



TEST DATA OF MGS31215

Regulated DC Power Supply
March 24, 2016

Approved by : Takayuki Fukuda Design Manager

Prepared by : Shohei Mukaide Design Engineer

COSEL CO.,LTD.

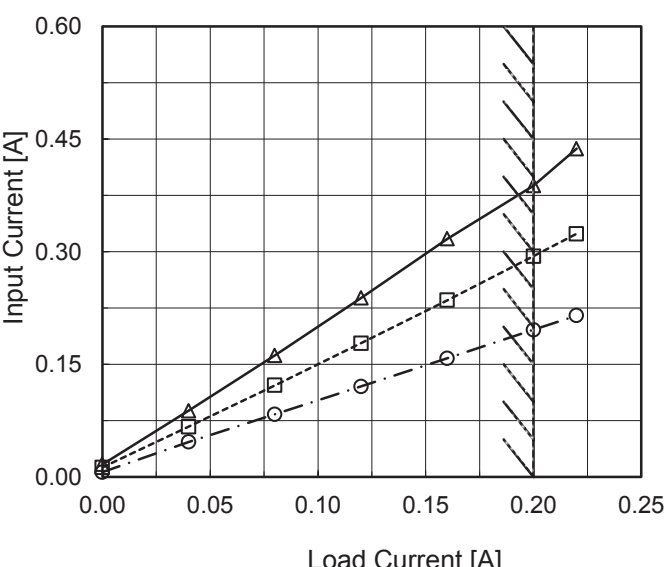
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Model		MGS31215	Temperature 25°C																																																																																
Item		Input Current (by Input Voltage)	Testing Circuitry Figure A																																																																																
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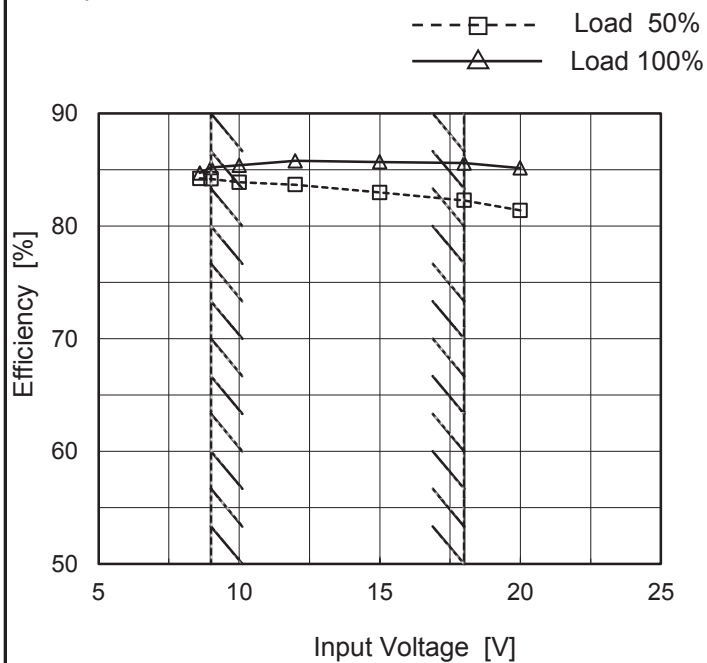
Model MGS31215

