

TEST DATA OF MGFS302412

Regulated DC Power Supply
December 24, 2010

Approved by : *Kazunari Asano*
Kazunari Asano Design Manager

Prepared by : *Masashi Ueda*
Masashi Ueda Design Engineer

COSEL CO.,LTD.

CONTENTS

1.Input Current (by Input Voltage)	1
2.Input Current (by Load Current)	2
3.Input Power (by Load Current)	3
4.Efficiency (by Input Voltage)	4
5.Efficiency (by Load Current)	5
6.Line Regulation	6
7.Load Regulation	7
8.Dynamic Load Response	8
9.Ripple Voltage (by Load Current)	9
10.Ripple-Noise	10
11.Ripple Voltage (by Ambient Temperature)	11
12.Ambient Temperature Drift	12
13.Output Voltage Accuracy	13
14.Time Lapse Drift	14
15.Rise and Fall Time	15
16.Minimum Input Voltage for Regulated Output Voltage	16
17.Overcurrent Protection	17
18.Overvoltage Protection	18
19.Figure of Testing Circuitry	19

(Final Page 19)



<p>Model MGFS302412</p>		<p>Temperature 25°C</p>																																																																															
<p>Item Input Current (by Input Voltage)</p>		<p>Testing Circuitry Figure A</p>																																																																															
<p>Object _____</p>																																																																																	
<p>1.Graph</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> </div> <div style="width: 35%;"> <p>—△— Load 100%</p> <p>- - -□- - Load 50%</p> <p>- · -○- · - Load 0%</p> </div> </div>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Load 0%</th> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>2.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>4.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>6.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>7.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>8.0</td><td>0.000</td><td>0.000</td><td>0.002</td></tr> <tr><td>8.5</td><td>0.084</td><td>1.944</td><td>3.926</td></tr> <tr><td>9.0</td><td>0.082</td><td>1.832</td><td>3.694</td></tr> <tr><td>12.0</td><td>0.072</td><td>1.388</td><td>2.788</td></tr> <tr><td>18.0</td><td>0.060</td><td>0.942</td><td>1.870</td></tr> <tr><td>24.0</td><td>0.054</td><td>0.720</td><td>1.422</td></tr> <tr><td>36.0</td><td>0.049</td><td>0.504</td><td>0.985</td></tr> <tr><td>38.0</td><td>0.048</td><td>0.482</td><td>0.939</td></tr> <tr><td>38.2</td><td>0.048</td><td>0.479</td><td>0.935</td></tr> <tr><td>39.8</td><td>0.048</td><td>0.464</td><td>0.902</td></tr> <tr><td>40.0</td><td>0.048</td><td>0.461</td><td>0.900</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Input Voltage [V]	Input Current [A]			Load 0%	Load 50%	Load 100%	0.0	0.000	0.000	0.000	2.0	0.000	0.000	0.000	4.0	0.000	0.000	0.000	6.0	0.000	0.000	0.000	7.0	0.000	0.000	0.000	8.0	0.000	0.000	0.002	8.5	0.084	1.944	3.926	9.0	0.082	1.832	3.694	12.0	0.072	1.388	2.788	18.0	0.060	0.942	1.870	24.0	0.054	0.720	1.422	36.0	0.049	0.504	0.985	38.0	0.048	0.482	0.939	38.2	0.048	0.479	0.935	39.8	0.048	0.464	0.902	40.0	0.048	0.461	0.900	--	-	-	-	--	-	-	-
Input Voltage [V]	Input Current [A]																																																																																
	Load 0%	Load 50%	Load 100%																																																																														
0.0	0.000	0.000	0.000																																																																														
2.0	0.000	0.000	0.000																																																																														
4.0	0.000	0.000	0.000																																																																														
6.0	0.000	0.000	0.000																																																																														
7.0	0.000	0.000	0.000																																																																														
8.0	0.000	0.000	0.002																																																																														
8.5	0.084	1.944	3.926																																																																														
9.0	0.082	1.832	3.694																																																																														
12.0	0.072	1.388	2.788																																																																														
18.0	0.060	0.942	1.870																																																																														
24.0	0.054	0.720	1.422																																																																														
36.0	0.049	0.504	0.985																																																																														
38.0	0.048	0.482	0.939																																																																														
38.2	0.048	0.479	0.935																																																																														
39.8	0.048	0.464	0.902																																																																														
40.0	0.048	0.461	0.900																																																																														
--	-	-	-																																																																														
--	-	-	-																																																																														
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																																																																	



Model		MGFS302412		Temperature 25°C																																																																														
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																																														
Object		_____																																																																																
1.Graph		<p> —△— Input Volt. 9V - - - □ - - - Input Volt. 12V - · · * · · - · - Input Volt. 18V - · · ○ · · - · - Input Volt. 24V - - ◇ - - - Input Volt. 36V </p>		2.Values																																																																														
				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Current [A]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.081</td><td>0.070</td><td>0.059</td><td>0.053</td><td>0.048</td></tr> <tr><td>0.50</td><td>0.776</td><td>0.591</td><td>0.409</td><td>0.318</td><td>0.229</td></tr> <tr><td>1.00</td><td>1.473</td><td>1.121</td><td>0.765</td><td>0.589</td><td>0.414</td></tr> <tr><td>1.50</td><td>2.226</td><td>1.675</td><td>1.132</td><td>0.862</td><td>0.600</td></tr> <tr><td>2.00</td><td>2.954</td><td>2.218</td><td>1.502</td><td>1.146</td><td>0.792</td></tr> <tr><td>2.50</td><td>3.732</td><td>2.811</td><td>1.886</td><td>1.433</td><td>0.992</td></tr> <tr><td>2.75</td><td>4.107</td><td>3.092</td><td>2.084</td><td>1.584</td><td>1.093</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> </tbody> </table>		Load Current [A]	Input Current [A]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	0.081	0.070	0.059	0.053	0.048	0.50	0.776	0.591	0.409	0.318	0.229	1.00	1.473	1.121	0.765	0.589	0.414	1.50	2.226	1.675	1.132	0.862	0.600	2.00	2.954	2.218	1.502	1.146	0.792	2.50	3.732	2.811	1.886	1.433	0.992	2.75	4.107	3.092	2.084	1.584	1.093	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Current [A]																																																																																	
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																													
0.00	0.081	0.070	0.059	0.053	0.048																																																																													
0.50	0.776	0.591	0.409	0.318	0.229																																																																													
1.00	1.473	1.121	0.765	0.589	0.414																																																																													
1.50	2.226	1.675	1.132	0.862	0.600																																																																													
2.00	2.954	2.218	1.502	1.146	0.792																																																																													
2.50	3.732	2.811	1.886	1.433	0.992																																																																													
2.75	4.107	3.092	2.084	1.584	1.093																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																		



