COSEL

参考資料

TEST DATA OF MGXW62415

Regulated DC Power Supply
February 19, 2018

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Masumi Kitamura Design Engineer

COSEL CO.,LTD.

参考資料

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参考資料

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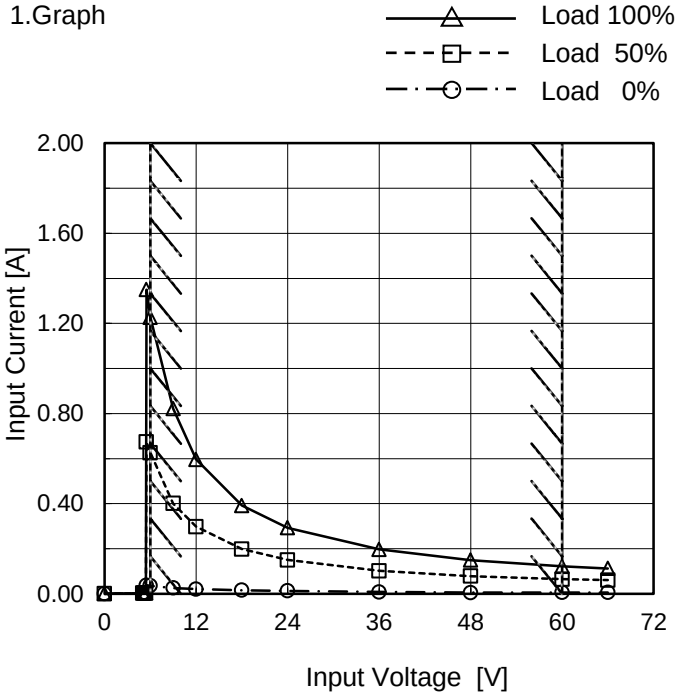
Model	MGXW62415
Item	Input Current (by Input Voltage)
Object	――――――――

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]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
5.0	0.003	0.003	0.003
5.2	0.003	0.003	0.003
5.4	0.003	0.003	0.003
5.5	0.038	0.674	1.350
6.0	0.035	0.626	1.227
9.0	0.026	0.401	0.822
12.0	0.021	0.298	0.596
18.0	0.016	0.198	0.392
24.0	0.013	0.150	0.293
36.0	0.008	0.102	0.197
48.0	0.005	0.078	0.149
60.0	0.006	0.065	0.122
66.0	0.006	0.061	0.112
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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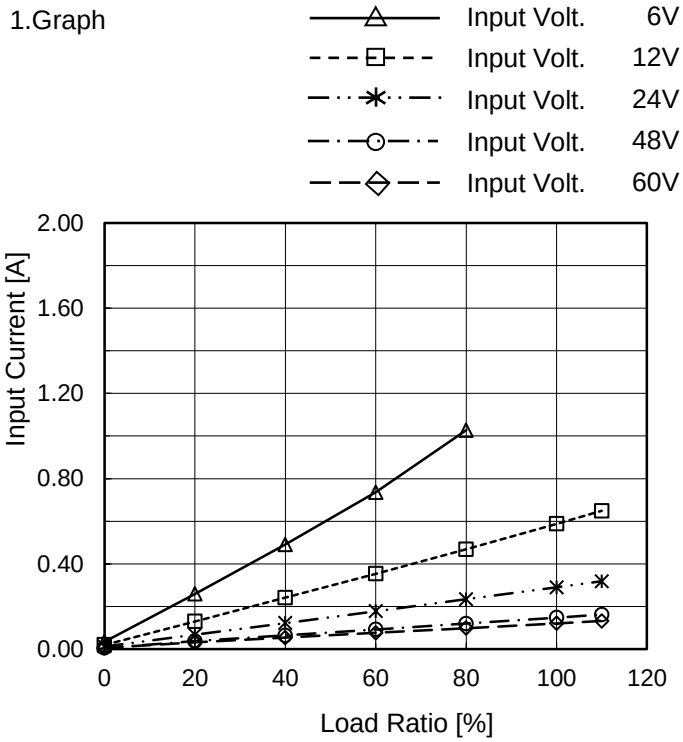
Model	MGXW62415
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Input Current [A]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0	0.035	0.021	0.013	0.005	0.006
20	0.259	0.130	0.068	0.037	0.031
40	0.491	0.242	0.123	0.065	0.054
60	0.736	0.353	0.178	0.092	0.076
80	1.027	0.469	0.234	0.120	0.099
100	- ※	0.588	0.290	0.148	0.121
110	- ※	0.649	0.318	0.162	0.132
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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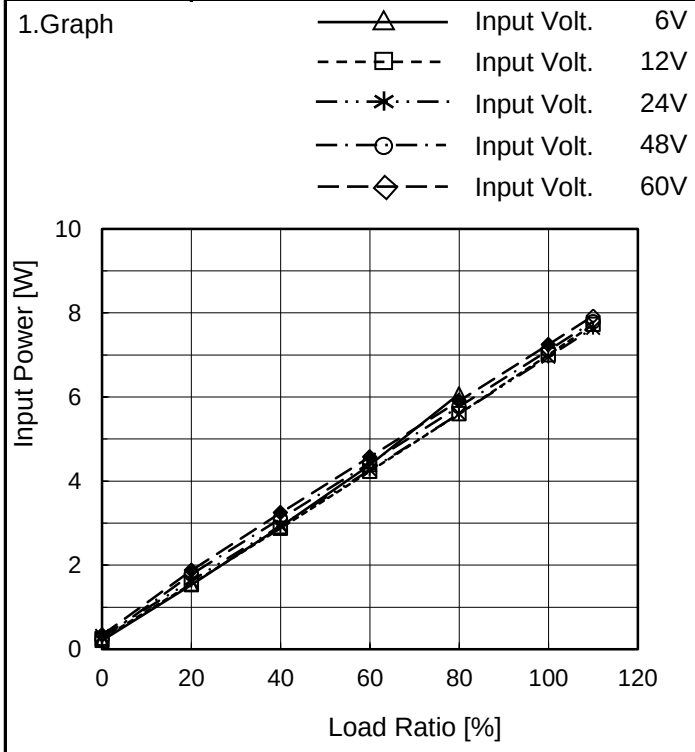
COSEL

Model	MGXW62415
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Input Power [W]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0	0.21	0.25	0.31	0.24	0.34
20	1.53	1.55	1.62	1.78	1.87
40	2.91	2.88	2.94	3.11	3.25
60	4.39	4.23	4.26	4.43	4.57
80	6.08	5.60	5.60	5.77	5.91
100	- ※	7.00	6.96	7.11	7.25
110	- ※	7.72	7.64	7.79	7.92
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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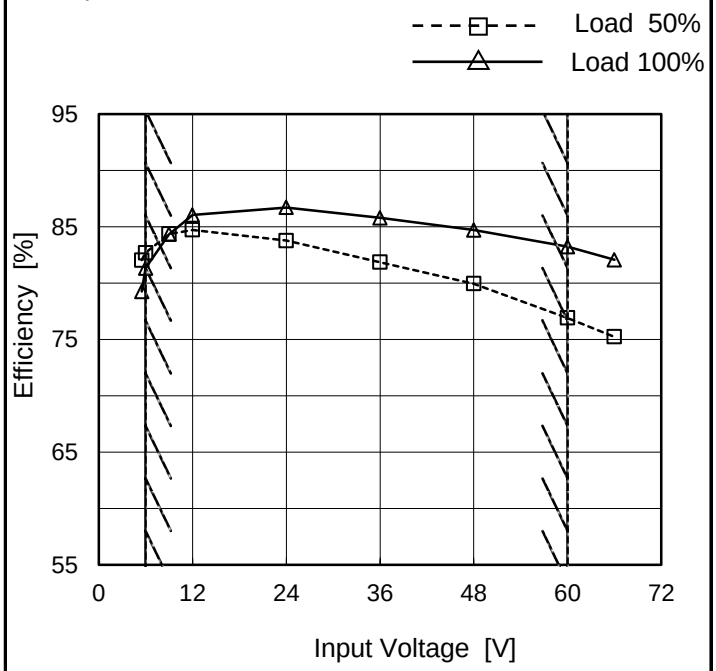
Model	MGXW62415
Item	Efficiency (by Input Voltage)
Object	――――――――――

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%
5.5	82.1	79.3 ※1
6.0	82.7	81.3 ※1
9.0	84.4	84.3
12.0	84.7	86.1
24.0	83.8	86.7
36.0	81.9	85.8
48.0	80.0	84.7
60.0	76.9	83.2
66.0	75.2	82.1

