



TEST DATA OF SUCS34815

Regulated DC Power Supply
Mar 9, 2005

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Tetsuo Sugimori Design Manager

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Hayato Nakatsubo Design Engineer

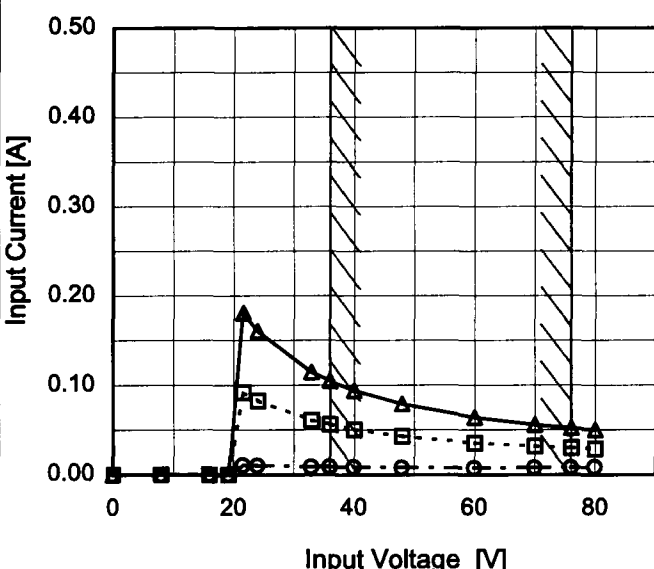
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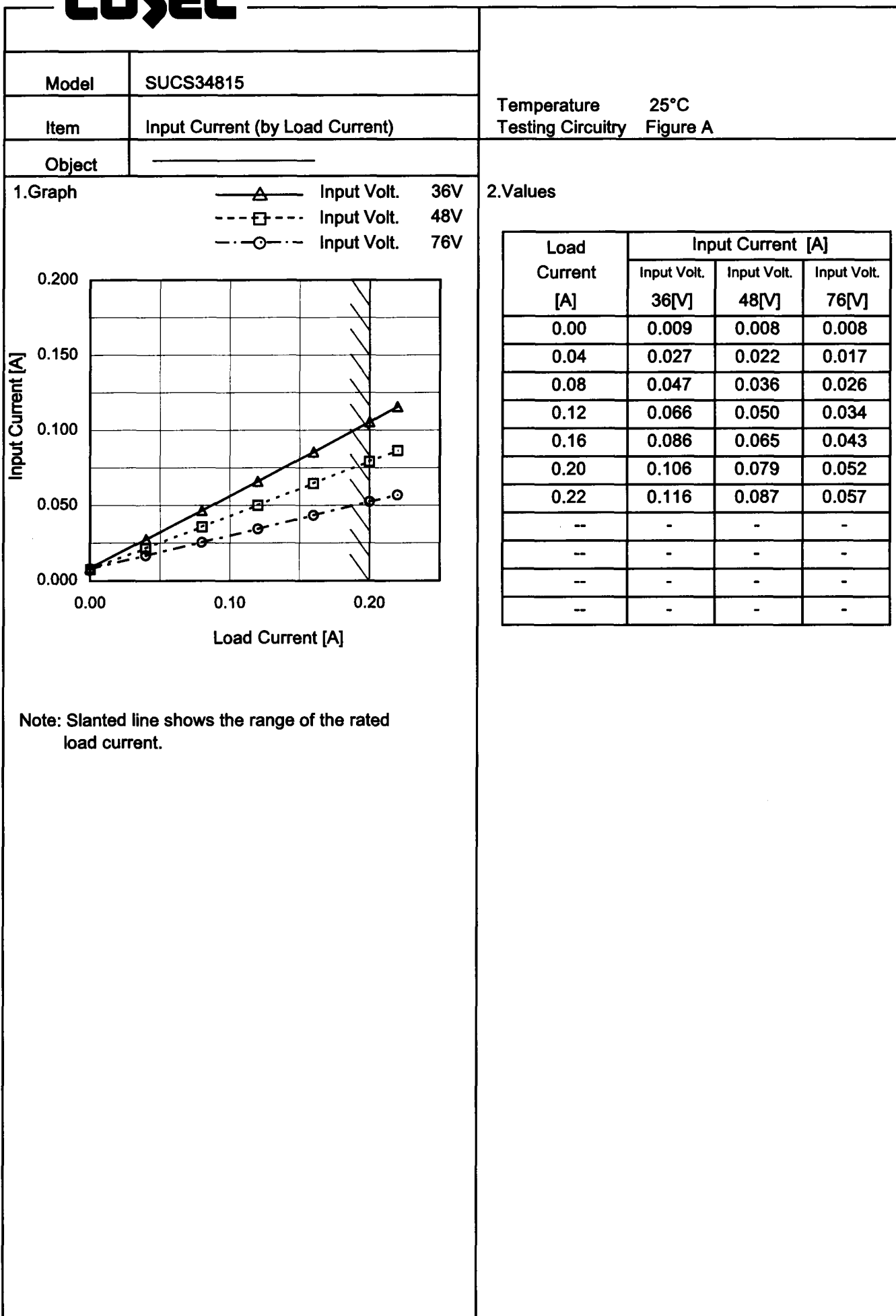
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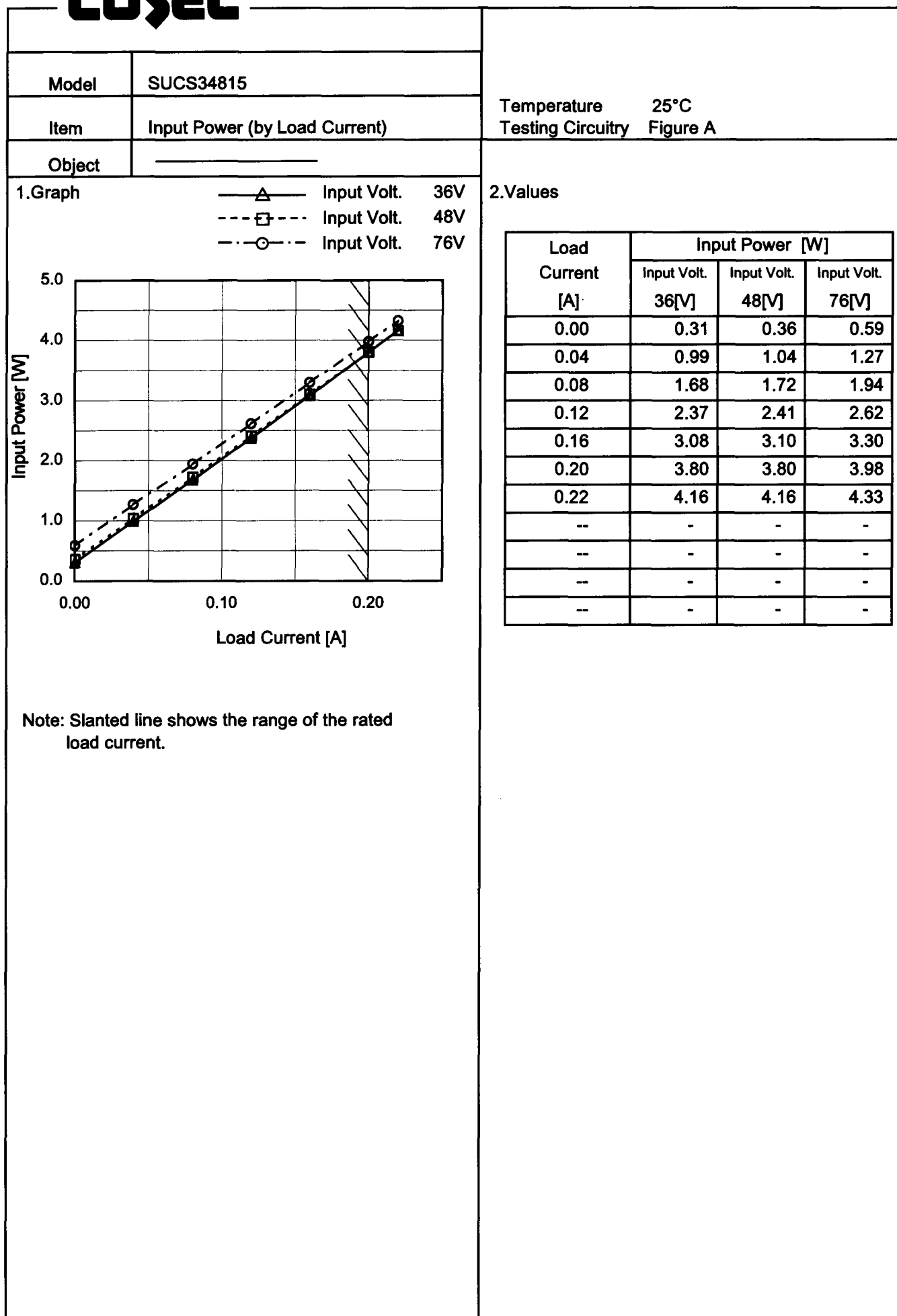
Model		SUCS34815	
Item		Input Current (by Input Voltage)	
Object			
1.Graph			
		<div><div>—△—</div>Load 100%</div> <div><div>---□---</div>Load 50%</div> <div><div>-·-○-·-</div>Load 0%</div>	
			
