COSEL

参考資料

TEST DATA OF MGFW304812

Regulated DC Power Supply
December 25, 2010

Approved by : Kazunari Asano
Kazunari Asano Design Manager

Prepared by : Masashi Ueda
Masashi Ueda Design Engineer

COSEL CO.,LTD.

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COSEL

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Item	Input Current (by Input Voltage)
Object	————————

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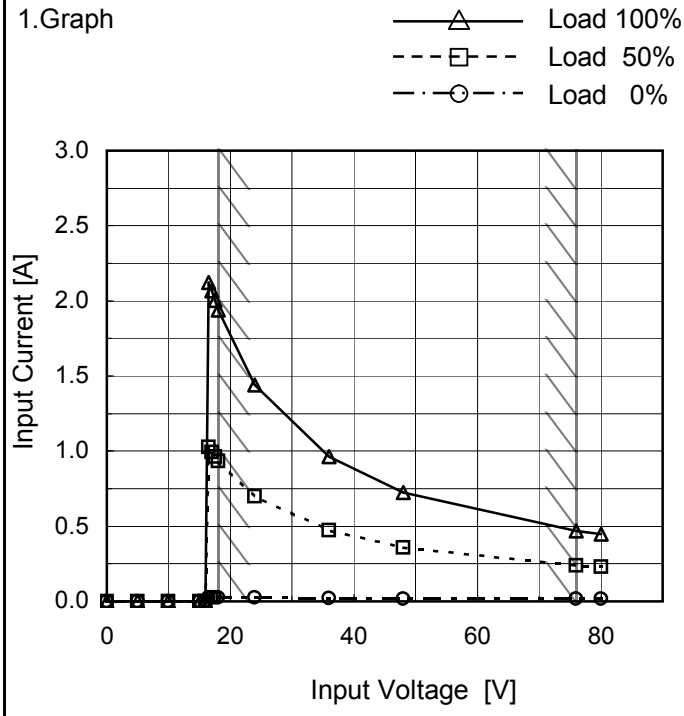

Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
5.0	0.002	0.001	0.002
10.0	0.002	0.002	0.002
15.0	0.002	0.002	0.002
16.0	0.002	0.002	0.002
16.5	0.027	1.027	2.124
17.0	0.026	0.993	2.068
17.5	0.026	0.961	2.002
18.0	0.026	0.932	1.939
24.0	0.024	0.700	1.442
36.0	0.021	0.472	0.963
48.0	0.018	0.360	0.724
76.0	0.017	0.239	0.469
80.0	0.018	0.229	0.447
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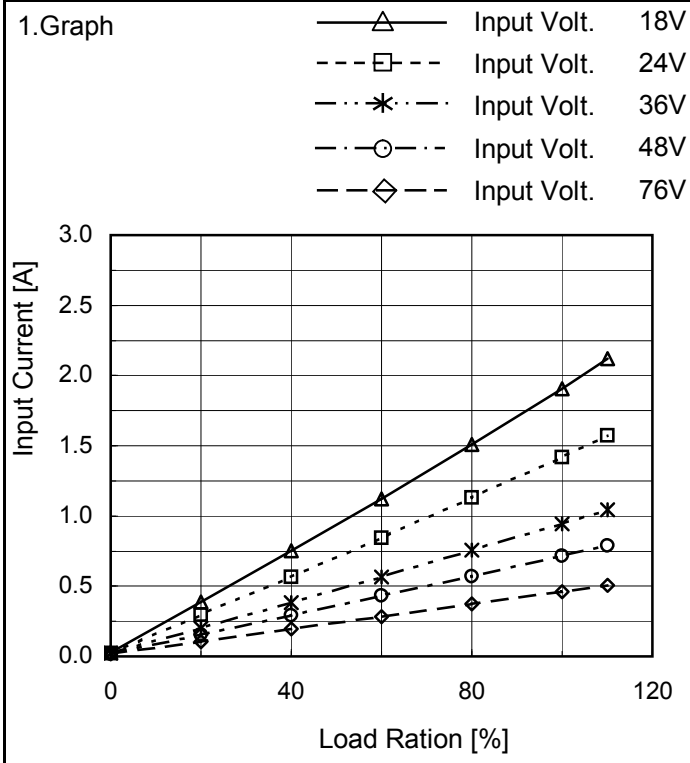
COSEL

Model	MGFW304812
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.026	0.024	0.021	0.018	0.018
20	0.387	0.295	0.202	0.154	0.106
40	0.751	0.566	0.384	0.294	0.197
60	1.121	0.842	0.567	0.431	0.284
80	1.511	1.129	0.757	0.571	0.372
100	1.907	1.420	0.946	0.714	0.462
110	2.119	1.571	1.044	0.789	0.508
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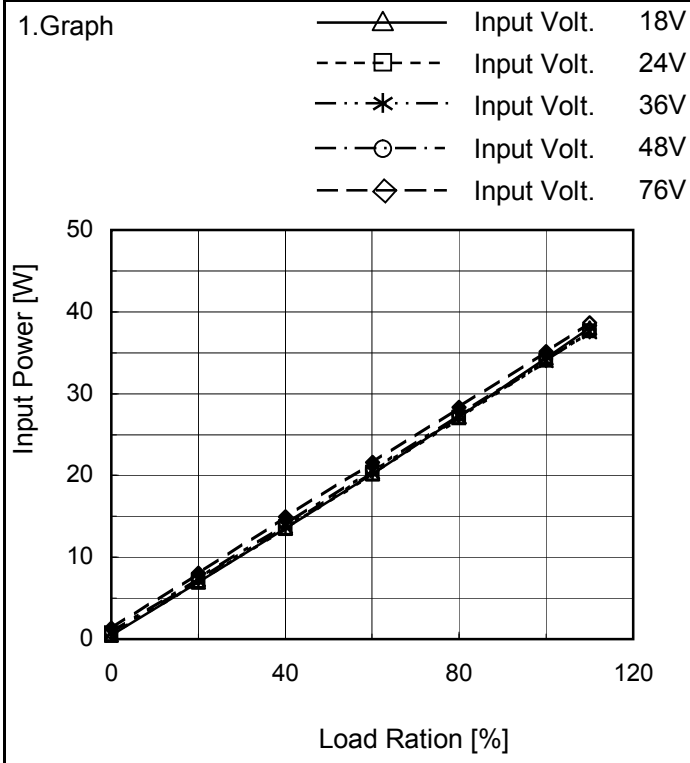
--	-	-	-	-	-

COSEL

Model	MGFW304812
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

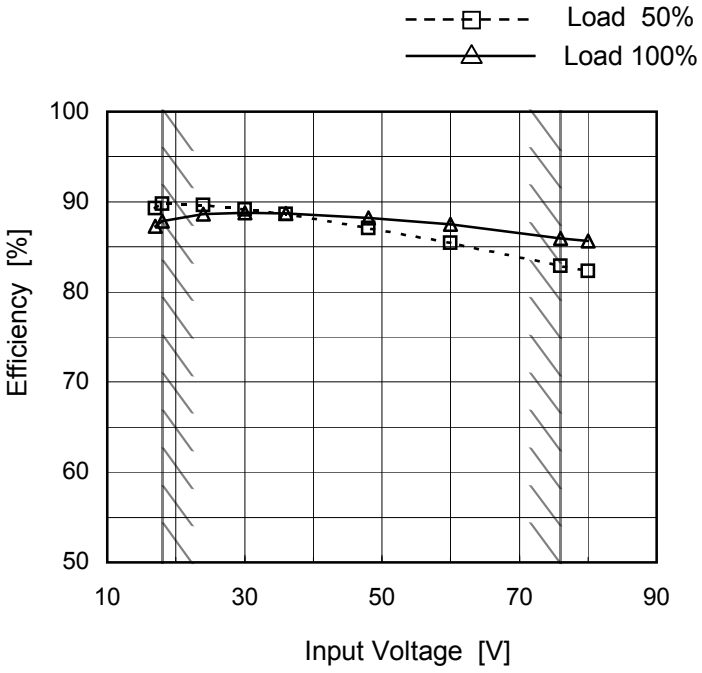
Load Ration [%]	Input Power [W]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.47	0.58	0.75	0.87	1.35
20	6.98	7.06	7.26	7.40	8.09
40	13.51	13.54	13.78	14.07	14.96
60	20.22	20.21	20.40	20.65	21.58
80	27.14	27.03	27.12	27.35	28.30
100	34.32	34.06	34.04	34.23	35.12
110	38.05	37.64	37.59	37.73	38.62
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304812
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%
17	89.3	87.3
18	89.8	87.9
24	89.7	88.7
30	89.1	88.8
36	88.6	88.7
48	87.1	88.2
60	85.4	87.5
76	82.9	86.0
80	82.3	85.7