Model		MGFS302412		Temperature 25°C																																																																														
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																																														
Object		_____																																																																																
1.Graph		<p> —△— Input Volt. 9V - - - □ - - Input Volt. 12V - · · * · · - · - Input Volt. 18V - · - ○ - · - - Input Volt. 24V - - - ◇ - - - Input Volt. 36V </p>		2.Values																																																																														
				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Power [W]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.72</td><td>0.84</td><td>1.06</td><td>1.27</td><td>1.75</td></tr> <tr><td>0.50</td><td>6.94</td><td>7.07</td><td>7.33</td><td>7.61</td><td>8.23</td></tr> <tr><td>1.00</td><td>13.28</td><td>13.43</td><td>13.74</td><td>14.08</td><td>14.88</td></tr> <tr><td>1.50</td><td>19.83</td><td>19.92</td><td>20.26</td><td>20.64</td><td>21.58</td></tr> <tr><td>2.00</td><td>26.52</td><td>26.64</td><td>26.95</td><td>27.38</td><td>28.43</td></tr> <tr><td>2.50</td><td>33.39</td><td>33.48</td><td>33.90</td><td>34.34</td><td>35.60</td></tr> <tr><td>2.75</td><td>36.93</td><td>37.01</td><td>37.40</td><td>37.90</td><td>39.30</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> </tbody> </table>		Load Current [A]	Input Power [W]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	0.72	0.84	1.06	1.27	1.75	0.50	6.94	7.07	7.33	7.61	8.23	1.00	13.28	13.43	13.74	14.08	14.88	1.50	19.83	19.92	20.26	20.64	21.58	2.00	26.52	26.64	26.95	27.38	28.43	2.50	33.39	33.48	33.90	34.34	35.60	2.75	36.93	37.01	37.40	37.90	39.30	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Power [W]																																																																																	
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																													
0.00	0.72	0.84	1.06	1.27	1.75																																																																													
0.50	6.94	7.07	7.33	7.61	8.23																																																																													
1.00	13.28	13.43	13.74	14.08	14.88																																																																													
1.50	19.83	19.92	20.26	20.64	21.58																																																																													
2.00	26.52	26.64	26.95	27.38	28.43																																																																													
2.50	33.39	33.48	33.90	34.34	35.60																																																																													
2.75	36.93	37.01	37.40	37.90	39.30																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																		



COSEL																																			
Model	MGFS302412	Temperature	25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																
Object																																			
<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">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>8.5</td><td>91.1</td><td>90.1</td></tr> <tr><td>9.0</td><td>91.0</td><td>90.1</td></tr> <tr><td>12.0</td><td>90.4</td><td>89.9</td></tr> <tr><td>15.0</td><td>89.6</td><td>89.4</td></tr> <tr><td>18.0</td><td>88.7</td><td>88.6</td></tr> <tr><td>24.0</td><td>86.8</td><td>87.7</td></tr> <tr><td>30.0</td><td>84.9</td><td>86.2</td></tr> <tr><td>36.0</td><td>82.7</td><td>84.6</td></tr> <tr><td>40.0</td><td>81.3</td><td>83.5</td></tr> </tbody> </table>		Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	8.5	91.1	90.1	9.0	91.0	90.1	12.0	90.4	89.9	15.0	89.6	89.4	18.0	88.7	88.6	24.0	86.8	87.7	30.0	84.9	86.2	36.0	82.7	84.6	40.0	81.3	83.5
Input Voltage [V]	Efficiency [%]																																		
	Load 50%	Load 100%																																	
8.5	91.1	90.1																																	
9.0	91.0	90.1																																	
12.0	90.4	89.9																																	
15.0	89.6	89.4																																	
18.0	88.7	88.6																																	
24.0	86.8	87.7																																	
30.0	84.9	86.2																																	
36.0	82.7	84.6																																	
40.0	81.3	83.5																																	
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																			



