

TEST DATA OF MGXS1R5243R3

Regulated DC Power Supply
February 19, 2018

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Takayuki Fukuda Design Manager

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COSEL CO.,LTD.

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Model		MGXS1R5243R3		Temperature Testing Circuitry	25°C Figure A																																																																															
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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>Load 50%</div><div>Load 100%</div></div> <p>Note: Slanted line shows the range of the rated input voltage.</p>		<table><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><tr><td>5.5</td><td>3.331</td><td>- ※</td></tr><tr><td>6.0</td><td>3.331</td><td>- ※</td></tr><tr><td>9.0</td><td>3.331</td><td>3.330</td></tr><tr><td>12.0</td><td>3.331</td><td>3.331</td></tr><tr><td>24.0</td><td>3.331</td><td>3.331</td></tr><tr><td>36.0</td><td>3.331</td><td>3.331</td></tr><tr><td>48.0</td><td>3.331</td><td>3.331</td></tr><tr><td>60.0</td><td>3.331</td><td>3.331</td></tr><tr><td>66.0</td><td>3.331</td><td>3.331</td></tr></table> <p>※ Maximum output current at minimum input Voltage is 70% of rated load current. Refer to instruction manuals for details of input derating.</p>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	5.5	3.331	- ※	6.0	3.331	- ※	9.0	3.331	3.330	12.0	3.331	3.331	24.0	3.331	3.331	36.0	3.331	3.331	48.0	3.331	3.331	60.0	3.331	3.331	66.0	3.331	3.331
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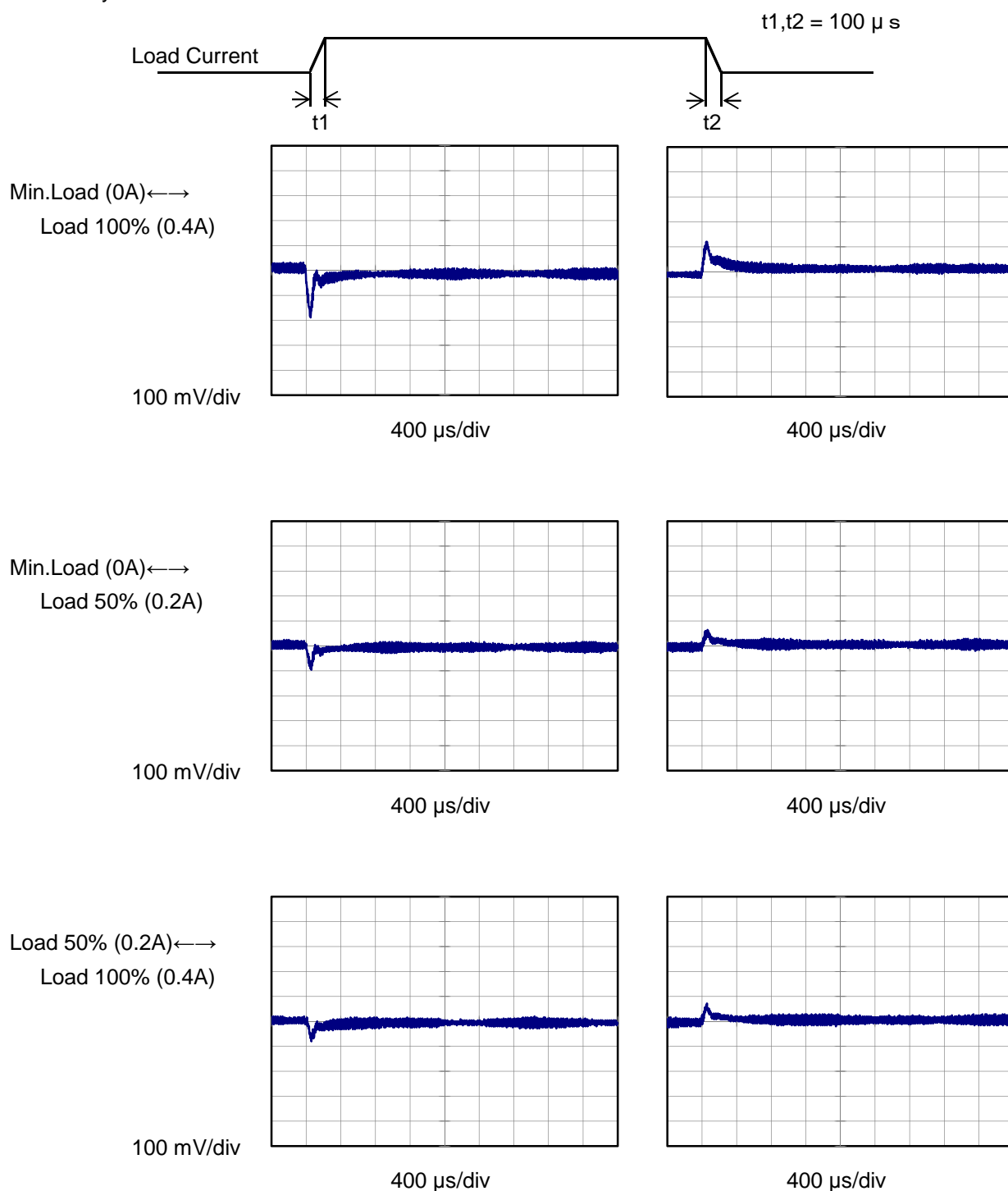


