

# TEST DATA OF SUTS30512

Regulated DC Power Supply  
February 13, 2009

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**COSEL CO.,LTD.**

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Model	SUTS30512		
Item	Input Current (by Input Voltage)	Temperature	25°C
Object		Testing Circuitry	Figure A
1.Graph		2.Values	
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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> <p>Efficiency [%]</p> <p>Load Current [A]</p> <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">Efficiency [%]</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>0.000</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.050</td><td>63.8</td><td>63.0</td><td>51.9</td></tr><tr><td>0.100</td><td>73.7</td><td>73.4</td><td>65.8</td></tr><tr><td>0.150</td><td>76.8</td><td>77.0</td><td>71.9</td></tr><tr><td>0.200</td><td>77.7</td><td>78.3</td><td>75.3</td></tr><tr><td>0.250</td><td>77.4</td><td>78.5</td><td>77.5</td></tr><tr><td>0.275</td><td>77.4</td><td>78.6</td><td>78.2</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></table>		Load Current [A]	Efficiency [%]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	0.000	-	-	-	0.050	63.8	63.0	51.9	0.100	73.7	73.4	65.8	0.150	76.8	77.0	71.9	0.200	77.7	78.3	75.3	0.250	77.4	78.5	77.5	0.275	77.4	78.6	78.2	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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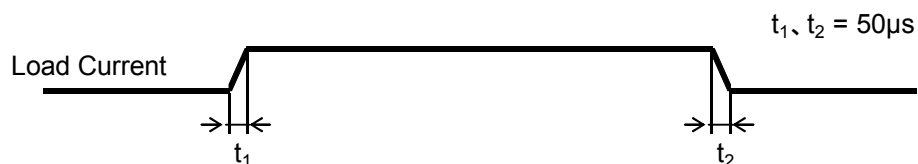
Model	SUTS30512																																		
Item	Line Regulation	Temperature	25°C																																
		Testing Circuitry	Figure A																																
Object	+12V0.25A																																		
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Input Voltage [V]	Output Voltage [V]																																		
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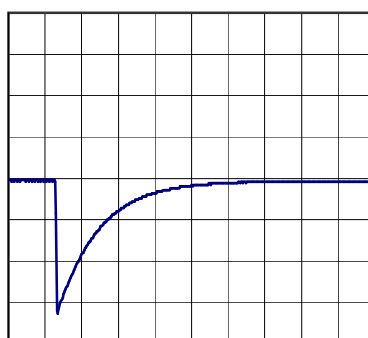
Model	SUTS30512	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+12V0.25A	

Input Volt. 5 V  
Cycle 100 mS



Min. Load (0A)  $\longleftrightarrow$   
Load 100% (0.25A)

200mV/div



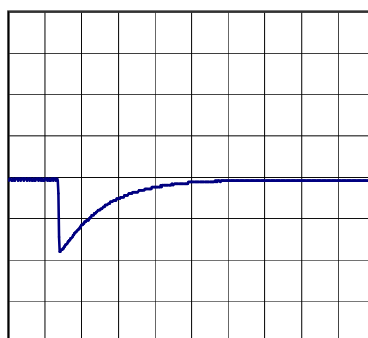
2ms/div



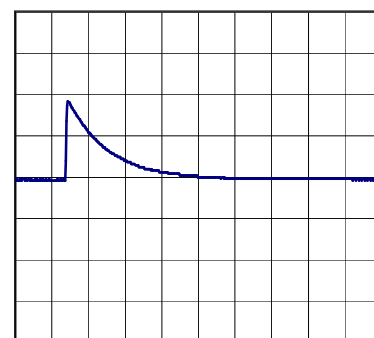
2ms/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (0.125A)

