

TEST DATA OF MGFS15483R3

Regulated DC Power Supply
September 7, 2010

Approved by : Kazunari Asano
Kazunari Asano Design Manager

Prepared by : Yuichiro Ohashi
Yuichiro Ohashi Design Engineer

COSEL CO.,LTD.

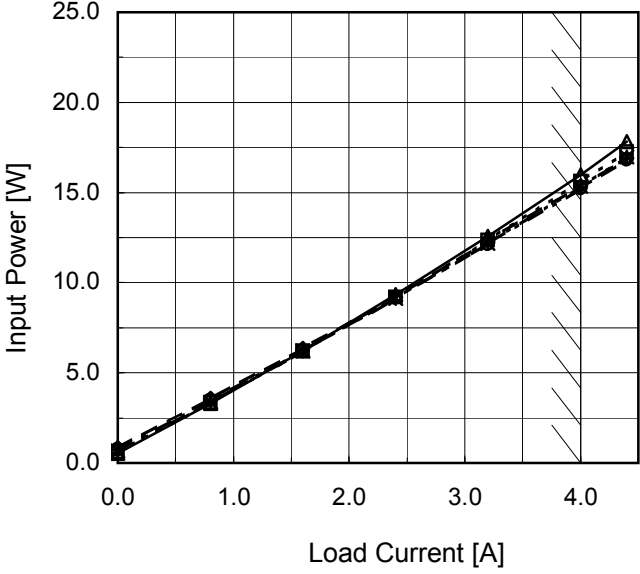
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Load Current [A]	Efficiency [%]																																																																																																																																																										
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]																																																																																																																																																						
0.0	-	-	-	-	-																																																																																																																																																						
0.8	81.3	80.8	79.4	77.3	74.7																																																																																																																																																						
1.6	86.4	86.3	86.5	86.4	84.2																																																																																																																																																						
2.4	86.1	87.5	88.0	87.9	87.3																																																																																																																																																						
3.2	85.2	86.8	88.0	88.1	87.1																																																																																																																																																						
4.0	83.8	85.8	87.3	87.9	87.1																																																																																																																																																						
4.4	82.7	85.3	86.7	87.5	87.1																																																																																																																																																						
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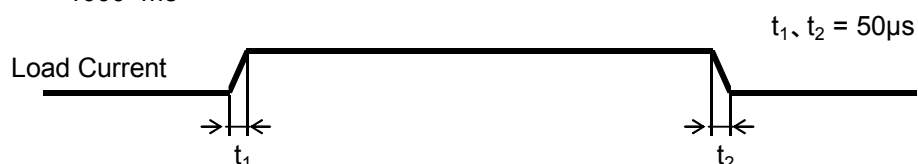
Model	MGFS15483R3	Temperature25°C Testing CircuitryFigure A																															
Item	Line Regulation																																
Object	+3.3V4A																																
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>17</td><td>3.353</td><td>3.351</td></tr><tr><td>18</td><td>3.353</td><td>3.351</td></tr><tr><td>24</td><td>3.353</td><td>3.352</td></tr><tr><td>30</td><td>3.353</td><td>3.352</td></tr><tr><td>36</td><td>3.353</td><td>3.352</td></tr><tr><td>48</td><td>3.353</td><td>3.352</td></tr><tr><td>60</td><td>3.353</td><td>3.352</td></tr><tr><td>76</td><td>3.353</td><td>3.352</td></tr><tr><td>80</td><td>3.353</td><td>3.352</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	17	3.353	3.351	18	3.353	3.351	24	3.353	3.352	30	3.353	3.352	36	3.353	3.352	48	3.353	3.352	60	3.353	3.352	76	3.353	3.352	80	3.353	3.352		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
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Model	MGFS15483R3																																																																																				
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<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>—△—</div><div>---□---</div><div>-...*...-</div><div>-...○...-</div><div>--◇--</div></div><div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div></div><div><div>18V</div><div>24V</div><div>36V</div><div>48V</div><div>76V</div></div></div><div></div></div> <div><table><tr><th rowspan="2">Load Current [A]</th><th colspan="5">Output Voltage [V]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>0.0</td><td>3.354</td><td>3.354</td><td>3.354</td><td>3.353</td><td>3.353</td></tr><tr><td>0.8</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td></tr><tr><td>1.6</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td></tr><tr><td>2.4</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td><td>3.353</td></tr><tr><td>3.2</td><td>3.352</td><td>3.352</td><td>3.352</td><td>3.352</td><td>3.352</td></tr><tr><td>4.0</td><td>3.351</td><td>3.352</td><td>3.352</td><td>3.352</td><td>3.352</td></tr><tr><td>4.4</td><td>3.351</td><td>3.351</td><td>3.352</td><td>3.352</td><td>3.352</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr></table></div> <tr><td colspan="2">Note: Slanted line shows the range of the rated load current.</td><td colspan="5"></td></tr>		Load Current [A]	Output Voltage [V]					Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	3.354	3.354	3.354	3.353	3.353	0.8	3.353	3.353	3.353	3.353	3.353	1.6	3.353	3.353	3.353	3.353	3.353	2.4	3.353	3.353	3.353	3.353	3.353	3.2	3.352	3.352	3.352	3.352	3.352	4.0	3.351	3.352	3.352	3.352	3.352	4.4	3.351	3.351	3.352	3.352	3.352	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	Note: Slanted line shows the range of the rated load current.						
Load Current [A]	Output Voltage [V]																																																																																				
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Note: Slanted line shows the range of the rated load current.																																																																																					