Model		MGFS302412		Temperature 25°C																																																																													
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																																													
Object		_____																																																																															
1.Graph		<p> —△— Input Volt. 9V - - - □ - - - Input Volt. 12V ····*····· Input Volt. 18V - - - ○ - - - Input Volt. 24V - - - ◇ - - - Input Volt. 36V </p>		2.Values																																																																													
		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.50</td><td>86.7</td><td>85.1</td><td>82.1</td><td>79.1</td><td>73.1</td></tr> <tr><td>1.00</td><td>90.7</td><td>89.7</td><td>87.7</td><td>85.6</td><td>81.0</td></tr> <tr><td>1.50</td><td>91.2</td><td>90.8</td><td>89.2</td><td>87.6</td><td>83.8</td></tr> <tr><td>2.00</td><td>90.9</td><td>90.5</td><td>89.5</td><td>88.1</td><td>84.8</td></tr> <tr><td>2.50</td><td>90.2</td><td>90.0</td><td>88.9</td><td>87.8</td><td>84.7</td></tr> <tr><td>2.75</td><td>89.7</td><td>89.6</td><td>88.6</td><td>87.5</td><td>84.3</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> </tbody> </table>		Load Current [A]	Efficiency [%]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	-	-	-	-	-	0.50	86.7	85.1	82.1	79.1	73.1	1.00	90.7	89.7	87.7	85.6	81.0	1.50	91.2	90.8	89.2	87.6	83.8	2.00	90.9	90.5	89.5	88.1	84.8	2.50	90.2	90.0	88.9	87.8	84.7	2.75	89.7	89.6	88.6	87.5	84.3	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	
Load Current [A]	Efficiency [%]																																																																																
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																												
0.00	-	-	-	-	-																																																																												
0.50	86.7	85.1	82.1	79.1	73.1																																																																												
1.00	90.7	89.7	87.7	85.6	81.0																																																																												
1.50	91.2	90.8	89.2	87.6	83.8																																																																												
2.00	90.9	90.5	89.5	88.1	84.8																																																																												
2.50	90.2	90.0	88.9	87.8	84.7																																																																												
2.75	89.7	89.6	88.6	87.5	84.3																																																																												
--	-	-	-	-	-																																																																												
--	-	-	-	-	-																																																																												
--	-	-	-	-	-																																																																												
--	-	-	-	-	-																																																																												
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																	



COSEL																																			
Model	MGFS302412	Temperature	25°C																																
Item	Line Regulation	Testing Circuitry	Figure A																																
Object	+12V2.5A																																		
<p>1.Graph</p> <div style="text-align: right;"> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> </div> <p style="text-align: center;">Input Voltage [V]</p>		<p>2.Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>8.5</td><td>12.023</td><td>12.023</td></tr> <tr><td>9.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>12.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>15.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>18.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>24.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>30.0</td><td>12.022</td><td>12.023</td></tr> <tr><td>36.0</td><td>12.021</td><td>12.023</td></tr> <tr><td>40.0</td><td>12.021</td><td>12.023</td></tr> </tbody> </table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	8.5	12.023	12.023	9.0	12.022	12.023	12.0	12.022	12.023	15.0	12.022	12.023	18.0	12.022	12.023	24.0	12.022	12.023	30.0	12.022	12.023	36.0	12.021	12.023	40.0	12.021	12.023
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
8.5	12.023	12.023																																	
9.0	12.022	12.023																																	
12.0	12.022	12.023																																	
15.0	12.022	12.023																																	
18.0	12.022	12.023																																	
24.0	12.022	12.023																																	
30.0	12.022	12.023																																	
36.0	12.021	12.023																																	
40.0	12.021	12.023																																	
<p>Note: Slanted line shows the range of the rated input voltage.</p>																																			

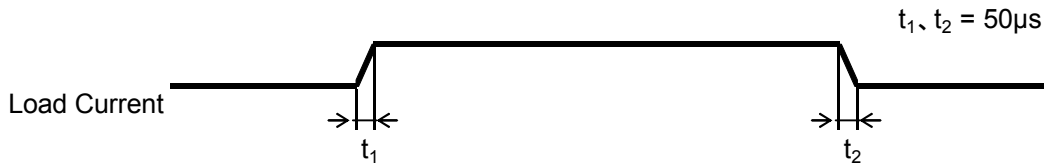


COSEL																																																																																		
Model	MGFS302412	Temperature	25°C																																																																															
Item	Load Regulation	Testing Circuitry	Figure A																																																																															
Object	+12V2.5A																																																																																	
1.Graph	<p>—△— Input Volt. 9V</p> <p>---□--- Input Volt. 12V</p> <p>-·-·*·-·- Input Volt. 18V</p> <p>-·-·○-·- Input Volt. 24V</p> <p>-·-·◇-·- Input Volt. 36V</p>	2.Values																																																																																
<p>Output Voltage [V]</p> <p>Load Current [A]</p>	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>12.023</td><td>12.024</td><td>12.024</td><td>12.024</td><td>12.024</td></tr> <tr><td>0.50</td><td>12.023</td><td>12.024</td><td>12.024</td><td>12.024</td><td>12.024</td></tr> <tr><td>1.00</td><td>12.022</td><td>12.023</td><td>12.023</td><td>12.024</td><td>12.023</td></tr> <tr><td>1.50</td><td>12.022</td><td>12.023</td><td>12.023</td><td>12.023</td><td>12.023</td></tr> <tr><td>2.00</td><td>12.022</td><td>12.022</td><td>12.023</td><td>12.023</td><td>12.022</td></tr> <tr><td>2.50</td><td>12.022</td><td>12.022</td><td>12.022</td><td>12.022</td><td>12.022</td></tr> <tr><td>2.75</td><td>12.022</td><td>12.022</td><td>12.022</td><td>12.022</td><td>12.021</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> </tbody> </table>					Load Current [A]	Output Voltage [V]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	12.023	12.024	12.024	12.024	12.024	0.50	12.023	12.024	12.024	12.024	12.024	1.00	12.022	12.023	12.023	12.024	12.023	1.50	12.022	12.023	12.023	12.023	12.023	2.00	12.022	12.022	12.023	12.023	12.022	2.50	12.022	12.022	12.022	12.022	12.022	2.75	12.022	12.022	12.022	12.022	12.021	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
	Load Current [A]	Output Voltage [V]																																																																																
		Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																												
	0.00	12.023	12.024	12.024	12.024	12.024																																																																												
	0.50	12.023	12.024	12.024	12.024	12.024																																																																												
	1.00	12.022	12.023	12.023	12.024	12.023																																																																												
	1.50	12.022	12.023	12.023	12.023	12.023																																																																												
	2.00	12.022	12.022	12.023	12.023	12.022																																																																												
	2.50	12.022	12.022	12.022	12.022	12.022																																																																												
	2.75	12.022	12.022	12.022	12.022	12.021																																																																												
	--	-	-	-	-	-																																																																												
	--	-	-	-	-	-																																																																												
	--	-	-	-	-	-																																																																												
--	-	-	-	-	-																																																																													
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																		

