



# TEST DATA OF SFS304810

Regulated DC Power Supply  
Apr.5. 2004

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Prepared by : Tatsuya Mano  
Tatsuya Mano Design Engineer

COSEL CO.,LTD.

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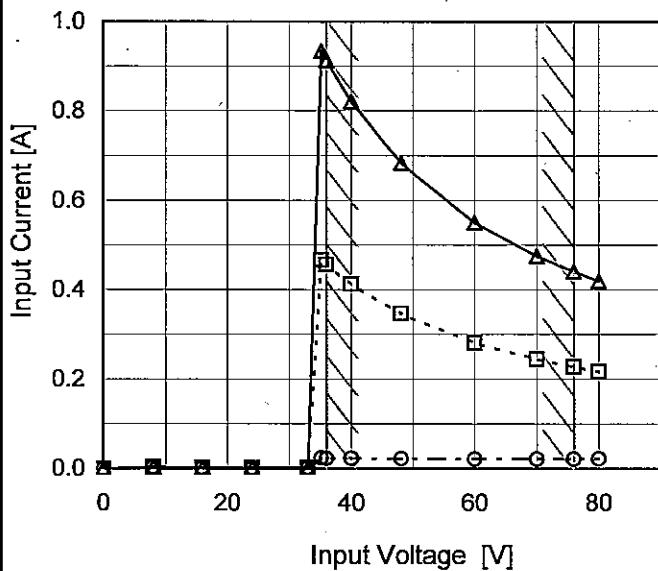
Model SFS304810

Item Input Current (by Input Voltage)

Object \_\_\_\_\_

## 1. Graph

—△— Load 100%  
 - - -□--- Load 50%  
 - - -○--- Load 0%



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

 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
8	0.003	0.003	0.003
16	0.002	0.002	0.002
24	0.002	0.002	0.002
33	0.002	0.002	0.002
35	0.023	0.467	0.934
36	0.023	0.457	0.914
40	0.023	0.413	0.821
48	0.022	0.347	0.684
60	0.022	0.282	0.551
70	0.022	0.245	0.476
76	0.022	0.228	0.441
80	0.022	0.217	0.419
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**COSSEL**

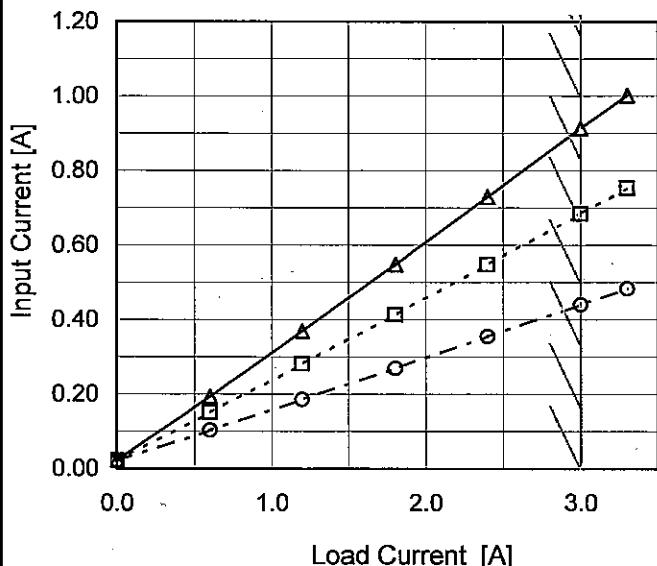
Model SFS304810

Item Input Current (by Load Current)

Object \_\_\_\_\_

1. Graph

—△— Input Volt. 36V  
 - - -□--- Input Volt. 48V  
 - - -○--- Input Volt. 76V



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

 Temperature 25°C  
 Testing Circuitry Figure A

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	0.023	0.022	0.022
0.6	0.194	0.151	0.104
1.2	0.370	0.282	0.186
1.8	0.548	0.414	0.270
2.4	0.729	0.548	0.355
3.0	0.914	0.684	0.441
3.3	1.002	0.753	0.484
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

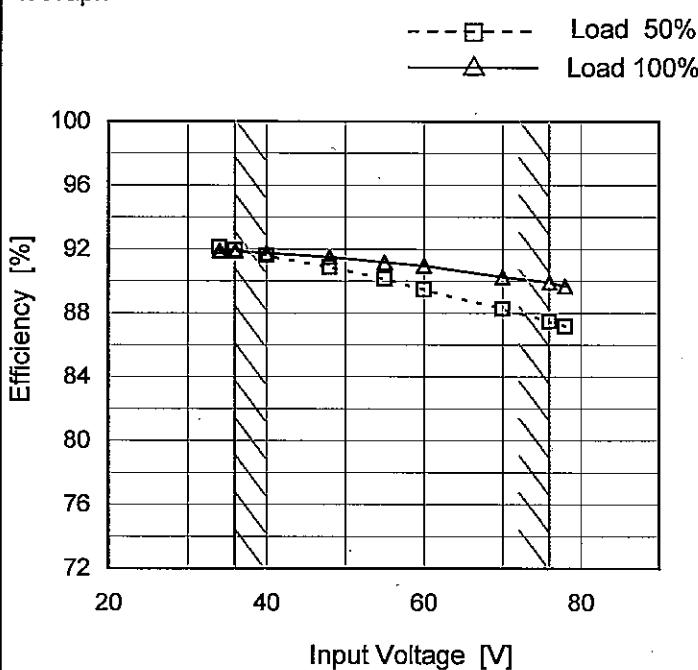
**COSEL**

Model	SFS304810	Temperature 25°C Testing Circuitry Figure A																																																					
Item	Input Power (by Load Current)																																																						
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Note: Slanted line shows the range of the rated load current.