Note: Slanted line shows the range of the rated input voltage.			

Temperature		25°C	
Testing Circuitry		Figure A	
2.Values			
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
19.2	0.000	0.000	0.000
21.6	0.011	0.092	0.181
24.0	0.010	0.083	0.160
33.0	0.009	0.061	0.115
36.0	0.009	0.056	0.105
40.0	0.008	0.050	0.094
48.0	0.008	0.043	0.079
60.0	0.007	0.035	0.064
70.0	0.007	0.032	0.056
76.0	0.008	0.030	0.052
80.0	0.008	0.029	0.050
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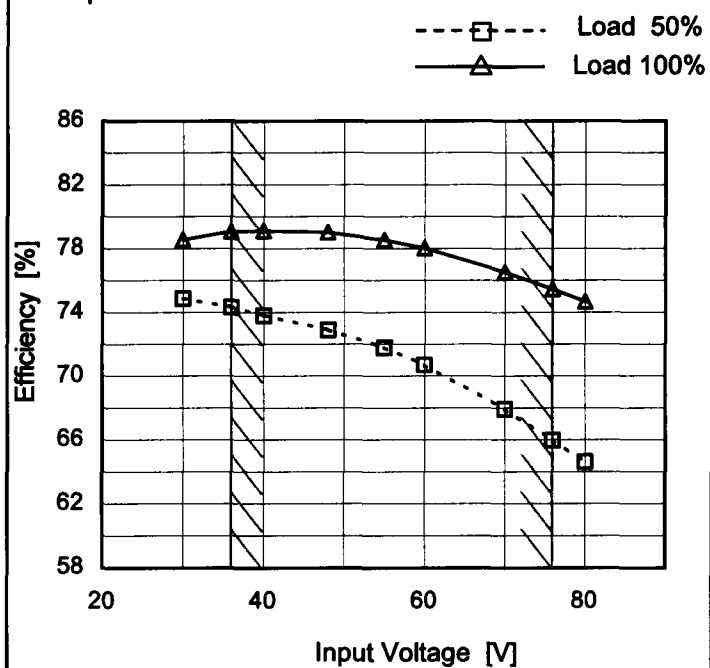
Model SUCS34815