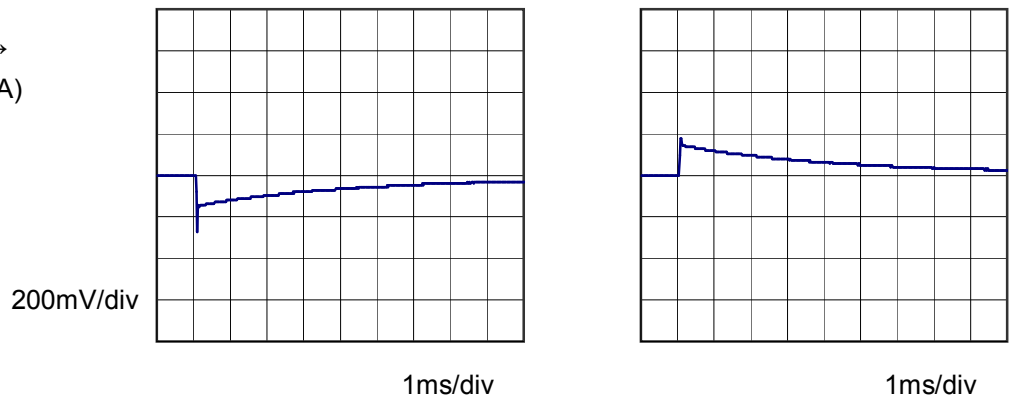


Model	MGFS302412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V2.5A		

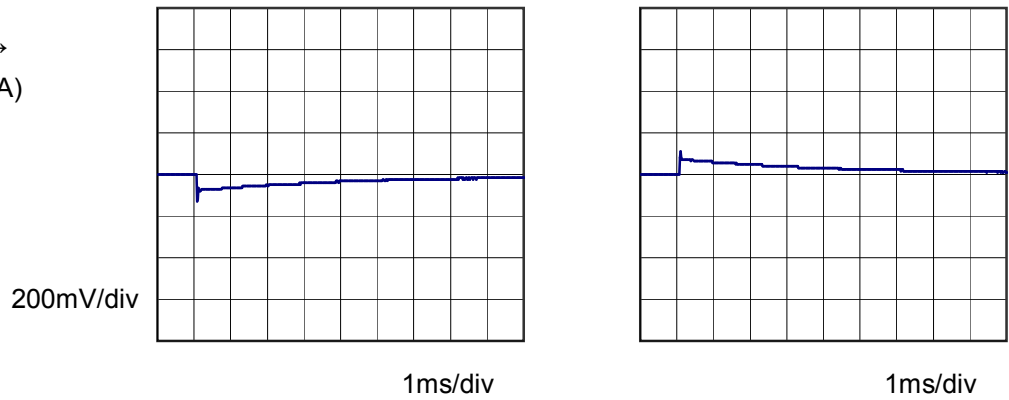
Input Volt. 24 V
 Cycle 1000 ms



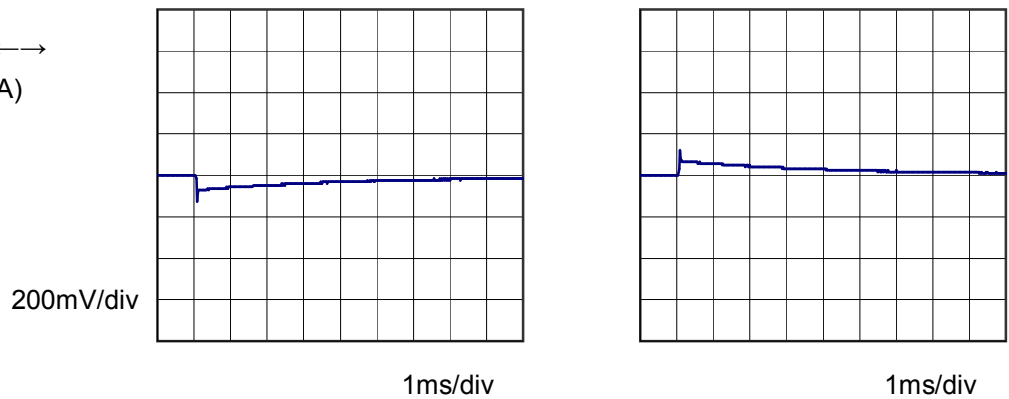
Min. Load (0A) ←→
 Load 100% (2.5A)



Min. Load (0A) ←→
 Load 50% (1.25A)



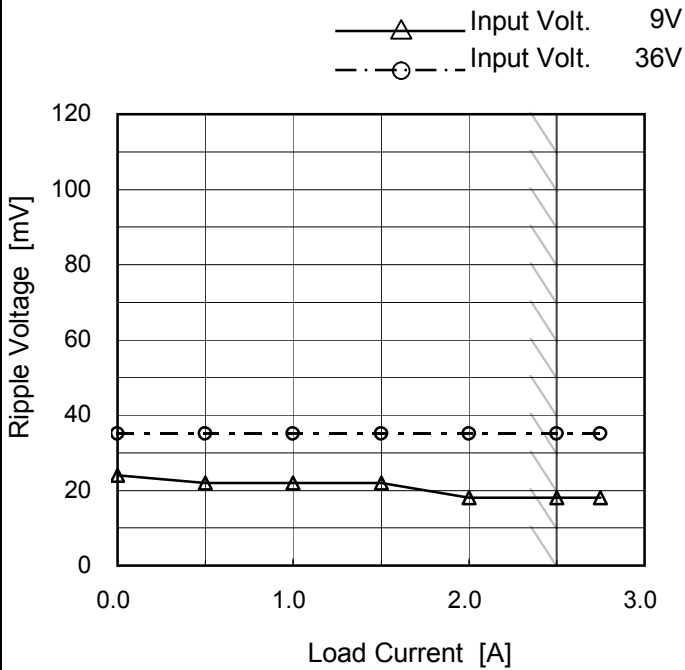
Load 50% (1.25A) ←→
 Load 100% (2.5A)