Model	SFS304810
Item	Efficiency (by Input Voltage)
Object	_____

## 1. Graph



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

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	92.1	91.9
36	91.9	91.9
40	91.6	91.7
48	90.9	91.5
55	90.1	91.2
60	89.5	91.0
70	88.3	90.3
76	87.5	89.9
78	87.2	89.7

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Model	SFS304810	Temperature 25°C Testing Circuitry Figure A																																																						
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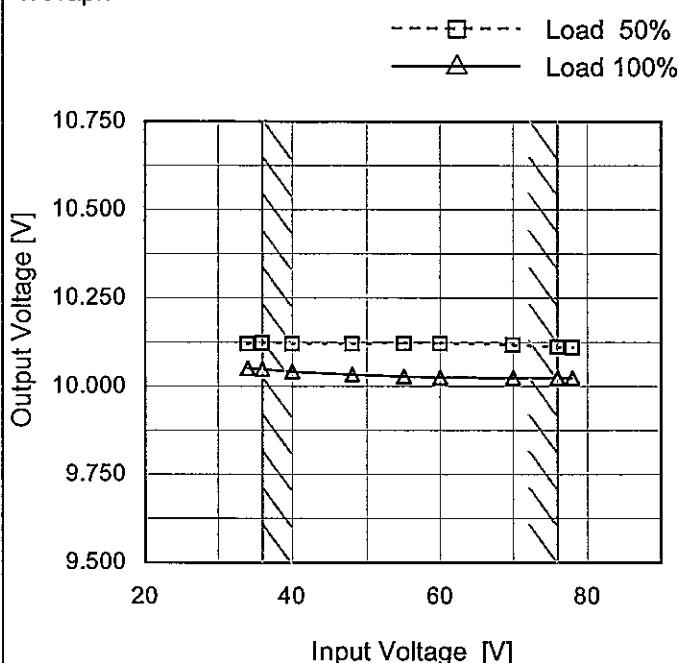
Note: Slanted line shows the range of the rated load current.

**COSEL**

Model	SFS304810
Item	Line Regulation
Object	+10V3A

Temperature 25°C  
Testing Circuitry Figure A

## 1.Graph



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

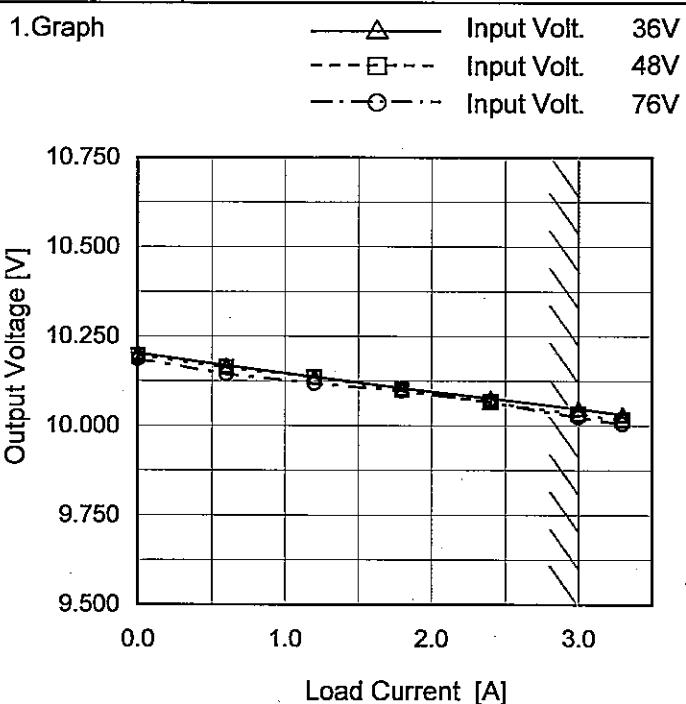
## 2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	10.121	10.051
36	10.122	10.048
40	10.121	10.041
48	10.121	10.033
55	10.122	10.028
60	10.121	10.025
70	10.118	10.024
76	10.112	10.024
78	10.110	10.024

Model SFS304810

Item Load Regulation

Object +10V3A

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	10.203	10.197	10.187
0.6	10.168	10.164	10.144
1.2	10.137	10.136	10.119
1.8	10.105	10.101	10.098
2.4	10.076	10.067	10.067
3.0	10.048	10.033	10.024
3.3	10.032	10.017	10.006
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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

