



# TEST DATA OF SFS20481R5

Regulated DC Power Supply  
Sep 24, 2004

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COSEL CO.,LTD.

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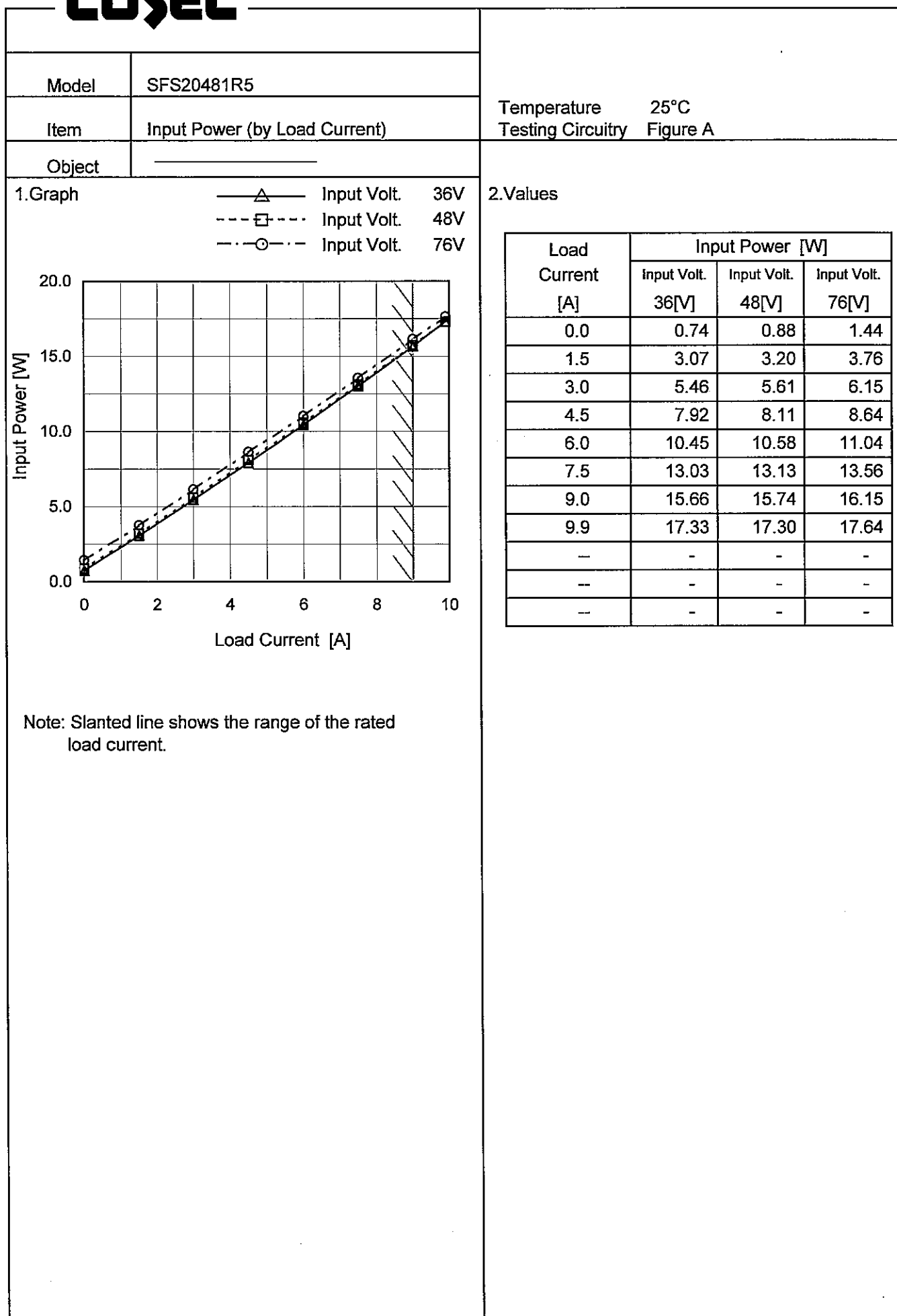
Model		SFS20481R5	
Item		Input Current (by Input Voltage)	
Object			
1.Graph			
		<div><div>—△— Load 100%</div><div>- - -□- - Load 50%</div><div>- · -○- · - Load 0%</div></div>	
<div><div>Input Current [A]</div><div><div>Input Voltage [V]</div></div></div>			
Note: Slanted line shows the range of the 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	0.001	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
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--	-	-	-
--	-	-	-