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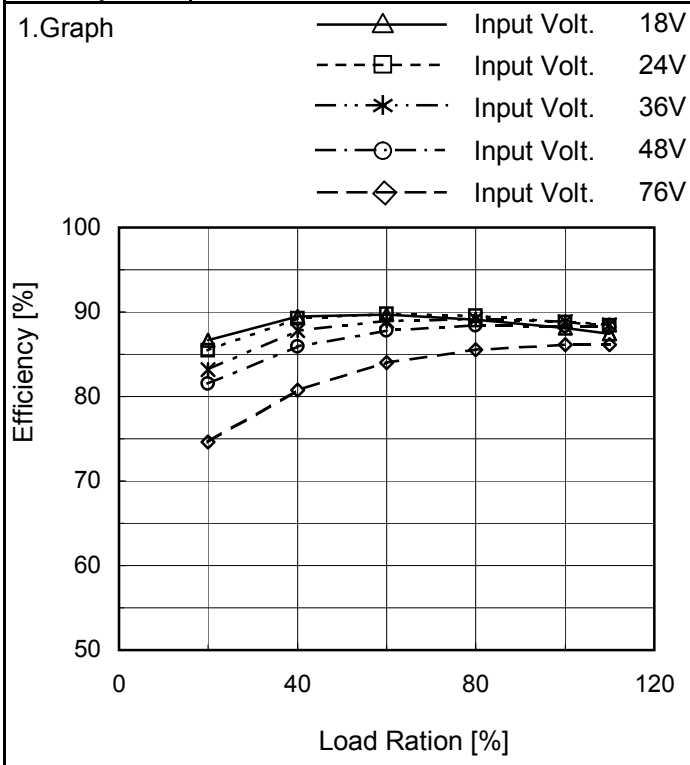
Model	MGFW304812
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

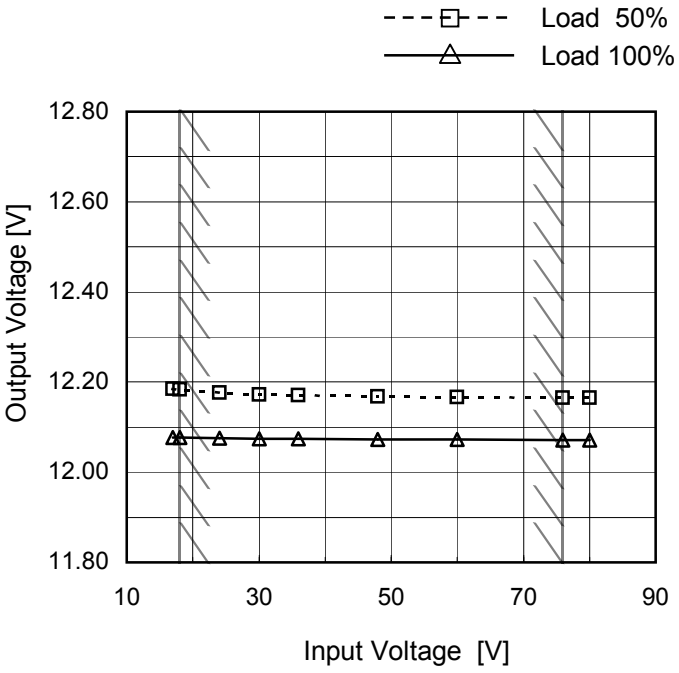
Load Ration [%]	Efficiency [%]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-	-	-
20	86.6	85.5	83.2	81.5	74.6
40	89.5	89.3	87.8	85.9	80.8
60	89.7	89.8	88.9	87.8	84.0
80	89.1	89.5	89.2	88.4	85.5
100	88.1	88.8	88.9	88.4	86.1
110	87.4	88.4	88.5	88.2	86.1
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304812
Item	Line Regulation
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



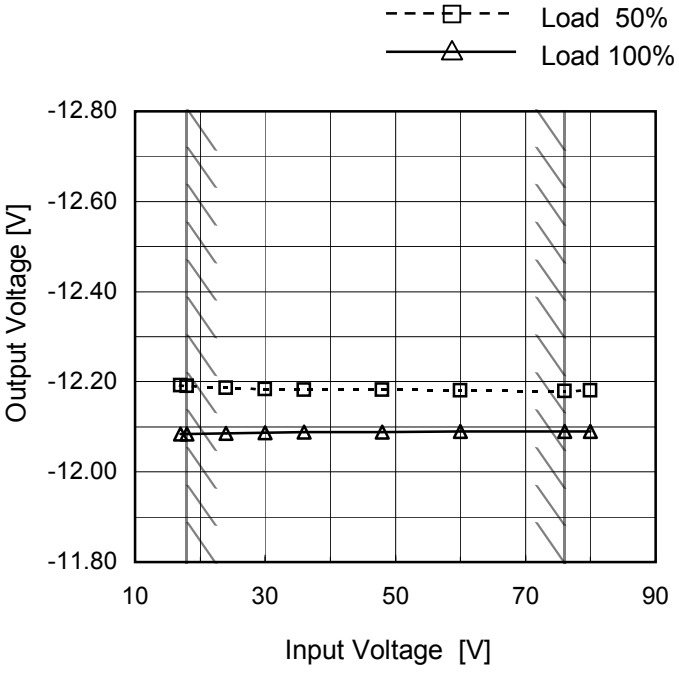
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.185	12.078
18	12.184	12.078
24	12.177	12.076
30	12.173	12.075
36	12.171	12.074
48	12.168	12.073
60	12.167	12.073
76	12.165	12.072
80	12.165	12.072

-12V: Rated output current

Object	-12V1.25A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	-12.192	-12.084
18	-12.190	-12.084
24	-12.187	-12.086
30	-12.184	-12.087
36	-12.183	-12.088
48	-12.181	-12.089
60	-12.180	-12.089
76	-12.180	-12.089
80	-12.180	-12.089

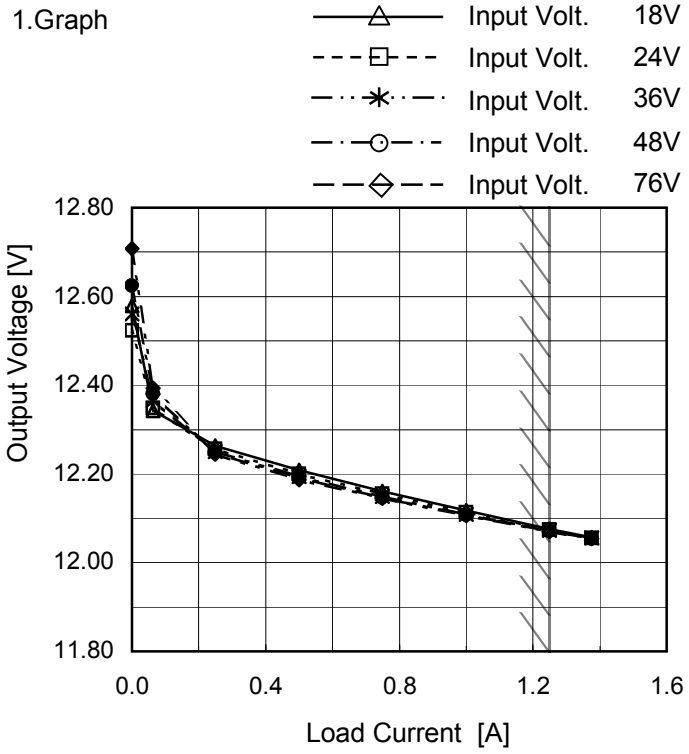
+12V: Rated output current

COSEL

Model	MGFW304812
Item	Load Regulation
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Current [A]	Output Voltage [V] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.579	12.522	12.561	12.624	12.708
0.063	12.342	12.349	12.365	12.380	12.393
0.250	12.264	12.256	12.250	12.247	12.244
0.500	12.209	12.200	12.194	12.190	12.187
0.750	12.161	12.155	12.149	12.147	12.144
1.000	12.117	12.113	12.109	12.108	12.105
1.250	12.076	12.074	12.072	12.072	12.070
1.375	12.057	12.056	12.055	12.054	12.054
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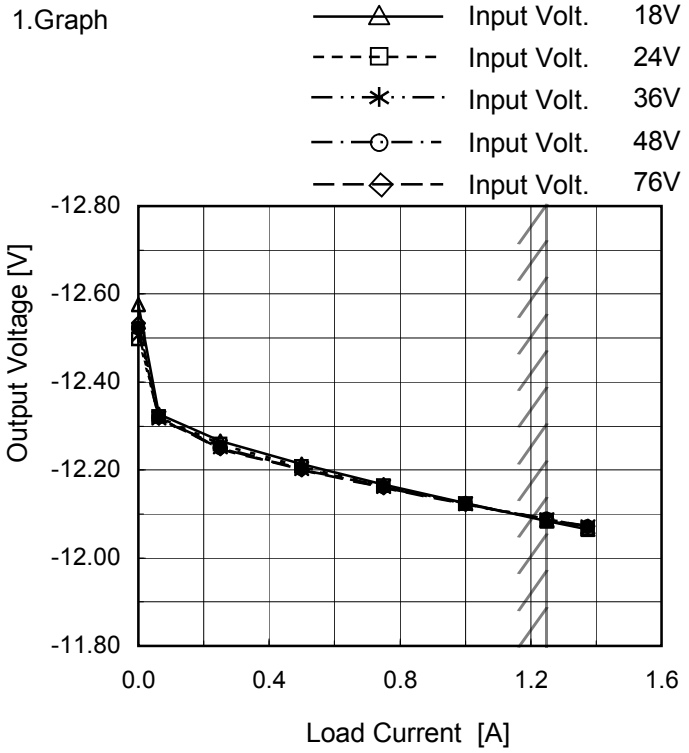
--	-	-	-	-	-

