



# TEST DATA OF MHFS34809

Regulated DC Power Supply  
May 29, 2020

Approved by : Kenichi Tsukada  
Kenichi Tsukada Design Manager

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Yoshihiko Saeki Design Engineer

**COSEL CO.,LTD.**

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Model		MHFS34809		Temperature 25°C																																																																												
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																																												
Object																																																																																
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>		2.Values																																																																												
<div><div><div>Input Current [A]</div><div><div><div><div><div>0.4</div><div>0.3</div><div>0.2</div><div>0.1</div><div>0.0</div></div><div><div>0.00</div><div>0.10</div><div>0.20</div><div>0.30</div><div>0.40</div></div></div></div><div><div><div>0.00</div><div>0.10</div><div>0.20</div><div>0.30</div><div>0.40</div></div></div></div><div><div><div>Load Current [A]</div></div></div></div></div>		<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>0.008</td><td>0.007</td><td>0.005</td><td>0.003</td><td>0.004</td></tr><tr><td>0.066</td><td>0.044</td><td>0.034</td><td>0.024</td><td>0.019</td><td>0.013</td></tr><tr><td>0.132</td><td>0.082</td><td>0.062</td><td>0.042</td><td>0.033</td><td>0.023</td></tr><tr><td>0.198</td><td>0.120</td><td>0.090</td><td>0.061</td><td>0.046</td><td>0.032</td></tr><tr><td>0.264</td><td>0.159</td><td>0.118</td><td>0.080</td><td>0.060</td><td>0.041</td></tr><tr><td>0.297</td><td>0.180</td><td>0.133</td><td>0.089</td><td>0.068</td><td>0.045</td></tr><tr><td>0.330</td><td>0.200</td><td>0.148</td><td>0.099</td><td>0.075</td><td>0.049</td></tr><tr><td>0.363</td><td>0.220</td><td>0.163</td><td>0.109</td><td>0.082</td><td>0.054</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]	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	0.008	0.007	0.005	0.003	0.004	0.066	0.044	0.034	0.024	0.019	0.013	0.132	0.082	0.062	0.042	0.033	0.023	0.198	0.120	0.090	0.061	0.046	0.032	0.264	0.159	0.118	0.080	0.060	0.041	0.297	0.180	0.133	0.089	0.068	0.045	0.330	0.200	0.148	0.099	0.075	0.049	0.363	0.220	0.163	0.109	0.082	0.054	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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Model

MHFS34809

Item

Efficiency (by Load Current)

Object

1.Graph

—△—

Input Volt.

18V

---□---

Input Volt.

24V

-·-·\*-·-

Input Volt.

36V

-·-○-·-

Input Volt.

48V

---◇---

Input Volt.

76V

Efficiency [%]

90

80

70

60

50

0.00

0.10

0.20

0.30

0.40

Load Current [A]

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

2.Values

Load Current [A]	Efficiency [%]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	-	-	-	-	-
0.066	74.2	72.5	69.6	66.8	58.5
0.132	80.2	80.0	78.6	76.3	67.1
0.198	82.4	82.6	81.5	79.9	73.8
0.264	82.9	83.5	82.8	81.9	76.9
0.297	82.7	83.6	83.5	82.5	78.2
0.330	82.5	83.4	83.8	82.9	79.2
0.363	82.3	83.5	83.8	83.3	79.8
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

- 2 -

BC-11619



Model		MHFS34809	Temperature		25°C																																
Item		Line Regulation	Testing Circuitry		Figure A																																
Object		+9V0.33A																																			
1.Graph			2.Values																																		
<div><div><div><div><div></div><div></div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>Load 50%</div><div><div><div><div></div><div></div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div>Load 100%</div></div> <table><thead><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>17.2</td><td>9.036</td><td>9.034</td></tr><tr><td>18.0</td><td>9.036</td><td>9.034</td></tr><tr><td>24.0</td><td>9.036</td><td>9.034</td></tr><tr><td>30.0</td><td>9.036</td><td>9.034</td></tr><tr><td>36.0</td><td>9.036</td><td>9.034</td></tr><tr><td>48.0</td><td>9.036</td><td>9.034</td></tr><tr><td>60.0</td><td>9.036</td><td>9.034</td></tr><tr><td>76.0</td><td>9.036</td><td>9.034</td></tr><tr><td>80.0</td><td>9.036</td><td>9.034</td></tr></tbody></table> <p>Note: Slanted line shows the range of the rated input voltage.</p>			Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	17.2	9.036	9.034	18.0	9.036	9.034	24.0	9.036	9.034	30.0	9.036	9.034	36.0	9.036	9.034	48.0	9.036	9.034	60.0	9.036	9.034	76.0	9.036	9.034	80.0	9.036	9.034			
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Item	Ripple-Noise	Temperature	25°C																																																																															
Object	+9V0.33A	Testing Circuitry	Figure B																																																																															
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<div><div>Input Voltage 48V Load 100%</div><div><p>10[mV/div] 1[μs/div]</p></div></div>																																																																																		

