



TEST DATA OF MGS102412

Regulated DC Power Supply
July 21, 2016

Approved by :

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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.Switching Frequency (by Load Current)	18
19.Figure of Testing Circuitry	19

(Final Page 19)

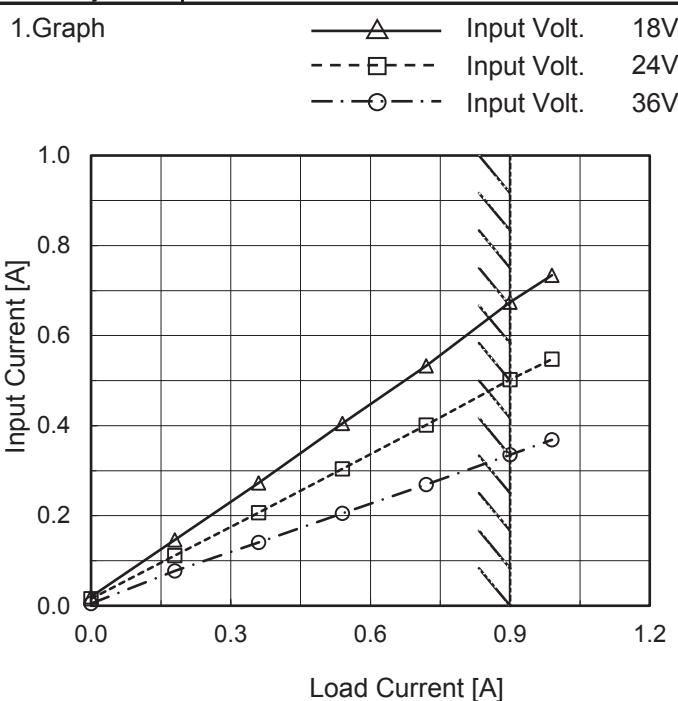
COSEL

Model	MGS102412	Temperature	25°C																																																																															
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Note: Slanted line shows the range of the rated input voltage.

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Model	MGS102412
Item	Input Current (by Load Current)
Object	_____


 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.020	0.016	0.005
0.18	0.146	0.111	0.077
0.36	0.273	0.207	0.141
0.54	0.405	0.304	0.205
0.72	0.533	0.402	0.269
0.90	0.674	0.502	0.335
0.99	0.734	0.548	0.369
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

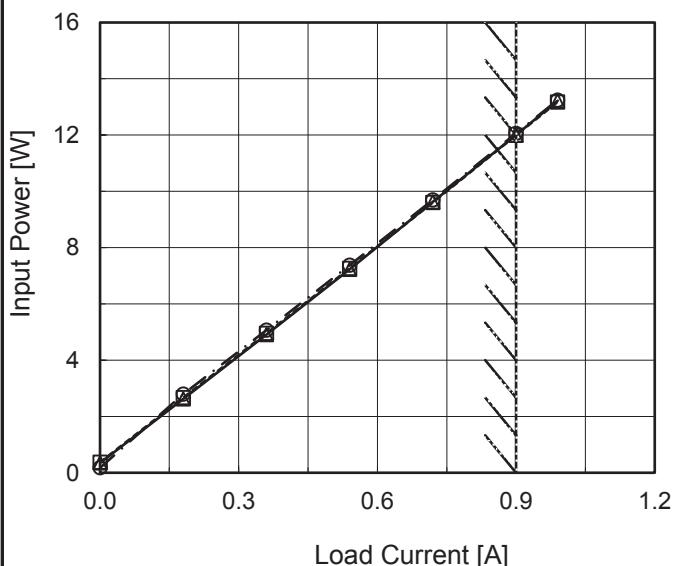
Note: Slanted line shows the range of the rated load current.

COSEL

Model	MGS102412
Item	Input Power (by Load Current)
Object	_____

1.Graph

—△— Input Volt. 18V
 - - □--- Input Volt. 24V
 - - ○--- Input Volt. 36V



Note: Slanted line shows the range of the rated load current.