-12V: Rated output current

Object	-12V1.25A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	-12.576	-12.498	-12.507	-12.523	-12.534
0.063	-12.327	-12.321	-12.318	-12.320	-12.319
0.250	-12.265	-12.258	-12.252	-12.251	-12.249
0.500	-12.214	-12.208	-12.204	-12.202	-12.201
0.750	-12.167	-12.164	-12.162	-12.161	-12.160
1.000	-12.124	-12.124	-12.123	-12.123	-12.122
1.250	-12.084	-12.085	-12.087	-12.088	-12.089
1.375	-12.064	-12.067	-12.070	-12.071	-12.073
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--	-	-	-	-	-

+12V: Rated output current

COSEL

Model	MGFW304812
Item	Dynamic Load Response
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

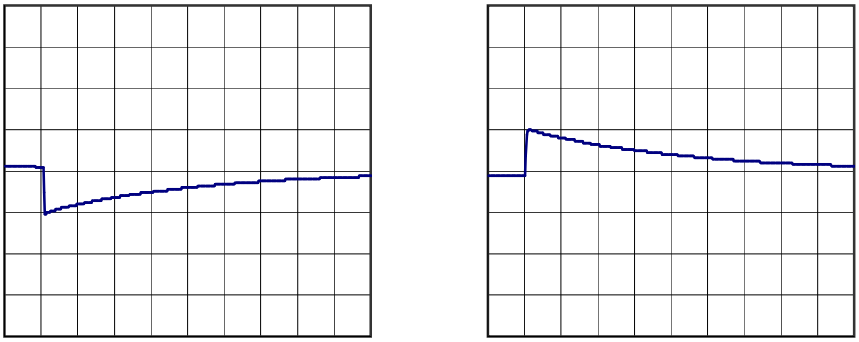
Input Volt. 48 V
Other output current rated
Cycle 1000 ms

t_1、t_2 = 50μs

Load Current

Min. Load (0A) ⟷
Load 100% (1.25A)

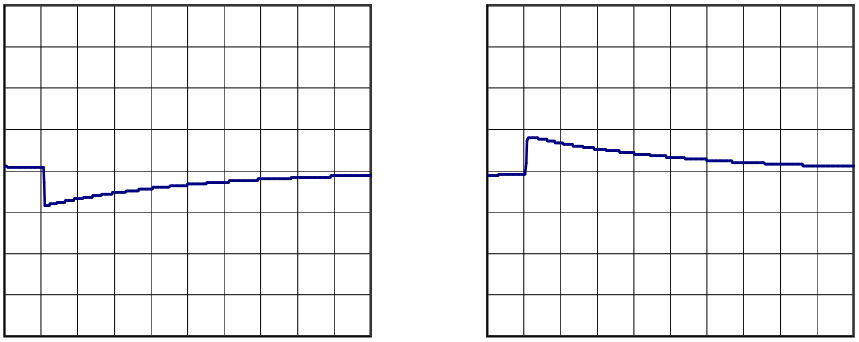
500mV/div



50ms/div 50ms/div

Min. Load (0A) ⟷
Load 50% (0.625A)

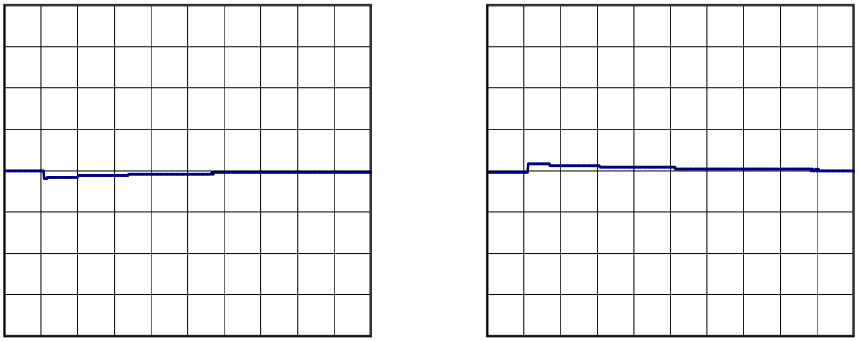
500mV/div



50ms/div 50ms/div

Load 50% (0.625A) ⟷
Load 100% (1.25A)

500mV/div



50ms/div 50ms/div

COSEL

Model	MGFW304812
Item	Dynamic Load Response
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure A

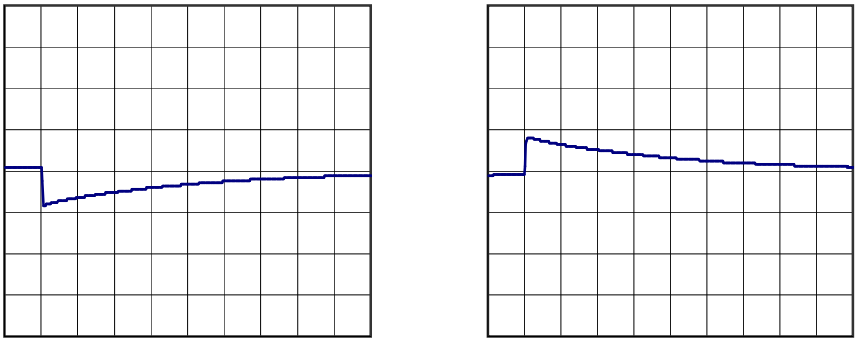
Input Volt. 48 V
Other output current rated
Cycle 1000 ms

t_1、t_2 = 50μs

Load Current

Min. Load (0A) ⟷
Load 100% (1.25A)

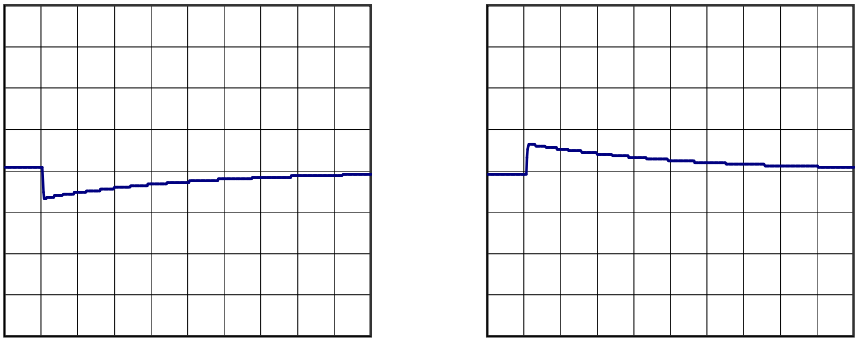
500mV/div



50ms/div 50ms/div

Min. Load (0A) ⟷
Load 50% (0.625A)

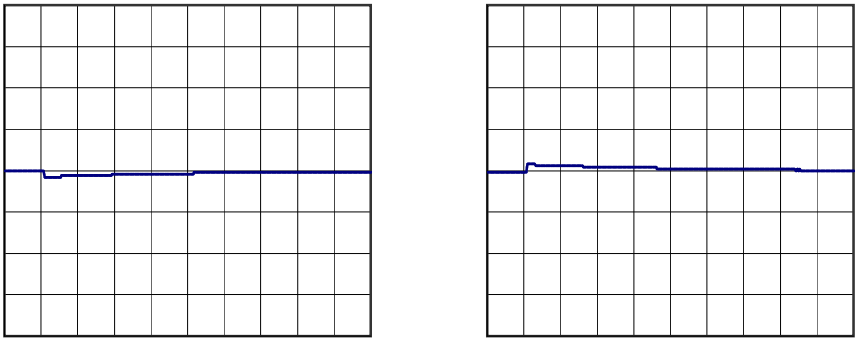
500mV/div



50ms/div 50ms/div

Load 50% (0.625A) ⟷
Load 100% (1.25A)

500mV/div



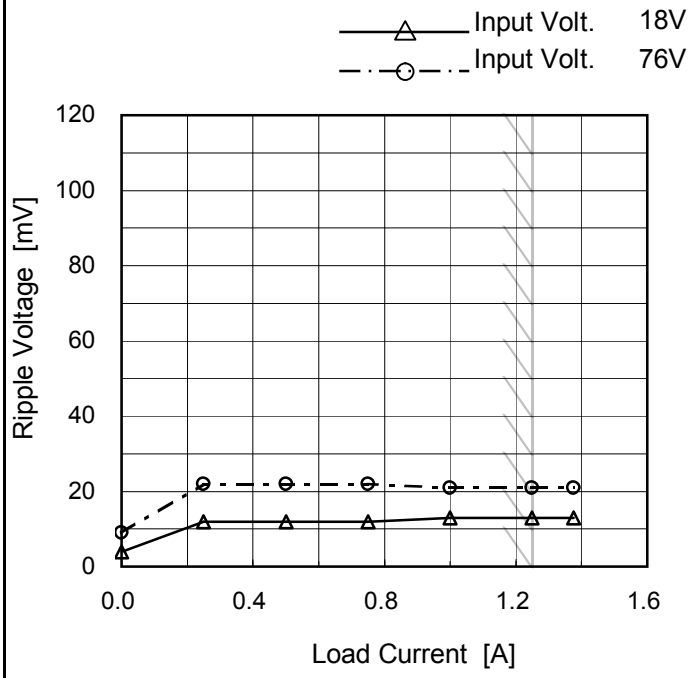
50ms/div 50ms/div

COSEL

Model	MGFW304812
Item	Ripple Voltage (by Load Current)
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