Model		MHFS34809	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Response	
Object		+9V0.33A	

Input Volt.	48 V
Cycle	100 ms

Temperature	25°C
Testing Circuitry	Figure A

$$t_1, t_2 = 50 \mu s$$

Load Current

A diagram of a fillet weld joint. Two plates are joined by a fillet weld. The throat thickness, which is the minimum thickness of the weld, is labeled as  $t_2$ .

Min.Load (0A) ← →  
Load 100% (0.33A)

200 mV/div

1 ms/div

Min.Load (0A) ← →  
Load 50% (0.165A)

200 mV/div

1 ms/div

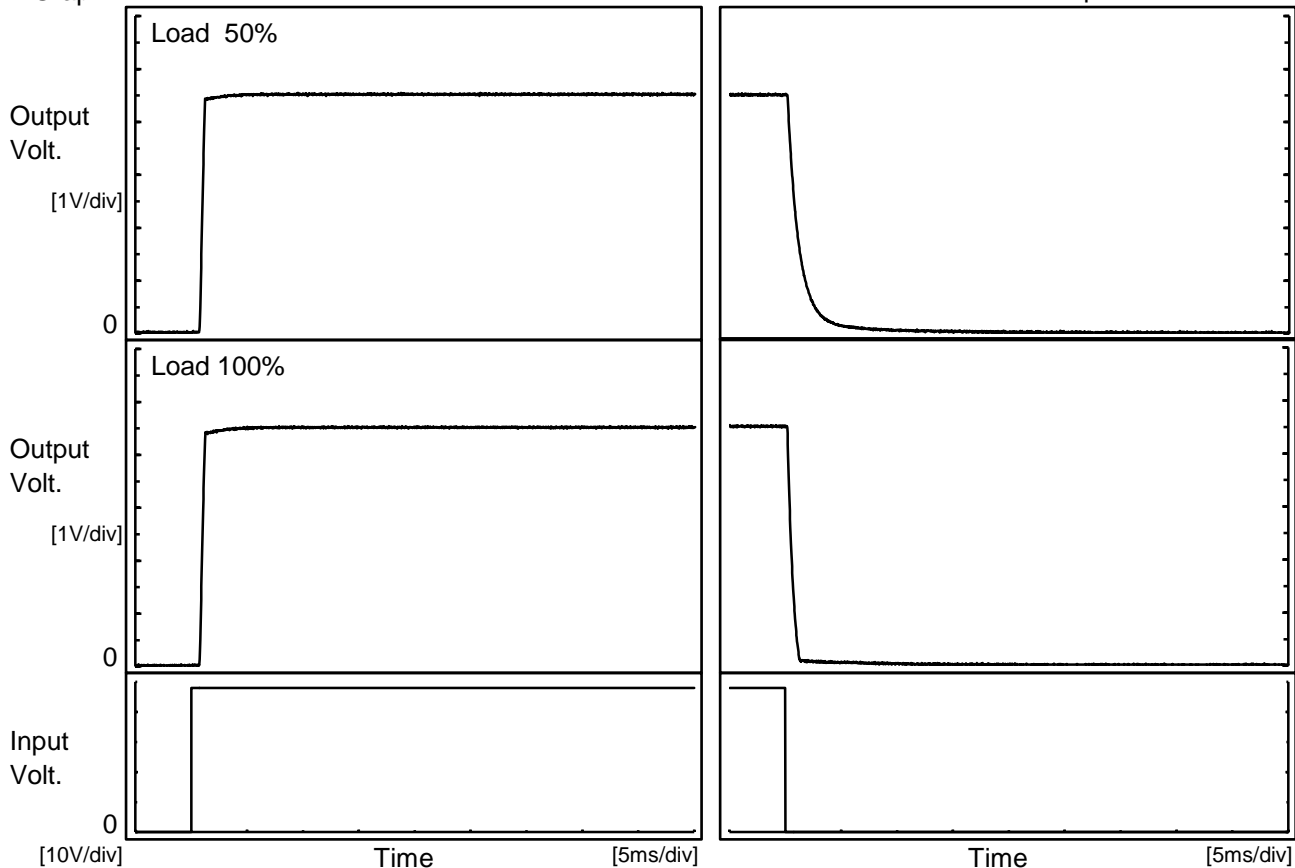
1 ms/div

1 ms/div



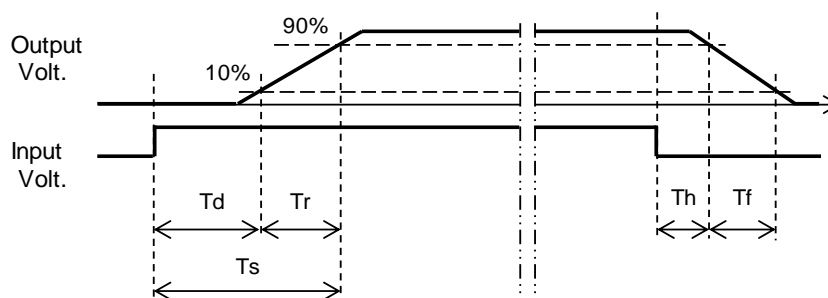
Model	MHFS34809	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+9V0.33A		

# 1.Graph



# 2.Values

Load \ Time	T <sub>d</sub>	T <sub>r</sub>	T <sub>s</sub>	T <sub>h</sub>	T <sub>f</sub>
50 %	0.8	0.4	1.2	0.3	2.4
100 %	0.8	0.4	1.2	0.2	0.8





Model		MHFS34809		Temperature		25°C																																																																																				
Item		Overcurrent Protection		Testing Circuitry		Figure A																																																																																				
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**COSEL**

		Testing Circuitry Figure A
Model	MHFS34809	
Item	Ambient Temperature Drift	
Object	+9V0.33A	

## 1.Values

Ambient Temperature[°C]	Output Voltage [V]				
	Input Volt. 18V	Input Volt. 24V	Input Volt. 36V	Input Volt. 48V	Input Volt. 76V
-40	8.988	8.989	8.990	8.990	8.991
25	9.033	9.033	9.034	9.034	9.034
75	9.035	9.035	9.035	9.035	9.035

Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A
Object	+9V0.33A	

## 1.Values

Ambient Temperature[°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	7.2	7.3
25	7.2	7.2
75	7.0	6.9

Model		MHFS34809	Temperature25°C																																																																													
Item		Switching frequency (by Load Current)	Testing CircuitryFigure A																																																																													