Item Efficiency (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]	Efficiency [%]	
	Load 50%	Load 100%
30	74.9	78.6
36	74.3	79.1
40	73.8	79.1
48	72.9	79.0
55	71.8	78.5
60	70.7	78.0
70	67.9	76.5
76	66.0	75.5
80	64.6	74.7

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Model		SUCS34815		Temperature 25°C																																																		
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																		
Object																																																						
1.Graph		<div><div>—△—</div>Input Volt. 36V</div> <div><div>---□---</div>Input Volt. 48V</div> <div><div>-○-</div>Input Volt. 76V</div>		2.Values																																																		
<div><div><div>Efficiency [%]</div><div>86</div><div>78</div><div>70</div><div>62</div><div>54</div><div>46</div><div>38</div><div>30</div></div><div><div>0.000.100.20</div><div>Load Current [A]</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.04</td><td>61.2</td><td>58.2</td><td>47.8</td></tr><tr><td>0.08</td><td>71.8</td><td>69.9</td><td>62.0</td></tr><tr><td>0.12</td><td>76.1</td><td>74.9</td><td>69.0</td></tr><tr><td>0.16</td><td>78.0</td><td>77.5</td><td>72.9</td></tr><tr><td>0.20</td><td>79.1</td><td>79.0</td><td>75.5</td></tr><tr><td>0.22</td><td>79.4</td><td>79.5</td><td>76.4</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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.00	-	-	-	0.04	61.2	58.2	47.8	0.08	71.8	69.9	62.0	0.12	76.1	74.9	69.0	0.16	78.0	77.5	72.9	0.20	79.1	79.0	75.5	0.22	79.4	79.5	76.4	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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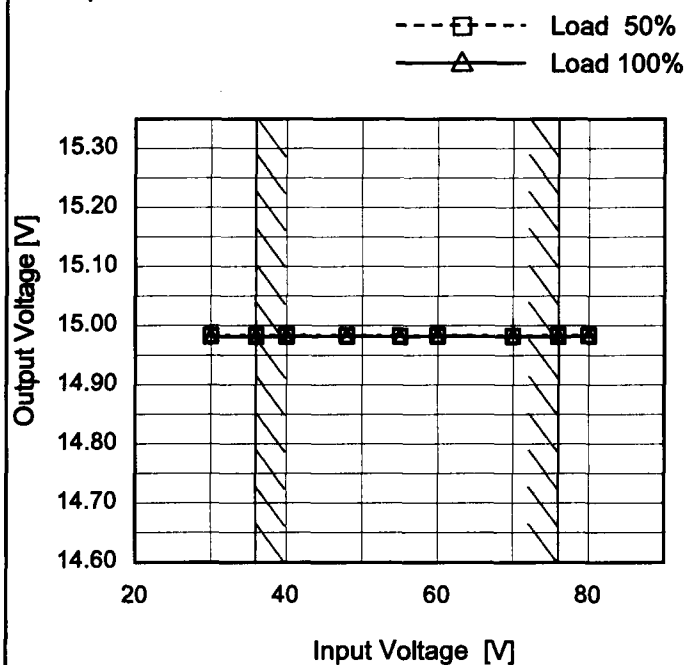
Model SUCS34815

Item Line Regulation

Object +15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
30	14.983	14.982
36	14.983	14.982
40	14.983	14.982
48	14.983	14.982
55	14.983	14.982
60	14.983	14.982
70	14.983	14.982
76	14.984	14.982
80	14.983	14.982