Model		MGXS1R5243R3		Temperature 25°C																																																																														
Item		Load Regulation		Testing Circuitry Figure A																																																																														
Object		+3.3V0.4A																																																																																
1.Graph		<div><div><div>—△—</div>Input Volt. 6V</div><div><div>---□---</div>Input Volt. 12V</div><div><div>-·*·-</div>Input Volt. 24V</div><div><div>-·○-</div>Input Volt. 48V</div><div><div>--◇--</div>Input Volt. 60V</div></div> <div><div><div>Output Voltage [V]</div><div><div>3.39</div><div>3.36</div><div>3.33</div><div>3.30</div><div>3.27</div><div>3.24</div></div><div><div>0.0</div><div>0.1</div><div>0.2</div><div>0.3</div><div>0.4</div><div>0.5</div></div><div>Load Current [A]</div></div></div>		2.Values																																																																														
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="5">Output Voltage [V]</th></tr><tr><th>Input Volt. 6[V]</th><th>Input Volt. 12[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 60[V]</th></tr><tr><td>0.00</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.333</td></tr><tr><td>0.08</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td></tr><tr><td>0.16</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td></tr><tr><td>0.24</td><td>3.331</td><td>3.332</td><td>3.332</td><td>3.332</td><td>3.332</td></tr><tr><td>0.32</td><td>3.330</td><td>3.331</td><td>3.331</td><td>3.331</td><td>3.331</td></tr><tr><td>0.40</td><td>- ※</td><td>3.331</td><td>3.331</td><td>3.331</td><td>3.331</td></tr><tr><td>0.44</td><td>- ※</td><td>3.330</td><td>3.331</td><td>3.331</td><td>3.331</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>		Load Current [A]	Output Voltage [V]					Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]	0.00	3.332	3.332	3.332	3.332	3.333	0.08	3.332	3.332	3.332	3.332	3.332	0.16	3.332	3.332	3.332	3.332	3.332	0.24	3.331	3.332	3.332	3.332	3.332	0.32	3.330	3.331	3.331	3.331	3.331	0.40	- ※	3.331	3.331	3.331	3.331	0.44	- ※	3.330	3.331	3.331	3.331	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-		
Load Current [A]	Output Voltage [V]																																																																																	
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Note: Slanted line shows the range of the rated load current.		※ Maximum output current at minimum input Voltage is 70% of rated load current. Refer to instruction manuals for details of input derating.																																																																																



Model	MGXS1R5243R3	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+3.3V0.4A	