※1:Load 70%

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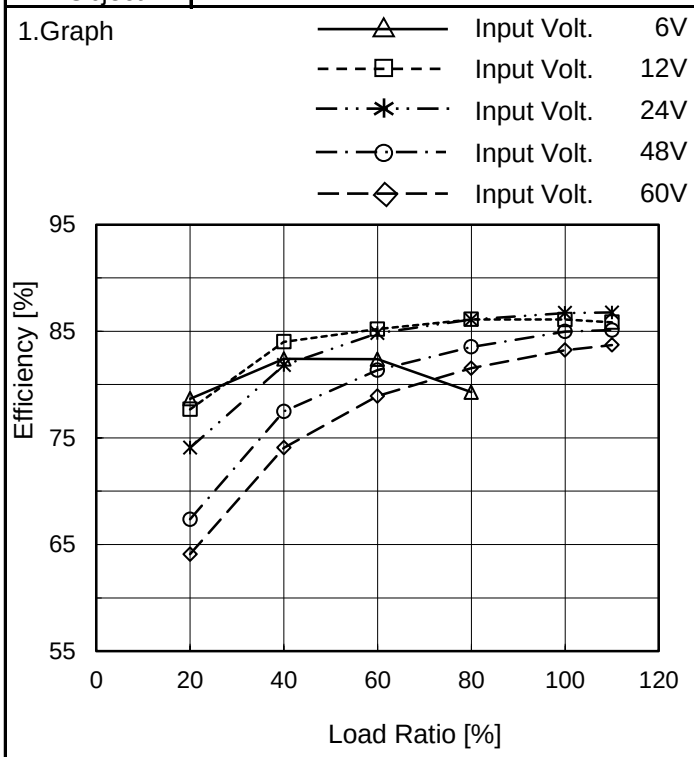
Model	MGXW62415
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Efficiency [%]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0	-	-	-	-	-
20	78.7	77.7	74.1	67.4	64.1
40	82.4	84.0	81.8	77.5	74.1
60	82.4	85.2	84.8	81.4	78.9
80	79.3	86.1	86.1	83.5	81.5
100	- ※	86.1	86.7	85.0	83.2
110	- ※	85.8	86.8	85.1	83.7
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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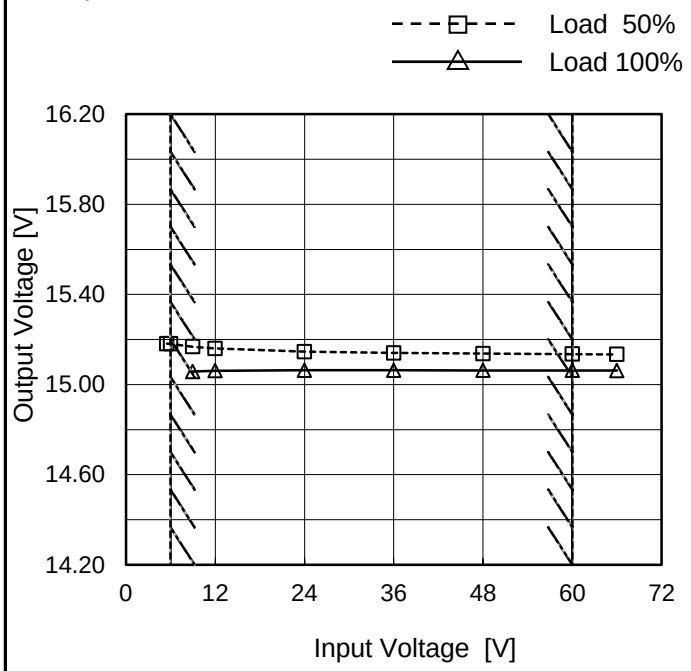
Model	MGXW62415
Item	Line Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



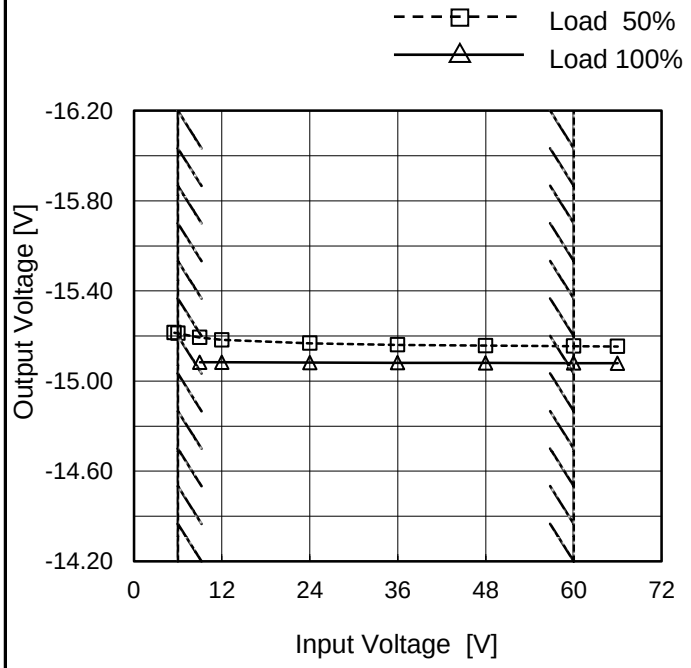
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
5.5	15.181	- ※
6.0	15.180	- ※
9.0	15.168	15.057
12.0	15.160	15.061
24.0	15.146	15.063
36.0	15.140	15.063
48.0	15.137	15.063
60.0	15.135	15.063
66.0	15.134	15.062

-15V: Rated Load Current

Object	-15V0.2A

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%
5.5	-15.215	- ※
6.0	-15.212	- ※
9.0	-15.193	-15.083
12.0	-15.183	-15.083
24.0	-15.168	-15.082
36.0	-15.161	-15.081
48.0	-15.157	-15.081
60.0	-15.155	-15.080
66.0	-15.153	-15.079

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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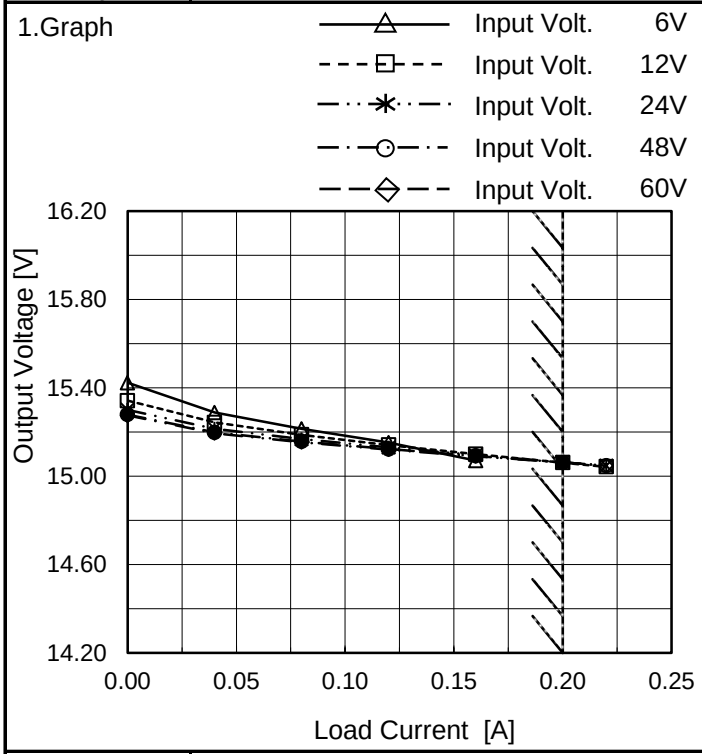
COSEL

Model	MGXW62415
Item	Load Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



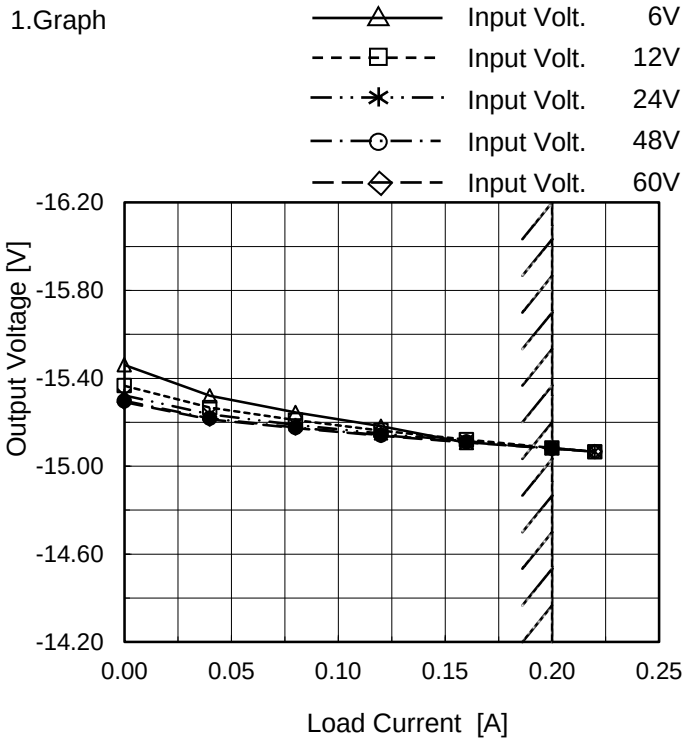
2.Values

Load Current [A]	Output Voltage [V] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	15.423	15.342	15.300	15.279	15.275
0.04	15.289	15.244	15.215	15.199	15.195
0.08	15.214	15.187	15.168	15.157	15.154
0.12	15.152	15.141	15.130	15.123	15.121
0.16	15.071	15.100	15.096	15.092	15.090
0.20	- ※	15.061	15.063	15.062	15.062
0.22	- ※	15.043	15.048	15.048	15.048
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