**COSSEL**

Model	SFS304810
Item	Dynamic Load Response
Object	+10V3A

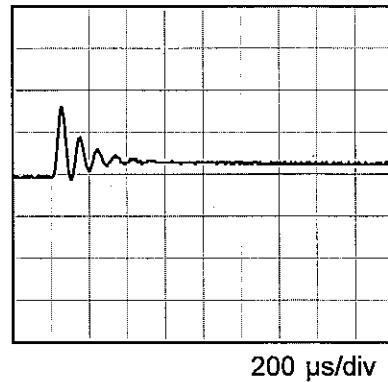
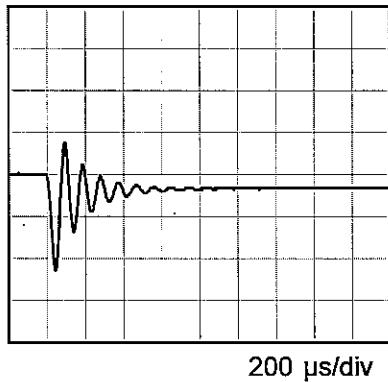
Temperature 25°C  
Testing Circuitry Figure A

Input Volt. 48 V  
Cycle 1000 ms

Load Current 3A / 200 μs

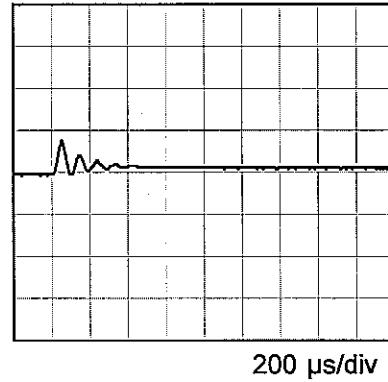
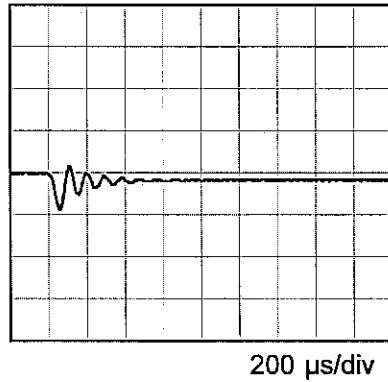
Min. Load (0A) ↔

Load 100% (3A)



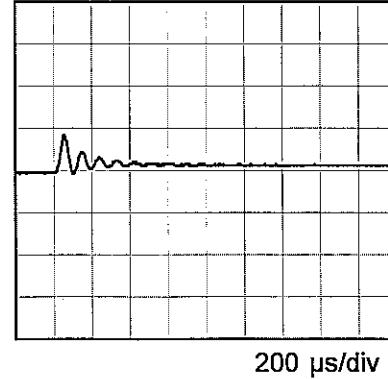
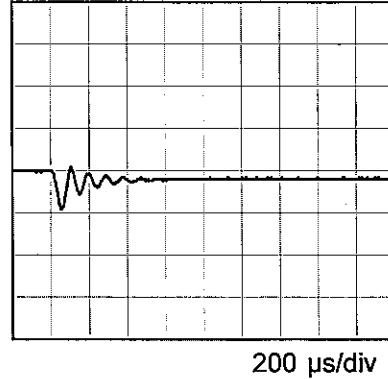
Min. Load (0A) ↔

Load 50% (1.5A)



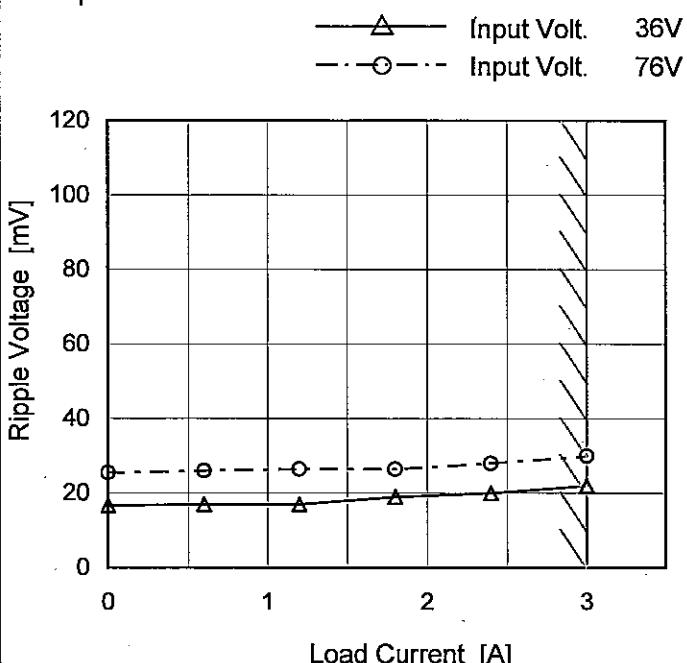
Load 50% (1.5A) ↔

Load 100% (3A)



Model	SFS304810
Item	Ripple Voltage (by Load Current)
Object	+10V3A

## 1. Graph



Measured by 100MHz Ossiloscope.

