

TEST DATA OF MGFW1R54812

Regulated DC Power Supply
January 5, 2017

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Takaaki Sekiguchi Design Engineer

COSEL CO.,LTD.

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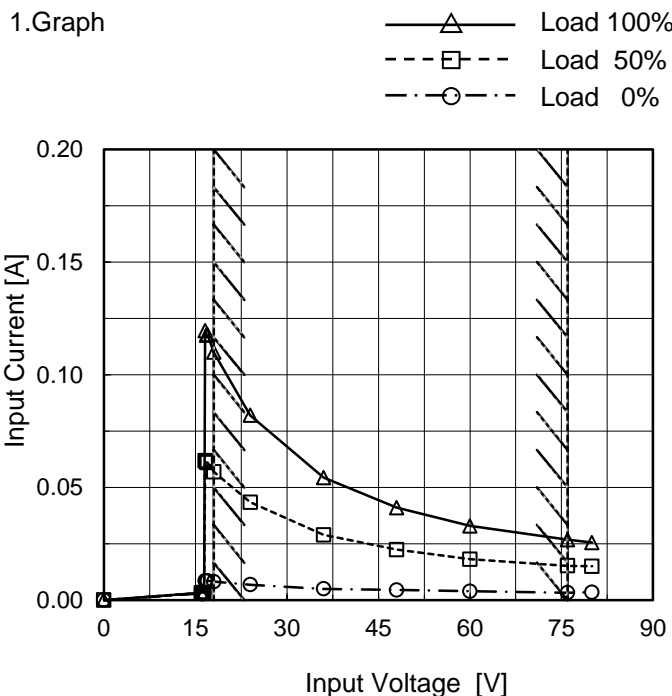
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(Final Page 23)



Model	MGFW1R54812
Item	Input Current (by Input Voltage)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.003	0.003
16.2	0.003	0.003	0.004
16.4	0.003	0.003	0.003
16.6	0.009	0.062	0.120
16.8	0.008	0.061	0.118
17.0	0.009	0.061	0.118
18.0	0.008	0.057	0.110
24.0	0.007	0.043	0.082
36.0	0.005	0.029	0.054
48.0	0.005	0.022	0.041
60.0	0.004	0.018	0.033
76.0	0.003	0.015	0.027
80.0	0.004	0.015	0.026
--	-	-	-
--	-	-	-
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--	-	-	-



Model		MGFW1R54812		Temperature 25°C																																																																												
Item		Input Current (by Load Ratio)		Testing Circuitry Figure A																																																																												
Object		_____																																																																														
1.Graph		<p> —△— Input Volt. 18V - - - □ - - - Input Volt. 24V - · · * · · - · - · - Input Volt. 36V - · · ○ · · - · - · - Input Volt. 48V - - - ◇ - - - Input Volt. 76V </p>		2.Values																																																																												
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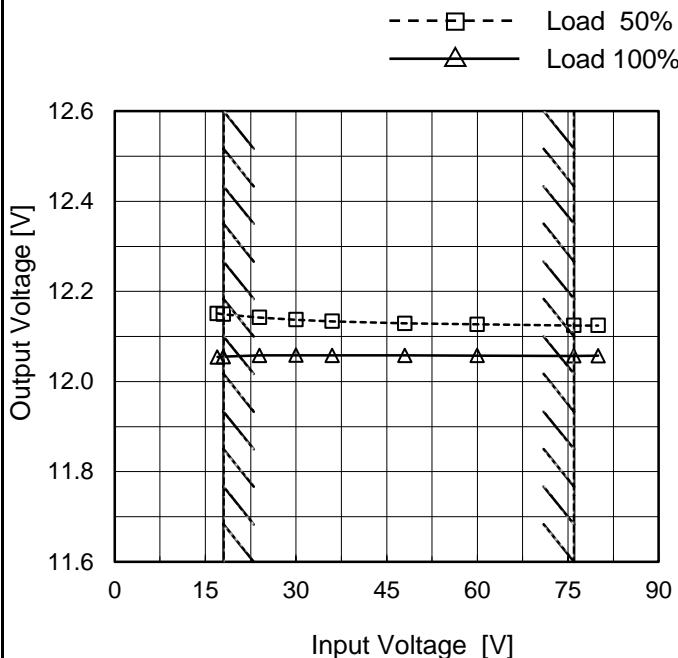
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Model	MGFW1R54812
Item	Line Regulation
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



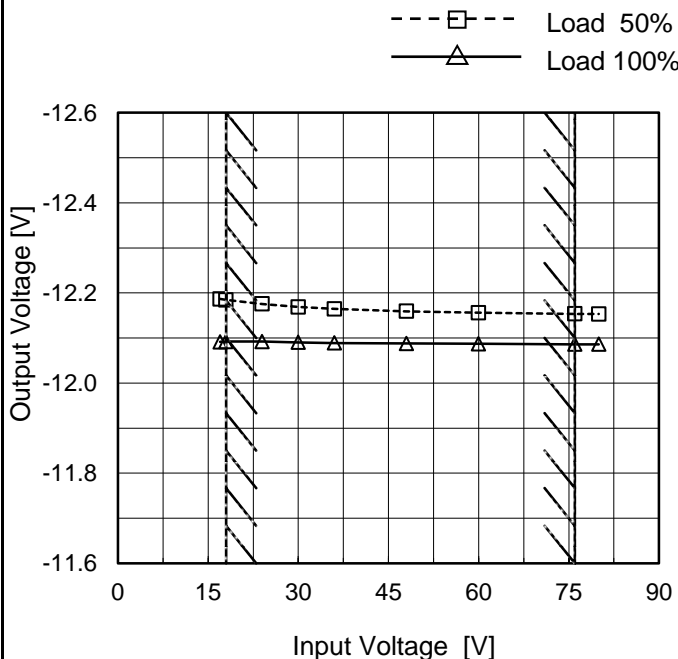
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.151	12.055
18	12.149	12.055
24	12.142	12.058
30	12.137	12.058
36	12.134	12.058
48	12.129	12.058
60	12.127	12.058
76	12.125	12.057
80	12.124	12.057