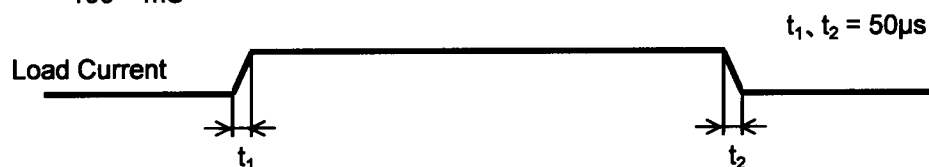
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<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>Input Volt.</div><div>36V</div></div><div><div>Input Volt.</div><div>48V</div></div><div><div>Input Volt.</div><div>76V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr></thead><tbody><tr><td>0.00</td><td>14.985</td><td>14.984</td><td>14.985</td></tr><tr><td>0.04</td><td>14.984</td><td>14.984</td><td>14.984</td></tr><tr><td>0.08</td><td>14.984</td><td>14.983</td><td>14.984</td></tr><tr><td>0.12</td><td>14.983</td><td>14.983</td><td>14.983</td></tr><tr><td>0.16</td><td>14.983</td><td>14.982</td><td>14.983</td></tr><tr><td>0.20</td><td>14.982</td><td>14.982</td><td>14.982</td></tr><tr><td>0.22</td><td>14.982</td><td>14.982</td><td>14.982</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></div><div>Note: Slanted line shows the range of the rated load current.</div></div>				Load Current [A]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.00	14.985	14.984	14.985	0.04	14.984	14.984	14.984	0.08	14.984	14.983	14.984	0.12	14.983	14.983	14.983	0.16	14.983	14.982	14.983	0.20	14.982	14.982	14.982	0.22	14.982	14.982	14.982	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-		
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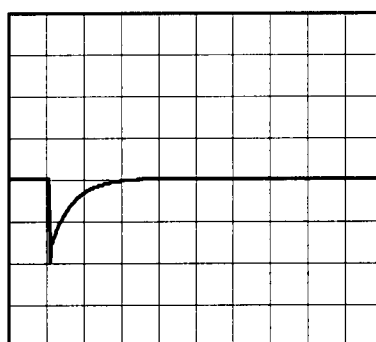
Model	SUCS34815	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+15V0.2A		

Input Volt. 48 V
Cycle 100 mS

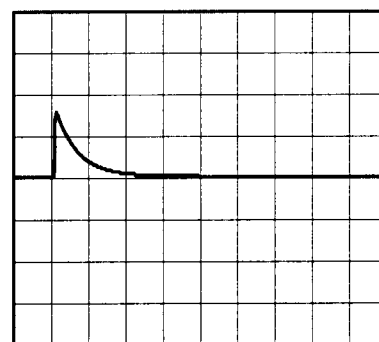


Min. Load (0A) \longleftrightarrow
Load 100% (0.2A)

200mV/div



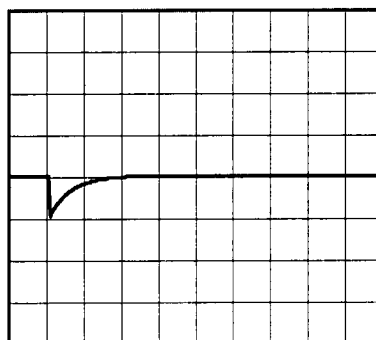
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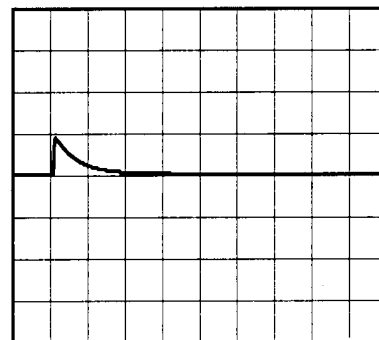
2ms/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.1A)

200mV/div



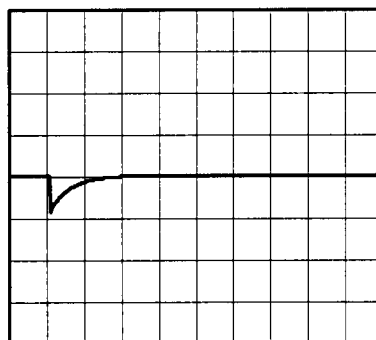
2ms/div



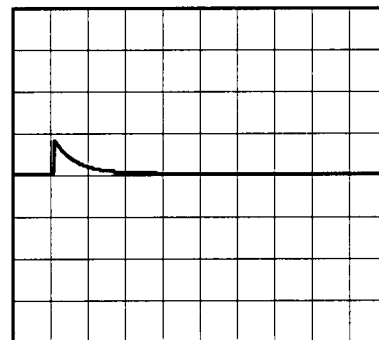
2ms/div

Load 50% (0.1A) \longleftrightarrow
Load 100% (0.2A)

200mV/div



2ms/div



2ms/div

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Model		SUCS34815																																							
Item		Ripple Voltage (by Load Current)																																							
Object		+15V0.2A																																							
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 36V</div><div>-·-○-·- Input Volt. 76V</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. 36 [V]</th><th>Input Volt. 76 [V]</th></tr><tr><td>0.00</td><td>3</td><td>2</td></tr><tr><td>0.04</td><td>3</td><td>2</td></tr><tr><td>0.08</td><td>4</td><td>2</td></tr><tr><td>0.12</td><td>4</td><td>2</td></tr><tr><td>0.16</td><td>5</td><td>2</td></tr><tr><td>0.20</td><td>6</td><td>3</td></tr><tr><td>0.22</td><td>7</td><td>3</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. 36 [V]	Input Volt. 76 [V]	0.00	3	2	0.04	3	2	0.08	4	2	0.12	4	2	0.16	5	2	0.20	6	3	0.22	7	3	--	-	-	--	-	-	--	-	-	--	-	-
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<div><div>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div>																																									