200mV/div



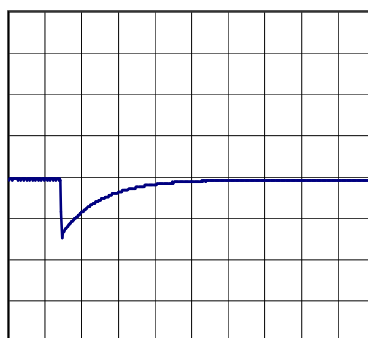
2ms/div



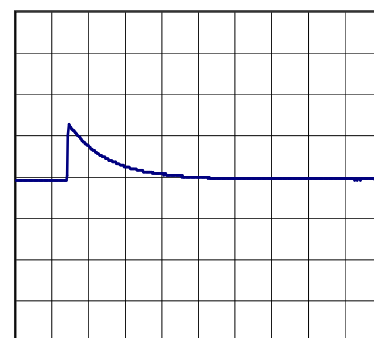
2ms/div

Load 50% (0.125A)  $\longleftrightarrow$   
Load 100% (0.25A)

200mV/div



2ms/div



2ms/div

Model	SUTS30512																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
		Testing Circuitry	Figure B																																						
Object	+12V0.25A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>9V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>18V</div></div></div> <p>Ripple Voltage 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 Voltage [mV]</th></tr><tr><th>Input Volt. 9 [V]</th><th>Input Volt. 18 [V]</th></tr><tr><td>0.000</td><td>4</td><td>2</td></tr><tr><td>0.050</td><td>4</td><td>2</td></tr><tr><td>0.100</td><td>5</td><td>3</td></tr><tr><td>0.150</td><td>6</td><td>3</td></tr><tr><td>0.200</td><td>6</td><td>3</td></tr><tr><td>0.250</td><td>7</td><td>4</td></tr><tr><td>0.275</td><td>7</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. 9 [V]	Input Volt. 18 [V]	0.000	4	2	0.050	4	2	0.100	5	3	0.150	6	3	0.200	6	3	0.250	7	4	0.275	7	4	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																									

Model	SUTS30512																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+12V0.25A	Testing Circuitry	Figure B																																						
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Model	SUTS30512																																								
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry    Figure B																																							
Object	+12V0.25A																																								
1.Graph		2.Values																																							
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <p>Ambient Temperature [°C]</p> <p>Input Volt.      12V</p> <p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-60</td><td>5</td><td>9</td></tr><tr><td>-40</td><td>4</td><td>9</td></tr><tr><td>-20</td><td>5</td><td>9</td></tr><tr><td>0</td><td>4</td><td>8</td></tr><tr><td>25</td><td>4</td><td>7</td></tr><tr><td>55</td><td>3</td><td>6</td></tr><tr><td>60</td><td>3</td><td>5</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]	Ripple Voltage [mV]		Load 50%	Load 100%	-60	5	9	-40	4	9	-20	5	9	0	4	8	25	4	7	55	3	6	60	3	5	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																								
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Model	SUTS30512																																																						
Item	Ambient Temperature Drift		Testing Circuitry    Figure A																																																				
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Note: Slanted line shows the range of the rated ambient temperature.																																																							



Model		SUTS30512	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+12V0.25A	

### 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 - 0.25A

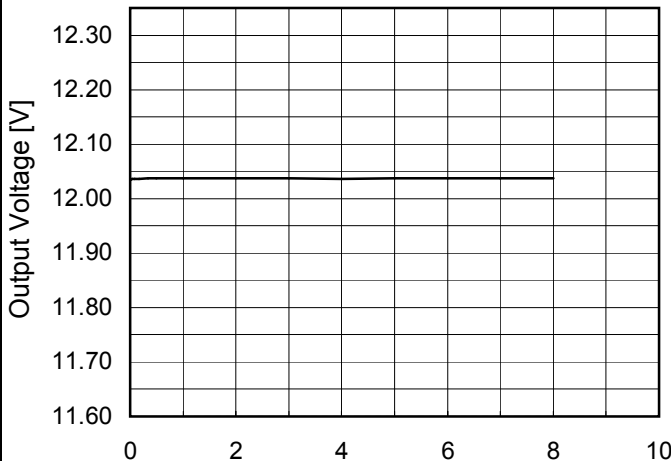
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

