

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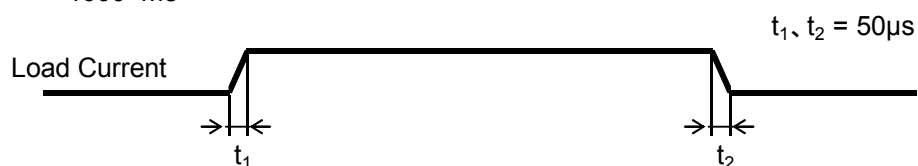
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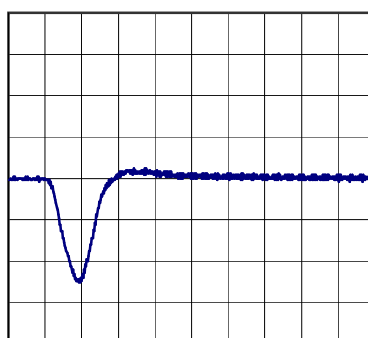
Model	MGS15243R3	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+3.3V4A	

Input Volt. 24 V
Cycle 1000 ms

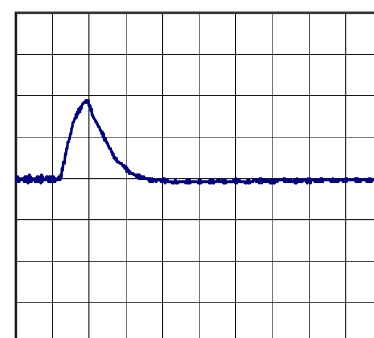


Min. Load (0A) \longleftrightarrow
Load 100% (4A)

100mV/div



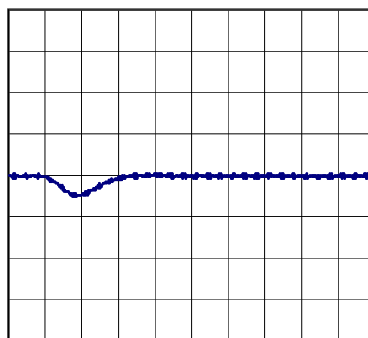
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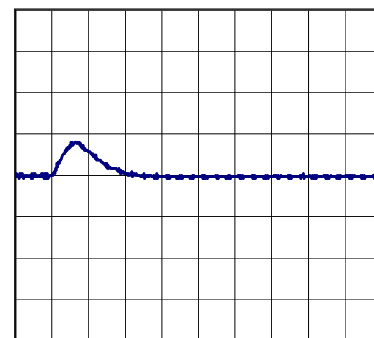
50µs/div

Min. Load (0A) \longleftrightarrow
Load 50% (2A)

100mV/div



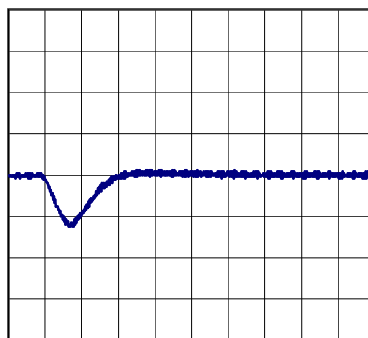
50µs/div



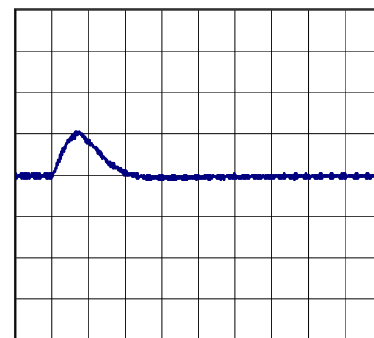
50µs/div

Load 50% (2A) \longleftrightarrow
Load 100% (4A)