Object		+9V0.33A																																																																														
1.Graph		<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>	2.Values																																																																													
<div>10000</div> <div>Switching Frequency [kHz]</div> <div>1000</div> <div>100</div> <div>0.000.100.200.300.400</div> <div>Load Current [A]</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="5">Switching Frequency [kHz]</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>800</td><td>892</td><td>994</td><td>1015</td><td>978</td></tr><tr><td>0.066</td><td>596</td><td>689</td><td>802</td><td>878</td><td>911</td></tr><tr><td>0.132</td><td>462</td><td>563</td><td>688</td><td>758</td><td>826</td></tr><tr><td>0.198</td><td>382</td><td>480</td><td>589</td><td>653</td><td>721</td></tr><tr><td>0.264</td><td>327</td><td>410</td><td>507</td><td>580</td><td>655</td></tr><tr><td>0.297</td><td>302</td><td>382</td><td>484</td><td>544</td><td>619</td></tr><tr><td>0.330</td><td>284</td><td>354</td><td>457</td><td>522</td><td>590</td></tr><tr><td>0.363</td><td>260</td><td>336</td><td>429</td><td>493</td><td>567</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]	Switching Frequency [kHz]					Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.000	800	892	994	1015	978	0.066	596	689	802	878	911	0.132	462	563	688	758	826	0.198	382	480	589	653	721	0.264	327	410	507	580	655	0.297	302	382	484	544	619	0.330	284	354	457	522	590	0.363	260	336	429	493	567	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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<div>Note: Slanted line shows the range of the rated load current.</div> <div>When load current is low, MH operates intermittently, so switching frequency would not become constant.</div>																																																																																

