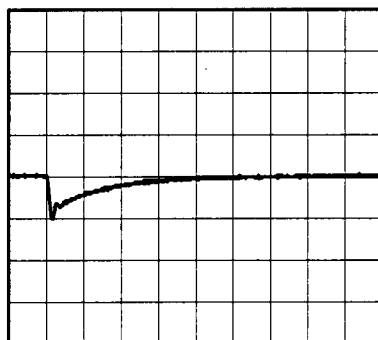
200µs/div



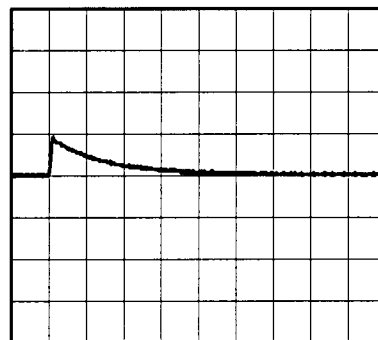
200µs/div

Load 50% (0.3A) \longleftrightarrow
Load 100% (0.6A)

100mV/div



200µs/div



200µs/div

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Model	SUCS30505	Temperature 25°C Testing Circuitry Figure B																																							
Item	Ripple Voltage (by Load Current)																																								
Object	+5V0.6A																																								
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>0.00</td><td>2</td><td>2</td></tr><tr><td>0.12</td><td>2</td><td>2</td></tr><tr><td>0.24</td><td>4</td><td>2</td></tr><tr><td>0.36</td><td>6</td><td>3</td></tr><tr><td>0.48</td><td>10</td><td>4</td></tr><tr><td>0.60</td><td>15</td><td>6</td></tr><tr><td>0.66</td><td>18</td><td>7</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]	0.00	2	2	0.12	2	2	0.24	4	2	0.36	6	3	0.48	10	4	0.60	15	6	0.66	18	7	--	-	-	--	-	-	--	-	-	--	-	-
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	SUCS30505		
Item	Ripple-Noise	Temperature	25°C
Object	+5V0.6A	Testing Circuitry	Figure B
1.Graph		2.Values	
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COSEL

Model

SUCS30505

Item

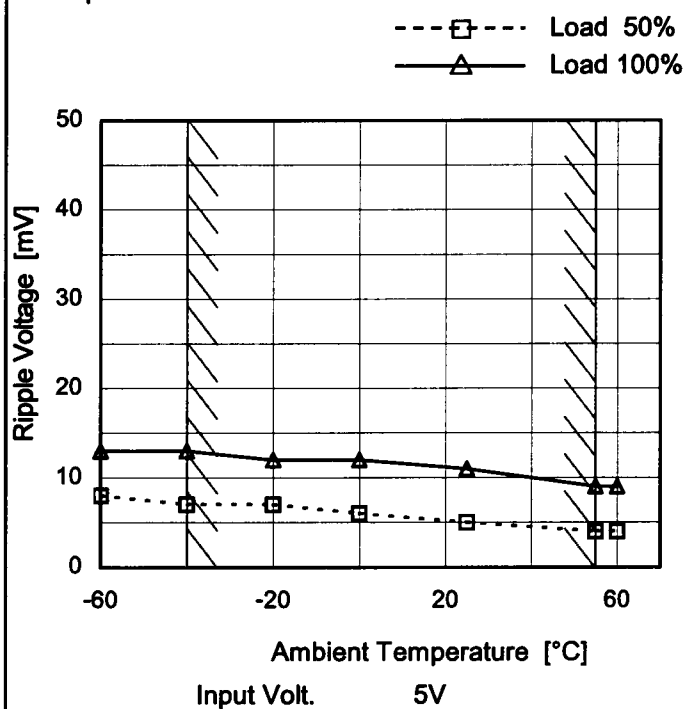
Ripple Voltage (by Ambient Temp.)

Object

+5V0.6A

Testing Circuitry Figure A

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	13
-40	7	13
-20	7	12
0	6	12
25	5	11
55	4	9
60	4	9
--	-	-
--	-	-
--	-	-
--	-	-

