参考資料

COSEL

TEST DATA OF MHFW31212

Regulated DC Power Supply
July 1, 2020

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COSEL CO.,LTD.

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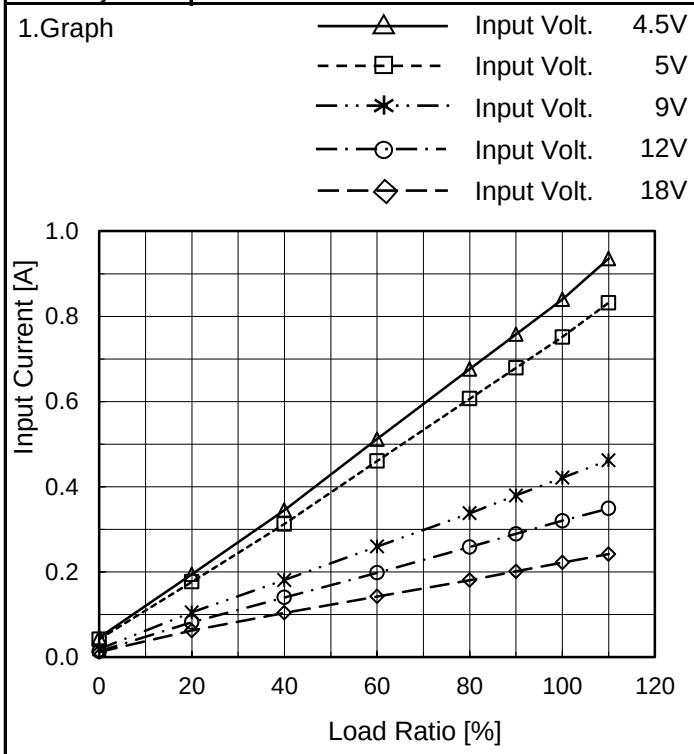
COSEL

Model	MHFW31212
Item	Input Current (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

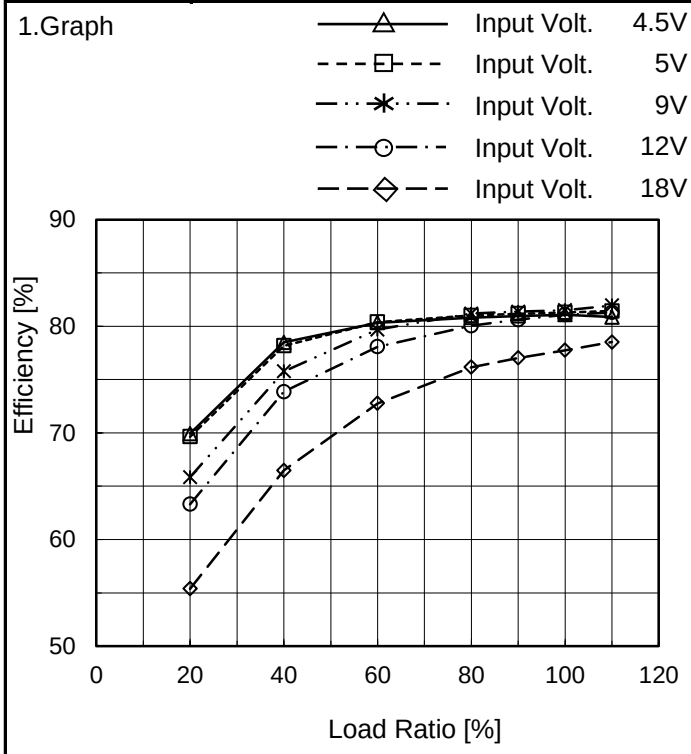
Load Ratio [%]	Input Current [A]				
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.046	0.042	0.019	0.013	0.012
20	0.195	0.177	0.105	0.082	0.062
40	0.345	0.313	0.181	0.140	0.104
60	0.512	0.461	0.260	0.198	0.143
80	0.676	0.607	0.338	0.259	0.181
90	0.758	0.679	0.380	0.289	0.201
100	0.840	0.752	0.421	0.320	0.222
110	0.936	0.832	0.462	0.349	0.242
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MHFW31212
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Efficiency [%]				
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-	-	-
20	69.9	69.6	65.8	63.3	55.4
40	78.5	78.2	75.8	73.9	66.5
60	80.3	80.4	79.7	78.1	72.8
80	80.8	81.0	81.2	80.0	76.2
90	81.0	81.2	81.4	80.6	77.0
100	81.1	81.3	81.5	81.1	77.7
110	80.9	81.4	81.9	81.3	78.5
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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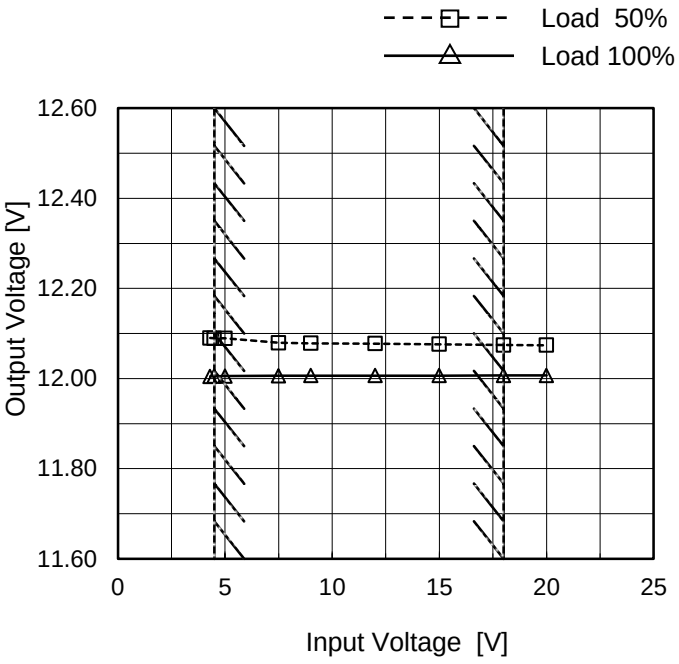
Model	MHFW31212
Item	Line Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



