



TEST DATA OF SUW102412 SUCW102412

Regulated DC Power Supply
Mar 28, 2005

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Yoshimichi Hirokawa
Yoshimichi Hirokawa Design Engineer

COSEL CO.,LTD.

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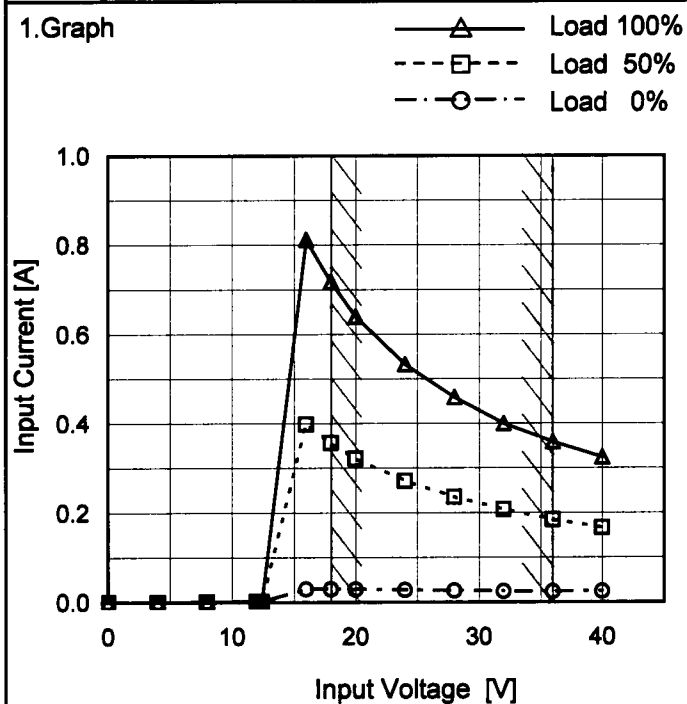
Model SUW102412/SUCW102412

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%
0.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
8.0	0.001	0.001	0.001
12.0	0.001	0.001	0.001
12.4	0.001	0.001	0.001
16.0	0.030	0.399	0.813
18.0	0.029	0.357	0.718
20.0	0.029	0.322	0.640
24.0	0.027	0.271	0.533
28.0	0.026	0.236	0.459
32.0	0.025	0.207	0.400
36.0	0.024	0.185	0.359
40.0	0.024	0.167	0.325
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Model SUW102412/SUCW102412

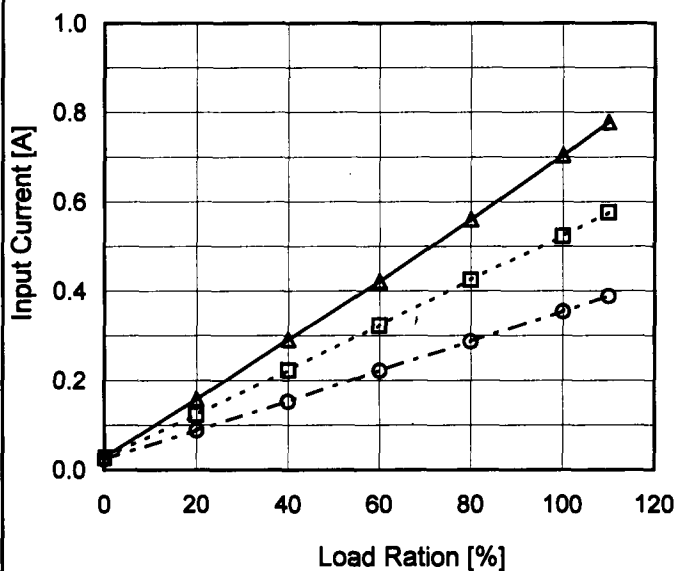
Item Input Current (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

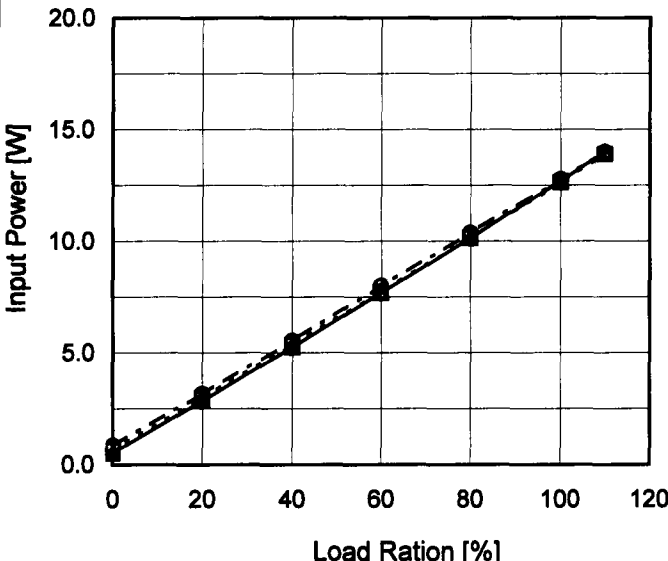
—△— Input Volt. 18V
---□--- Input Volt. 24V
---○--- Input Volt. 36V