Model		SUCS30505																																																				
Item		Ambient Temperature Drift																																																				
Object		+5V0.6A																																																				
1.Graph		2.Values																																																				
<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>		<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>5.003</td><td>5.004</td><td>5.005</td></tr><tr><td>-40</td><td>5.015</td><td>5.016</td><td>5.016</td></tr><tr><td>-20</td><td>5.024</td><td>5.025</td><td>5.025</td></tr><tr><td>0</td><td>5.031</td><td>5.031</td><td>5.031</td></tr><tr><td>25</td><td>5.035</td><td>5.036</td><td>5.036</td></tr><tr><td>55</td><td>5.036</td><td>5.036</td><td>5.036</td></tr><tr><td>60</td><td>5.036</td><td>5.036</td><td>5.036</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	5.003	5.004	5.005	-40	5.015	5.016	5.016	-20	5.024	5.025	5.025	0	5.031	5.031	5.031	25	5.035	5.036	5.036	55	5.036	5.036	5.036	60	5.036	5.036	5.036	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]																																																			
-60	5.003	5.004	5.005																																																			
-40	5.015	5.016	5.016																																																			
-20	5.024	5.025	5.025																																																			
0	5.031	5.031	5.031																																																			
25	5.035	5.036	5.036																																																			
55	5.036	5.036	5.036																																																			
60	5.036	5.036	5.036																																																			
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		Testing Circuitry Figure A
Model	SUCS30505	
Item	Output Voltage Accuracy	
Object	+5V0.6A	

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 : 4.5 - 9V

Load Current : 0 - 0.6A

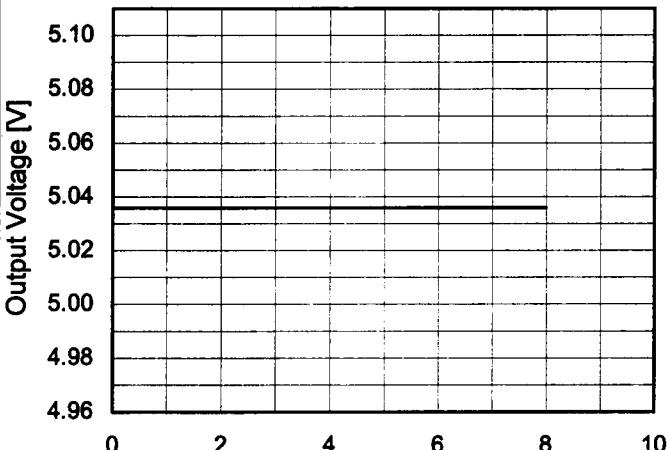
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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	5.040	±13	±0.3
Minimum Voltage	-40	4.5	0.6	5.015		

COSEL

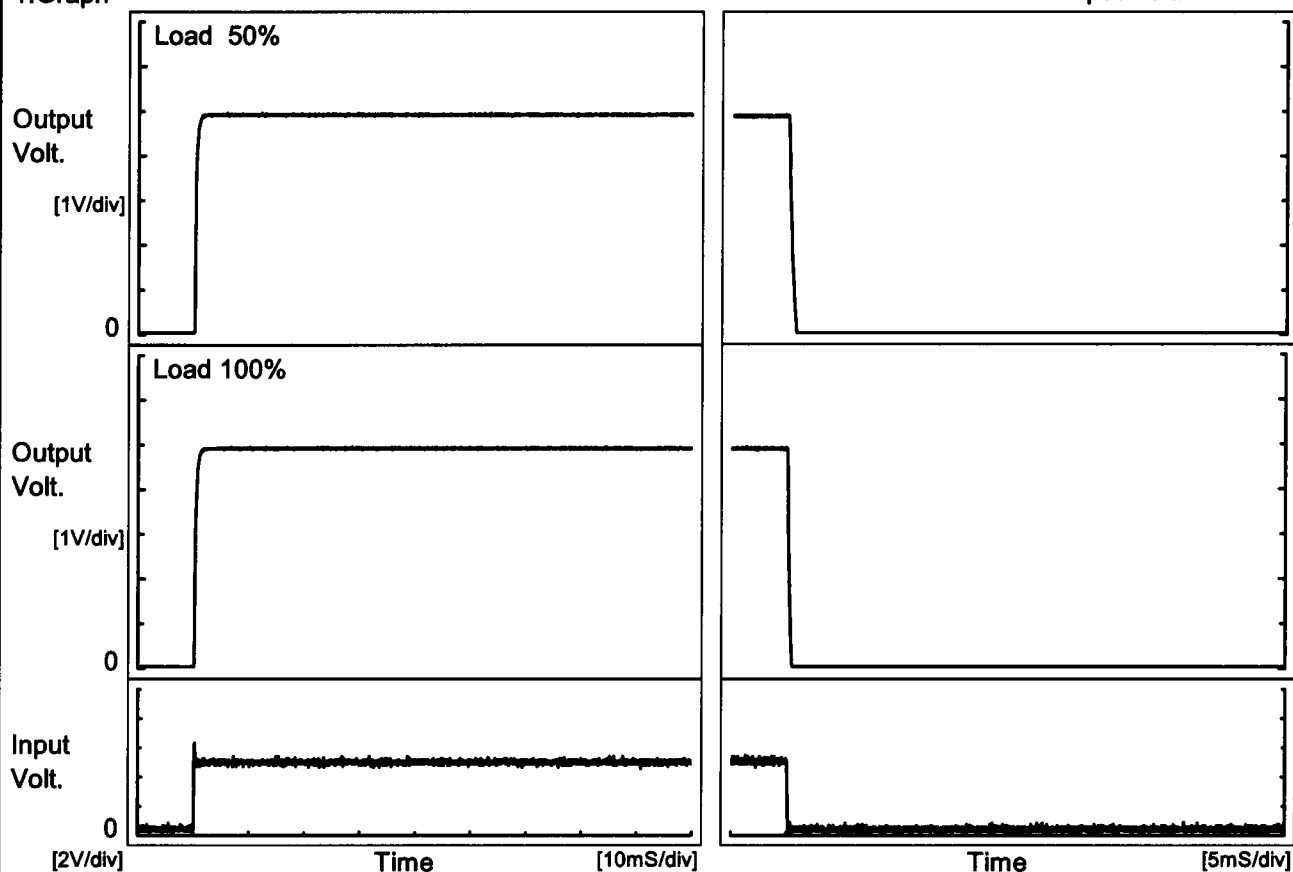
Model	SUCS30505																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+5V0.6A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 5V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.036</td></tr><tr><td>0.5</td><td>5.036</td></tr><tr><td>1.0</td><td>5.036</td></tr><tr><td>2.0</td><td>5.036</td></tr><tr><td>3.0</td><td>5.036</td></tr><tr><td>4.0</td><td>5.036</td></tr><tr><td>5.0</td><td>5.036</td></tr><tr><td>6.0</td><td>5.036</td></tr><tr><td>7.0</td><td>5.036</td></tr><tr><td>8.0</td><td>5.036</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.036	0.5	5.036	1.0	5.036	2.0	5.036	3.0	5.036	4.0	5.036	5.0	5.036	6.0	5.036	7.0	5.036	8.0	5.036
Time since start [H]	Output Voltage [V]																								
0.0	5.036																								
0.5	5.036																								
1.0	5.036																								
2.0	5.036																								
3.0	5.036																								
4.0	5.036																								
5.0	5.036																								
6.0	5.036																								
7.0	5.036																								
8.0	5.036																								

