

TEST DATA OF MGS302412

Regulated DC Power Supply
December 7, 2010

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Kazunari Asano Design Manager

Prepared by : Sho Saito
Sho Saito Design Engineer

COSEL CO.,LTD.

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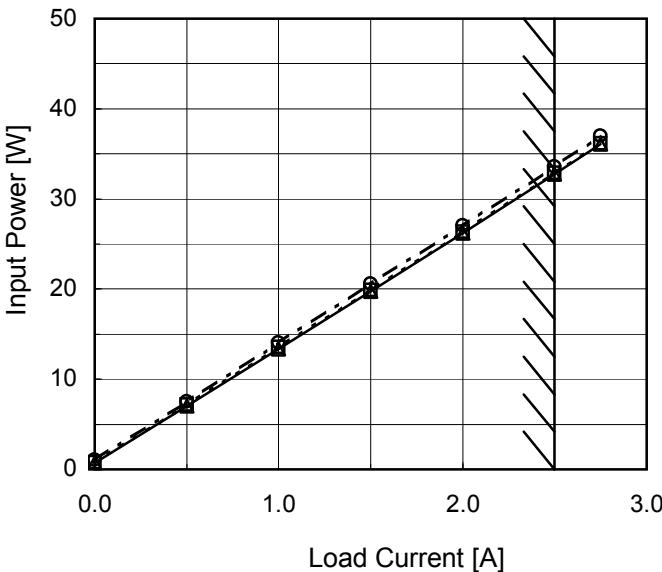
(Final Page 19)

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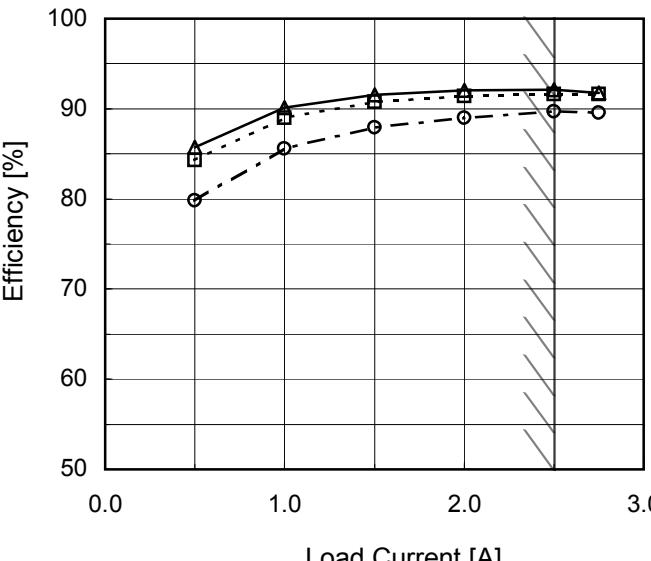
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
8.0	0.002	0.002	0.002
16.0	0.002	0.002	0.002
16.6	0.048	1.005	1.978
17.0	0.045	0.973	1.918
18.0	0.041	0.916	1.816
20.0	0.036	0.828	1.630
22.0	0.035	0.756	1.484
24.0	0.034	0.696	1.369
28.0	0.032	0.602	1.178
30.0	0.031	0.565	1.104
32.0	0.030	0.533	1.042
36.0	0.029	0.480	0.932
40.0	0.029	0.437	0.846
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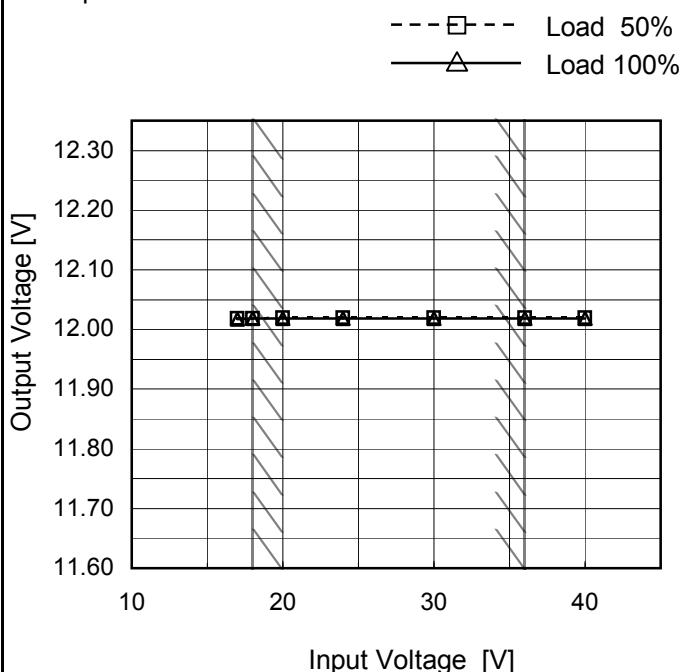
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Item	Line Regulation
Object	+12V2.5A