Temperature 25°C
Testing Circuitry Figure A

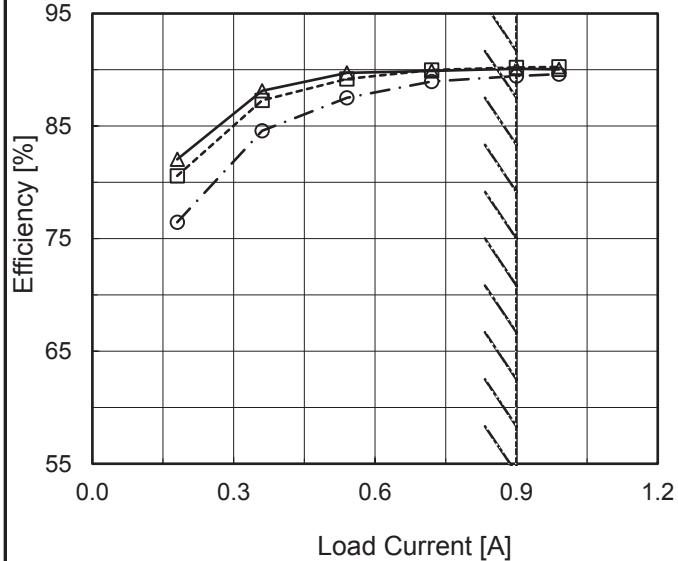
2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.35	0.37	0.18
0.18	2.62	2.67	2.79
0.36	4.91	4.95	5.07
0.54	7.23	7.27	7.38
0.72	9.62	9.60	9.69
0.90	12.00	11.99	12.05
0.99	13.22	13.18	13.25
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102412																																	
Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
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<p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line with squares), Load 100% (solid line with triangles)</p>																																		
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COSEL

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	 <p>The graph plots Efficiency [%] on the y-axis (55 to 95) against Load Current [A] on the x-axis (0.0 to 1.2). Three data series are shown: 18V (solid line with triangles), 24V (dashed line with squares), and 36V (dash-dot line with circles). All curves show efficiency increasing with load current. A slanted line is drawn from approximately (0.1, 75%) to (0.9, 90%), indicating the rated load current range.</p>	2.Values																																																			
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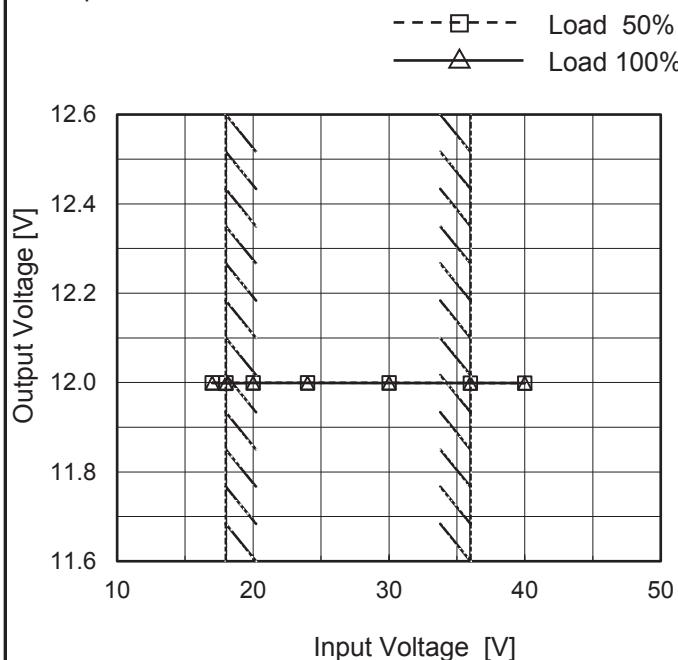
Note: Slanted line shows the range of the rated load current.

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Model	MGS102412
Item	Line Regulation
Object	+12V0.9A

 Temperature 25°C
 Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	11.999	11.999
18	11.999	11.998
20	11.999	11.999
24	11.999	11.999
30	11.999	11.999
36	11.999	11.999
40	11.999	11.999
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--	-	-