Ripple Voltage is shown as p-p in the figure below.

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

Temperature 25°C  
Testing Circuitry Figure C

## 2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	17	26
0.6	17	26
1.2	17	27
1.8	19	27
2.4	20	28
3.0	22	30
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

Ripple [mVp-p]

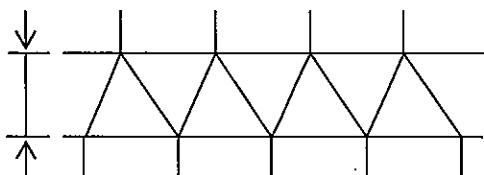


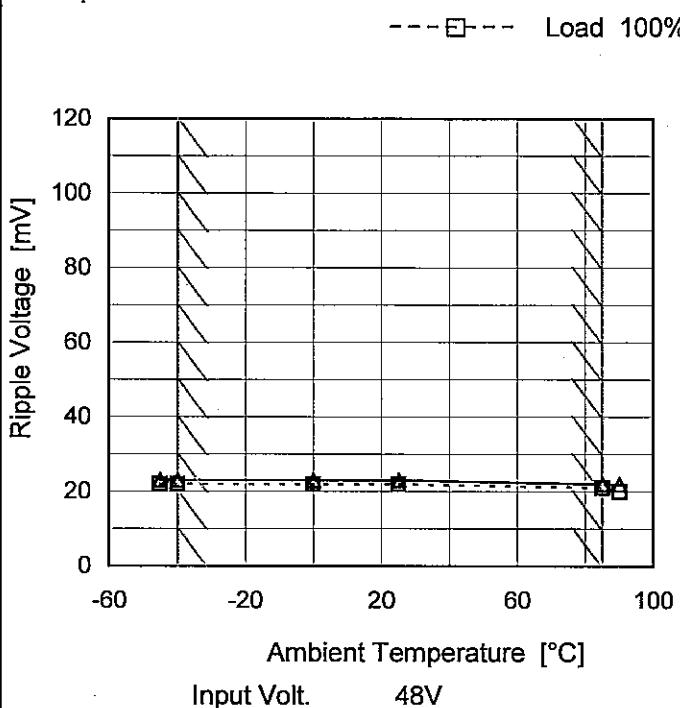
Fig.Complex Ripple Wave Form

COSEL

Model	SFS304810	Temperature Testing Circuitry 25°C Figure C																																						
Item	Ripple-Noise																																							
Object	+10V3A																																							
1. Graph																																								
<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The graph shows two sets of data points: Input Volt. 36V (solid line with triangle markers) and Input Volt. 76V (dashed line with circle markers). The x-axis represents Load Current [A] from 0 to 3. The y-axis represents Ripple-Noise [mV] from 0 to 150. A slanted line indicates the range of the rated load current.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple-Noise [mV] (Input Volt. 36V)</th> <th>Ripple-Noise [mV] (Input Volt. 76V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>~20</td><td>~25</td></tr> <tr><td>0.6</td><td>~20</td><td>~25</td></tr> <tr><td>1.2</td><td>~20</td><td>~25</td></tr> <tr><td>1.8</td><td>~20</td><td>~25</td></tr> <tr><td>2.4</td><td>~22</td><td>~28</td></tr> <tr><td>3.0</td><td>~25</td><td>~31</td></tr> </tbody> </table>			Load Current [A]	Ripple-Noise [mV] (Input Volt. 36V)	Ripple-Noise [mV] (Input Volt. 76V)	0.0	~20	~25	0.6	~20	~25	1.2	~20	~25	1.8	~20	~25	2.4	~22	~28	3.0	~25	~31																	
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Model	SFS304810
Item	Ripple Voltage (by Ambient Temp.)
Object	+10V3A

## 1. Graph



Measured by 100MHz Ossiloscope.

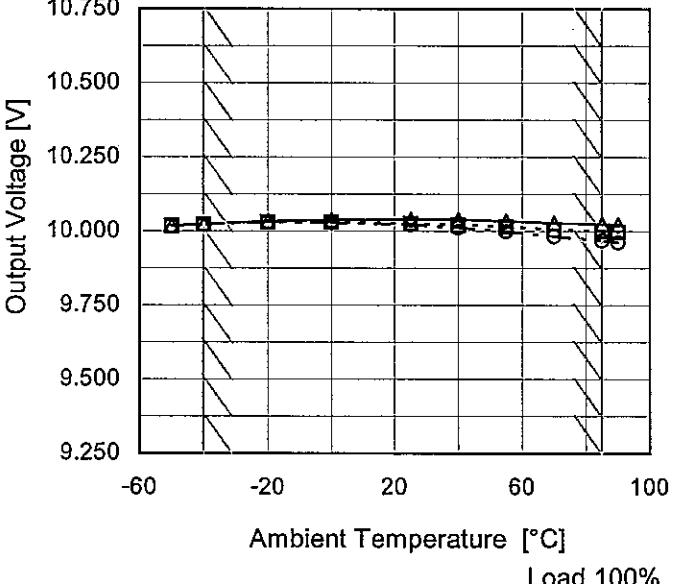
Note: Slanted line shows the range of the rated ambient temperature.