Item Efficiency (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph



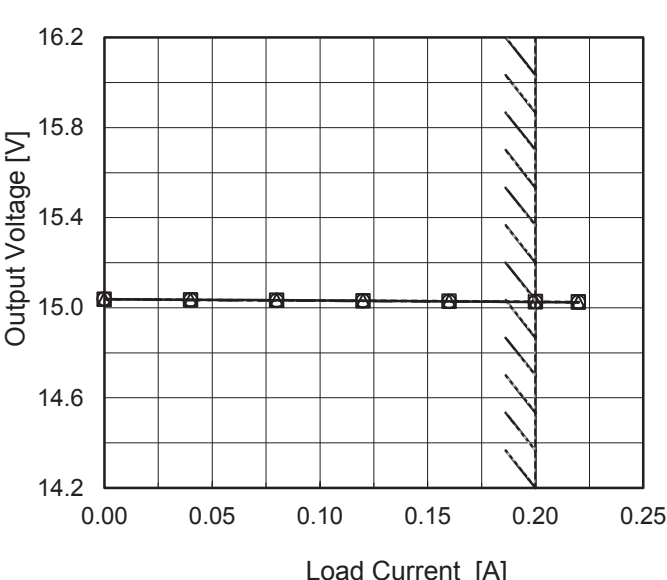
Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8.6	84.2	84.7
9.0	84.2	85.2
10.0	83.9	85.4
12.0	83.7	85.8
15.0	83.0	85.7
18.0	82.3	85.6
20.0	81.4	85.2
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Model	MGS31215	Temperature	25°C																																
Item	Line Regulation	Testing Circuitry	Figure A																																
Object	+15V0.2A																																		
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Model		MGS31215	Temperature		25°C
Item		Load Regulation	Testing Circuitry		Figure A
Object		+15V0.2A			
1.Graph		<div><div>—△—</div><div>Input Volt.</div><div>9V</div></div> <div><div>---□---</div><div>Input Volt.</div><div>12V</div></div> <div><div>---○---</div><div>Input Volt.</div><div>18V</div></div>	2.Values		
					
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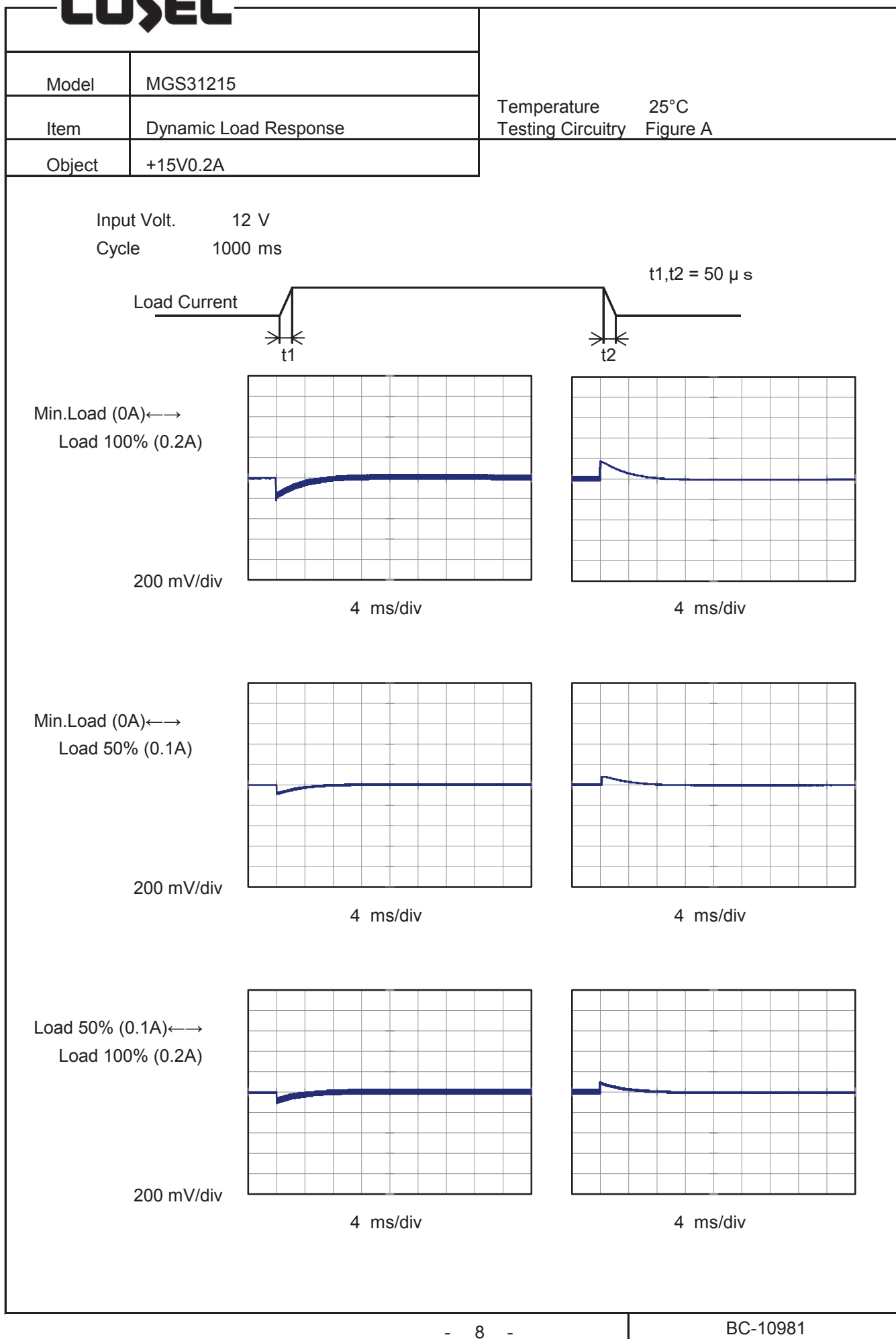
Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	15.038	15.038	15.038
0.04	15.035	15.035	15.034
0.08	15.033	15.033	15.032
0.12	15.031	15.031	15.030
0.16	15.029	15.029	15.028
0.20	15.026	15.027	15.026
0.22	15.024	15.026	15.025
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Model		MGS31215		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B																																							
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<div><p>Ripple [mVp-p]</p><p>Fig.Complex Ripple Wave Form</p></div>																																											