Model	MGFS302412	Temperature	25°C
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B
Object	+12V2.5A		

1.Graph



2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 36 [V]
0.00	24	35
0.50	22	35
1.00	22	35
1.50	22	35
2.00	18	35
2.50	18	35
2.75	18	35
--	-	-
--	-	-
--	-	-
--	-	-

Ripple Voltage is shown as p-p in the figure below.
 Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

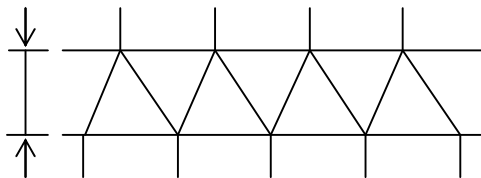


Fig.Complex Ripple Wave Form



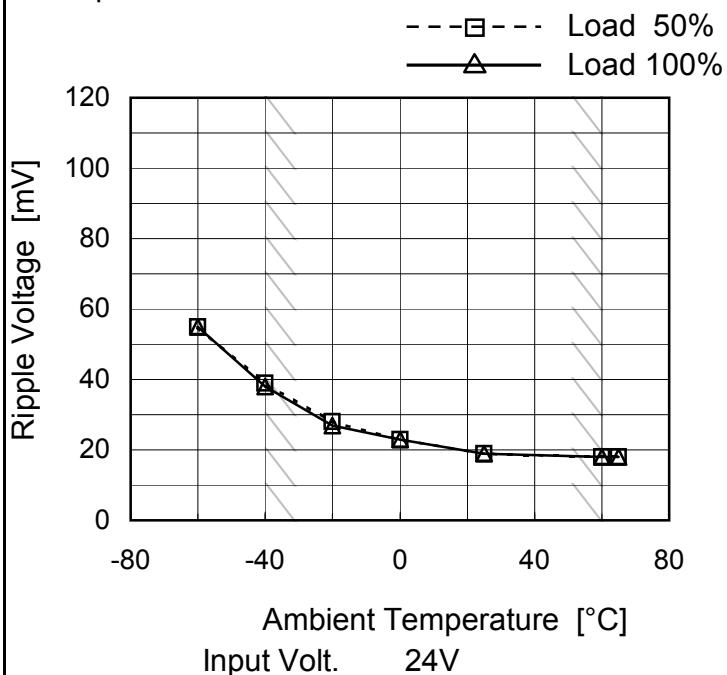
COSEL																																								
Model	MGFS302412																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+12V2.5A																																							
<p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 9V</p> <p>- - ○ - - Input Volt. 36V</p> </div> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 9 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>25</td><td>40</td></tr> <tr><td>0.50</td><td>25</td><td>40</td></tr> <tr><td>1.00</td><td>25</td><td>40</td></tr> <tr><td>1.50</td><td>25</td><td>40</td></tr> <tr><td>2.00</td><td>25</td><td>40</td></tr> <tr><td>2.50</td><td>25</td><td>40</td></tr> <tr><td>2.75</td><td>25</td><td>40</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-Noise [mV]		Input Volt. 9 [V]	Input Volt. 36 [V]	0.00	25	40	0.50	25	40	1.00	25	40	1.50	25	40	2.00	25	40	2.50	25	40	2.75	25	40	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																							
	Input Volt. 9 [V]	Input Volt. 36 [V]																																						
0.00	25	40																																						
0.50	25	40																																						
1.00	25	40																																						
1.50	25	40																																						
2.00	25	40																																						
2.50	25	40																																						
2.75	25	40																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																								
<p>Ripple Noise[mVp-p]</p>																																								
<p>Fig.Complex Ripple Noise Wave Form</p>																																								



Model	MGFS302412
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V2.5A

Testing Circuitry Figure B

1.Graph



2.Values

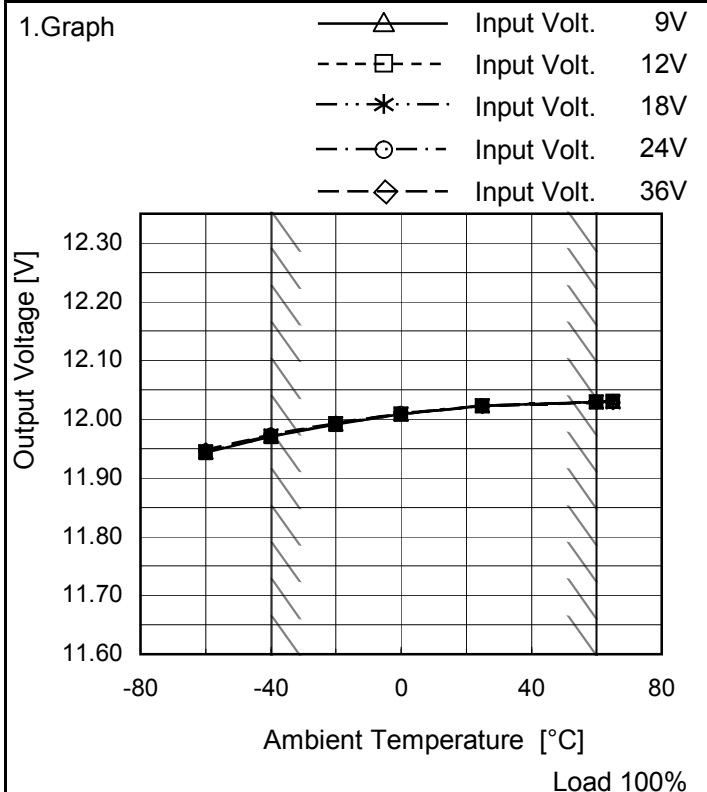
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	55	55
-40	39	38
-20	28	27
0	23	23
25	19	19
60	18	18
65	18	18
--	-	-
--	-	-
--	-	-
--	-	-