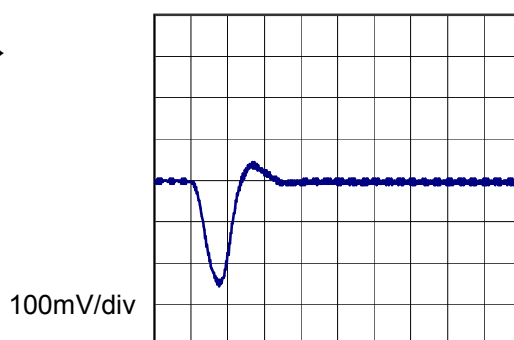


Model	MGFS15483R3	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+3.3V4A	

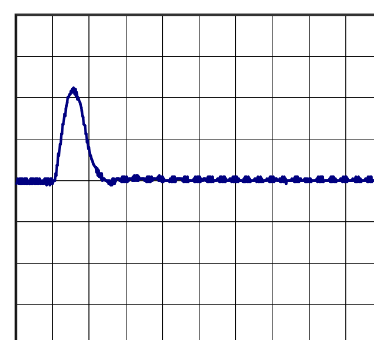
Input Volt. 48 V
Cycle 1000 ms



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

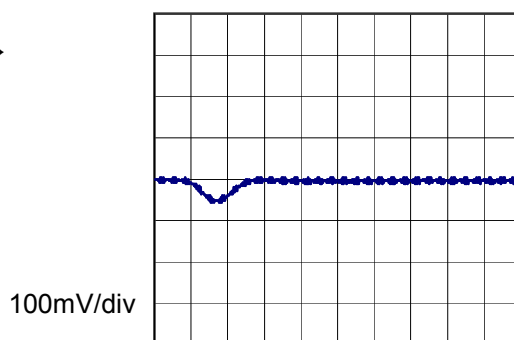


50µs/div

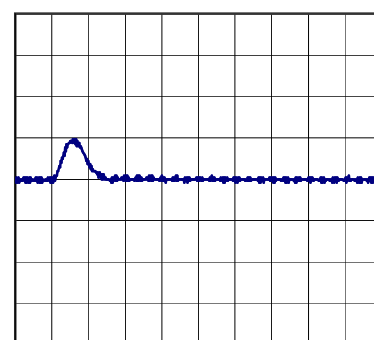


50µs/div