Temperature 25°C
Testing Circuitry Figure A

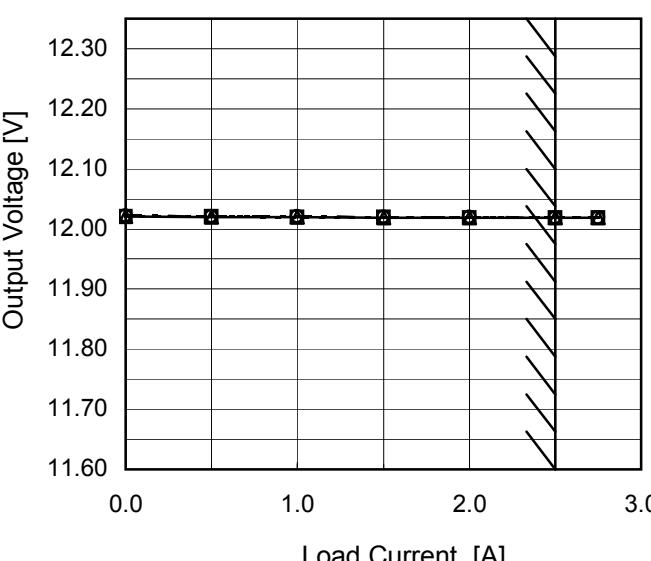
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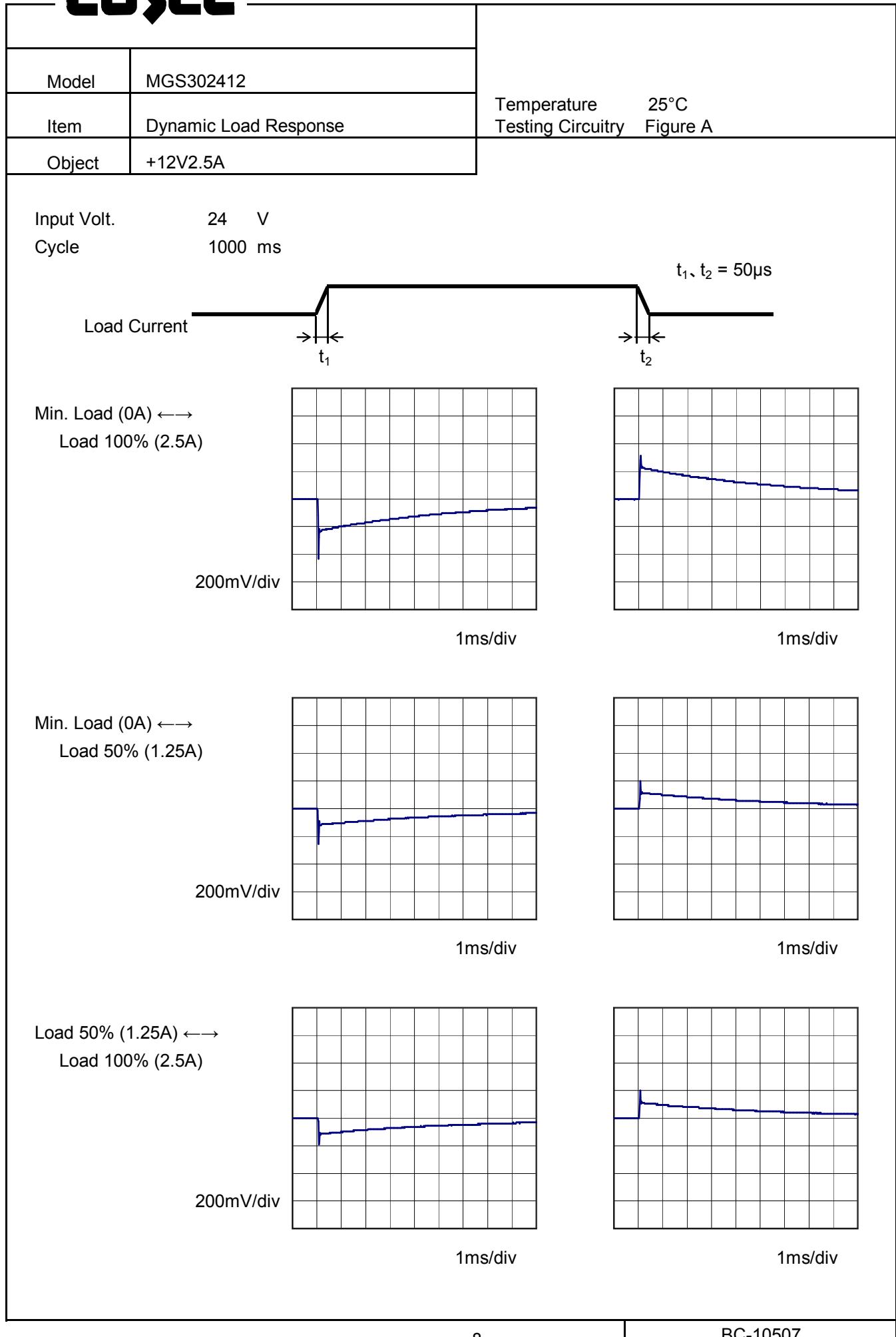