COSEL

Model	SUCS30505	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V0.6A		

1.Graph

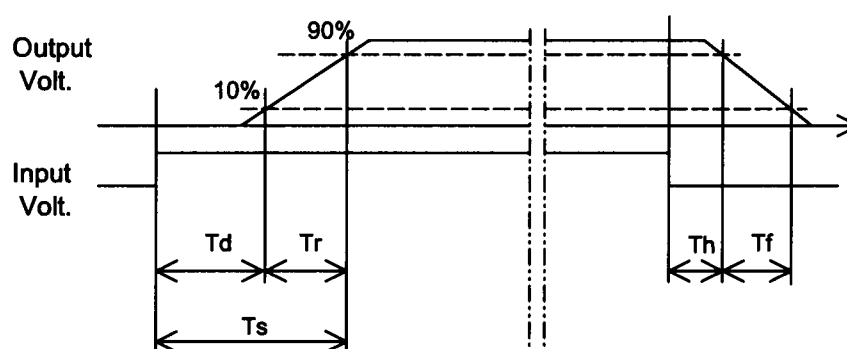
Input Volt. 5 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	0.7	0.8	0.1	0.6
100 %	0.1	0.8	0.9	0.1	0.3



Model

SUCS30505

Item

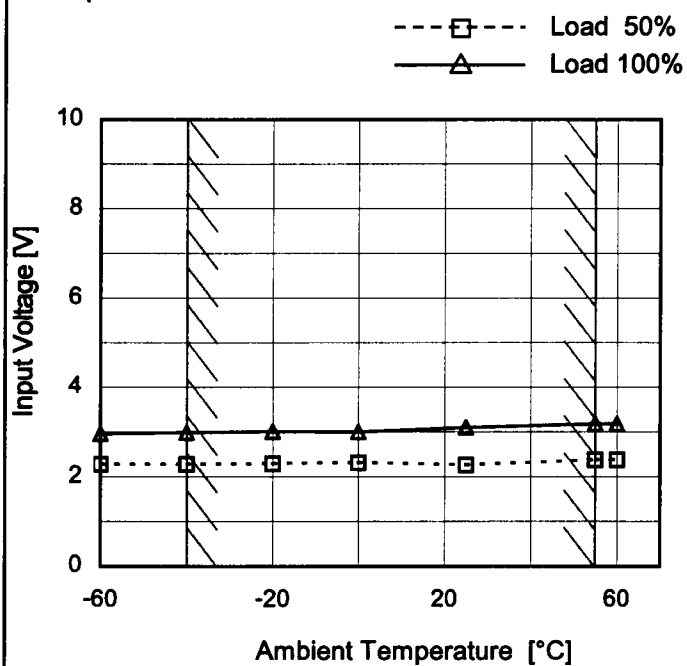
Minimum Input Voltage
for Regulated Output Voltage

