

TEST DATA OF MGFS34812

Regulated DC Power Supply
January 11, 2017

Approved by : Takayuki Fukuda Design Manager

Prepared by : Takaaki Sekiguchi Design Engineer

COSEL CO.,LTD.

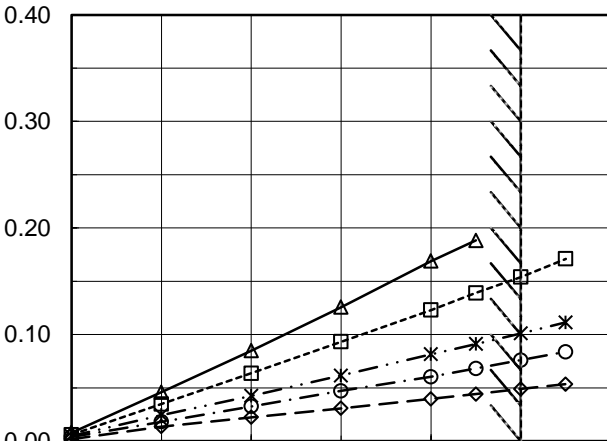
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Model		MGFS34812		Temperature 25°C																																																																																
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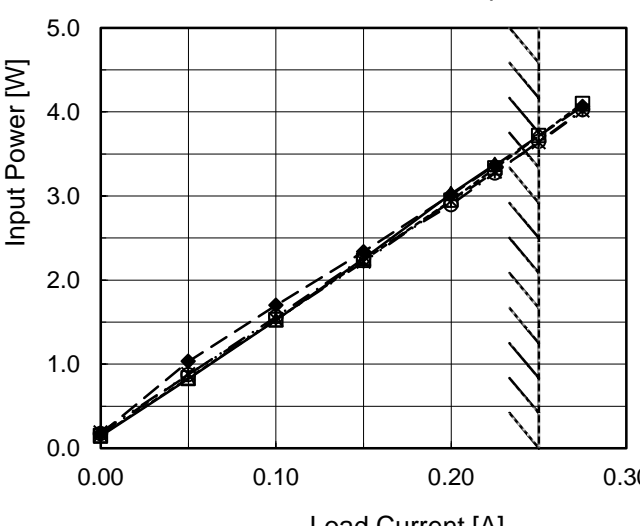
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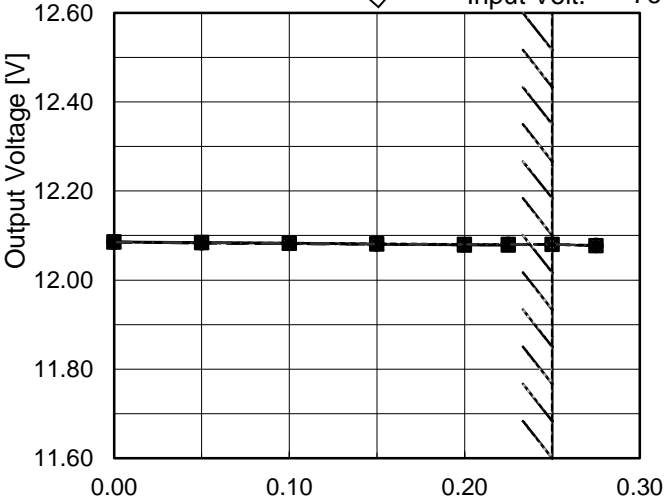
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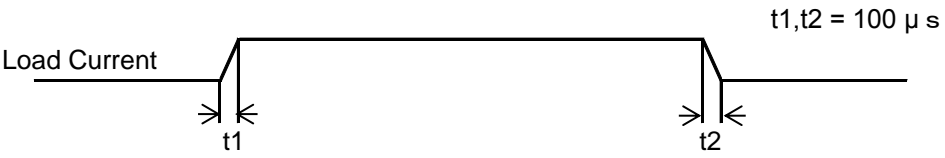
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Model		MGFS34812		Temperature 25°C																																																																														
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		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="5">Output Voltage [V]</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><tr><td>0.000</td><td>12.086</td><td>12.086</td><td>12.085</td><td>12.085</td><td>12.086</td></tr><tr><td>0.050</td><td>12.084</td><td>12.084</td><td>12.083</td><td>