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.019	12.018
18	12.019	12.018
20	12.020	12.018
24	12.020	12.019
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		<p>Note: Slanted line shows the range of the rated load current.</p>																																																					



COSSEL

Model	MGS302412	Temperature	25°C																																				
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B																																				
Object	+12V2.5A																																						
1.Graph			2.Values																																				
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 120 mV, and the X-axis ranges from 0.0 to 3.0 A. Two sets of data points are shown: solid circles for 18V and open triangles for 36V. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (18V)</th> <th>Ripple Voltage [mV] (36V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>17</td><td>24</td></tr> <tr><td>0.50</td><td>17</td><td>24</td></tr> <tr><td>1.00</td><td>17</td><td>24</td></tr> <tr><td>1.50</td><td>17</td><td>24</td></tr> <tr><td>2.00</td><td>17</td><td>24</td></tr> <tr><td>2.50</td><td>17</td><td>24</td></tr> <tr><td>2.75</td><td>17</td><td>24</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 Voltage [mV] (18V)	Ripple Voltage [mV] (36V)	0.00	17	24	0.50	17	24	1.00	17	24	1.50	17	24	2.00	17	24	2.50	17	24	2.75	17	24	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV] (18V)	Ripple Voltage [mV] (36V)																																					
0.00	17	24																																					
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<p>Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>Fig.Complex Ripple Wave Form</p>																																							

