

TEST DATA OF SFS10481R8

Regulated DC Power Supply
Nov.4. 2003

Approved by : Isao Yasuda
Isao Yasuda Design Manager

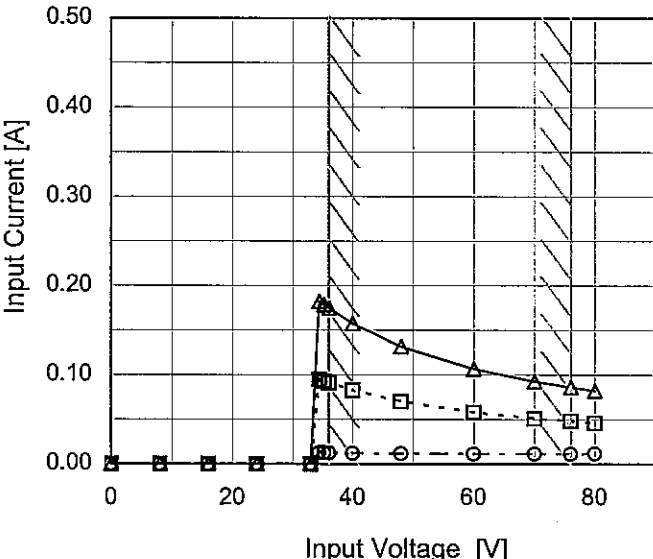
Prepared by : Kenichi Tsukada
Kenichi Tsukada Design Engineer

COSEL CO.,LTD.

