参考資料

COSEL

TEST DATA OF SFS20481R5

Regulated DC Power Supply
Sep 24, 2004

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Kazuhiro Horii Design Engineer

COSEL CO.,LTD.

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Item	Input Current (by Input Voltage)
Object	————————

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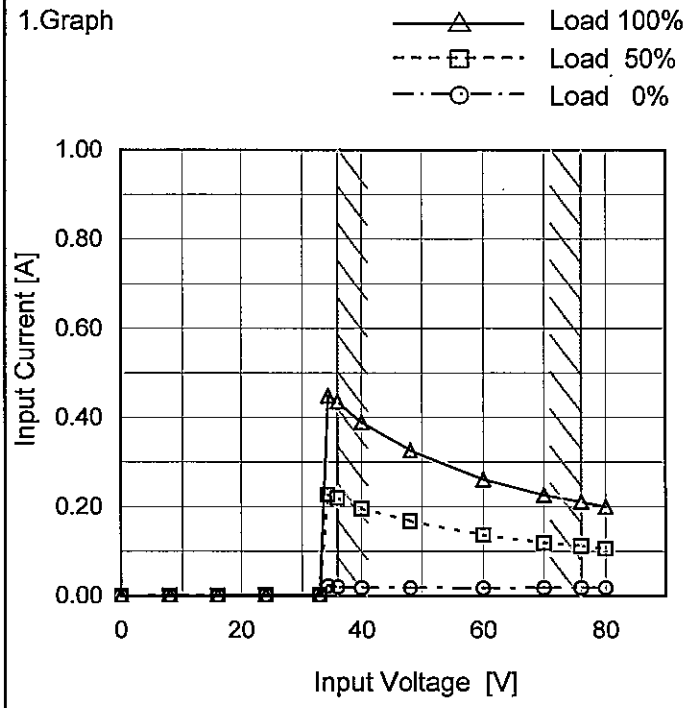


Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
8	0.001	0.001	0.001
16	0.001	0.001	0.001
24	0.002	0.002	0.002
33	0.002	0.002	0.002
34	0.022	0.227	0.449
36	0.020	0.220	0.436
40	0.018	0.196	0.389
48	0.018	0.168	0.327
60	0.018	0.136	0.262
70	0.018	0.119	0.227
76	0.018	0.112	0.211
80	0.018	0.106	0.200
---	-	-	-
---	-	-	-
---	-	-	-

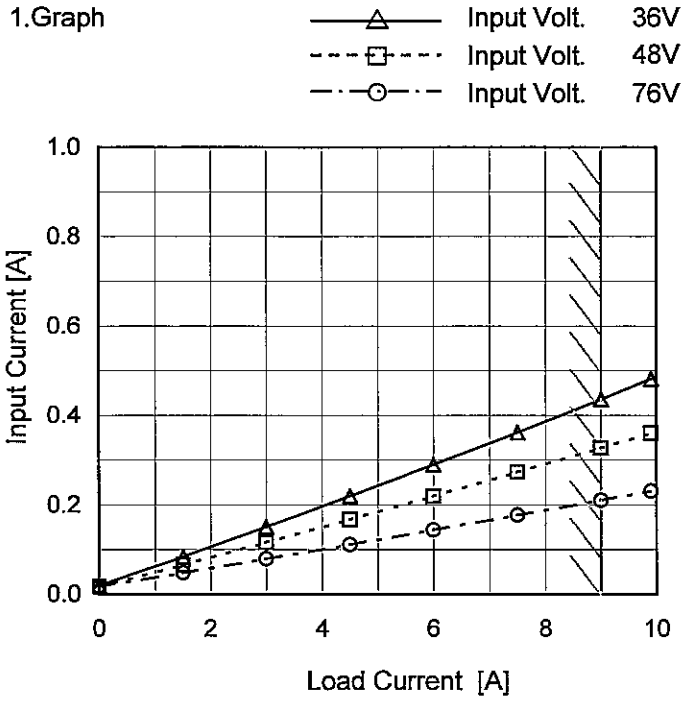
BC-3616

COSEL

Model	SFS20481R5
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

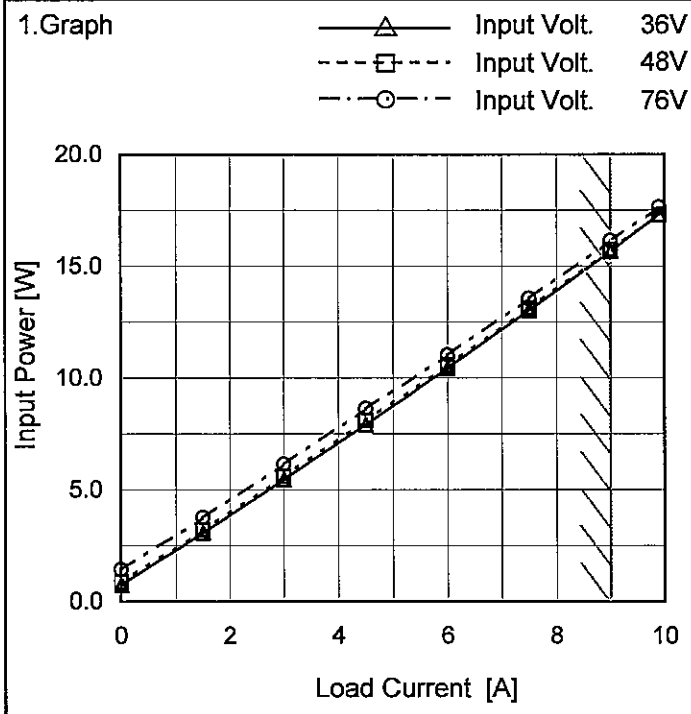
Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	0.020	0.018	0.018
1.5	0.084	0.066	0.048
3.0	0.151	0.116	0.080
4.5	0.220	0.168	0.112
6.0	0.290	0.220	0.144
7.5	0.362	0.273	0.177
9.0	0.436	0.327	0.211
9.9	0.482	0.361	0.231
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	SFS20481R5
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