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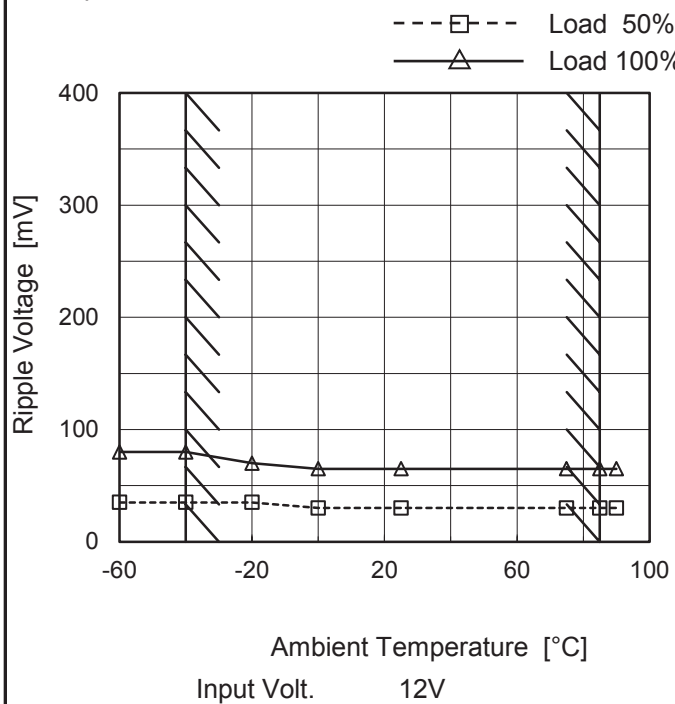
Model MGS31215

Item Ripple Voltage (by Ambient Temp.)

Object +15V0.2A

Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.