-15V: Rated Load Current

Object	-15V0.2A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	-15.461	-15.367	-15.322	-15.297	-15.291
0.04	-15.320	-15.267	-15.236	-15.218	-15.213
0.08	-15.245	-15.209	-15.189	-15.176	-15.173
0.12	-15.182	-15.162	-15.149	-15.141	-15.139
0.16	-15.107	-15.120	-15.114	-15.110	-15.108
0.20	- ※	-15.083	-15.082	-15.081	-15.080
0.22	- ※	-15.065	-15.066	-15.067	-15.066
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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Model	MGXW62415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.2A	

Input Volt. 24 V

-15V:Rated load current

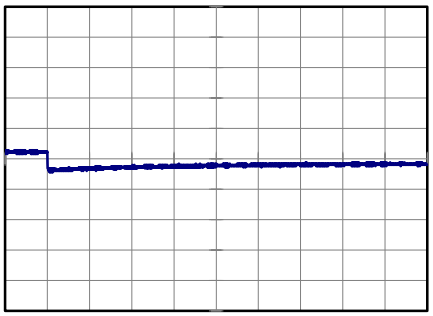
Cycle 100 ms

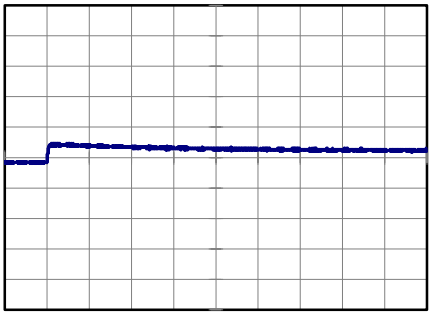
t1,t2 = 100 μs

Load Current

t1 t2

Min.Load (0A)←→
Load 100% (0.2A)

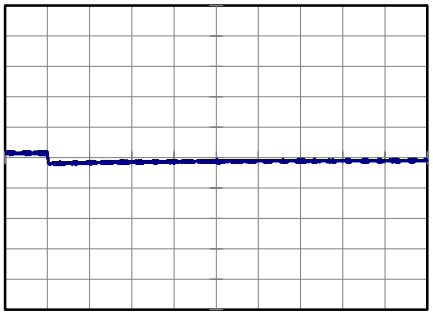


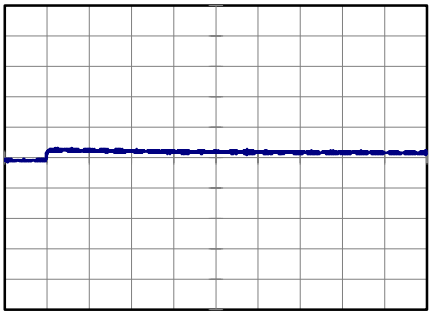


500 mV/div

4 ms/div 4 ms/div

Min.Load (0A)←→
Load 50% (0.1A)

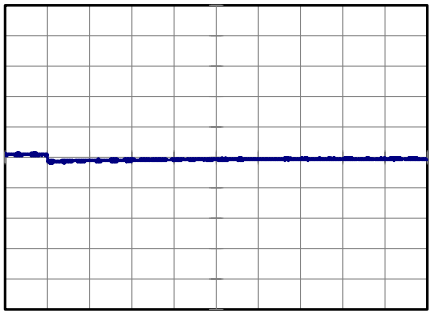


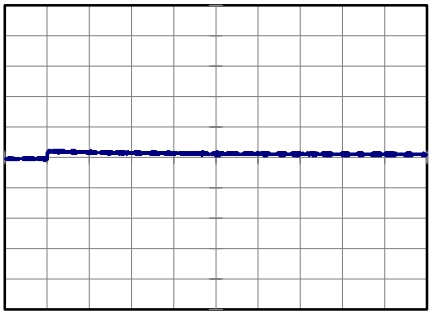


500 mV/div

4 ms/div 4 ms/div

Load 50% (0.1A)←→
Load 100% (0.2A)





500 mV/div

4 ms/div 4 ms/div

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Model	MGXW62415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-15V0.2A	

Input Volt. 24 V

+15V:Rated load current

Cycle 100 ms

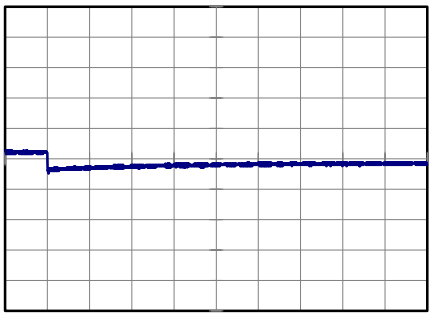
t1,t2 = 100 μs

Load Current

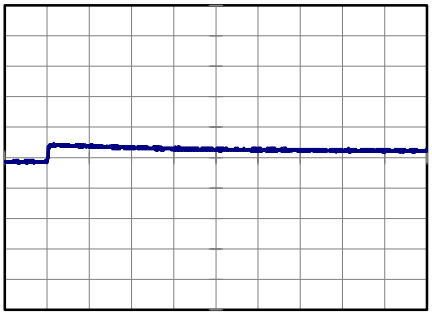
t1 t2

Min.Load (0A)←→
Load 100% (0.2A)

500 mV/div



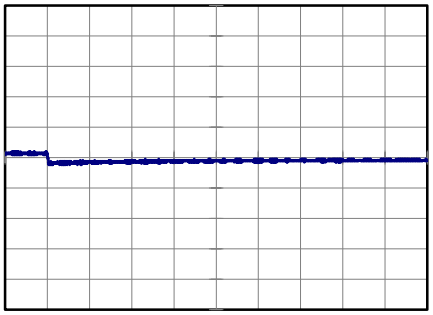
4 ms/div



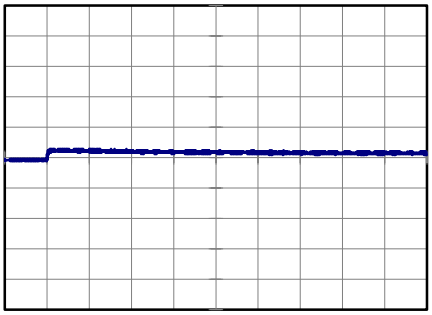
4 ms/div

Min.Load (0A)←→
Load 50% (0.1A)

500 mV/div



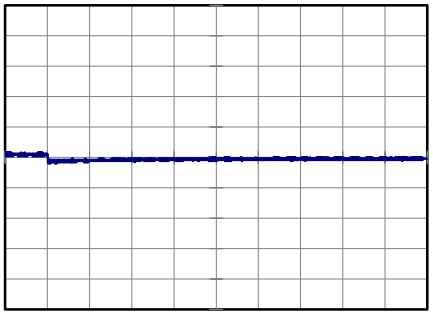
4 ms/div



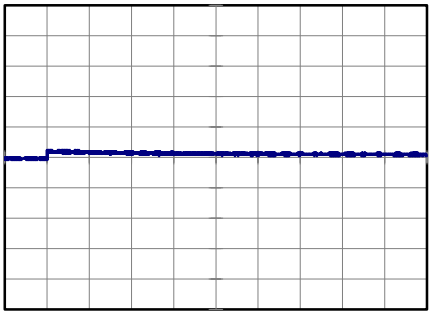
4 ms/div

Load 50% (0.1A)←→
Load 100% (0.2A)

500 mV/div



4 ms/div



4 ms/div

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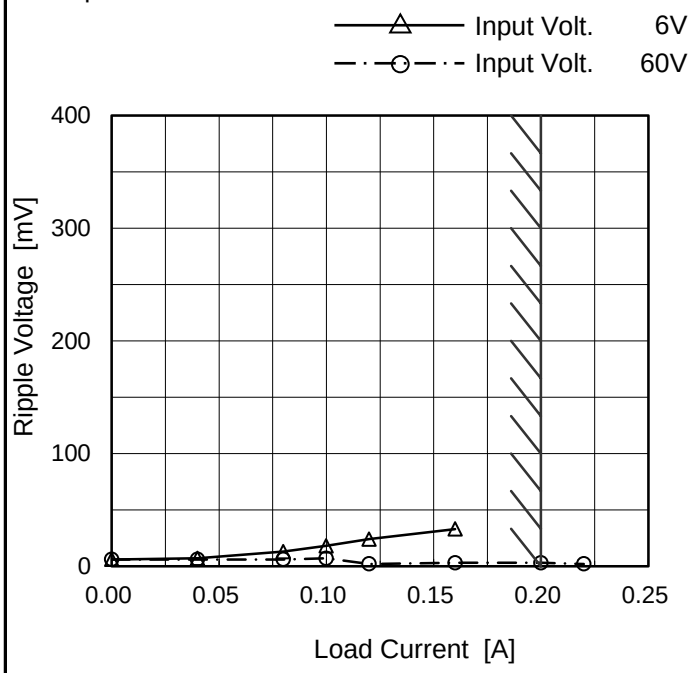
Model	MGXW62415
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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.