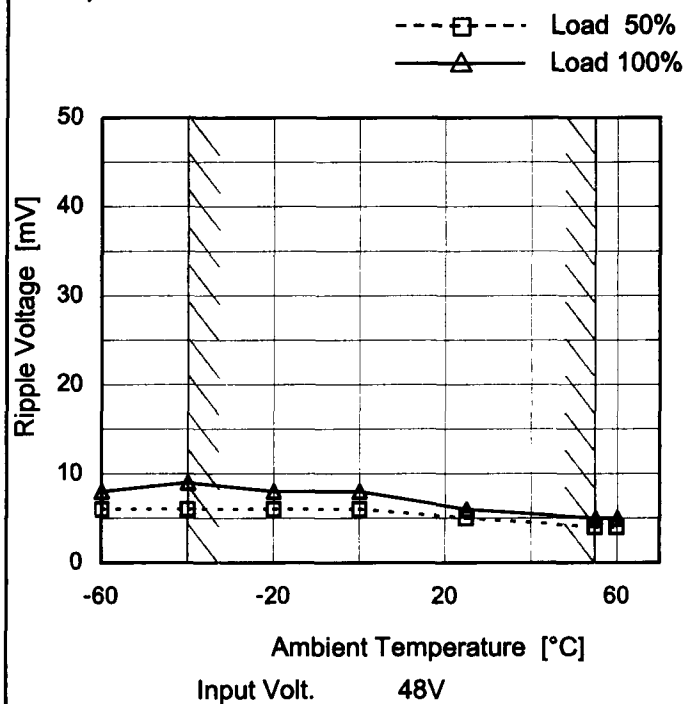
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Model	SUCS34815																																																																												
Item	Ripple-Noise	Temperature	25°C																																																																										
Object	+15V0.2A	Testing Circuitry	Figure B																																																																										
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<div><div><div><div><div></div><div>Input Volt.</div><div>36V</div></div><div><div></div><div>Input Volt.</div><div>76V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>Input Volt. 36 [V]</th><th>Input Volt. 76 [V]</th></tr></thead><tbody><tr><td>0.00</td><td>5</td><td>5</td></tr><tr><td>0.04</td><td>9</td><td>7</td></tr><tr><td>0.08</td><td>9</td><td>7</td></tr><tr><td>0.12</td><td>9</td><td>7</td></tr><tr><td>0.16</td><td>10</td><td>7</td></tr><tr><td>0.20</td><td>12</td><td>8</td></tr><tr><td>0.22</td><td>13</td><td>9</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></div></div><div><div>Measured by 100 MHz Oscilloscope.</div><div>Ripple-Noise 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><div><div><div></div><div>Ripple Noise[mVp-p]</div><div></div></div><div></div></div><div>Fig.Complex Ripple Noise Wave Form</div></div></div>		Load Current [A]	Input Volt. 36 [V]	Input Volt. 76 [V]	0.00	5	5	0.04	9	7	0.08	9	7	0.12	9	7	0.16	10	7	0.20	12	8	0.22	13	9	--	-	-	--	-	-	--	-	-	--	-	-	<table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 36 [V]</th><th>Input Volt. 76 [V]</th></tr></thead><tbody><tr><td>0.00</td><td>5</td><td>5</td></tr><tr><td>0.04</td><td>9</td><td>7</td></tr><tr><td>0.08</td><td>9</td><td>7</td></tr><tr><td>0.12</td><td>9</td><td>7</td></tr><tr><td>0.16</td><td>10</td><td>7</td></tr><tr><td>0.20</td><td>12</td><td>8</td></tr><tr><td>0.22</td><td>13</td><td>9</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>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.00	5	5	0.04	9	7	0.08	9	7	0.12	9	7	0.16	10	7	0.20	12	8	0.22	13	9	--	-	-	--	-	-	--	-	-	--	-	-
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Model	SUCS34815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

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	6	8
-40	6	9
-20	6	8
0	6	8
25	5	6
55	4	5
60	4	5
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Model

SUCS34815

Item

Ambient Temperature Drift

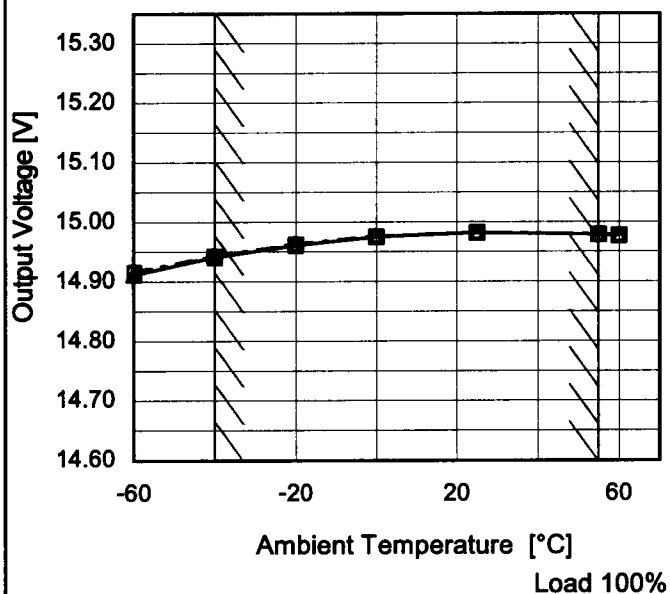
Object

+15V0.2A

Testing Circuitry Figure A

1.Graph

—△— Input Volt. 36V
 ---□--- Input Volt. 48V
 -·-○-·- Input Volt. 76V



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.912	14.915	14.917
-40	14.941	14.942	14.943
-20	14.961	14.962	14.963
0	14.975	14.975	14.976
25	14.982	14.982	14.982
55	14.979	14.979	14.978
60	14.978	14.977	14.977
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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		Testing Circuitry Figure A
Model	SUCS34815	
Item	Output Voltage Accuracy	
Object	+15V0.2A	

