

# TEST DATA OF MGS15243R3

Regulated DC Power Supply  
September 9, 2010

Approved by : *Kazunari Asano*  
Kazunari Asano Design Manager

Prepared by : *Junki Nakayama*  
Junki Nakayama Design Engineer

**COSEL CO.,LTD.**

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<p>Model MGS15243R3</p> <p>Item Input Current (by Input Voltage)</p> <p>Object _____</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																																															
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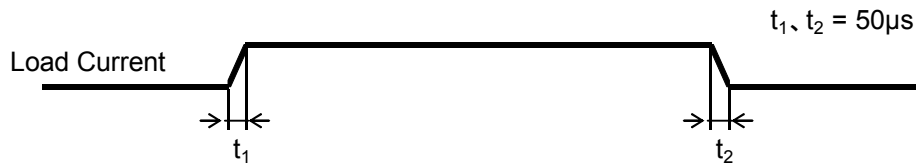


<p>Model MGS15243R3</p> <p>Item Load Regulation</p> <p>Object +3.3V4A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																			
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Load Current [A]	Output Voltage [V]																																																				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																		
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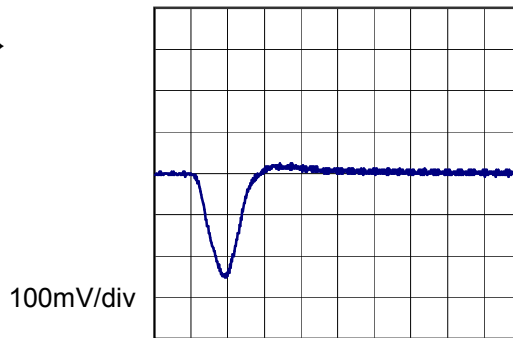


Model	MGS15243R3	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V4A		

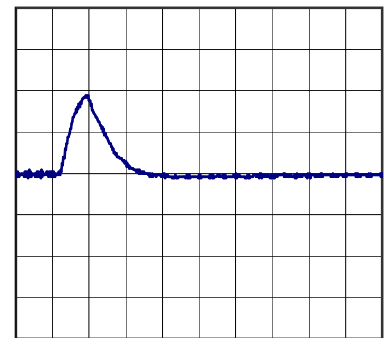
Input Volt. 24 V  
 Cycle 1000 ms



Min. Load (0A) ←→  
 Load 100% (4A)

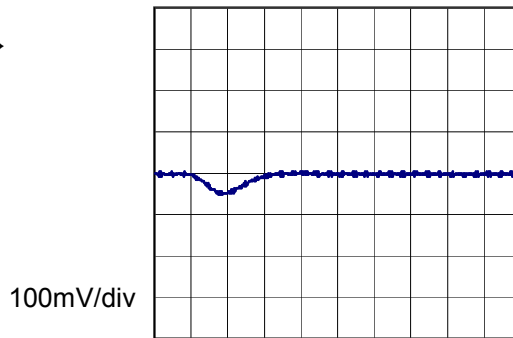


50µs/div

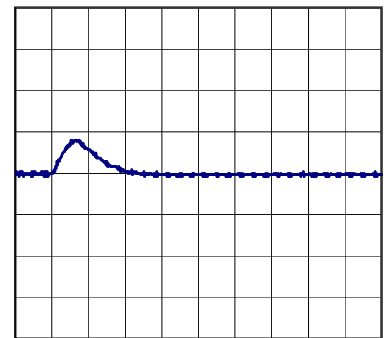


50µs/div

Min. Load (0A) ←→  
 Load 50% (2A)

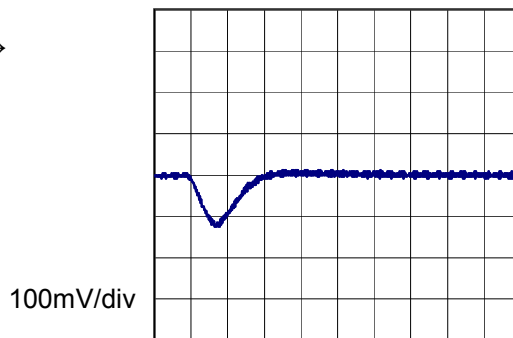


50µs/div

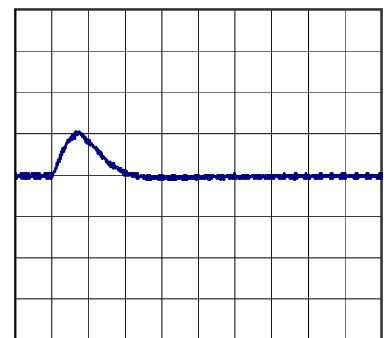


50µs/div

Load 50% (2A) ←→  
 Load 100% (4A)