-12V : Rated Load Current

Object	-12V0.065A
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1.Graph

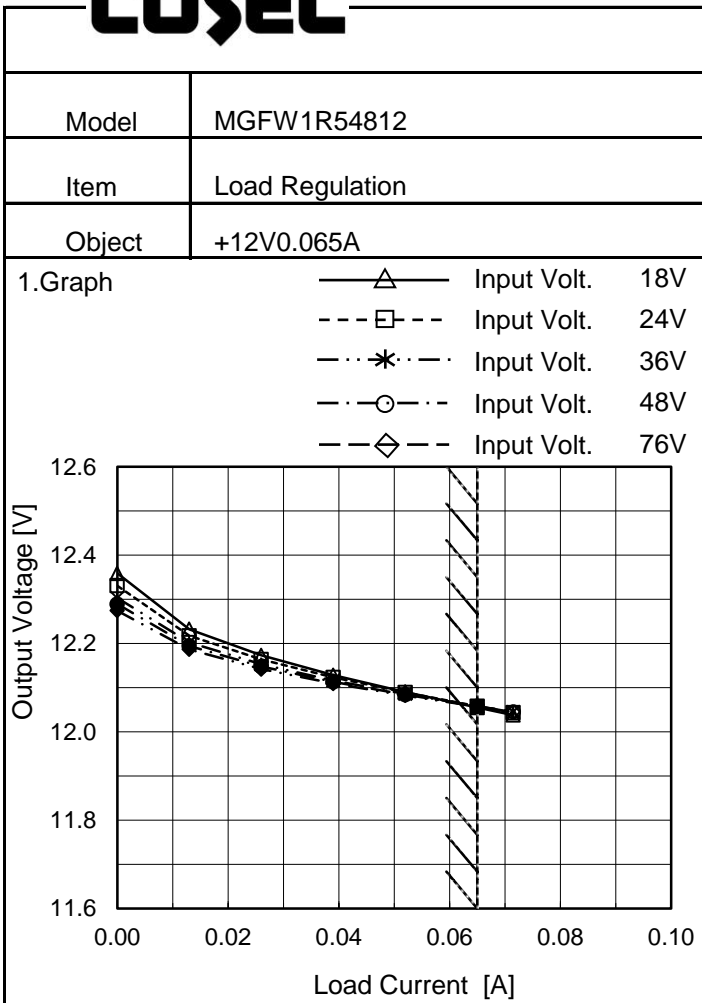


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	-12.187	-12.092
18	-12.184	-12.092
24	-12.176	-12.092
30	-12.169	-12.091
36	-12.164	-12.089
48	-12.159	-12.088
60	-12.156	-12.087
76	-12.154	-12.086
80	-12.153	-12.086

+12V : Rated Load Current

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

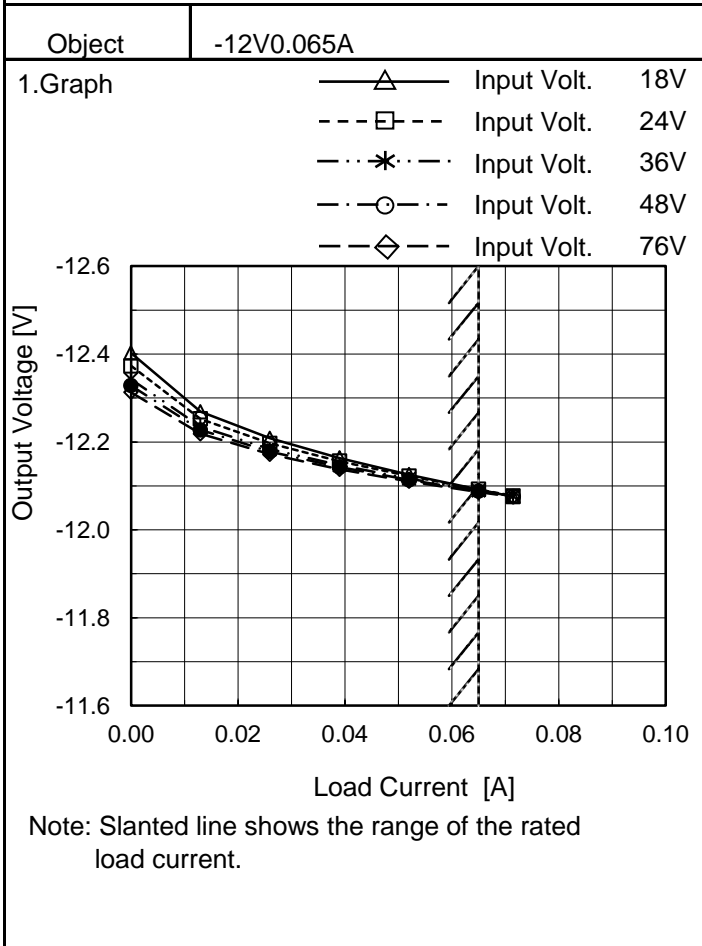


Temperature 25°C
Testing Circuitry Figure A

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	12.359	12.331	12.303	12.289	12.274
0.013	12.232	12.218	12.202	12.194	12.187
0.026	12.173	12.164	12.153	12.148	12.142
0.039	12.128	12.123	12.116	12.113	12.110
0.052	12.090	12.089	12.086	12.084	12.082
0.065	12.055	12.058	12.058	12.058	12.057
0.072	12.038	12.043	12.045	12.045	12.045
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

-12V: 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	-12.402	-12.373	-12.342	-12.328	-12.313
0.013	-12.269	-12.252	-12.235	-12.227	-12.219
0.026	-12.208	-12.197	-12.184	-12.178	-12.172
0.039	-12.163	-12.156	-12.147	-12.143	-12.138
0.052	-12.126	-12.122	-12.117	-12.114	-12.110
0.065	-12.092	-12.092	-12.089	-12.088	-12.086
0.072	-12.075	-12.077	-12.077	-12.076	-12.075
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