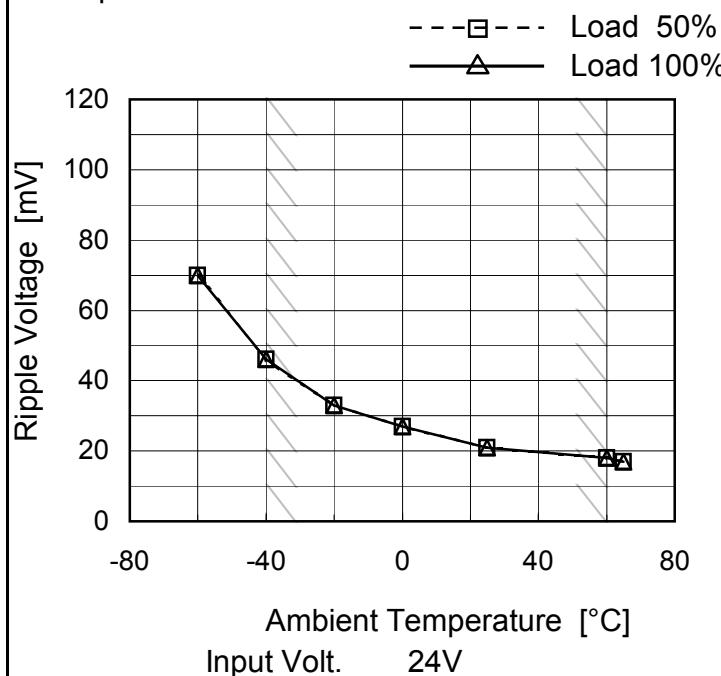
COSEL

Model	MGS302412	Temperature Testing Circuitry 25°C Figure B																																					
Item	Ripple-Noise																																						
Object	+12V2.5A																																						
1.Graph	<p>1. Graph</p> <p>Legend: Input Volt. 18V (Triangle), Input Volt. 36V (Circle)</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (18V)</th> <th>Ripple Voltage [mV] (36V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>~25</td><td>~30</td></tr> <tr><td>0.5</td><td>~25</td><td>~30</td></tr> <tr><td>1.0</td><td>~25</td><td>~30</td></tr> <tr><td>1.5</td><td>~25</td><td>~30</td></tr> <tr><td>2.0</td><td>~25</td><td>~30</td></tr> <tr><td>2.5</td><td>~25</td><td>~30</td></tr> </tbody> </table>	Load Current [A]	Ripple Voltage [mV] (18V)	Ripple Voltage [mV] (36V)	0.0	~25	~30	0.5	~25	~30	1.0	~25	~30	1.5	~25	~30	2.0	~25	~30	2.5	~25	~30																	
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2.Values	<table border="1"> <thead> <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. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>20</td><td>30</td></tr> <tr><td>0.50</td><td>20</td><td>30</td></tr> <tr><td>1.00</td><td>20</td><td>30</td></tr> <tr><td>1.50</td><td>20</td><td>30</td></tr> <tr><td>2.00</td><td>20</td><td>30</td></tr> <tr><td>2.50</td><td>20</td><td>30</td></tr> <tr><td>2.75</td><td>20</td><td>30</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. 18 [V]	Input Volt. 36 [V]	0.00	20	30	0.50	20	30	1.00	20	30	1.50	20	30	2.00	20	30	2.50	20	30	2.75	20	30	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																						
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<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>Fig.Complex Ripple Noise Wave Form</p>																																							

COSEL

Model	MGS302412
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V2.5A

1. Graph



Testing Circuitry Figure B

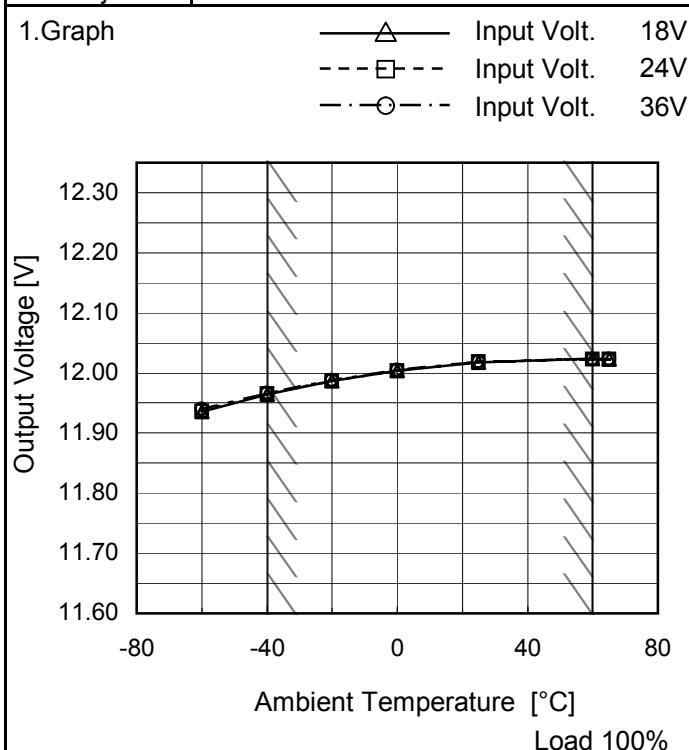
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	70	70
-40	46	46
-20	33	33
0	27	27
25	21	21
60	18	18
65	17	17
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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

Model	MGS302412
Item	Ambient Temperature Drift
Object	+12V2.5A



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	11.936	11.937	11.940
-40	11.964	11.965	11.967
-20	11.986	11.987	11.988
0	12.003	12.004	12.004
25	12.018	12.019	12.019
60	12.024	12.023	12.023
65	12.023	12.023	12.023
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	MGS302412	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
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 : 18 - 36V