50µs/div

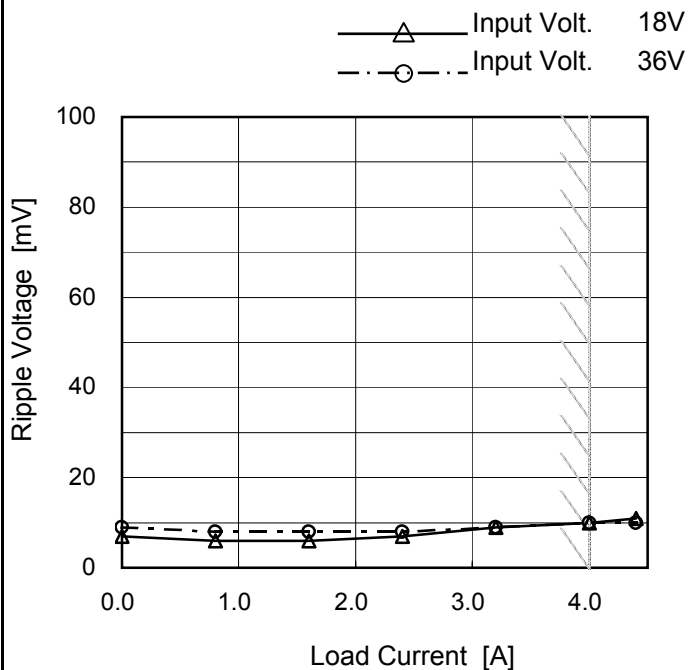


50µs/div

<p>Model MGS15243R3</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+3.3V4A																																							
<p>1. Graph</p> <p>             —△— Input Volt. 18V              - - ○ - - Input Volt. 36V         </p>		<p>2. Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.0</td><td>5</td><td>6</td></tr> <tr><td>0.8</td><td>5</td><td>7</td></tr> <tr><td>1.6</td><td>5</td><td>7</td></tr> <tr><td>2.4</td><td>7</td><td>8</td></tr> <tr><td>3.2</td><td>8</td><td>9</td></tr> <tr><td>4.0</td><td>10</td><td>10</td></tr> <tr><td>4.4</td><td>11</td><td>10</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 Voltage [mV]		Input Volt. 18 [V]	Input Volt. 36 [V]	0.0	5	6	0.8	5	7	1.6	5	7	2.4	7	8	3.2	8	9	4.0	10	10	4.4	11	10	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 18 [V]	Input Volt. 36 [V]																																						
0.0	5	6																																						
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4.0	10	10																																						
4.4	11	10																																						
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<p>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.</p>																																								
<p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form</p>																																								

Model	MGS15243R3	Temperature	25°C
Item	Ripple-Noise	Testing Circuitry	Figure B
Object	+3.3V4A		

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.0	7	9
0.8	6	8
1.6	6	8
2.4	7	8
3.2	9	9
4.0	10	10
4.4	11	10
--	-	-
--	-	-
--	-	-
--	-	-