+12V: Rated Load Current



Model	MGFW1R54812	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V0.065A		

Input Volt. 48 V
 -12V:rated load current.
 Cycle 100 ms

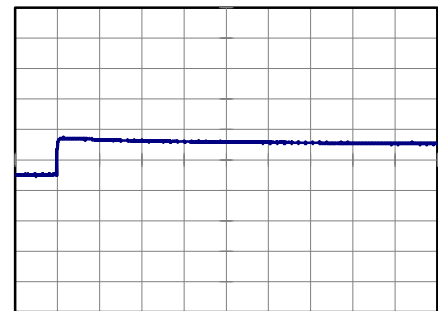
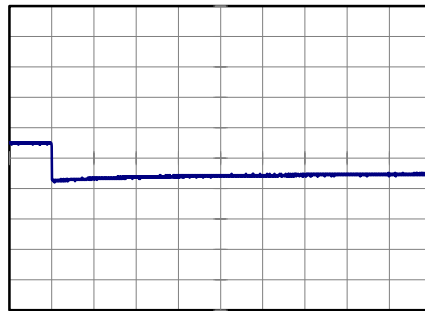
$t_1, t_2 = 100 \mu s$



Min.Load (0A) ←→
 Load 100% (0.065A)

200 mV/div

4 ms/div

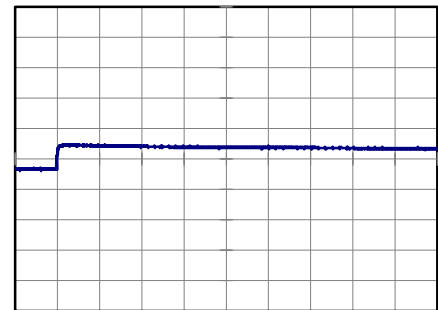
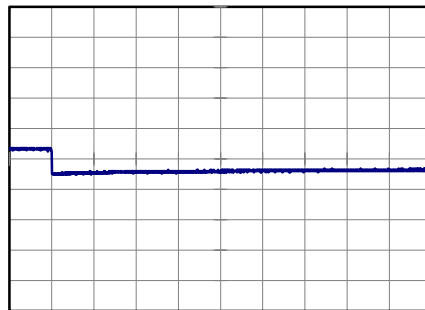


4 ms/div

Min.Load (0A) ←→
 Load 50% (0.0325A)

200 mV/div

4 ms/div

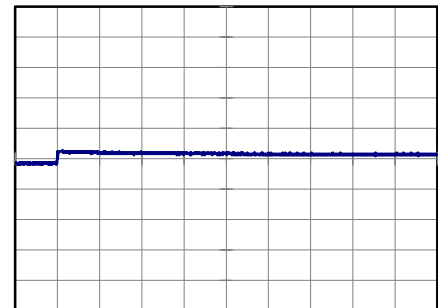
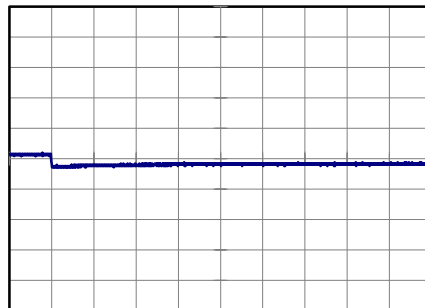


4 ms/div

Load 50% (0.0325A) ←→
 Load 100% (0.065A)

200 mV/div

4 ms/div



4 ms/div



Model	MGFW1R54812	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	-12V0.065A		

Input Volt. 48 V
 +12V:rated load current.
 Cycle 100 ms

t1,t2 = 100 μs



Min.Load (0A) ←→
 Load 100% (0.065A)

200 mV/div

4 ms/div

4 ms/div

Min.Load (0A) ←→
 Load 50% (0.0325A)

200 mV/div

4 ms/div

4 ms/div

Load 50% (0.0325A) ←→
 Load 100% (0.065A)

200 mV/div

4 ms/div

4 ms/div



<p>Model MGFW1R54812</p> <p>Item Ripple Voltage (by Load Current)</p> <p>Object +12V0.065A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure B</p>																																						
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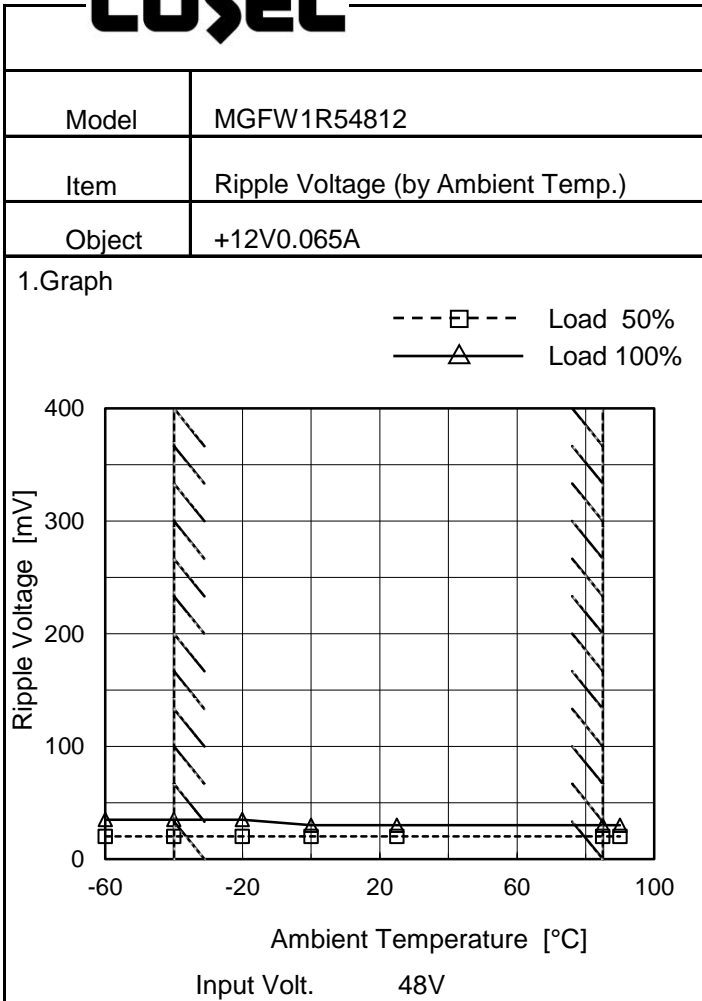
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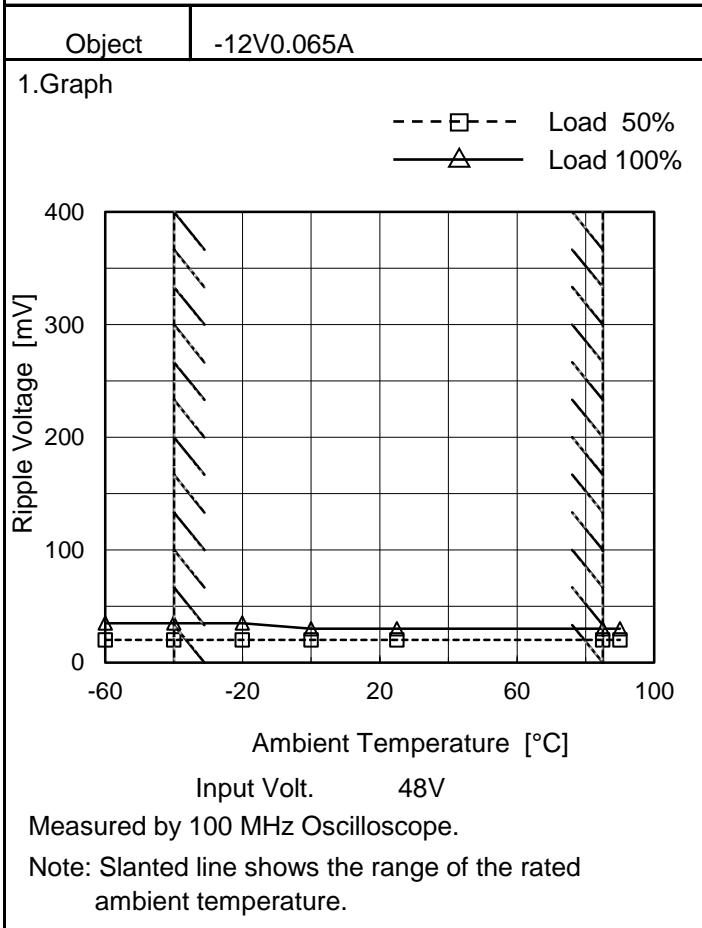