## Testing Circuitry Figure C

## 2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-45	22	23
-40	22	23
0	22	23
25	22	23
85	21	22
90	20	22
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**COSSEL**

Model	SFS304810	Testing Circuitry Figure A																																																					
Item	Ambient Temperature Drift																																																						
Object	+10V3A																																																						
1.Graph	<p>—▲— Input Volt. 36V        - - +--- Input Volt. 48V        - - ○--- Input Volt. 76V</p>  <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>	2.Values																																																					
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>-50</td><td>10.018</td><td>10.018</td><td>10.018</td></tr> <tr> <td>-40</td><td>10.024</td><td>10.023</td><td>10.023</td></tr> <tr> <td>-20</td><td>10.035</td><td>10.031</td><td>10.031</td></tr> <tr> <td>0</td><td>10.039</td><td>10.030</td><td>10.028</td></tr> <tr> <td>25</td><td>10.040</td><td>10.026</td><td>10.022</td></tr> <tr> <td>40</td><td>10.040</td><td>10.022</td><td>10.012</td></tr> <tr> <td>55</td><td>10.035</td><td>10.015</td><td>10.000</td></tr> <tr> <td>70</td><td>10.028</td><td>10.006</td><td>9.983</td></tr> <tr> <td>85</td><td>10.025</td><td>10.001</td><td>9.969</td></tr> <tr> <td>90</td><td>10.024</td><td>9.997</td><td>9.962</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-50	10.018	10.018	10.018	-40	10.024	10.023	10.023	-20	10.035	10.031	10.031	0	10.039	10.030	10.028	25	10.040	10.026	10.022	40	10.040	10.022	10.012	55	10.035	10.015	10.000	70	10.028	10.006	9.983	85	10.025	10.001	9.969	90	10.024	9.997	9.962	--	-	-	-
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Note: Slanted line shows the range of the rated ambient temperature.



Model	SFS304810	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+10V3A	

### 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 : 36 - 76V

Load Current : 0 - 3A

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

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

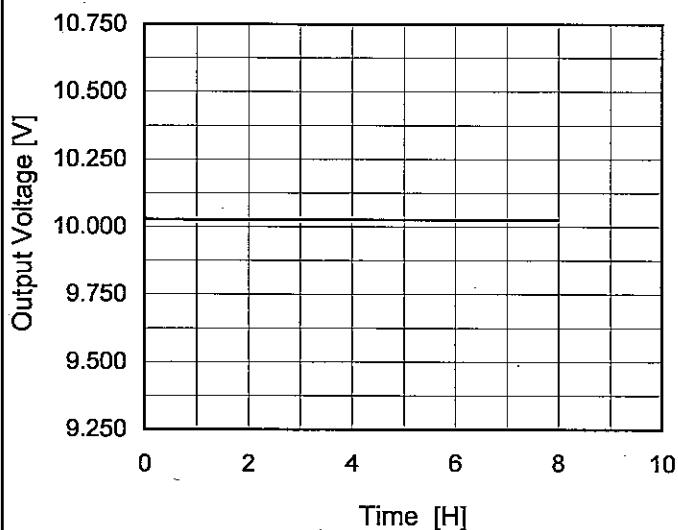
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	85	36	0	10.247	±139	±1.4
Minimum Voltage	85	76	3	9.969		

Model	SFS304810
Item	Time Lapse Drift
Object	+10V3A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



