参考資料

TEST DATA OF MGXW1R52415

Regulated DC Power Supply
February 19, 2018

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COSEL CO.,LTD.

参考資料

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(Final Page 23)

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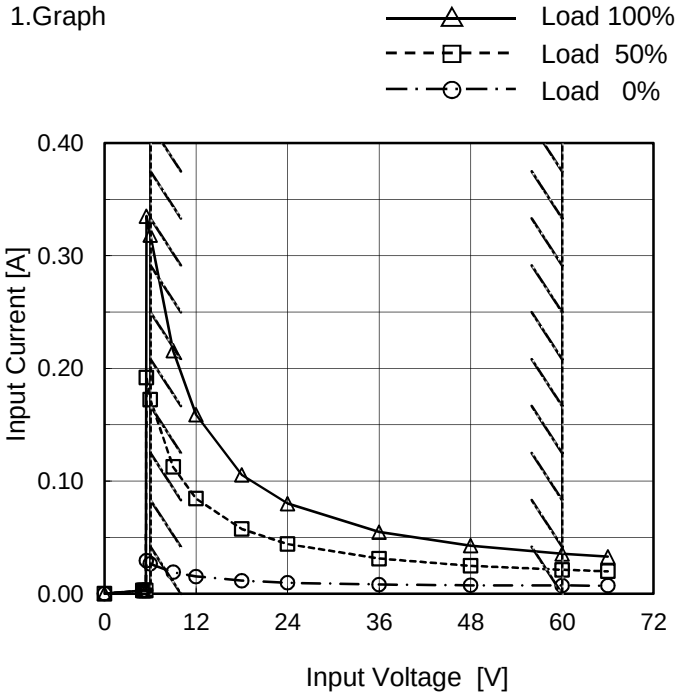
Model	MGXW1R52415
Item	Input Current (by Input Voltage)
Object	――――――

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	0.029	0.192	0.335
6.0	0.027	0.172	0.319
9.0	0.019	0.113	0.216
12.0	0.015	0.084	0.159
18.0	0.012	0.058	0.105
24.0	0.010	0.044	0.080
36.0	0.008	0.031	0.055
48.0	0.007	0.025	0.043
60.0	0.007	0.021	0.035
66.0	0.007	0.020	0.033
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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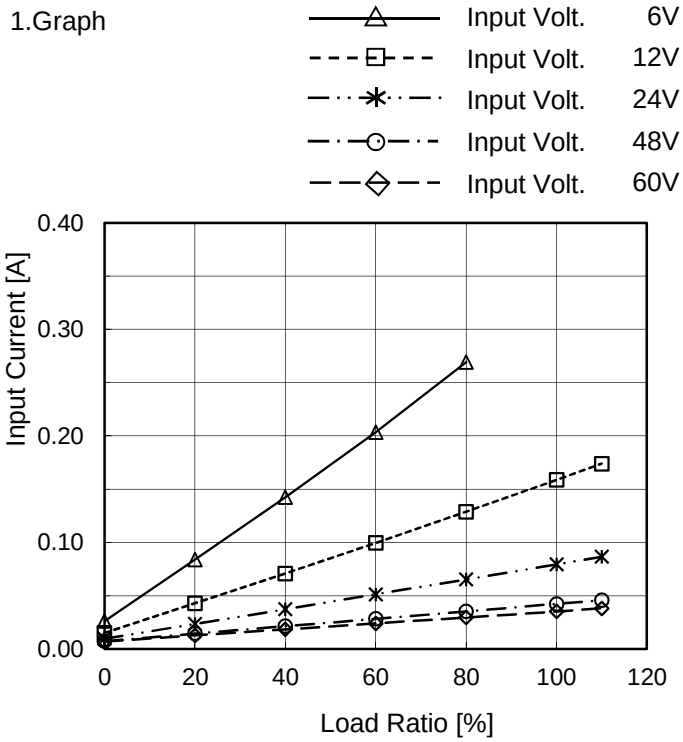
COSEL

Model	MGXW1R52415
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	0.026	0.015	0.010	0.007	0.007
20	0.084	0.043	0.024	0.015	0.013
40	0.143	0.071	0.037	0.021	0.019
60	0.204	0.100	0.051	0.028	0.024
80	0.269	0.129	0.065	0.035	0.030
100	- ※	0.159	0.080	0.042	0.035
110	- ※	0.174	0.087	0.046	0.038
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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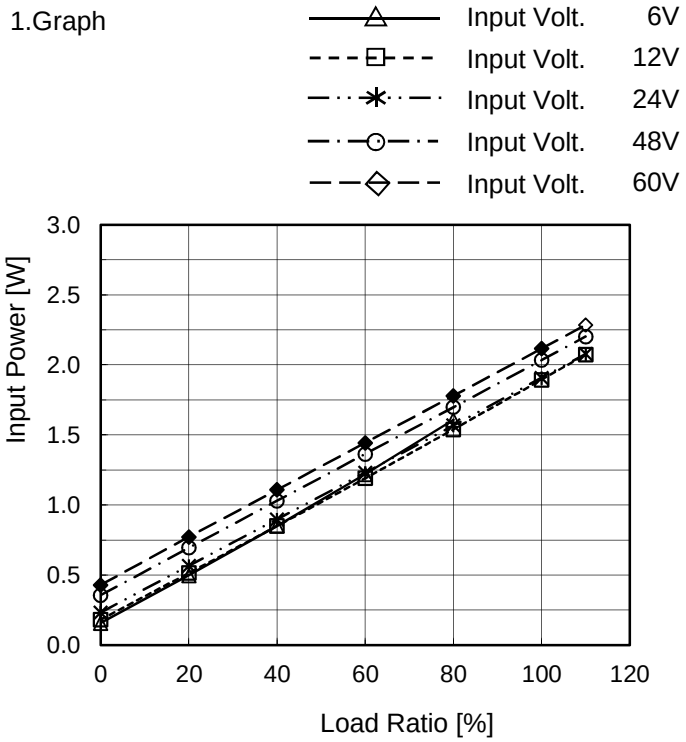
Model	MGXW1R52415
Item	Input Power (by Load Current)
Object	――――――

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	0.16	0.18	0.23	0.36	0.43
20	0.50	0.51	0.57	0.69	0.77
40	0.85	0.85	0.90	1.03	1.11
60	1.22	1.19	1.23	1.36	1.44
80	1.61	1.54	1.57	1.70	1.78
100	- ※	1.89	1.91	2.03	2.12
110	- ※	2.07	2.08	2.20	2.28
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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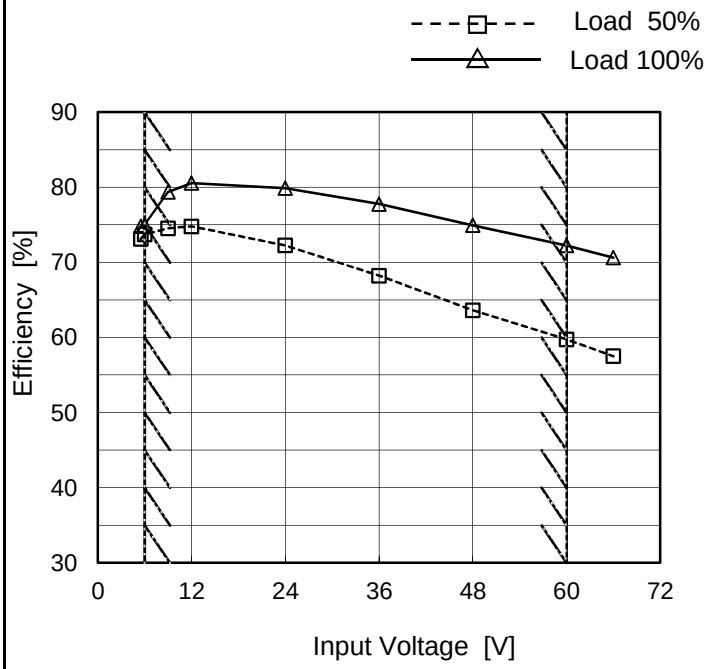
COSEL

Model	MGXW1R52415
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	73.1	74.8 ※1
6.0	73.7	75.0 ※1
9.0	74.5	79.4
12.0	74.8	80.6
24.0	72.3	79.9
36.0	68.2	77.8
48.0	63.6	74.9
60.0	59.7	72.3
66.0	57.5	70.6