2. Values

Load Ration [%]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.029	0.028	0.024
20	0.158	0.124	0.088
40	0.292	0.223	0.153
60	0.422	0.323	0.222
80	0.560	0.425	0.288
100	0.704	0.523	0.355
110	0.778	0.576	0.388
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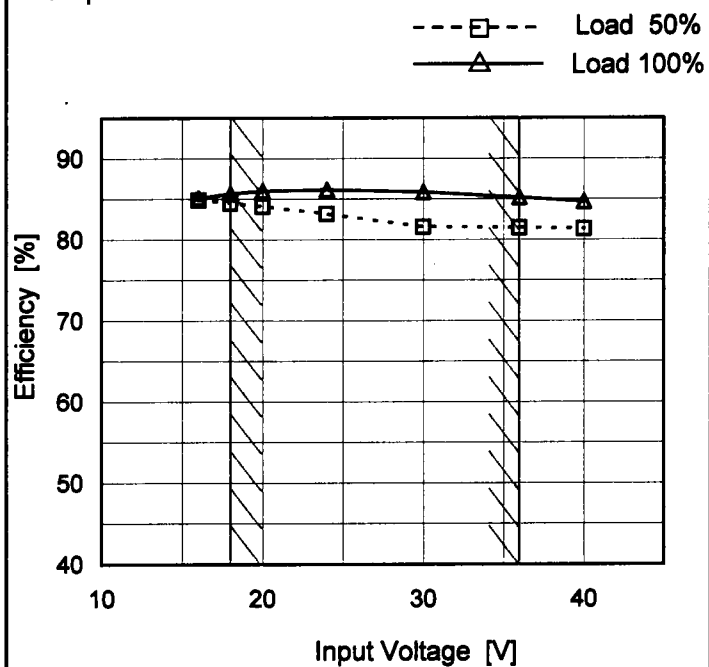
Model SUW102412/SUCW102412