Input Volt. 24 V
Cycle 100 ms

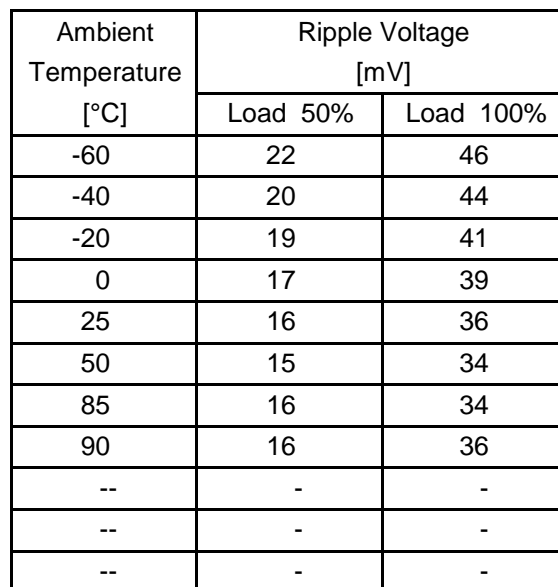


Model		MGXS1R5243R3		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B																																							
Object		+3.3V0.4A																																									
1.Graph				2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>6V</div></div><div><div>---○---</div><div>Input Volt.</div><div>60V</div></div></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. 6 [V]</th><th>Input Volt. 60 [V]</th></tr><tr><td>0.00</td><td>11</td><td>11</td></tr><tr><td>0.08</td><td>16</td><td>7</td></tr><tr><td>0.16</td><td>32</td><td>10</td></tr><tr><td>0.20</td><td>41</td><td>12</td></tr><tr><td>0.24</td><td>50</td><td>16</td></tr><tr><td>0.32</td><td>64</td><td>23</td></tr><tr><td>0.40</td><td>- ※</td><td>25</td></tr><tr><td>0.44</td><td>- ※</td><td>27</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. 6 [V]	Input Volt. 60 [V]	0.00	11	11	0.08	16	7	0.16	32	10	0.20	41	12	0.24	50	16	0.32	64	23	0.40	- ※	25	0.44	- ※	27	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																										
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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>				<p>※ Maximum output current at minimum input Voltage is 70% of rated load current.</p> <p>Refer to instruction manuals for details of input derating.</p>																																							
<div><div>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div>																																											

Model	MGXS1R5243R3																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+3.3V0.4A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>6V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>60V</div></div></div> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 6 [V]</th><th>Input Volt. 60 [V]</th></tr><tr><td>0.00</td><td>16</td><td>16</td></tr><tr><td>0.08</td><td>22</td><td>11</td></tr><tr><td>0.16</td><td>37</td><td>13</td></tr><tr><td>0.20</td><td>47</td><td>17</td></tr><tr><td>0.24</td><td>60</td><td>25</td></tr><tr><td>0.32</td><td>74</td><td>30</td></tr><tr><td>0.40</td><td>- ※</td><td>35</td></tr><tr><td>0.44</td><td>- ※</td><td>35</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. 6 [V]	Input Volt. 60 [V]	0.00	16	16	0.08	22	11	0.16	37	13	0.20	47	17	0.24	60	25	0.32	74	30	0.40	- ※	35	0.44	- ※	35	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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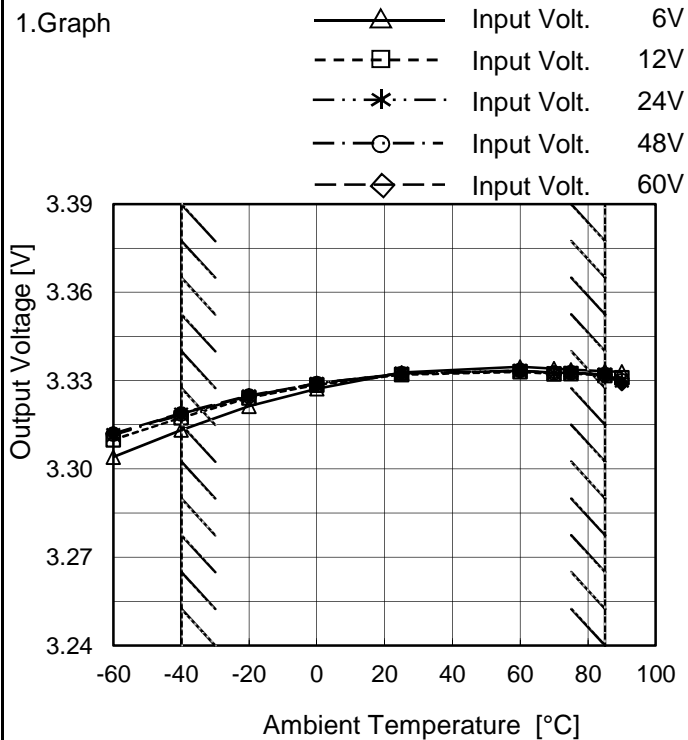
Testing Circuitry Figure B

