

TEST DATA OF SUW60512 SUCW60512

Regulated DC Power Supply
Feb 24, 2005

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Yoshikazu Mizuno
Yoshikazu Mizuno Design Engineer

COSEL CO.,LTD.

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Model		SUW60512/SUCW60512		Temperature	25°C																																																																							
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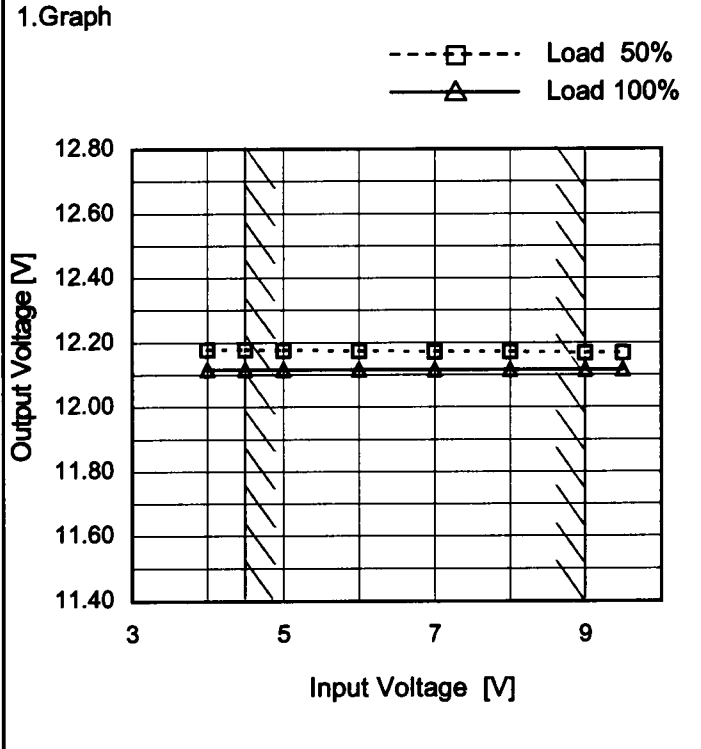


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Item	Line Regulation
Object	+12V0.25A

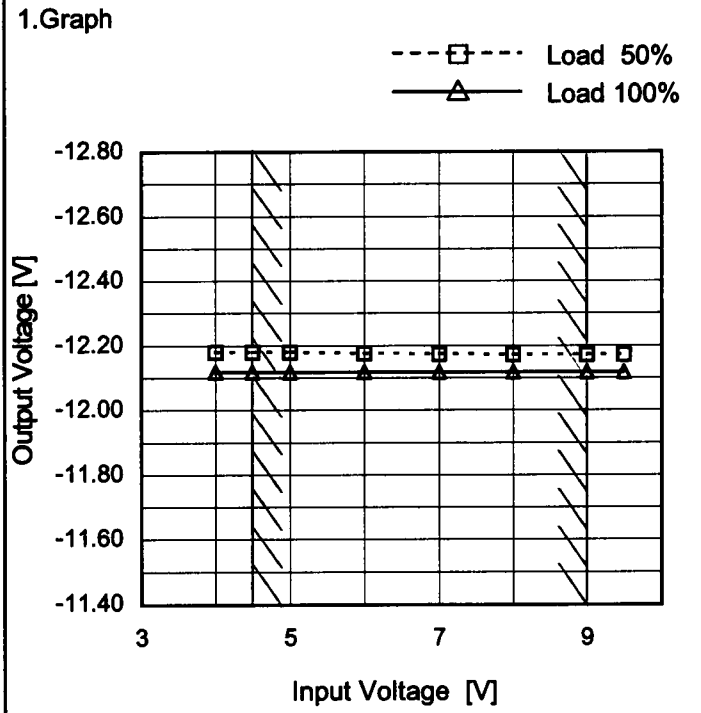
Temperature 25°C
Testing Circuitry Figure A



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	12.178	12.116
4.5	12.178	12.116
5.0	12.176	12.116
6.0	12.173	12.117
7.0	12.171	12.117
8.0	12.171	12.117
9.0	12.168	12.116
9.5	12.168	12.116
-	-	-

Object	-12V0.25A
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2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	-12.179	-12.117
4.5	-12.179	-12.117
5.0	-12.179	-12.117
6.0	-12.176	-12.117
7.0	-12.174	-12.118
8.0	-12.172	-12.117
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Note: Slanted line shows the range of the rated input voltage.

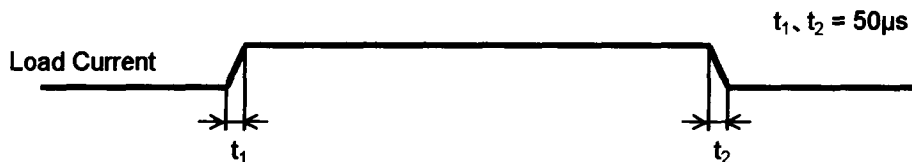


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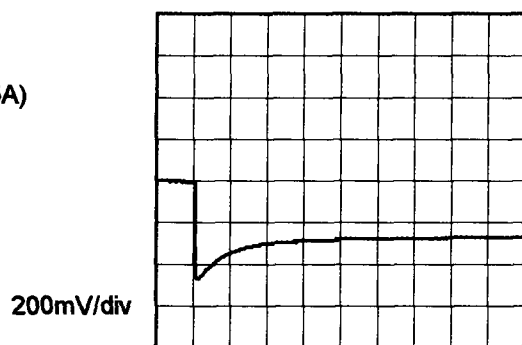