Item Efficiency (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

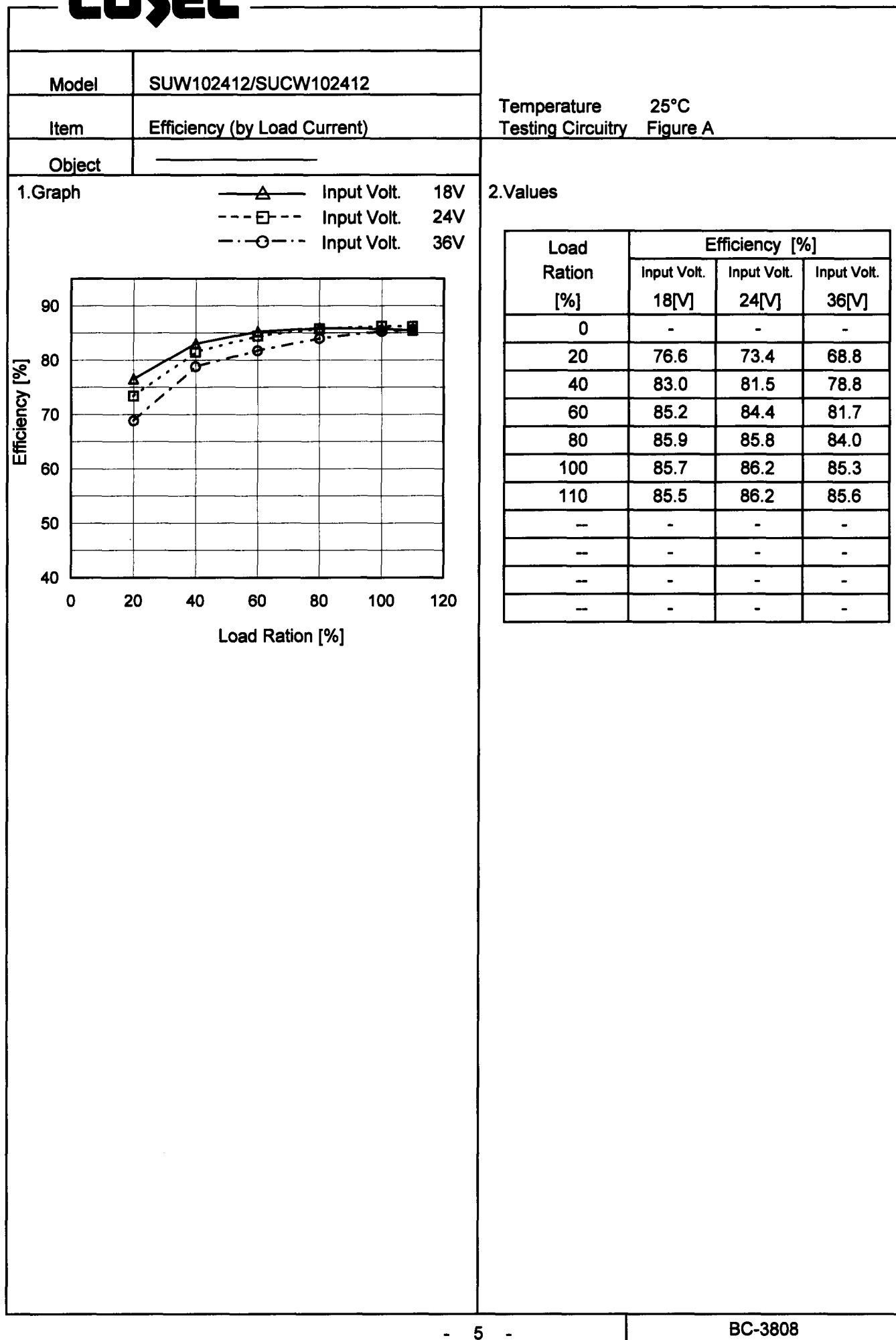


Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
16	84.9	85.1
18	84.5	85.7
20	84.1	86.0
24	83.2	86.1
30	81.6	85.9
36	81.4	85.2
40	81.3	84.7
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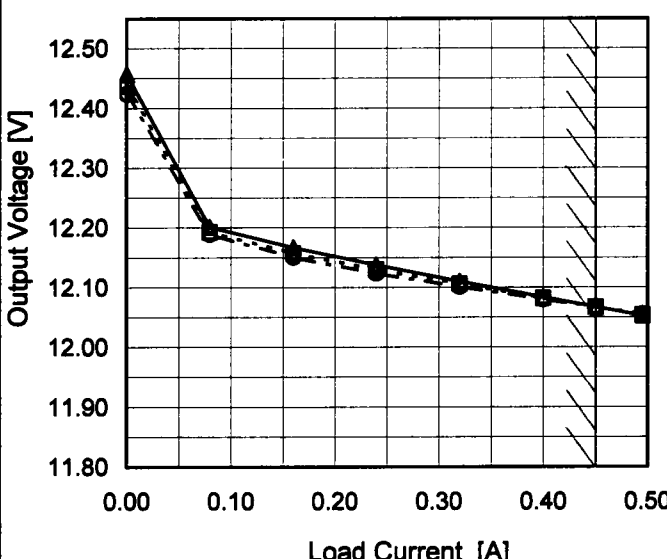
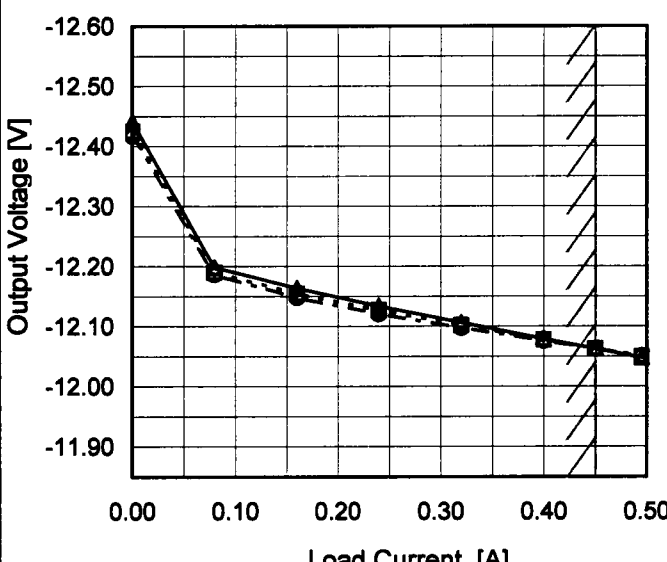


Model		SUW102412/SUCW102412																																	
Item		Line Regulation																																	
Object		+12V0.45A																																	
1.Graph		2.Values																																	
<div><div><div><div>---</div><div>□</div><div>---</div></div><div>Load 50%</div></div><div><div>—</div><div>△</div><div>—</div></div><div>Load 100%</div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>16</td><td>12.148</td><td>12.067</td></tr><tr><td>18</td><td>12.143</td><td>12.067</td></tr><tr><td>20</td><td>12.140</td><td>12.066</td></tr><tr><td>24</td><td>12.135</td><td>12.066</td></tr><tr><td>30</td><td>12.131</td><td>12.066</td></tr><tr><td>36</td><td>12.129</td><td>12.066</td></tr><tr><td>40</td><td>12.128</td><td>12.066</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	16	12.148	12.067	18	12.143	12.067	20	12.140	12.066	24	12.135	12.066	30	12.131	12.066	36	12.129	12.066	40	12.128	12.066	--	-	-	--	-	-		
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Model	SUW102412/SUCW102412																																																						
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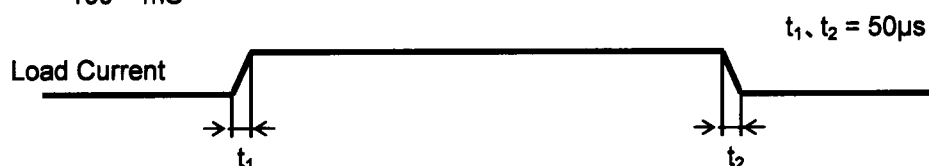
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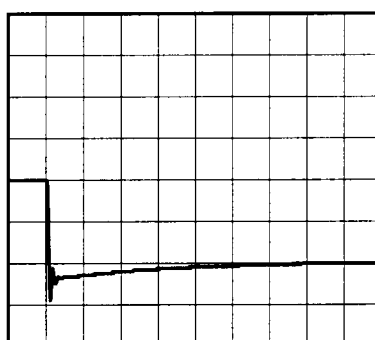
Model	SUW102412/SUCW102412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V0.45A		

Input Volt. 24 V
Cycle 100 mS

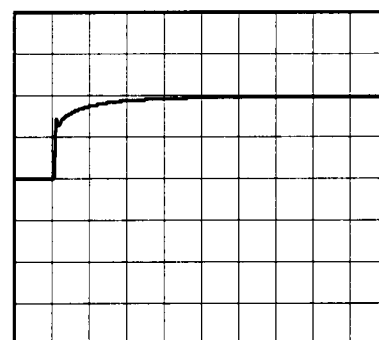


Min. Load (0A) \longleftrightarrow
Load 100% (0.45A)

200mV/div



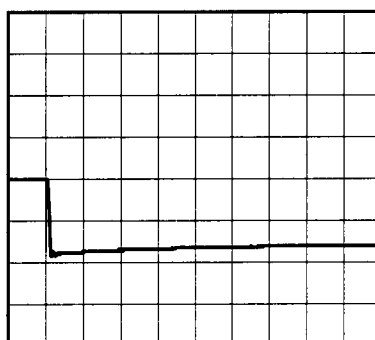
500µs/div



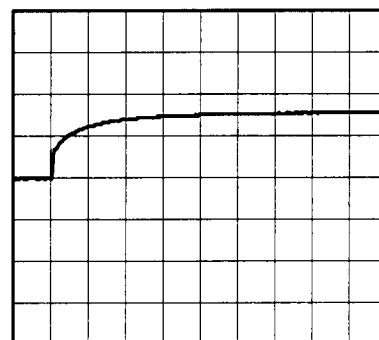
500µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.225A)

200mV/div



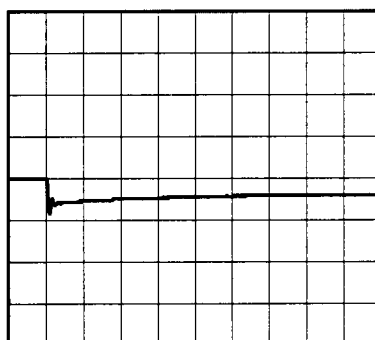
500µs/div



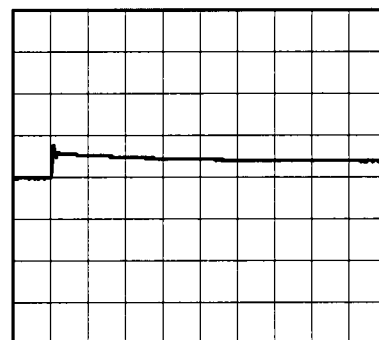
500µs/div

Load 50% (0.225A) \longleftrightarrow
Load 100% (0.45A)