2.Values



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

Model	MGXS1R5243R3
Item	Ambient Temperature Drift
Object	+3.3V0.4A



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
-60	3.304	3.310	3.312	3.312	3.312
-40	3.313	3.317	3.318	3.319	3.319
-20	3.321	3.324	3.325	3.325	3.325
0	3.327	3.329	3.329	3.329	3.329
25	3.333	3.332	3.332	3.332	3.332
60	3.335	3.333	3.333	3.333	3.333
70	3.334	3.332	3.333	3.333	3.333
75	3.334	3.332	3.333	3.333	3.333
85	3.333	3.332	3.332	3.332	3.332
90	3.333	3.331	3.330	3.330	3.329
--	-	-	-	-	-

Note: In case of input Volt. 6V, Load 70%.
Other case Load 100%.



Model		MGXS1R5243R3	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+3.3V0.4A	

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 - 85°C

Input Voltage : 6 - 60V

Load Current : 0 - 0.4A

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

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

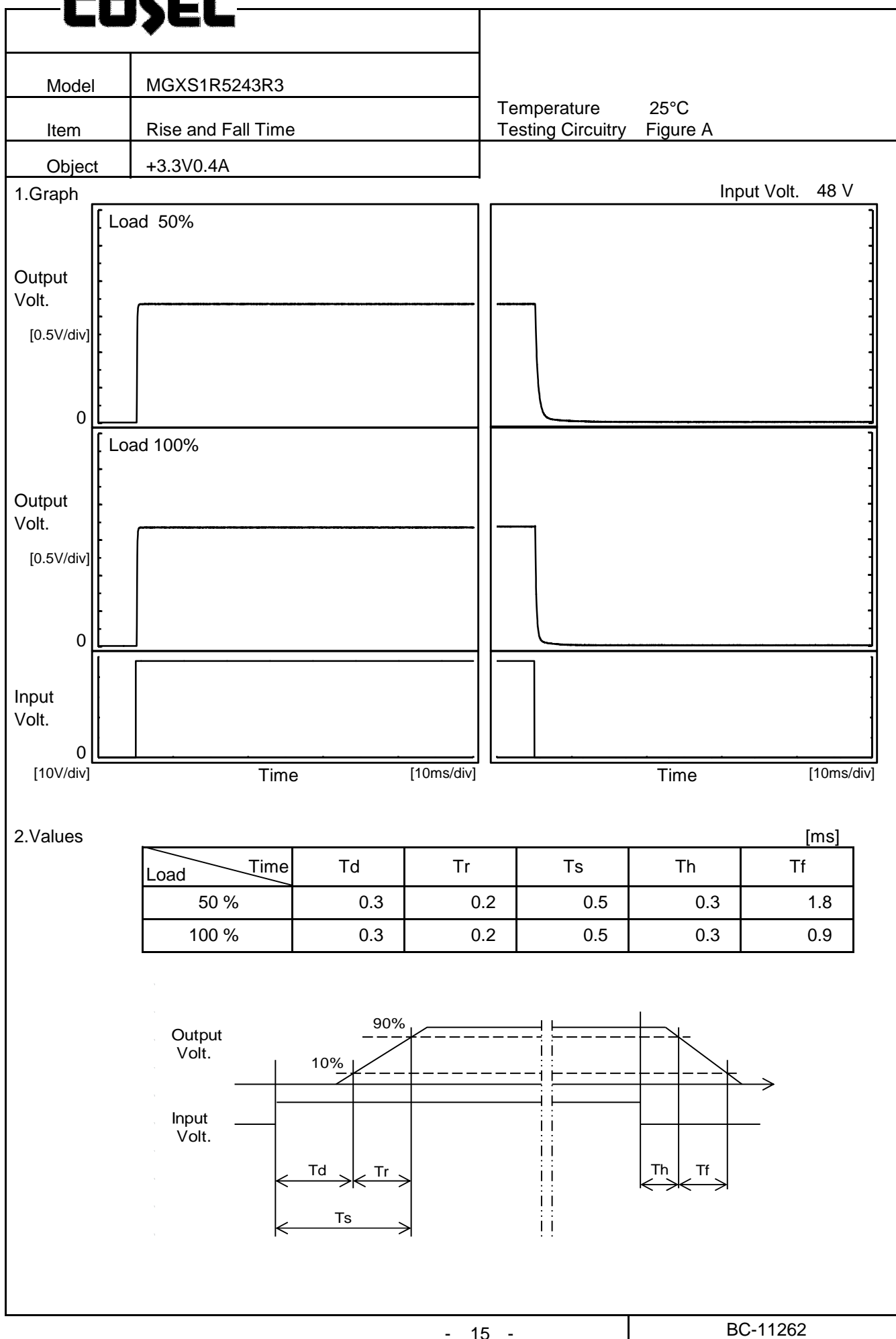
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	48	0	3.336	±12	±0.4
Minimum Voltage	-40	6	0.28 ※	3.313		