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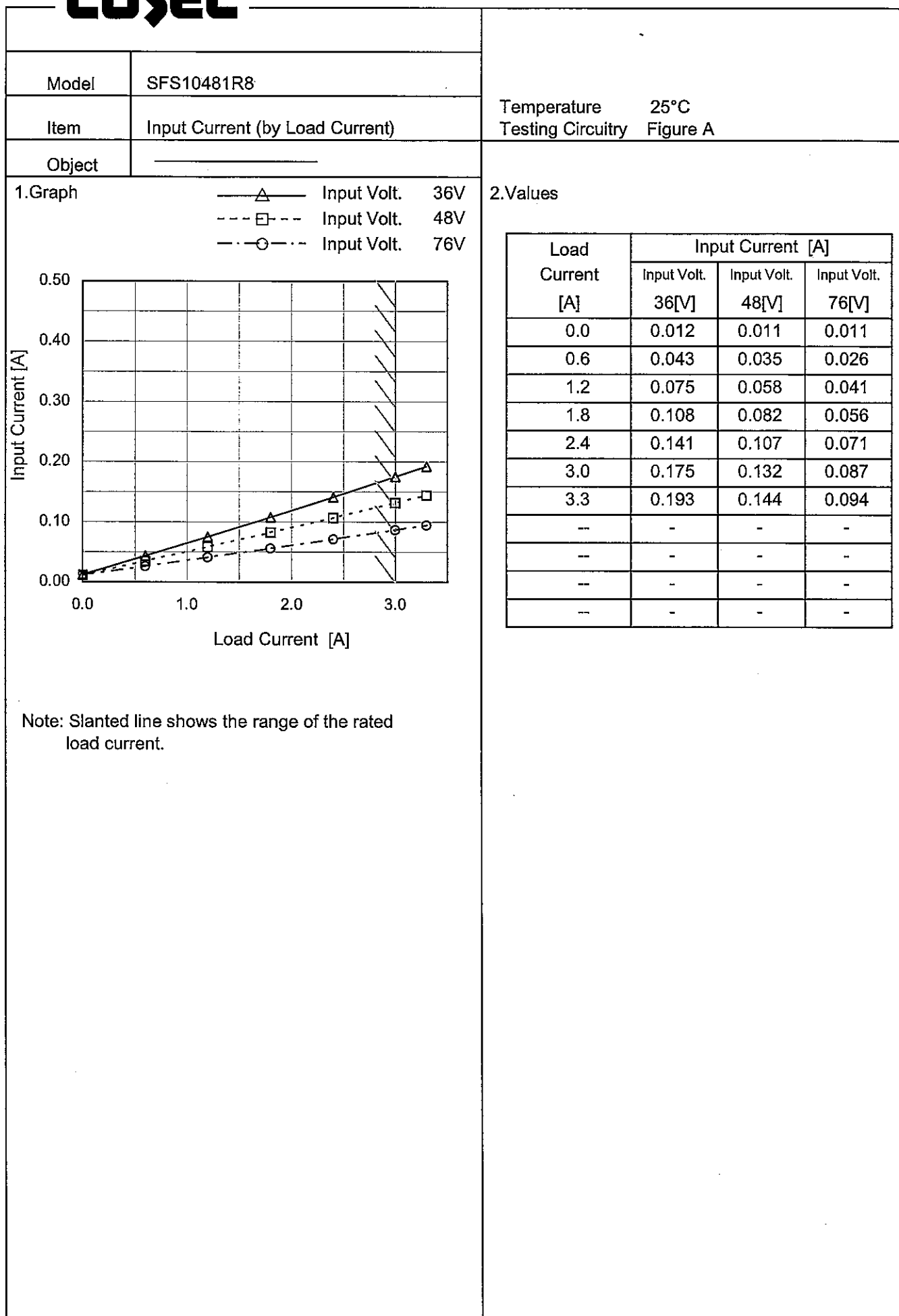
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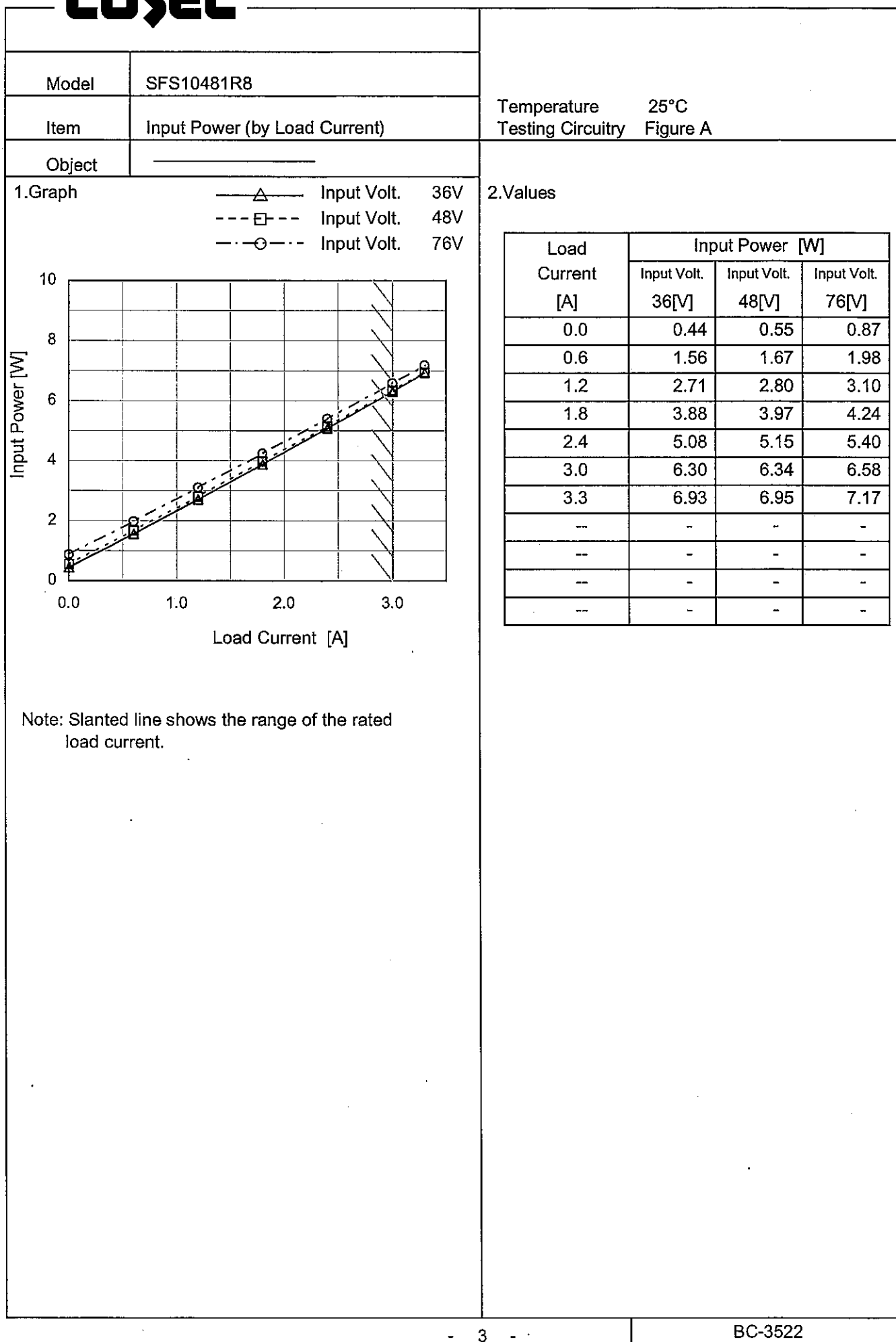
Model		SFS10481R8	
Item		Input Current (by Input Voltage)	
Object			
1.Graph			
		<div><div>—△—</div>Load 100%</div> <div><div>---□---</div>Load 50%</div> <div><div>---○---</div>Load 0%</div>	
			
Note: Slanted line shows the range of the rated input voltage.			