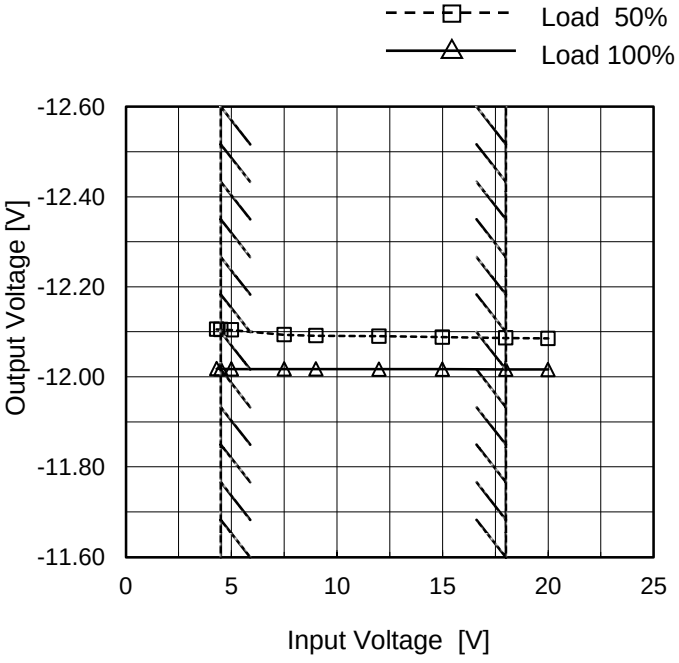
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.3	12.090	12.005
4.5	12.089	12.005
5.0	12.089	12.005
7.5	12.080	12.006
9.0	12.078	12.006
12.0	12.078	12.006
15.0	12.076	12.007
18.0	12.074	12.007
20.0	12.074	12.007

-12V:Rated Load Current

Object	-12V0.13A

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%
4.3	-12.106	-12.018
4.5	-12.105	-12.018
5.0	-12.104	-12.018
7.5	-12.093	-12.018
9.0	-12.091	-12.017
12.0	-12.090	-12.017
15.0	-12.088	-12.017
18.0	-12.086	-12.017
20.0	-12.085	-12.016

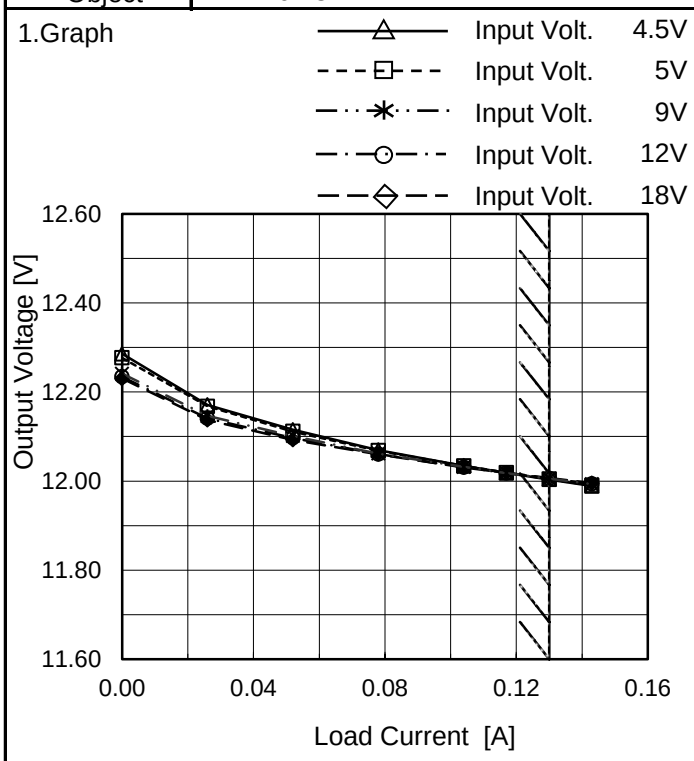
+12V:Rated Load Current

COSEL

Model	MHFW31212
Item	Load Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	12.286	12.277	12.241	12.234	12.230
0.026	12.171	12.168	12.146	12.141	12.137
0.052	12.115	12.111	12.101	12.097	12.093
0.078	12.070	12.068	12.062	12.061	12.060
0.104	12.034	12.034	12.032	12.031	12.031
0.117	12.018	12.019	12.018	12.018	12.018
0.130	12.003	12.004	12.005	12.006	12.007
0.143	11.989	11.990	11.993	11.994	11.995
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