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Model	SFS20481R5																																																					
Item	Input Current (by Load Current)	Temperature	25°C																																																			
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<div><div>—△—</div>Input Volt. 36V</div> <div><div>---□---</div>Input Volt. 48V</div> <div><div>---○---</div>Input Volt. 76V</div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>0.0</td><td>0.020</td><td>0.018</td><td>0.018</td></tr><tr><td>1.5</td><td>0.084</td><td>0.066</td><td>0.048</td></tr><tr><td>3.0</td><td>0.151</td><td>0.116</td><td>0.080</td></tr><tr><td>4.5</td><td>0.220</td><td>0.168</td><td>0.112</td></tr><tr><td>6.0</td><td>0.290</td><td>0.220</td><td>0.144</td></tr><tr><td>7.5</td><td>0.362</td><td>0.273</td><td>0.177</td></tr><tr><td>9.0</td><td>0.436</td><td>0.327</td><td>0.211</td></tr><tr><td>9.9</td><td>0.482</td><td>0.361</td><td>0.231</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>--</td><td>—</td><td>—</td><td>—</td></tr><tr><td>--</td><td>—</td><td>—</td><td>—</td></tr></table>		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	—	—	—	—	--	—	—	—	--	—	—	—
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		Testing Circuitry	Figure A																														
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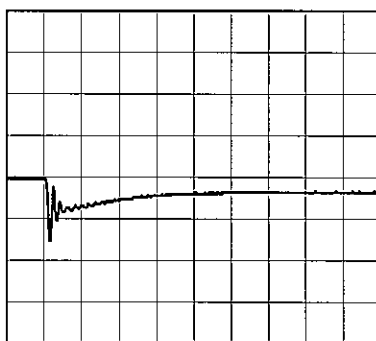
Model	SFS20481R5	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+1.5V9A		

Input Volt. 48 V  
Cycle 1000 mS

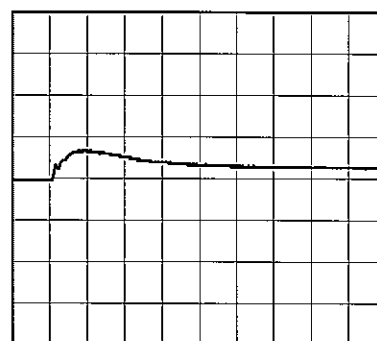
Load Current 9A / 200  $\mu$ s

Min. Load (0A)  $\longleftrightarrow$   
Load 100% (9A)

100mV/div



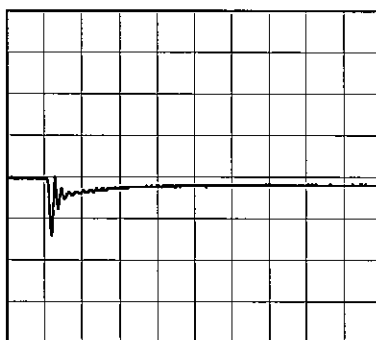
200  $\mu$ s/div



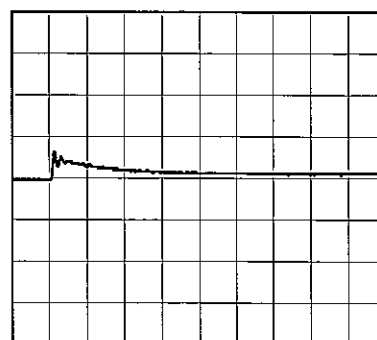
200  $\mu$ s/div

Min. Load (0A)  $\longleftrightarrow$   
Load 50% (4.5A)