Testing Circuitry Figure B

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	20	35
-40	20	35
-20	20	35
0	20	30
25	20	30
85	20	30
90	20	30
--	-	-
--	-	-
--	-	-
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-12V: Rated Load Current



2.Values

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+12V: Rated Load Current



Model		MGFW1R54812		Testing Circuitry Figure A																																																																														
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COSEL		Testing Circuitry Figure A
Model	MGFW1R54812	
Item	Output Voltage Accuracy	

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 : 18 - 76V

Load Current (AVR 1) : 0 - 0.065A (AVR 2) : 0 - 0.065A

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

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

2. Values

Object		+12V0.065A				
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	18	0	12.401	±344	±2.9
Minimum Voltage	85	18	0.065	11.713		

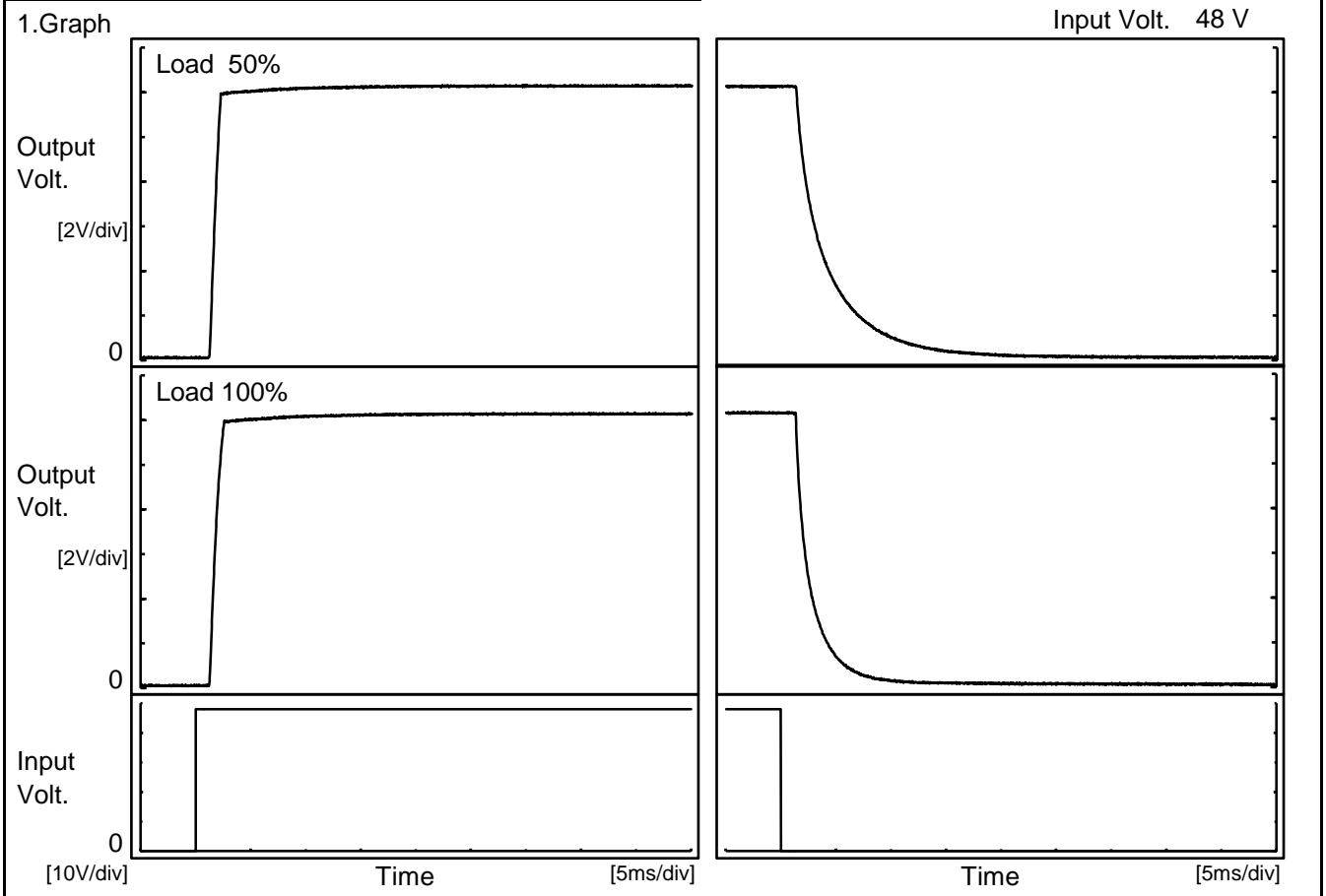
Object		-12V0.065A				
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	18	0	-12.444	±344	±2.9
Minimum Voltage	85	18	0.065	-11.756		