200mV/div



500µs/div

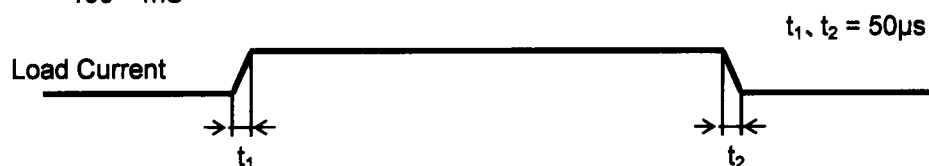


500µs/div



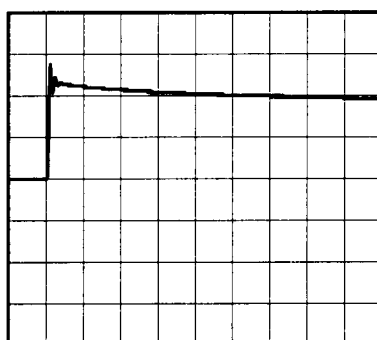
Model	SUW102412/SUCW102412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	-12V0.45A		

Input Volt. 24 V
Cycle 100 mS

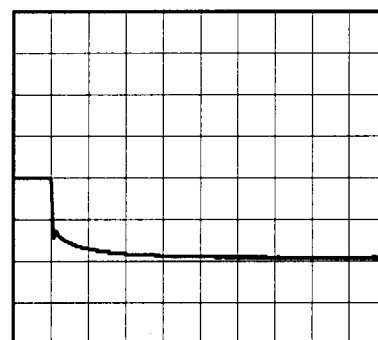


Min. Load (0A) \longleftrightarrow
Load 100% (0.45A)

200mV/div



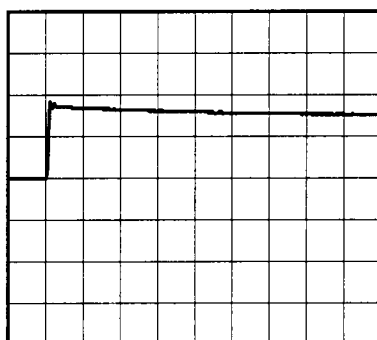
500µs/div



500µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (0.225A)

200mV/div



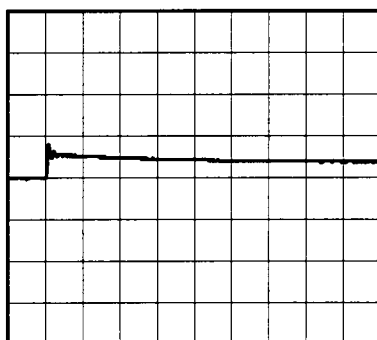
500µs/div



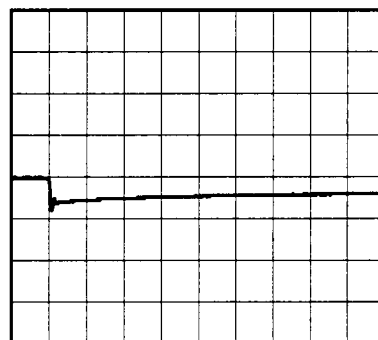
500µs/div

Load 50% (0.225A) \longleftrightarrow
Load 100% (0.45A)

200mV/div



500µs/div



500µs/div

COSEL

Model		SUW102412/SUCW102412		Temperature 25°C Testing Circuitry Figure B																																							
Item		Ripple Voltage (by Load Current)																																									
Object		+12V0.45A																																									
1.Graph				2.Values																																							
<div><div><div>—△— Input Volt. 18V</div><div>- - -○- - - Input Volt. 36V</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. 18 [V]</th><th>Input Volt. 36 [V]</th></tr><tr><td>0.000</td><td>2</td><td>2</td></tr><tr><td>0.090</td><td>2</td><td>2</td></tr><tr><td>0.180</td><td>3</td><td>3</td></tr><tr><td>0.270</td><td>3</td><td>3</td></tr><tr><td>0.360</td><td>5</td><td>4</td></tr><tr><td>0.450</td><td>5</td><td>4</td></tr><tr><td>0.495</td><td>6</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>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 18 [V]	Input Volt. 36 [V]	0.000	2	2	0.090	2	2	0.180	3	3	0.270	3	3	0.360	5	4	0.450	5	4	0.495	6	5	—	-	-	—	-	-	—	-	-	—	-	-
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Item		Ripple Voltage (by Load Current)																																							
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1.Graph		2.Values																																							
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<div><div><div>—△— Input Volt. 18V</div><div>- - -○- - - Input Volt. 36V</div></div><div>Ripple-Noise [mV]</div><div>Load Current [A]</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>Ripple Noise[mVp-p]</div></div><div>Fig.Complex Ripple Noise Wave Form</div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 18 [V]</th><th>Input Volt. 36 [V]</th></tr><tr><td>0.000</td><td>4</td><td>4</td></tr><tr><td>0.090</td><td>4</td><td>5</td></tr><tr><td>0.180</td><td>5</td><td>5</td></tr><tr><td>0.270</td><td>6</td><td>5</td></tr><tr><td>0.360</td><td>7</td><td>6</td></tr><tr><td>0.450</td><td>9</td><td>7</td></tr><tr><td>0.495</td><td>10</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-Noise [mV]		Input Volt. 18 [V]	Input Volt. 36 [V]	0.000	4	4	0.090	4	5	0.180	5	5	0.270	6	5	0.360	7	6	0.450	9	7	0.495	10	7	—	-	-	—	-	-	—	-	-	—	-	-
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Model	SUW102412/SUCW102412		
Item	Ripple-Noise	Temperature	25°C
Object	-12V0.45A	Testing Circuitry	Figure B
1.Graph		2.Values	
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COSEL

Model		SUW102412/SUCW102412																																							
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+12V0.45A																																							
1.Graph																																									
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Measured by 100 MHz Oscilloscope.