Input Volt. 48V  
Load 100%

## 2. Values

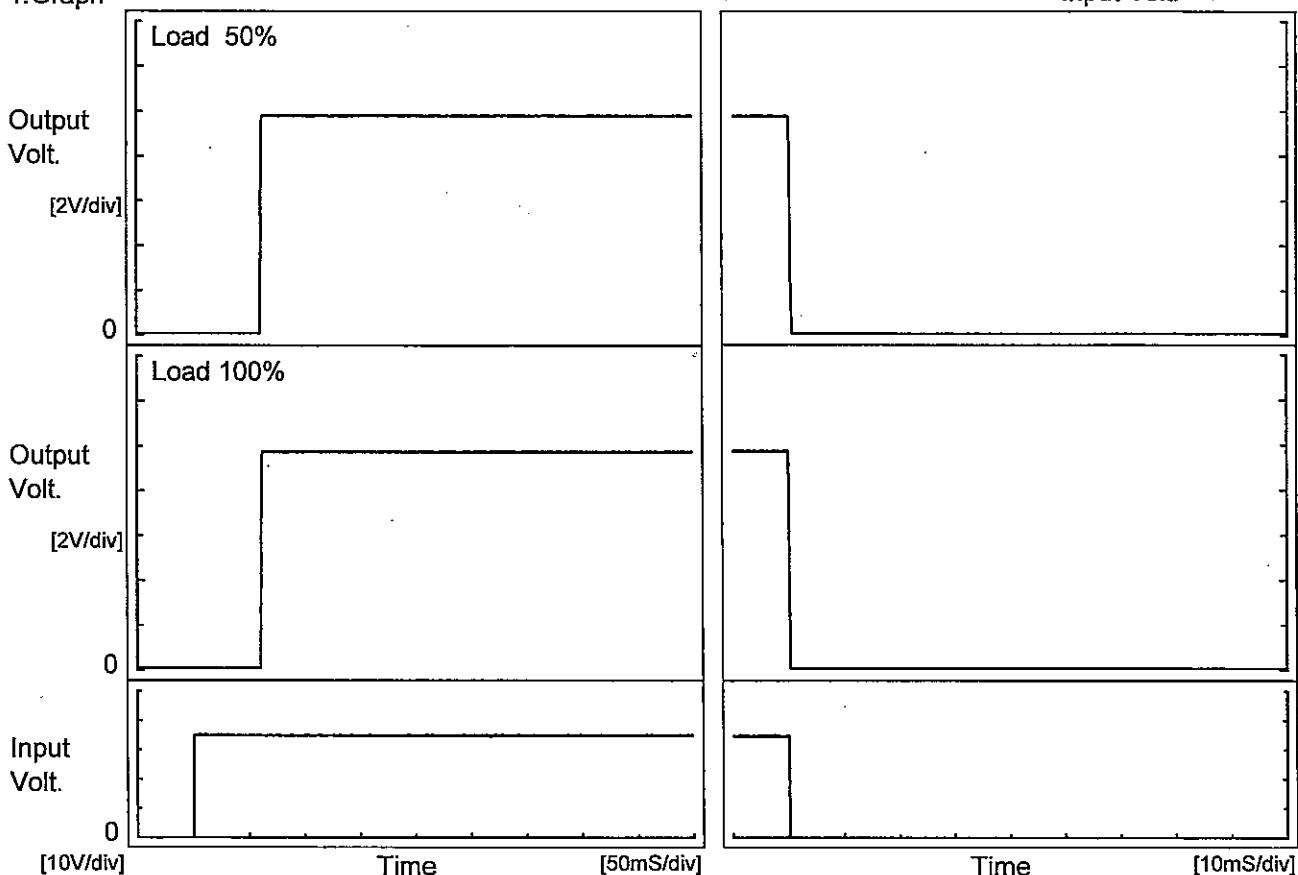
Time since start [H]	Output Voltage [V]
0.0	10.041
0.5	10.027
1.0	10.027
2.0	10.027
3.0	10.027
4.0	10.027
5.0	10.027
6.0	10.027
7.0	10.027
8.0	10.027

**COSEL**

Model	SFS304810
Item	Rise and Fall Time
Object	+10V3A

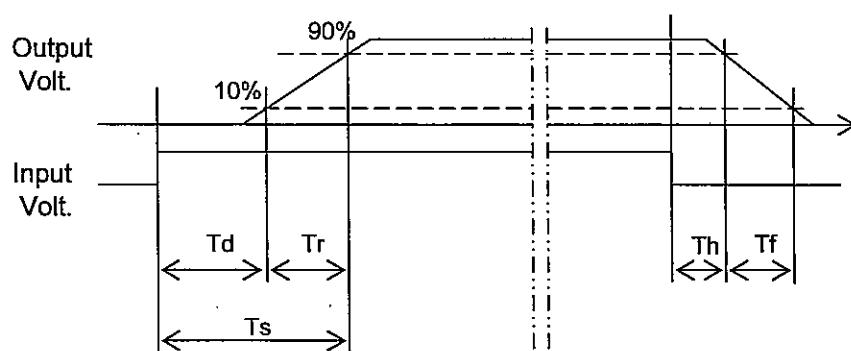
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



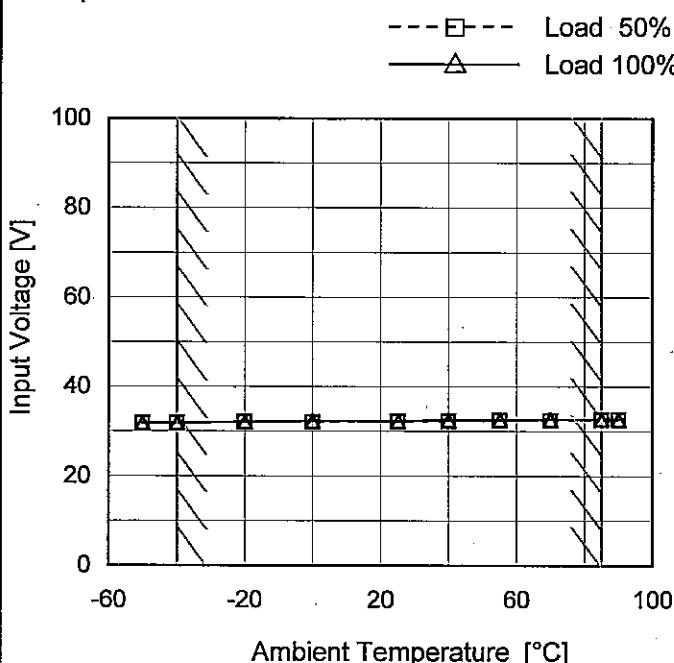
## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		60.5	1.1	61.6	0.1	0.5	
100 %		60.5	1.2	61.7	0.1	0.3	