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

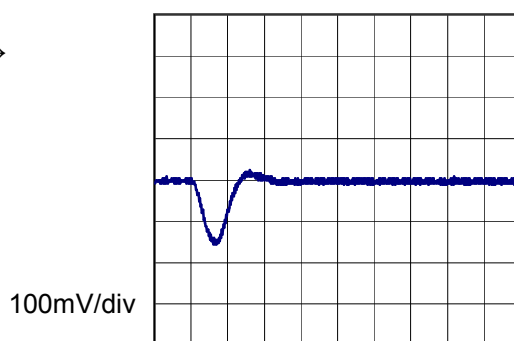


50µs/div

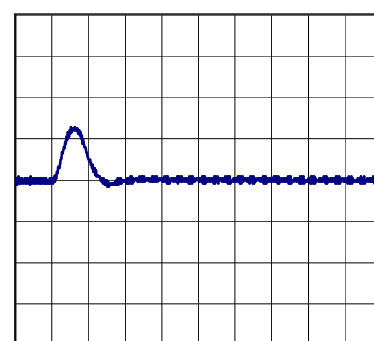


50µs/div

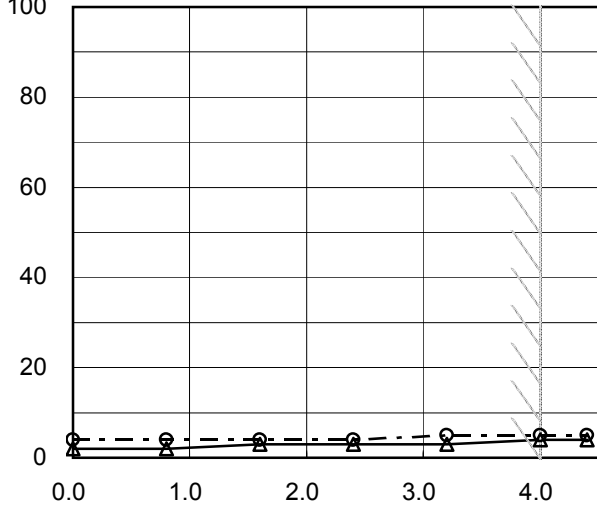
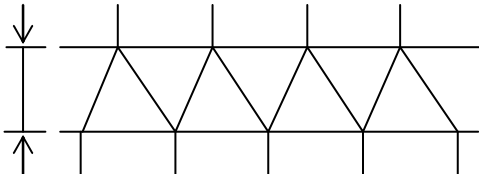
Load 50% (2A) \longleftrightarrow
Load 100% (4A)



50µs/div

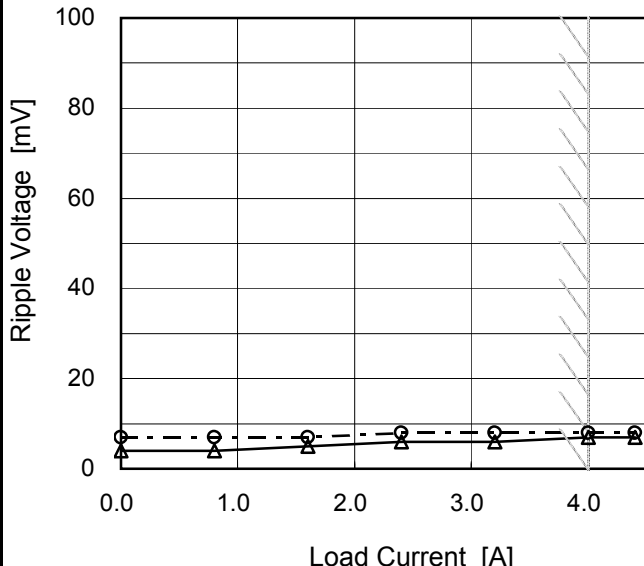
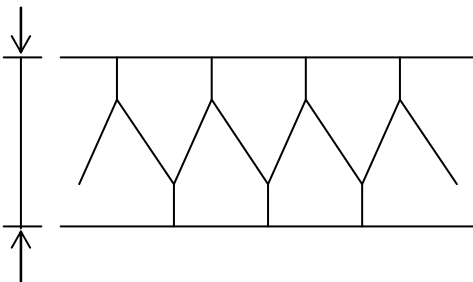