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

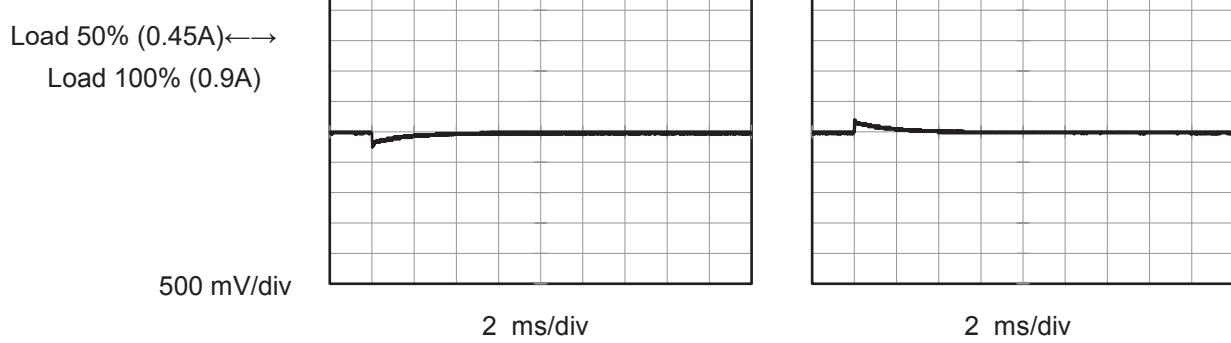
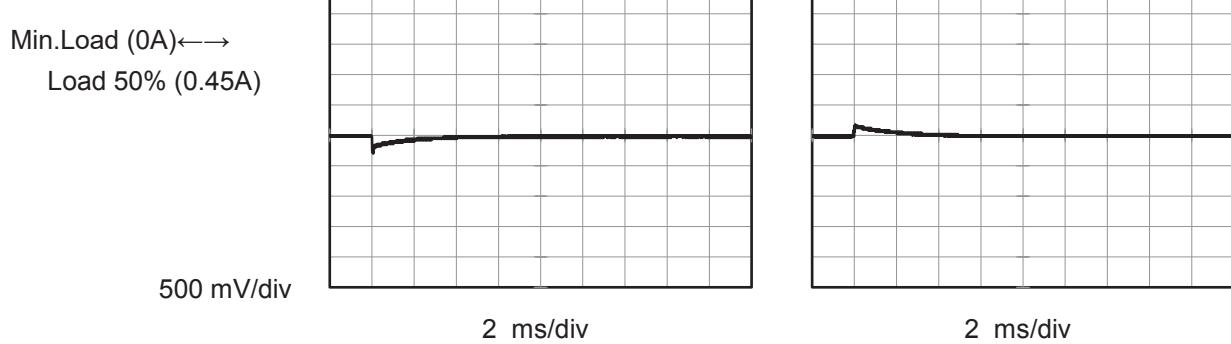
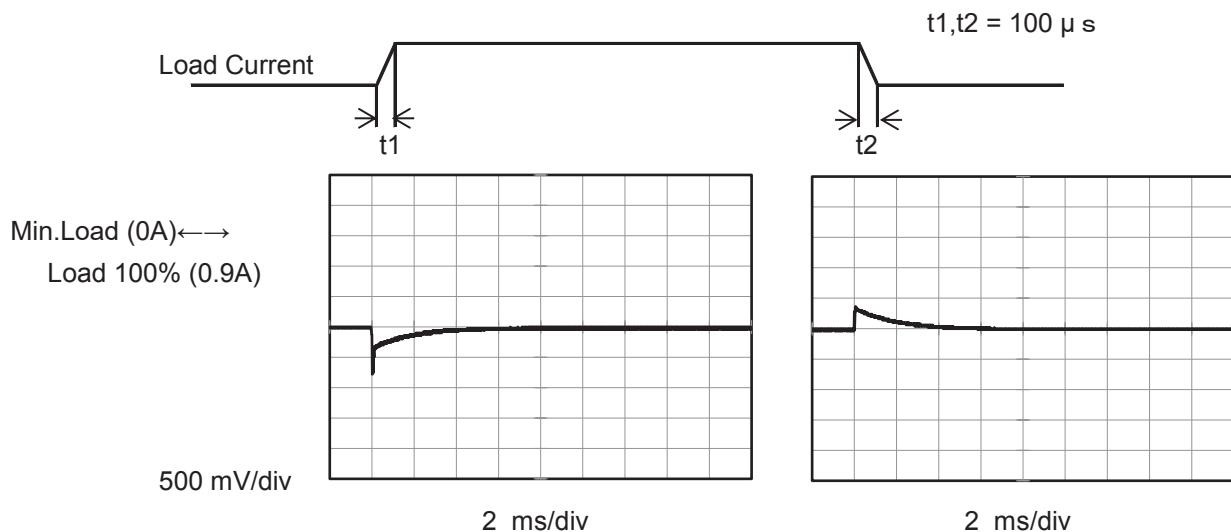
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Model	MGS102412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V0.9A		