Model		SUW60512/SUCW60512	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Response	
Object		+12V0.25A	

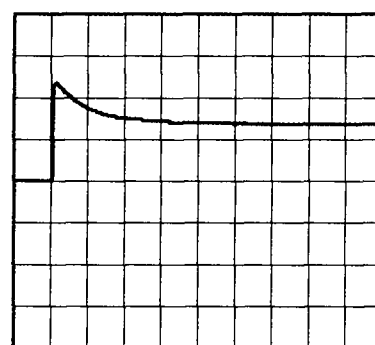
Input Volt. 5 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.25A)

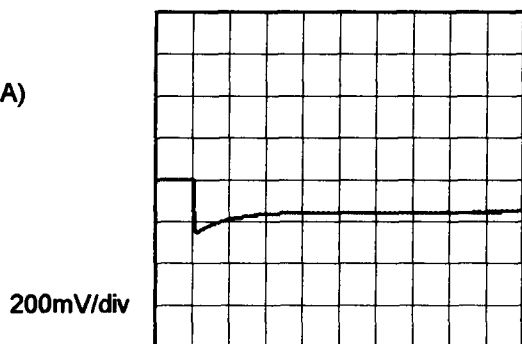


2ms/div

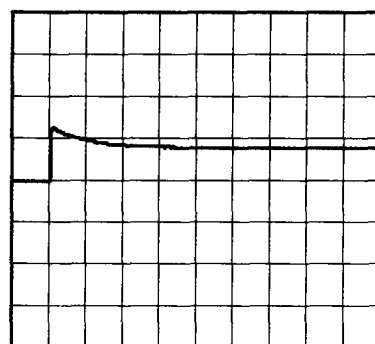


2ms/div

Min. Load (0A) ←→
Load 50% (0.125A)

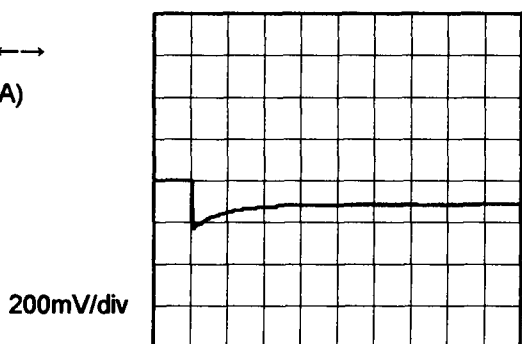


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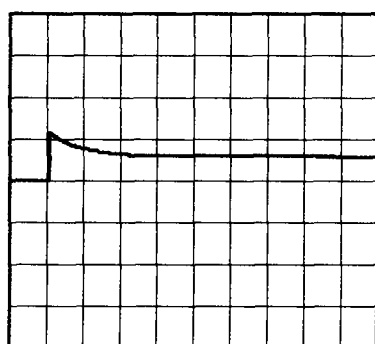


2ms/div

Load 50% (0.125A) ←→
Load 100% (0.25A)



2ms/div

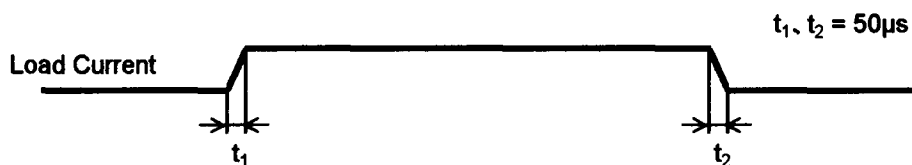


2ms/div



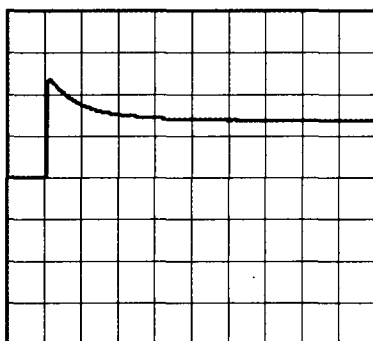
Model		SUW60512/SUCW60512	
Item		Dynamic Load Response	
Object		-12V0.25A	
		Temperature	25°C
		Testing Circuitry	Figure A

Input Volt. 5 V
 Cycle 100 mS

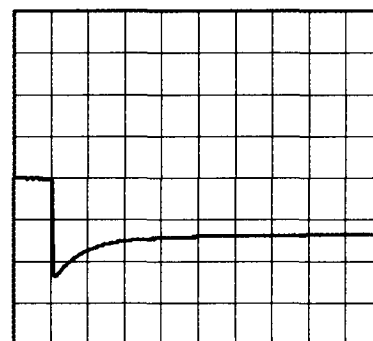


Min. Load (0A) ←→
 Load 100% (0.25A)