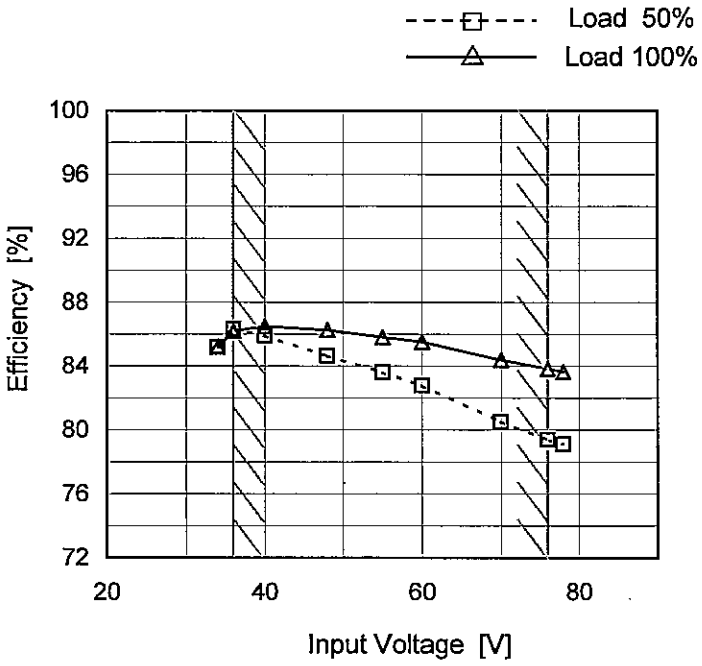
Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	0.74	0.88	1.44
1.5	3.07	3.20	3.76
3.0	5.46	5.61	6.15
4.5	7.92	8.11	8.64
6.0	10.45	10.58	11.04
7.5	13.03	13.13	13.56
9.0	15.66	15.74	16.15
9.9	17.33	17.30	17.64
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	SFS20481R5
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

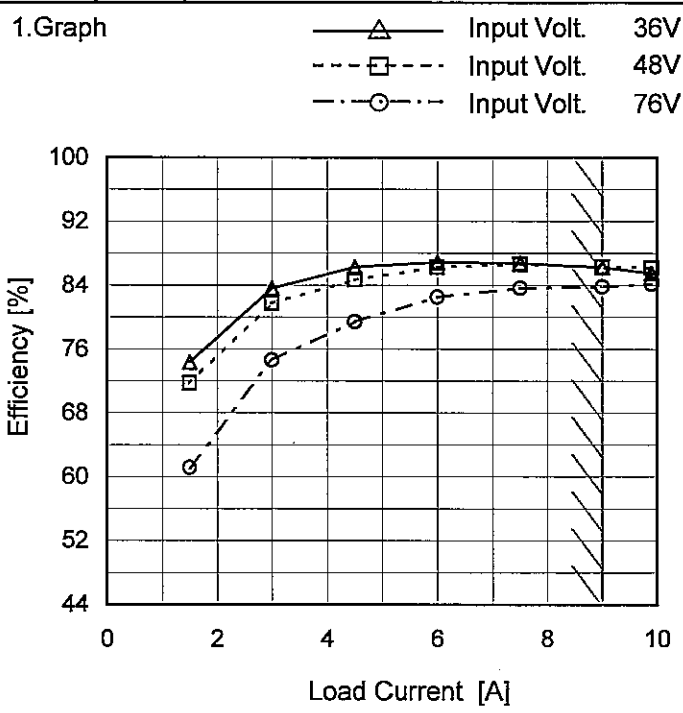
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	85.2	85.2
36	86.3	86.2
40	85.9	86.5
48	84.7	86.3
55	83.6	85.8
60	82.8	85.5
70	80.5	84.4
76	79.4	83.8
78	79.1	83.6

COSEL

Model	SFS20481R5
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-
1.5	74.4	71.8	61.2
3.0	83.6	81.8	74.7
4.5	86.3	84.7	79.4
6.0	86.9	86.3	82.5
7.5	86.8	86.6	83.7
9.0	86.2	86.3	83.8
9.9	85.5	86.2	84.2
--	-	-	-
--	-	-	-
--	-	-	-

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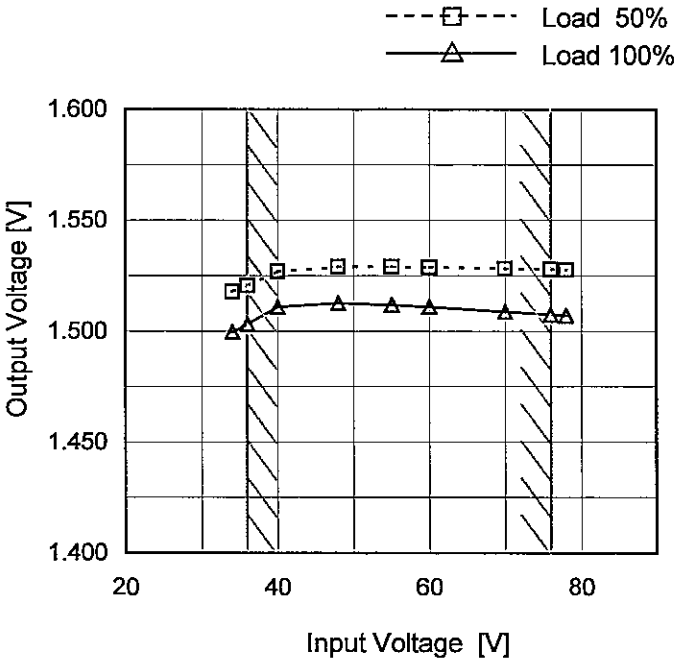
Model	SFS20481R5
Item	Line Regulation
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