Ripple [mVp-p]

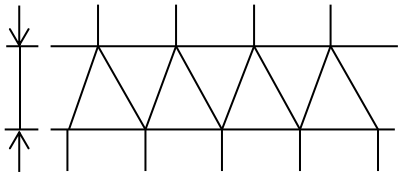


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	6	6
0.04	7	6
0.08	13	6
0.10	18	7
0.12	24	2
0.16	33	3
0.20	- ※	3
0.22	- ※	2
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

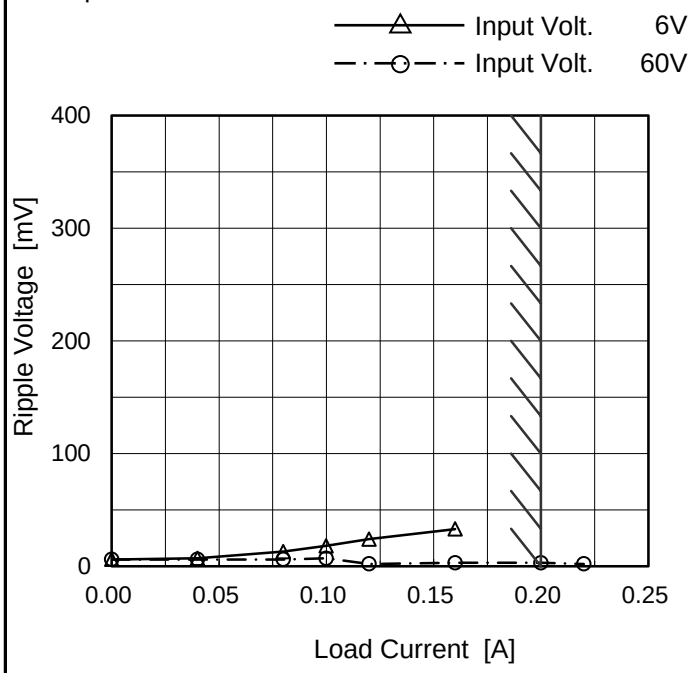
BC-11273

COSEL

Model	MGXW62415
Item	Ripple Voltage (by Load Current)
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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.

Ripple [mVp-p]

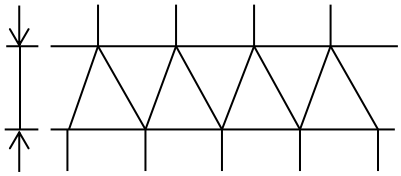


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	6	6
0.04	7	6
0.08	13	6
0.10	18	7
0.12	24	2
0.16	33	3
0.20	- ※	3
0.22	- ※	2
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

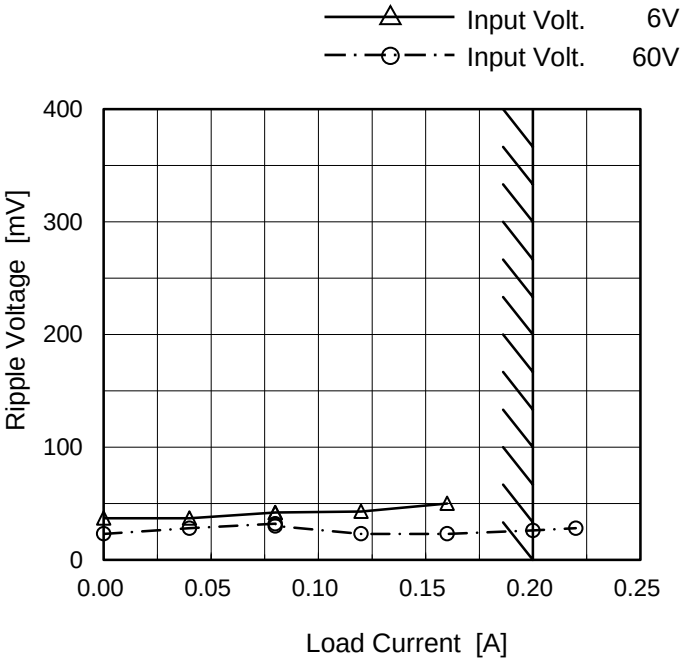
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXW62415
Item	Ripple-Noise
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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]

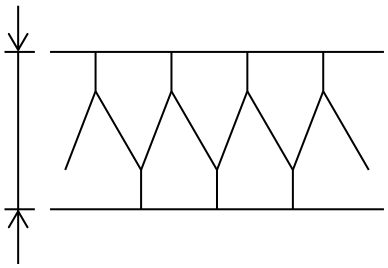


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	37	23
0.04	37	28
0.08	42	32
0.08	42	30
0.12	43	23
0.16	50	23
0.20	- ※	26
0.22	- ※	28
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

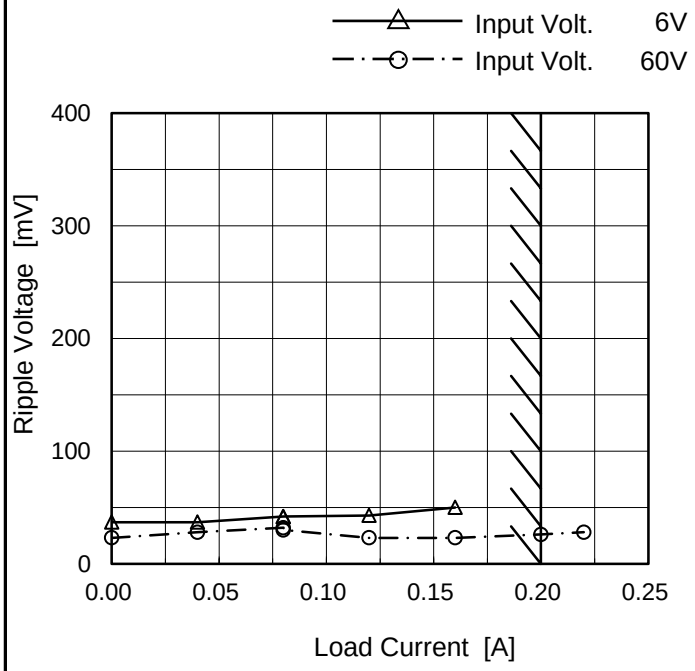
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXW62415
Item	Ripple-Noise
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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]

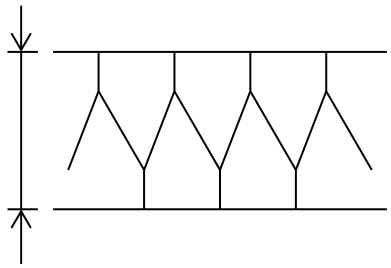


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	37	23
0.04	37	28
0.08	42	32
0.08	42	30
0.12	43	23
0.16	50	23
0.20	- ※	26
0.22	- ※	28
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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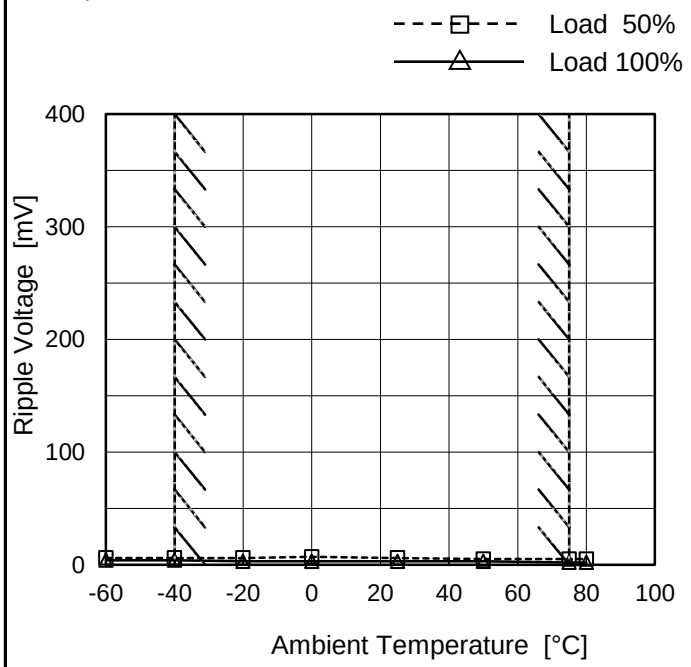
COSEL