50µs/div

Model	MGFS15483R3																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+3.3V4A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 18V</div><div>- -○- - Input Volt. 76V</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. 76 [V]</th></tr><tr><td>0.0</td><td>2</td><td>4</td></tr><tr><td>0.8</td><td>2</td><td>4</td></tr><tr><td>1.6</td><td>3</td><td>4</td></tr><tr><td>2.4</td><td>3</td><td>4</td></tr><tr><td>3.2</td><td>3</td><td>5</td></tr><tr><td>4.0</td><td>4</td><td>5</td></tr><tr><td>4.4</td><td>4</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. 76 [V]	0.0	2	4	0.8	2	4	1.6	3	4	2.4	3	4	3.2	3	5	4.0	4	5	4.4	4	5	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 18 [V]	Input Volt. 76 [V]																																							
0.0	2	4																																							
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2.4	3	4																																							
3.2	3	5																																							
4.0	4	5																																							
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<p>Measured by 100 MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <div><div>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div>																																									

- 9 -

BC-10455

Model	MGFS15483R3																																								
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. 76V</div></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. 76 [V]</th></tr><tr><td>0.0</td><td>4</td><td>7</td></tr><tr><td>0.8</td><td>4</td><td>7</td></tr><tr><td>1.6</td><td>5</td><td>7</td></tr><tr><td>2.4</td><td>6</td><td>8</td></tr><tr><td>3.2</td><td>6</td><td>8</td></tr><tr><td>4.0</td><td>7</td><td>8</td></tr><tr><td>4.4</td><td>7</td><td>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></table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 18 [V]	Input Volt. 76 [V]	0.0	4	7	0.8	4	7	1.6	5	7	2.4	6	8	3.2	6	8	4.0	7	8	4.4	7	8	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 18 [V]	Input Volt. 76 [V]																																							
0.0	4	7																																							
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Model	MGFS15483R3																																																																																	
Item	Ambient Temperature Drift																																																																																	
Object	+3.3V4A																																																																																	
1.Graph		2.Values																																																																																
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></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><div>-·-○-·-</div><div>Input Volt.</div><div>48V</div></div><div><div>--◇--</div><div>Input Volt.</div><div>76V</div></div></div><div><div><div><div>3.42</div><div>3.40</div><div>3.38</div><div>3.36</div><div>3.34</div><div>3.32</div><div>3.30</div><div>3.28</div></div><div><div>Output Voltage [V]</div><div></div></div><div><div><div>-80</div><div>-40</div><div>0</div><div>40</div><div>80</div></div><div><div>Ambient Temperature [°C]</div><div></div></div></div><div><div>Load 100%</div></div></div></div><div>Note: Slanted line shows the range of the rated ambient temperature.</div></div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="5">Output Voltage [V]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>-60</td><td>3.362</td><td>3.363</td><td>3.363</td><td>3.363</td><td>3.363</td></tr><tr><td>-40</td><td>3.362</td><td>3.363</td><td>3.363</td><td>3.363</td><td>3.363</td></tr><tr><td>-20</td><td>3.360</td><td>3.360</td><td>3.360</td><td>3.360</td><td>3.360</td></tr><tr><td>0</td><td>3.355</td><td>3.356</td><td>3.356</td><td>3.356</td><td>3.356</td></tr><tr><td>25</td><td>3.352</td><td>3.352</td><td>3.352</td><td>3.353</td><td>3.352</td></tr><tr><td>60</td><td>3.346</td><td>3.346</td><td>3.346</td><td>3.346</td><td>3.346</td></tr><tr><td>65</td><td>3.345</td><td>3.345</td><td>3.345</td><td>3.345</td><td>3.344</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><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]	Input Volt. 48[V]	Input Volt. 76[V]	-60	3.362	3.363	3.363	3.363	3.363	-40	3.362	3.363	3.363	3.363	3.363	-20	3.360	3.360	3.360	3.360	3.360	0	3.355	3.356	3.356	3.356	3.356	25	3.352	3.352	3.352	3.353	3.352	60	3.346	3.346	3.346	3.346	3.346	65	3.345	3.345	3.345	3.345	3.344	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																																																	
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<div>COJEC</div>		
Model	MGFS15483R3	
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 - 76V