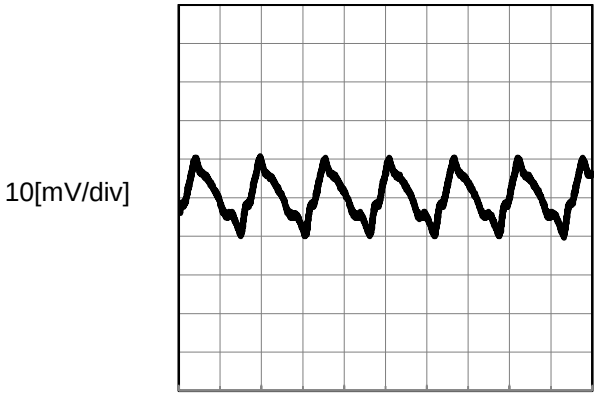
-12V:Rated Load Current

Item	Ripple-Noise
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 12V
Load 100%



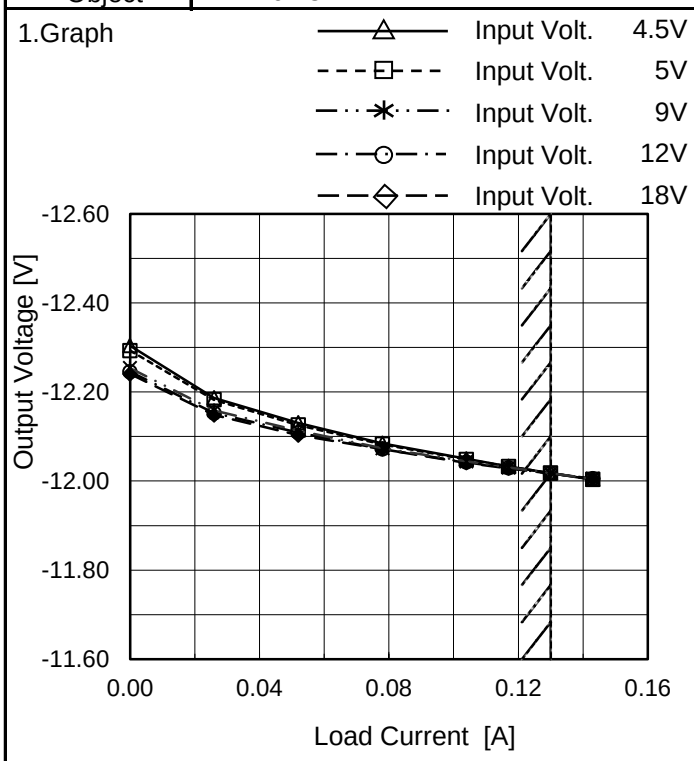
-12V:Rated Load Current

COSEL

Model	MHFW31212
Item	Load Regulation
Object	-12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	-12.304	-12.293	-12.254	-12.245	-12.240
0.026	-12.187	-12.182	-12.159	-12.153	-12.148
0.052	-12.131	-12.125	-12.113	-12.109	-12.103
0.078	-12.085	-12.083	-12.073	-12.072	-12.072
0.104	-12.050	-12.048	-12.044	-12.042	-12.041
0.117	-12.033	-12.033	-12.030	-12.029	-12.028
0.130	-12.018	-12.018	-12.017	-12.017	-12.017
0.143	-12.003	-12.004	-12.005	-12.005	-12.005
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

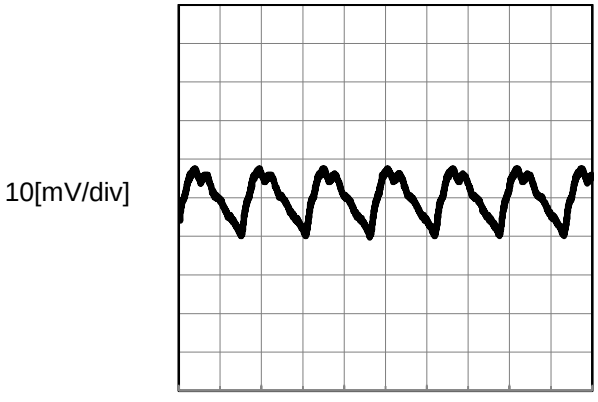
+12V:Rated Load Current

Item	Ripple-Noise
Object	-12V0.13A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

Input Voltage 12V
Load 100%



+12V:Rated Load Current

COSEL

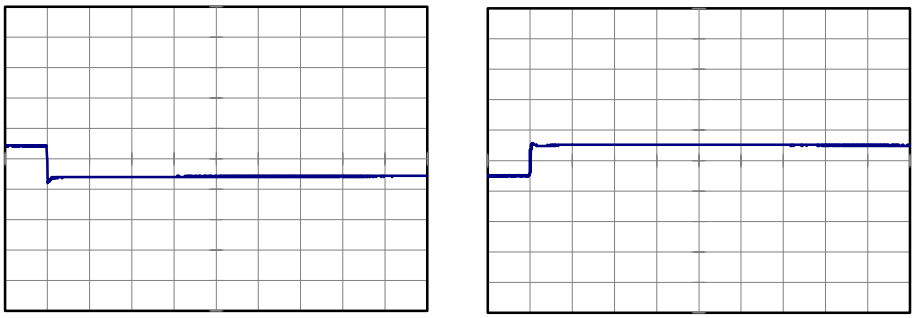
Model	MHFW31212	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.13A	

Input Volt. 12 V

-12V:rated load current.