100mV/div



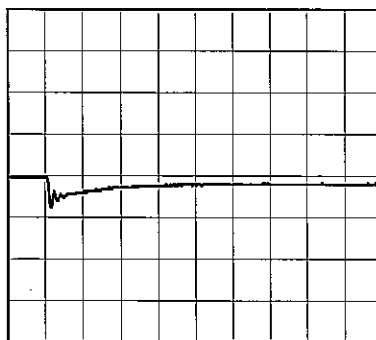
200  $\mu$ s/div



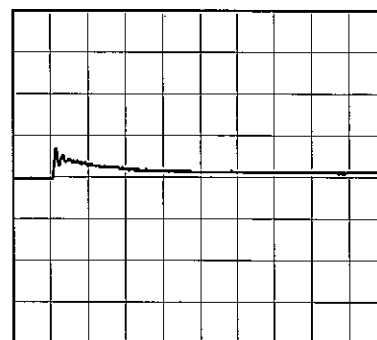
200  $\mu$ s/div

Load 50% (4.5A)  $\longleftrightarrow$   
Load 100% (9A)

100mV/div



200  $\mu$ s/div



200  $\mu$ s/div

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Model	SFS20481R5		
Item	Ripple Voltage (by Load Current)	Temperature	25°C
Object	+1.5V9A	Testing Circuitry	Figure C
1.Graph		2.Values	
<div><div><div><div><div></div><div>△</div></div><div>Input Volt. 36V</div></div><div><div><div></div><div>○</div></div><div>Input Volt. 76V</div></div></div><div><div><div><div>25</div><div>20</div><div>15</div><div>10</div><div>5</div><div>0</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div></div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></d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# COSEL

Model		SFS20481R5	
Item		Ripple-Noise	
Object		+1.5V9A	
1.Graph		2.Values	

# COSEL

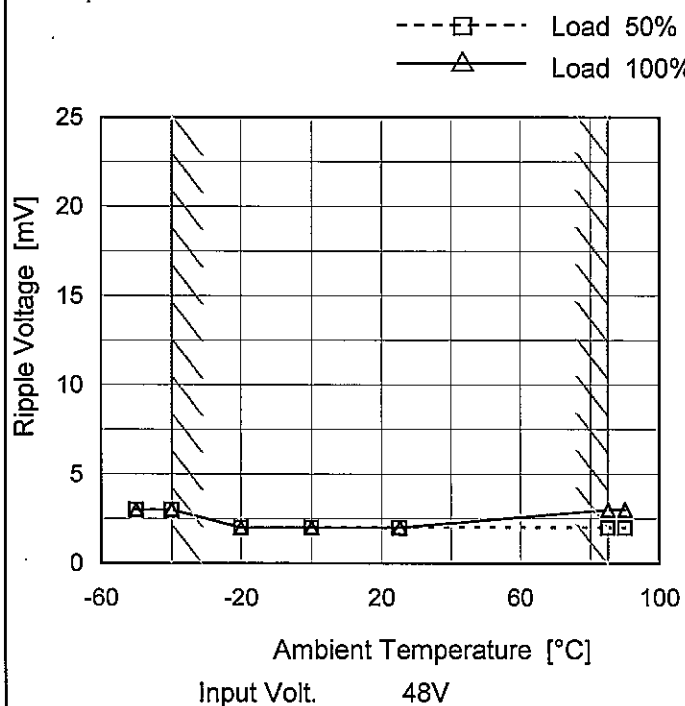
Model SFS20481R5

Item Ripple Voltage (by Ambient Temp.)

Object +1.5V9A

Testing Circuitry Figure C

## 1. Graph



Measured by 100MHz Ossilloscope.