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

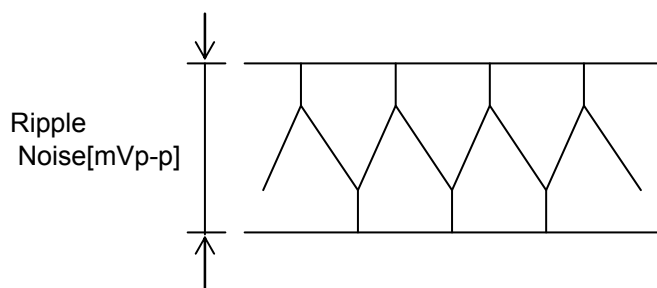
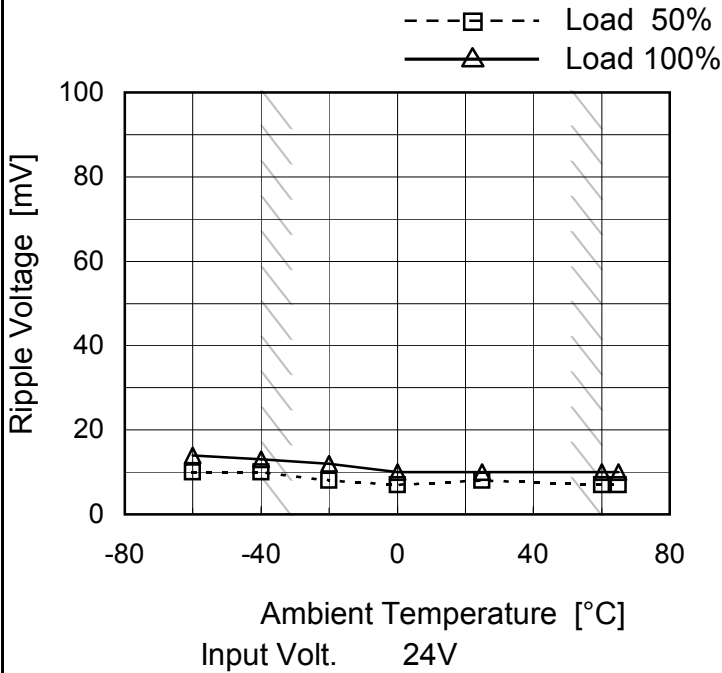


Fig.Complex Ripple Noise Wave Form

Model	MGS15243R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V4A

Testing Circuitry Figure B

1. Graph



2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	10	14
-40	10	13
-20	8	12
0	7	10
25	8	10
60	7	10
65	7	10
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.  
Note: Slanted line shows the range of the rated ambient temperature.



<b>COSEL</b>																																																					
Model	MGS15243R3																																																				
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																			
Object	+3.3V4A																																																				
1.Graph	<p>—△— Input Volt. 18V                  ---□--- Input Volt. 24V                  ···○··· Input Volt. 36V</p> <p style="text-align: center;">Ambient Temperature [°C] Load 100%</p>	2.Values																																																			
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>-60</td><td>3.346</td><td>3.346</td><td>3.346</td></tr> <tr><td>-40</td><td>3.347</td><td>3.347</td><td>3.347</td></tr> <tr><td>-20</td><td>3.345</td><td>3.346</td><td>3.346</td></tr> <tr><td>0</td><td>3.343</td><td>3.343</td><td>3.343</td></tr> <tr><td>25</td><td>3.342</td><td>3.342</td><td>3.342</td></tr> <tr><td>60</td><td>3.339</td><td>3.339</td><td>3.339</td></tr> <tr><td>65</td><td>3.338</td><td>3.338</td><td>3.338</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>	Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	-60	3.346	3.346	3.346	-40	3.347	3.347	3.347	-20	3.345	3.346	3.346	0	3.343	3.343	3.343	25	3.342	3.342	3.342	60	3.339	3.339	3.339	65	3.338	3.338	3.338	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																					



<b>COSEL</b>		
Model	MGS15243R3	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V4A	

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 - 60°C

Input Voltage : 18 - 36V

Load Current : 0 - 4A

\* 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	-40	18	0	3.350	±6	±0.2
Minimum Voltage	60	18	4	3.339		