Load Current : 0 - 2.5A

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

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

2. Values

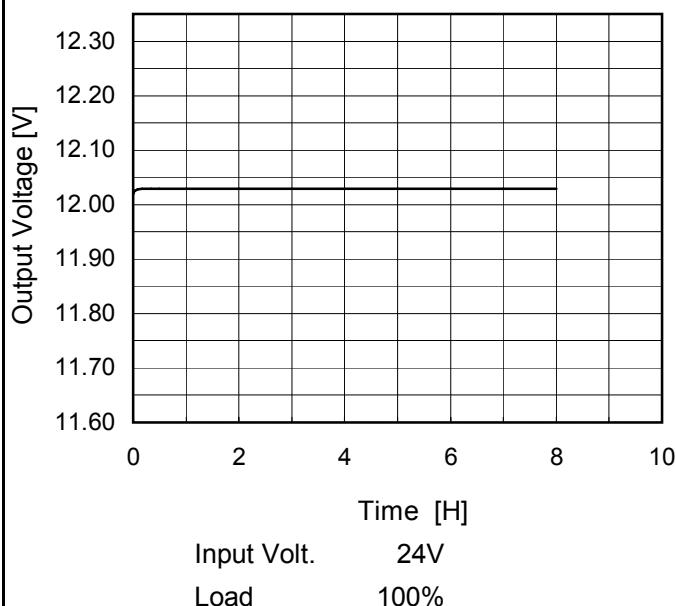
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	24	0	12.027	±32	±0.3
Minimum Voltage	-40	18	0	11.964		

COSEL

Model	MGS302412
Item	Time Lapse Drift
Object	+12V2.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

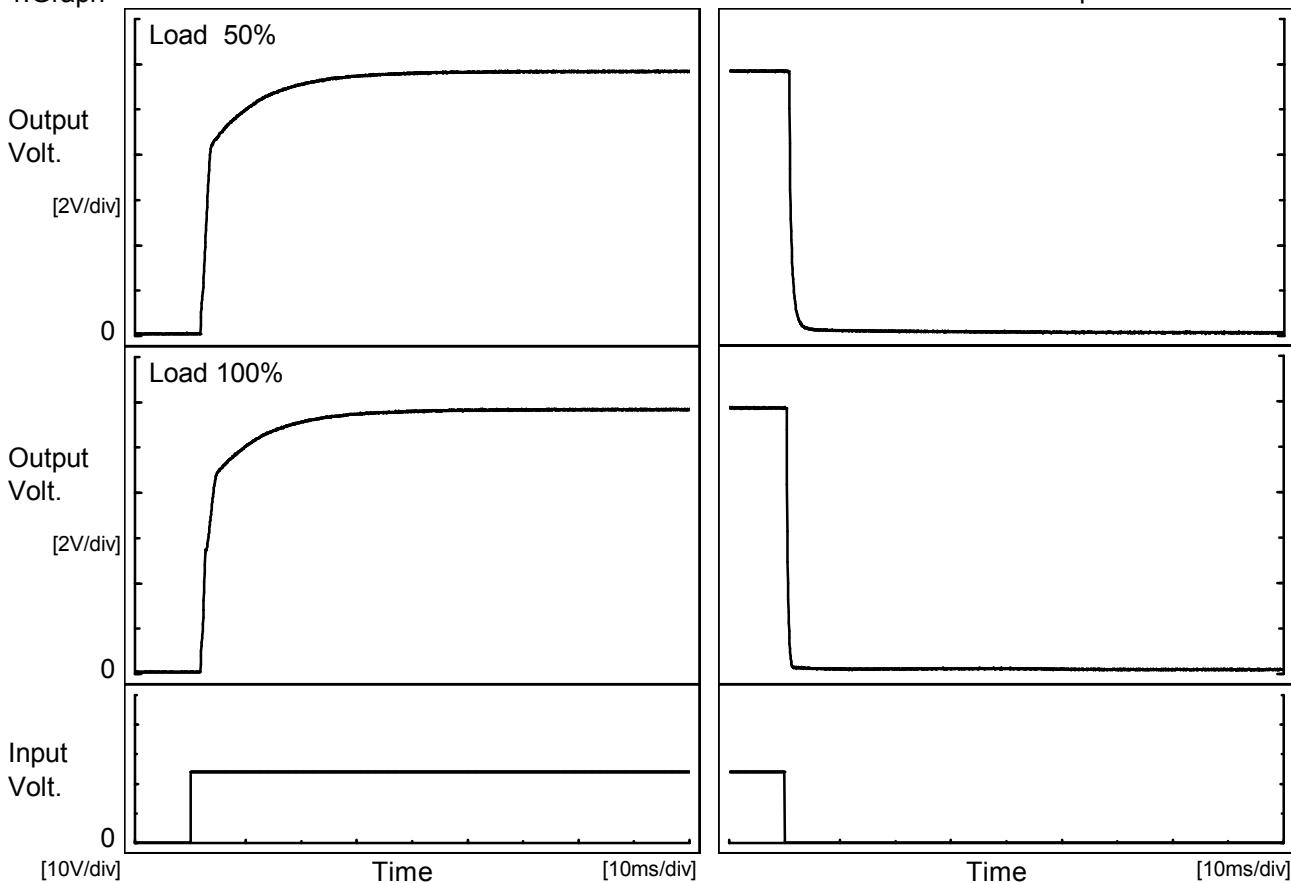
Time since start [H]	Output Voltage [V]
0.0	12.019
0.5	12.029
1.0	12.029
2.0	12.029
3.0	12.029
4.0	12.029
5.0	12.029
6.0	12.029
7.0	12.029
8.0	12.029