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																																																				
1.Graph		<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><p>Output Voltage [V]</p><p>Ambient Temperature [°C]</p><p>Load 100%</p><p>Note: Slanted line shows the range of the rated ambient temperature.</p></div>																																																				
2.Values		<table><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><tr><td>-45</td><td>1.516</td><td>1.523</td><td>1.520</td></tr><tr><td>-40</td><td>1.515</td><td>1.523</td><td>1.519</td></tr><tr><td>-20</td><td>1.511</td><td>1.519</td><td>1.516</td></tr><tr><td>0</td><td>1.508</td><td>1.517</td><td>1.513</td></tr><tr><td>25</td><td>1.503</td><td>1.513</td><td>1.508</td></tr><tr><td>50</td><td>1.498</td><td>1.508</td><td>1.502</td></tr><tr><td>85</td><td>1.490</td><td>1.499</td><td>1.491</td></tr><tr><td>90</td><td>1.489</td><td>1.498</td><td>1.490</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		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	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]																																																			
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-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																																																			
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**COSEL**

		Testing Circuitry Figure A
Model	SFS20481R5	
Item	Output Voltage Accuracy	
Object	+1.5V9A	

### 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

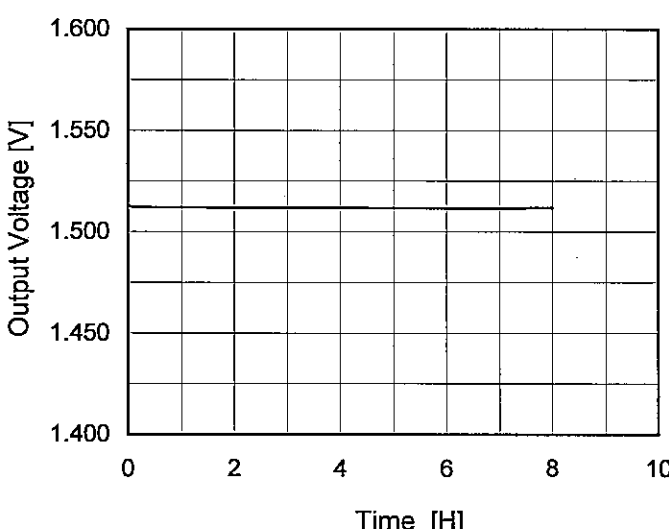
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* 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	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+1.5V9A																								
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 48V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>1.513</td></tr><tr><td>0.5</td><td>1.512</td></tr><tr><td>1.0</td><td>1.512</td></tr><tr><td>2.0</td><td>1.512</td></tr><tr><td>3.0</td><td>1.512</td></tr><tr><td>4.0</td><td>1.512</td></tr><tr><td>5.0</td><td>1.512</td></tr><tr><td>6.0</td><td>1.512</td></tr><tr><td>7.0</td><td>1.512</td></tr><tr><td>8.0</td><td>1.512</td></tr></table>		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
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																								