COSEL																									
Model	MGFW1R54812	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V0.065A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.053</td></tr> <tr><td>0.5</td><td>12.054</td></tr> <tr><td>1.0</td><td>12.054</td></tr> <tr><td>2.0</td><td>12.054</td></tr> <tr><td>3.0</td><td>12.054</td></tr> <tr><td>4.0</td><td>12.053</td></tr> <tr><td>5.0</td><td>12.053</td></tr> <tr><td>6.0</td><td>12.053</td></tr> <tr><td>7.0</td><td>12.053</td></tr> <tr><td>8.0</td><td>12.053</td></tr> </tbody> </table> <p style="text-align: center;">-12V: Rated Load Current</p>		Time since start [H]	Output Voltage [V]	0.0	12.053	0.5	12.054	1.0	12.054	2.0	12.054	3.0	12.054	4.0	12.053	5.0	12.053	6.0	12.053	7.0	12.053	8.0	12.053
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4.0	12.053																								
5.0	12.053																								
6.0	12.053																								
7.0	12.053																								
8.0	12.053																								
Object	-12V0.065A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-12.089</td></tr> <tr><td>0.5</td><td>-12.091</td></tr> <tr><td>1.0</td><td>-12.091</td></tr> <tr><td>2.0</td><td>-12.090</td></tr> <tr><td>3.0</td><td>-12.091</td></tr> <tr><td>4.0</td><td>-12.091</td></tr> <tr><td>5.0</td><td>-12.090</td></tr> <tr><td>6.0</td><td>-12.090</td></tr> <tr><td>7.0</td><td>-12.090</td></tr> <tr><td>8.0</td><td>-12.090</td></tr> </tbody> </table> <p style="text-align: center;">+12V: Rated Load Current</p>		Time since start [H]	Output Voltage [V]	0.0	-12.089	0.5	-12.091	1.0	-12.091	2.0	-12.090	3.0	-12.091	4.0	-12.091	5.0	-12.090	6.0	-12.090	7.0	-12.090	8.0	-12.090
Time since start [H]	Output Voltage [V]																								
0.0	-12.089																								
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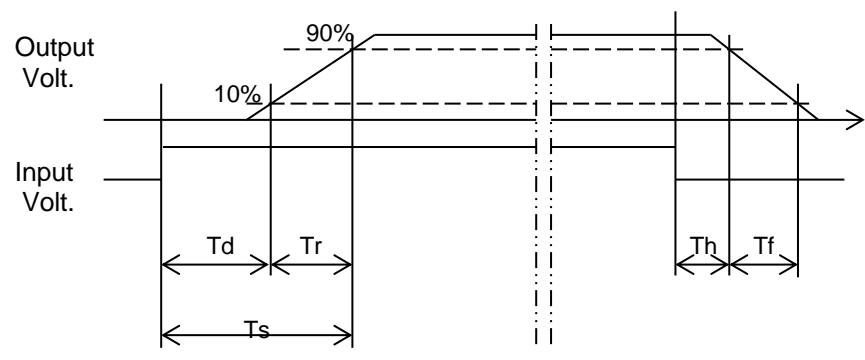


Model		MGFW1R54812	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		+12V0.065A		



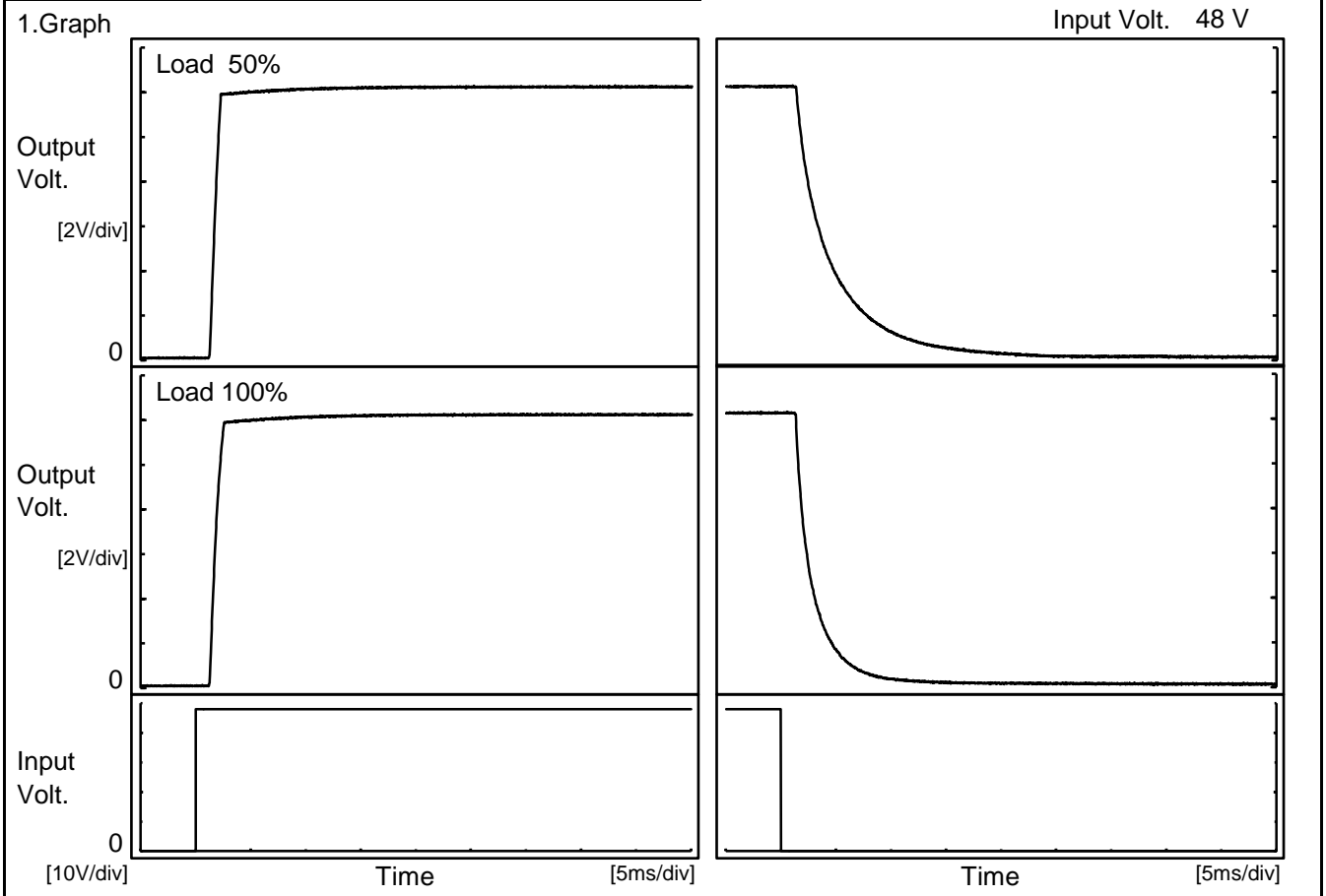
2.Values [ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.4	0.8	2.2	1.6	7.4
100 %	1.4	1.0	2.4	1.5	3.7