12.083</td><td>12.083</td></tr><tr><td>0.100</td><td>12.083</td><td>12.083</td><td>12.082</td><td>12.082</td><td>12.081</td></tr><tr><td>0.150</td><td>12.081</td><td>12.082</td><td>12.081</td><td>12.080</td><td>12.080</td></tr><tr><td>0.200</td><td>12.079</td><td>12.080</td><td>12.080</td><td>12.079</td><td>12.079</td></tr><tr><td>0.225</td><td>12.078</td><td>12.080</td><td>12.080</td><td>12.080</td><td>12.079</td></tr><tr><td>0.250</td><td>- ※</td><td>12.080</td><td>12.080</td><td>12.080</td><td>12.080</td></tr><tr><td>0.275</td><td>- ※</td><td>12.077</td><td>12.078</td><td>12.078</td><td>12.077</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></table>				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	12.086	12.086	12.085	12.085	12.086	0.050	12.084	12.084	12.083	12.083	12.083	0.100	12.083	12.083	12.082	12.082	12.081	0.150	12.081	12.082	12.081	12.080	12.080	0.200	12.079	12.080	12.080	12.079	12.079	0.225	12.078	12.080	12.080	12.080	12.079	0.250	- ※	12.080	12.080	12.080	12.080	0.275	- ※	12.077	12.078	12.078	12.077	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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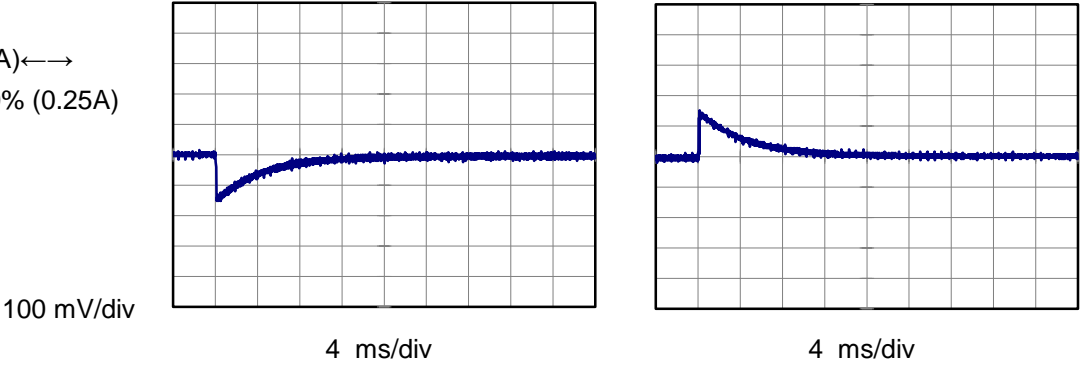