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

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Testing Circuitry Figure A



Object	-12V0.45A
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Note: Slanted line shows the range of the rated ambient temperature.



		Testing Circuitry Figure A
Model	SUW102412/SUCW102412	
Item	Output Voltage Accuracy	

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 : 18 - 36V

Load Current (AVR 1) : 0 - 0.45A (AVR 2) : 0 - 0.45A

* Other Output : Rated Load

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

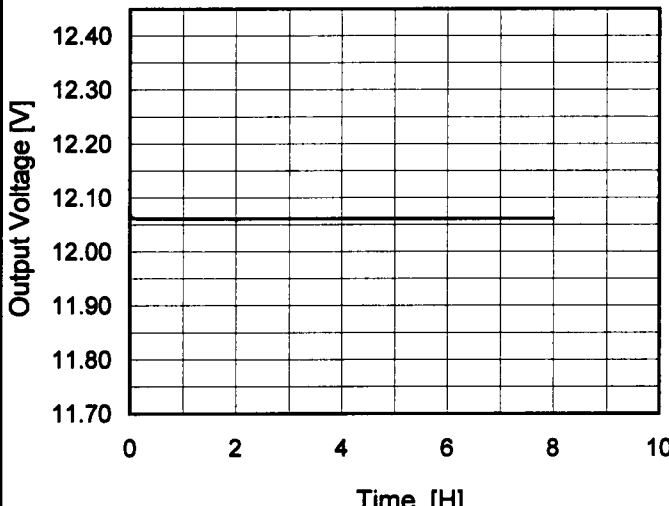
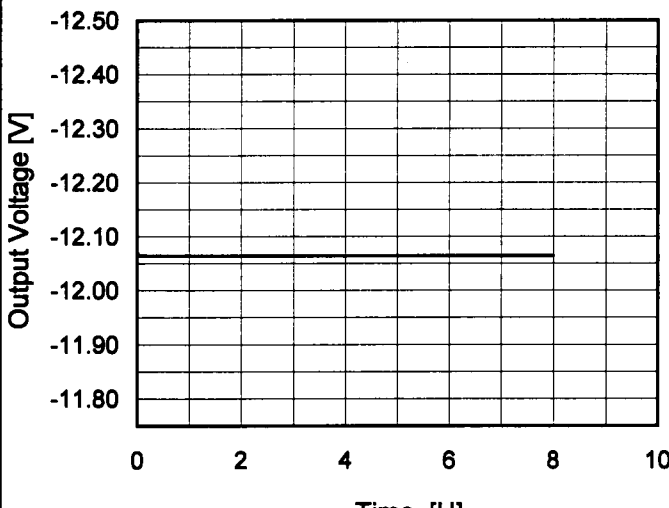
* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Object	+12V0.45A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	0	18	0	12.469	±209	±1.7
Minimum Voltage	55	36	0.45	12.051		

Object	-12V0.45A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	0	18	0	-12.451	±203	±1.7
Minimum Voltage	55	36	0.45	-12.045		