COSEL

Model	MGS302412
Item	Rise and Fall Time
Object	+12V2.5A

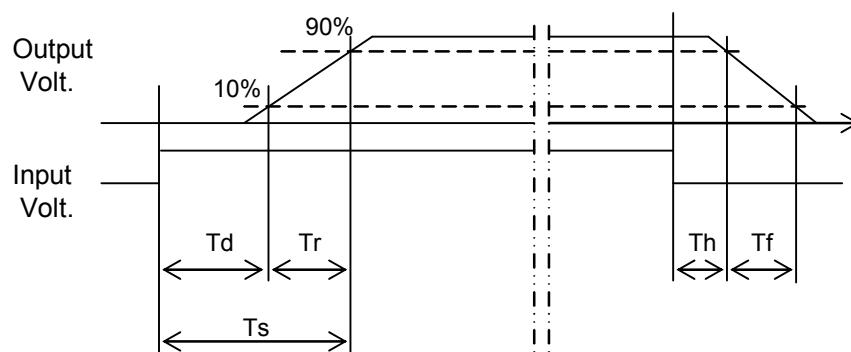
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

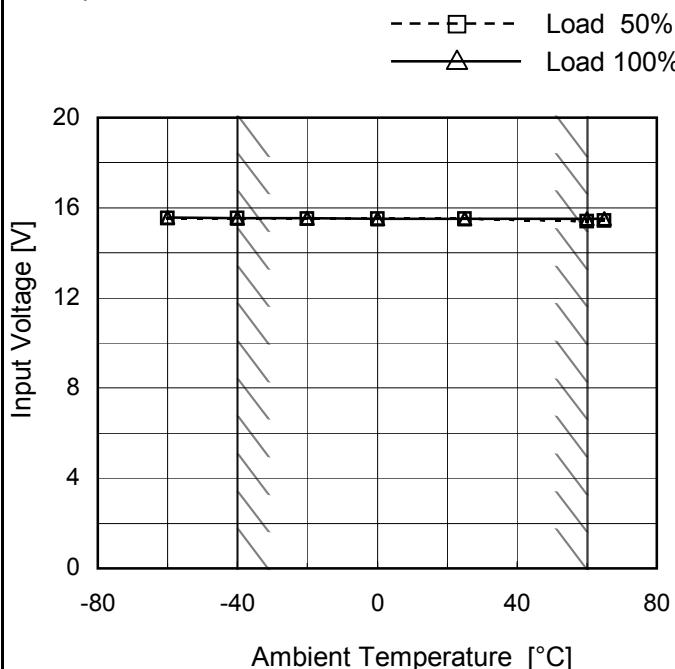
Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		2.1	14.7	16.8	0.7	1.2	
100 %		2.1	14.4	16.5	0.4	0.5	