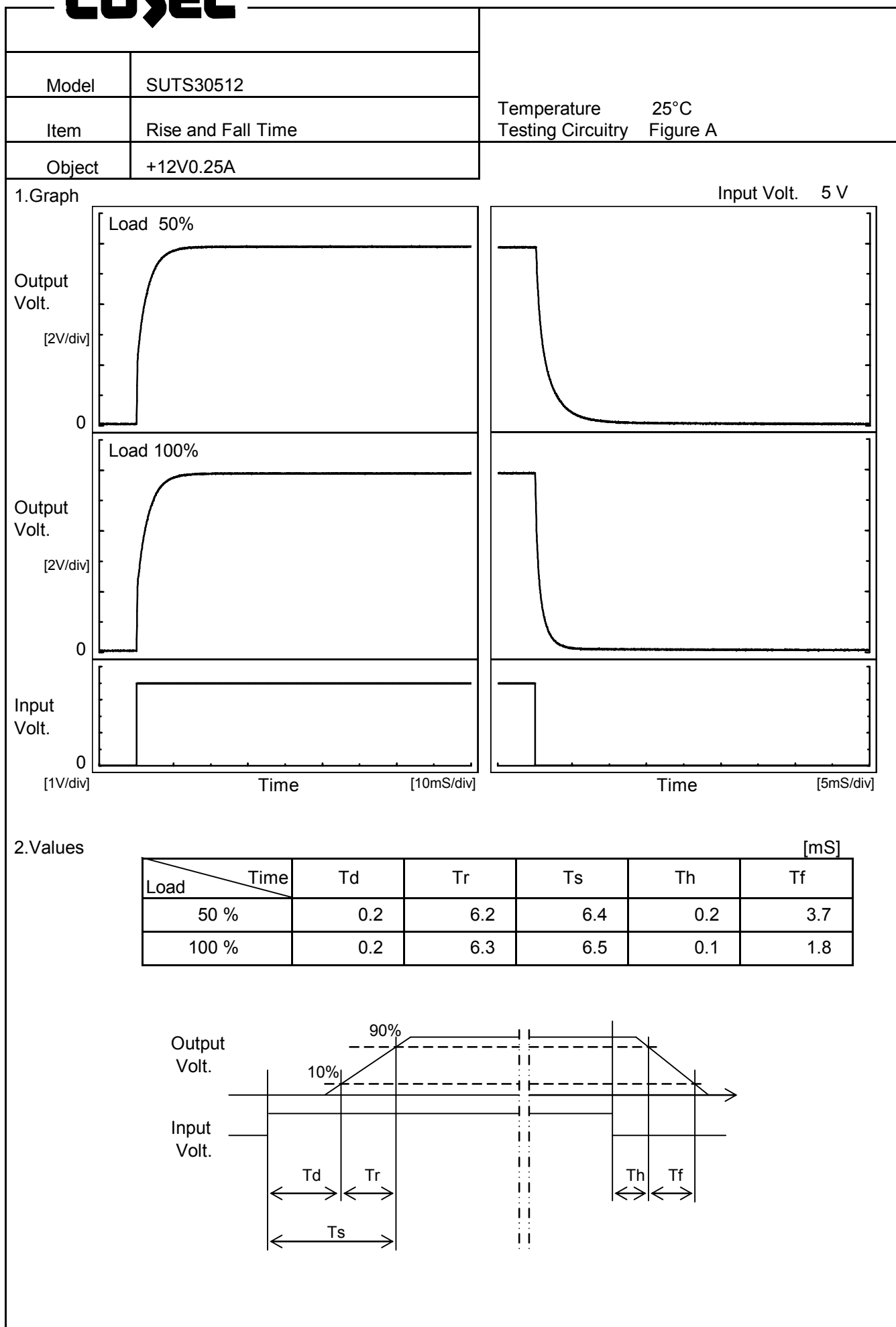
\* Output Voltage Accuracy (Ratio) =  $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	55	9	0	12.042	±21	±0.2
Minimum Voltage	-40	4.5	0.25	12.001		