※1:Load 70%

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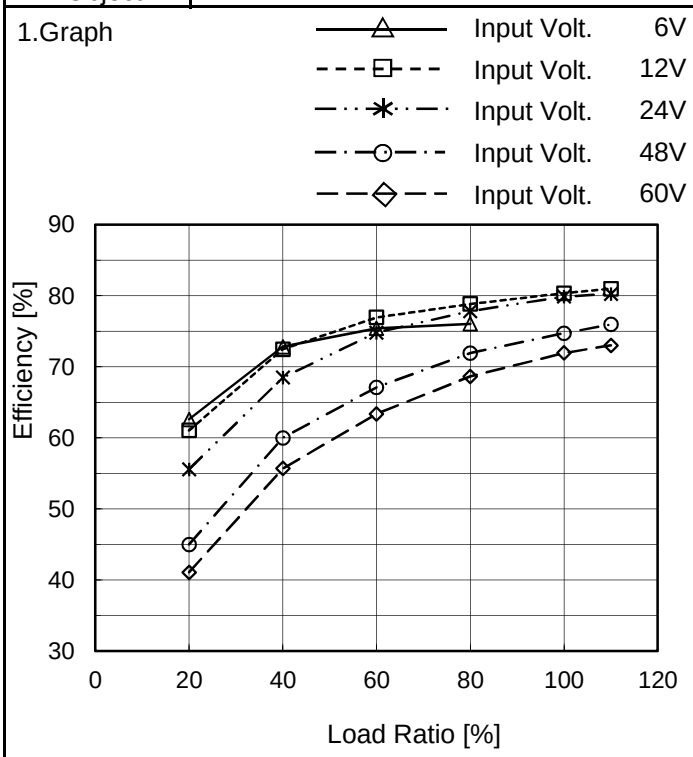
COSEL

Model	MGXW1R52415
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	62.6	61.0	55.6	45.0	41.1
40	72.8	72.5	68.5	60.0	55.7
60	75.4	76.9	74.8	67.1	63.4
80	76.0	78.8	77.8	71.9	68.6
100	- ※	80.3	79.9	74.7	71.9
110	- ※	81.0	80.2	75.9	73.0
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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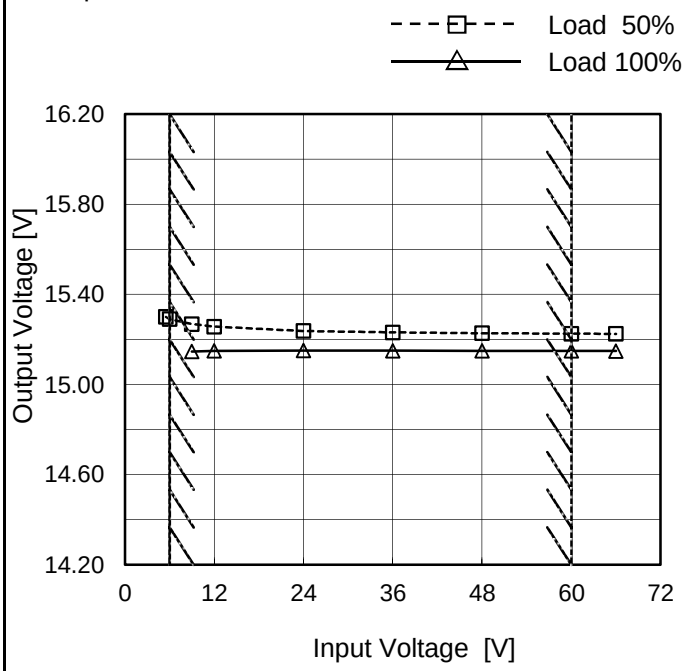
COSEL

Model	MGXW1R52415
Item	Line Regulation
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



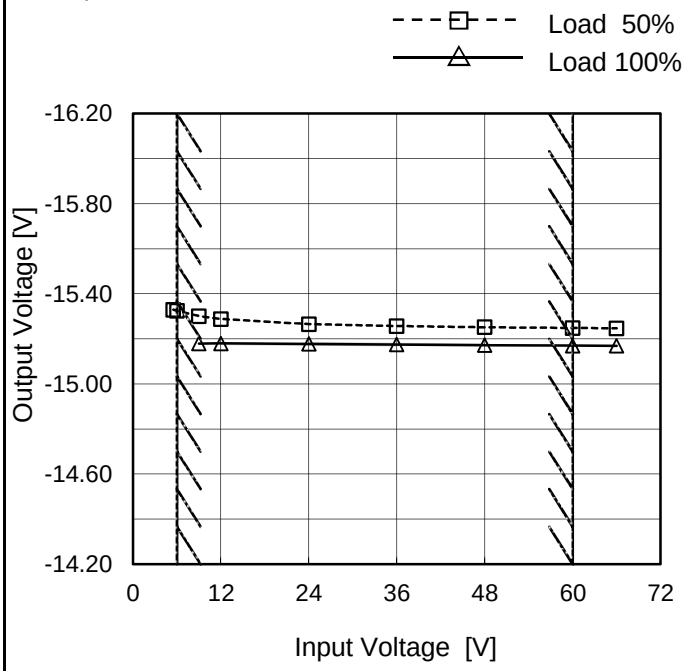
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
5.5	15.300	- ※
6.0	15.290	- ※
9.0	15.268	15.146
12.0	15.257	15.150
24.0	15.238	15.151
36.0	15.231	15.150
48.0	15.227	15.150
60.0	15.225	15.149
66.0	15.225	15.149

-15V:Rated Load Current

Object	-15V0.05A

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	-15.329	- ※
6.0	-15.325	- ※
9.0	-15.301	-15.179
12.0	-15.288	-15.180
24.0	-15.266	-15.178
36.0	-15.257	-15.175
48.0	-15.252	-15.172
60.0	-15.248	-15.170
66.0	-15.246	-15.169

+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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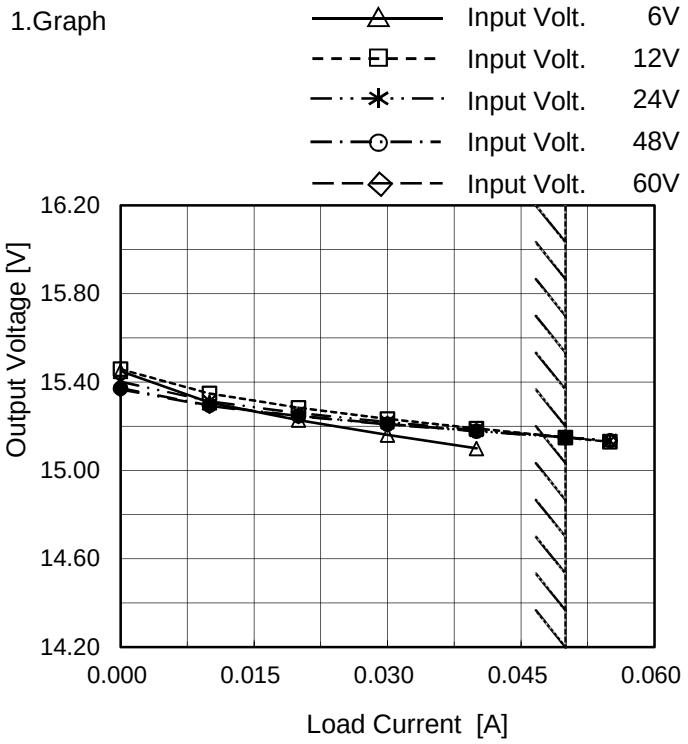
COSEL

Model	MGXW1R52415
Item	Load Regulation
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



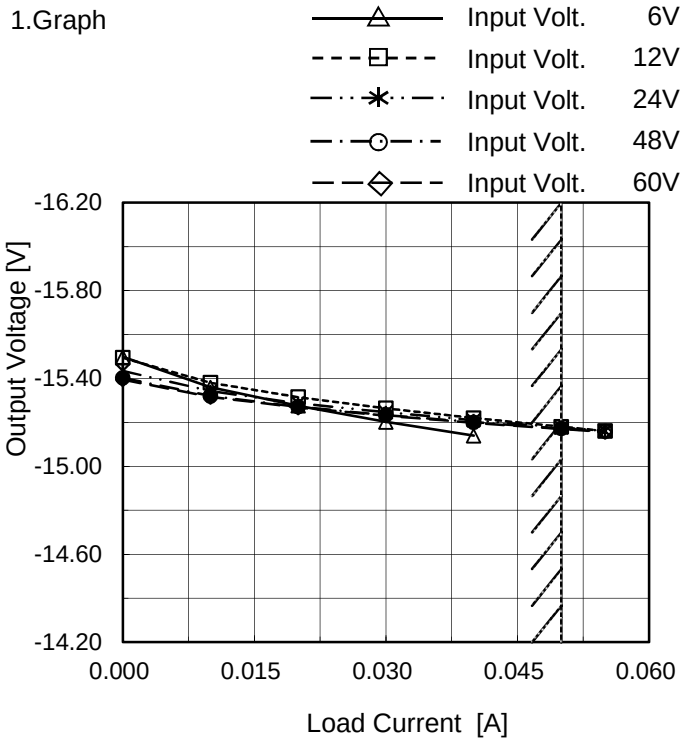
2.Values

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]
0.000	15.449	15.459	15.402	15.372	15.367
0.010	15.307	15.348	15.313	15.295	15.291
0.020	15.228	15.284	15.260	15.247	15.245
0.030	15.161	15.233	15.219	15.210	15.208
0.040	15.100	15.190	15.183	15.178	15.177
0.050	- ※	15.149	15.150	15.149	15.149
0.055	- ※	15.130	15.135	15.135	15.135
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