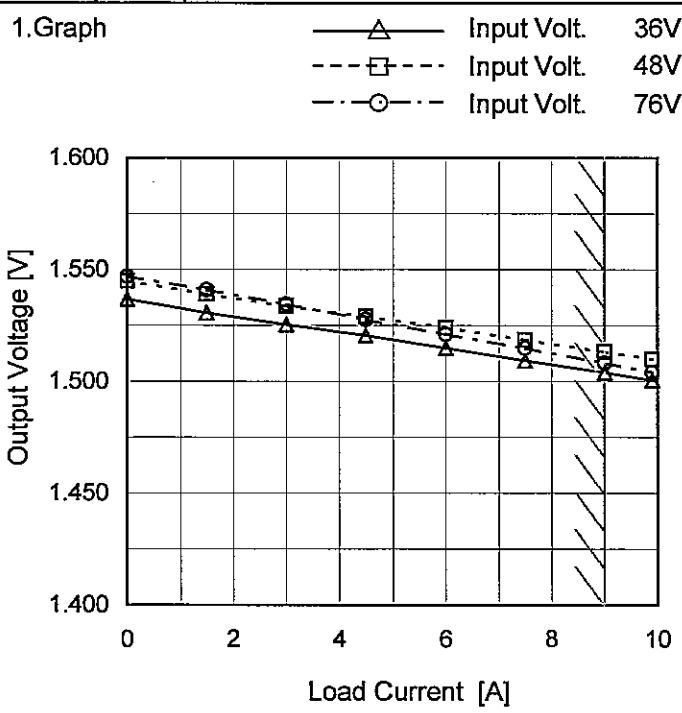
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	1.518	1.500
36	1.521	1.503
40	1.527	1.511
48	1.529	1.513
55	1.529	1.512
60	1.529	1.511
70	1.528	1.509
76	1.528	1.507
78	1.528	1.507

COSEL

Model	SFS20481R5
Item	Load Regulation
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	1.537	1.545	1.547
1.5	1.531	1.539	1.541
3.0	1.526	1.534	1.535
4.5	1.521	1.529	1.528
6.0	1.515	1.524	1.521
7.5	1.509	1.519	1.515
9.0	1.504	1.513	1.508
9.9	1.501	1.510	1.504
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

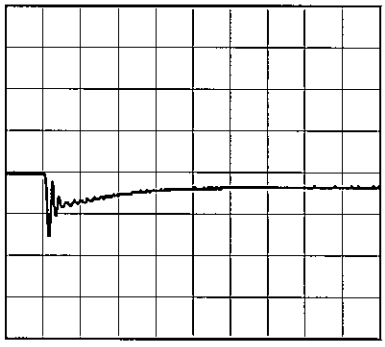
Model	SFS20481R5
Item	Dynamic Load Response
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 1000 mS

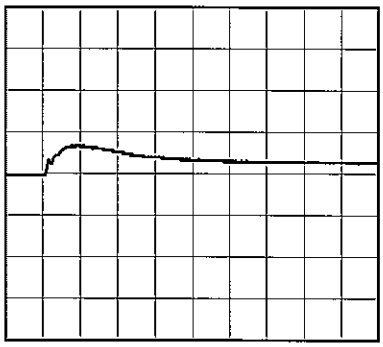
Load Current
9A / 200 µs

Min. Load (0A) ⟷ Load 100% (9A)



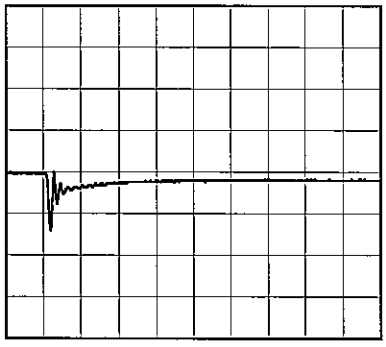
100mV/div

200 µs/div



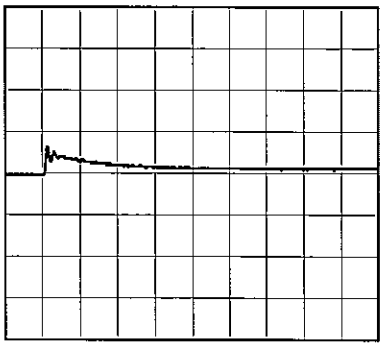
200 µs/div

Min. Load (0A) ⟷ Load 50% (4.5A)