Model	MGXW62415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

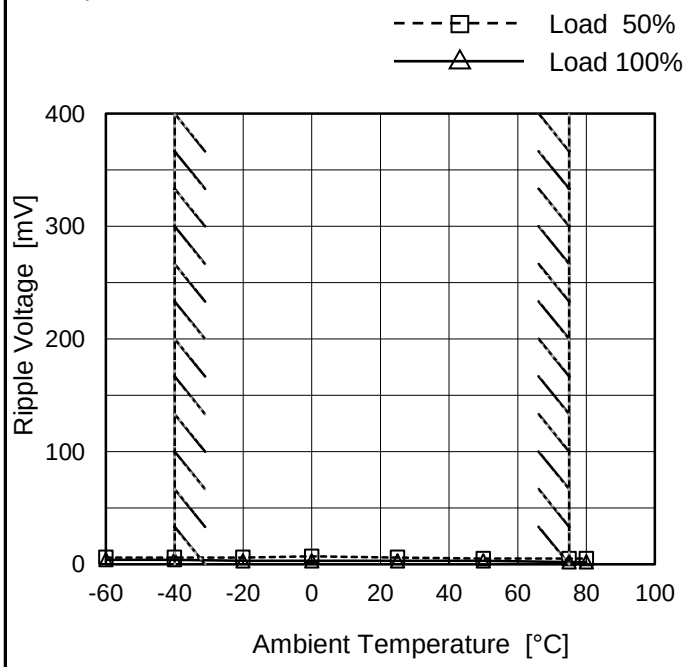
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	6	4
-40	6	4
-20	6	3
0	7	3
25	6	3
50	5	3
75	5	2
80	5	2
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

Object	-15V0.2A

1.Graph



Input Volt. 24V

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	6	4
-40	6	4
-20	6	3
0	7	3
25	6	3
50	5	3
75	5	2
80	5	2
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

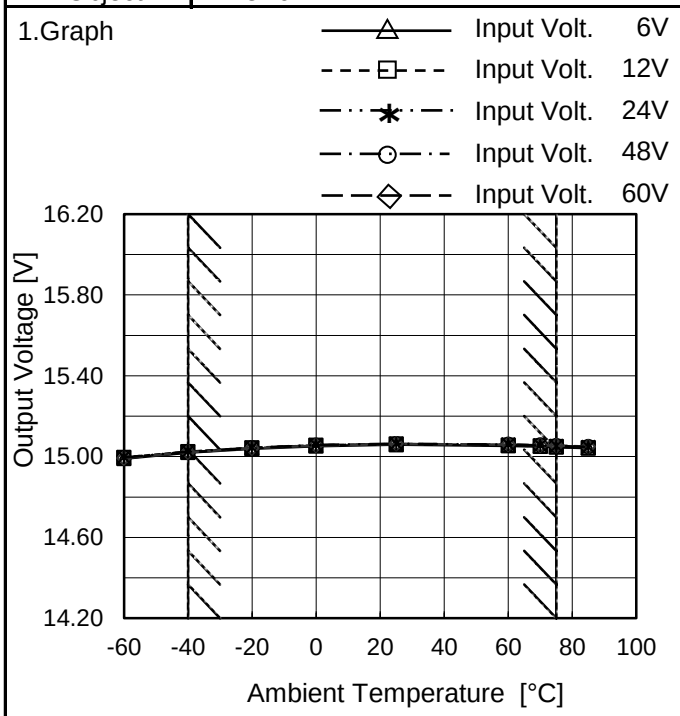
COSEL

Model	MGXW62415
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +15V0.2A

1.Graph



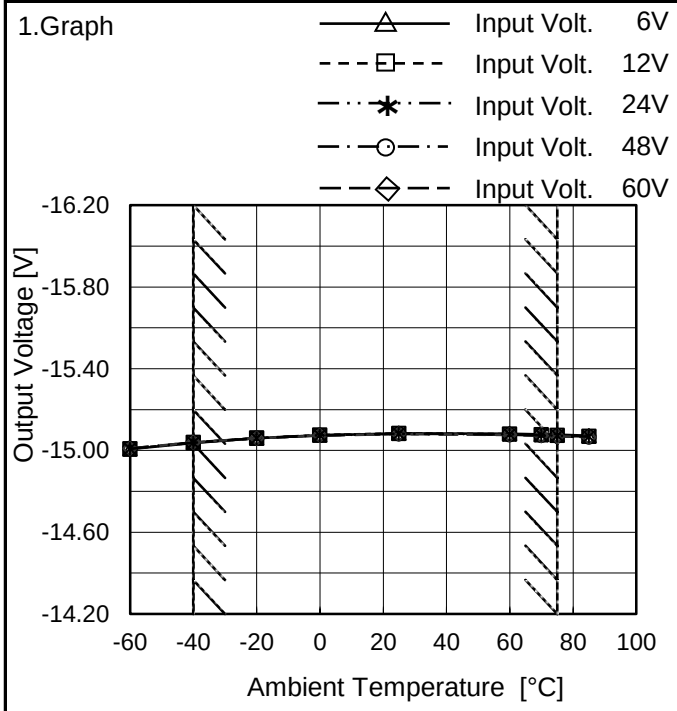
2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
-60	14.990	14.995	14.997	14.993	14.992
-40	15.020	15.024	15.025	15.022	15.021
-20	15.039	15.043	15.044	15.042	15.041
0	15.051	15.056	15.057	15.056	15.055
25	15.059	15.062	15.064	15.063	15.063
60	15.053	15.056	15.059	15.060	15.060
70	15.050	15.052	15.055	15.056	15.056
75	15.047	15.049	15.053	15.054	15.054
85	15.042	15.043	15.048	15.050	15.049
--	-	-	-	-	-
--	-	-	-	-	-

-15V: Rated Load Current

Object -15V0.2A

1.Graph



2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
-60	-15.006	-15.008	-15.008	-15.010	-15.010
-40	-15.037	-15.039	-15.038	-15.039	-15.039
-20	-15.059	-15.060	-15.060	-15.060	-15.060
0	-15.075	-15.075	-15.074	-15.074	-15.073
25	-15.084	-15.083	-15.082	-15.081	-15.080
60	-15.082	-15.080	-15.079	-15.077	-15.076
70	-15.079	-15.077	-15.075	-15.073	-15.072
75	-15.077	-15.074	-15.072	-15.070	-15.070
85	-15.072	-15.069	-15.068	-15.065	-15.064
--	-	-	-	-	-
--	-	-	-	-	-

+15V: Rated Load Current

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

Note: In case of input Volt. 6V, Load 70%.
Other case Load 100%.

COSEL

Model	MGXW62415	
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 - 75°C

Input Voltage : 6 - 60V

Load Current (AVR 1) : 0 - 0.2A (AVR 2) : 0 - 0.2A

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

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

2.Values

Object	+15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	75	6	0	15.431	±334	±2.2
Minimum Voltage	75	6	0.14 ※	14.763		

Object	-15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	75	6	0	-15.468	±341	±2.3
Minimum Voltage	75	6	0.14 ※	-14.786		

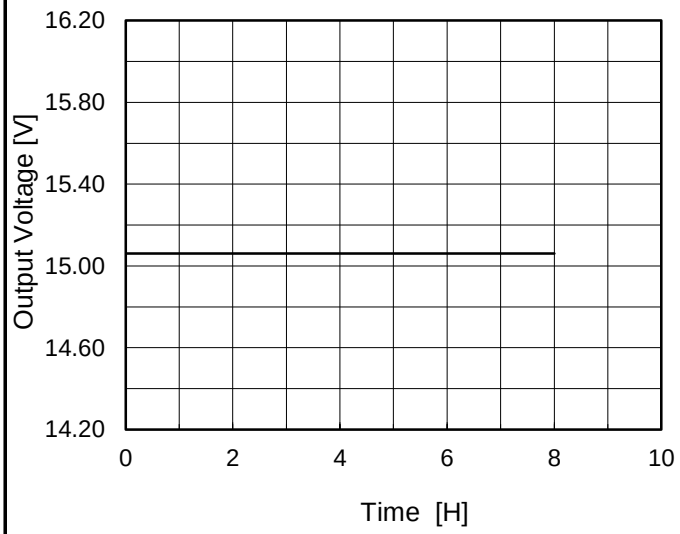
※: Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXW62415
Item	Time Lapse Drift
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

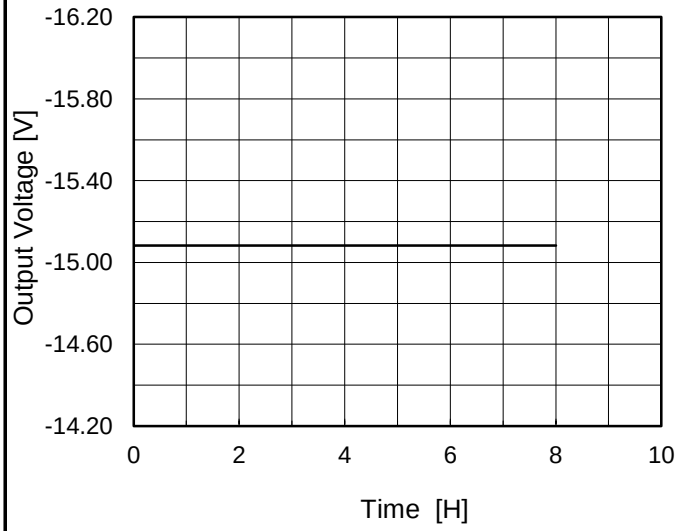
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.059
0.5	15.061
1.0	15.061
2.0	15.061
3.0	15.061
4.0	15.061
5.0	15.061
6.0	15.061
7.0	15.061
8.0	15.061