-15V:Rated Load Current

Object	-15V0.05A

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]
0.000	-15.498	-15.495	-15.435	-15.402	-15.396
0.010	-15.360	-15.381	-15.342	-15.321	-15.316
0.020	-15.276	-15.315	-15.288	-15.272	-15.268
0.030	-15.202	-15.264	-15.246	-15.234	-15.230
0.040	-15.140	-15.220	-15.209	-15.201	-15.199
0.050	- ※	-15.180	-15.177	-15.172	-15.170
0.055	- ※	-15.161	-15.162	-15.159	-15.157
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

+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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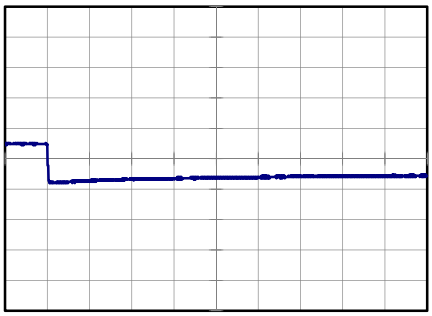
Model	MGXW1R52415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.05A	

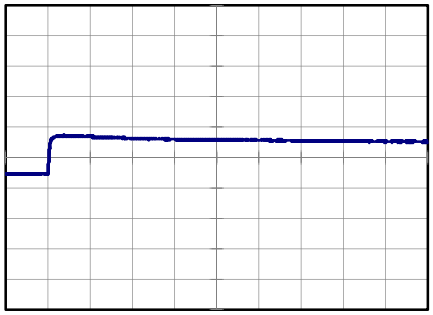
Input Volt. 24 V
-15V:rated load Current
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

Min.Load (0A)←→
Load 100% (0.05A)

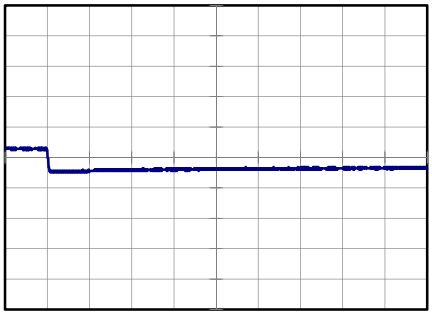


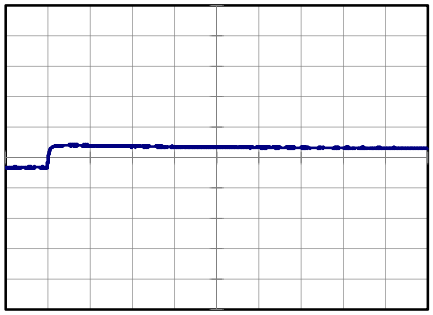


200 mV/div

4 ms/div 4 ms/div

Min.Load (0A)←→
Load 50% (0.025A)

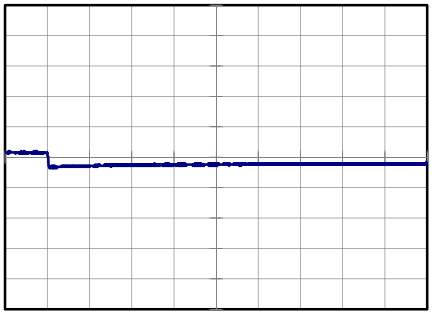


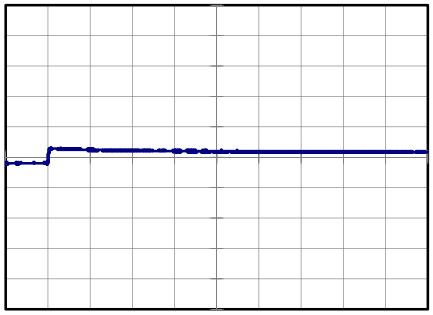


200 mV/div

4 ms/div 4 ms/div

Load 50% (0.025A)←→
Load 100% (0.05A)





200 mV/div

4 ms/div 4 ms/div

COSEL

Model	MGXW1R52415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-15V0.05A	

Input Volt. 24 V

+15V:rated load Current

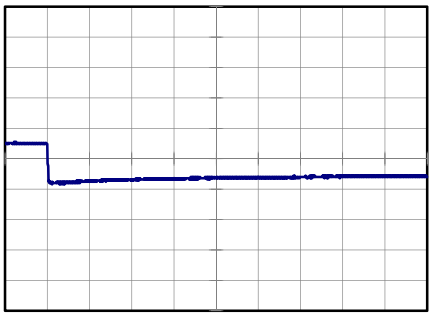
Cycle 100 ms

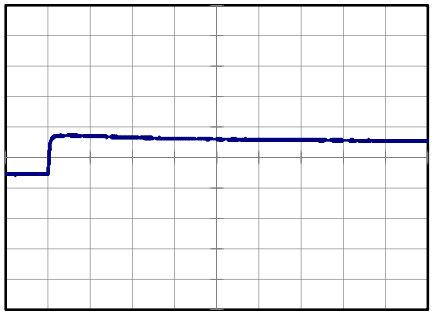
t1,t2 = 100 μ s

Load Current

t1 t2

Min.Load (0A)←→
Load 100% (0.05A)

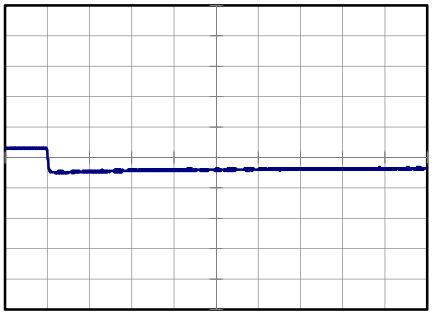


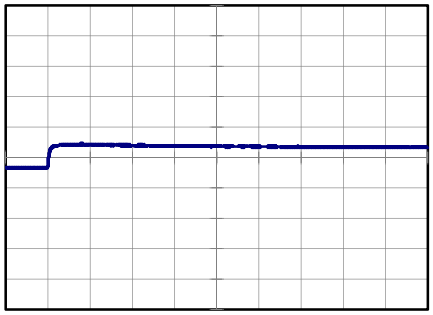


200 mV/div

4 ms/div 4 ms/div

Min.Load (0A)←→
Load 50% (0.025A)

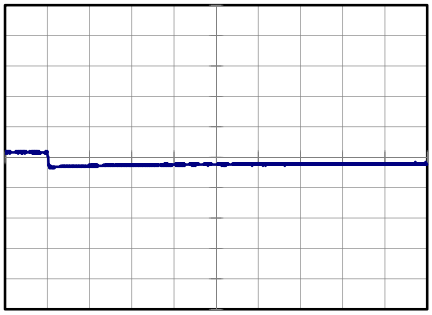


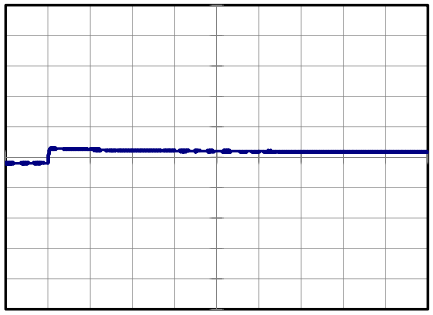


200 mV/div

4 ms/div 4 ms/div

Load 50% (0.025A)←→
Load 100% (0.05A)





200 mV/div

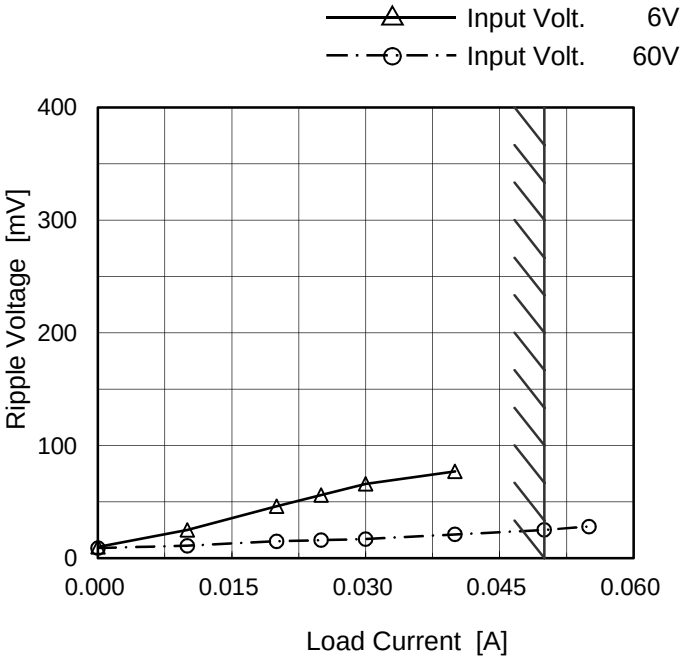
4 ms/div 4 ms/div

COSEL

Model	MGXW1R52415
Item	Ripple Voltage (by Load Current)
Object	+15V0.05A

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]

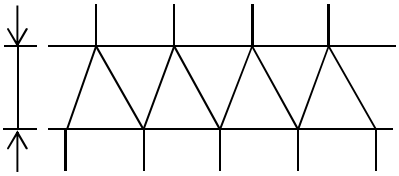


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.000	10	9
0.010	25	11
0.020	46	15
0.025	56	16
0.030	66	17
0.040	77	21
0.050	- ※	25
0.055	- ※	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.