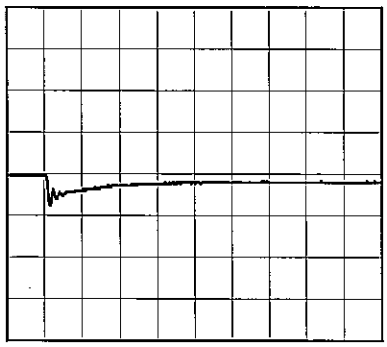
100mV/div

200 µs/div



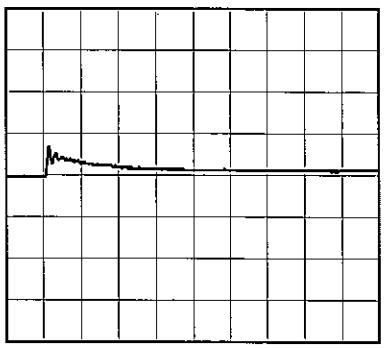
200 µs/div

Load 50% (4.5A) ⟷ Load 100% (9A)



100mV/div

200 µs/div



200 µs/div

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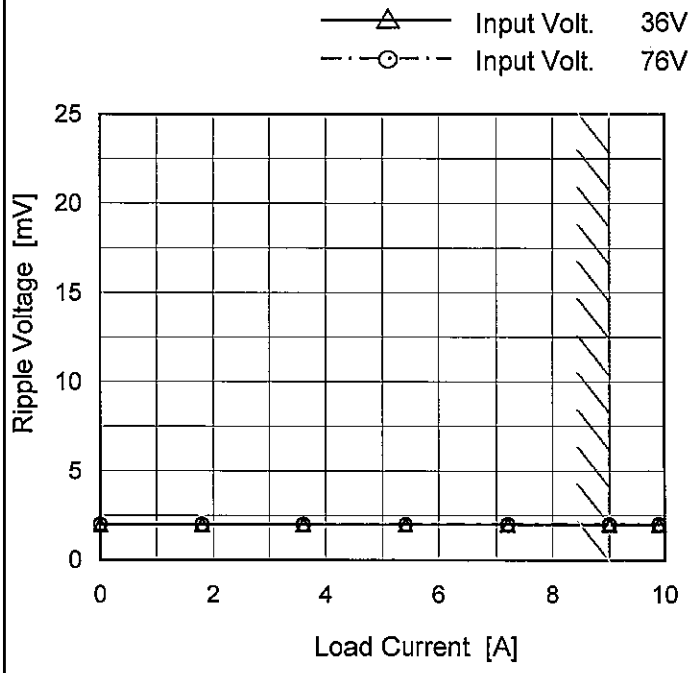
Model	SFS20481R5
Item	Ripple Voltage (by Load Current)
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	2	2
1.8	2	2
3.6	2	2
5.4	2	2
7.2	2	2
9.0	2	2
9.9	2	2
--	-	-
--	-	-
---	-	-
--	-	-

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.

Ripple [mVp-p]

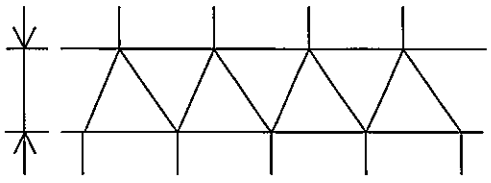


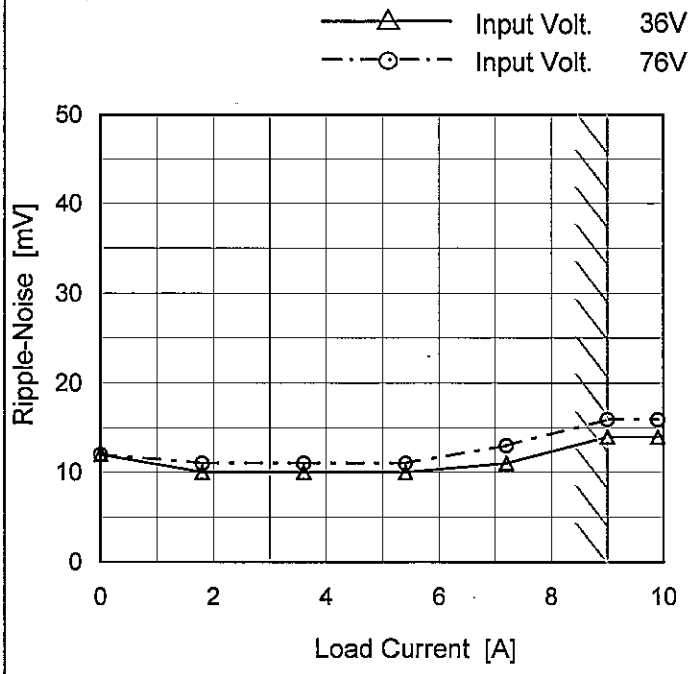
Fig.Complex Ripple Wave Form

COSEL

Model	SFS20481R5
Item	Ripple-Noise
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure C