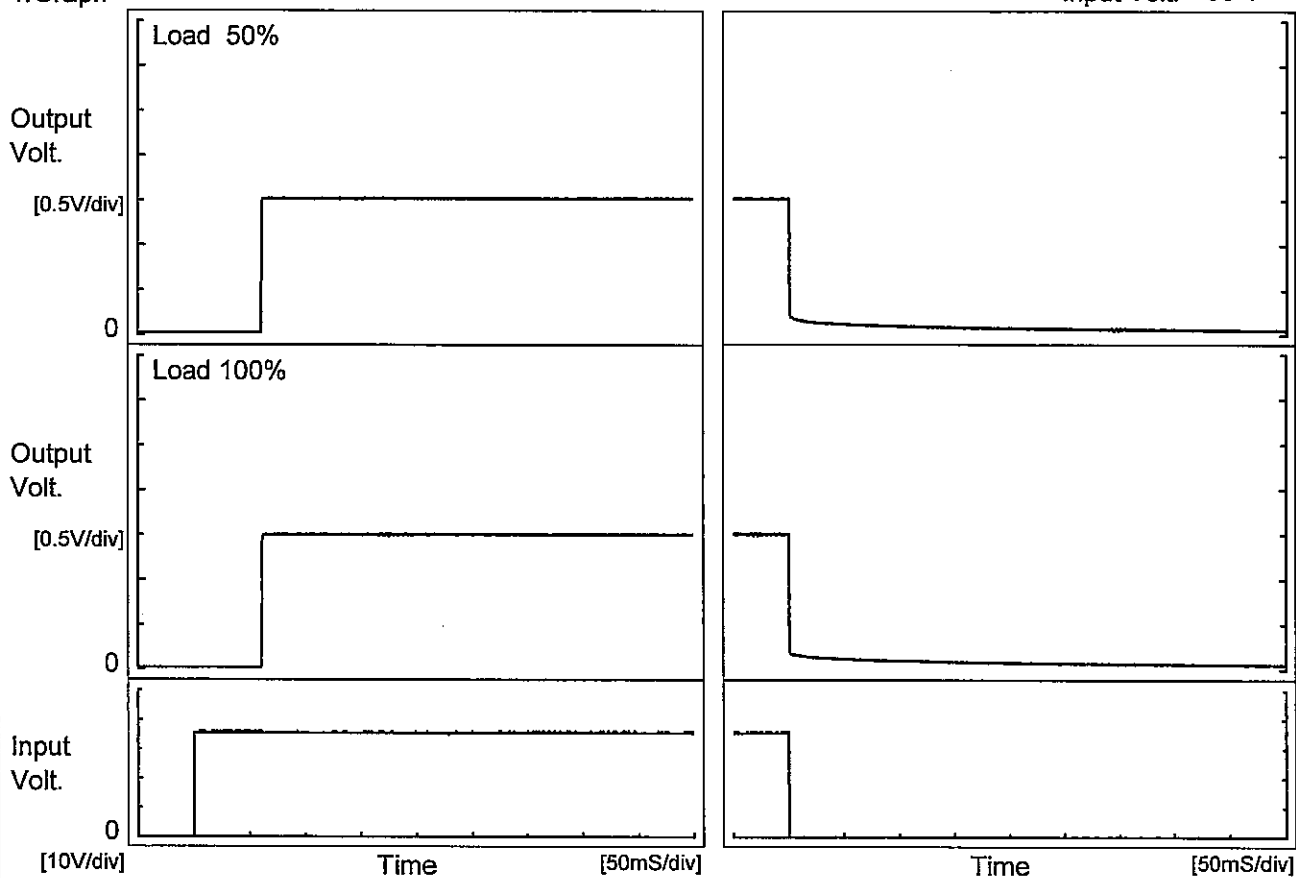


# COSEL

Model	SFS20481R5	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+1.5V9A		

## 1. Graph

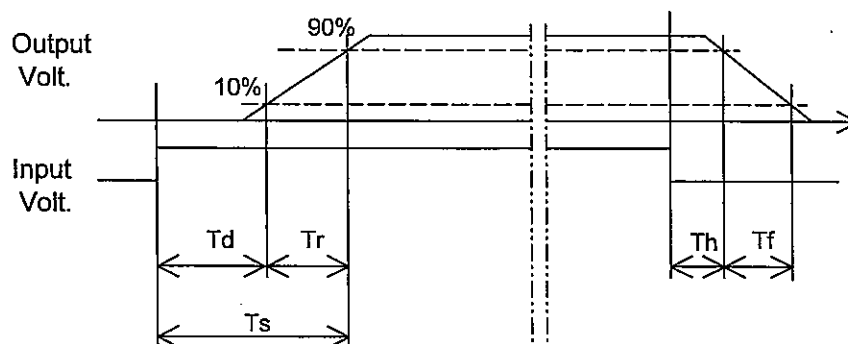
Input Volt. 36 V



## 2. Values

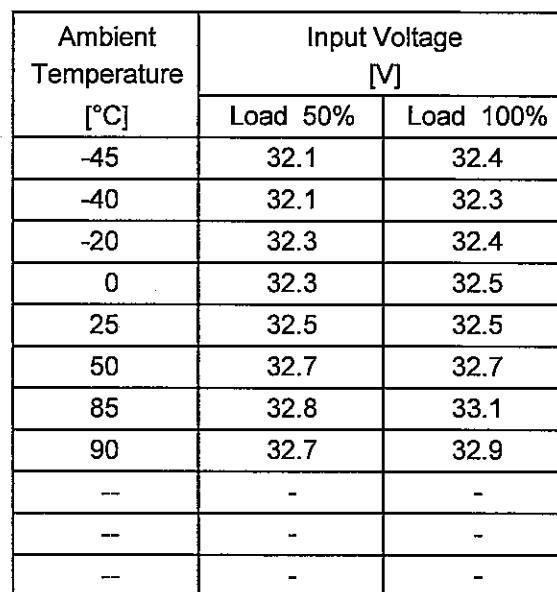
[mS]

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



Testing Circuitry Figure A