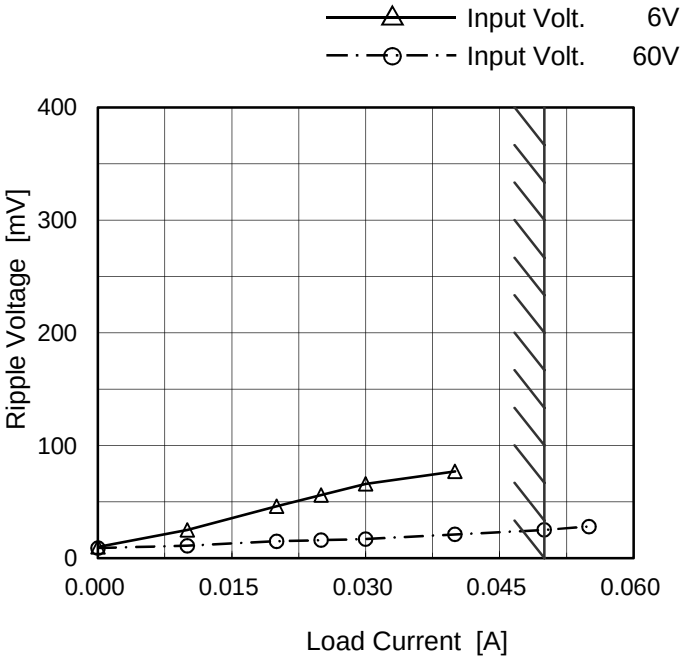
BC-11267

COSEL

Model	MGXW1R52415
Item	Ripple Voltage (by Load Current)
Object	-15V0.05A

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]

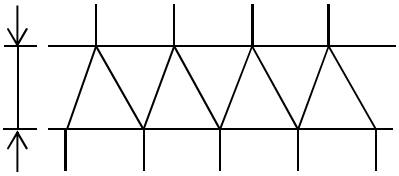


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.000	10	9
0.010	25	11
0.020	46	15
0.025	56	16
0.030	66	17
0.040	77	21
0.050	- ※	25
0.055	- ※	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.

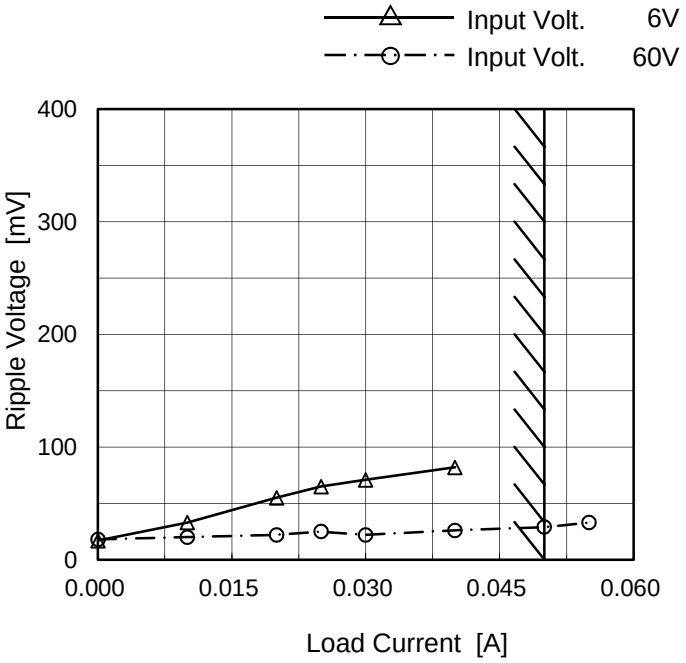
BC-11267

COSEL

Model	MGXW1R52415
Item	Ripple-Noise
Object	+15V0.05A

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]

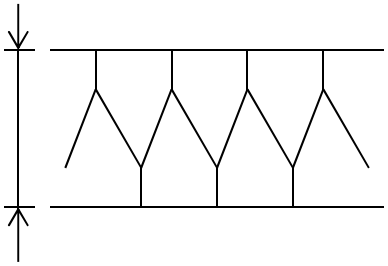


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.000	17	18
0.010	33	20
0.020	55	22
0.025	65	25
0.030	71	22
0.040	82	26
0.050	- ※	29
0.055	- ※	33
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

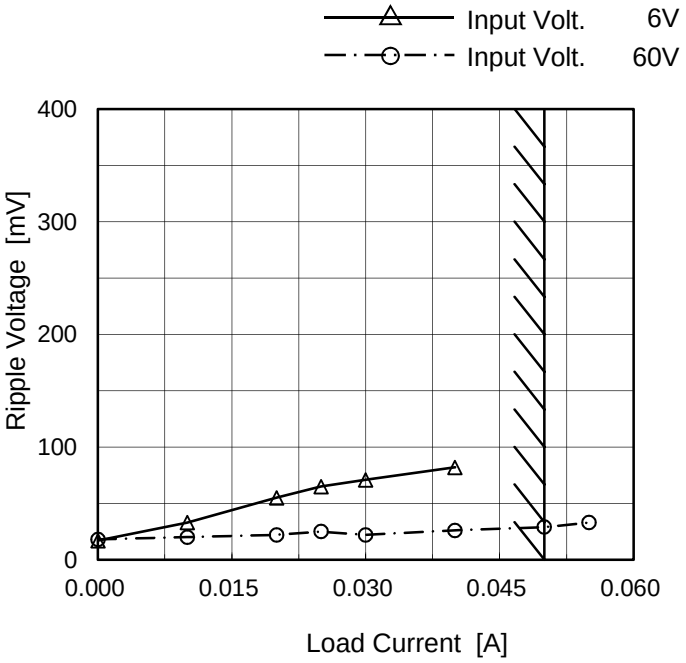
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXW1R52415
Item	Ripple-Noise
Object	-15V0.05A

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]

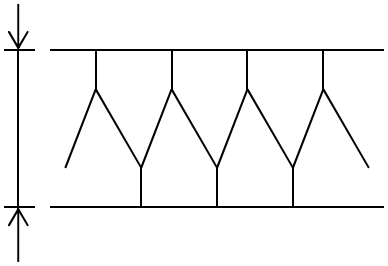


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.000	17	18
0.010	33	20
0.020	55	22
0.025	65	25
0.030	71	22
0.040	82	26
0.050	- ※	29
0.055	- ※	33
--	-	-
--	-	-
--	-	-

+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.

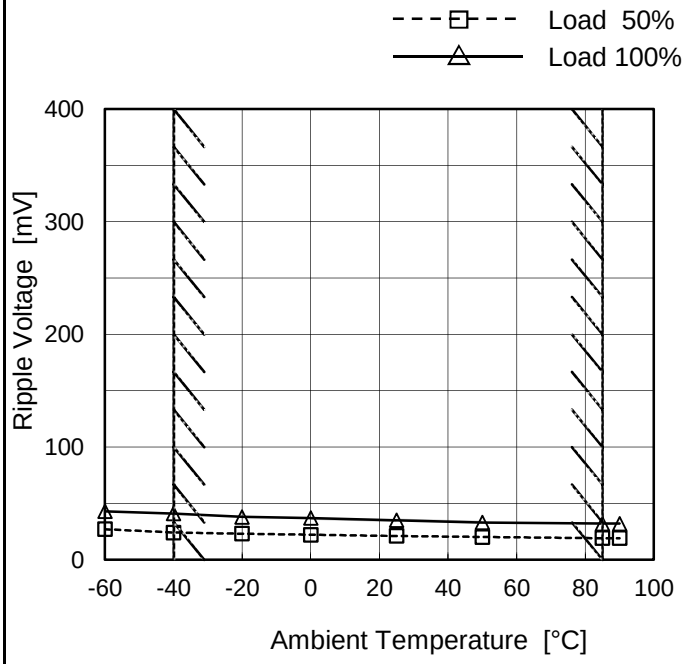
BC-11267

COSEL

Model	MGXW1R52415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.05A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