Cycle 100 ms

Min.Load (0A)←→
Load 100% (0.13A)

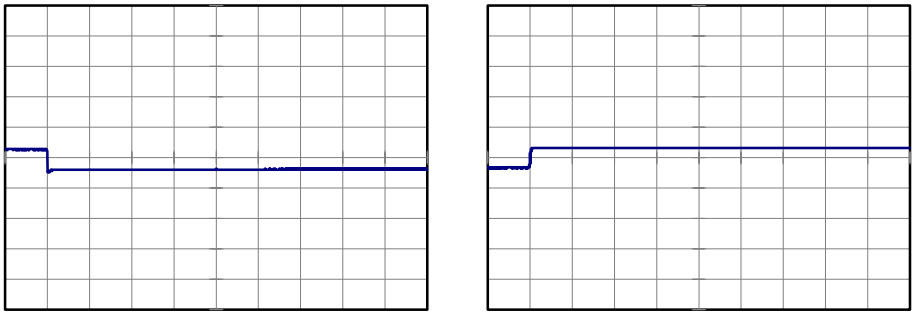


200 mV/div

2 ms/div

2 ms/div

Min.Load (0A)←→
Load 50% (0.065A)



200 mV/div

2 ms/div

2 ms/div

COSEL

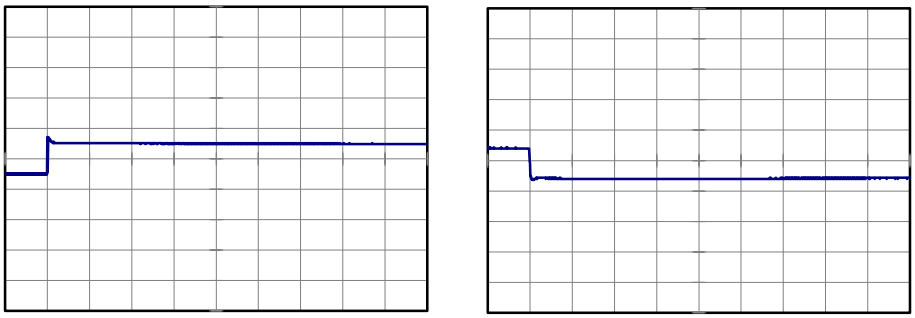
Model	MHFW31212	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.13A	

Input Volt. 12 V

+12V:rated load current.

Cycle 100 ms

Min.Load (0A)←→
Load 100% (0.13A)

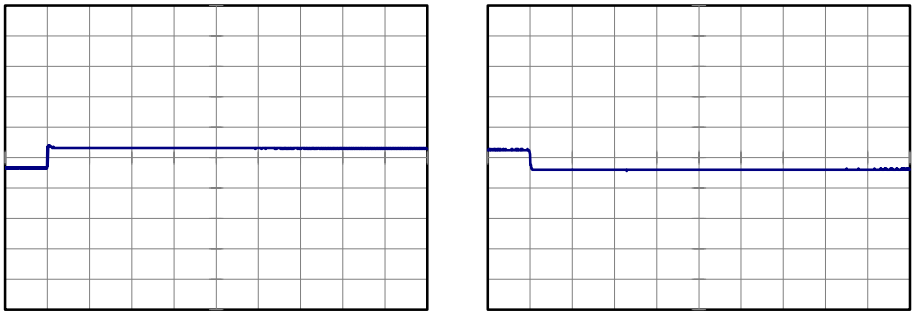


200 mV/div

2 ms/div

2 ms/div

Min.Load (0A)←→
Load 50% (0.065A)