200mV/div



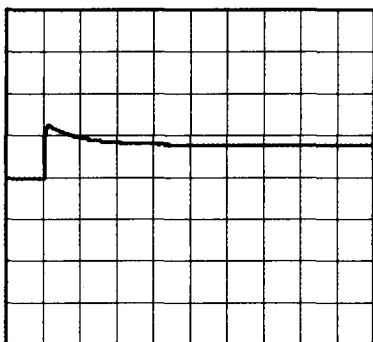
2ms/div



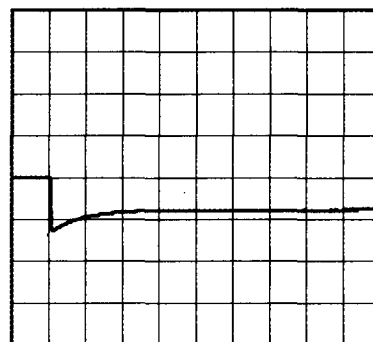
2ms/div

Min. Load (0A) ←→
 Load 50% (0.125A)

200mV/div



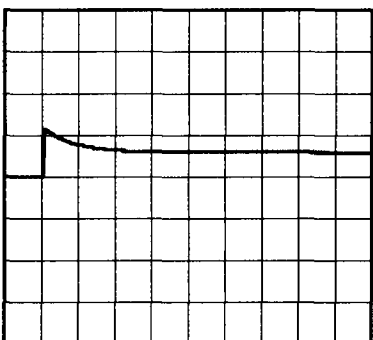
2ms/div



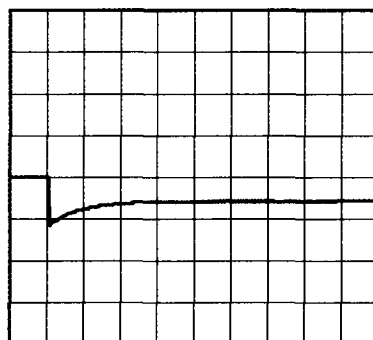
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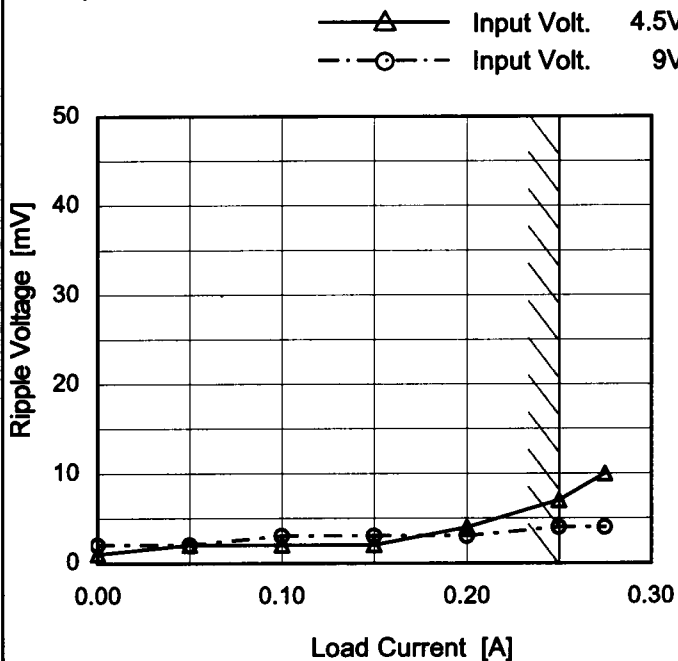
2ms/div



Model	SUW60512/SUCW60512
Item	Ripple Voltage (by Load Current)
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.000	1	2
0.050	2	2
0.100	2	3
0.150	2	3
0.200	4	3
0.250	7	4
0.275	10	4
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