1.Graph



Measured by 100MHz Ossiloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

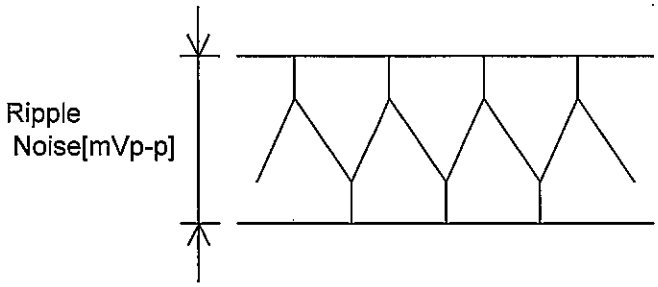


Fig.Complex Ripple Noise Wave Form

2.Values

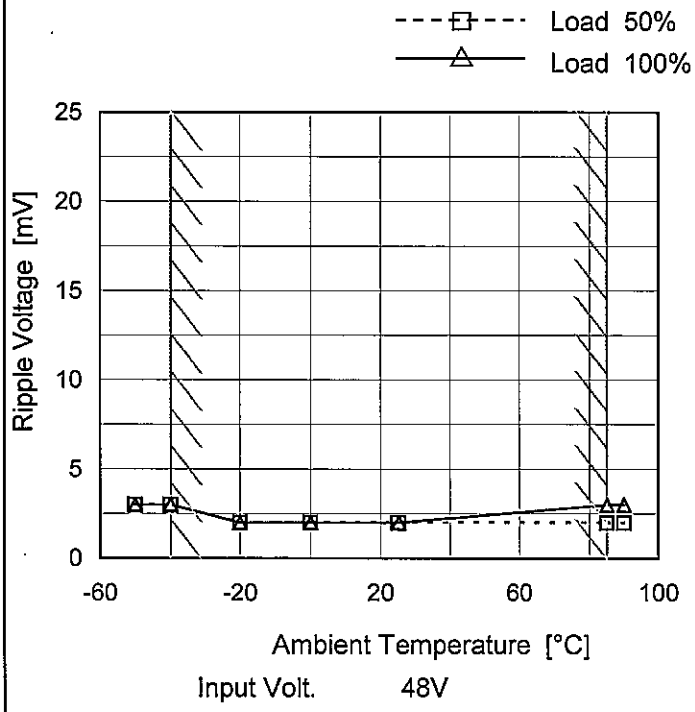
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	12	12
1.8	10	11
3.6	10	11
5.4	10	11
7.2	11	13
9.0	14	16
9.9	14	16
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SFS20481R5
Item	Ripple Voltage (by Ambient Temp.)
Object	+1.5V9A

Testing Circuitry Figure C

1.Graph



Input Volt. 48V

Measured by 100MHz Ossiloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

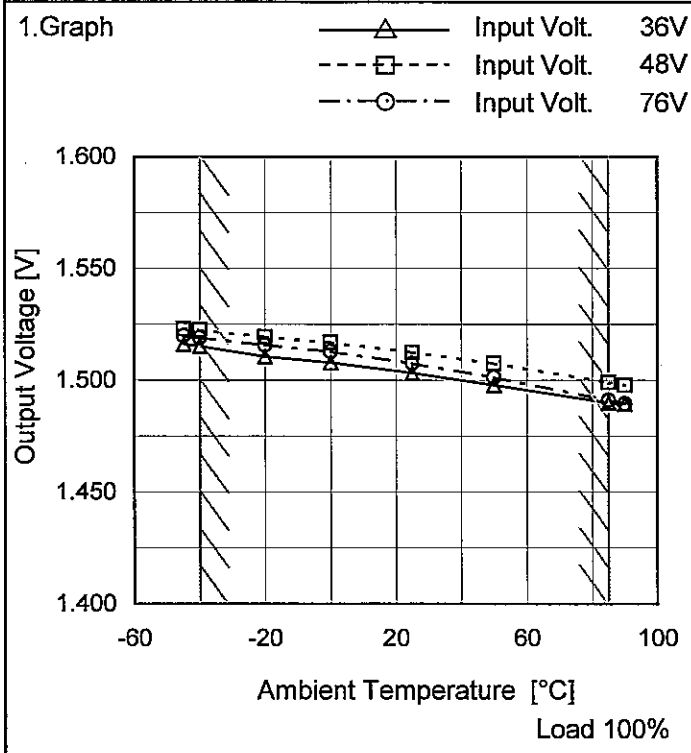
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	3	3
-40	3	3
-20	2	2
0	2	2
25	2	2
85	2	3
90	2	3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SFS20481R5
Item	Ambient Temperature Drift
Object	+1.5V9A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-45	1.516	1.523	1.520
-40	1.515	1.523	1.519
-20	1.511	1.519	1.516
0	1.508	1.517	1.513
25	1.503	1.513	1.508
50	1.498	1.508	1.502
85	1.490	1.499	1.491
90	1.489	1.498	1.490
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SFS20481R5
Item	Output Voltage Accuracy
Object	+1.5V9A

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 : 36 - 76V
Load Current : 0 - 9A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2.Values

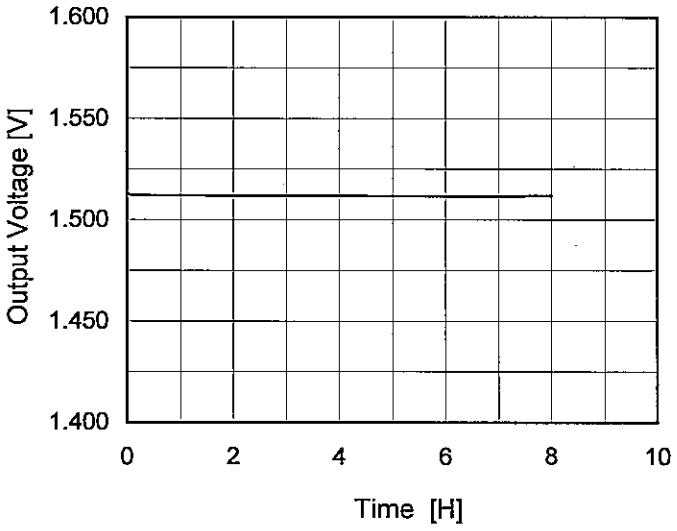
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	85	48	0	1.549	±30	±2.0
Minimum Voltage	85	36	9	1.490		