Model	SFS304810
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+10V3A

## 1. Graph



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

## Testing Circuitry Figure A

## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	31.9	32.0
-40	31.9	32.0
-20	32.1	32.2
0	32.1	32.4
25	32.3	32.4
40	32.3	32.6
55	32.5	32.6
70	32.5	32.8
85	32.7	32.8
90	32.7	32.8
--	-	-

**COSEL**

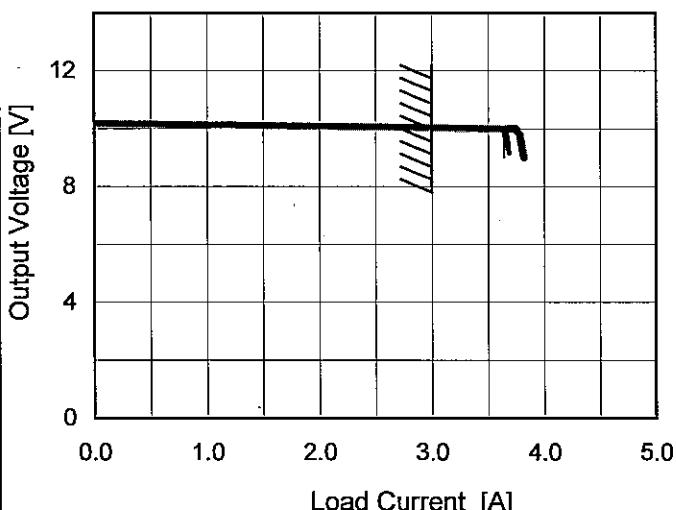
Model SFS304810

Item Overcurrent Protection

Object +10V3A

## 1. Graph

- Input Volt. 36V  
 — Input Volt. 48V  
 — Input Volt. 76V



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

When the output voltage fell to less than 9.0V ,the unit shuts off the output by operating low voltage protection .

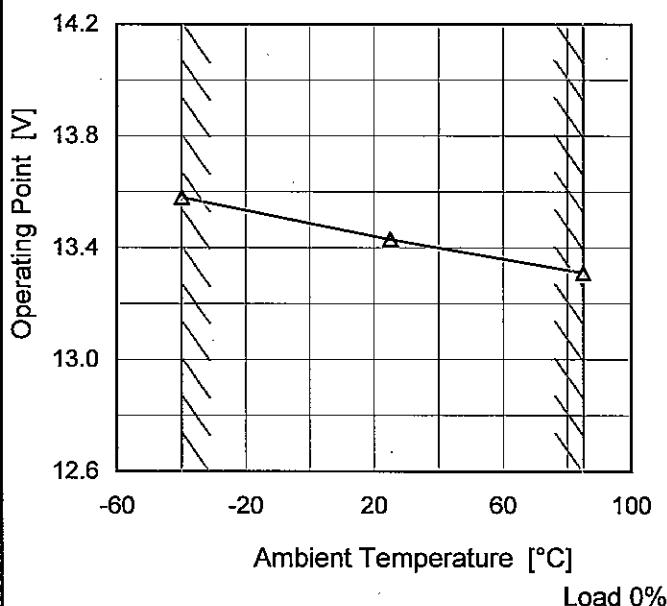
Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
10.0	3.16	3.16	3.16
9.5	3.64	3.68	3.80
9.0	3.64	3.69	3.82
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Model	SFS304810
Item	Overvoltage Protection
Object	+10V3A

1. Graph      —△— Input Volt. 48V



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 48[V]	Input Volt.	Input Volt.
-40	13.58	-	-
25	13.43	-	-
85	13.31	-	-
-	-	-	-
-	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