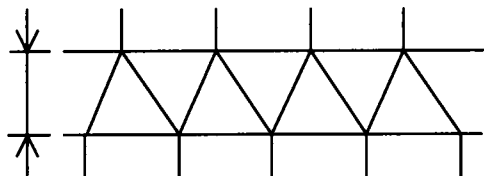


Fig. Complex Ripple Wave Form



Model		SUW60512/SUCW60512		Temperature 25°C Testing Circuitry Figure B																																						
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Object		-12V0.25A																																								
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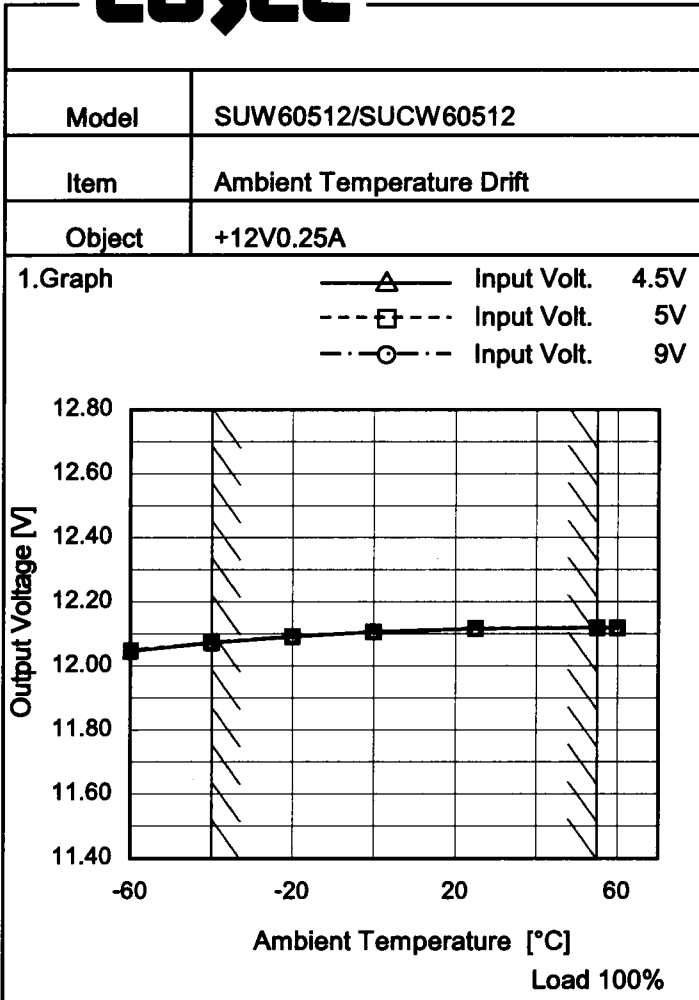
<p>Model SUW60512/SUCW60512</p> <p>Item Ripple-Noise</p> <p>Object +12V0.25A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure B</p>																																						
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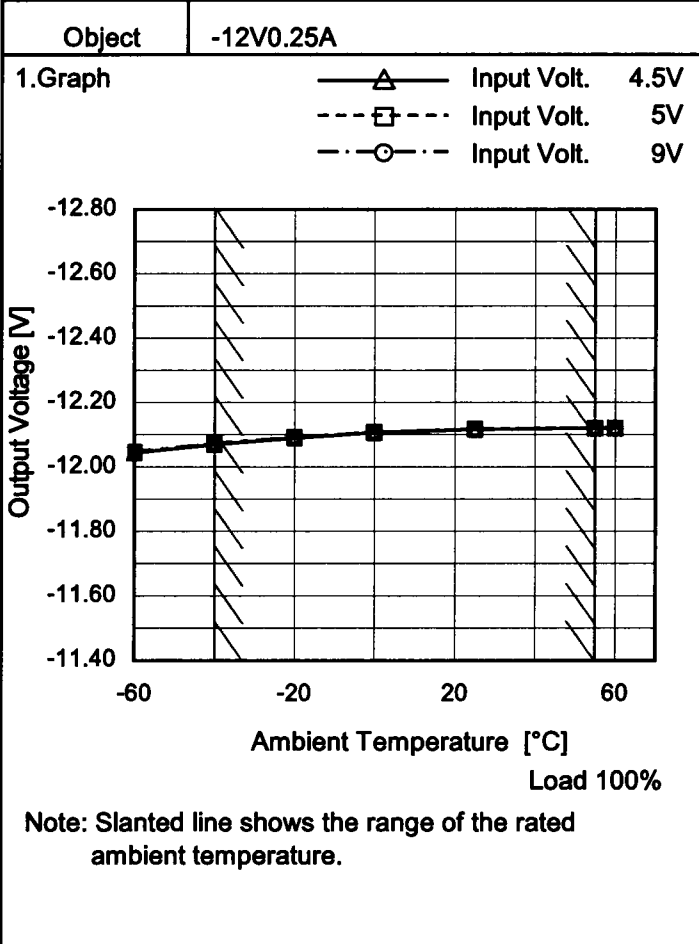
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Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	12.046	12.048	12.047
-40	12.072	12.073	12.073
-20	12.091	12.092	12.092
0	12.106	12.106	12.106
25	12.116	12.117	12.116
55	12.119	12.119	12.119
60	12.119	12.119	12.118
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	-12.044	-12.046	-12.047
-40	-12.070	-12.072	-12.073
-20	-12.090	-12.092	-12.092
0	-12.106	-12.107	-12.107
25	-12.116	-12.117	-12.117
55	-12.120	-12.120	-12.120
60	-12.120	-12.120	-12.120
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



COSEL		Testing Circuitry Figure A
Model	SUW60512/SUCW60512	
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 : 4.5 - 9V

Load Current (AVR 1) : 0 - 0.25A (AVR 2): 0 - 0.25A

* Other Output : Rated Load

* 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

Object		+12V0.25A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy		
			Current[A]	Voltage[V]	Value [mV]	Ration [%]	
Maximum Voltage	55	4.5	0	12.389	±159	±1.3	
Minimum Voltage	-40	4.5	0.25	12.072			

Object		-12V0.25A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy		
			Current[A]	Voltage[V]	Value [mV]	Ration [%]	
Maximum Voltage	55	4.5	0	-12.424	±177	±1.5	
Minimum Voltage	-40	4.5	0.25	-12.070			