Input Volt. 24 V
 Cycle 100 ms



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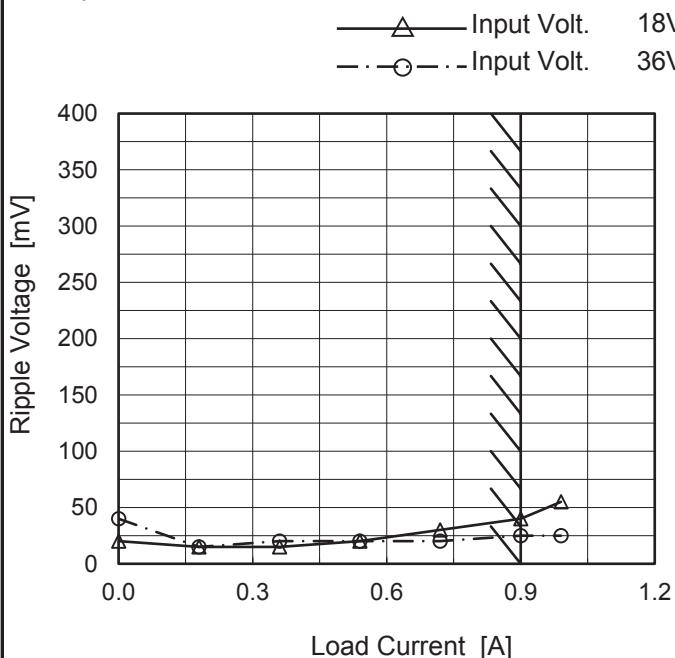
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Object	+12V0.9A																																							
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<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two sets of data points: one for Input Volt. 18V (solid line with triangle markers) and one for Input Volt. 36V (dashed line with circle markers). The x-axis represents Load Current [A] from 0.0 to 1.2. The y-axis represents Ripple Voltage [mV] from 0 to 400. Both curves show a slight increase in ripple voltage as load current increases, with the 18V curve generally higher than the 36V curve.</p>																																								
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<p>Measured by 100 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																								
<p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																								

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Model	MGS102412
Item	Ripple-Noise
Object	+12V0.9A

 Temperature 25°C
 Testing Circuitry Figure B

1.Graph



2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	20	40
0.18	15	15
0.36	15	20
0.54	20	20
0.72	30	20
0.90	40	25
0.99	55	25
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

Ripple-Noise is shown as p-p in the figure below.

Note: Slanted line shows the range of the rated load current.

Ripple Noise[mVp-p]

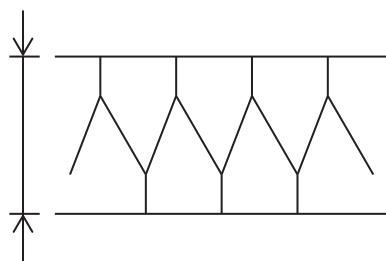
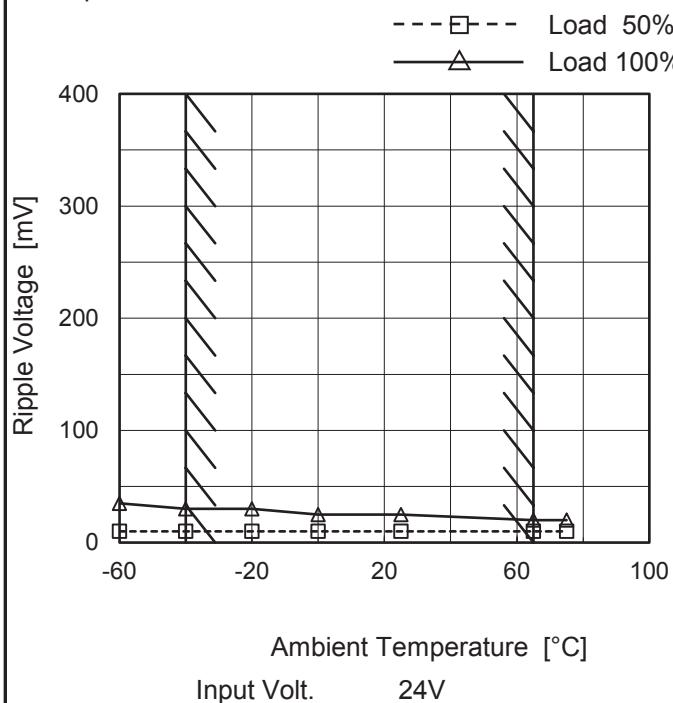


Fig.Complex Ripple Noise Wave Form

COSEL

Model	MGS102412
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.9A

1. Graph



Measured by 100 MHz Oscilloscope.