-15V: Rated Load Current

Object	-15V0.2A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.080
0.5	-15.083
1.0	-15.083
2.0	-15.083
3.0	-15.083
4.0	-15.083
5.0	-15.083
6.0	-15.083
7.0	-15.083
8.0	-15.083

+15V: Rated Load Current

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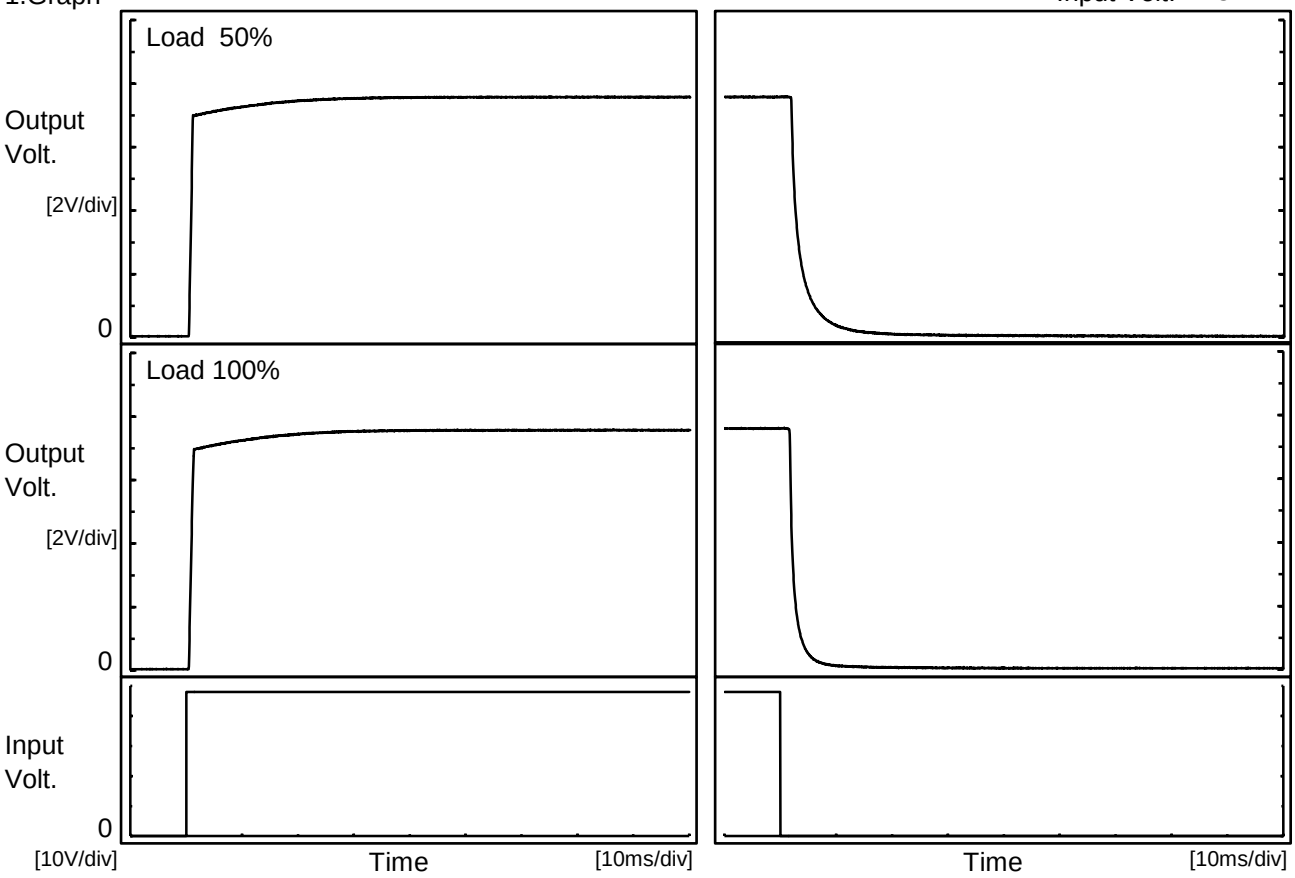
COSEL

Model	MGXW62415	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.2A	

1.Graph

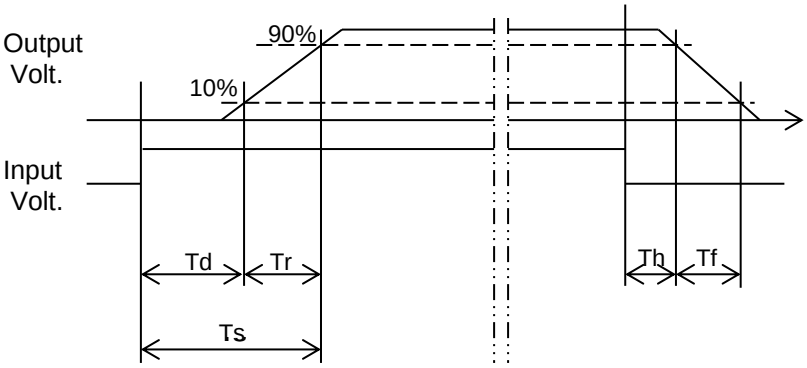
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.6	0.6	1.2	2.0	4.9
100 %	0.6	0.8	1.4	1.8	2.3



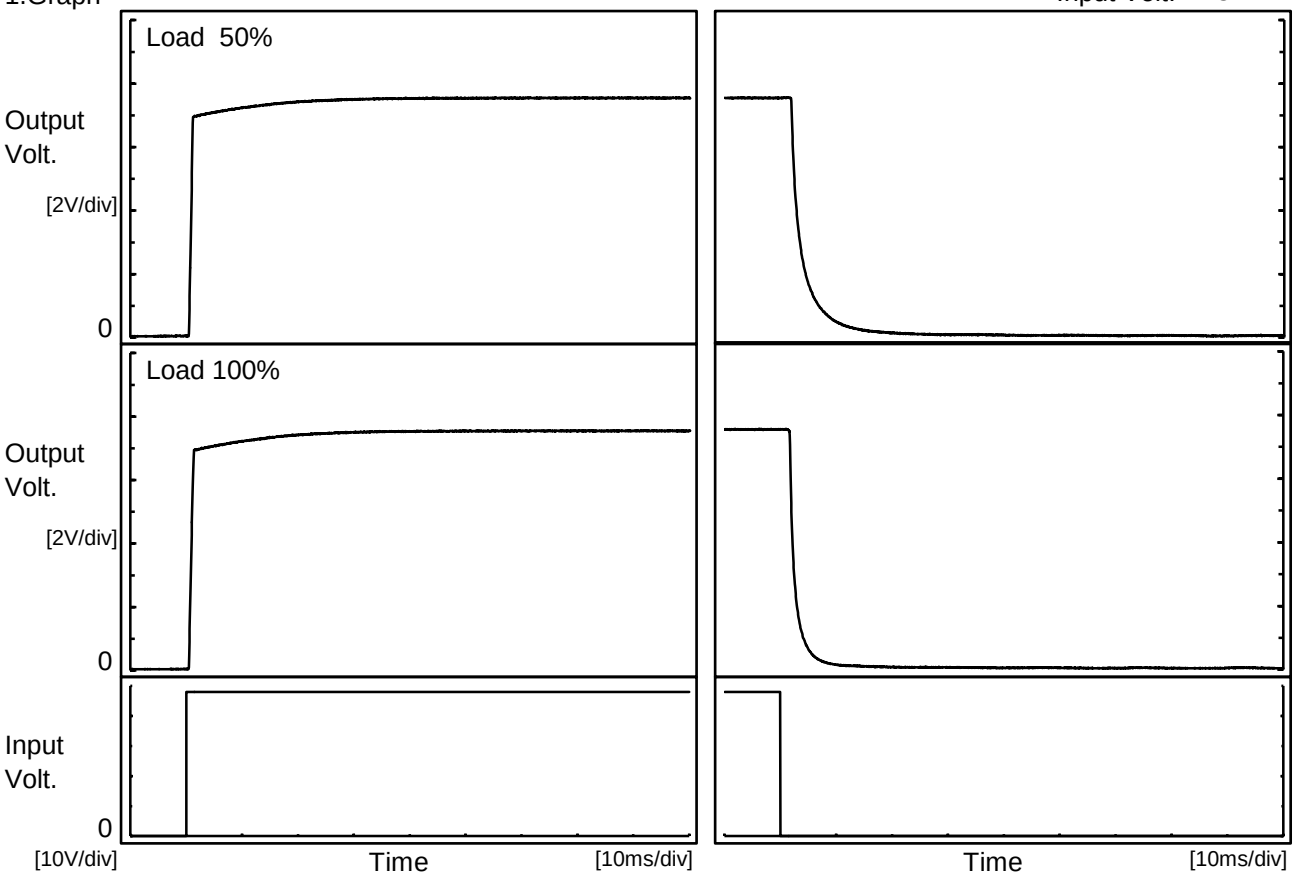
COSEL

Model	MGXW62415
Item	Rise and Fall Time
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