Model	MGFS34812		
Item	Dynamic Load Response	Temperature	25°C
Object	+12V0.25A	Testing Circuitry	Figure A

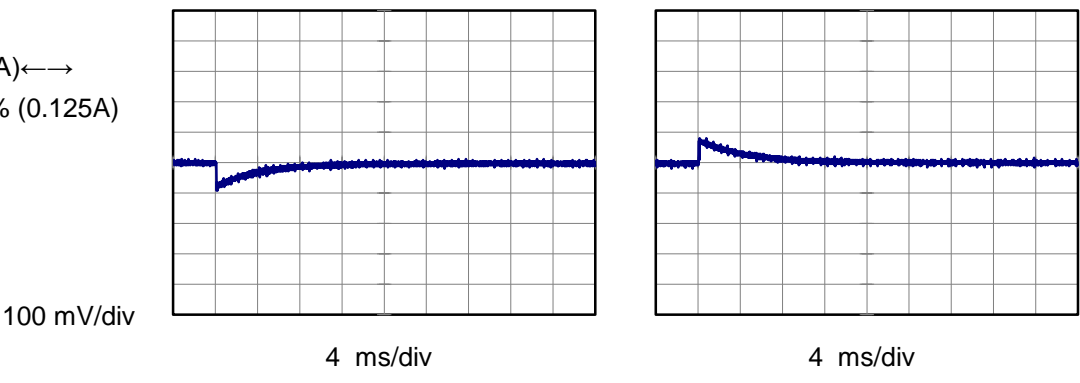
Input Volt. 48 V
Cycle 100 ms



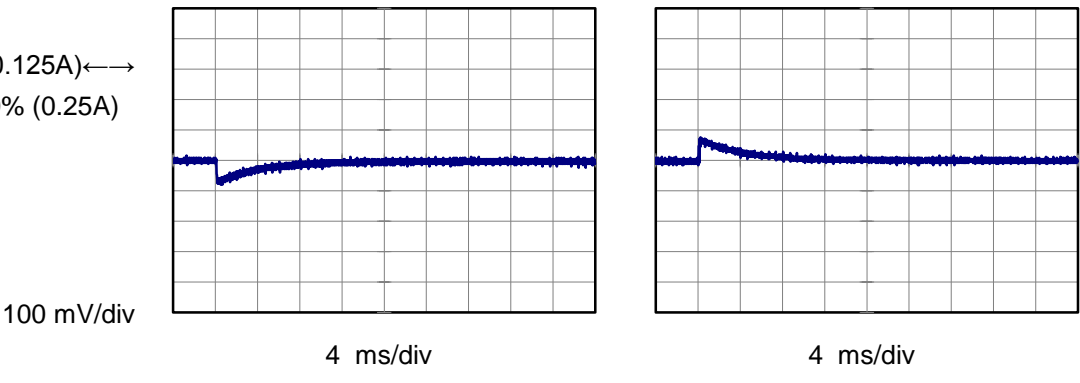
Min.Load (0A) ←→
Load 100% (0.25A)



Min.Load (0A) ←→
Load 50% (0.125A)




Load 50% (0.125A) ←→
Load 100% (0.25A)