200 mV/div

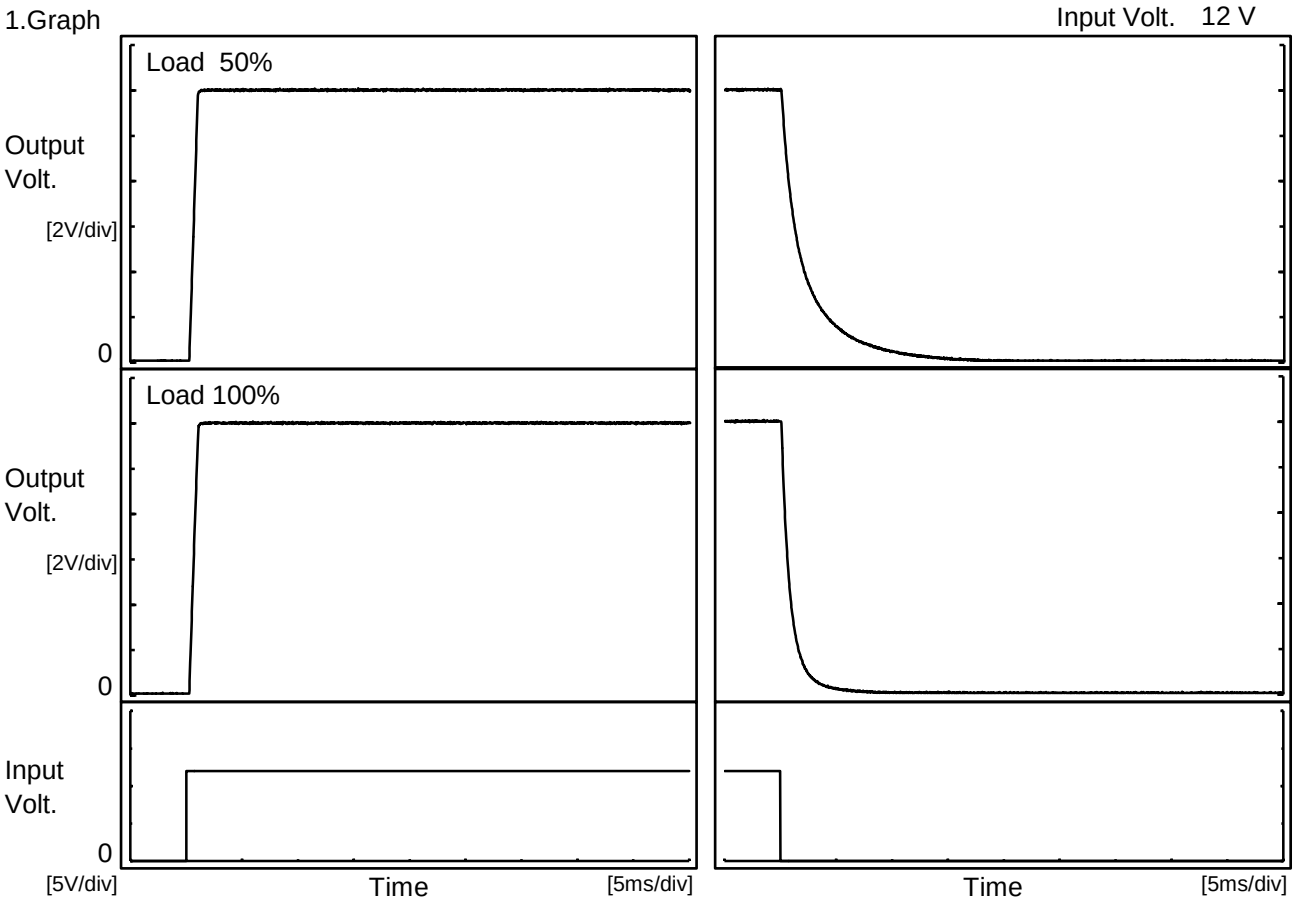
2 ms/div

2 ms/div

COSEL

Model	MHFW31212	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.13A	

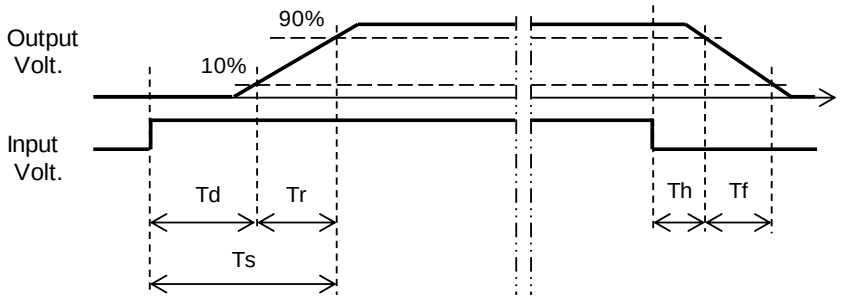
1.Graph



2.Values

[ms]

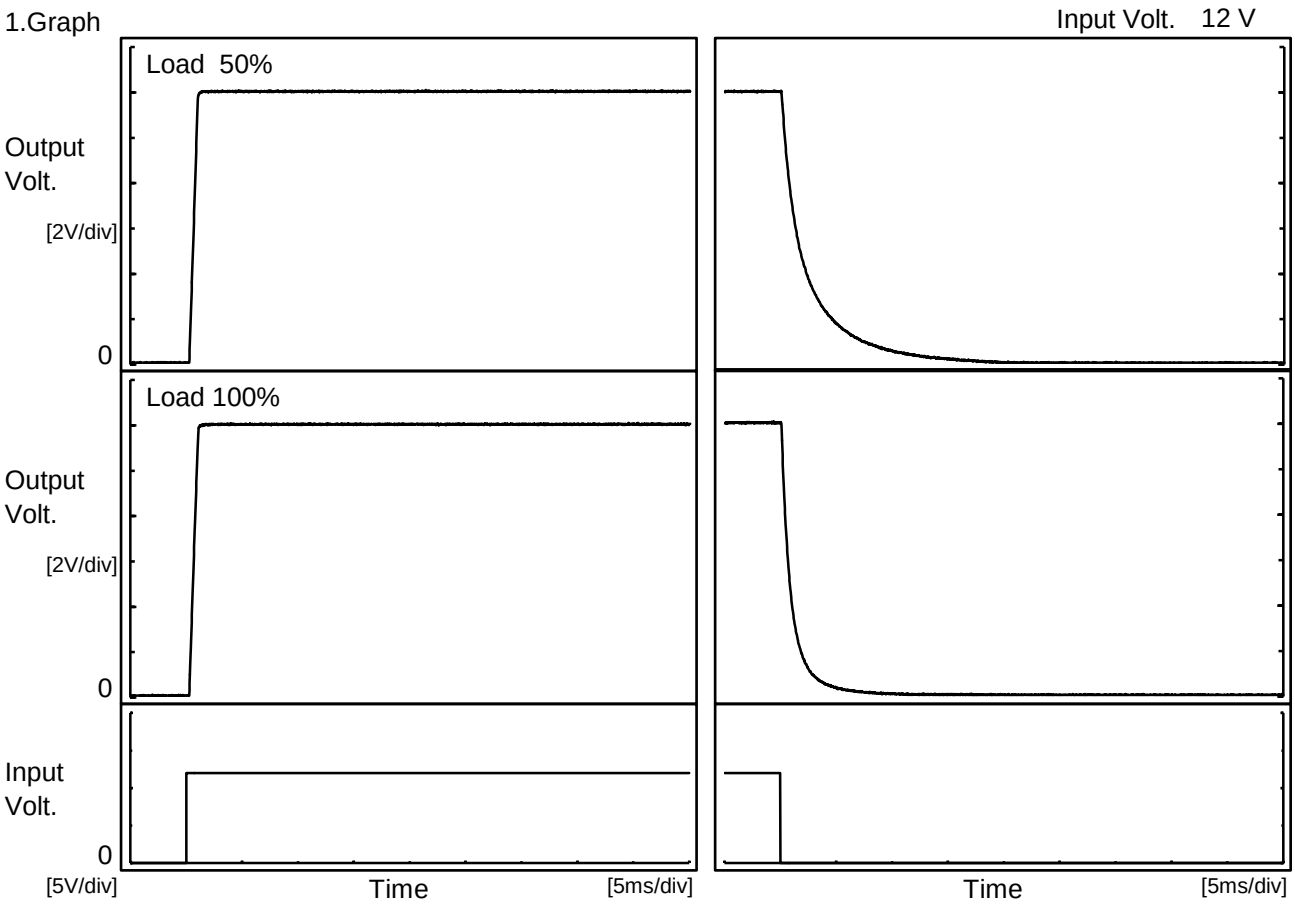
Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.4	0.6	1.0	0.3	5.6
100 %	0.4	0.7	1.1	0.2	1.9