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

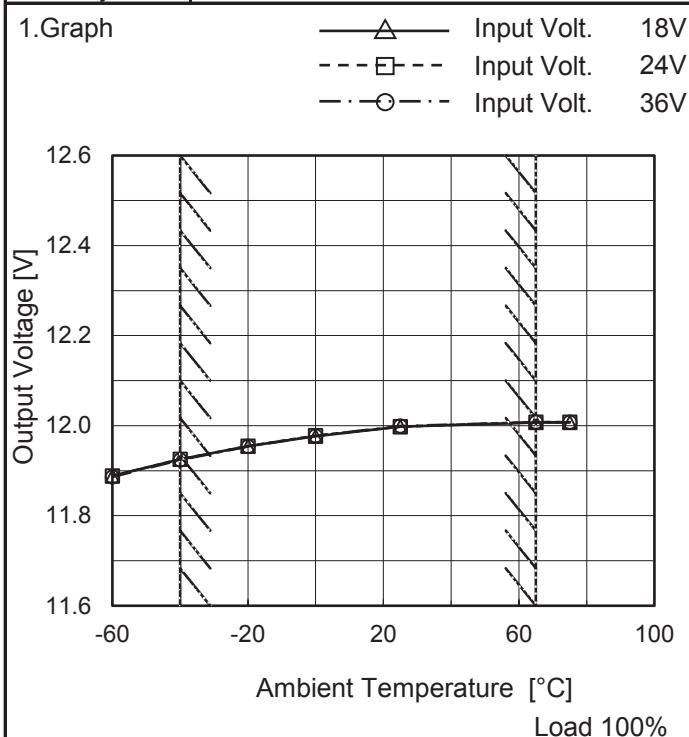
Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	10	35
-40	10	30
-20	10	30
0	10	25
25	10	25
65	10	20
75	10	20
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS102412
Item	Ambient Temperature Drift
Object	+12V0.9A



Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	11.889	11.888	11.886
-40	11.925	11.925	11.924
-20	11.954	11.955	11.954
0	11.977	11.978	11.977
25	11.998	11.998	11.999
65	12.007	12.008	12.008
75	12.007	12.008	12.008
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	MGS102412	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V0.9A	

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 - 65°C

Input Voltage : 18 - 36V

Load Current : 0 - 0.9A

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

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

2. Values

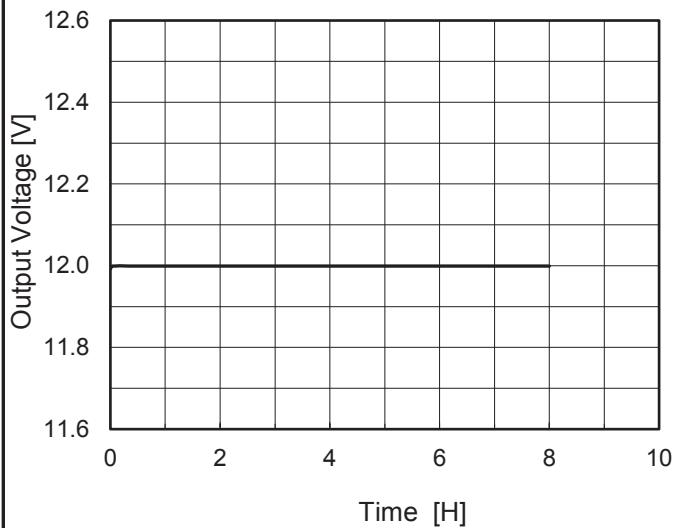
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	65	36	0	12.017	±47	±0.4
Minimum Voltage	-40	36	0.9	11.924		

COSEL

Model	MGS102412
Item	Time Lapse Drift
Object	+12V0.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