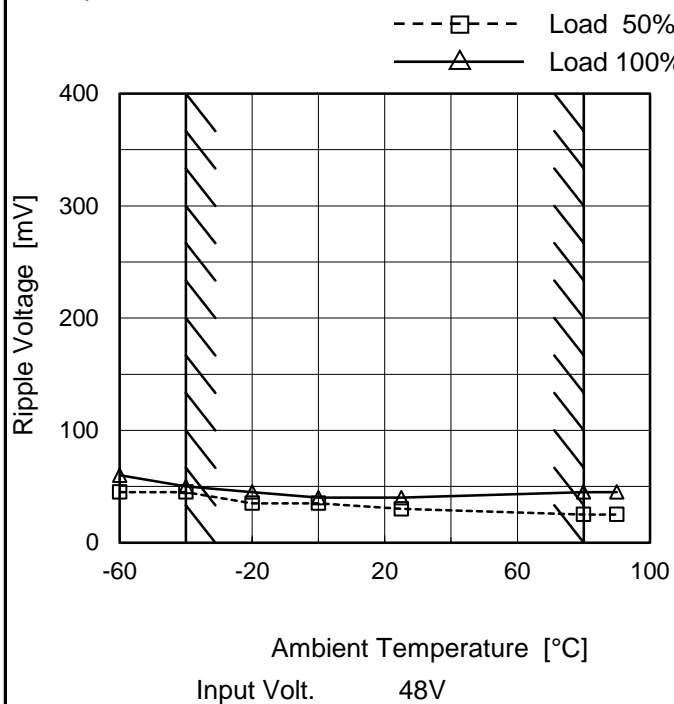


COSEL																																									
Model	MGFS34812																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
		Testing Circuitry	Figure B																																						
Object	+12V0.25A																																								
1.Graph		2.Values																																							
<div><div><div><div>—△— Input Volt. 24V</div><div>- -○- - Input Volt. 76V</div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 24 [V]</th><th>Input Volt. 76 [V]</th></tr><tr><td>0.000</td><td>5</td><td>20</td></tr><tr><td>0.050</td><td>25</td><td>15</td></tr><tr><td>0.100</td><td>25</td><td>20</td></tr><tr><td>0.150</td><td>55</td><td>25</td></tr><tr><td>0.200</td><td>65</td><td>45</td></tr><tr><td>0.225</td><td>75</td><td>50</td></tr><tr><td>0.250</td><td>85</td><td>50</td></tr><tr><td>0.275</td><td>95</td><td>50</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 24 [V]	Input Volt. 76 [V]	0.000	5	20	0.050	25	15	0.100	25	20	0.150	55	25	0.200	65	45	0.225	75	50	0.250	85	50	0.275	95	50	--	-	-	--	-	-	--	-	-
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<div><div><div>Ripple [mVp-p]</div><div></div></div></div> <div>Fig.Complex Ripple Wave Form</div>																																									

Model		MGFS34812		Temperature 25°C																																					
Item		Ripple-Noise		Testing Circuitry Figure B																																					
Object		+12V0.25A																																							
1.Graph				2.Values																																					
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Model	MGFS34812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.25A

1.Graph



Measured by 100 MHz Oscilloscope.

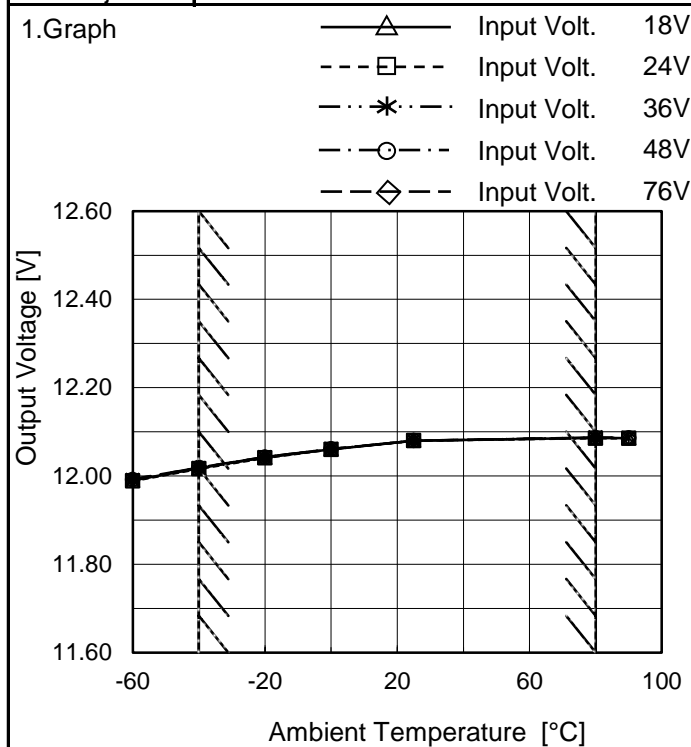
Note: Slanted line shows the range of the rated ambient temperature.

Testing Circuitry Figure B

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	45	60
-40	45	50
-20	35	45
0	35	40
25	30	40
80	25	45
90	25	45
--	-	-
--	-	-
--	-	-
--	-	-

Model	MGFS34812
Item	Ambient Temperature Drift
Object	+12V0.25A



Testing Circuitry Figure A

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	11.990	11.989	11.991	11.992	11.993
-40	12.017	12.016	12.018	12.019	12.019
-20	12.042	12.041	12.043	12.043	12.043
0	12.061	12.060	12.061	12.061	12.061
25	12.080	12.080	12.080	12.080	12.080
80	12.086	12.086	12.087	12.087	12.087
90	12.086	12.085	12.086	12.086	12.086
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Note: In case of Input Volt. 18V, Load 80%.
 Other case Load 100%.