Model	SUTS30512																								
Item	Time Lapse Drift	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+12V0.25A																								
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>12.033</td></tr><tr><td>0.5</td><td>12.037</td></tr><tr><td>1.0</td><td>12.037</td></tr><tr><td>2.0</td><td>12.037</td></tr><tr><td>3.0</td><td>12.037</td></tr><tr><td>4.0</td><td>12.037</td></tr><tr><td>5.0</td><td>12.037</td></tr><tr><td>6.0</td><td>12.037</td></tr><tr><td>7.0</td><td>12.037</td></tr><tr><td>8.0</td><td>12.037</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	12.033	0.5	12.037	1.0	12.037	2.0	12.037	3.0	12.037	4.0	12.037	5.0	12.037	6.0	12.037	7.0	12.037	8.0	12.037
Time since start [H]	Output Voltage [V]																								
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Model	SUTS30512																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry    Figure A																																							
Object	+12V0.25A																																								
1.Graph		2.Values																																							
<div><div>---□---    Load 50%</div><div>—△—    Load 100%</div></div> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<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>2.1</td><td>2.6</td></tr><tr><td>-40</td><td>2.1</td><td>2.8</td></tr><tr><td>-20</td><td>2.1</td><td>2.6</td></tr><tr><td>0</td><td>2.1</td><td>2.7</td></tr><tr><td>25</td><td>2.1</td><td>2.8</td></tr><tr><td>55</td><td>2.3</td><td>2.9</td></tr><tr><td>60</td><td>2.2</td><td>2.9</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></table>		Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-60	2.1	2.6	-40	2.1	2.8	-20	2.1	2.6	0	2.1	2.7	25	2.1	2.8	55	2.3	2.9	60	2.2	2.9	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																								
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Model	SUTS30512																																																									
Item	Overcurrent Protection	Temperature	25°C																																																							
Object	+12V0.25A	Testing Circuitry	Figure A																																																							
1.Graph		2.Values																																																								
<div><div><div></div><div>Input Volt. 4.5V</div></div><div><div></div><div>Input Volt. 5V</div></div><div><div></div><div>Input Volt. 9V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</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>12.0</td><td>0.25</td><td>0.25</td><td>0.25</td></tr><tr><td>11.4</td><td>0.39</td><td>0.39</td><td>0.39</td></tr><tr><td>10.8</td><td>0.40</td><td>0.40</td><td>0.39</td></tr><tr><td>9.6</td><td>0.41</td><td>0.41</td><td>0.40</td></tr><tr><td>8.4</td><td>0.43</td><td>0.43</td><td>0.41</td></tr><tr><td>7.2</td><td>0.45</td><td>0.44</td><td>0.42</td></tr><tr><td>6.0</td><td>0.46</td><td>0.45</td><td>0.42</td></tr><tr><td>4.8</td><td>0.47</td><td>0.46</td><td>0.42</td></tr><tr><td>3.6</td><td>0.47</td><td>0.46</td><td>0.42</td></tr><tr><td>2.4</td><td>0.46</td><td>0.45</td><td>0.40</td></tr><tr><td>1.2</td><td>0.42</td><td>0.40</td><td>0.37</td></tr><tr><td>0.0</td><td>0.36</td><td>0.36</td><td>0.36</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	12.0	0.25	0.25	0.25	11.4	0.39	0.39	0.39	10.8	0.40	0.40	0.39	9.6	0.41	0.41	0.40	8.4	0.43	0.43	0.41	7.2	0.45	0.44	0.42	6.0	0.46	0.45	0.42	4.8	0.47	0.46	0.42	3.6	0.47	0.46	0.42	2.4	0.46	0.45	0.40	1.2	0.42	0.40	0.37	0.0	0.36	0.36	0.36
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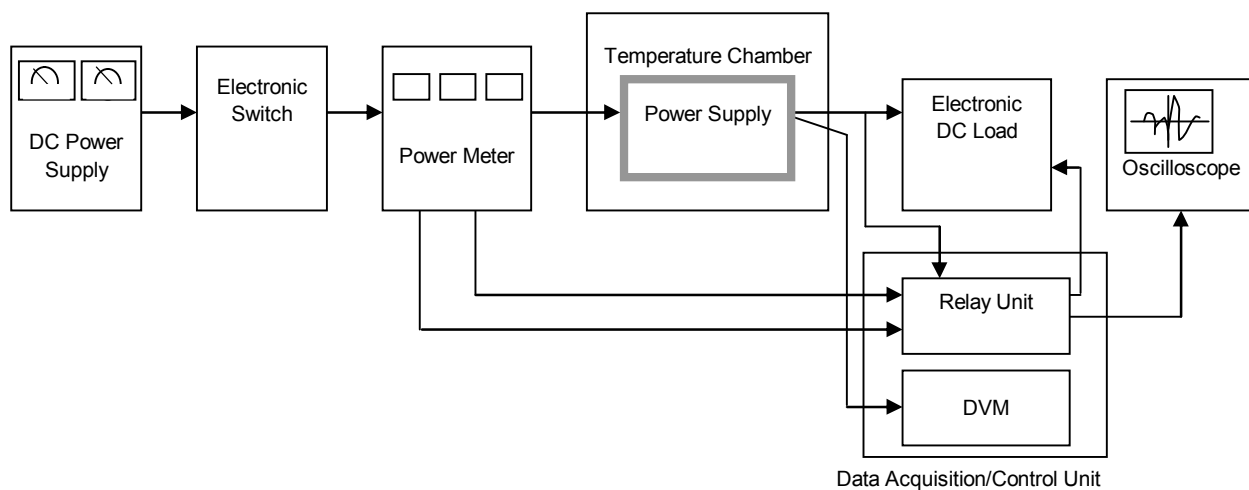