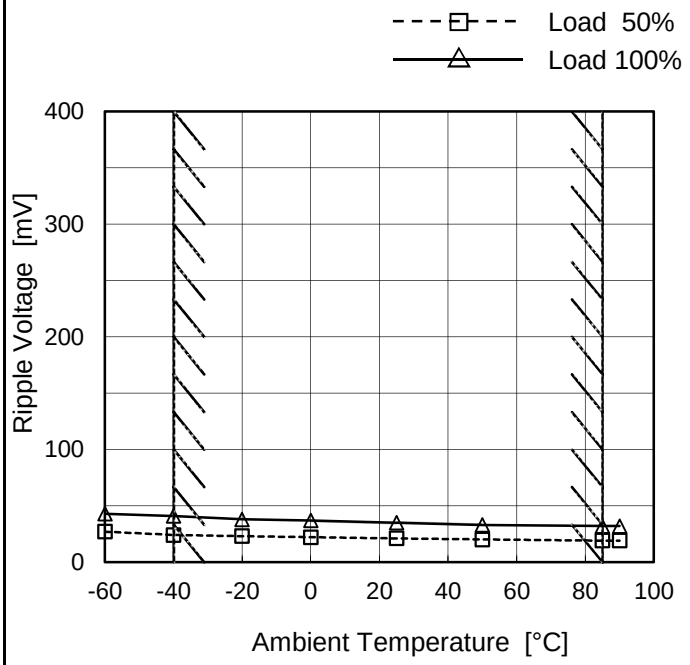
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	27	43
-40	24	41
-20	23	38
0	22	37
25	21	35
50	20	33
85	19	32
90	19	32
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

Object	-15V0.05A

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	27	43
-40	24	41
-20	23	38
0	22	37
25	21	35
50	20	33
85	19	32
90	19	32
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

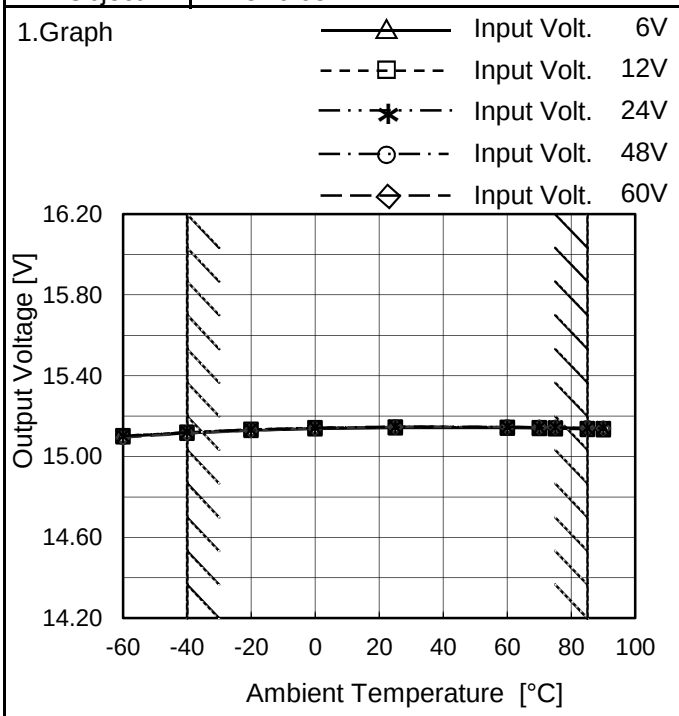
COSEL

Model	MGXW1R52415
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +15V0.05A

1.Graph



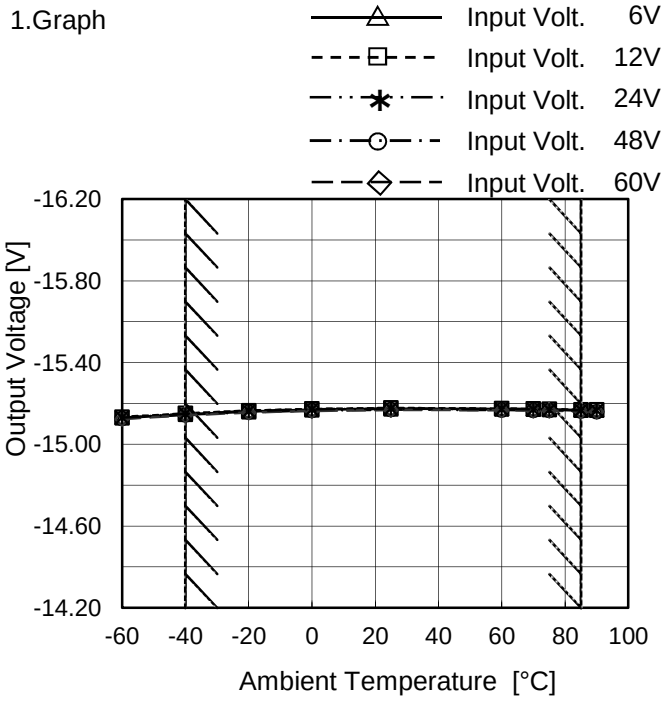
2.Values

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	15.098	15.102	15.101	15.096	15.094
-40	15.116	15.120	15.120	15.116	15.114
-20	15.129	15.134	15.133	15.130	15.129
0	15.137	15.142	15.142	15.140	15.140
25	15.142	15.146	15.147	15.146	15.146
60	15.141	15.144	15.146	15.146	15.146
70	15.140	15.142	15.144	15.144	15.144
75	15.138	15.141	15.143	15.144	15.144
85	15.134	15.138	15.141	15.142	15.142
90	15.132	15.138	15.140	15.140	15.139
--	-	-	-	-	-

-15V:Rated Load Current

Object -15V0.05A

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	-15.129	-15.133	-15.131	-15.126	-15.124
-40	-15.147	-15.151	-15.149	-15.144	-15.142
-20	-15.160	-15.165	-15.163	-15.158	-15.155
0	-15.169	-15.173	-15.171	-15.166	-15.164
25	-15.174	-15.178	-15.175	-15.170	-15.168
60	-15.174	-15.175	-15.173	-15.168	-15.166
70	-15.173	-15.173	-15.171	-15.167	-15.165
75	-15.171	-15.172	-15.170	-15.165	-15.164
85	-15.167	-15.169	-15.167	-15.163	-15.162
90	-15.167	-15.169	-15.166	-15.160	-15.160
--	-	-	-	-	-

+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	MGXW1R52415	
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 - 85°C

Input Voltage : 6 - 60V

Load Current (AVR 1) : 0 - 0.05A (AVR 2) : 0 - 0.05A

* 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	+15V0.05A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	6	0	15.490	±348	±2.3
Minimum Voltage	85	6	0.035 ※	14.794		

Object	-15V0.05A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	6	0	-15.526	±348	±2.3
Minimum Voltage	85	6	0.035 ※	-14.831		

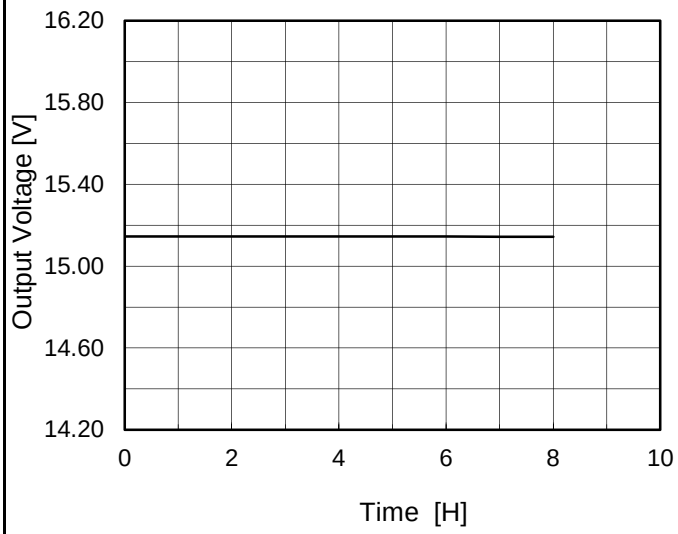
※: Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXW1R52415
Item	Time Lapse Drift
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

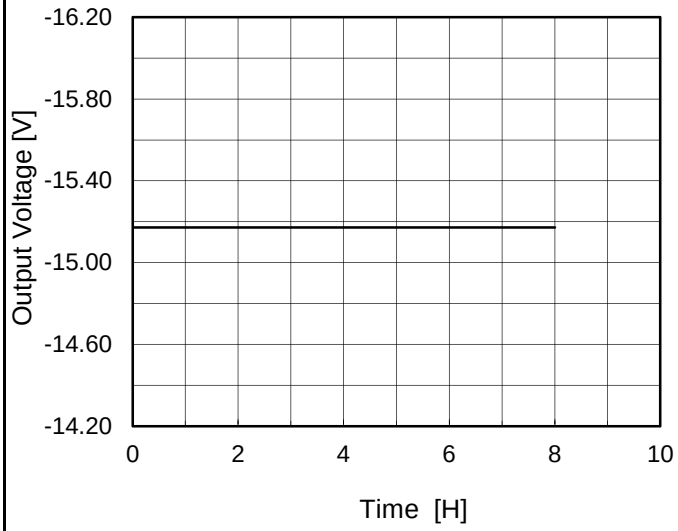
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.146
0.5	15.146
1.0	15.145
2.0	15.145
3.0	15.145
4.0	15.145
5.0	15.145
6.0	15.145
7.0	15.145
8.0	15.144