Load Current : 0 - 4A

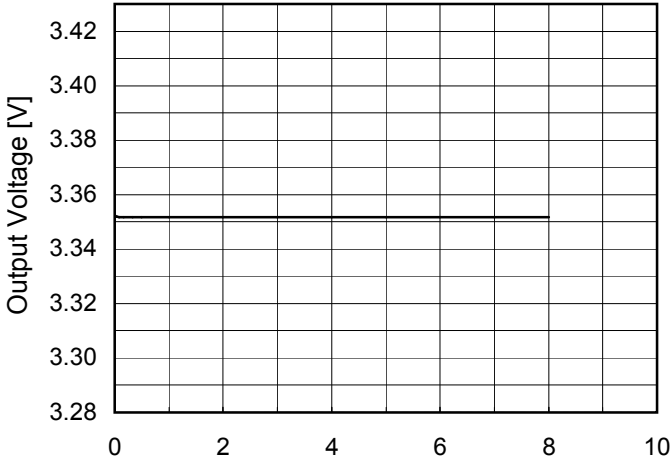
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

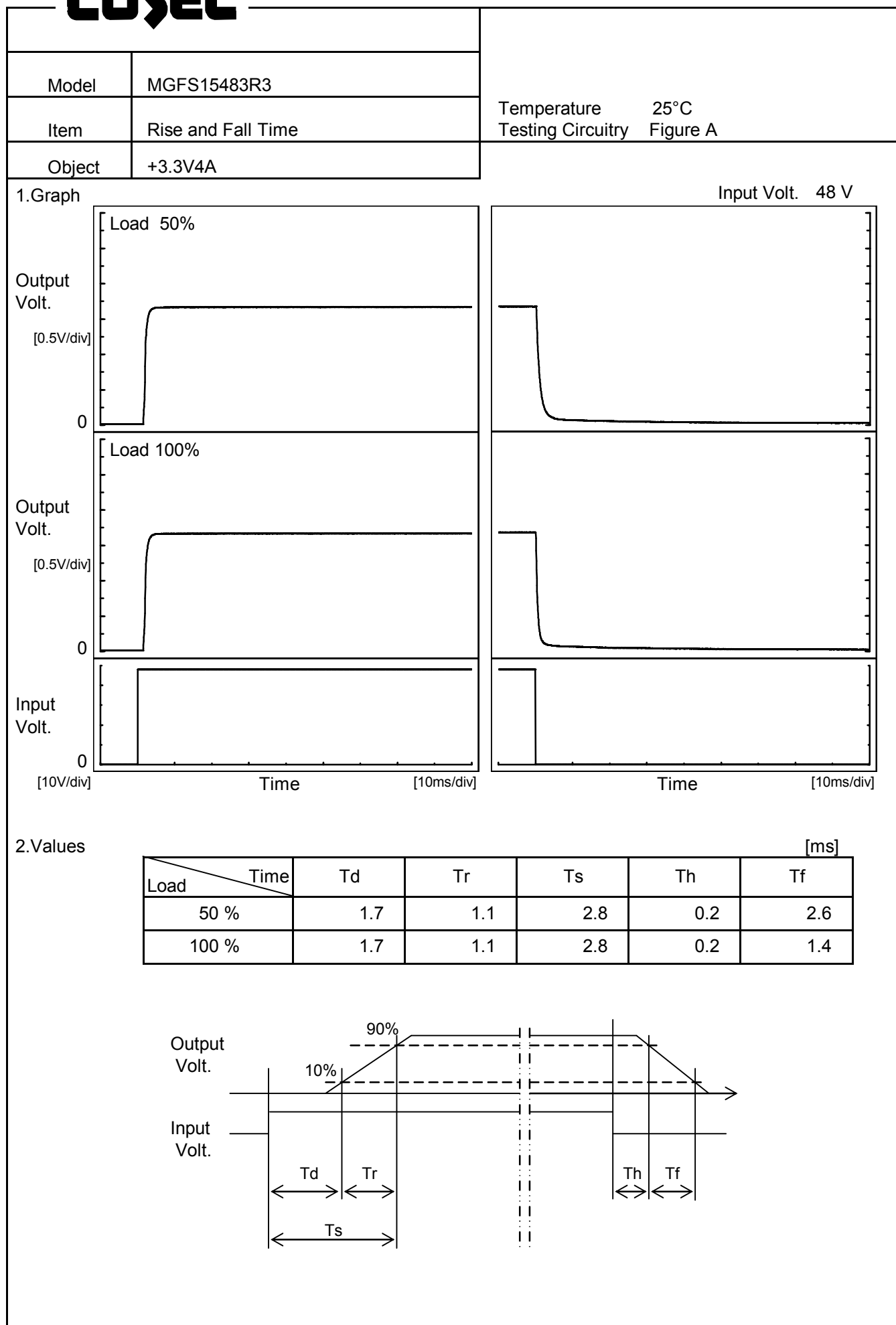
* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	18	0	3.365	±10	±0.3
Minimum Voltage	60	76	4	3.346		