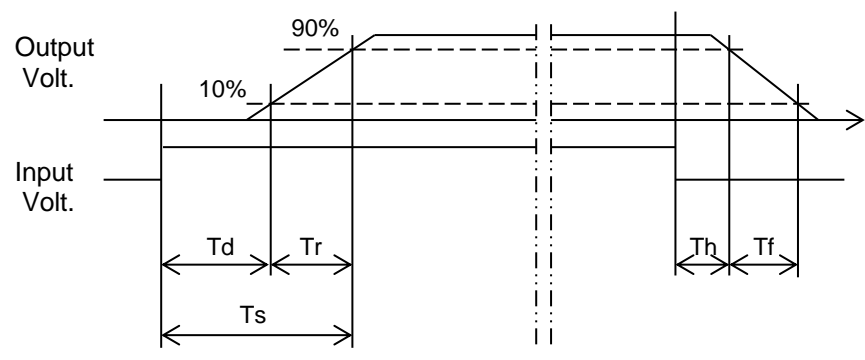
Model		MGFW1R54812	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		-12V0.065A		



2.Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		1.4	0.8	2.2	1.6	8.4
100 %		1.4	1.0	2.4	1.5	4.3

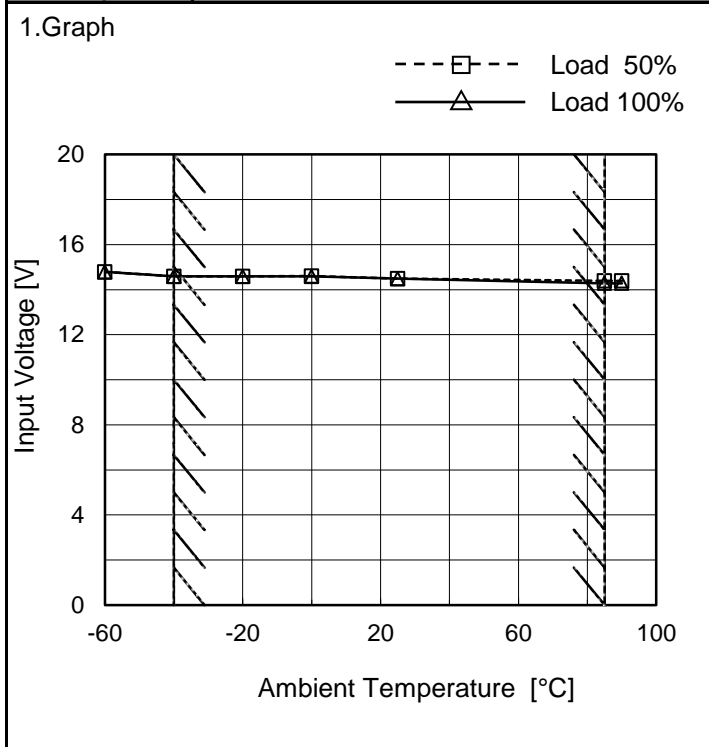
[ms]





Model	MGFW1R54812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.065A

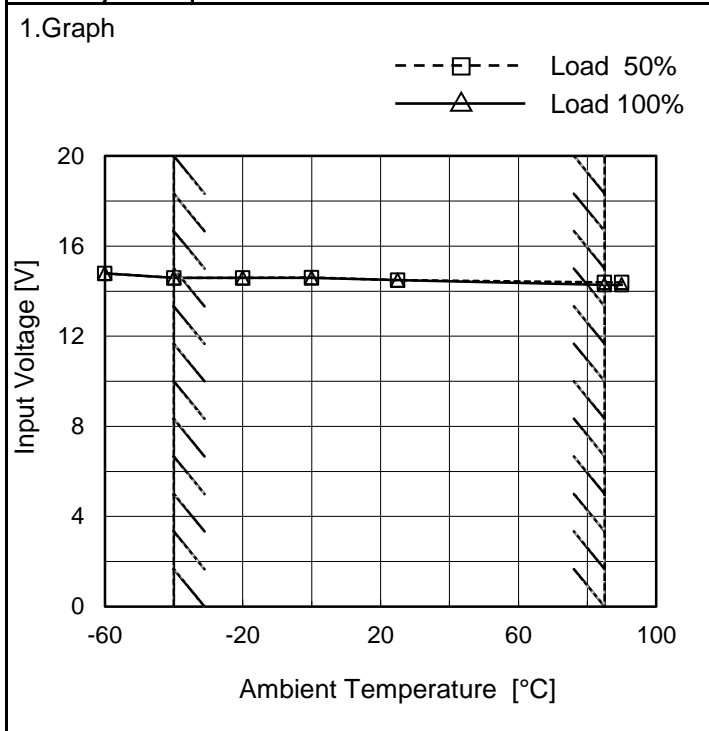
Testing Circuitry Figure A



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.8	14.8
-40	14.6	14.6
-20	14.6	14.6
0	14.6	14.6
25	14.5	14.5
85	14.4	14.3
90	14.4	14.3
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.065A
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2.Values