-15V:Rated Load Current

Object	-15V0.05A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.172
0.5	-15.172
1.0	-15.172
2.0	-15.172
3.0	-15.172
4.0	-15.172
5.0	-15.172
6.0	-15.172
7.0	-15.172
8.0	-15.172

+15V:Rated Load Current

BC-11267

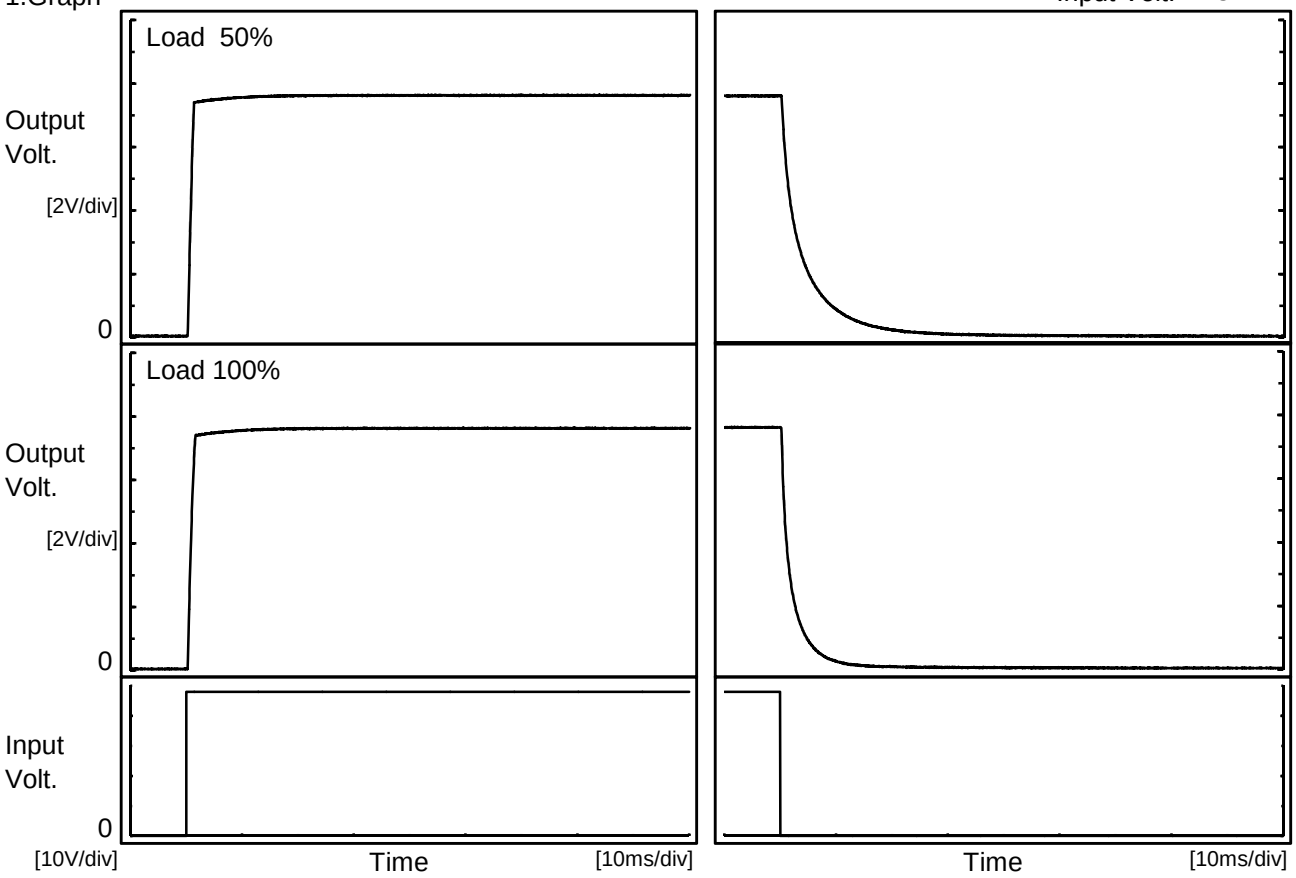
COSEL

Model	MGXW1R52415
Item	Rise and Fall Time
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

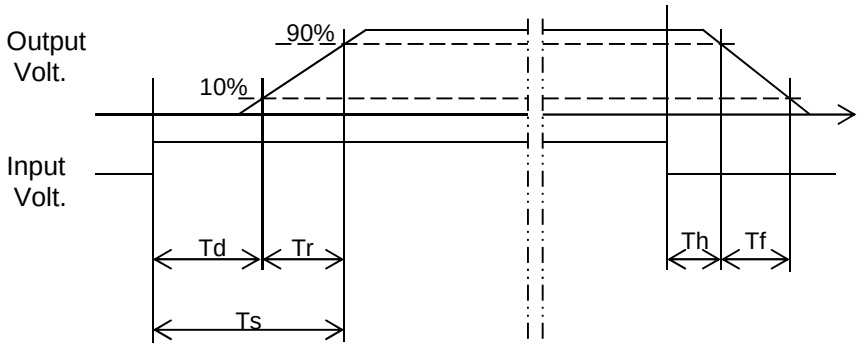
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.4	0.9	1.3	0.5	10.4
100 %	0.4	1.1	1.5	0.3	5.2



BC-11267

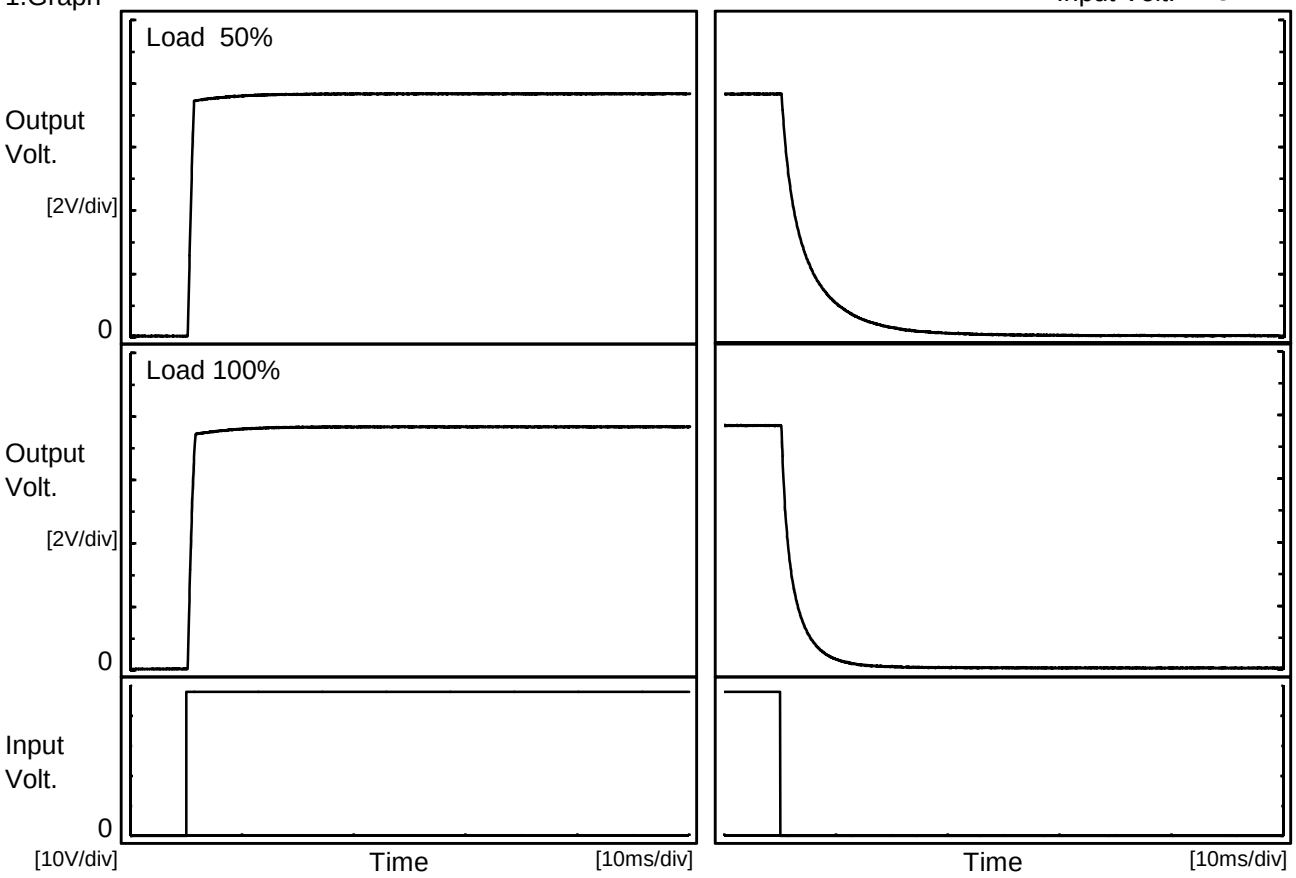
COSEL

Model	MGXW1R52415
Item	Rise and Fall Time
Object	-15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