<b>COSEL</b>																								
Model	MGS15243R3																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+3.3V4A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V 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>3.342</td></tr> <tr><td>0.5</td><td>3.341</td></tr> <tr><td>1.0</td><td>3.341</td></tr> <tr><td>2.0</td><td>3.341</td></tr> <tr><td>3.0</td><td>3.341</td></tr> <tr><td>4.0</td><td>3.341</td></tr> <tr><td>5.0</td><td>3.341</td></tr> <tr><td>6.0</td><td>3.341</td></tr> <tr><td>7.0</td><td>3.341</td></tr> <tr><td>8.0</td><td>3.341</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	3.342	0.5	3.341	1.0	3.341	2.0	3.341	3.0	3.341	4.0	3.341	5.0	3.341	6.0	3.341	7.0	3.341	8.0	3.341
Time since start [H]	Output Voltage [V]																							
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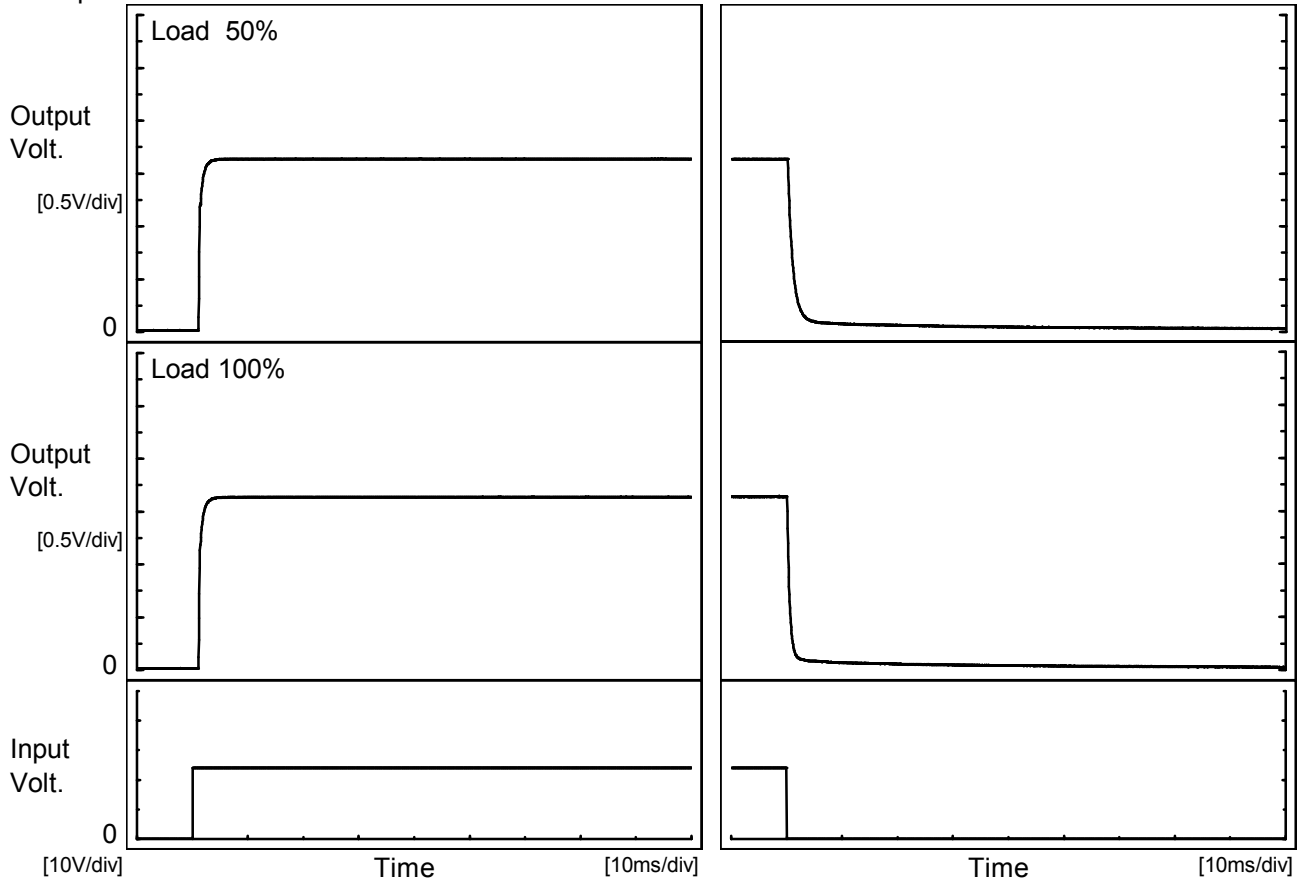