Figure A

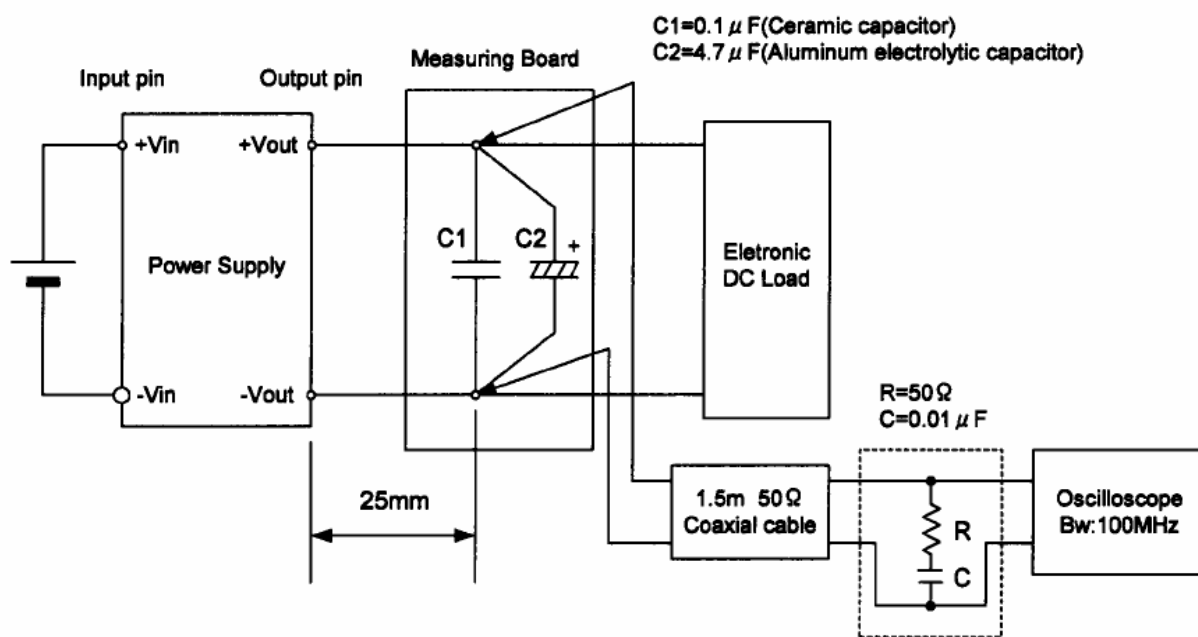


Figure B (Ripple and Ripple noise Characteristic)