COSEL

Model	SFS20481R5
Item	Time Lapse Drift
Object	+1.5V9A

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	1.513
0.5	1.512
1.0	1.512
2.0	1.512
3.0	1.512
4.0	1.512
5.0	1.512
6.0	1.512
7.0	1.512
8.0	1.512

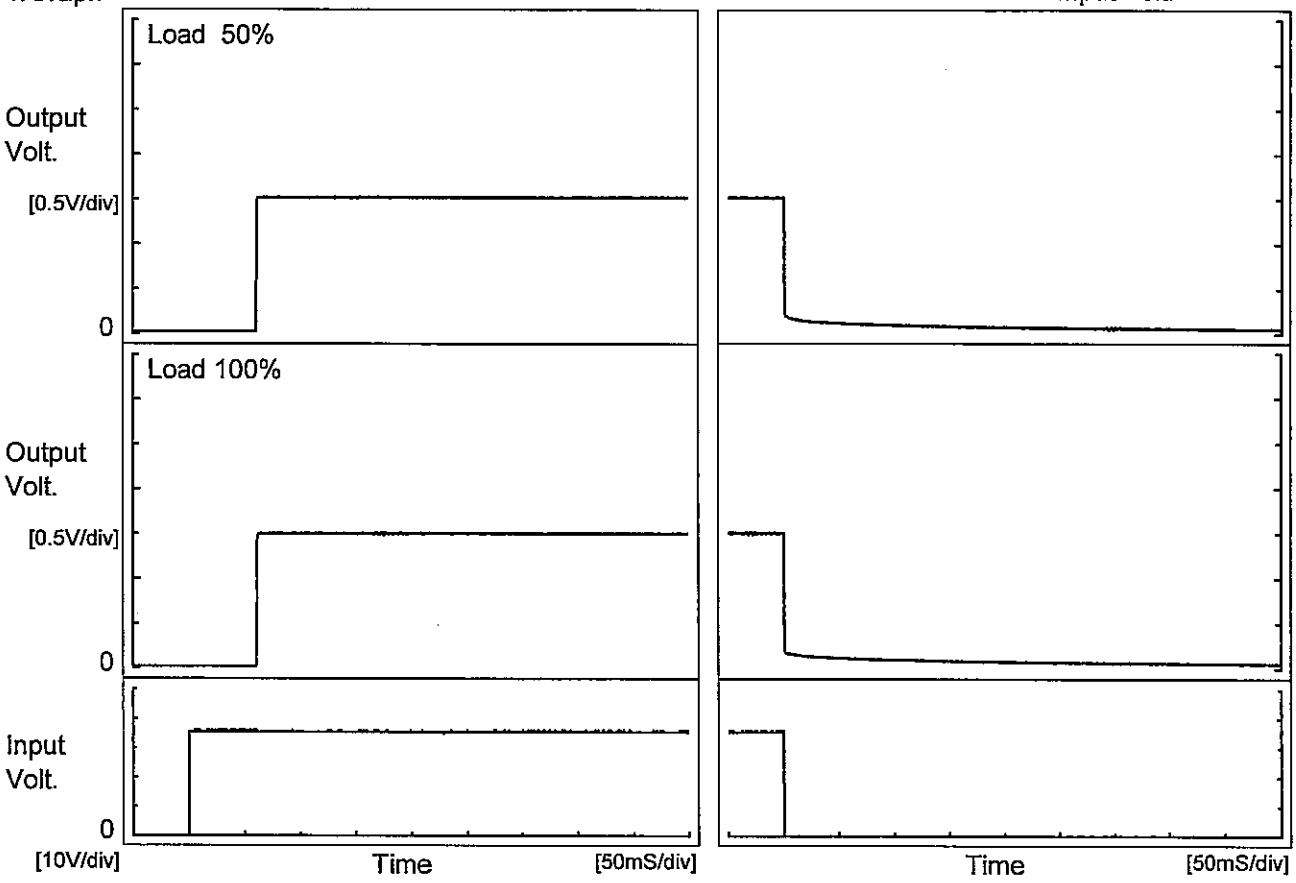
COSEL

Model	SFS20481R5
Item	Rise and Fall Time
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

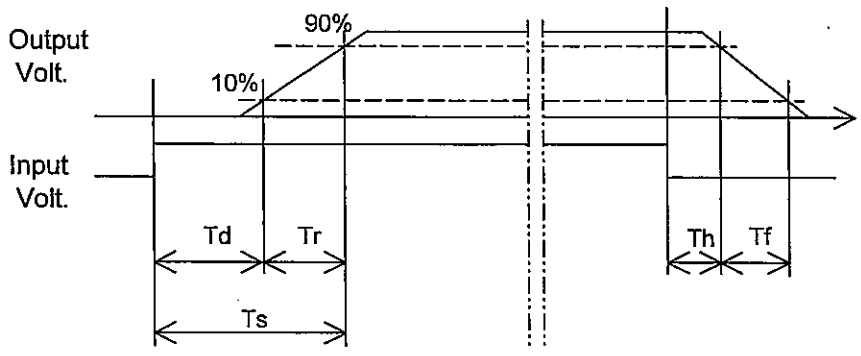
Input Volt. 36 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	60.5	0.2	60.7	0.3	8.3
100 %	60.5	0.2	60.7	0.3	2.8