Model		MGS15243R3	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		+3.3V4A		

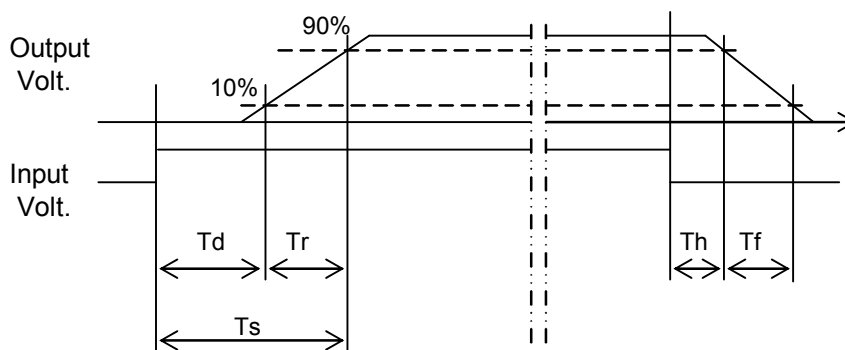
1. Graph

Input Volt. 24 V



2. Values

		[ms]				
Load \ Time	Time	Td	Tr	Ts	Th	Tf
50 %		1.2	1.0	2.2	0.2	2.5
100 %		1.2	1.0	2.2	0.2	1.2





<b>COSEL</b>																																								
Model	MGS15243R3																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+3.3V4A																																							
<p>1.Graph</p> <p style="text-align: right;">             ---□--- Load 50%              —△— Load 100%         </p>		<p>2.Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>-60</td><td>16.0</td><td>15.9</td></tr> <tr><td>-40</td><td>15.9</td><td>15.9</td></tr> <tr><td>-20</td><td>15.9</td><td>16.0</td></tr> <tr><td>0</td><td>15.9</td><td>15.9</td></tr> <tr><td>25</td><td>15.9</td><td>15.8</td></tr> <tr><td>60</td><td>15.8</td><td>15.8</td></tr> <tr><td>65</td><td>15.8</td><td>15.8</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>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-60	16.0	15.9	-40	15.9	15.9	-20	15.9	16.0	0	15.9	15.9	25	15.9	15.8	60	15.8	15.8	65	15.8	15.8	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



<p>Model MGS15243R3</p> <p>Item Overcurrent Protection</p> <p>Object +3.3V4A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																							
<p>1.Graph</p> <p>                     —△ Input Volt. 18V                      —□ Input Volt. 24V                      —○ Input Volt. 36V                 </p> <p>                     Note: Slanted line shows the range of the rated load current.                      Intermittent operation occurs when overcurrent protection is activated.                 </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. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>3.30</td><td>5.64</td><td>5.99</td><td>5.75</td></tr> <tr><td>3.14</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.97</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.64</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.31</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.98</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.65</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.32</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.99</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.66</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.33</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	3.30	5.64	5.99	5.75	3.14	-	-	-	2.97	-	-	-	2.64	-	-	-	2.31	-	-	-	1.98	-	-	-	1.65	-	-	-	1.32	-	-	-	0.99	-	-	-	0.66	-	-	-	0.33	-	-	-	0.00	-	-	-
Output Voltage [V]	Load Current [A]																																																								
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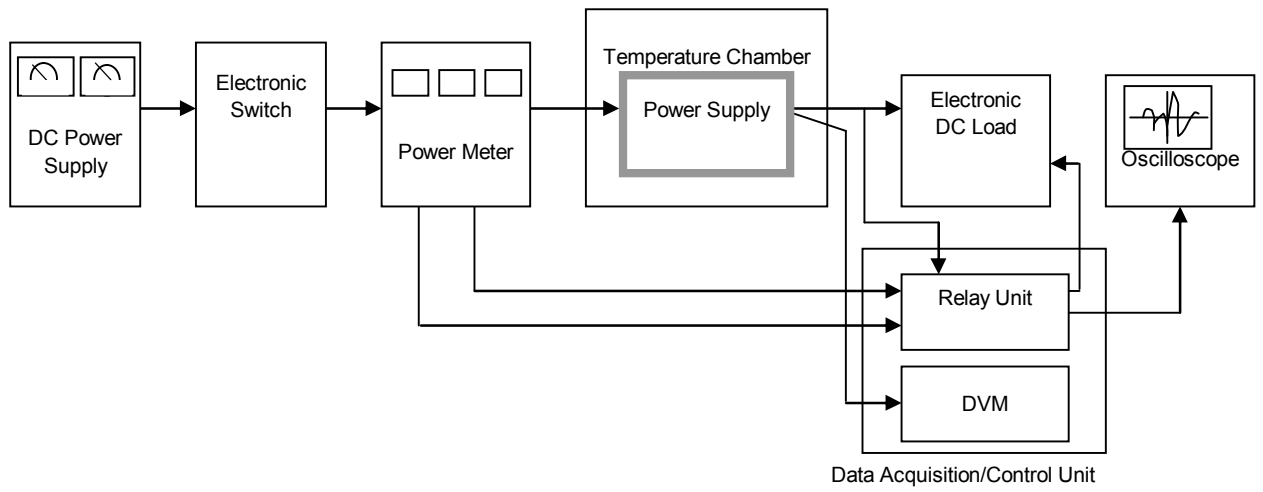