Model		MGFS34812	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+12V0.25A	

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 - 80°C

Input Voltage : 24 - 76V

Load Current : 0 - 0.25A

* 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

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	80	76	0	12.097	±41	±0.3
Minimum Voltage	-40	24	0.25	12.016		

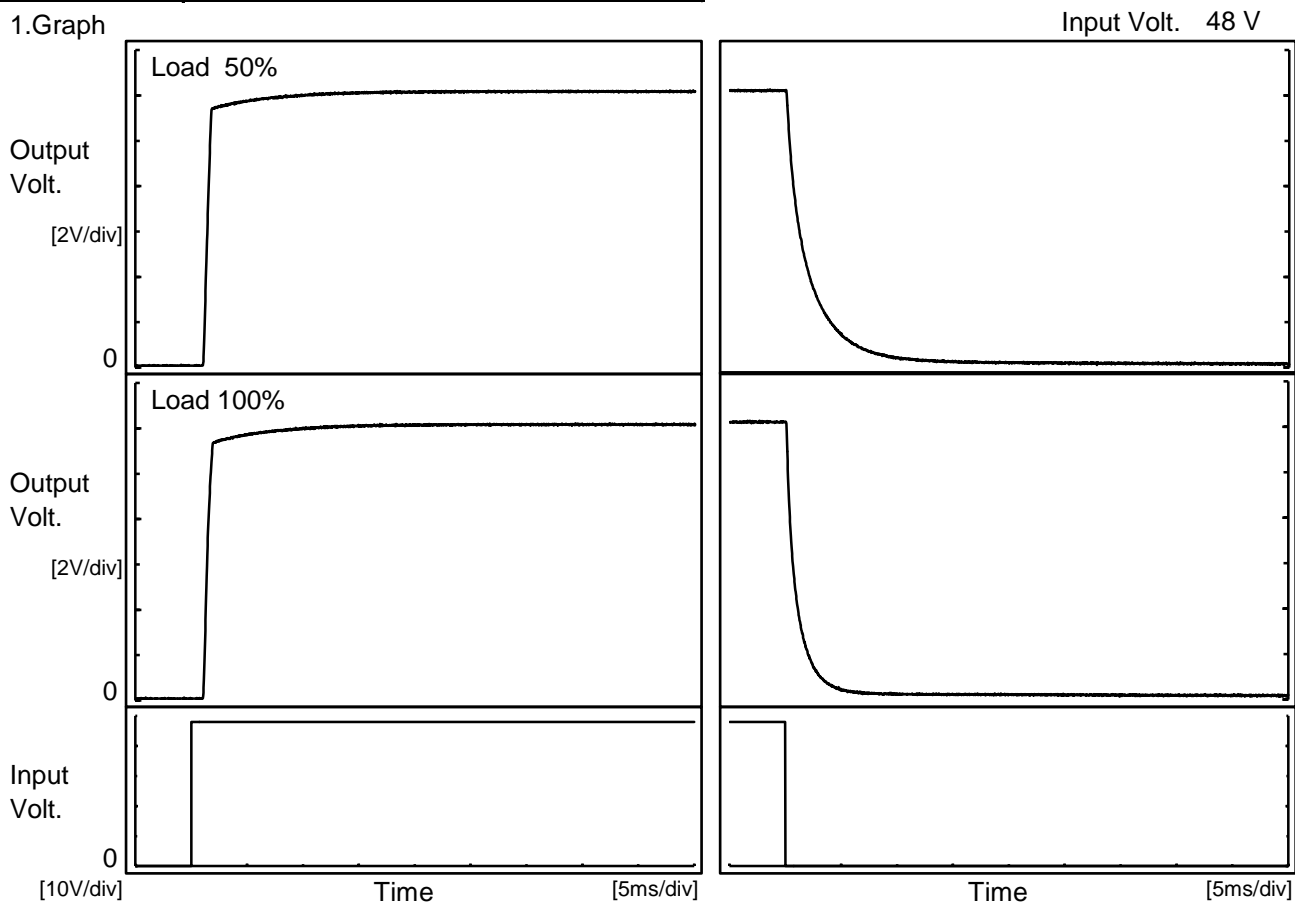
COSEL

Model		MGFS34812	
Item		Time Lapse Drift	
Object		+12V0.25A	
1.Graph		2.Values	
<div><div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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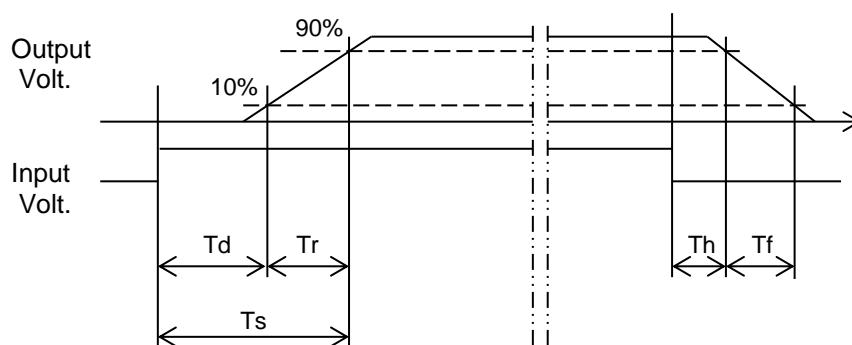
Model	MGFS34812	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V0.25A		

1.Graph



2.Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.2	0.6	1.8	0.3	5.2
100 %	1.2	0.7	1.9	0.2	2.6



Model		MGFS34812	Testing Circuitry Figure A																																						
Item		Minimum Input Voltage for Regulated Output Voltage																																							
Object		+12V0.25A																																							
1.Graph			2.Values																																						
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 80%</div></div></div> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>			<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 80%</th></tr><tr><td>-60</td><td>14.7</td><td>14.7</td></tr><tr><td>-40</td><td>14.6</td><td>14.6</td></tr><tr><td>-20</td><td>14.6</td><td>14.6</td></tr><tr><td>0</td><td>14.5</td><td>14.5</td></tr><tr><td>25</td><td>14.4</td><td>14.4</td></tr><tr><td>80</td><td>14.3</td><td>14.3</td></tr><tr><td>90</td><td>14.3</td><td>14.2</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 80%	-60	14.7	14.7	-40	14.6	14.6	-20	14.6	14.6	0	14.5	14.5	25	14.4	14.4	80	14.3	14.3	90	14.3	14.2	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																								
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Model	MGFS34812																																																																																								
Item	Overcurrent Protection	Temperature	25°C																																																																																						
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<div><div><div></div>Input Volt. 18V</div><div><div></div>Input Volt. 24V</div><div><div></div>Input Volt. 36V</div><div><div></div>Input Volt. 48V</div><div><div></div>Input Volt. 76V</div></div> <div><div>Output Voltage [V]</div><div>Load Current [A]</div></div>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="5">Load 