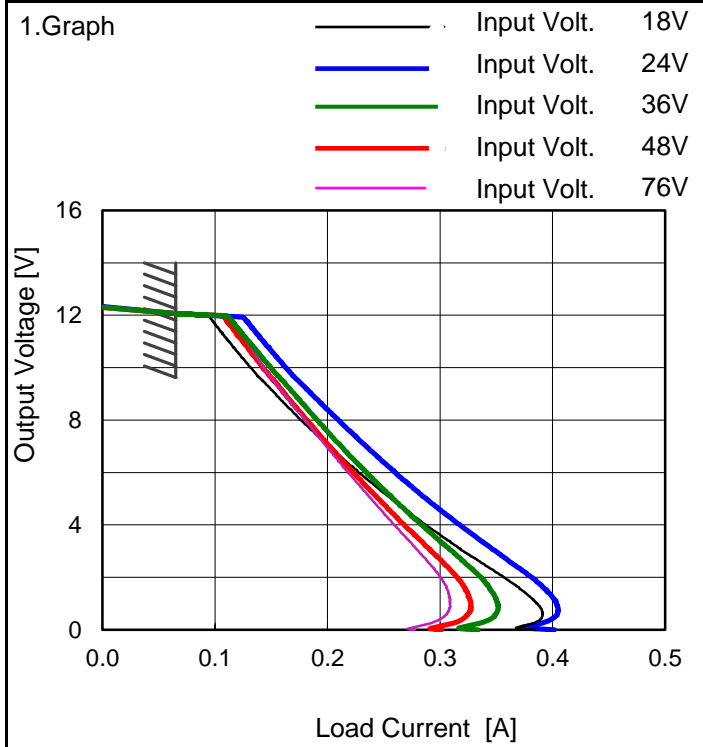
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.8	14.8
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-20	14.6	14.6
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25	14.5	14.5
85	14.4	14.3
90	14.4	14.3
--	-	-
--	-	-
--	-	-
--	-	-

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



Model	MGFW1R54812
Item	Overcurrent Protection
Object	+12V0.065A

Temperature	25°C
Testing Circuitry	Figure A

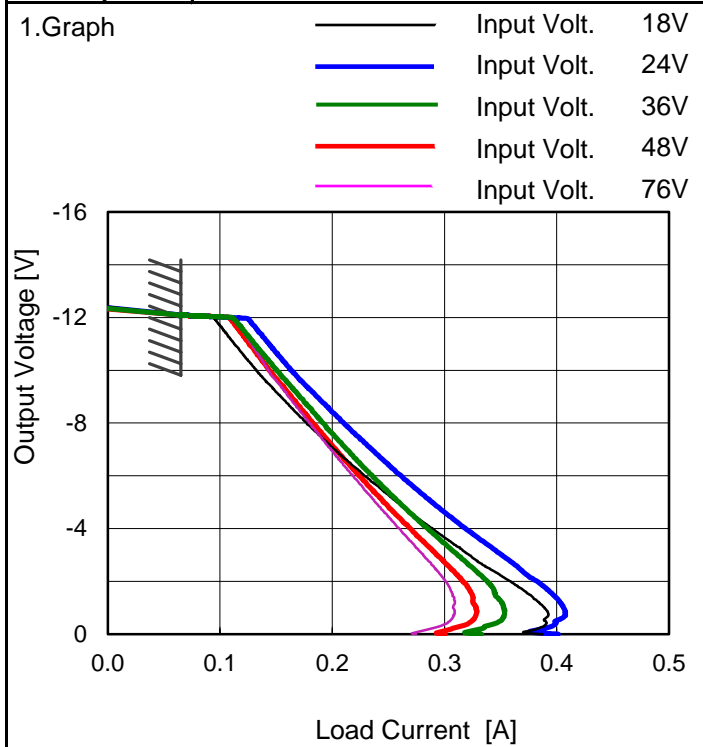


2.Values

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]
11.4	0.105	0.135	0.123	0.117	0.122
10.8	0.116	0.147	0.133	0.128	0.131
9.6	0.139	0.171	0.158	0.150	0.150
8.4	0.166	0.199	0.182	0.173	0.172
7.2	0.196	0.228	0.207	0.197	0.195
6.0	0.227	0.259	0.234	0.223	0.218
4.8	0.262	0.293	0.263	0.250	0.242
3.6	0.300	0.330	0.294	0.277	0.268
2.4	0.342	0.368	0.326	0.306	0.293
1.2	0.381	0.401	0.349	0.326	0.309
0.0	0.385	0.402	0.334	0.301	0.278
--	-	-	-	-	-

-12V: Rated Load Current

Object	-12V0.065A
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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]
-11.4	0.106	0.136	0.123	0.119	0.122
-10.8	0.117	0.147	0.135	0.130	0.130
-9.6	0.140	0.172	0.159	0.151	0.150
-8.4	0.168	0.199	0.183	0.175	0.172
-7.2	0.196	0.230	0.209	0.199	0.194
-6.0	0.228	0.261	0.236	0.224	0.218
-4.8	0.264	0.294	0.264	0.250	0.243
-3.6	0.301	0.331	0.295	0.278	0.267
-2.4	0.343	0.369	0.328	0.307	0.293
-1.2	0.384	0.403	0.351	0.325	0.309
0.0	0.387	0.401	0.333	0.301	0.275
--	-	-	-	-	-