## 2.Values



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

BC-3616

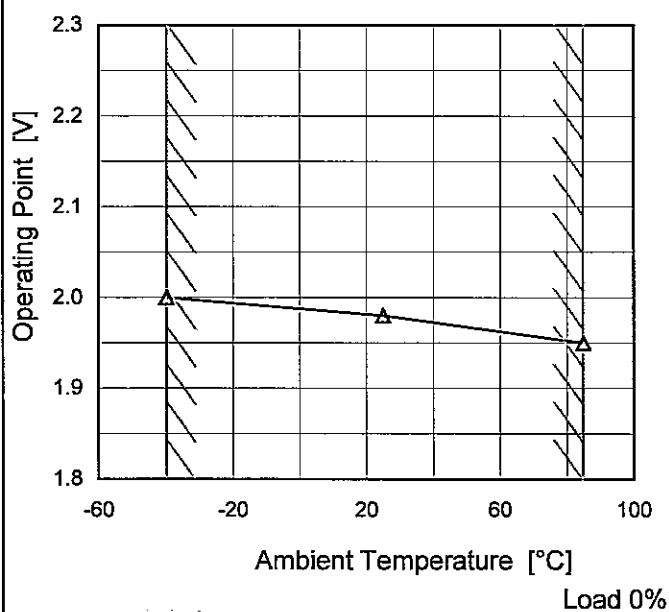
Model SFS20481R5

Item Overvoltage Protection

Object +1.5V9A

Testing Circuitry Figure A

1.Graph —△— Input Volt. 48V



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	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