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

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	35	80
-40	35	80
-20	35	70
0	30	65
25	30	65
75	30	65
85	30	65
90	30	65
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Object		+15V0.2A																																																			
1.Graph		<div><div>—△— Input Volt. 9V</div><div>---□--- Input Volt. 12V</div><div>-·-○-·- Input Volt. 18V</div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>	2.Values																																																		
		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 9[V]</th><th>Input Volt. 12[V]</th><th>Input Volt. 18[V]</th></tr><tr><td>-60</td><td>14.925</td><td>14.928</td><td>14.928</td></tr><tr><td>-40</td><td>14.958</td><td>14.960</td><td>14.960</td></tr><tr><td>-20</td><td>14.983</td><td>14.984</td><td>14.984</td></tr><tr><td>0</td><td>15.002</td><td>15.003</td><td>15.003</td></tr><tr><td>25</td><td>15.026</td><td>15.027</td><td>15.026</td></tr><tr><td>75</td><td>15.028</td><td>15.029</td><td>15.028</td></tr><tr><td>85</td><td>15.028</td><td>15.029</td><td>15.028</td></tr><tr><td>90</td><td>15.028</td><td>15.029</td><td>15.028</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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	-60	14.925	14.928	14.928	-40	14.958	14.960	14.960	-20	14.983	14.984	14.984	0	15.002	15.003	15.003	25	15.026	15.027	15.026	75	15.028	15.029	15.028	85	15.028	15.029	15.028	90	15.028	15.029	15.028	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																				
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-20	14.983	14.984	14.984																																																		
0	15.002	15.003	15.003																																																		
25	15.026	15.027	15.026																																																		
75	15.028	15.029	15.028																																																		
85	15.028	15.029	15.028																																																		
90	15.028	15.029	15.028																																																		
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Note: Slanted line shows the range of the rated ambient temperature.																																																					