Object

+5V0.6A

Testing Circuitry Figure A

1. Graph



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

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.3	3.0
-40	2.3	3.0
-20	2.3	3.1
0	2.4	3.0
25	2.3	3.1
55	2.4	3.2
60	2.4	3.2
--	-	-
--	-	-
--	-	-
--	-	-

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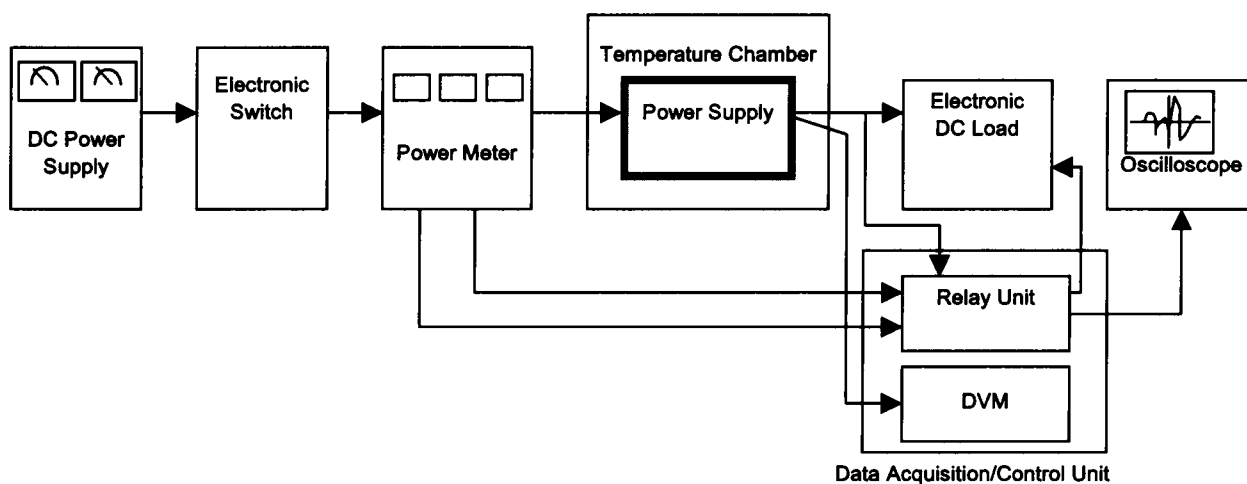


Figure A

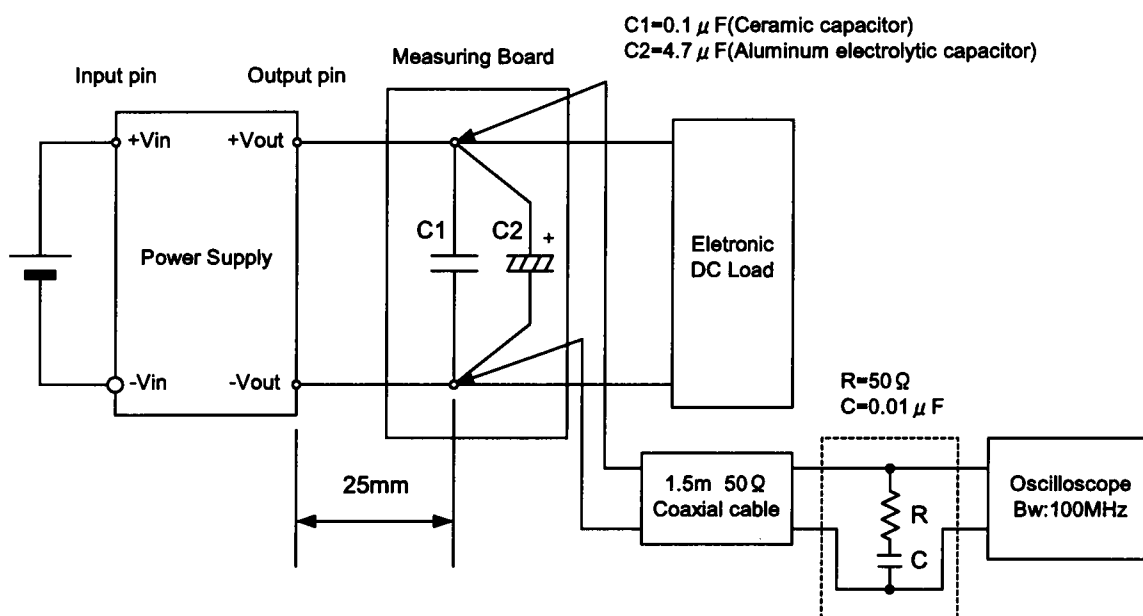


Figure B (Ripple and Ripple noise Characteristic)