Model	MGS302412
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V2.5A

Testing Circuitry Figure A

1. Graph



2. Values

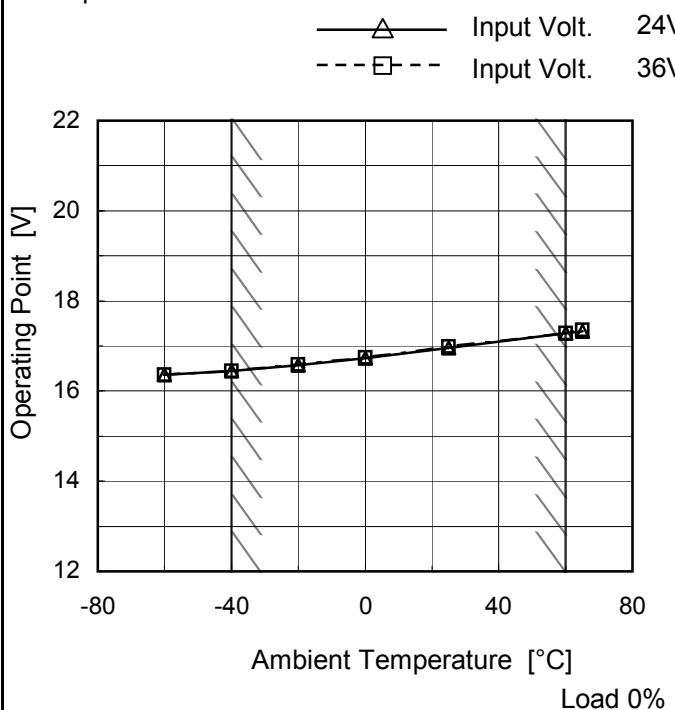
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.6	15.6
-40	15.6	15.6
-20	15.6	15.6
0	15.6	15.6
25	15.6	15.6
60	15.5	15.6
65	15.5	15.6
--	-	-
--	-	-
--	-	-
--	-	-

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

Model	MGS302412	Temperature Testing Circuitry 25°C Figure A																																																							
Item	Overcurrent Protection																																																								
Object	+12V2.5A																																																								
1.Graph	<p>—△— Input Volt. 18V —□— Input Volt. 24V —○— Input Volt. 36V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>	2.Values																																																							
Note:	Slanted line shows the range of the rated load current.																																																								
	Intermittent operation occurs when overcurrent protection is activated.																																																								
	<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</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>12.0</td><td>3.42</td><td>3.47</td><td>3.42</td></tr> <tr><td>11.4</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>10.8</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>9.6</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>8.4</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7.2</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4.8</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3.6</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.4</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.2</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Output Voltage [V]	Load Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	12.0	3.42	3.47	3.42	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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																						
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2.4	-	-	-																																																						
1.2	-	-	-																																																						
0.0	-	-	-																																																						

Model	MGS302412
Item	Oversupply Protection
Object	+12V2.5A

1. Graph



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 24[V]	Input Volt. 36[V]
-60	16.36	16.36
-40	16.45	16.45
-20	16.57	16.59
0	16.73	16.75
25	16.96	16.98
60	17.28	17.29
65	17.33	17.35
--	-	-
--	-	-
--	-	-
--	-	-