2.Values

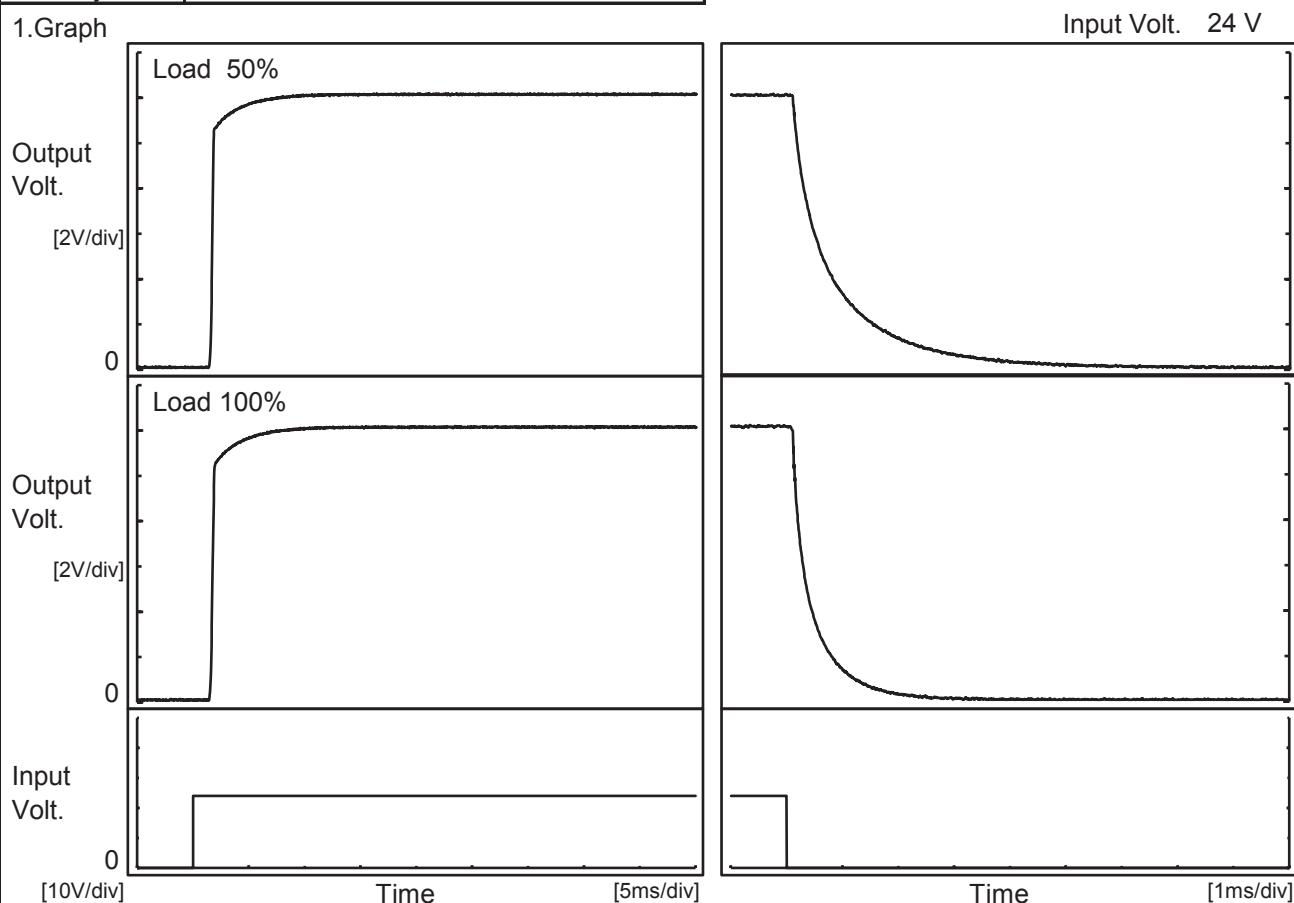
Time since start [H]	Output Voltage [V]
0.0	11.992
0.5	11.999
1.0	11.999
2.0	11.999
3.0	11.999
4.0	11.999
5.0	11.999
6.0	11.999
7.0	11.999
8.0	11.999

COSEL

Model	MGS102412
Item	Rise and Fall Time
Object	+12V0.9A

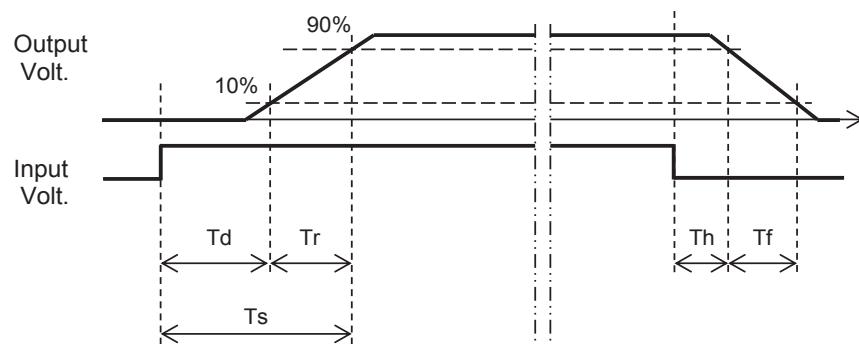
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

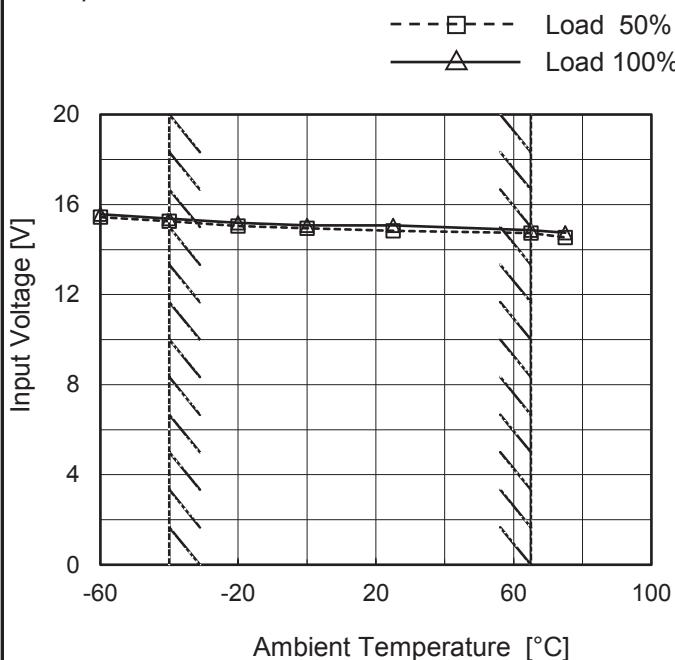
Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		1.6	0.7	2.3	0.1	2.0	
100 %		1.6	1.0	2.6	0.1	1.0	