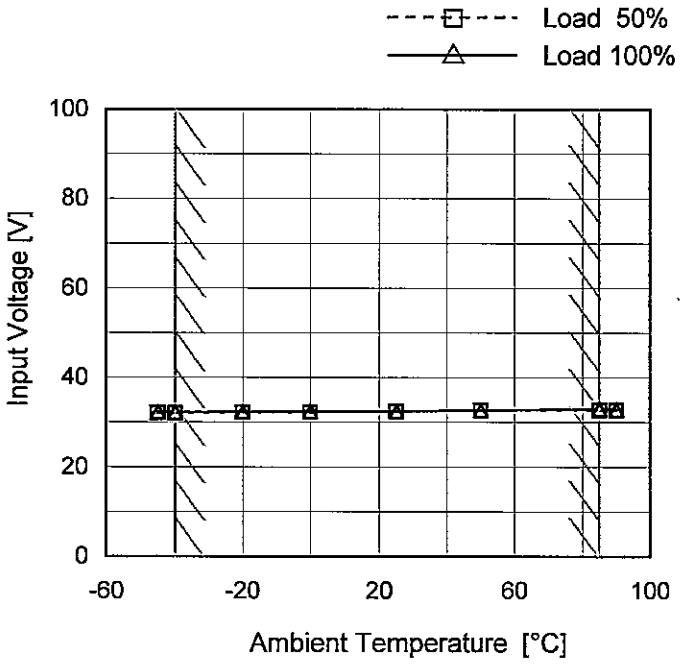


COSEL

Model	SFS20481R5
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+1.5V9A

Testing Circuitry Figure A

1.Graph



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

2.Values

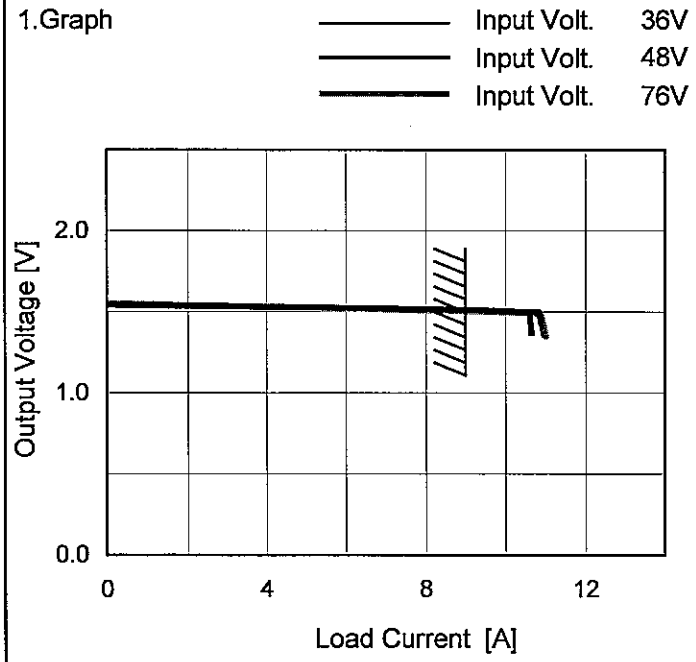
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-45	32.1	32.4
-40	32.1	32.3
-20	32.3	32.4
0	32.3	32.5
25	32.5	32.5
50	32.7	32.7
85	32.8	33.1
90	32.7	32.9
--	-	-
--	-	-
--	-	-

COSEL

Model	SFS20481R5
Item	Overcurrent Protection
Object	+1.5V9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

When the output voltage fell to less than 1.35V, the unit shuts off the output by operating low voltage protection.

2.Values

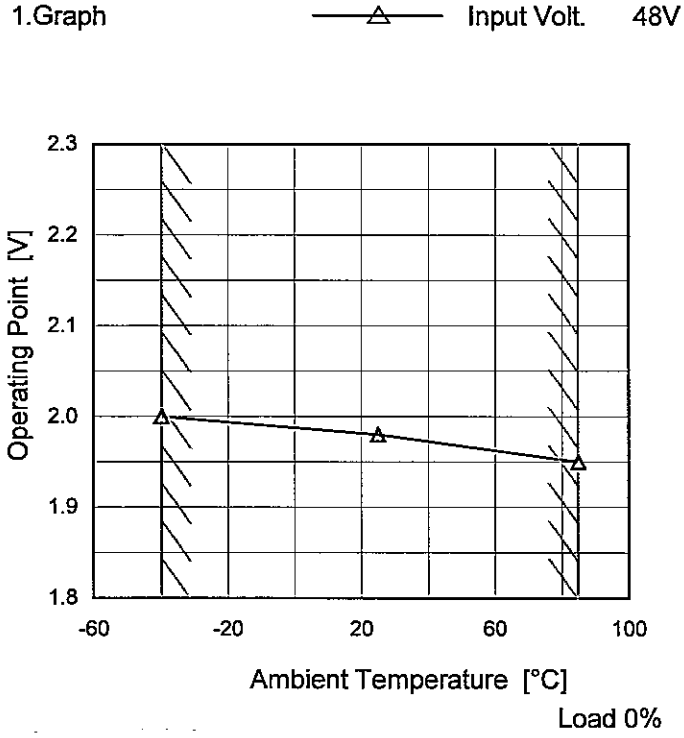
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
1.500	9.16	9.17	9.13
1.425	10.60	10.65	10.93
1.350	10.60	10.69	10.99
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SFS20481R5
Item	Overvoltage Protection
Object	+1.5V9A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V] Input Volt. 48[V]	Input Volt.	Input Volt.
-40	2.00	-	-
25	1.98	-	-
85	1.95	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