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.



Model		MGXS1R5243R3	Temperature25°C Testing CircuitryFigure A																						
Item		Time Lapse Drift																							
Object		+3.3V0.4A																							
1.Graph		2.Values																							
<div><div><div><div>3.39</div><div>3.36</div><div>3.33</div><div>3.30</div><div>3.27</div><div>3.24</div></div><div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div><div>Time [H]</div></div></div><div><div>Output Voltage [V]</div><div>Input Volt.24V</div><div>Load100%</div></div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>3.330</td></tr><tr><td>0.5</td><td>3.332</td></tr><tr><td>1.0</td><td>3.332</td></tr><tr><td>2.0</td><td>3.332</td></tr><tr><td>3.0</td><td>3.332</td></tr><tr><td>4.0</td><td>3.332</td></tr><tr><td>5.0</td><td>3.332</td></tr><tr><td>6.0</td><td>3.332</td></tr><tr><td>7.0</td><td>3.332</td></tr><tr><td>8.0</td><td>3.332</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	3.330	0.5	3.332	1.0	3.332	2.0	3.332	3.0	3.332	4.0	3.332	5.0	3.332	6.0	3.332	7.0	3.332	8.0	3.332
Time since start [H]	Output Voltage [V]																								
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Model	MGXS1R5243R3																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																							
Object	+3.3V0.4A																																								
1.Graph		2.Values																																							
<div><div>---□--- Load 50%</div><div>—△— Load 70%</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 70%</th></tr><tr><td>-60</td><td>5.1</td><td>4.9</td></tr><tr><td>-40</td><td>5.0</td><td>4.9</td></tr><tr><td>-20</td><td>4.9</td><td>4.8</td></tr><tr><td>0</td><td>4.8</td><td>4.8</td></tr><tr><td>25</td><td>4.8</td><td>4.8</td></tr><tr><td>60</td><td>4.8</td><td>4.8</td></tr><tr><td>70</td><td>4.8</td><td>4.8</td></tr><tr><td>75</td><td>4.8</td><td>4.8</td></tr><tr><td>85</td><td>4.8</td><td>4.8</td></tr><tr><td>90</td><td>4.8</td><td>4.8</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 70%	-60	5.1	4.9	-40	5.0	4.9	-20	4.9	4.8	0	4.8	4.8	25	4.8	4.8	60	4.8	4.8	70	4.8	4.8	75	4.8	4.8	85	4.8	4.8	90	4.8	4.8	--	-	-
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Model	MGXS1R5243R3																																																																																							
Item	Overcurrent Protection		Temperature	25°C																																																																																				
Object	+3.3V0.4A		Testing Circuitry	Figure A																																																																																				
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Model		MGXS1R5243R3		Temperature 25°C																																																																														
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When load current is low, MG operates intermittently, so switching frequency would not become constant.																																																																																		