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><tr><td>11.4</td><td>0.258</td><td>0.305</td><td>0.329</td><td>0.329</td><td>0.341</td></tr><tr><td>10.8</td><td>0.269</td><td>0.318</td><td>0.342</td><td>0.340</td><td>0.350</td></tr><tr><td>9.6</td><td>0.292</td><td>0.345</td><td>0.369</td><td>0.363</td><td>0.367</td></tr><tr><td>8.4</td><td>0.321</td><td>0.377</td><td>0.396</td><td>0.386</td><td>0.388</td></tr><tr><td>7.2</td><td>0.354</td><td>0.411</td><td>0.423</td><td>0.411</td><td>0.409</td></tr><tr><td>6.0</td><td>0.392</td><td>0.446</td><td>0.455</td><td>0.437</td><td>0.433</td></tr><tr><td>4.8</td><td>0.435</td><td>0.485</td><td>0.488</td><td>0.468</td><td>0.457</td></tr><tr><td>3.6</td><td>0.483</td><td>0.531</td><td>0.525</td><td>0.499</td><td>0.483</td></tr><tr><td>2.4</td><td>0.538</td><td>0.581</td><td>0.564</td><td>0.531</td><td>0.509</td></tr><tr><td>1.2</td><td>0.597</td><td>0.630</td><td>0.596</td><td>0.556</td><td>0.525</td></tr><tr><td>0.0</td><td>0.588</td><td>0.597</td><td>0.545</td><td>0.500</td><td>0.464</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr></table>					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	0.258	0.305	0.329	0.329	0.341	10.8	0.269	0.318	0.342	0.340	0.350	9.6	0.292	0.345	0.369	0.363	0.367	8.4	0.321	0.377	0.396	0.386	0.388	7.2	0.354	0.411	0.423	0.411	0.409	6.0	0.392	0.446	0.455	0.437	0.433	4.8	0.435	0.485	0.488	0.468	0.457	3.6	0.483	0.531	0.525	0.499	0.483	2.4	0.538	0.581	0.564	0.531	0.509	1.2	0.597	0.630	0.596	0.556	0.525	0.0	0.588	0.597	0.545	0.500	0.464	--	-	-	-	-	-
Output Voltage [V]	Load Current [A]																																																																																								
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10.8	0.269	0.318	0.342	0.340	0.350																																																																																				
9.6	0.292	0.345	0.369	0.363	0.367																																																																																				
8.4	0.321	0.377	0.396	0.386	0.388																																																																																				
7.2	0.354	0.411	0.423	0.411	0.409																																																																																				
6.0	0.392	0.446	0.455	0.437	0.433																																																																																				
4.8	0.435	0.485	0.488	0.468	0.457																																																																																				
3.6	0.483	0.531	0.525	0.499	0.483																																																																																				
2.4	0.538	0.581	0.564	0.531	0.509																																																																																				
1.2	0.597	0.630	0.596	0.556	0.525																																																																																				
0.0	0.588	0.597	0.545	0.500	0.464																																																																																				
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<p>Note: Slanted line shows the range of the rated load current.</p> <p>Maximum output current at minimum input Voltage is 80% of rated load current.</p> <p>Refer to instruction manuals for details of input derating.</p>																																																																																									