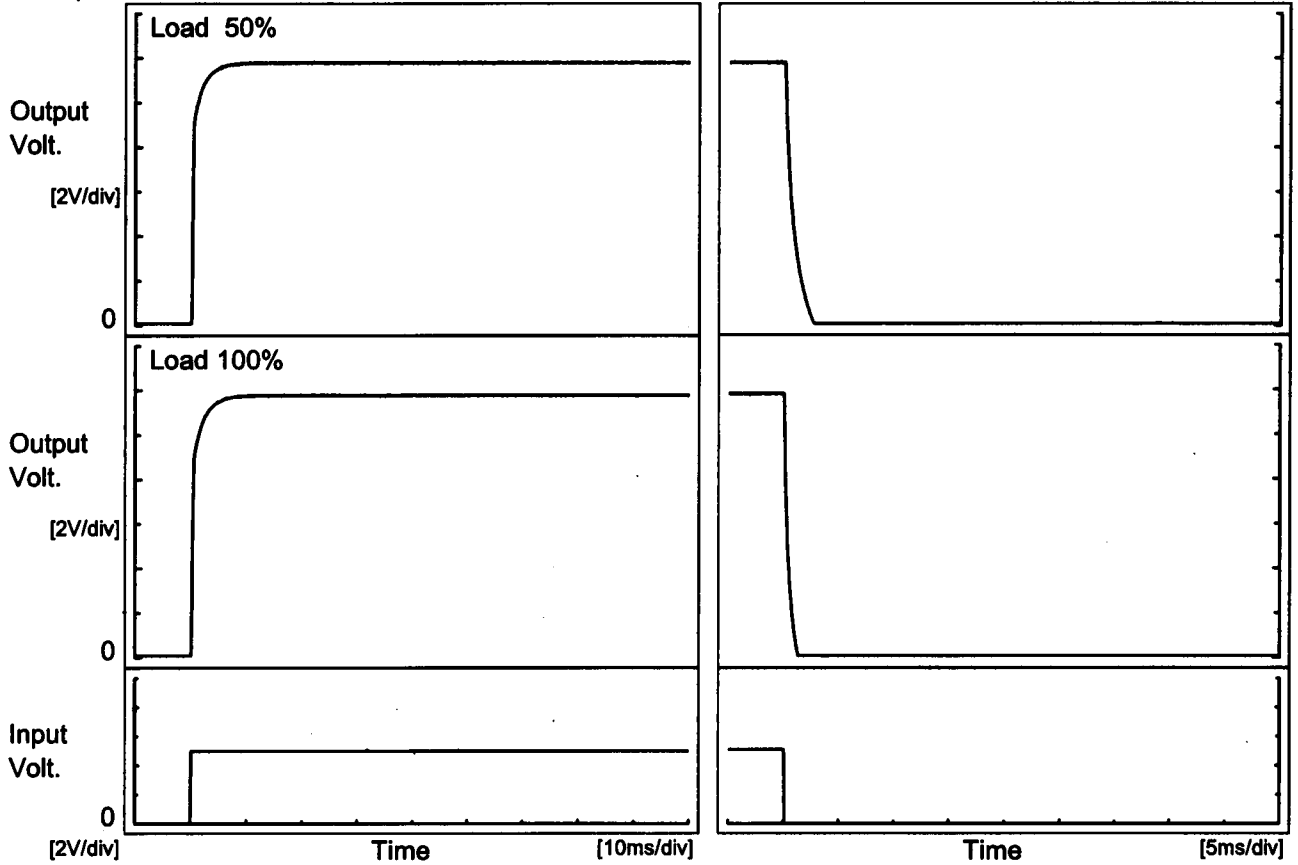


COSEL																								
Model	SUW60512/SUCW60512	Temperature 25°C Testing Circuitry Figure A																						
Item	Time Lapse Drift																							
Object	+12V0.25A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p style="text-align: center;">Input Volt. 5V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.118</td></tr> <tr><td>0.5</td><td>12.116</td></tr> <tr><td>1.0</td><td>12.116</td></tr> <tr><td>2.0</td><td>12.116</td></tr> <tr><td>3.0</td><td>12.116</td></tr> <tr><td>4.0</td><td>12.116</td></tr> <tr><td>5.0</td><td>12.116</td></tr> <tr><td>6.0</td><td>12.116</td></tr> <tr><td>7.0</td><td>12.116</td></tr> <tr><td>8.0</td><td>12.116</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.118	0.5	12.116	1.0	12.116	2.0	12.116	3.0	12.116	4.0	12.116	5.0	12.116	6.0	12.116	7.0	12.116	8.0	12.116
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8.0	12.116																							
Object	-12V0.25A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p style="text-align: center;">Input Volt. 5V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-12.120</td></tr> <tr><td>0.5</td><td>-12.118</td></tr> <tr><td>1.0</td><td>-12.118</td></tr> <tr><td>2.0</td><td>-12.118</td></tr> <tr><td>3.0</td><td>-12.118</td></tr> <tr><td>4.0</td><td>-12.118</td></tr> <tr><td>5.0</td><td>-12.118</td></tr> <tr><td>6.0</td><td>-12.118</td></tr> <tr><td>7.0</td><td>-12.118</td></tr> <tr><td>8.0</td><td>-12.118</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	-12.120	0.5	-12.118	1.0	-12.118	2.0	-12.118	3.0	-12.118	4.0	-12.118	5.0	-12.118	6.0	-12.118	7.0	-12.118	8.0	-12.118
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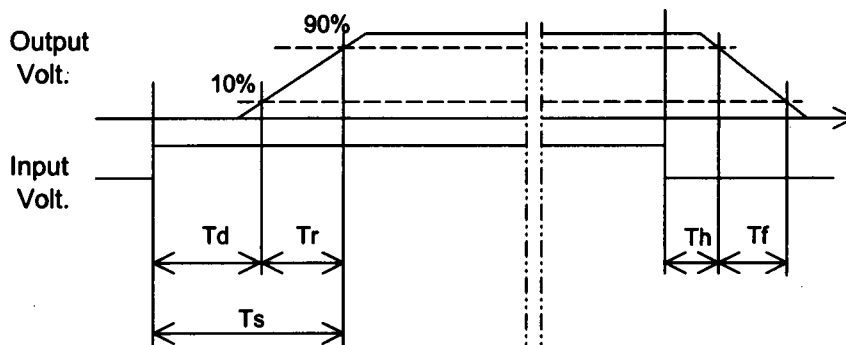
Model	SUW60512/SUCW60512	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V0.25A		