COSEL

Model	MHFW31212	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.13A	

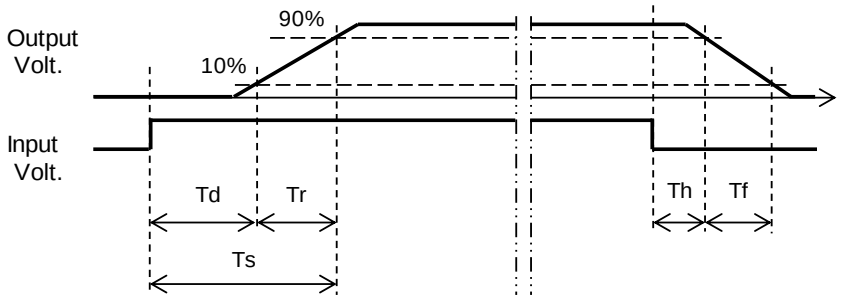
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.4	0.6	1.0	0.3	6.2
100 %	0.4	0.7	1.1	0.2	2.3

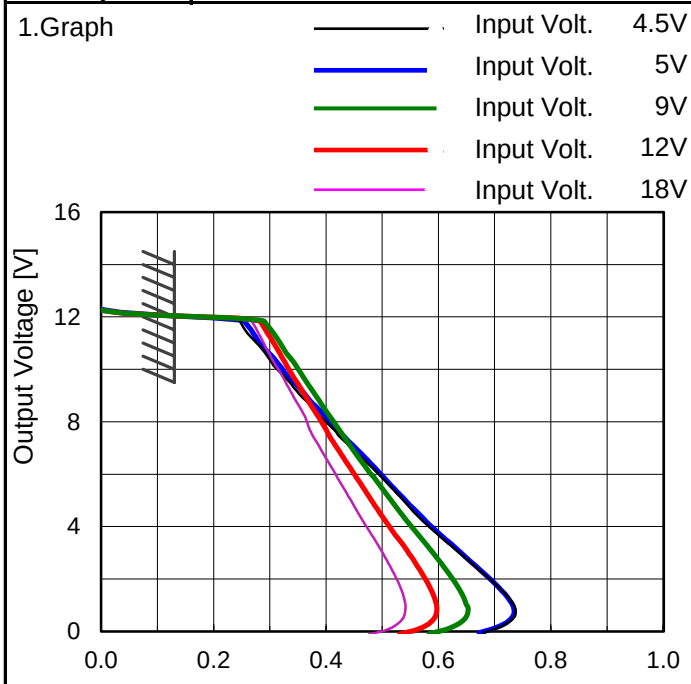


COSEL

Model	MHFW31212
Item	Overcurrent Protection
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



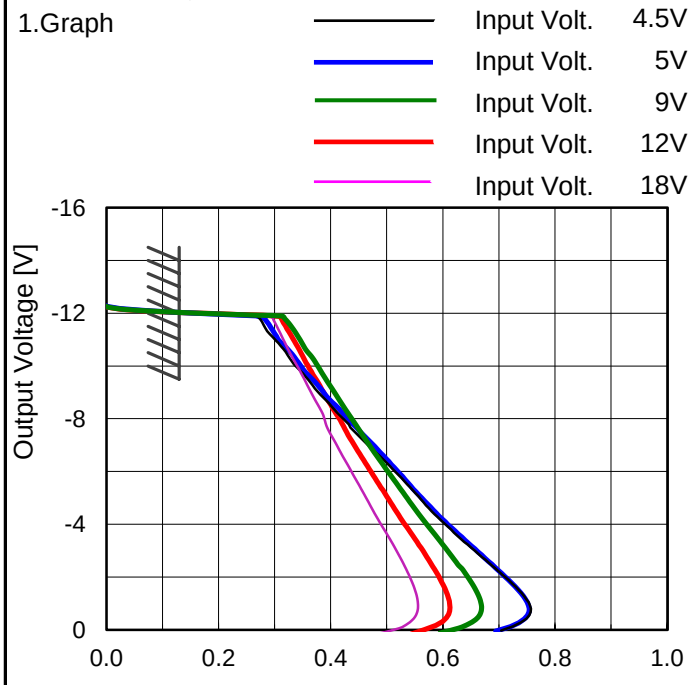
2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
11.4	0.260	0.270	0.307	0.297	0.281
10.8	0.281	0.286	0.322	0.311	0.293
9.6	0.329	0.335	0.361	0.344	0.325
8.4	0.379	0.388	0.399	0.379	0.357
7.2	0.433	0.440	0.438	0.413	0.384
6.0	0.492	0.496	0.479	0.450	0.414
4.8	0.545	0.549	0.523	0.484	0.447
3.6	0.603	0.608	0.563	0.523	0.481
2.4	0.670	0.671	0.608	0.563	0.515
1.2	0.724	0.723	0.645	0.593	0.539
0.0	0.680	0.673	0.584	0.531	0.477
--	-	-	-	-	-