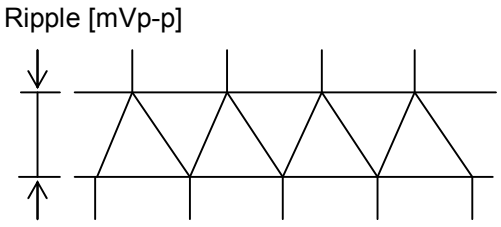


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	4	9
0.250	12	22
0.500	12	22
0.750	12	22
1.000	13	21
1.250	13	21
1.375	13	21
--	-	-
--	-	-
--	-	-
--	-	-

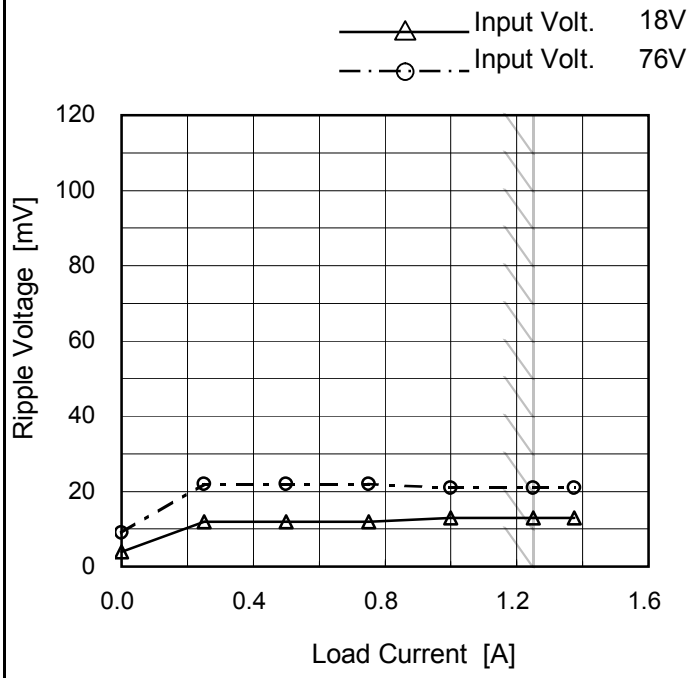
-12V: Rated output current

COSEL

Model	MGFW304812
Item	Ripple Voltage (by Load Current)
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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]

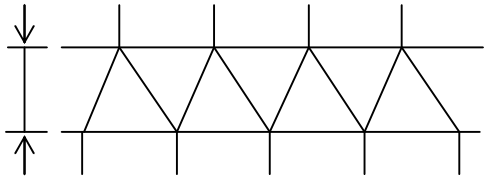


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	6	10
0.250	7	11
0.500	7	11
0.750	7	11
1.000	9	11
1.250	9	11
1.375	9	11
--	-	-
--	-	-
--	-	-
--	-	-

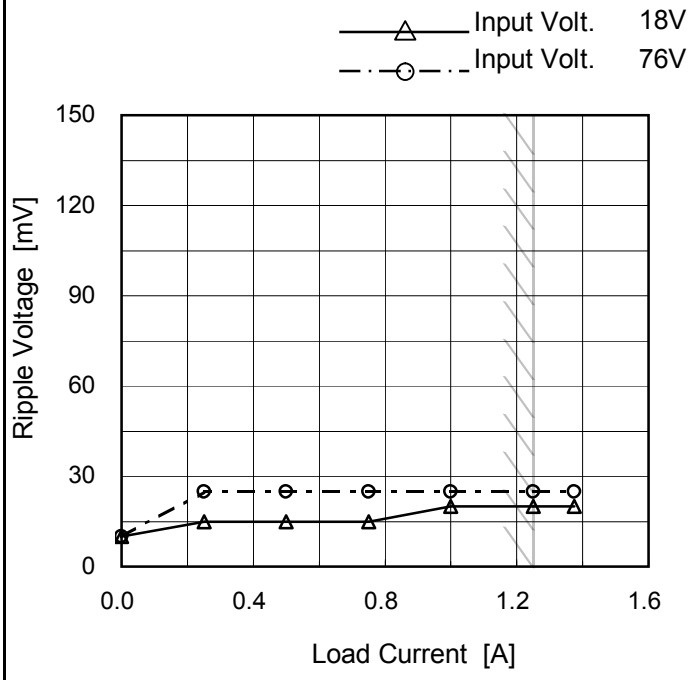
+12V: Rated output current

COSEL

Model	MGFW304812
Item	Ripple-Noise
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

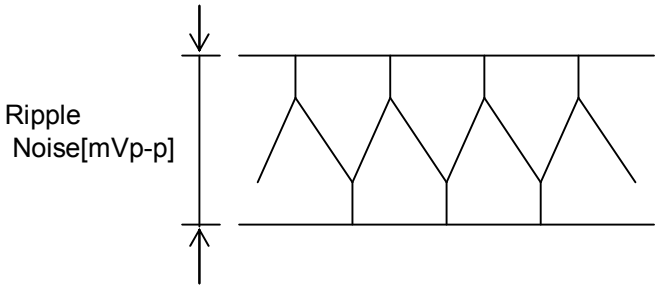


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	10	10
0.250	15	25
0.500	15	25
0.750	15	25
1.000	20	25
1.250	20	25
1.375	20	25
--	-	-
--	-	-
--	-	-
--	-	-

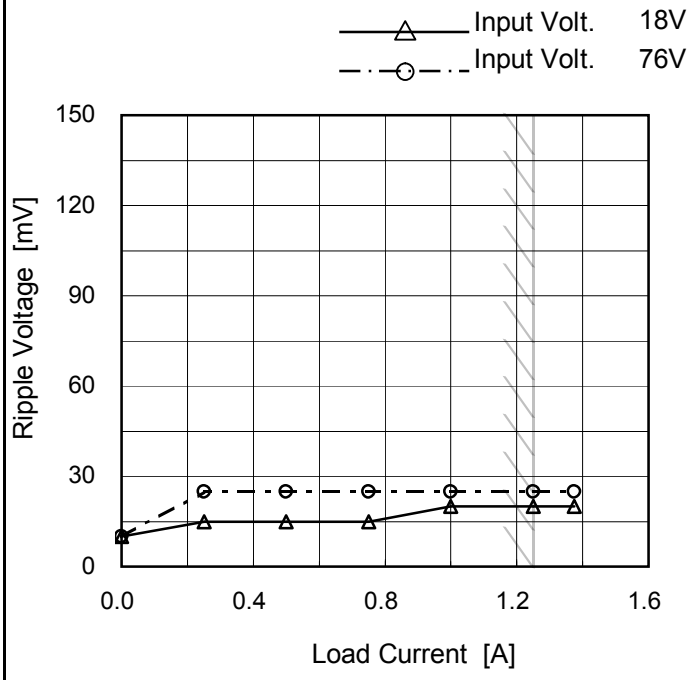
-12V: Rated output current

COSEL

Model	MGFW304812
Item	Ripple-Noise
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

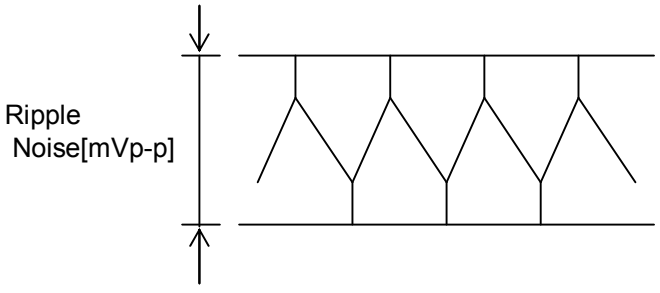


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	10	15
0.250	10	15
0.500	10	15
0.750	10	15
1.000	15	15
1.250	15	15
1.375	15	15
--	-	-
--	-	-
--	-	-
--	-	-