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 : 36 - 76V

Load Current : 0 - 0.2A

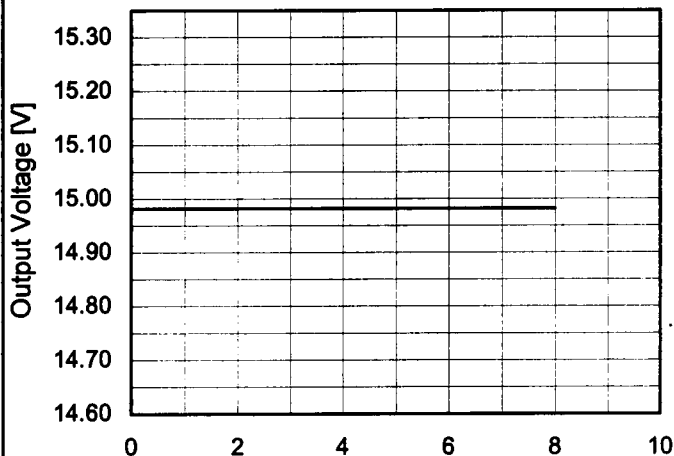
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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]	Ratio [%]
Maximum Voltage	25	76	0	14.985	±22	±0.1
Minimum Voltage	-40	36	0.2	14.941		

COSEL

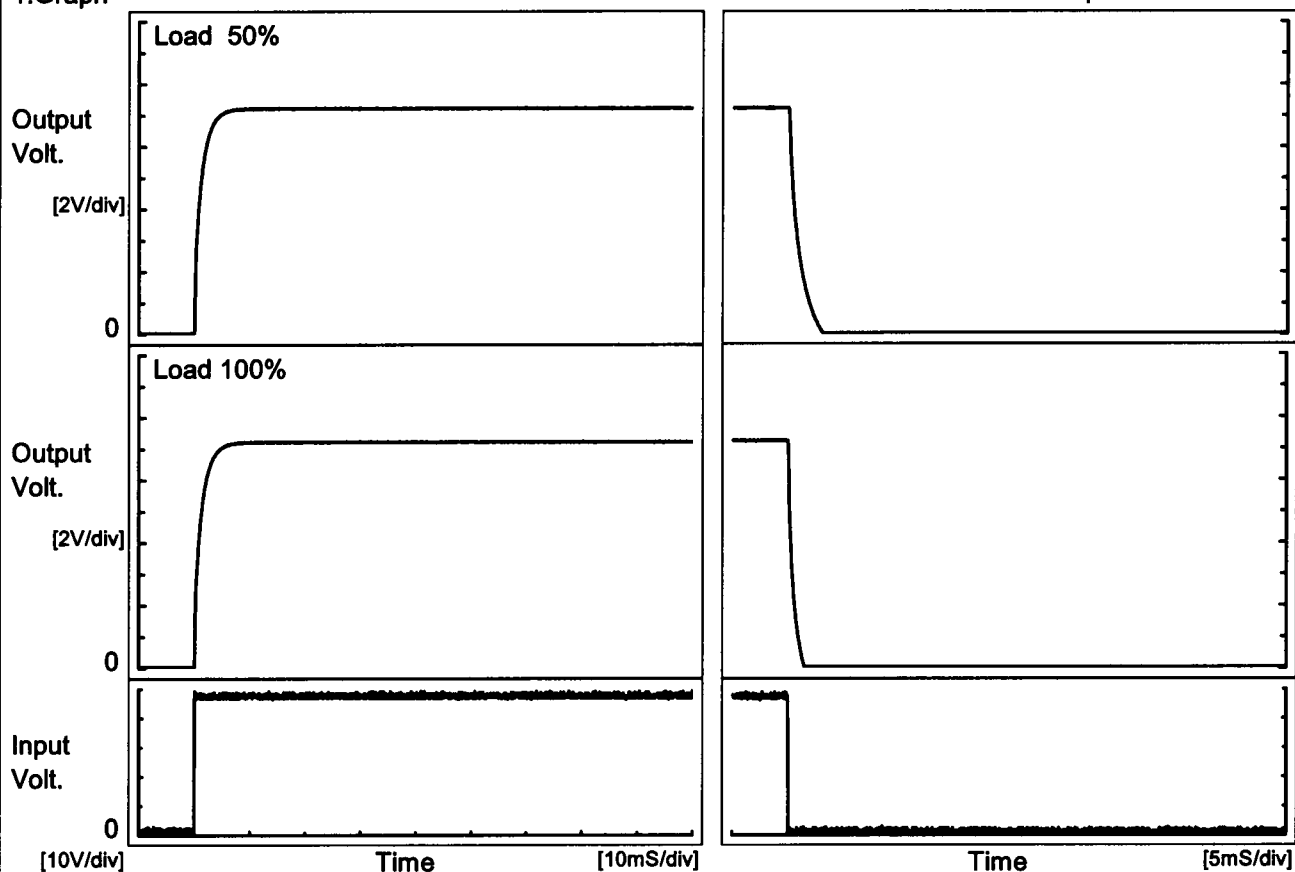
Model	SUCS34815																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+15V0.2A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 48V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>14.980</td></tr><tr><td>0.5</td><td>14.982</td></tr><tr><td>1.0</td><td>14.982</td></tr><tr><td>2.0</td><td>14.982</td></tr><tr><td>3.0</td><td>14.982</td></tr><tr><td>4.0</td><td>14.982</td></tr><tr><td>5.0</td><td>14.982</td></tr><tr><td>6.0</td><td>14.982</td></tr><tr><td>7.0</td><td>14.982</td></tr><tr><td>8.0</td><td>14.982</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	14.980	0.5	14.982	1.0	14.982	2.0	14.982	3.0	14.982	4.0	14.982	5.0	14.982	6.0	14.982	7.0	14.982	8.0	14.982
Time since start [H]	Output Voltage [V]																								
0.0	14.980																								
0.5	14.982																								
1.0	14.982																								
2.0	14.982																								
3.0	14.982																								
4.0	14.982																								
5.0	14.982																								
6.0	14.982																								
7.0	14.982																								
8.0	14.982																								