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



Model	MGFS302412
Item	Ambient Temperature Drift
Object	+12V2.5A

Testing Circuitry Figure A



2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	11.944	11.945	11.945	11.946	11.948
-40	11.970	11.971	11.972	11.973	11.974
-20	11.992	11.992	11.992	11.993	11.993
0	12.009	12.009	12.009	12.009	12.010
25	12.023	12.023	12.023	12.023	12.022
60	12.030	12.030	12.030	12.029	12.028
65	12.030	12.030	12.030	12.030	12.028
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



COSEL		
Model	MGFS302412	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V2.5A	

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 : 9 - 36V

Load Current : 0 - 2.5A

* 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	60	12	0	12.032	±31	±0.3
Minimum Voltage	-40	36	0	11.970		



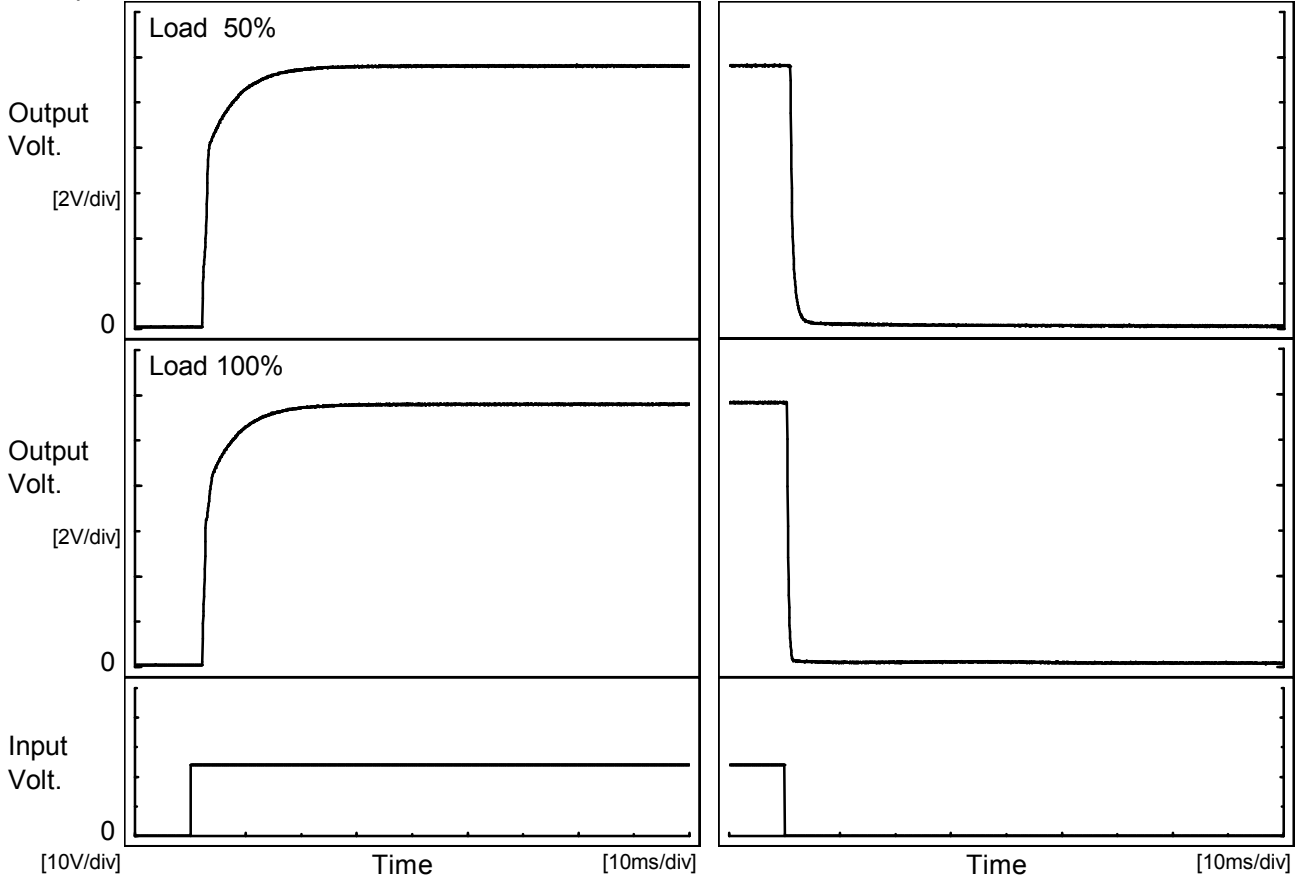
COSEL																								
Model	MGFS302412																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+12V2.5A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V Load 100%</p>		<p>2.Values</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>12.023</td></tr> <tr><td>0.5</td><td>12.032</td></tr> <tr><td>1.0</td><td>12.032</td></tr> <tr><td>2.0</td><td>12.031</td></tr> <tr><td>3.0</td><td>12.031</td></tr> <tr><td>4.0</td><td>12.031</td></tr> <tr><td>5.0</td><td>12.031</td></tr> <tr><td>6.0</td><td>12.031</td></tr> <tr><td>7.0</td><td>12.031</td></tr> <tr><td>8.0</td><td>12.031</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.023	0.5	12.032	1.0	12.032	2.0	12.031	3.0	12.031	4.0	12.031	5.0	12.031	6.0	12.031	7.0	12.031	8.0	12.031
Time since start [H]	Output Voltage [V]																							
0.0	12.023																							
0.5	12.032																							
1.0	12.032																							
2.0	12.031																							
3.0	12.031																							
4.0	12.031																							
5.0	12.031																							
6.0	12.031																							
7.0	12.031																							
8.0	12.031																							