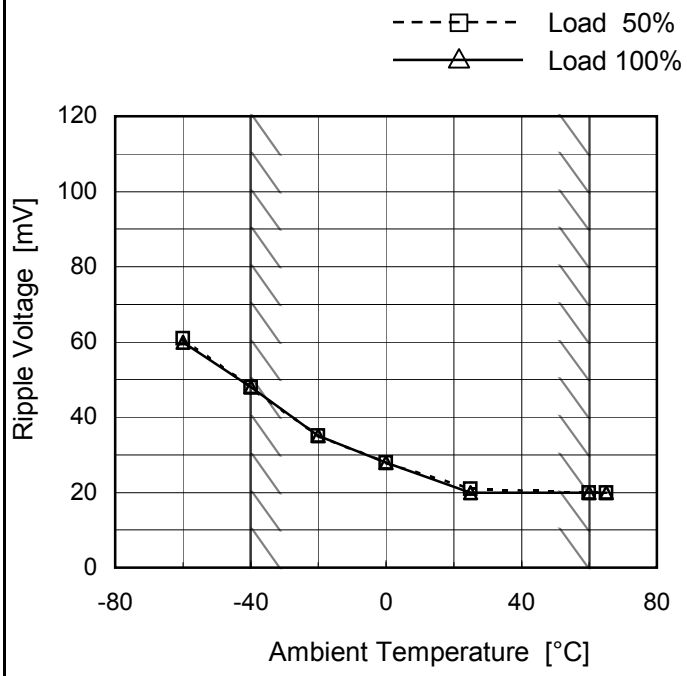
+12V: Rated output current

COSEL

Model	MGFW304812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V1.25A

Testing Circuitry Figure A

1.Graph



Input Volt. 48V

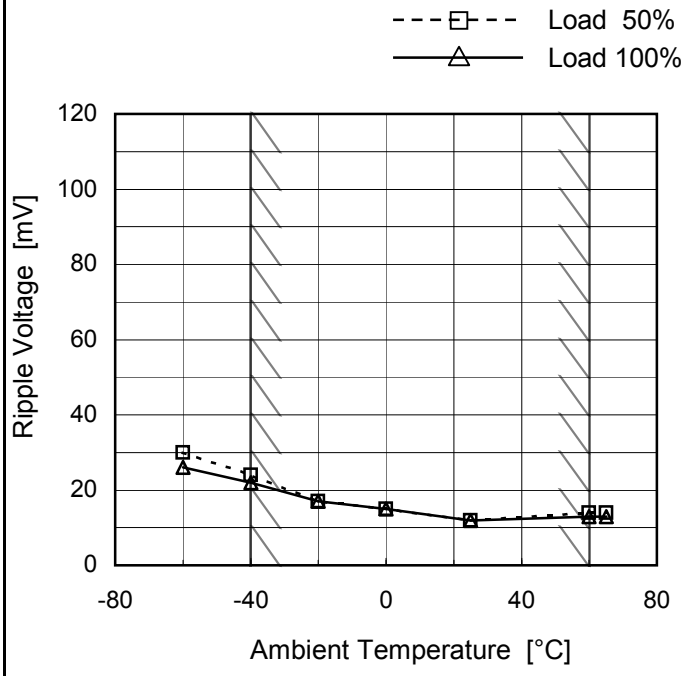
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	61	60
-40	48	48
-20	35	35
0	28	28
25	21	20
60	20	20
65	20	20
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated output current

Object	-12V1.25A

1.Graph



Input Volt. 48V

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	30	26
-40	24	22
-20	17	17
0	15	15
25	12	12
60	14	13
65	14	13
--	-	-
--	-	-
--	-	-
--	-	-

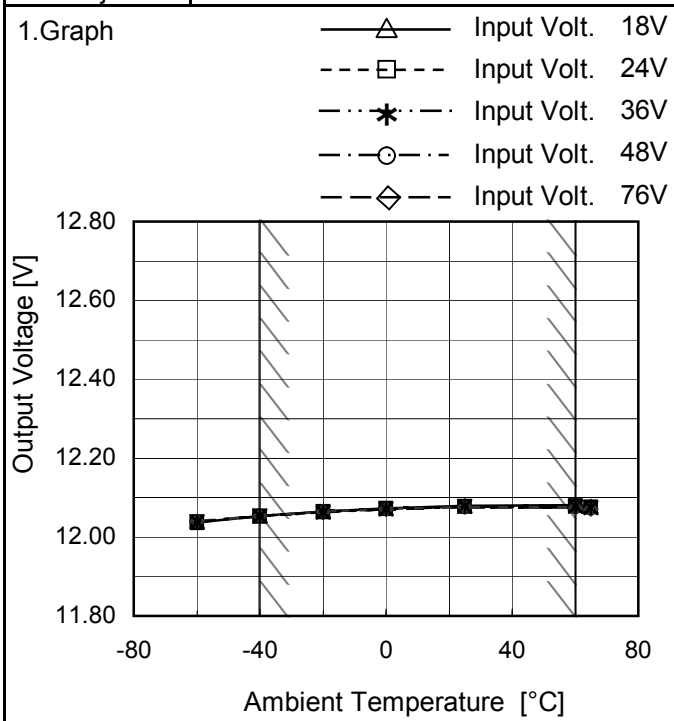
+12V: Rated output current

COSEL

Model	MGFW304812
Item	Ambient Temperature Drift
Object	+12V1.25A

Testing Circuitry Figure A

1.Graph



Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	12.037	12.038	12.039	12.039	12.040
-40	12.053	12.053	12.053	12.053	12.053
-20	12.065	12.064	12.064	12.064	12.064
0	12.073	12.073	12.072	12.072	12.071
25	12.080	12.078	12.077	12.076	12.075
60	12.081	12.079	12.077	12.076	12.074
65	12.078	12.076	12.074	12.073	12.071
--	-	-	-	-	-
--	-	-	-	-	-
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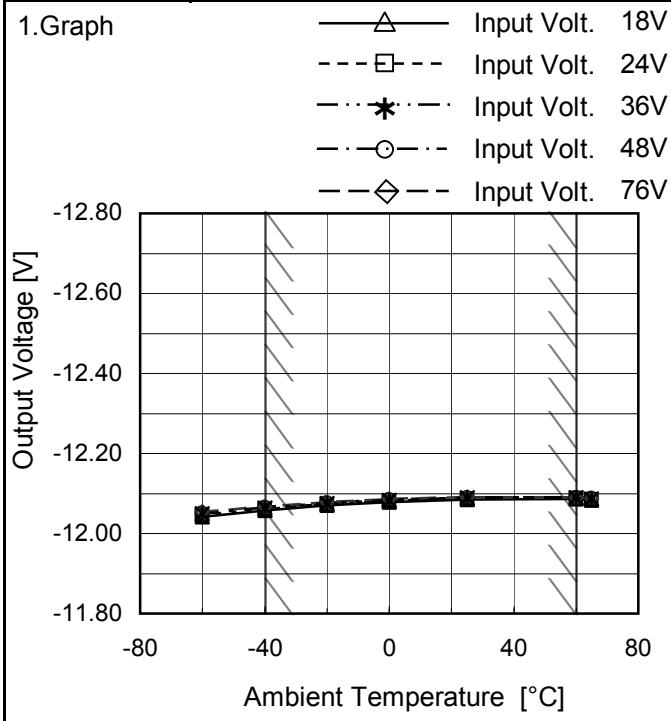
--	-	-	-	-	-

Object	-12V1.25A

1.Graph



Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-12.042	-12.046	-12.049	-12.051	-12.054
-40	-12.057	-12.061	-12.064	-12.066	-12.068
-20	-12.070	-12.073	-12.075	-12.077	-12.079
0	-12.079	-12.081	-12.084	-12.085	-12.087
25	-12.085	-12.087	-12.089	-12.090	-12.091
60	-12.086	-12.088	-12.089	-12.090	-12.090
65	-12.083	-12.085	-12.087	-12.088	-12.088
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304812	
Item	Output Voltage Accuracy	Testing Circuitry Figure A

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 - 76V
Load Current (AVR 1) : 0 - 1.25A (AVR 2) : 0 - 1.25A

* Other Output : Rated Load

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2.Values

Object	+12V1.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	76	0	12.704	±326	±2.7
Minimum Voltage	-40	18	1.25	12.053		

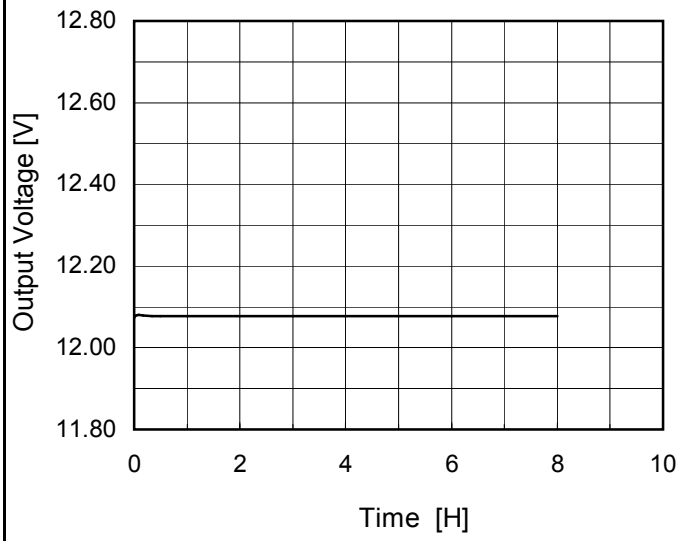
Object	-12V1.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	18	0	-12.574	±259	±2.2
Minimum Voltage	-40	18	1.25	-12.057		