COSEL

Model	SUCS34815	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V0.2A		

1.Graph

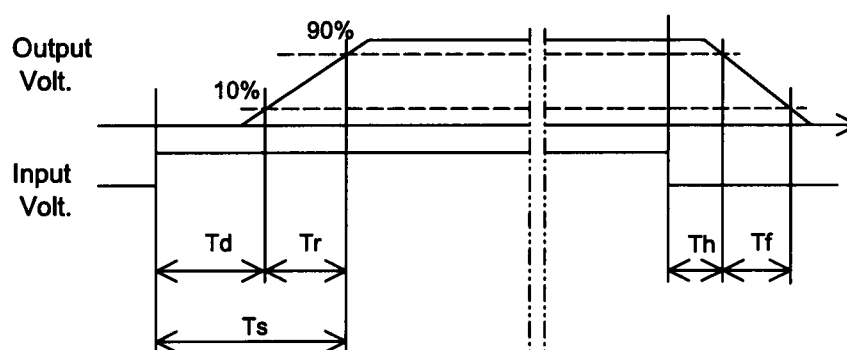
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.6	3.7	0.1	2.1
100 %	0.1	3.6	3.7	0.1	1.0



Model

SUCS34815

Item

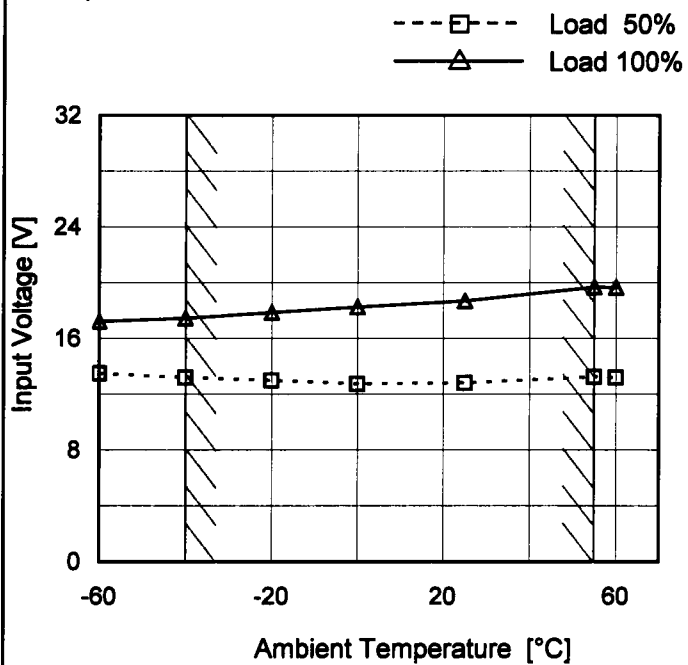
Minimum Input Voltage
for Regulated Output Voltage

Object

+15V0.2A

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	13.5	17.3
-40	13.2	17.5
-20	13.0	17.9
0	12.8	18.3
25	12.9	18.7
55	13.3	19.7
60	13.2	19.7
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model