1. Graph



2. Values

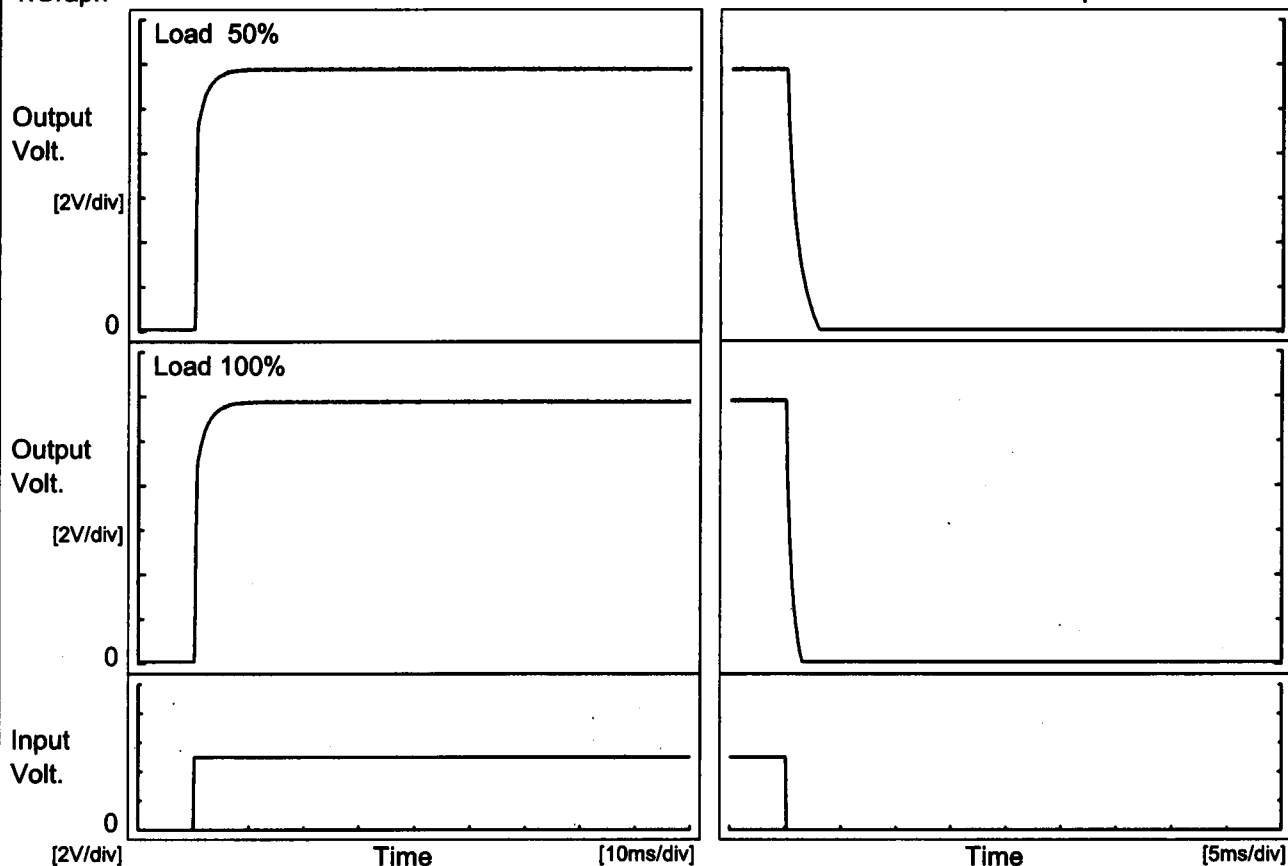
Load	Time	[ms]				
		Td	Tr	Ts	Th	Tf
50 %		0.2	2.4	2.6	0.1	1.8
100 %		0.2	2.6	2.8	0.1	0.9





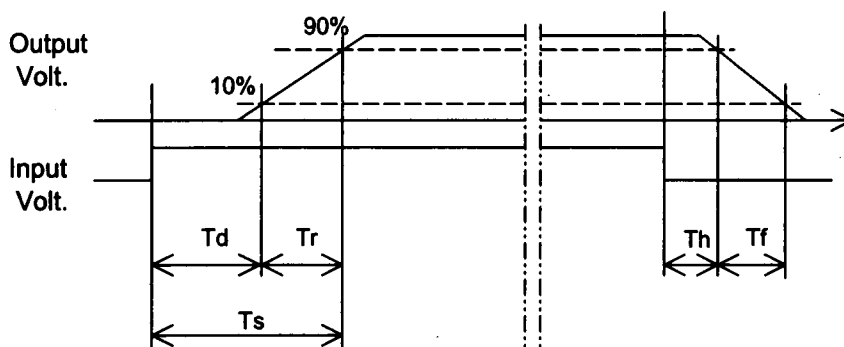
Model	SUW60512/SUCW60512	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	-12V0.25A		