COSEL

Model	MGFW304812
Item	Time Lapse Drift
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



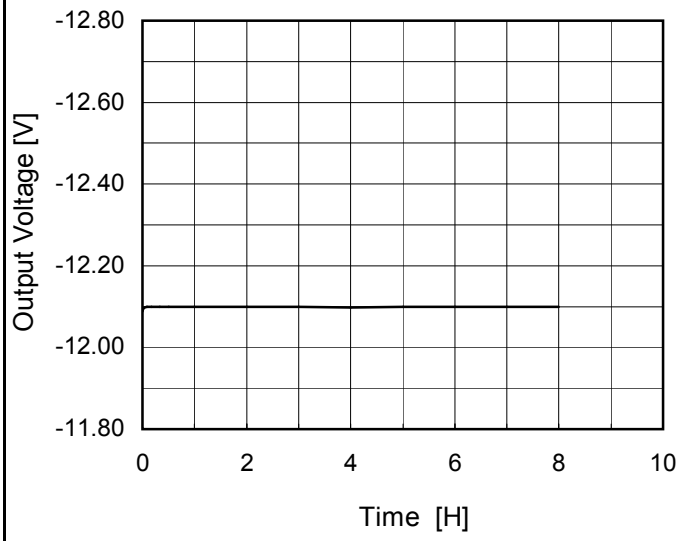
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.072
0.5	12.078
1.0	12.077
2.0	12.077
3.0	12.077
4.0	12.077
5.0	12.077
6.0	12.077
7.0	12.077
8.0	12.077

Object	-12V1.25A

1.Graph



Input Volt. 48V
Load 100%

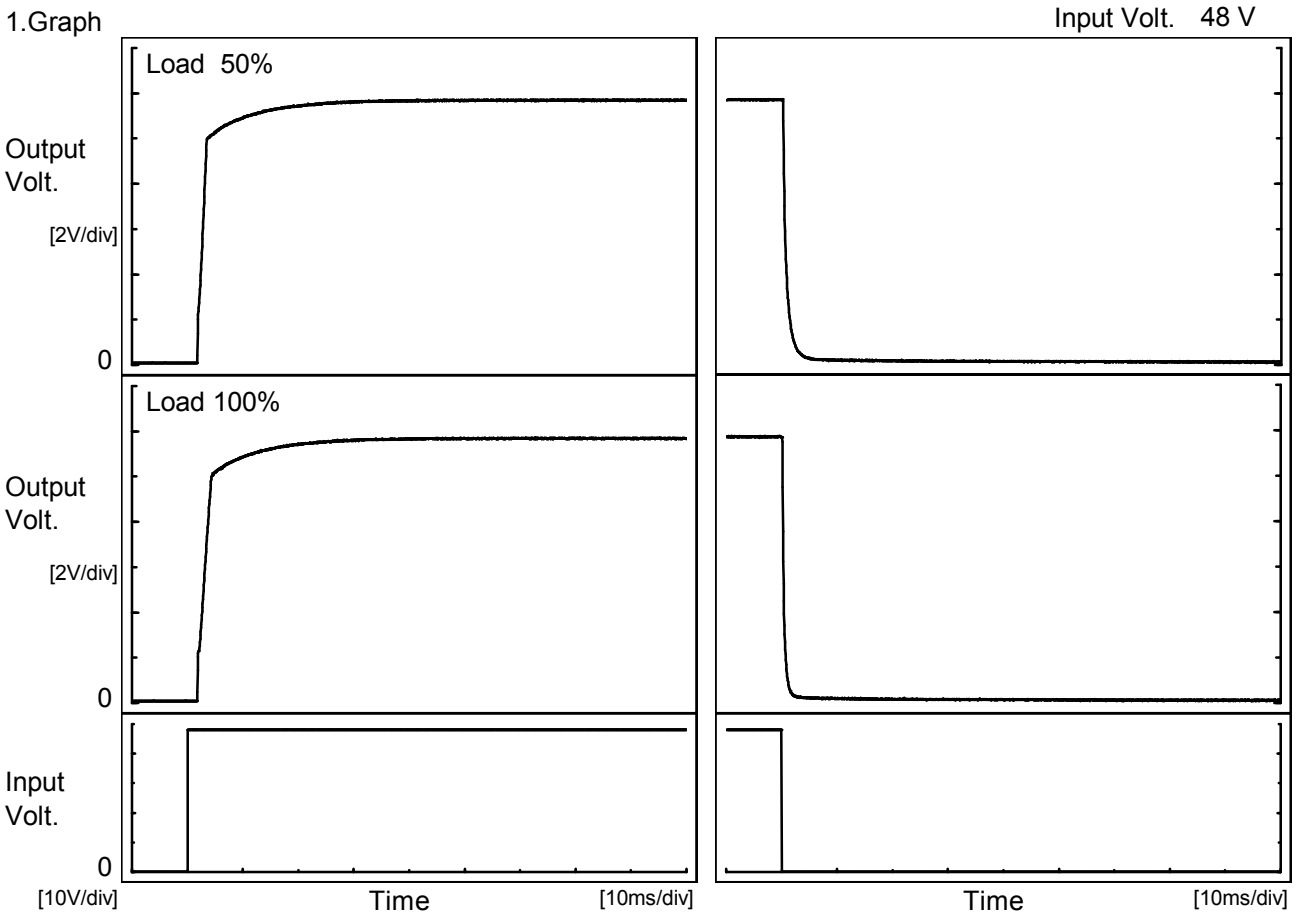
2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.088
0.5	-12.099
1.0	-12.099
2.0	-12.099
3.0	-12.099
4.0	-12.098
5.0	-12.099
6.0	-12.099
7.0	-12.099
8.0	-12.099

COSEL

Model	MGFW304812	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V1.25A	

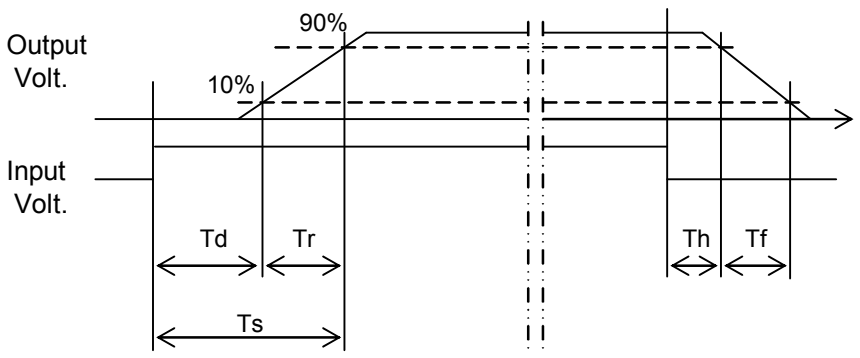
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.9	7.8	9.7	0.2	1.7
100 %	1.9	8.3	10.2	0.2	0.8