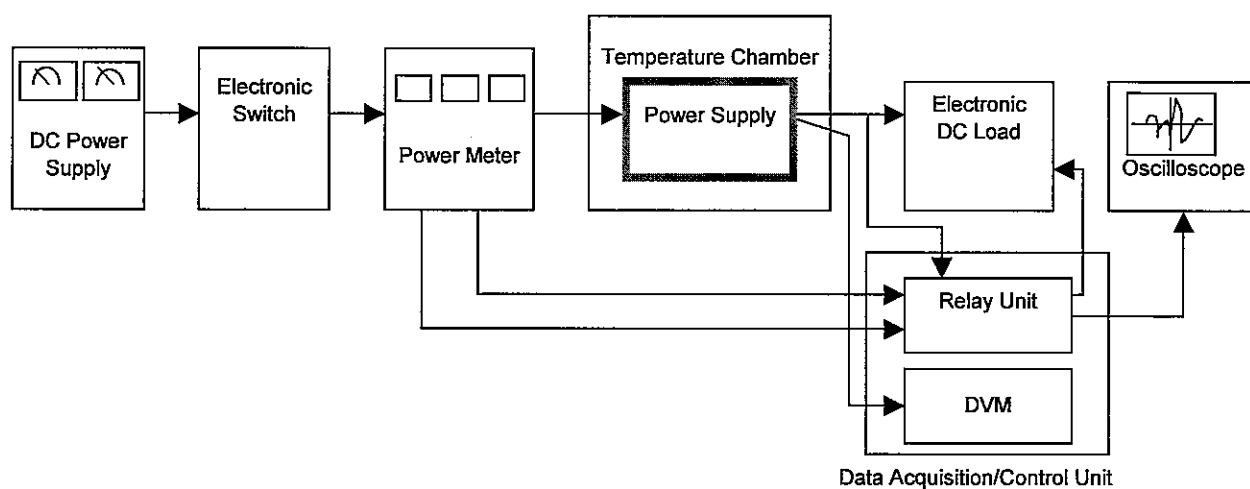


Figure A

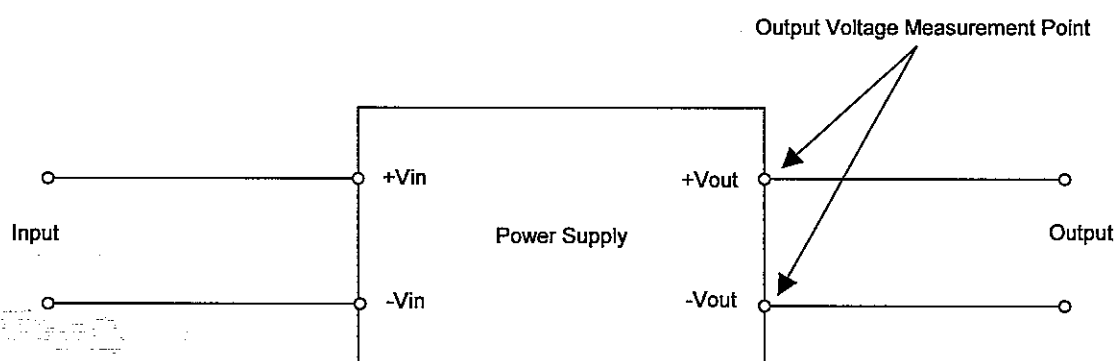


Figure B (General Electric Characteristic)

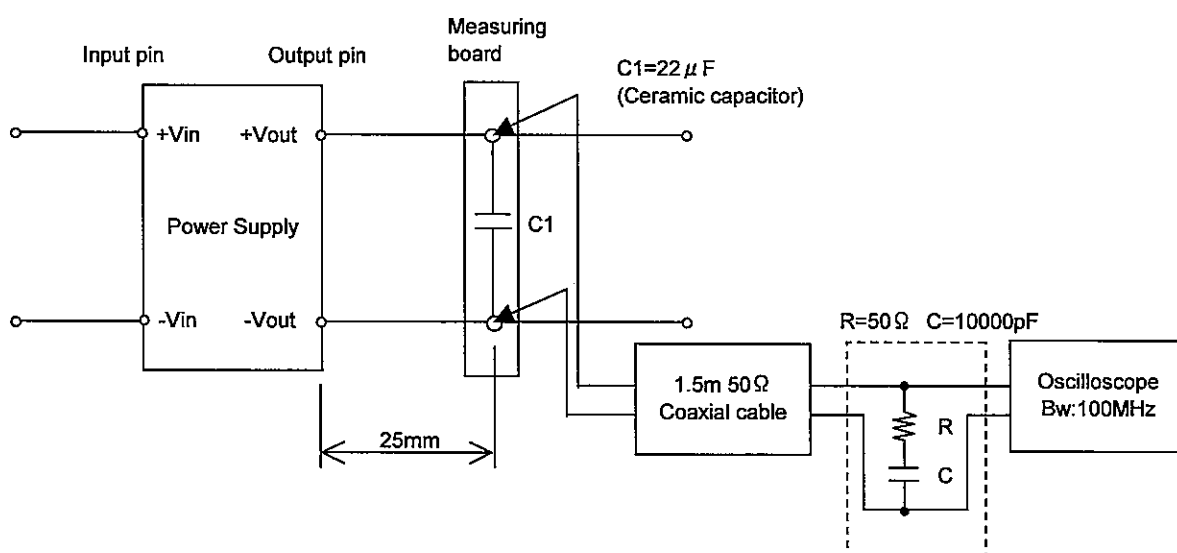


Figure C (Ripple and Ripple noise Characteristic)