1. Graph



2. Values

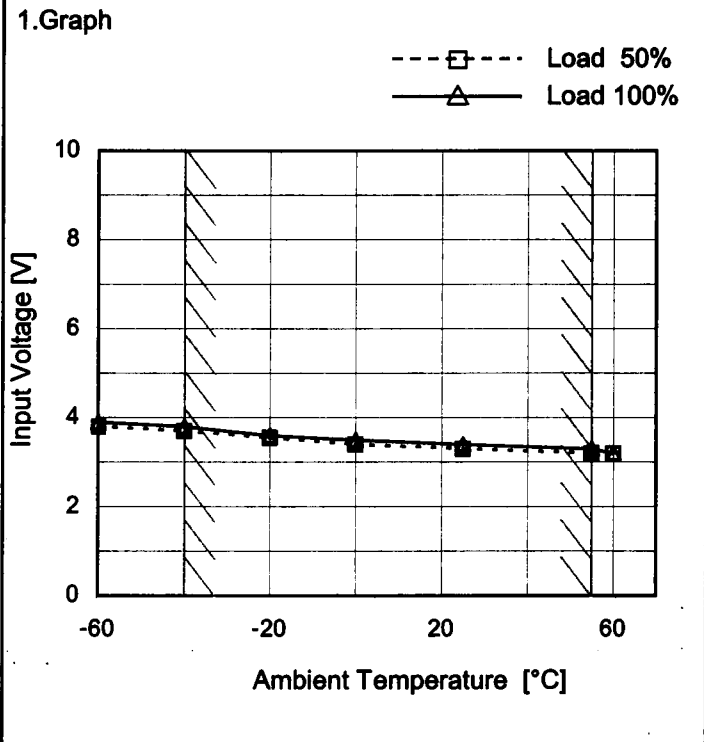
Load	Time	[ms]				
		Td	Tr	Ts	Th	Tf
50 %		0.2	2.4	2.6	0.1	2.0
100 %		0.2	2.7	2.9	0.1	1.0





Model	SUW60512/SUCW60512
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.25A

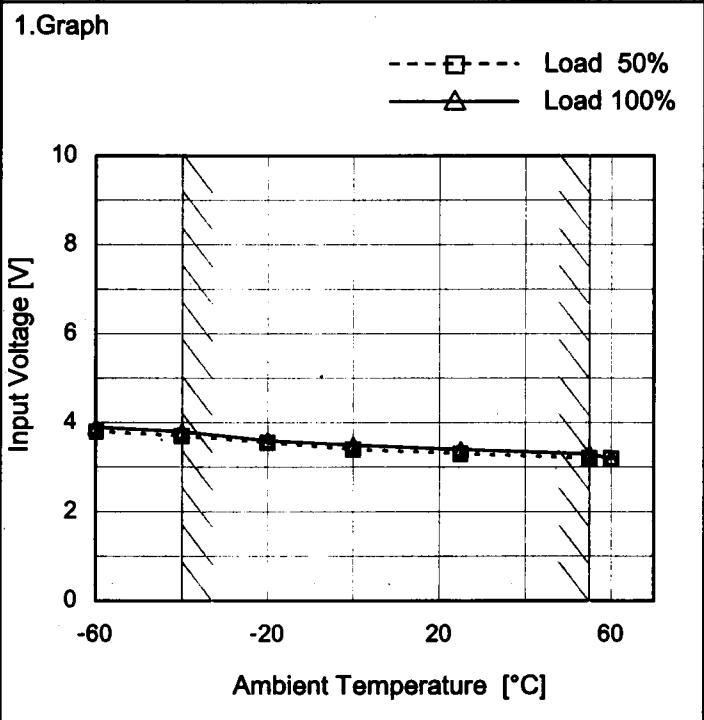
Testing Circuitry Figure A



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-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	3.3
60	3.2	3.2
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.25A
--------	-----------



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-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	3.3
60	3.2	3.2
--	-	-
--	-	-
--	-	-
--	-	-