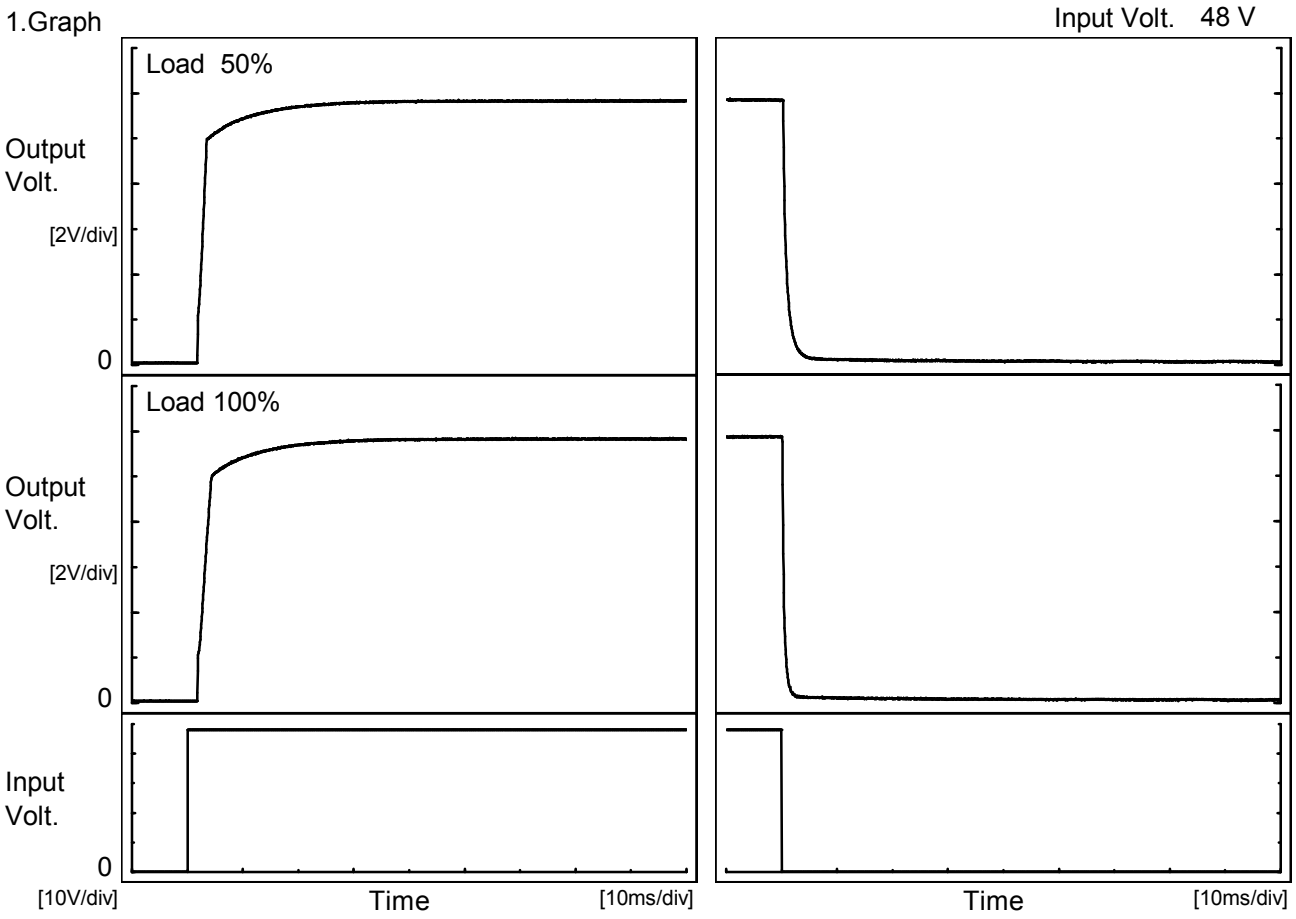


COSEL

Model	MGFW304812
Item	Rise and Fall Time
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure A

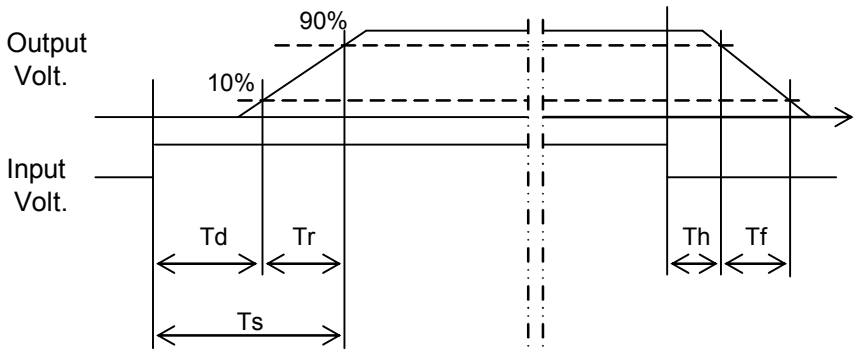
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.9	8.2	10.1	0.2	1.8
100 %	1.9	8.7	10.6	0.2	0.9



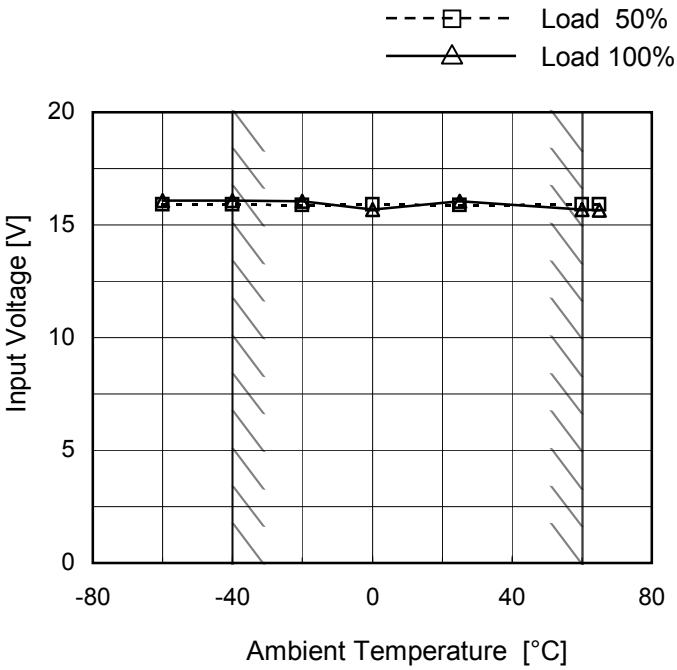
BC-10534

COSEL

Model	MGFW304812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V1.25A

Testing Circuitry Figure A

1.Graph

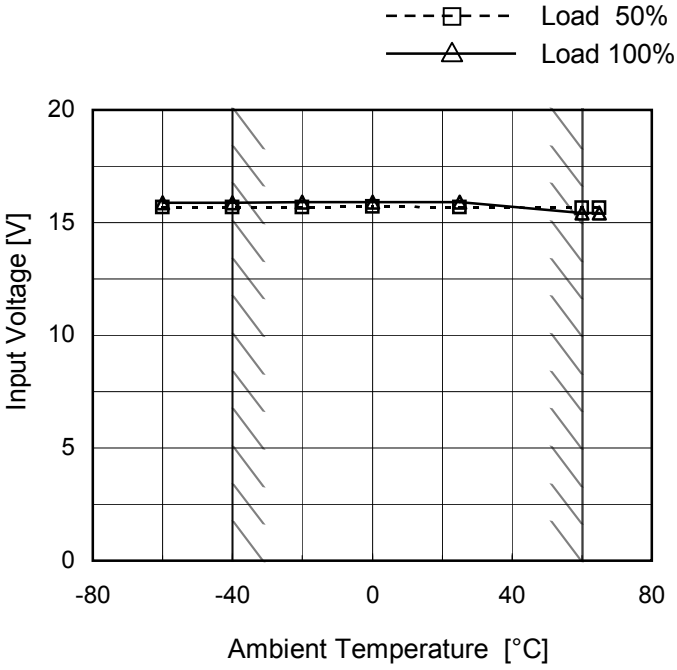


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.9	16.1
-40	16.0	16.1
-20	15.9	16.1
0	16.0	15.7
25	15.9	16.1
60	16.0	15.7
65	16.0	15.7
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V1.25A

1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.7	15.9
-40	15.7	15.9
-20	15.7	16.0
0	15.7	15.9
25	15.7	16.0
60	15.7	15.5
65	15.7	15.5
--	-	-
--	-	-
--	-	-
--	-	-

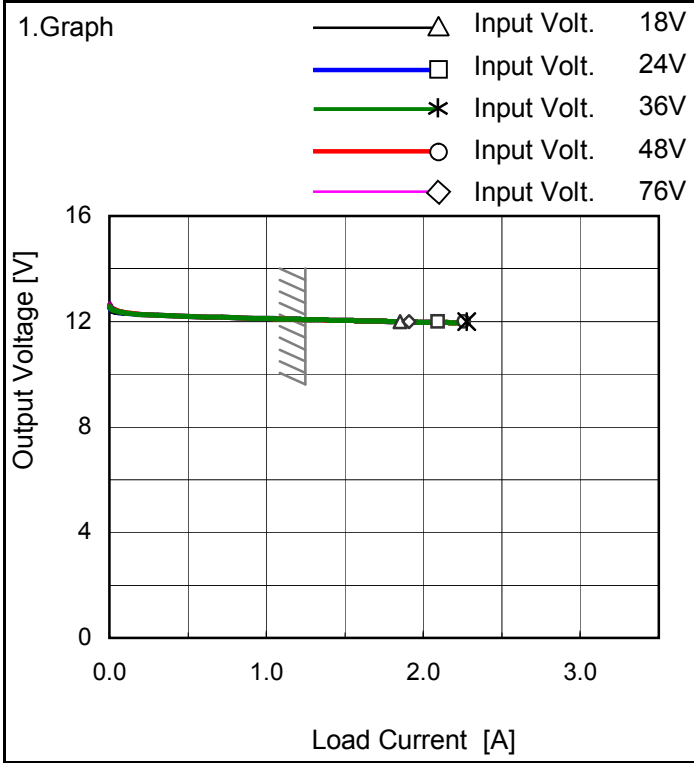
Note: Slanted line shows the range of the rated ambient temperature.