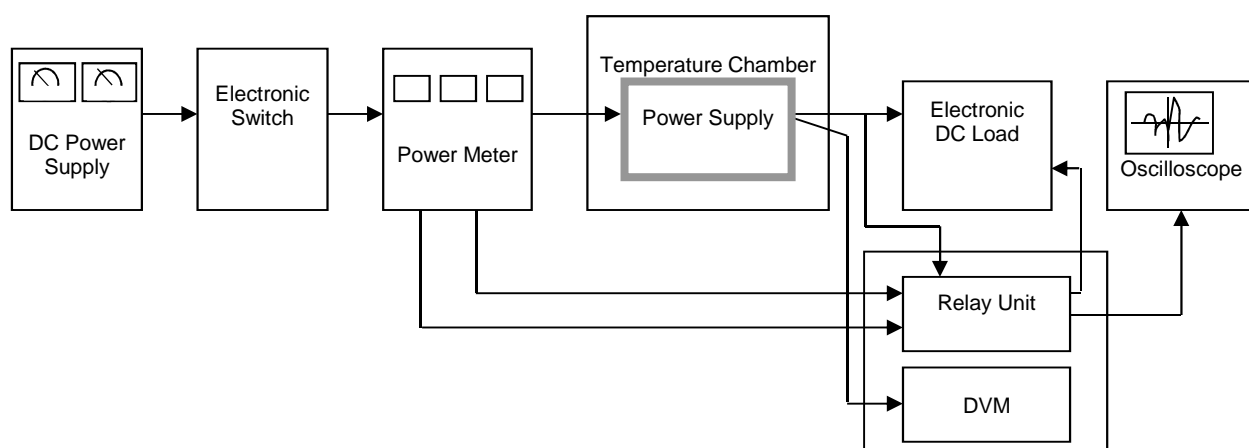


Figure A

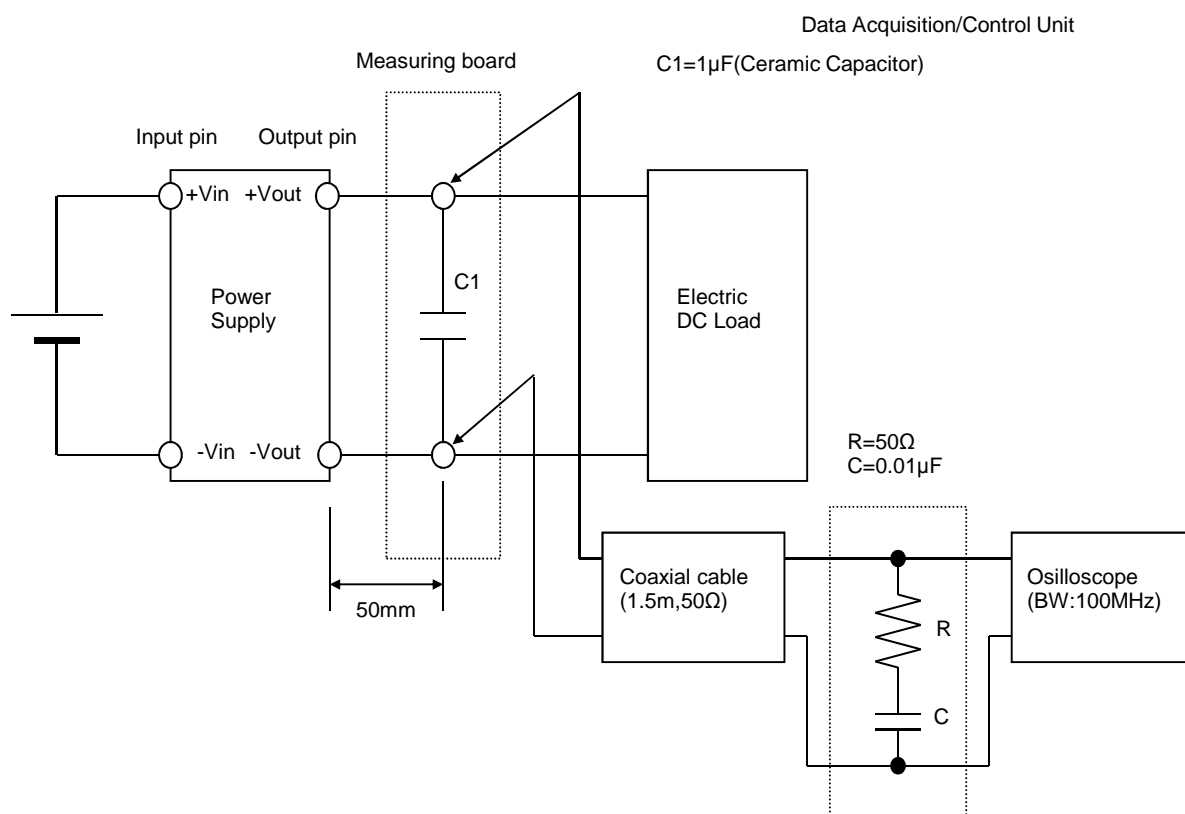


Figure B (Ripple and Ripple noise Characteristic)