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



<p>Model SUW60512/SUCW60512</p>		<p>Temperature 25°C</p>																																																								
<p>Item Overcurrent Protection</p>		<p>Testing Circuitry Figure A</p>																																																								
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<p>1.Graph</p> <p> Input Volt. 4.5V Input Volt. 5V Input Volt. 9V </p> <p style="text-align: center;">Load Current [A]</p>		<p>2.Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>12.0</td><td>0.25</td><td>0.25</td><td>0.25</td></tr> <tr><td>11.4</td><td>0.42</td><td>0.47</td><td>0.55</td></tr> <tr><td>10.8</td><td>0.45</td><td>0.49</td><td>0.56</td></tr> <tr><td>9.6</td><td>0.50</td><td>0.54</td><td>0.60</td></tr> <tr><td>8.4</td><td>0.55</td><td>0.59</td><td>0.65</td></tr> <tr><td>7.2</td><td>0.61</td><td>0.65</td><td>0.68</td></tr> <tr><td>6.0</td><td>0.67</td><td>0.71</td><td>0.72</td></tr> <tr><td>4.8</td><td>0.72</td><td>0.76</td><td>0.75</td></tr> <tr><td>3.6</td><td>0.77</td><td>0.79</td><td>0.78</td></tr> <tr><td>2.4</td><td>0.79</td><td>0.81</td><td>0.79</td></tr> <tr><td>1.2</td><td>0.76</td><td>0.77</td><td>0.75</td></tr> <tr><td>0.0</td><td>0.92</td><td>0.96</td><td>1.06</td></tr> </tbody> </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	0.42	0.47	0.55	10.8	0.45	0.49	0.56	9.6	0.50	0.54	0.60	8.4	0.55	0.59	0.65	7.2	0.61	0.65	0.68	6.0	0.67	0.71	0.72	4.8	0.72	0.76	0.75	3.6	0.77	0.79	0.78	2.4	0.79	0.81	0.79	1.2	0.76	0.77	0.75	0.0	0.92	0.96	1.06
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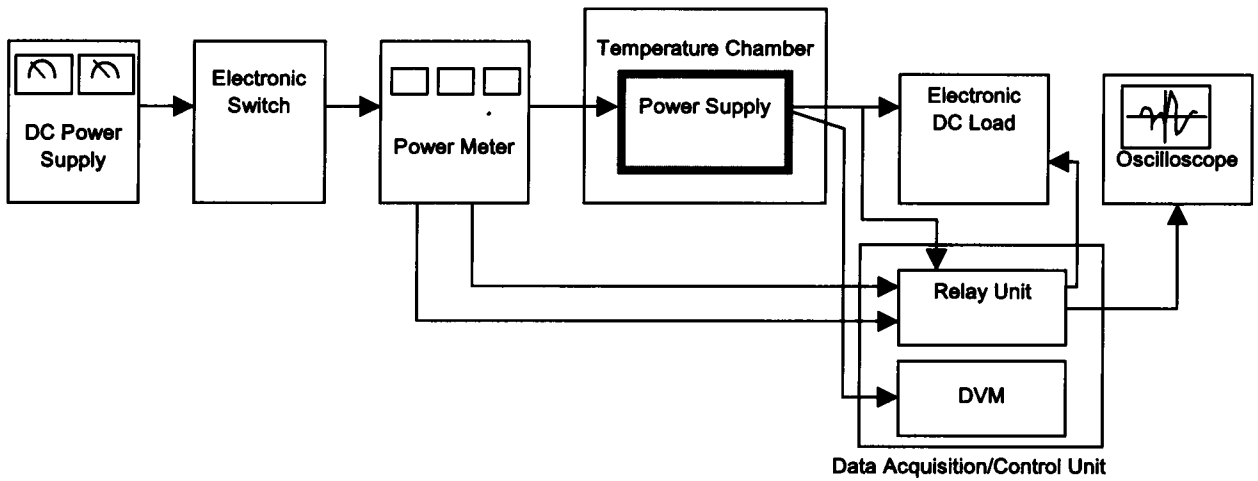


Figure A

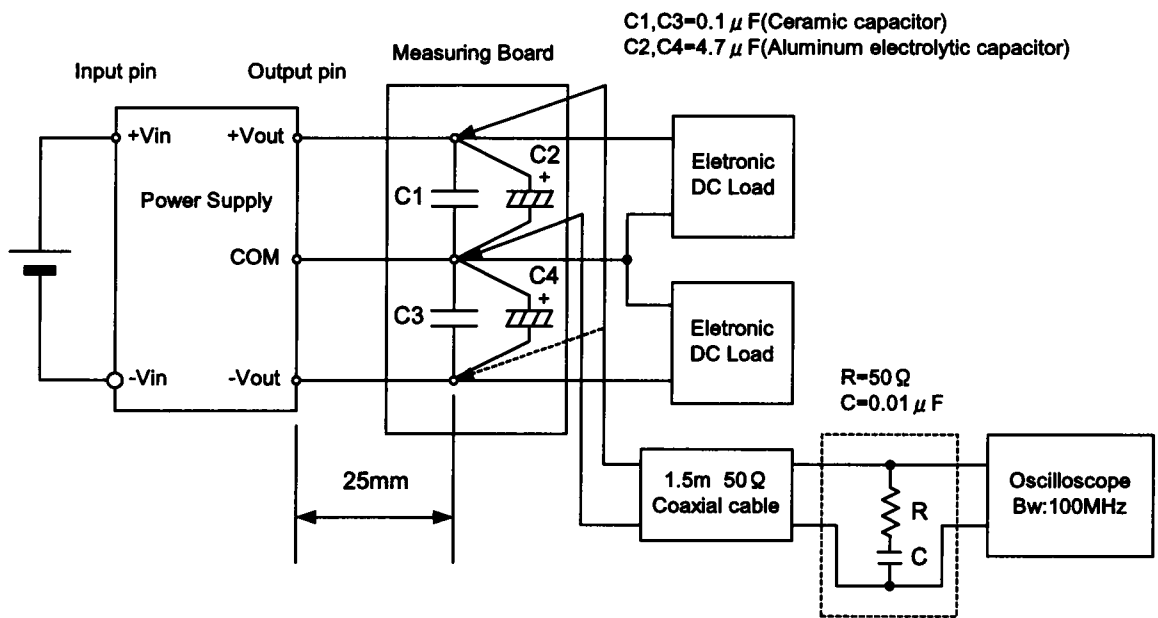


Figure B (Ripple and Ripple noise Characteristic)