COSEL

Model	MGFW304812
Item	Overcurrent Protection
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

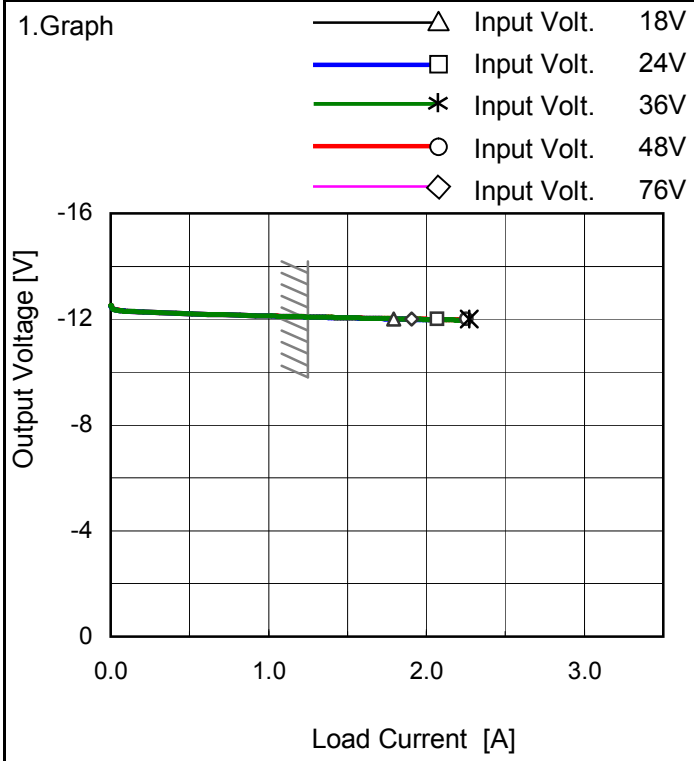


2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.0	1.851	2.093	2.278	2.260	1.908
11.4	-	-	-	-	-
10.8	-	-	-	-	-
9.6	-	-	-	-	-
8.4	-	-	-	-	-
7.2	-	-	-	-	-
6.0	-	-	-	-	-
4.8	-	-	-	-	-
3.6	-	-	-	-	-
2.4	-	-	-	-	-
1.2	-	-	-	-	-
0.0	-	-	-	-	-

Object	-12V1.25A

1.Graph



Note: Slanted line shows the range of the rated load current.
Intermittent operation occurs when overcurrent protection is activated.

2.Values

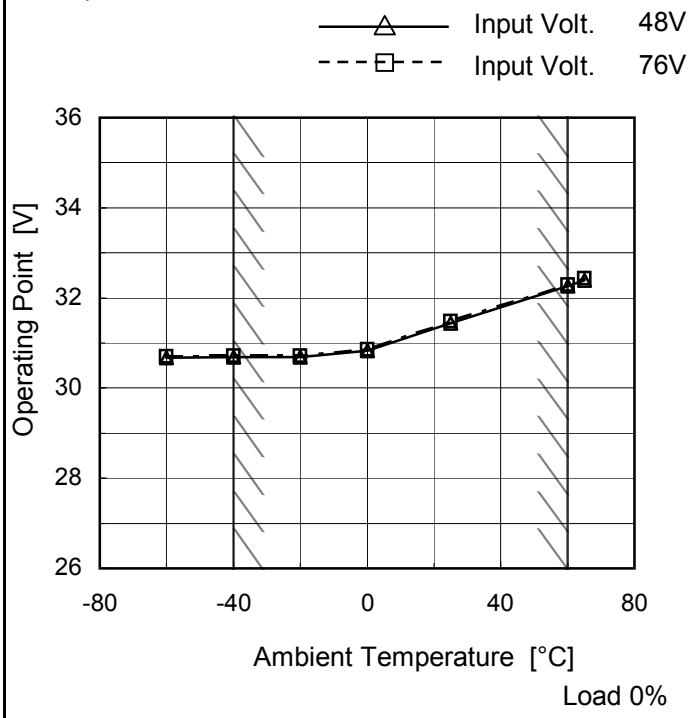
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-12.0	1.791	2.069	2.271	2.254	1.904
-11.4	-	-	-	-	-
-10.8	-	-	-	-	-
-9.6	-	-	-	-	-
-8.4	-	-	-	-	-
-7.2	-	-	-	-	-
-6.0	-	-	-	-	-
-4.8	-	-	-	-	-
-3.6	-	-	-	-	-
-2.4	-	-	-	-	-
-1.2	-	-	-	-	-
0.0	-	-	-	-	-

COSEL

Model	MGFW304812
Item	Overvoltage Protection
Object	+24V1.25A

Testing Circuitry Figure A

1.Graph



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

Measured as a single output(+24V).

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 76[V]
-60	30.68	30.71
-40	30.68	30.72
-20	30.68	30.72
0	30.83	30.86
25	31.44	31.48
60	32.26	32.29
65	32.40	32.43
--	-	-
--	-	-
--	-	-
--	-	-

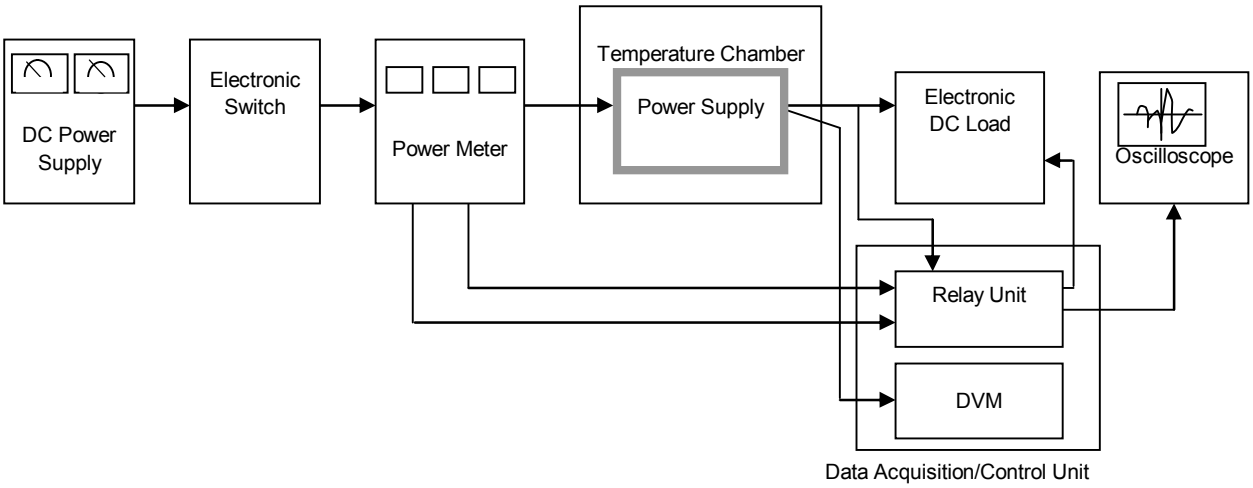


Figure A

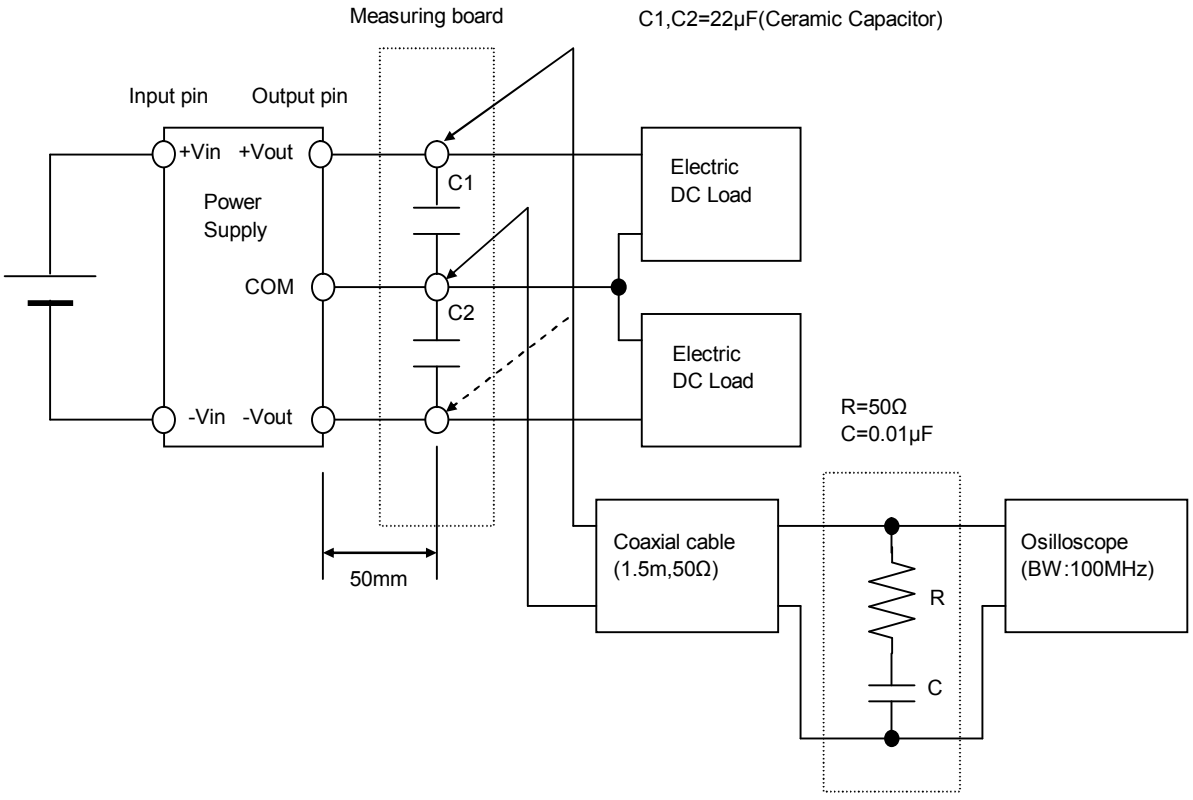


Figure B（Ripple and Ripple noise Characteristic）