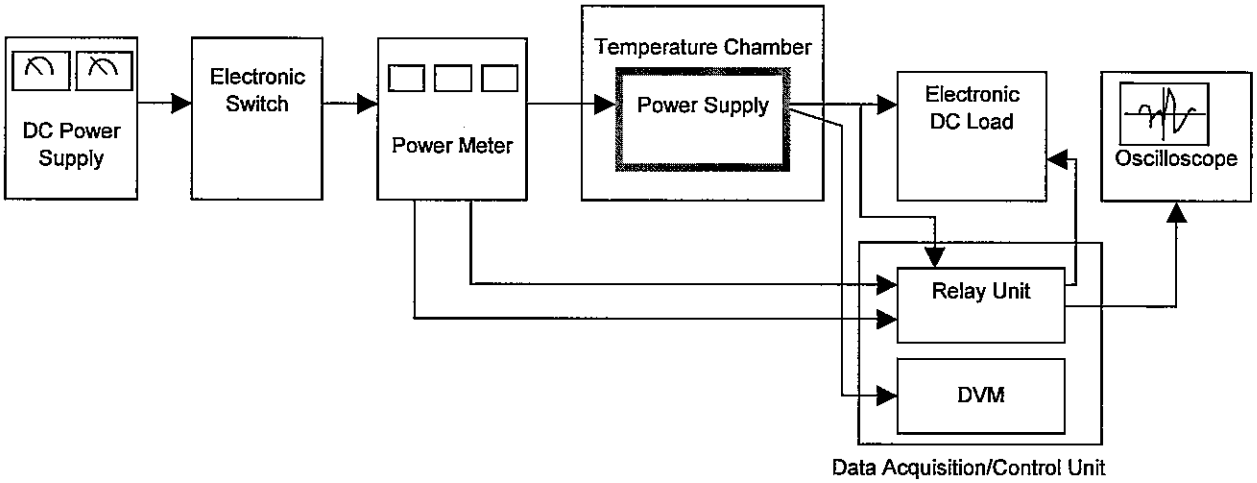


Figure A

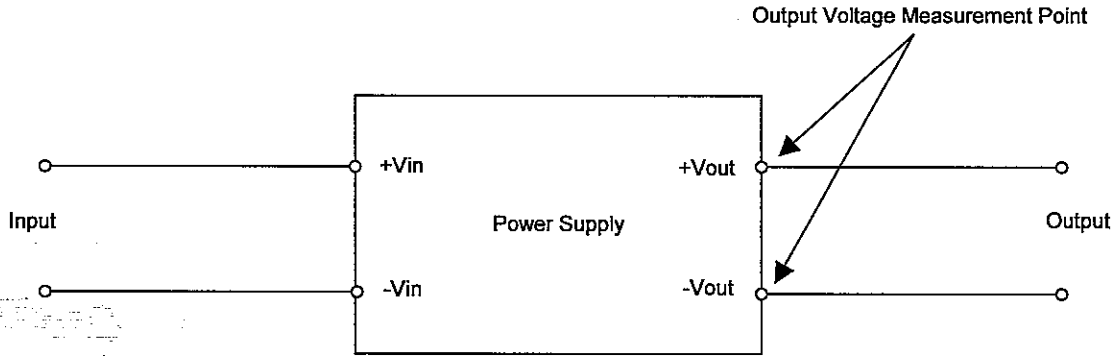


Figure B (General Electric Characteristic)

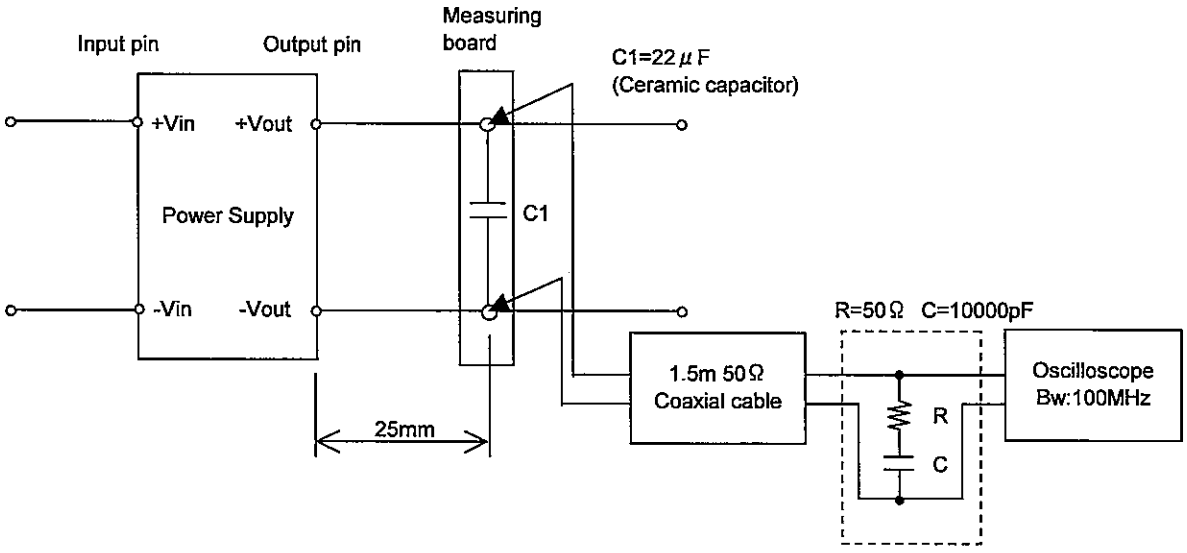


Figure C (Ripple and Ripple noise Characteristic)