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

COSEL

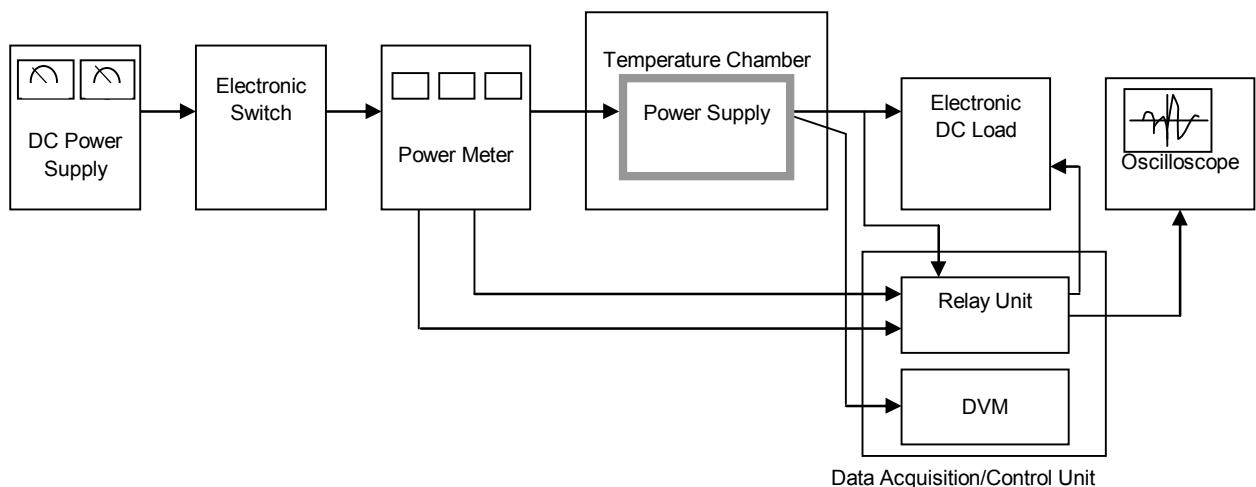


Figure A

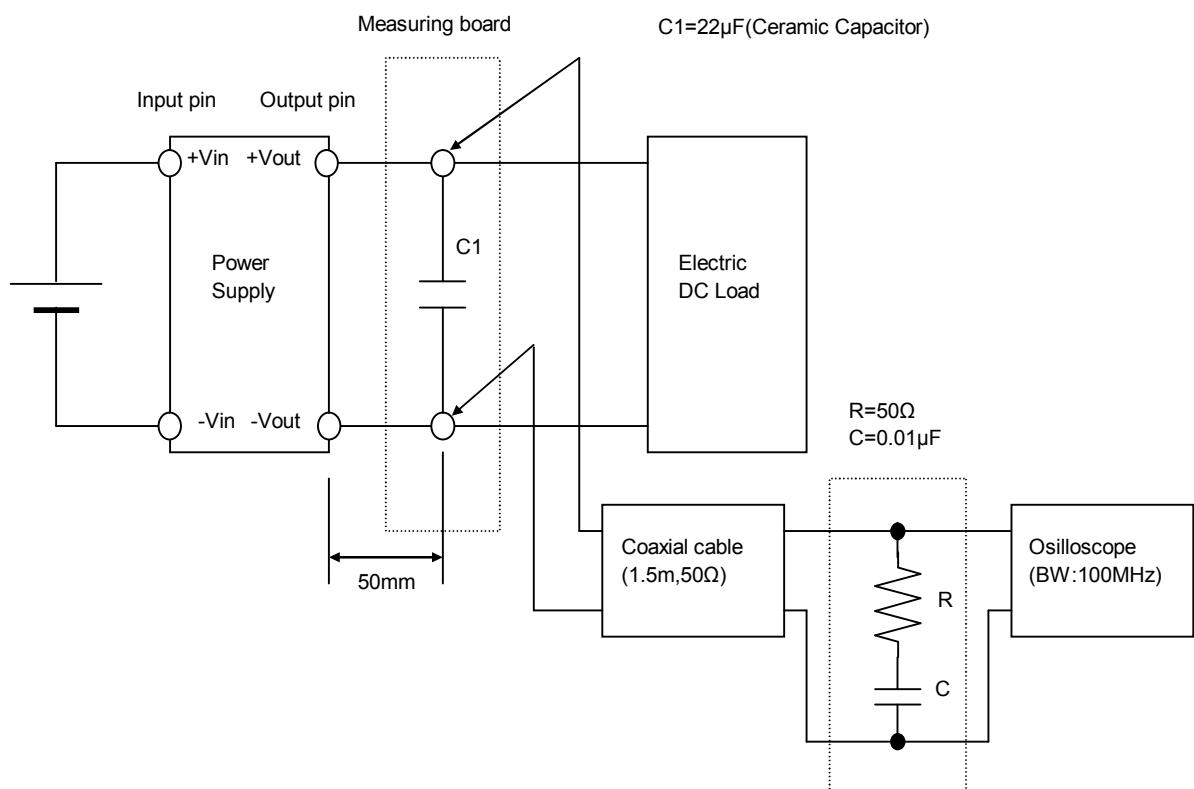


Figure B (Ripple and Ripple noise Characteristic)