COSEL			
Model	MGFS302412	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V2.5A		

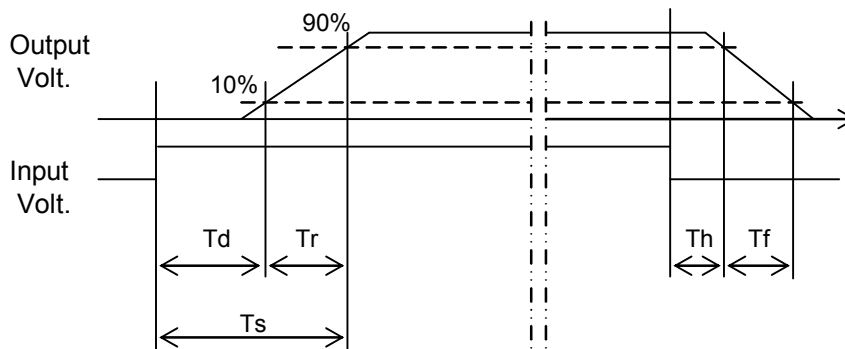
1. Graph

Input Volt. 24 V



2. Values

		[ms]				
Load \ Time	Time	Td	Tr	Ts	Th	Tf
50 %		2.2	9.5	11.7	1.0	1.1
100 %		2.3	9.4	11.7	0.5	0.5





COSEL																																								
Model	MGFS302412																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+12V2.5A																																							
<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>7.9</td><td>8.0</td></tr> <tr><td>-40</td><td>8.0</td><td>8.0</td></tr> <tr><td>-20</td><td>8.0</td><td>8.0</td></tr> <tr><td>0</td><td>8.0</td><td>8.0</td></tr> <tr><td>25</td><td>7.9</td><td>7.9</td></tr> <tr><td>60</td><td>7.9</td><td>8.0</td></tr> <tr><td>65</td><td>7.9</td><td>7.9</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	7.9	8.0	-40	8.0	8.0	-20	8.0	8.0	0	8.0	8.0	25	7.9	7.9	60	7.9	8.0	65	7.9	7.9	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-60	7.9	8.0																																						
-40	8.0	8.0																																						
-20	8.0	8.0																																						
0	8.0	8.0																																						
25	7.9	7.9																																						
60	7.9	8.0																																						
65	7.9	7.9																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



<p>Model MGFS302412</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																																																																			
Item	Overcurrent Protection																																																																																				
Object	+12V2.5A																																																																																				
<p>1.Graph</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>—△ Input Volt. 9V</p> <p>—□ Input Volt. 12V</p> <p>—* Input Volt. 18V</p> <p>—○ Input Volt. 24V</p> <p>—◇ Input Volt. 36V</p> </div> </div> <p style="text-align: center;">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>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="5">Load Current [A]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr> <td>12.0</td> <td>3.111</td> <td>3.580</td> <td>3.895</td> <td>3.845</td> <td>3.373</td> </tr> <tr> <td>11.4</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>10.8</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>9.6</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>8.4</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>7.2</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>6.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>4.8</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>3.6</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>2.4</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>1.2</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>0.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Output Voltage [V]	Load Current [A]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	12.0	3.111	3.580	3.895	3.845	3.373	11.4	-	-	-	-	-	10.8	-	-	-	-	-	9.6	-	-	-	-	-	8.4	-	-	-	-	-	7.2	-	-	-	-	-	6.0	-	-	-	-	-	4.8	-	-	-	-	-	3.6	-	-	-	-	-	2.4	-	-	-	-	-	1.2	-	-	-	-	-	0.0	-	-	-	-	-
Output Voltage [V]	Load Current [A]																																																																																				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																																
12.0	3.111	3.580	3.895	3.845	3.373																																																																																
11.4	-	-	-	-	-																																																																																
10.8	-	-	-	-	-																																																																																
9.6	-	-	-	-	-																																																																																
8.4	-	-	-	-	-																																																																																
7.2	-	-	-	-	-																																																																																
6.0	-	-	-	-	-																																																																																
4.8	-	-	-	-	-																																																																																
3.6	-	-	-	-	-																																																																																
2.4	-	-	-	-	-																																																																																
1.2	-	-	-	-	-																																																																																
0.0	-	-	-	-	-																																																																																



COSEL																																								
Model	MGFS302412																																							
Item	Overvoltage Protection	Testing Circuitry Figure A																																						
Object	+12V2.5A																																							
<p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 24V</p> <p>---□--- Input Volt. 36V</p> </div> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: right;">Load 0%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>-60</td><td>16.54</td><td>16.56</td></tr> <tr><td>-40</td><td>16.63</td><td>16.65</td></tr> <tr><td>-20</td><td>16.75</td><td>16.79</td></tr> <tr><td>0</td><td>16.91</td><td>16.95</td></tr> <tr><td>25</td><td>17.15</td><td>17.18</td></tr> <tr><td>60</td><td>17.47</td><td>17.50</td></tr> <tr><td>65</td><td>17.52</td><td>17.56</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]	Operating Point [V]		Input Volt. 24[V]	Input Volt. 36[V]	-60	16.54	16.56	-40	16.63	16.65	-20	16.75	16.79	0	16.91	16.95	25	17.15	17.18	60	17.47	17.50	65	17.52	17.56	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																							
	Input Volt. 24[V]	Input Volt. 36[V]																																						
-60	16.54	16.56																																						
-40	16.63	16.65																																						
-20	16.75	16.79																																						
0	16.91	16.95																																						
25	17.15	17.18																																						
60	17.47	17.50																																						
65	17.52	17.56																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								