COSEL

Model	MGS102412
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.9A

1.Graph



Testing Circuitry Figure A

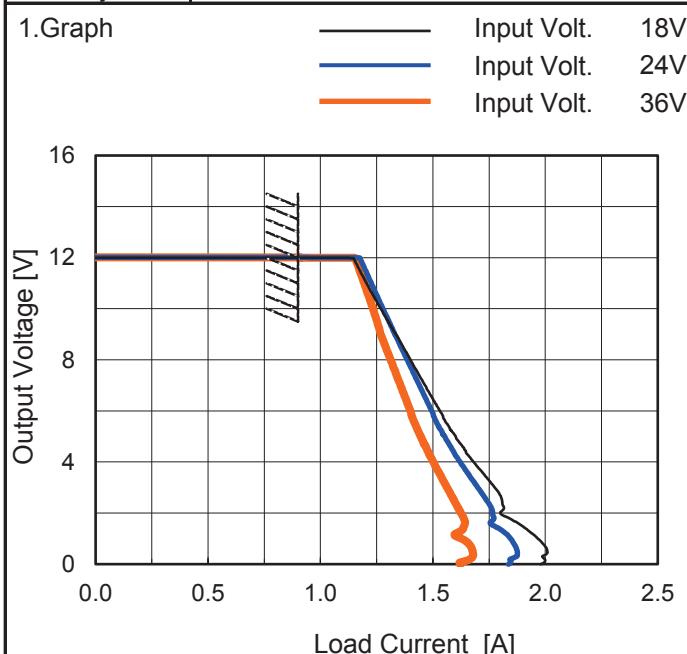
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.5	15.6
-40	15.3	15.4
-20	15.1	15.2
0	15.0	15.1
25	14.9	15.1
65	14.8	14.9
75	14.6	14.8
--	-	-
--	-	-
--	-	-
--	-	-

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

COSEL

Model	MGS102412
Item	Overcurrent Protection
Object	+12V0.9A



Note: Slanted line shows the range of the rated load current.

Temperature 25°C
Testing Circuitry Figure A

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
12.0	0.90	0.90	0.90
11.4	1.18	1.21	1.18
10.8	1.22	1.24	1.20
9.6	1.29	1.30	1.25
8.4	1.37	1.36	1.29
7.2	1.45	1.43	1.35
6.0	1.53	1.49	1.40
4.8	1.61	1.56	1.46
3.6	1.72	1.65	1.52
2.4	1.81	1.74	1.60
1.2	1.94	1.82	1.61
0.0	1.98	1.84	1.62

COSEL

Model	MGS102412	Temperature	25°C																																																			
Item	Switching Frequency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+12V0.9A																																																					
1.Graph	<p>Switching Frequency [kHz]</p> <p>Load Current [A]</p> <p>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="3">Frequency [kHz]</th> </tr> <tr> <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>870</td><td>922</td><td>986</td></tr> <tr> <td>0.18</td><td>534</td><td>604</td><td>679</td></tr> <tr> <td>0.36</td><td>391</td><td>455</td><td>527</td></tr> <tr> <td>0.54</td><td>305</td><td>362</td><td>430</td></tr> <tr> <td>0.72</td><td>251</td><td>301</td><td>364</td></tr> <tr> <td>0.90</td><td>213</td><td>258</td><td>314</td></tr> <tr> <td>0.99</td><td>198</td><td>240</td><td>294</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Frequency [kHz]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	870	922	986	0.18	534	604	679	0.36	391	455	527	0.54	305	362	430	0.72	251	301	364	0.90	213	258	314	0.99	198	240	294	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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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.																																																						