Model		MGS31215	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+15V0.2A	

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 : 9 - 18V

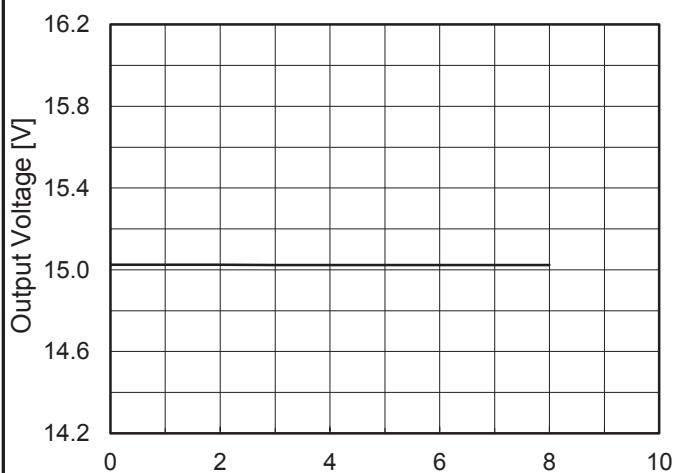
Load Current : 0 - 0.2A

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

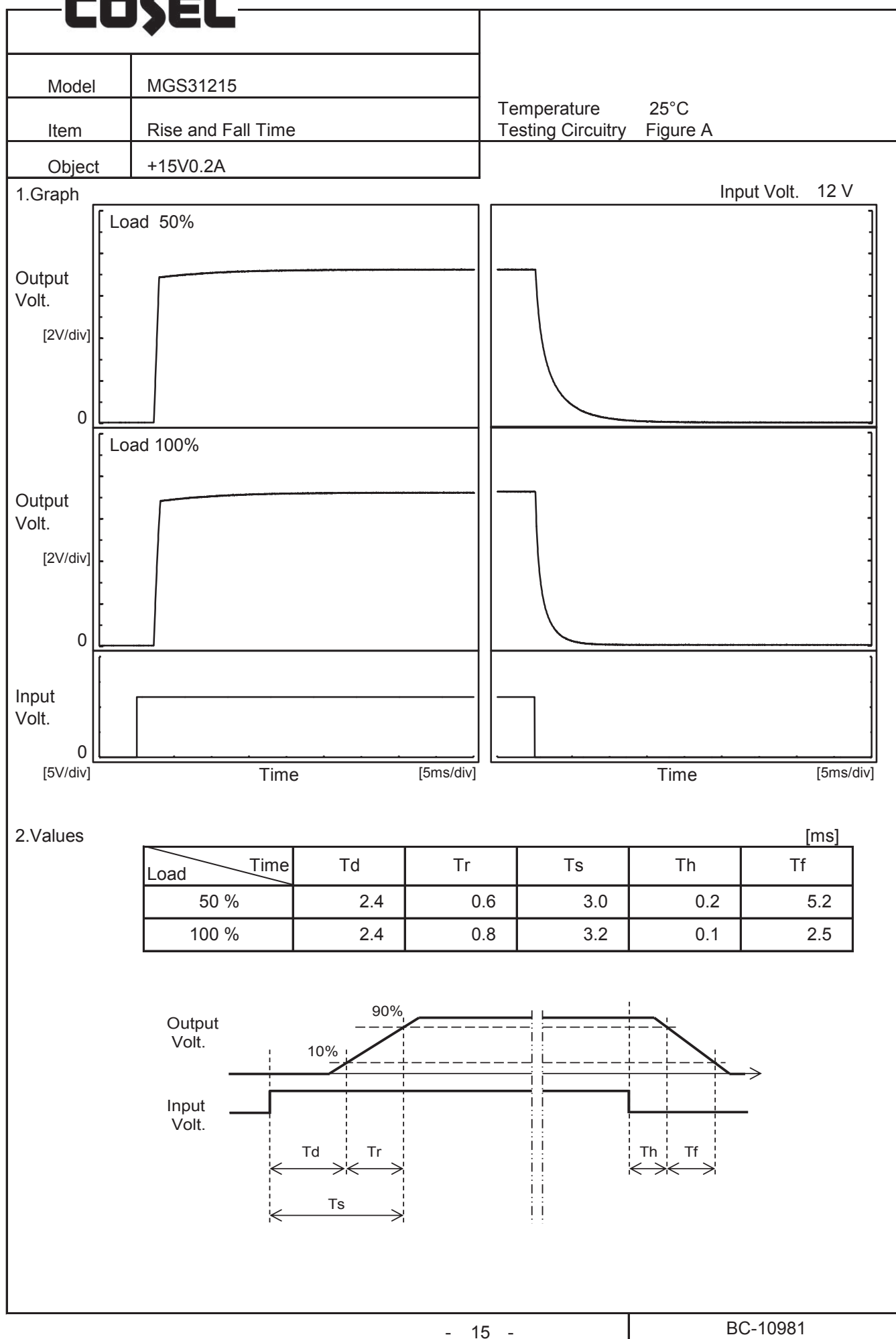
* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	18	0	15.045	±44	±0.3
Minimum Voltage	-40	9	0.2	14.958		

Model	MGS31215																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+15V0.2A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 12V</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>15.022</td></tr><tr><td>0.5</td><td>15.025</td></tr><tr><td>1.0</td><td>15.025</td></tr><tr><td>2.0</td><td>15.024</td></tr><tr><td>3.0</td><td>15.024</td></tr><tr><td>4.0</td><td>15.024</td></tr><tr><td>5.0</td><td>15.024</td></tr><tr><td>6.0</td><td>15.024</td></tr><tr><td>7.0</td><td>15.023</td></tr><tr><td>8.0</td><td>15.023</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	15.022	0.5	15.025	1.0	15.025	2.0	15.024	3.0	15.024	4.0	15.024	5.0	15.024	6.0	15.024	7.0	15.023	8.0	15.023
Time since start [H]	Output Voltage [V]																								
0.0	15.022																								
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5.0	15.024																								
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7.0	15.023																								
8.0	15.023																								