100mV/div



50µs/div



50µs/div

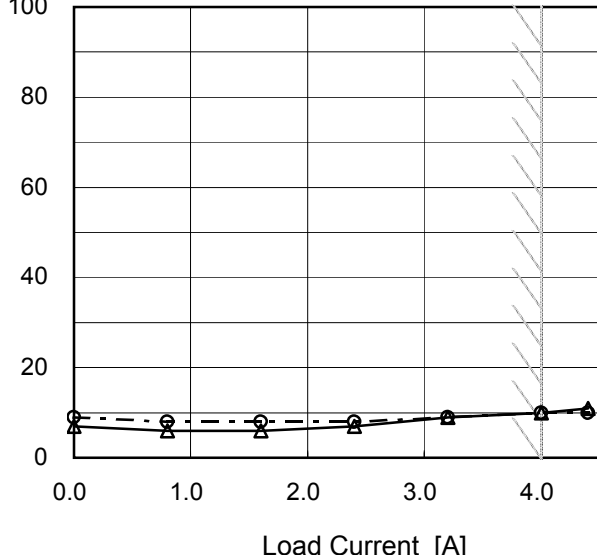
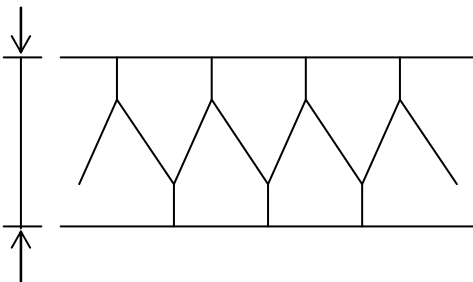
Model	MGS15243R3																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
		Testing Circuitry	Figure B																																						
Object	+3.3V4A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>- -○- -</div><div>Input Volt.</div><div>36V</div></div></div> <div>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.</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>0.0</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></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]																																								
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<div>Ripple [mVp-p]</div> <div>Fig.Complex Ripple Wave Form</div>																																									

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BC-10443

Model	MGS15243R3																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+3.3V4A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 18V</div><div>- -○- - Input Volt. 36V</div></div></div> <div><p>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.</p><div><div>Ripple Noise[mVp-p]</div></div><p>Fig.Complex Ripple Noise Wave Form</p></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>0.0</td><td>7</td><td>9</td></tr><tr><td>0.8</td><td>6</td><td>8</td></tr><tr><td>1.6</td><td>6</td><td>8</td></tr><tr><td>2.4</td><td>7</td><td>8</td></tr><tr><td>3.2</td><td>9</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></table>		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	--	-	-	--	-	-	--	-	-	--	-	-
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		Testing Circuitry Figure B																																						
Model	MGS15243R3																																							
Item	Ripple Voltage (by Ambient Temp.)																																							
Object	+3.3V4A																																							
<p>1.Graph</p> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> <p>Ripple Voltage [mV]</p> <p>Ambient Temperature [°C]</p> <p>Input Volt. 24V</p> <p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>		<p>2.Values</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>10</td><td>14</td></tr> <tr><td>-40</td><td>10</td><td>13</td></tr> <tr><td>-20</td><td>8</td><td>12</td></tr> <tr><td>0</td><td>7</td><td>10</td></tr> <tr><td>25</td><td>8</td><td>10</td></tr> <tr><td>60</td><td>7</td><td>10</td></tr> <tr><td>65</td><td>7</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> </table>	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	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
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-60	10	14																																						
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Model	MGS15243R3																																																						
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																					
Object	+3.3V4A																																																						
1.Graph		2.Values																																																					
<div><div>—△— Input Volt. 18V</div><div>---□--- Input Volt. 24V</div><div>-·-○-·- Input Volt. 36V</div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>		<table><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><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></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	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																						
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Note: Slanted line shows the range of the rated ambient temperature.																																																							



Model		MGS15243R3	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
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 = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