COSEL

Model	SUW102412/SUCW102412																								
Item	Time Lapse Drift																								
Object	+12V0.45A																								
1.Graph		2.Values																							
<div><p>Input Volt. 24V Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>12.072</td></tr><tr><td>0.5</td><td>12.062</td></tr><tr><td>1.0</td><td>12.062</td></tr><tr><td>2.0</td><td>12.061</td></tr><tr><td>3.0</td><td>12.061</td></tr><tr><td>4.0</td><td>12.061</td></tr><tr><td>5.0</td><td>12.061</td></tr><tr><td>6.0</td><td>12.061</td></tr><tr><td>7.0</td><td>12.061</td></tr><tr><td>8.0</td><td>12.061</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	12.072	0.5	12.062	1.0	12.062	2.0	12.061	3.0	12.061	4.0	12.061	5.0	12.061	6.0	12.061	7.0	12.061	8.0	12.061
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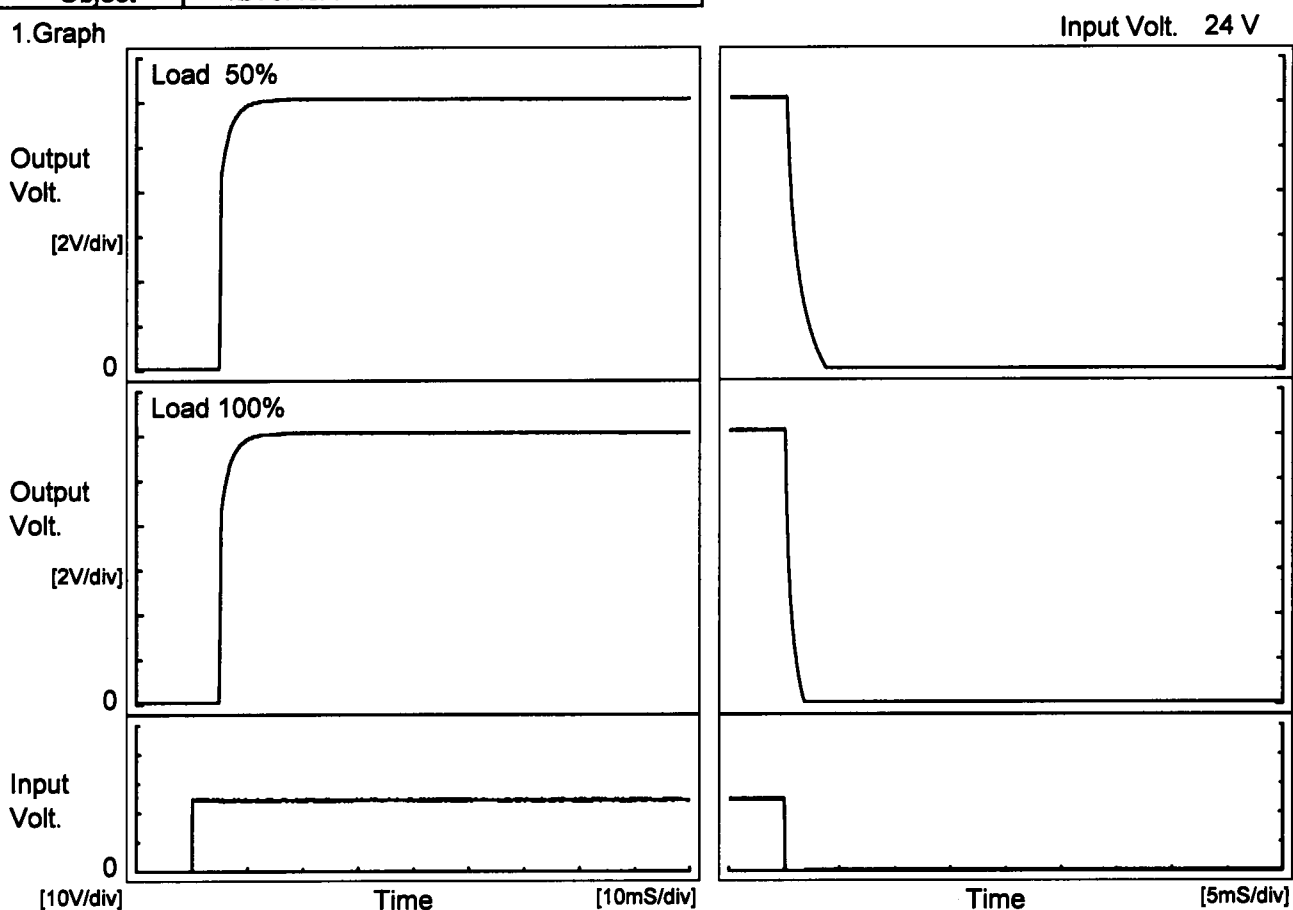
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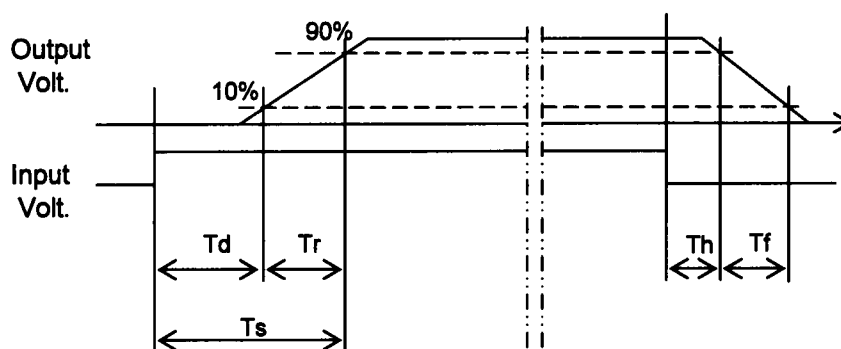
Model	SUW102412/SUCW102412	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V0.45A		

1.Graph



2.Values

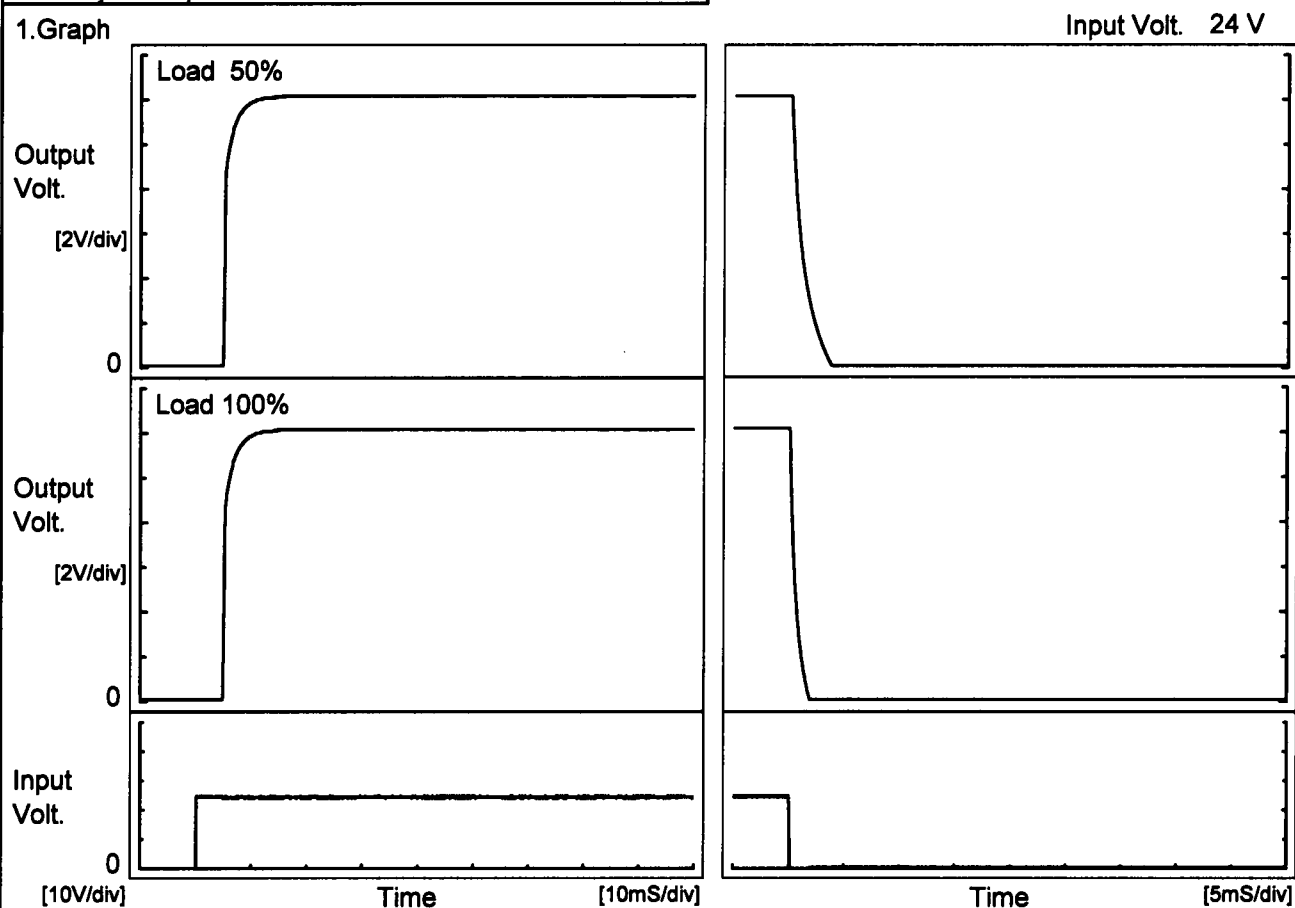
		[mS]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		5.0	2.0	7.0	0.2	2.4
100 %		4.9	2.2	7.1	0.1	1.2