Model	MGFS15483R3																								
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. 48V</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>3.353</td></tr><tr><td>0.5</td><td>3.352</td></tr><tr><td>1.0</td><td>3.352</td></tr><tr><td>2.0</td><td>3.352</td></tr><tr><td>3.0</td><td>3.352</td></tr><tr><td>4.0</td><td>3.352</td></tr><tr><td>5.0</td><td>3.352</td></tr><tr><td>6.0</td><td>3.352</td></tr><tr><td>7.0</td><td>3.352</td></tr><tr><td>8.0</td><td>3.352</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	3.353	0.5	3.352	1.0	3.352	2.0	3.352	3.0	3.352	4.0	3.352	5.0	3.352	6.0	3.352	7.0	3.352	8.0	3.352
Time since start [H]	Output Voltage [V]																								
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Model	MGFS15483R3																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																							
Object	+3.3V4A																																								
1.Graph		2.Values																																							
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></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>15.8</td><td>16.0</td></tr><tr><td>-40</td><td>15.8</td><td>16.0</td></tr><tr><td>-20</td><td>15.9</td><td>16.0</td></tr><tr><td>0</td><td>15.8</td><td>16.0</td></tr><tr><td>25</td><td>15.9</td><td>16.0</td></tr><tr><td>60</td><td>15.8</td><td>16.0</td></tr><tr><td>65</td><td>15.8</td><td>16.0</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	15.8	16.0	-40	15.8	16.0	-20	15.9	16.0	0	15.8	16.0	25	15.9	16.0	60	15.8	16.0	65	15.8	16.0	--	-	-	--	-	-	--	-	-	--	-	-
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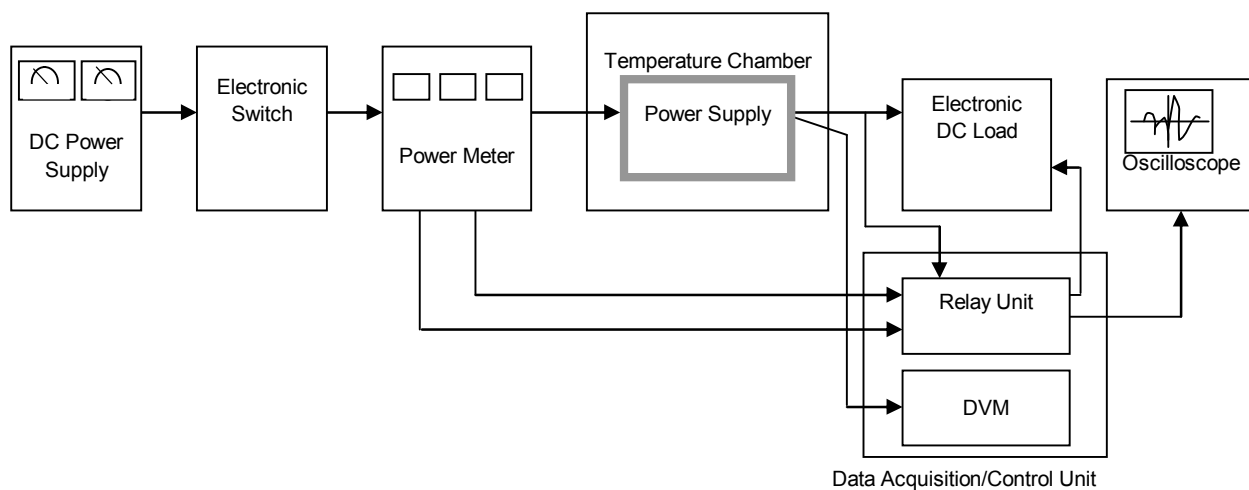