SUCS34815

Item

Overcurrent Protection

Object

+15V0.2A

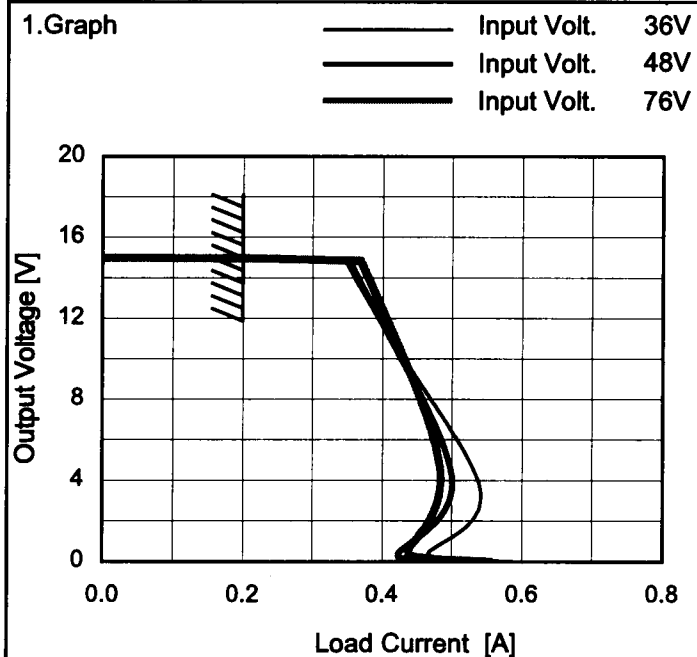
Temperature

25°C

Testing Circuitry

Figure A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.20	0.20	0.20
14.3	0.36	0.36	0.38
13.5	0.37	0.37	0.39
12.0	0.39	0.39	0.40
10.5	0.42	0.42	0.42
9.0	0.45	0.44	0.44
7.5	0.48	0.47	0.46
6.0	0.51	0.49	0.47
4.5	0.53	0.50	0.48
3.0	0.54	0.50	0.48
1.5	0.52	0.47	0.46
0.0	0.59	0.49	0.56

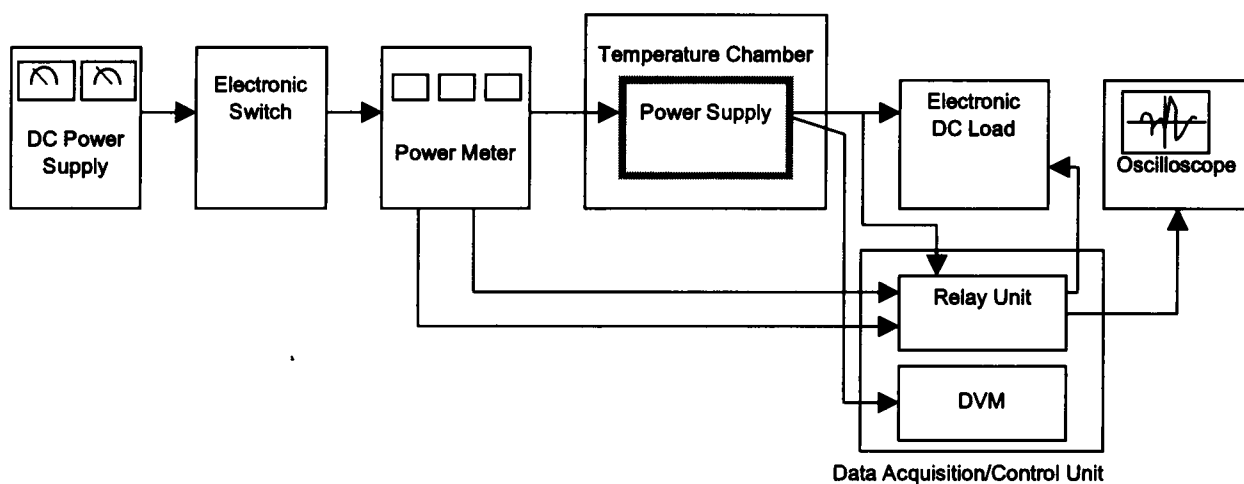


Figure A

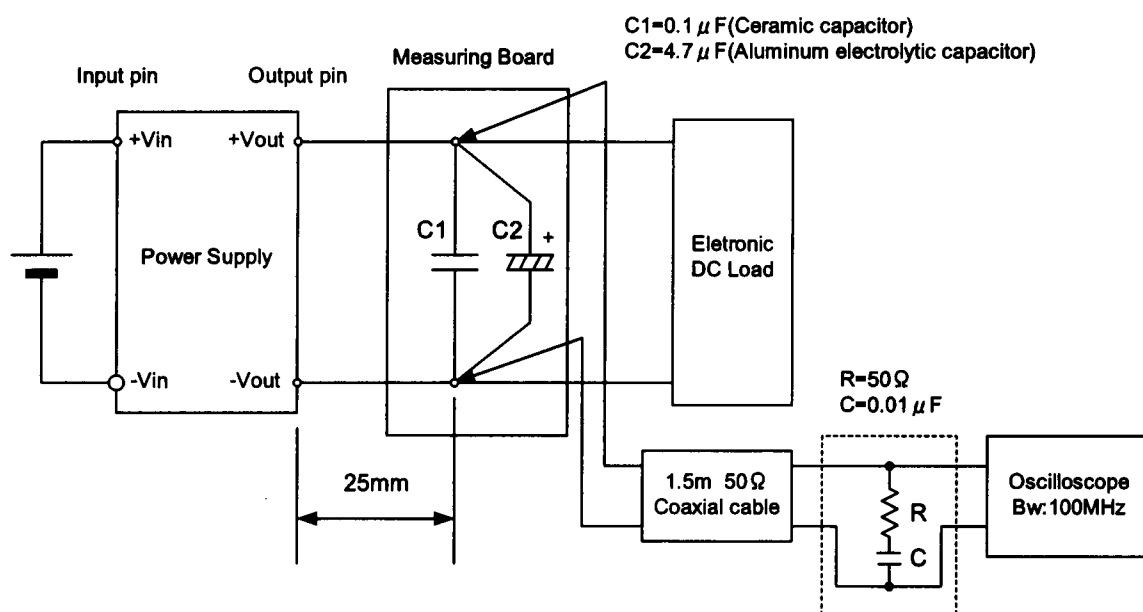


Figure B (Ripple and Ripple noise Characteristic)