COSEL

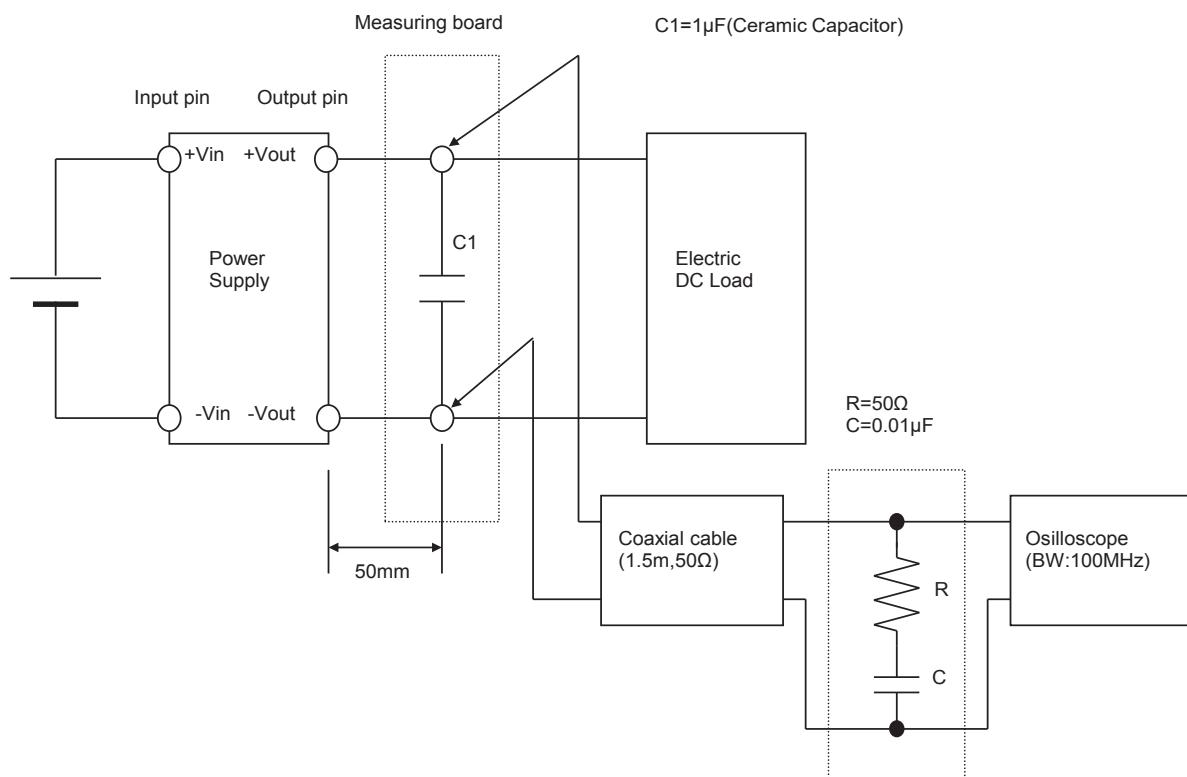
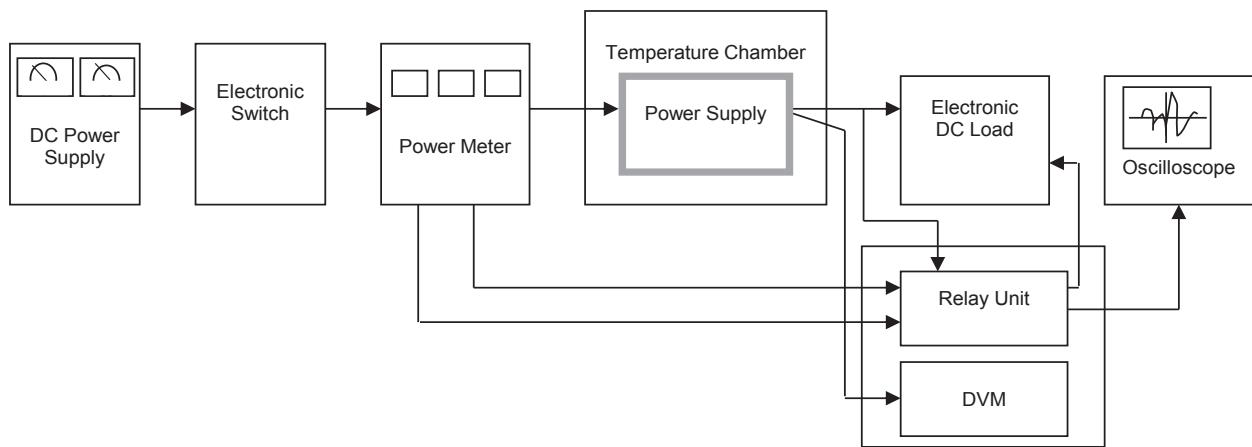


Figure B (Ripple and Ripple noise Characteristic)