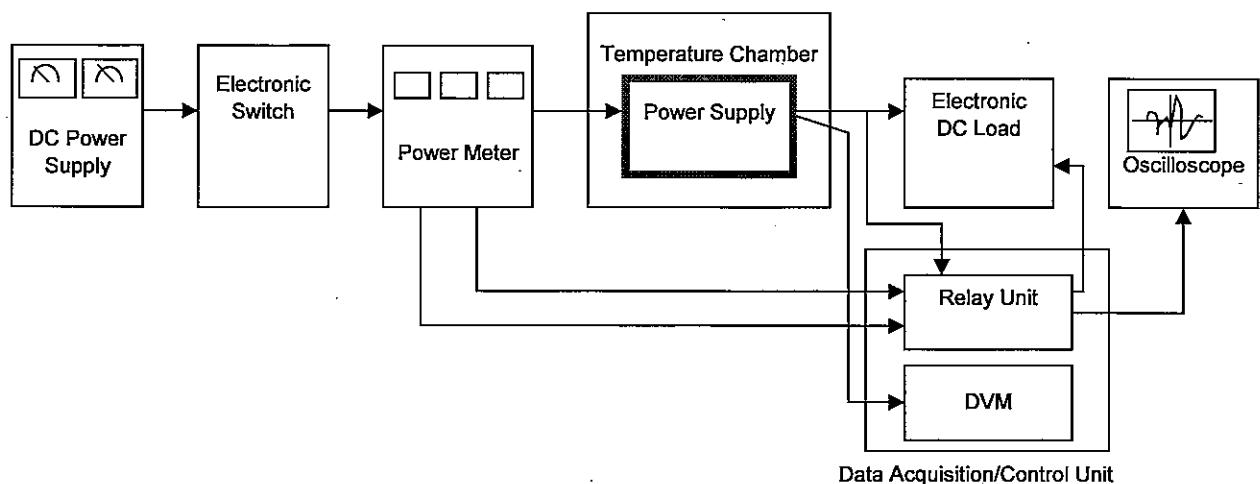


Figure A

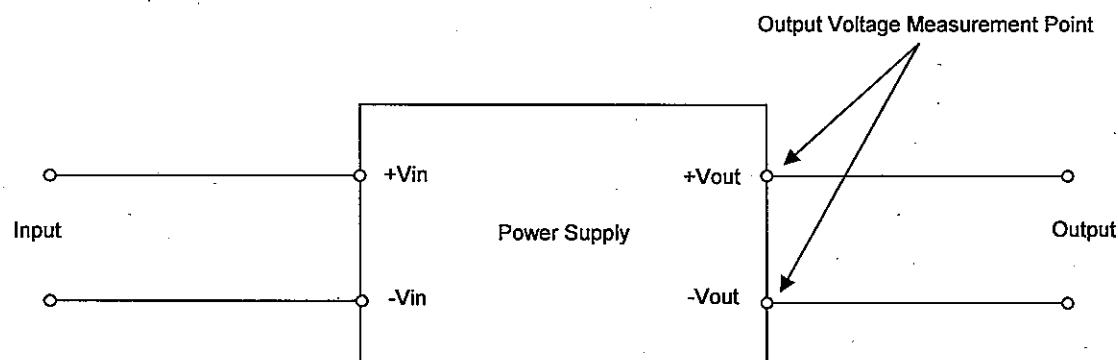


Figure B (General Electric Characteristic)

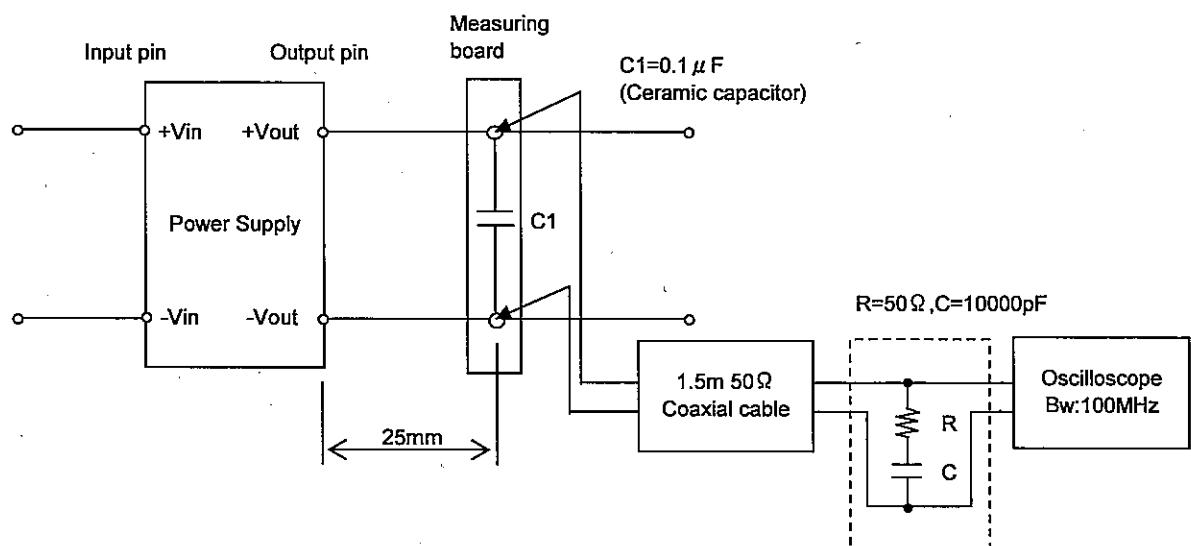


Figure C (Ripple and Ripple noise Characteristic)