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Model		MGFS34812		Temperature 25°C																																																																														
Item		Switching frequency (by Load Current)		Testing Circuitry Figure A																																																																														
Object		+12V0.25A																																																																																
1.Graph		<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>---□---</div><div>Input Volt.</div><div>24V</div></div><div><div>-·-·*·-·-</div><div>Input Volt.</div><div>36V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>48V</div></div><div><div>---◇---</div><div>Input Volt.</div><div>76V</div></div></div> <div>Switching Frequency [kHz]</div> <div>Load Current [A]</div> <div>Note: Slanted line shows the range of the rated load current.</div> <div>When load current is low, MG operates intermittently, so switching frequency would not become constant.</div>		2.Values																																																																														
				<table><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><tr><td>0.000</td><td>468</td><td>529</td><td>608</td><td>650</td><td>710</td></tr><tr><td>0.050</td><td>323</td><td>390</td><td>479</td><td>531</td><td>586</td></tr><tr><td>0.100</td><td>245</td><td>306</td><td>392</td><td>445</td><td>504</td></tr><tr><td>0.150</td><td>196</td><td>252</td><td>332</td><td>382</td><td>443</td></tr><tr><td>0.200</td><td>162</td><td>213</td><td>287</td><td>335</td><td>394</td></tr><tr><td>0.225</td><td>150</td><td>199</td><td>270</td><td>317</td><td>375</td></tr><tr><td>0.250</td><td>- ※</td><td>184</td><td>253</td><td>298</td><td>356</td></tr><tr><td>0.275</td><td>- ※</td><td>173</td><td>238</td><td>283</td><td>340</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></table> <div>※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.</div>		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	468	529	608	650	710	0.050	323	390	479	531	586	0.100	245	306	392	445	504	0.150	196	252	332	382	443	0.200	162	213	287	335	394	0.225	150	199	270	317	375	0.250	- ※	184	253	298	356	0.275	- ※	173	238	283	340	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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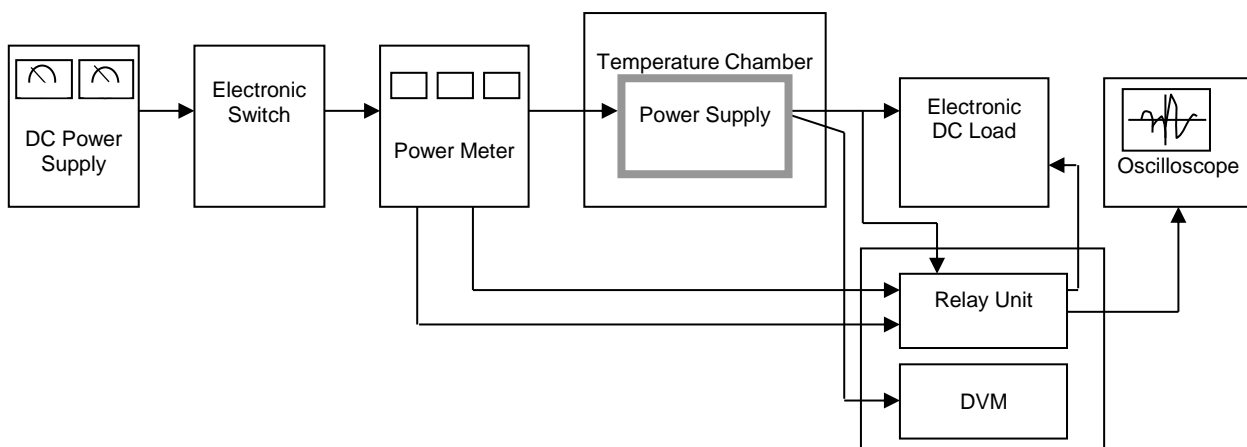