COSEL



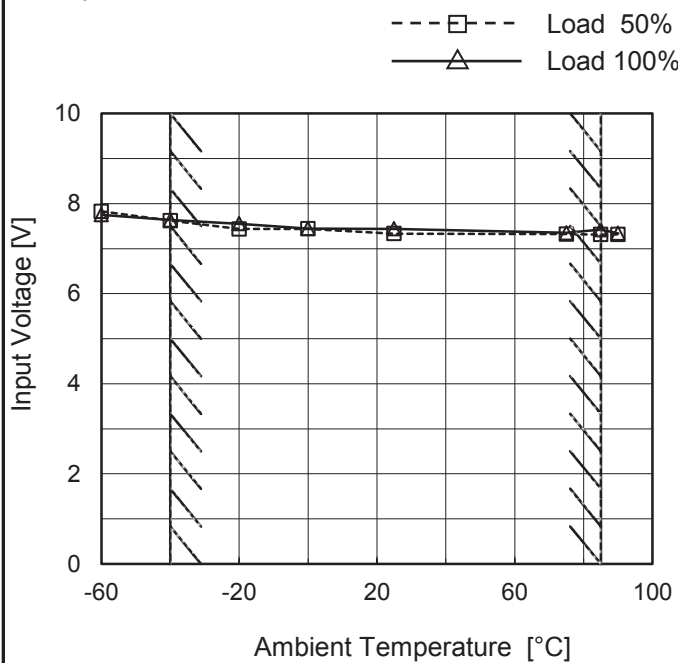
Model MGS31215

Item Minimum Input Voltage
for Regulated Output Voltage

Object +15V0.2A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	7.9	7.8
-40	7.7	7.7
-20	7.5	7.6
0	7.5	7.5
25	7.4	7.5
75	7.4	7.4
85	7.4	7.5
90	7.4	7.4
--	-	-
--	-	-
--	-	-

COSEL

Model		MGS31215		Temperature 25°C	
Item		Overcurrent Protection		Testing Circuitry Figure A	
Object		+15V0.2A			
1.Graph		<div><div></div>Input Volt. 9V</div> <div><div></div>Input Volt. 12V</div> <div><div></div>Input Volt. 18V</div>		2.Values	
<div><div>Output Voltage [V]</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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><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><di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Model		MGS31215	Temperature		25°C
Item		Switching frequency (by Load Current)	Testing Circuitry		Figure A
Object		+15V0.2A	2.Values		
1.Graph		<div><div>—△—</div>Input Volt. 9V</div> <div><div>---□---</div>Input Volt. 12V</div> <div><div>-·-○-·-</div>Input Volt. 18V</div> <p>Oscillator Frequency [KHz]</p> <p>Load Current [A]</p>			
Note: Slanted line shows the range of the rated load current.					
-When load current is low, MG operates intermittently, so switching frequency would not become constant.					

Load Current [A]	Frequency [kHz]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	1038	1120	1180
0.04	618	720	830
0.08	439	527	629
0.12	336	412	508
0.16	274	341	424
0.20	229	288	365
0.22	215	273	342
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--	-	-	-
--	-	-	-
--	-	-	-