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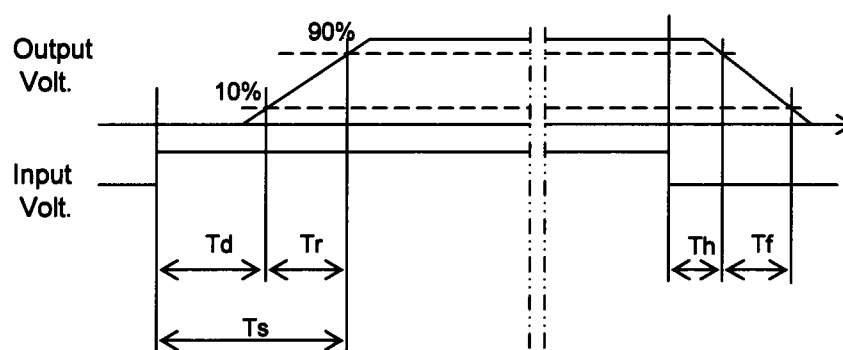
Model	SUW102412/SUCW102412	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	-12V0.45A		

1. Graph



2. Values

		[mS]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		5.0	2.0	7.0	0.2	2.5
100 %		4.9	2.1	7.0	0.1	1.3



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Model		SUW102412/SUCW102412																																					
Item		Minimum Input Voltage for Regulated Output Voltage																																					
Object		+12V0.45A																																					
1.Graph																																							
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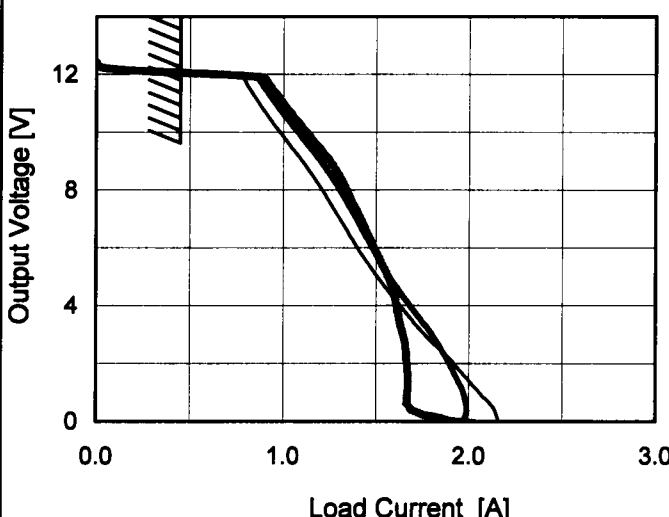
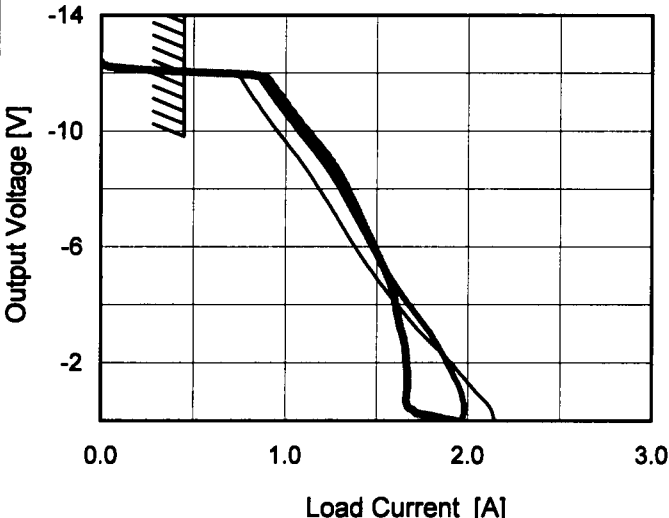
Ambient Temperature [°C]		Input Voltage [V]	
		Load 50%	Load 100%
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-40		11.9	12.0
-20		11.7	11.8
0		11.6	11.5
25		11.5	11.3
55		11.3	11.2
60		11.1	11.2
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Note: Slanted line shows the range of the rated ambient temperature.