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	0.000	0.000	0.000
16	0.000	0.000	0.000
24	0.000	0.000	0.000
33	0.000	0.000	0.000
34	0.012	0.095	0.183
35	0.012	0.093	0.179
36	0.012	0.091	0.175
40	0.012	0.083	0.158
48	0.011	0.070	0.132
60	0.011	0.058	0.107
70	0.011	0.051	0.093
76	0.011	0.048	0.086
80	0.011	0.046	0.082
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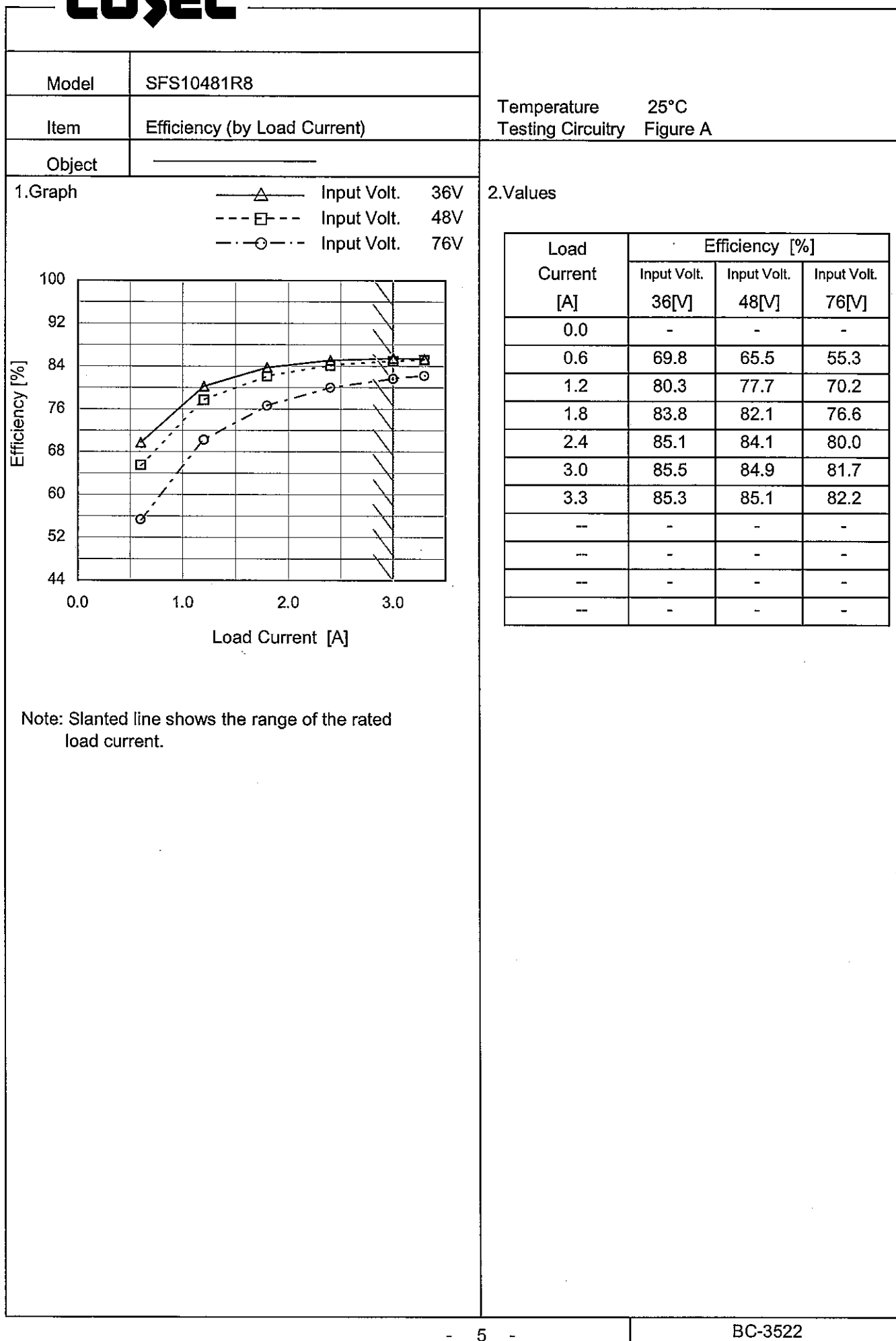