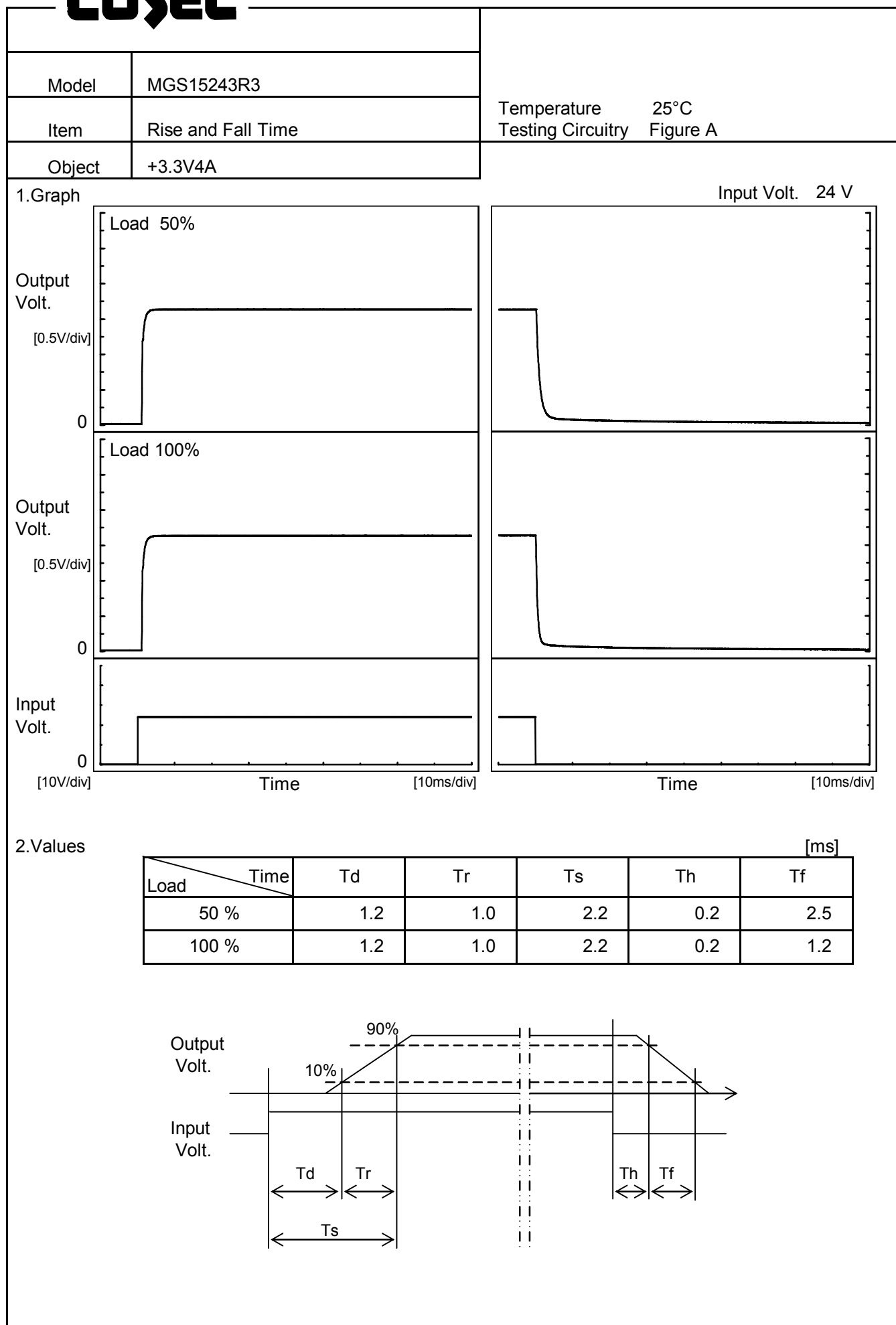
* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	18	0	3.350	±6	±0.2
Minimum Voltage	60	18	4	3.339		



Model	MGS15243R3																								
Item	Time Lapse Drift	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+3.3V4A																								
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 24V</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>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></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																																																									
Item	Overcurrent Protection	Temperature	25°C																																																							
Object	+3.3V4A	Testing Circuitry	Figure A																																																							
1.Graph		2.Values																																																								
<div><div><div>—△</div><div>Input Volt.</div><div>18V</div></div><div><div>—□</div><div>Input Volt.</div><div>24V</div></div><div><div>—○</div><div>Input Volt.</div><div>36V</div></div></div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when overcurrent protection is activated.</p>		<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>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></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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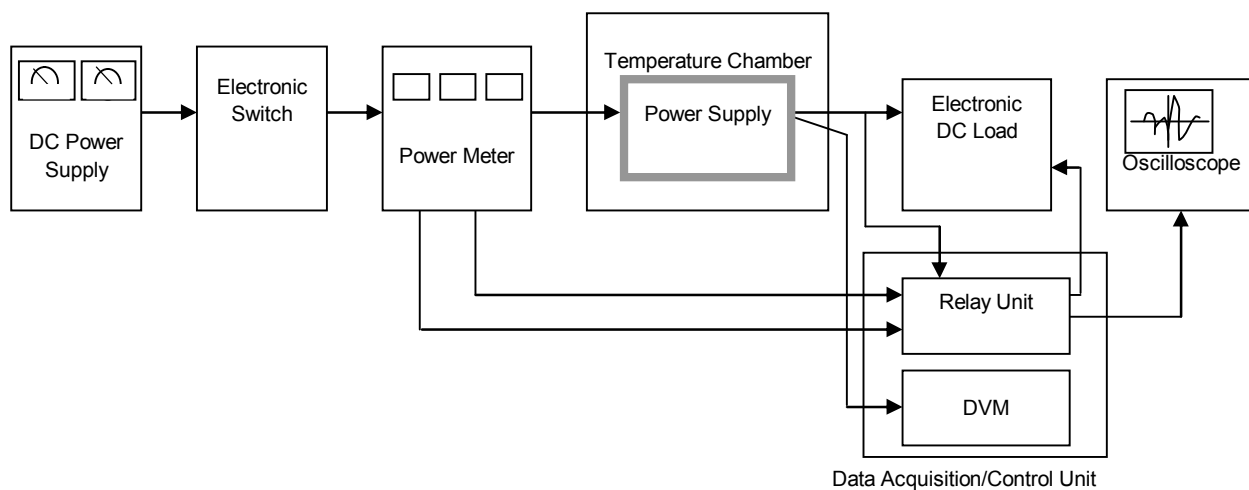