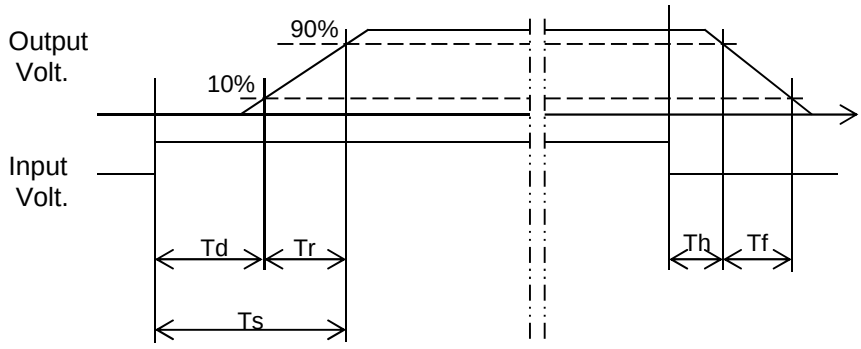
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.4	0.9	1.3	0.6	11.6
100 %	0.4	1.1	1.5	0.4	5.9



BC-11267

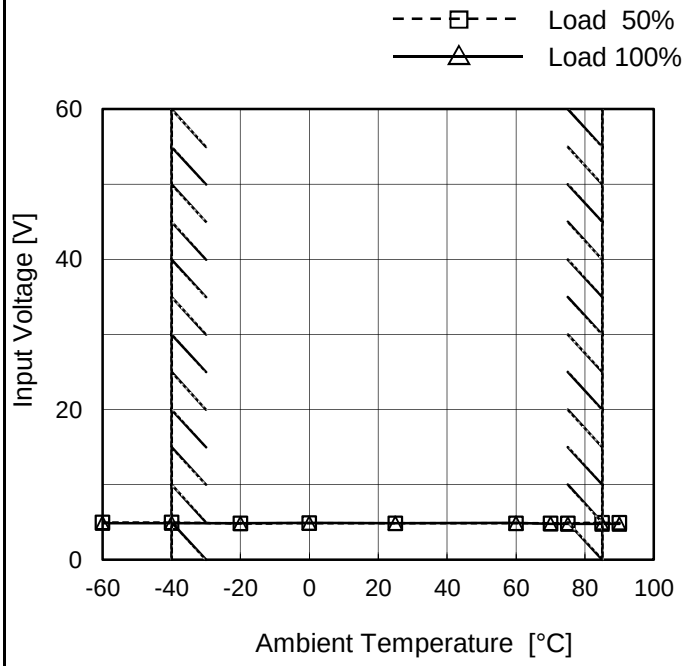
COSEL

Model	MGXW1R52415
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +15V0.05A

1.Graph

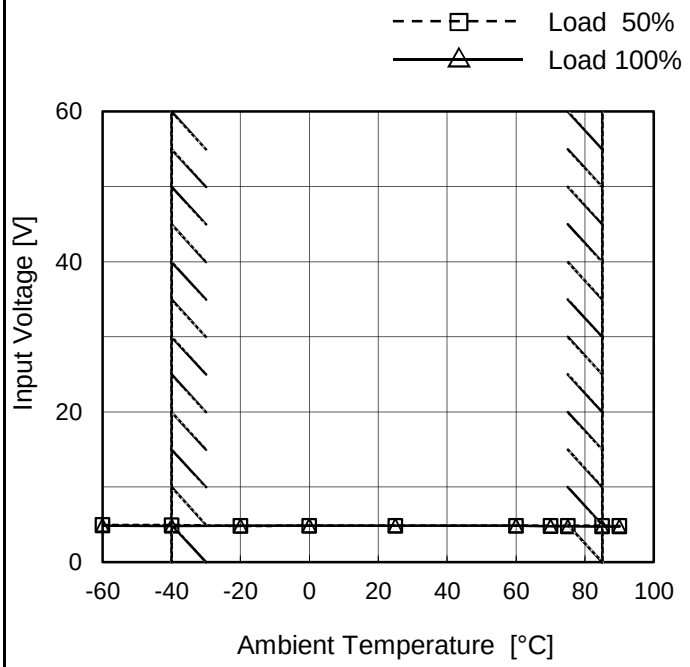


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 70%
-60	5.0	4.9
-40	5.0	4.9
-20	4.9	4.9
0	4.9	4.9
25	4.9	4.9
60	4.9	4.9
70	4.9	4.8
75	4.9	4.8
85	4.9	4.8
90	4.9	4.8
--	-	-

Object: -15V0.05A

1.Graph



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

2.Values

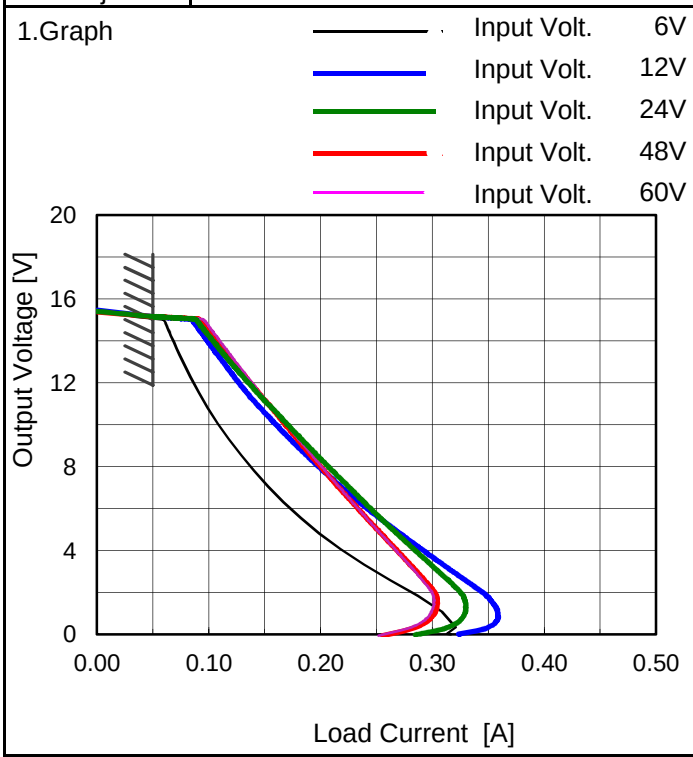
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 70%
-60	5.0	4.9
-40	5.0	4.9
-20	4.9	4.9
0	4.9	4.9
25	4.9	4.9
60	4.9	4.9
70	4.9	4.8
75	4.9	4.8
85	4.9	4.8
90	4.9	4.8
--	-	-

COSEL

Model	MGXW1R52415
Item	Overcurrent Protection
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



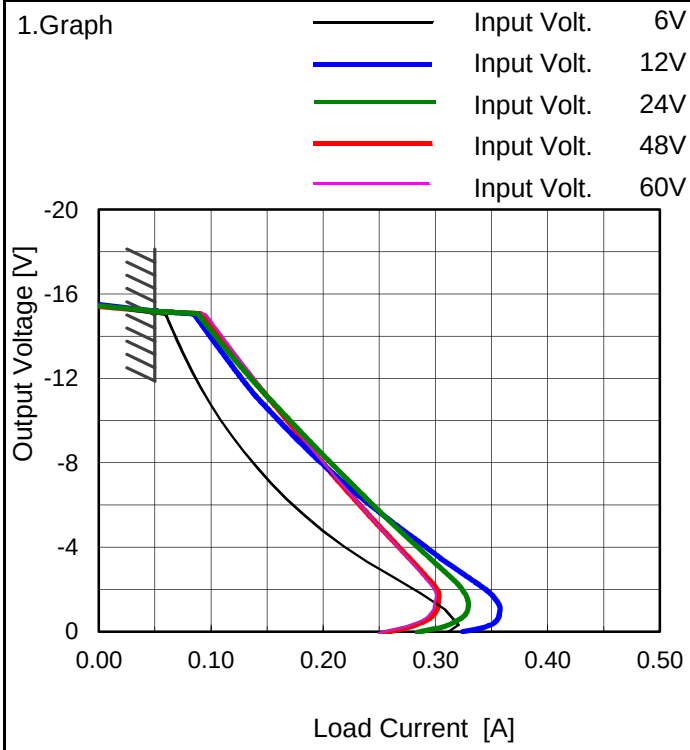
2.Values

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	0.066	0.095	0.100	0.103	0.106
13.5	0.071	0.105	0.111	0.114	0.117
12.0	0.084	0.126	0.135	0.137	0.138
10.5	0.099	0.151	0.162	0.161	0.162
9.0	0.118	0.178	0.188	0.184	0.185
7.5	0.141	0.208	0.216	0.208	0.208
6.0	0.167	0.242	0.244	0.233	0.233
4.5	0.199	0.278	0.274	0.259	0.258
3.0	0.239	0.318	0.305	0.286	0.284
1.5	0.287	0.354	0.330	0.304	0.301
0.0	0.316	0.324	0.285	0.255	0.252
--	-	-	-	-	-