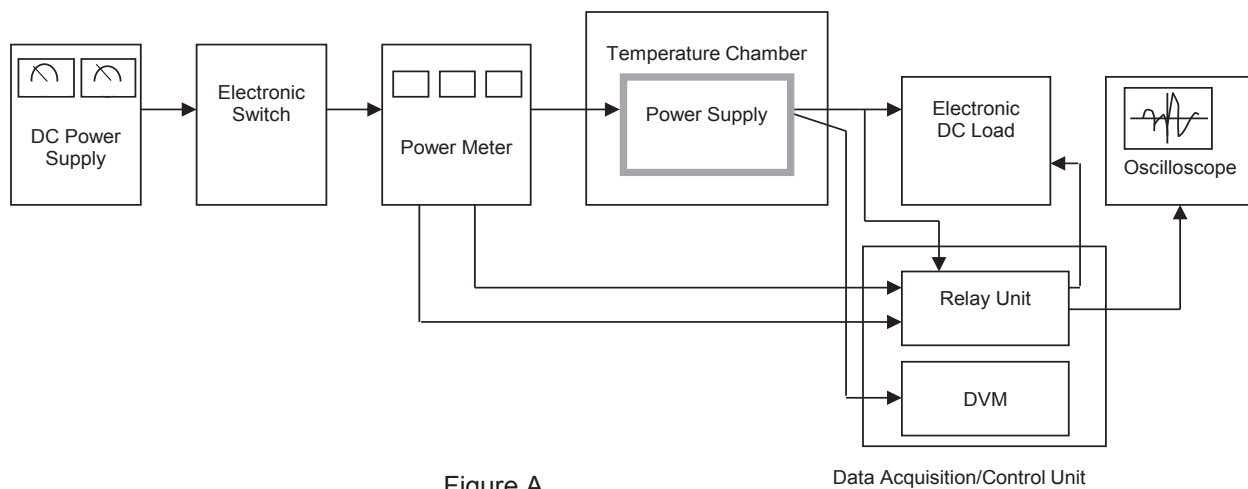


Figure A

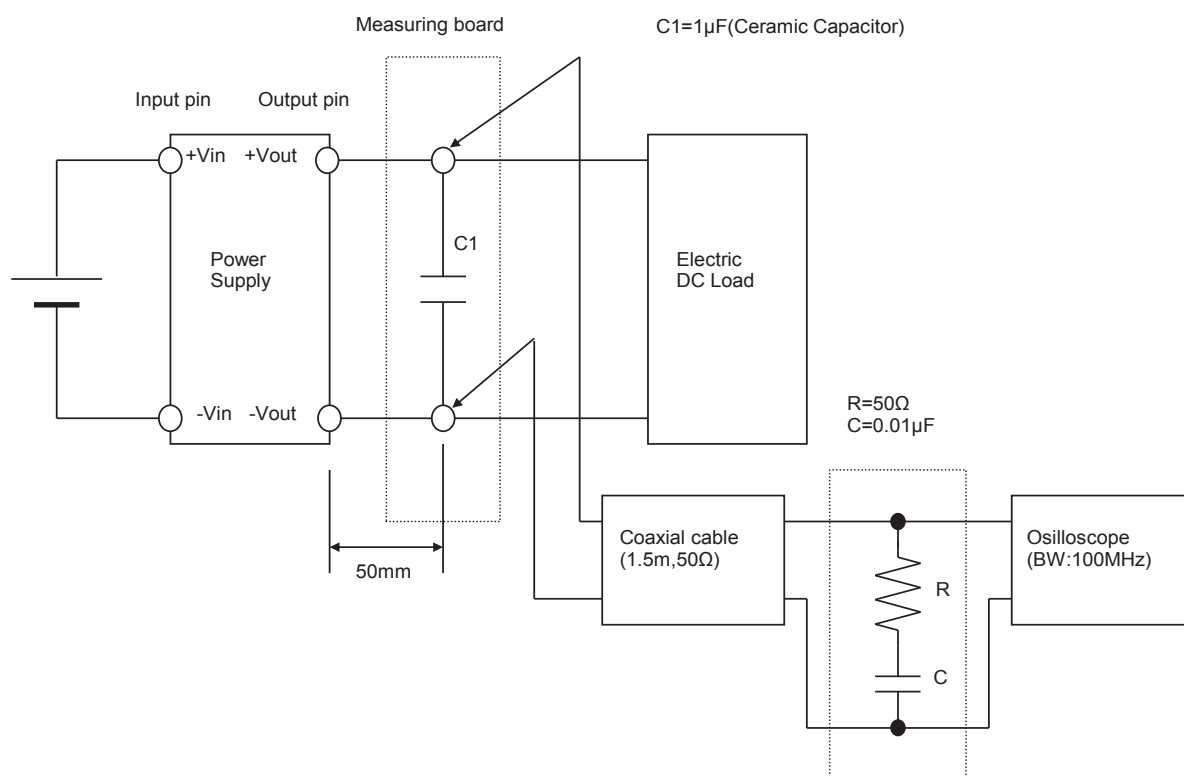


Figure B (Ripple and Ripple noise Characteristic)