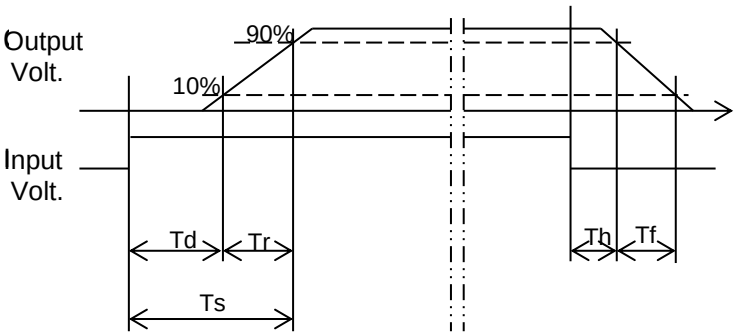
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.6	0.7	1.3	2.1	5.9
100 %	0.6	0.8	1.4	1.8	2.8



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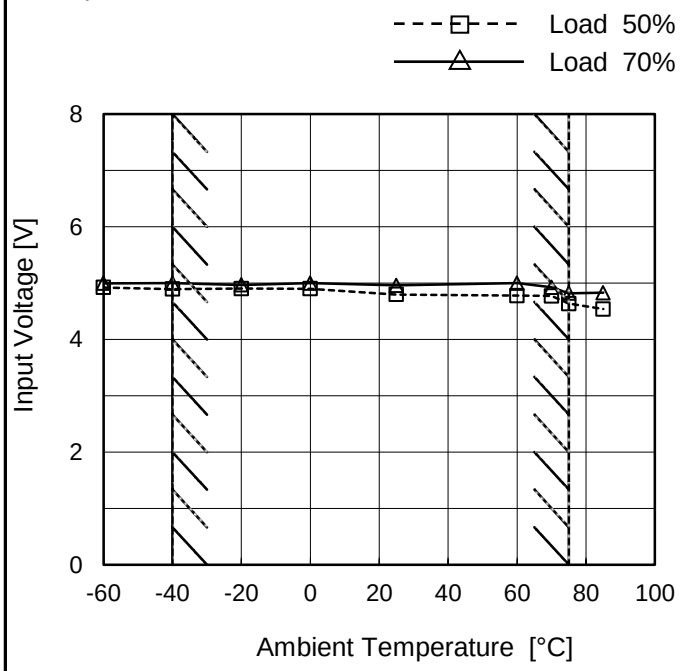
COSEL

Model	MGXW62415
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +15V0.2A

1.Graph



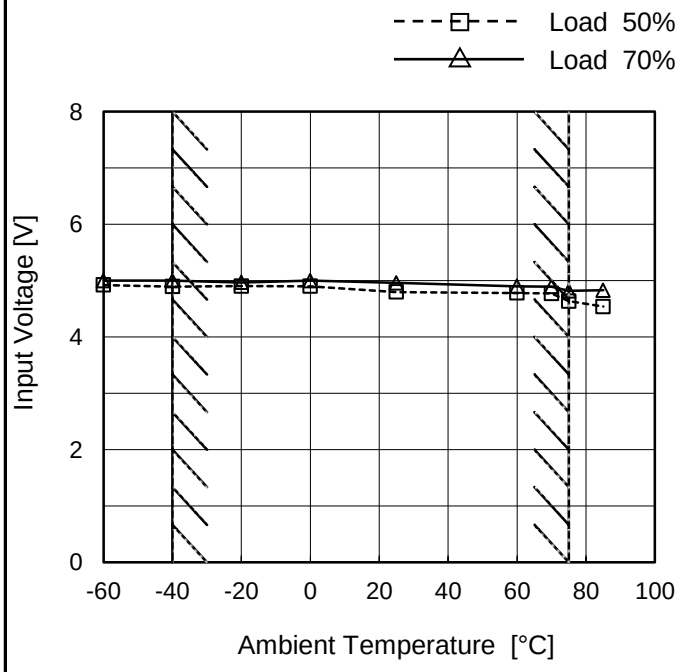
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 70%
-60	5.0	5.0
-40	4.9	5.0
-20	4.9	5.0
0	4.9	5.0
25	4.8	5.0
60	4.8	5.0
70	4.8	5.0
75	4.7	4.9
85	4.6	4.9
--	-	-
--	-	-

-15V: Rated Load Current

Object: -15V0.2A

1.Graph



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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 70%
-60	5.0	5.0
-40	4.9	5.0
-20	4.9	5.0
0	4.9	5.0
25	4.8	5.0
60	4.8	4.9
70	4.8	4.9
75	4.7	4.9
85	4.6	4.9
--	-	-
--	-	-

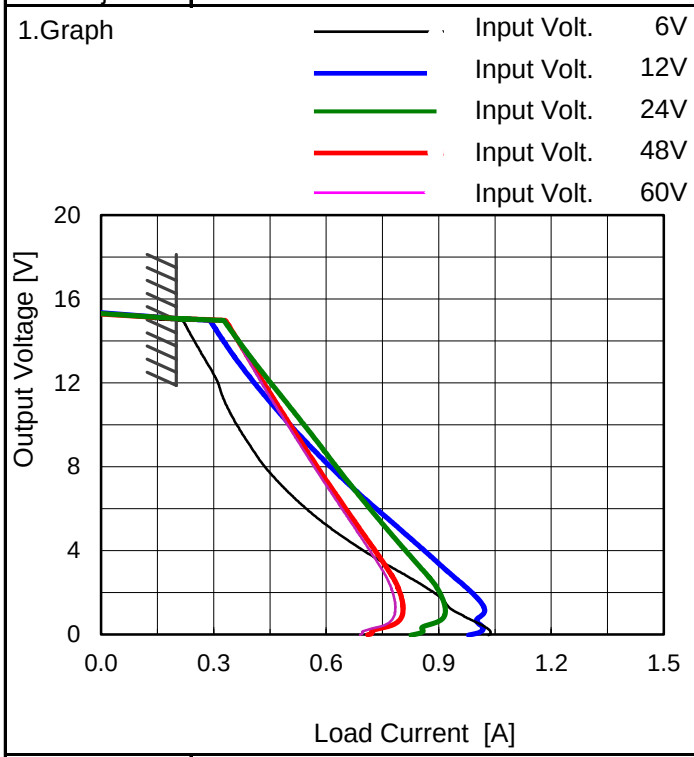
+15V: Rated Load Current

COSEL

Model	MGXW62415
Item	Overcurrent Protection
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



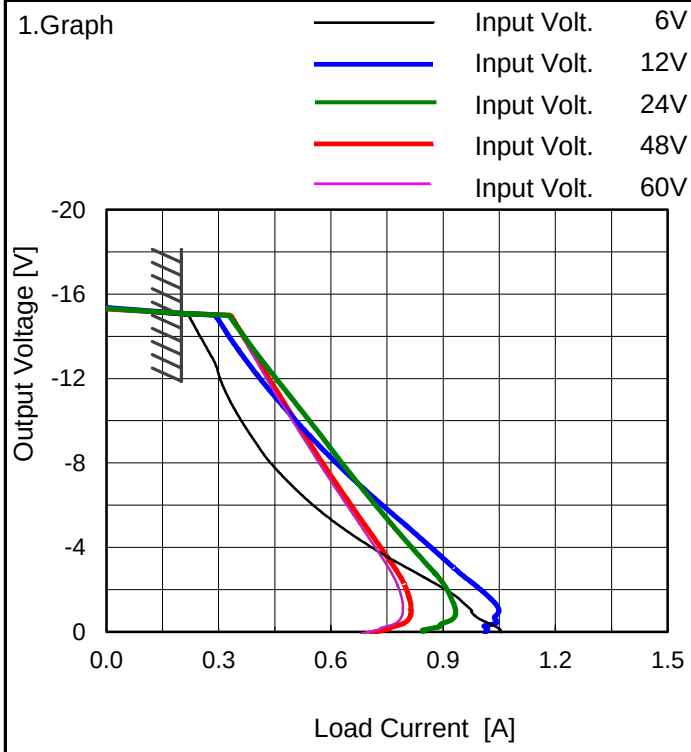
2.Values

Output Voltage [V]	Load Current [A] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
14.3	0.241	0.316	0.355	0.357	0.355
13.5	0.263	0.345	0.386	0.381	0.379
12.0	0.310	0.407	0.452	0.432	0.427
10.5	0.346	0.477	0.518	0.486	0.479
9.0	0.396	0.554	0.583	0.538	0.531
7.5	0.459	0.637	0.647	0.594	0.585
6.0	0.545	0.731	0.715	0.652	0.641
4.5	0.656	0.828	0.787	0.710	0.698
3.0	0.793	0.922	0.860	0.767	0.752
1.5	0.918	1.013	0.914	0.803	0.784
0.0	1.032	0.979	0.826	0.710	0.690
--	-	-	-	-	-