Figure A

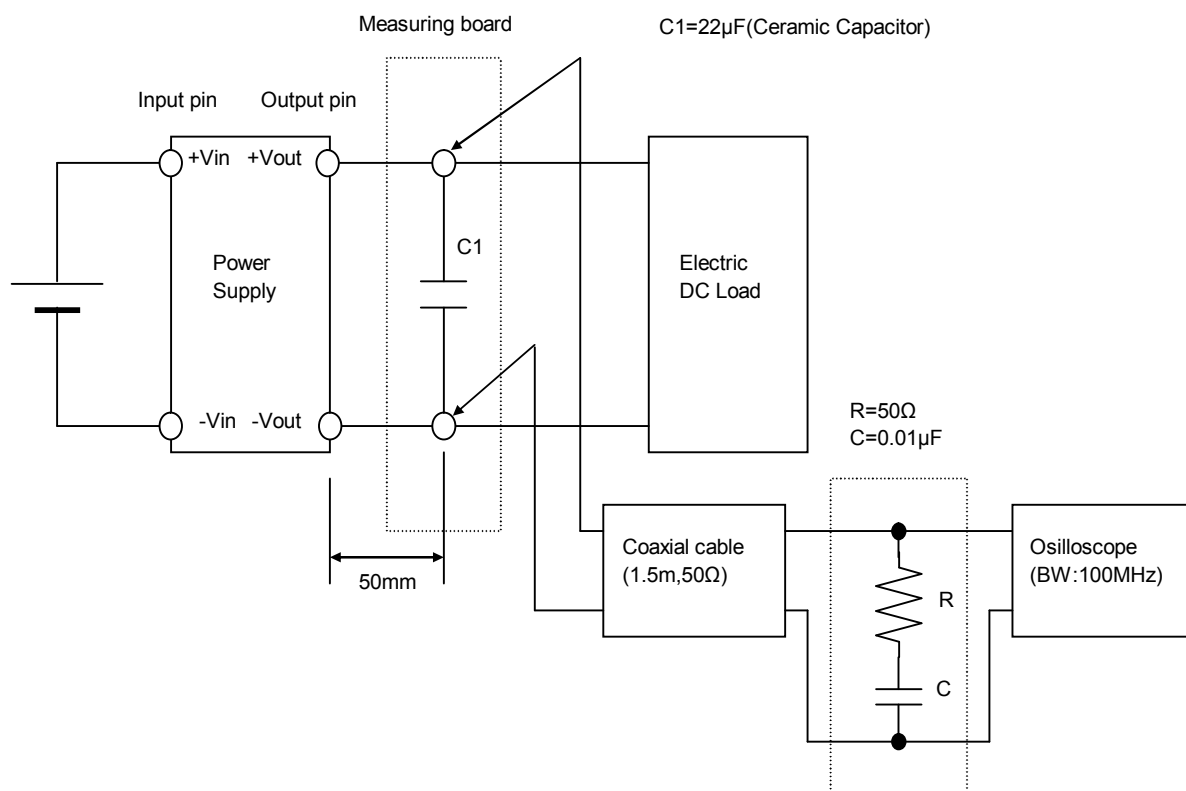


Figure B (Ripple and Ripple noise Characteristic)