+12V: Rated Load Current

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



Model		MGFW1R54812		Temperature 25°C																																																																														
Item		Switching frequency (by Load Current)		Testing Circuitry Figure A																																																																														
Object		+/-12V0.065A																																																																																
1.Graph		<p> —△— Input Volt. 18V - - - □ - - - Input Volt. 24V - · · * · · - · Input Volt. 36V - · · ○ · · - · Input Volt. 48V - - ◇ - - Input Volt. 76V </p>		2.Values																																																																														
				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Current [A]</th> </tr> <tr> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.000</td><td>359</td><td>411</td><td>477</td><td>508</td><td>552</td></tr> <tr><td>0.013</td><td>281</td><td>336</td><td>406</td><td>447</td><td>491</td></tr> <tr><td>0.026</td><td>231</td><td>284</td><td>353</td><td>395</td><td>443</td></tr> <tr><td>0.039</td><td>195</td><td>245</td><td>313</td><td>354</td><td>404</td></tr> <tr><td>0.052</td><td>169</td><td>215</td><td>280</td><td>321</td><td>371</td></tr> <tr><td>0.065</td><td>149</td><td>192</td><td>254</td><td>293</td><td>343</td></tr> <tr><td>0.072</td><td>140</td><td>182</td><td>242</td><td>280</td><td>330</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Input Current [A]					Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.000	359	411	477	508	552	0.013	281	336	406	447	491	0.026	231	284	353	395	443	0.039	195	245	313	354	404	0.052	169	215	280	321	371	0.065	149	192	254	293	343	0.072	140	182	242	280	330	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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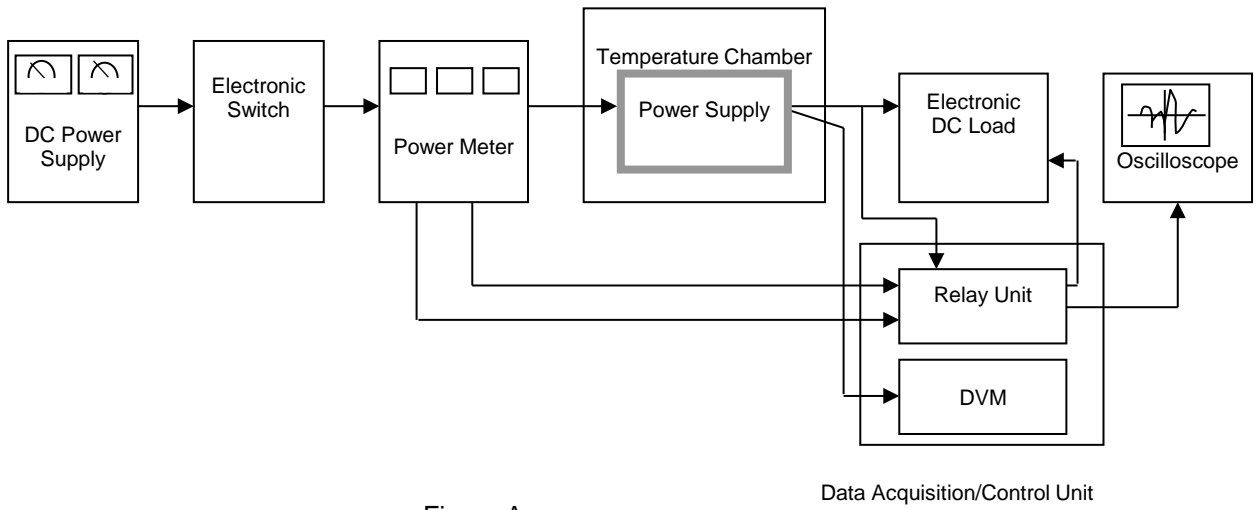


Figure A

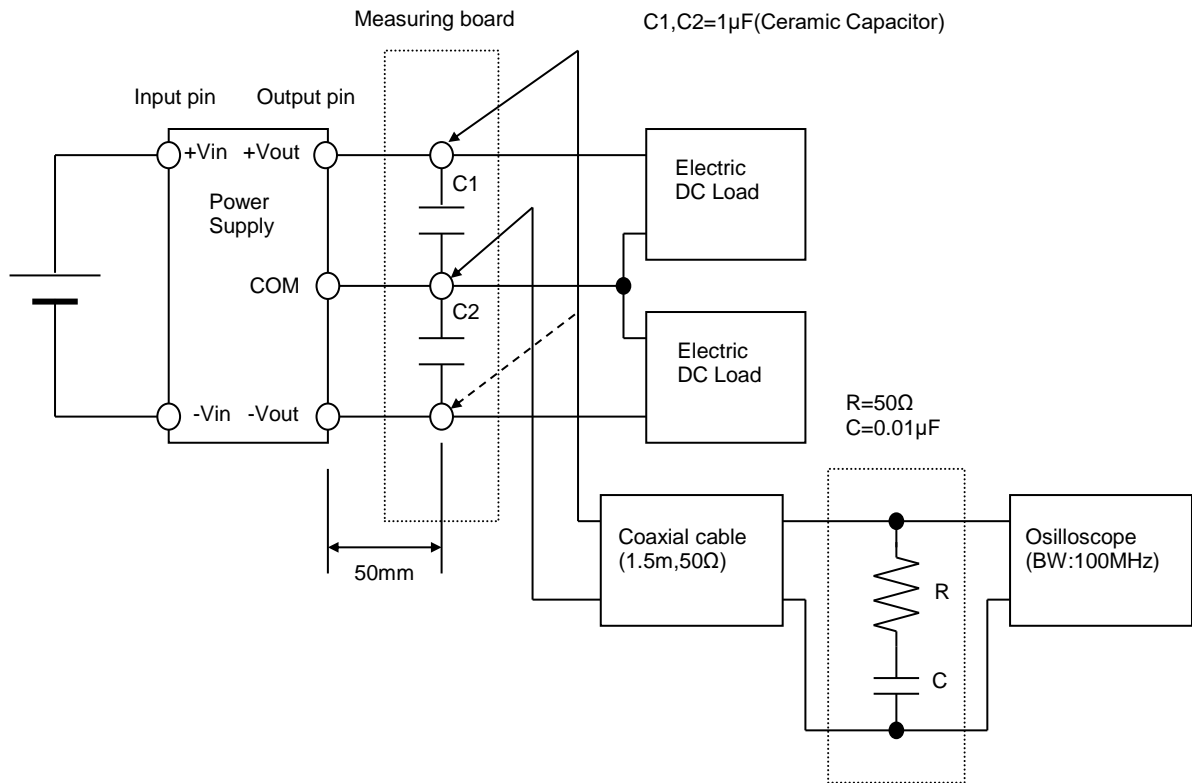


Figure B (Ripple and Ripple noise Characteristic)