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Model		SUW102412/SUCW102412		Temperature 25°C																																																								
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<div><div>Output Voltage [V]</div><div></div><div>Load Current [A]</div></div>				<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>-12.0</td><td>0.69</td><td>0.76</td><td>0.50</td></tr><tr><td>-11.4</td><td>0.80</td><td>0.92</td><td>0.94</td></tr><tr><td>-10.8</td><td>0.86</td><td>0.97</td><td>1.02</td></tr><tr><td>-9.6</td><td>1.00</td><td>1.13</td><td>1.17</td></tr><tr><td>-8.4</td><td>1.15</td><td>1.27</td><td>1.31</td></tr><tr><td>-7.2</td><td>1.27</td><td>1.38</td><td>1.40</td></tr><tr><td>-6.0</td><td>1.38</td><td>1.47</td><td>1.49</td></tr><tr><td>-4.8</td><td>1.52</td><td>1.59</td><td>1.57</td></tr><tr><td>-3.6</td><td>1.67</td><td>1.73</td><td>1.62</td></tr><tr><td>-2.4</td><td>1.84</td><td>1.85</td><td>1.66</td></tr><tr><td>-1.2</td><td>2.02</td><td>1.95</td><td>1.67</td></tr><tr><td>0.0</td><td>2.15</td><td>1.97</td><td>1.96</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	-12.0	0.69	0.76	0.50	-11.4	0.80	0.92	0.94	-10.8	0.86	0.97	1.02	-9.6	1.00	1.13	1.17	-8.4	1.15	1.27	1.31	-7.2	1.27	1.38	1.40	-6.0	1.38	1.47	1.49	-4.8	1.52	1.59	1.57	-3.6	1.67	1.73	1.62	-2.4	1.84	1.85	1.66	-1.2	2.02	1.95	1.67	0.0	2.15	1.97	1.96
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Note: Slanted line shows the range of the rated load current.																																																												

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BC-3808

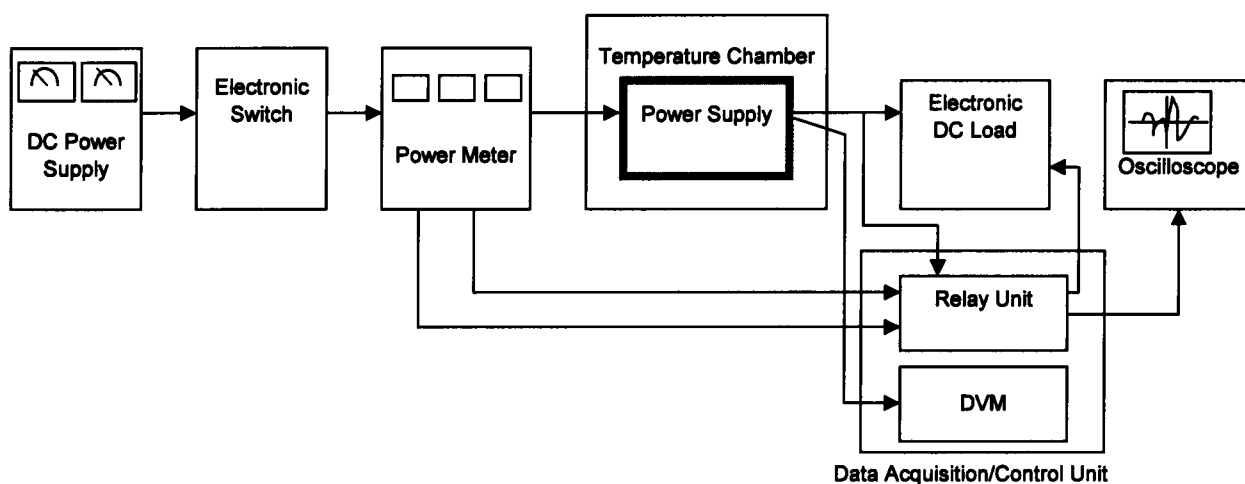


Figure A

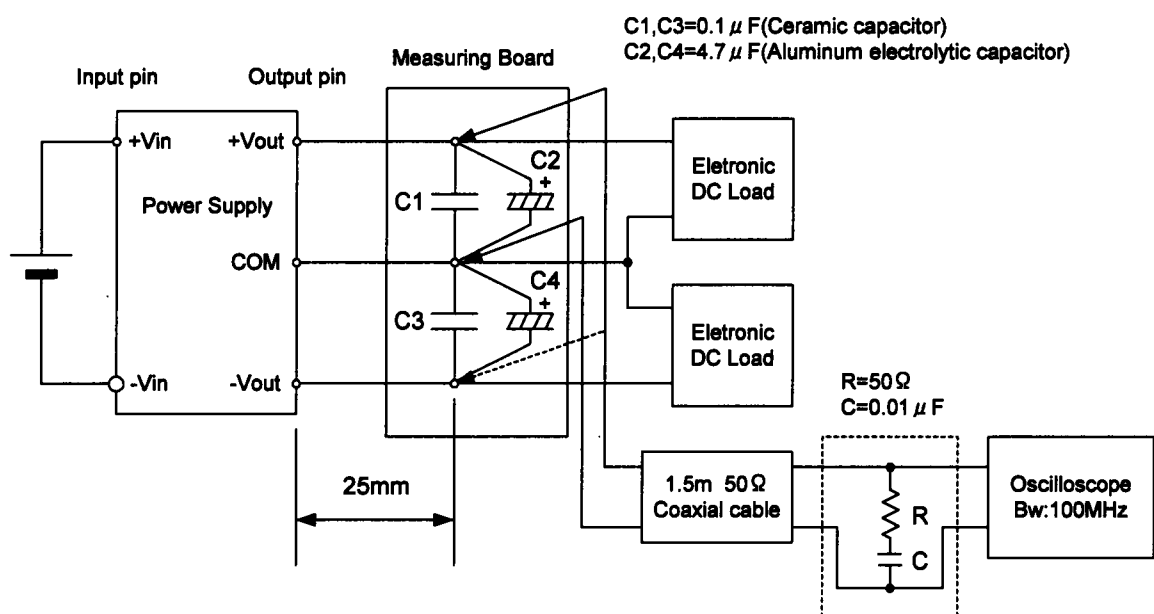


Figure B (Ripple and Ripple noise Characteristic)