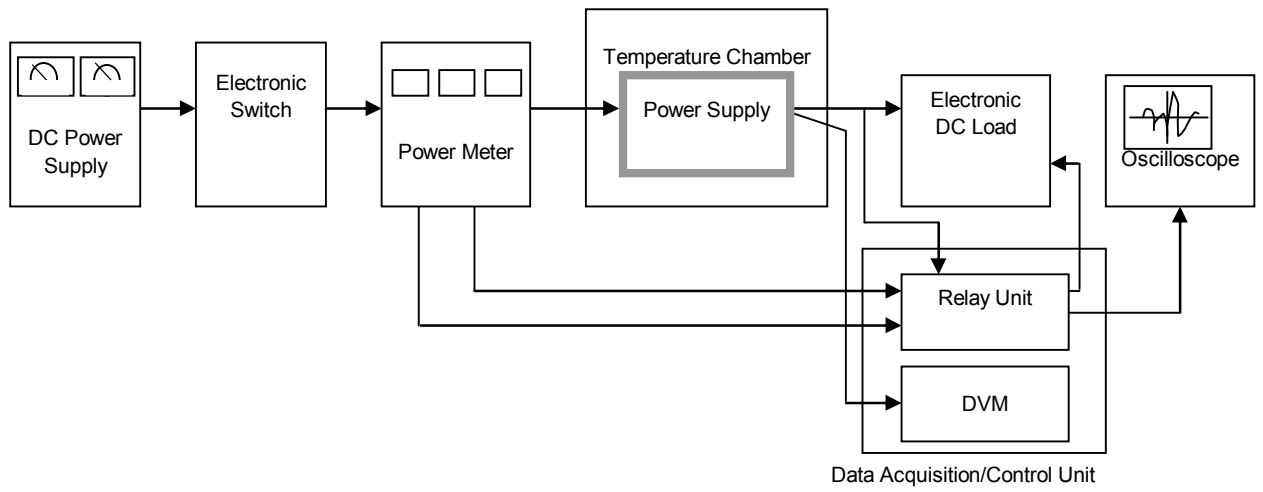


Figure A

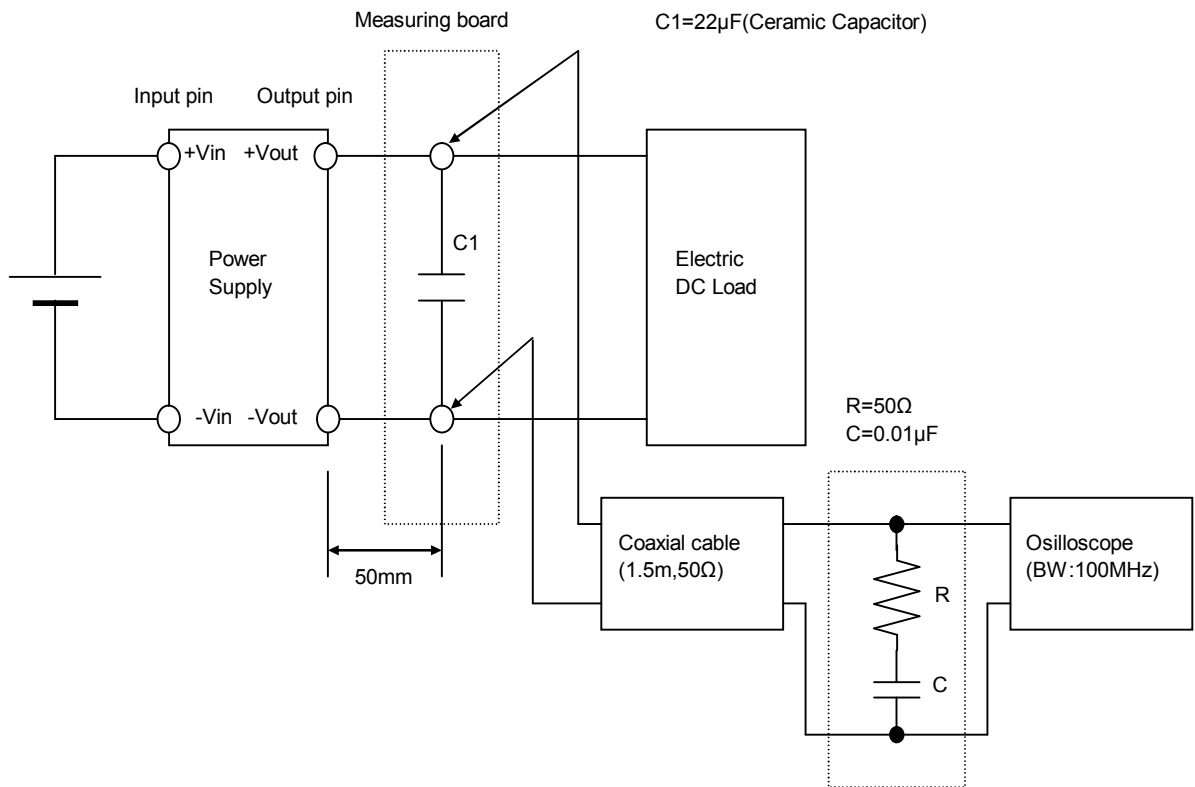


Figure B (Ripple and Ripple noise Characteristic)