Figure A

Data Acquisition/Control Unit

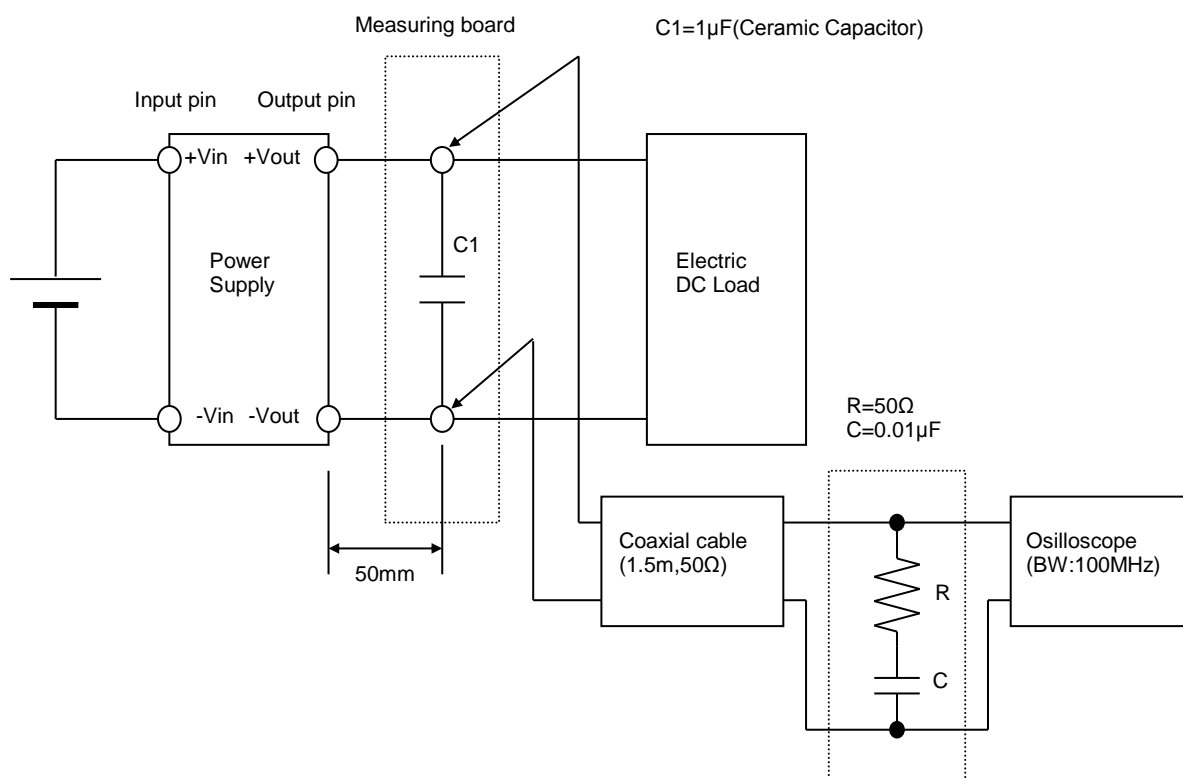


Figure B (Ripple and Ripple noise Characteristic)