-15V: Rated Load Current

Object	-15V0.2A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A] Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
-14.3	0.243	0.318	0.357	0.358	0.355
-13.5	0.266	0.346	0.387	0.382	0.378
-12.0	0.304	0.410	0.452	0.434	0.427
-10.5	0.344	0.479	0.519	0.487	0.479
-9.0	0.397	0.557	0.586	0.541	0.533
-7.5	0.463	0.642	0.651	0.594	0.586
-6.0	0.552	0.736	0.719	0.653	0.643
-4.5	0.665	0.835	0.790	0.712	0.699
-3.0	0.805	0.930	0.865	0.772	0.754
-1.5	0.945	1.031	0.923	0.811	0.790
0.0	1.055	1.011	0.847	0.708	0.681
--	-	-	-	-	-

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

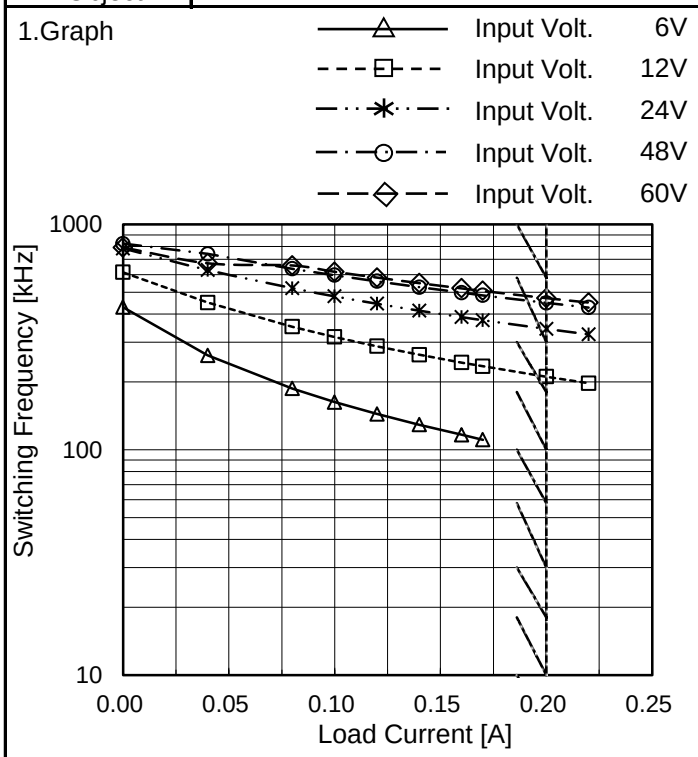
BC-11273

COSEL

Model	MGXW62415
Item	Switching frequency (by Load Current)
Object	+/-15V0.2A

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, MG operates intermittently, so switching frequency would not become constant.

2.Values

Load Current [A]	Input Current [A]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	429	613	783	822	791
0.04	263	450	628	741	673
0.08	187	352	522	636	658
0.10	163	317	480	596	617
0.12	144	288	445	560	581
0.14	129	264	415	527	549
0.16	117	244	388	498	521
0.17	111	235	376	485	507
0.20	- ※	211	344	449	471
0.22	- ※	198	325	428	451
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

BC-11273

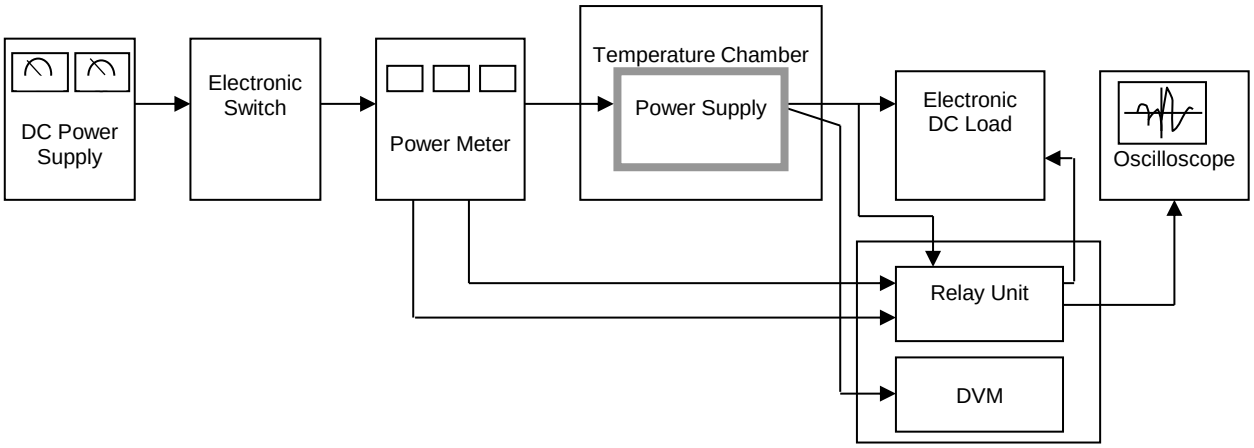


Figure A

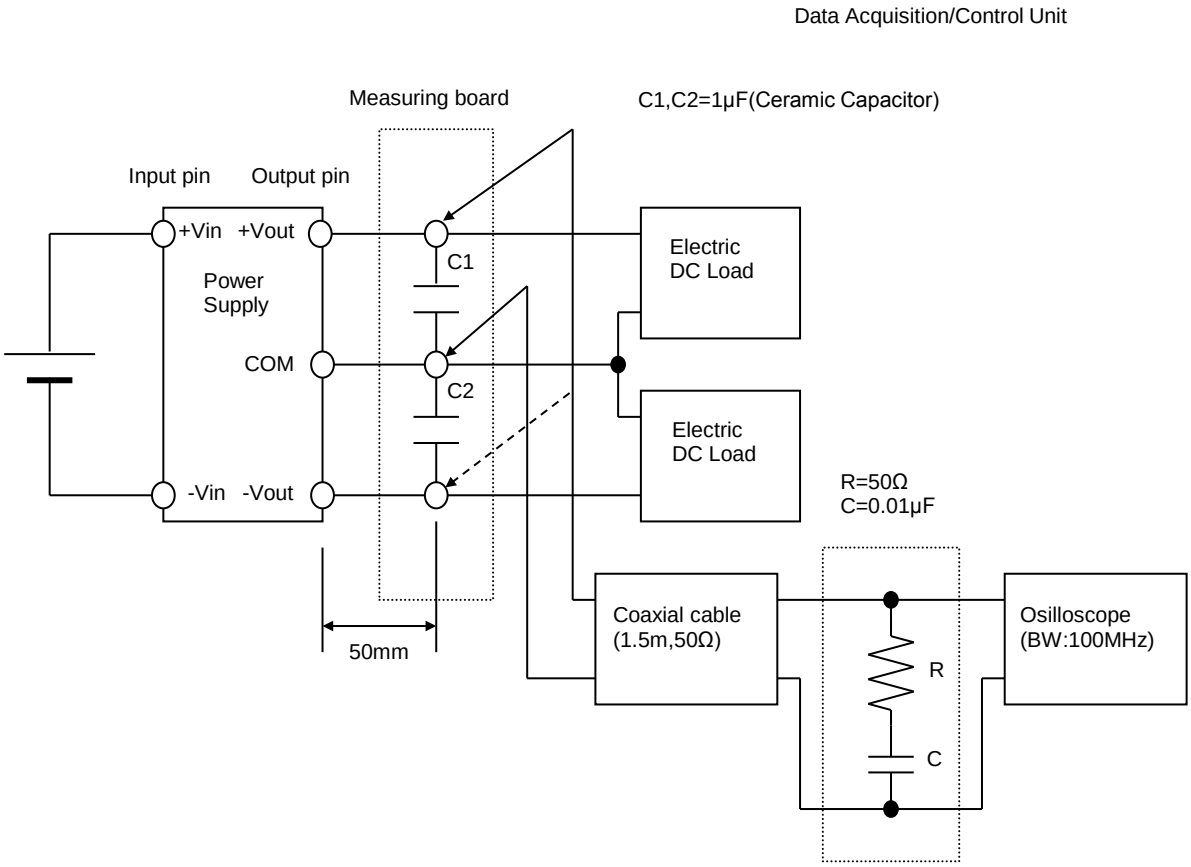


Figure B（Ripple and Ripple noise Characteristic）