-15V:Rated Load Current

Object	-15V0.05A

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	0.065	0.096	0.100	0.103	0.106
-13.5	0.071	0.106	0.111	0.114	0.117
-12.0	0.084	0.127	0.135	0.136	0.138
-10.5	0.100	0.151	0.161	0.160	0.161
-9.0	0.118	0.178	0.188	0.184	0.184
-7.5	0.141	0.208	0.216	0.207	0.208
-6.0	0.167	0.242	0.244	0.233	0.233
-4.5	0.199	0.278	0.274	0.258	0.258
-3.0	0.239	0.317	0.305	0.285	0.283
-1.5	0.287	0.354	0.329	0.303	0.300
0.0	0.313	0.324	0.284	0.254	0.250
--	-	-	-	-	-

+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.

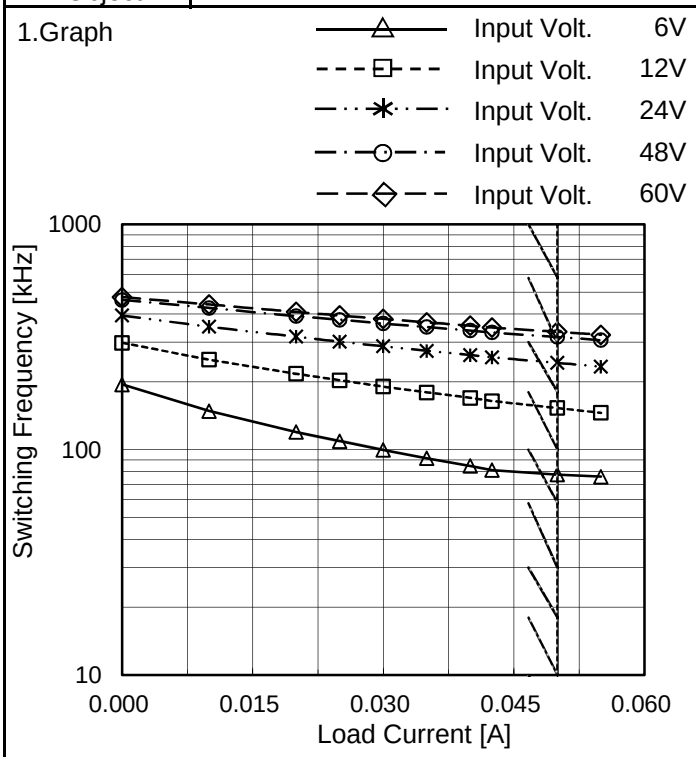
BC-11267

COSEL

Model	MGXW1R52415
Item	Switching frequency (by Load Current)
Object	+/-15V0.05A

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]
0.000	195	298	395	462	476
0.010	149	251	352	426	441
0.020	120	217	318	392	409
0.025	109	203	302	377	394
0.030	100	191	288	363	381
0.035	92	180	275	351	368
0.040	85	170	263	338	355
0.043	81	164	257	332	349
0.050	- ※	153	243	317	334
0.055	- ※	146	234	307	324
--	-	-	-	-	-

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

BC-11267

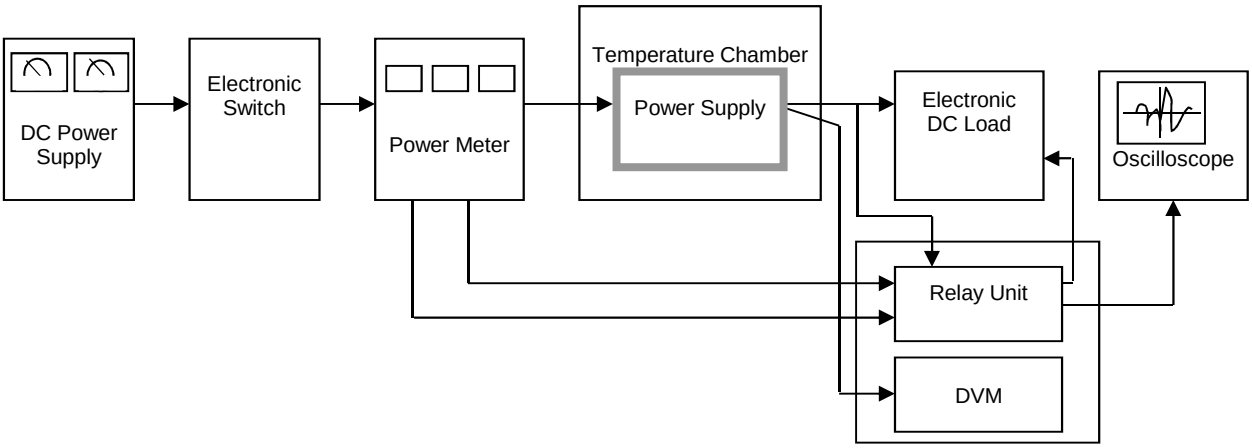


Figure A

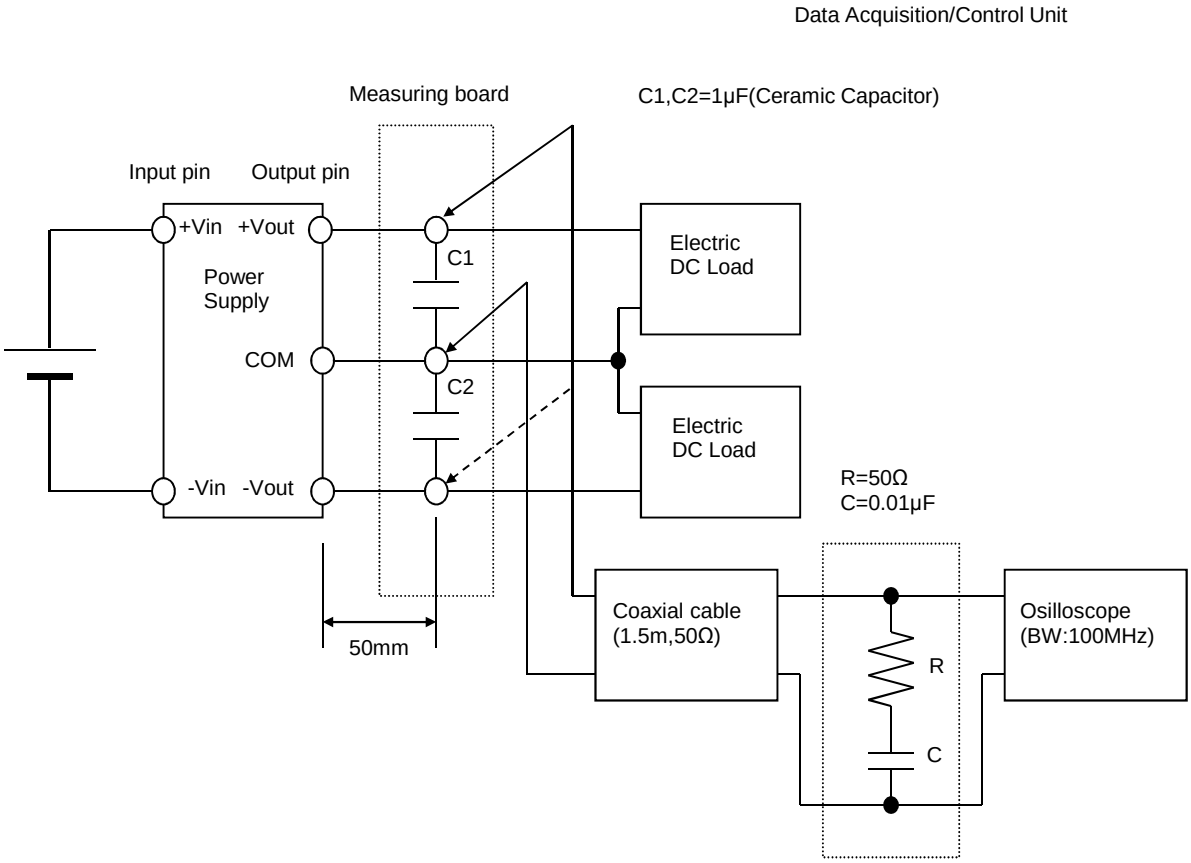


Figure B（Ripple and Ripple noise Characteristic）