Figure A

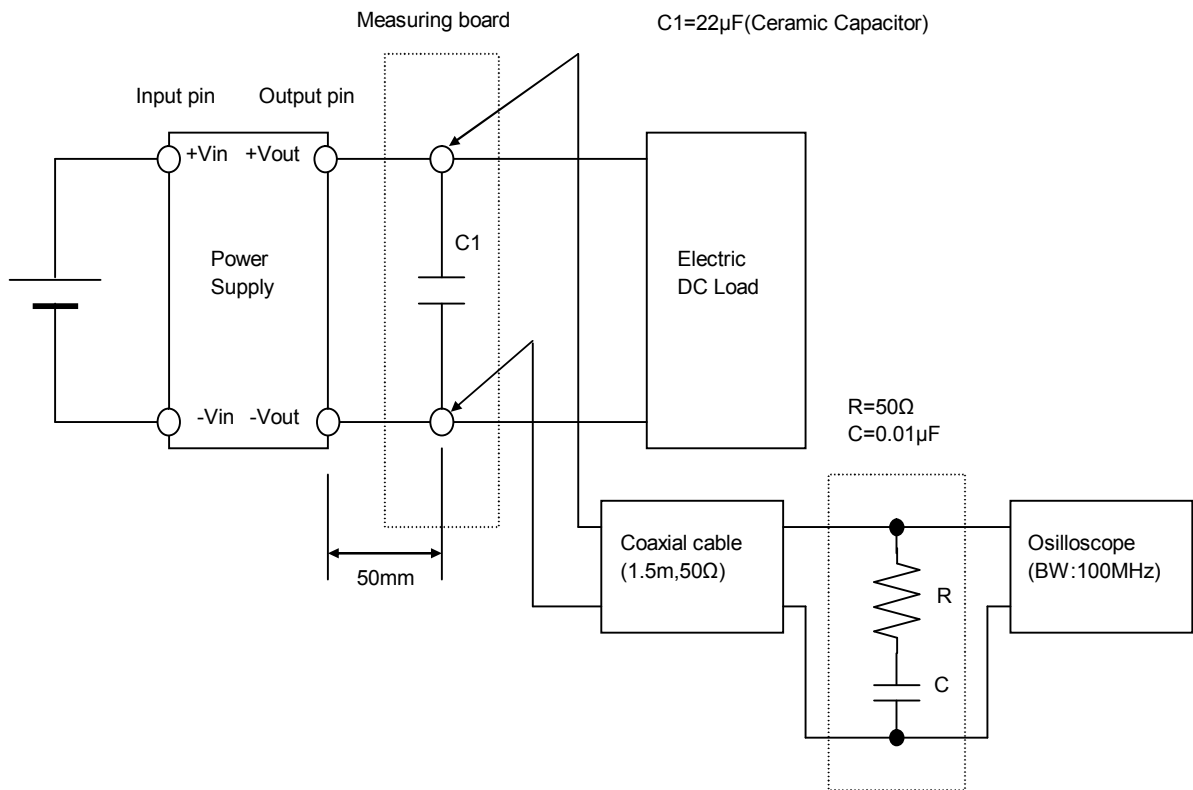


Figure B (Ripple and Ripple noise Characteristic)