Figure A

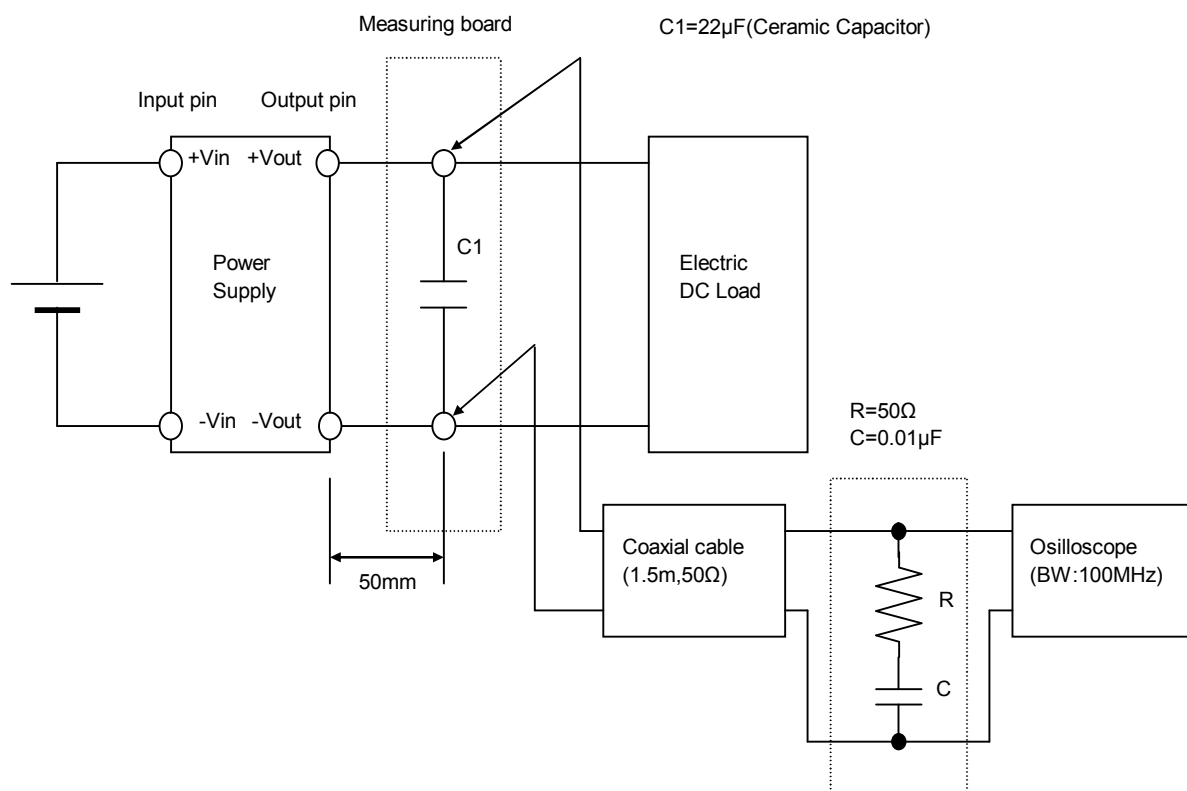


Figure B (Ripple and Ripple noise Characteristic)