-12V:Rated Load Current

Object	-12V0.13A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-11.4	0.284	0.297	0.332	0.322	0.307
-10.8	0.311	0.316	0.349	0.338	0.320
-9.6	0.355	0.360	0.388	0.369	0.350
-8.4	0.402	0.413	0.423	0.404	0.379
-7.2	0.457	0.463	0.460	0.435	0.403
-6.0	0.511	0.518	0.501	0.469	0.436
-4.8	0.565	0.567	0.541	0.507	0.466
-3.6	0.620	0.628	0.582	0.543	0.501
-2.4	0.688	0.688	0.628	0.579	0.532
-1.2	0.745	0.743	0.665	0.610	0.554
0.0	0.704	0.695	0.595	0.544	0.485
--	-	-	-	-	-

+12V:Rated Load Current

BC-11608

Model	MHFW31212	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	+12V0.13A	

1.Values

Ambient Temperature[℃]	Output Voltage [V]				
	Input Volt. 4.5V	Input Volt. 5V	Input Volt. 9V	Input Volt. 12V	Input Volt. 18V
-40	11.927	11.929	11.930	11.931	11.933
25	12.003	12.004	12.005	12.006	12.007
70	12.017	12.018	12.019	12.019	12.020

-12V:Rated Load Current

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+12V0.13A	

1.Values

Ambient Temperature[℃]	Input Voltage [V]	
	Load 50%	Load 100%
-40	3.6	3.6
25	3.6	3.6
70	3.4	3.5

Model	MHFW31212	
Item	Ambient Temperature Drift	Testing Circuitry Figure A
Object	-12V0.13A	

1.Values

Ambient Temperature[℃]	Output Voltage [V]				
	Input Volt. 4.5V	Input Volt. 5V	Input Volt. 9V	Input Volt. 12V	Input Volt. 18V
-40	-11.942	-11.943	-11.944	-11.944	-11.944
25	-12.018	-12.018	-12.017	-12.017	-12.017
70	-12.033	-12.032	-12.031	-12.030	-12.029

+12V:Rated Load Current

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	-12V0.13A	

1.Values

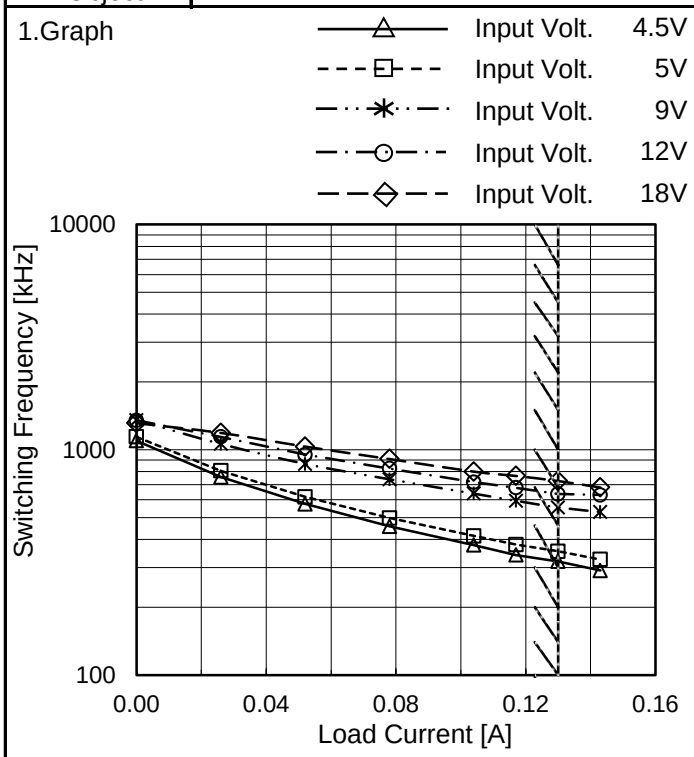
Ambient Temperature[℃]	Input Voltage [V]	
	Load 50%	Load 100%
-40	3.6	3.6
25	3.5	3.6
70	3.4	3.5

COSEL

Model	MHFW31212
Item	Switching frequency (by Load Current)
Object	+/-12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

When load current is low, MH operates intermittently, so switching frequency would not become constant.