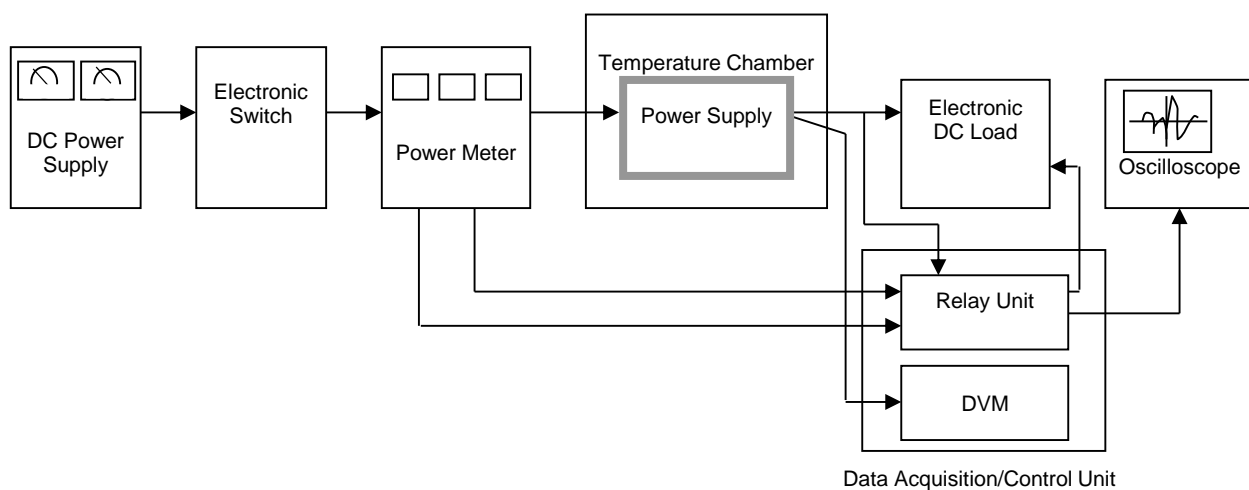


Figure A

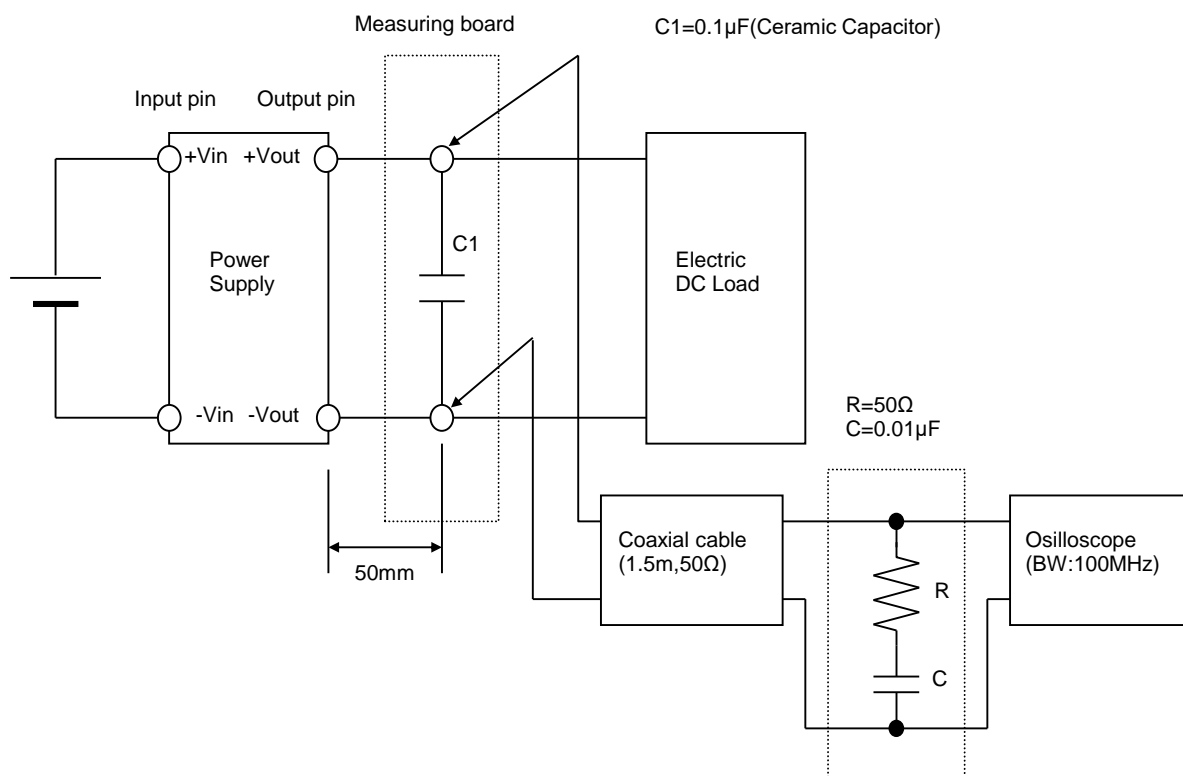


Figure B