2.Values

Load Current [A]	Switching Frequency [kHz]				
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	1097	1141	1354	1350	1313
0.026	757	807	1062	1141	1188
0.052	575	618	866	952	1034
0.078	457	498	740	825	910
0.104	378	415	639	718	800
0.117	341	380	594	679	765
0.130	320	354	555	637	727
0.143	291	326	530	630	680
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--	-	-	-	-	-
--	-	-	-	-	-

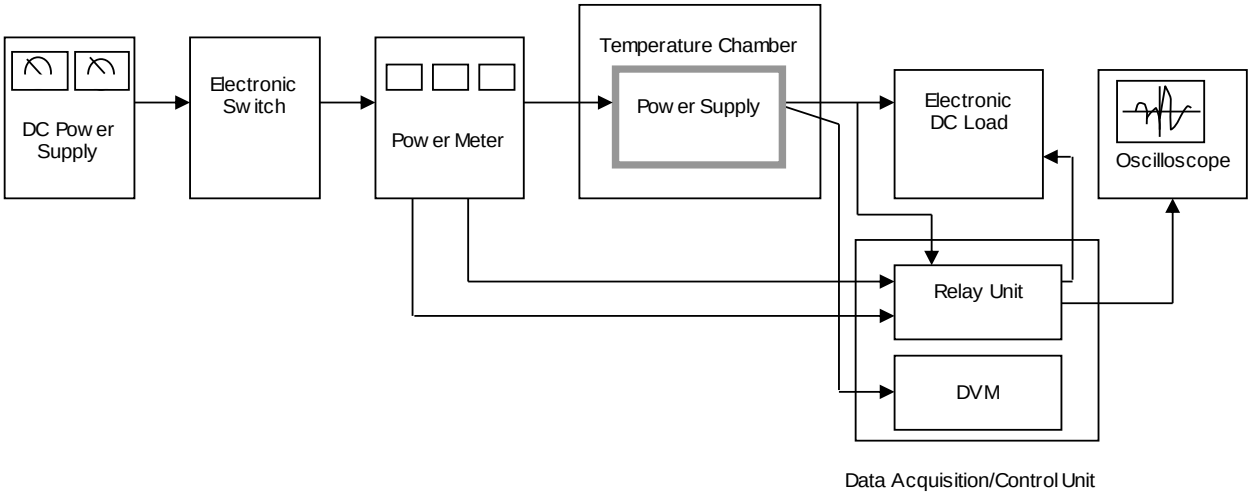

Figure A

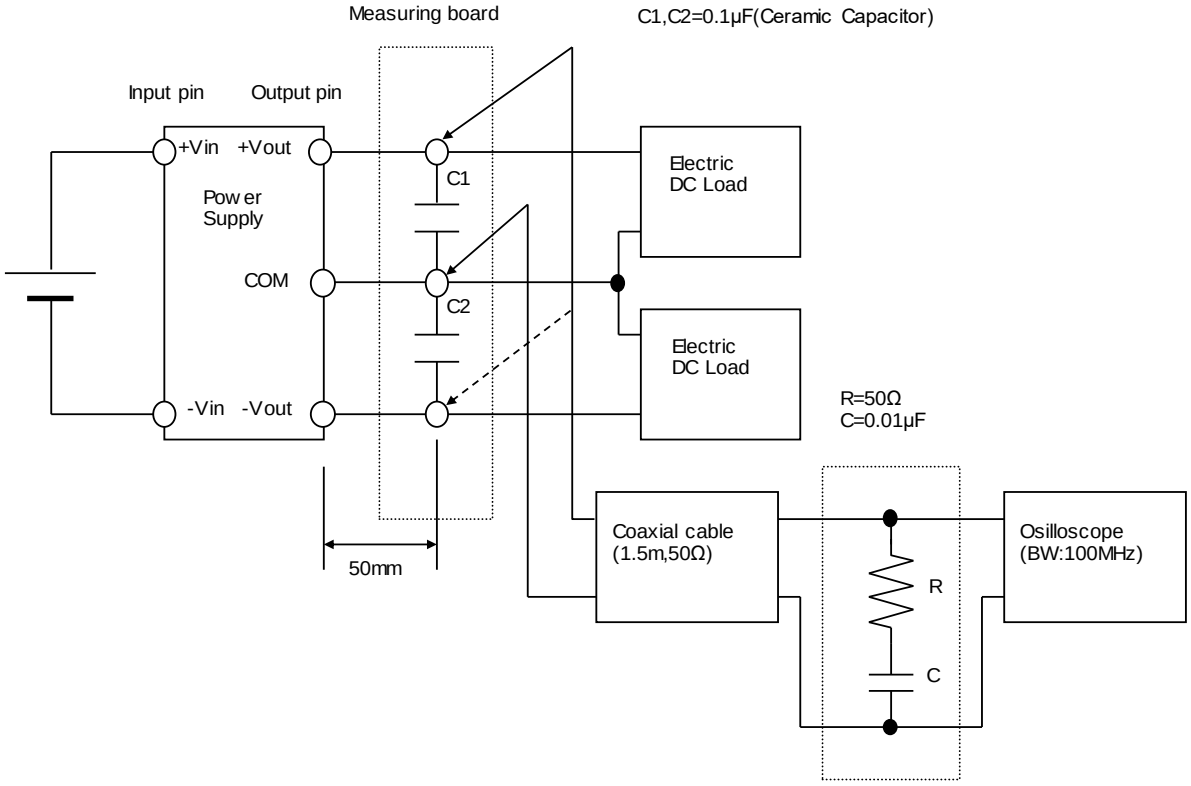

Figure B