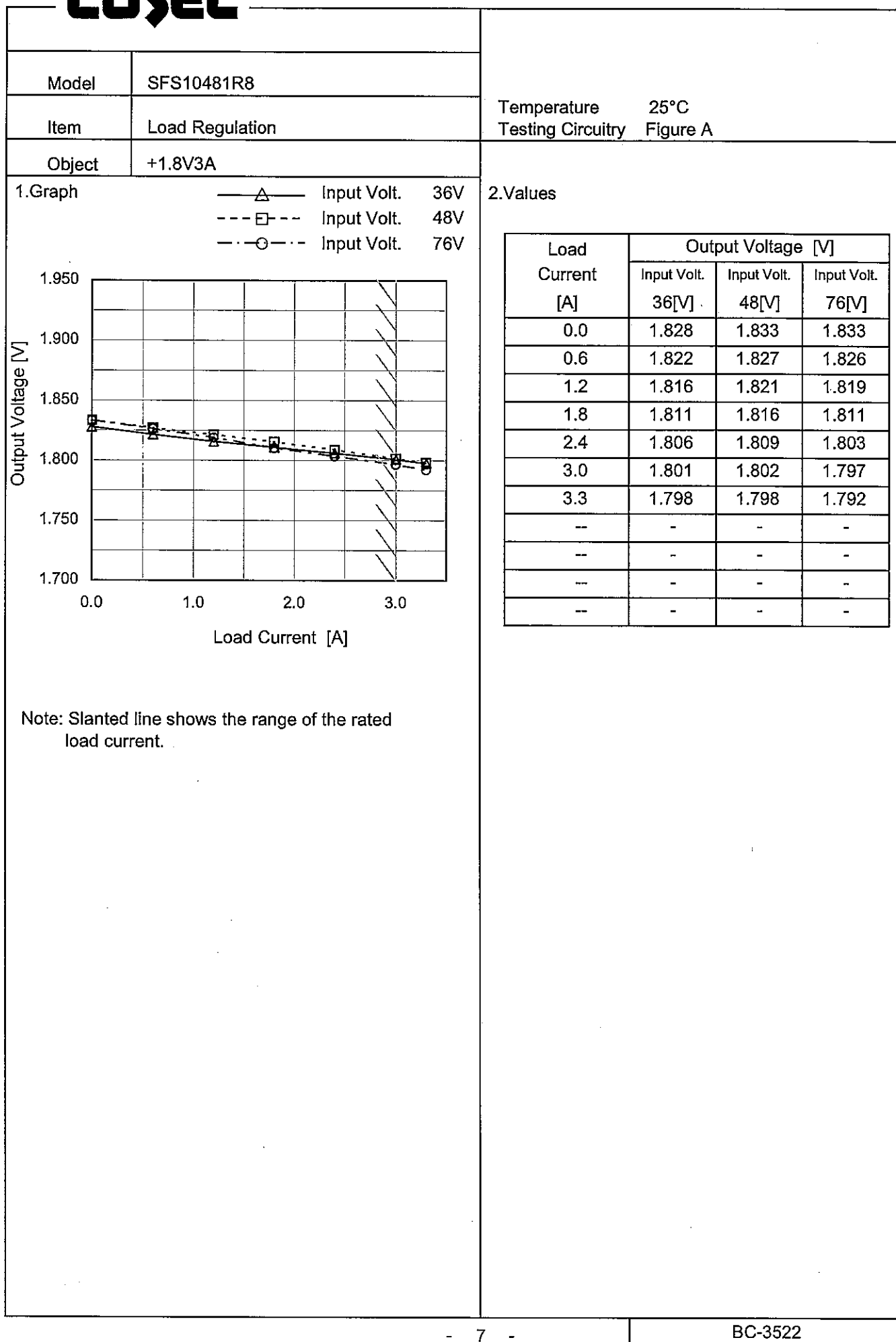
Model		SFS10481R8	Temperature 25°C Testing Circuitry Figure A																															
Item		Efficiency (by Input Voltage)																																
Object																																		
1.Graph			2.Values																															
<div><div><div><div></div><div></div></div><div>Load 50%</div></div><div><div></div><div></div></div><div>Load 100%</div></div> <p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>																																		
<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>34</td><td>82.5</td><td>85.3</td></tr><tr><td>36</td><td>82.1</td><td>85.3</td></tr><tr><td>40</td><td>81.5</td><td>85.2</td></tr><tr><td>48</td><td>80.2</td><td>84.8</td></tr><tr><td>55</td><td>78.7</td><td>84.3</td></tr><tr><td>60</td><td>77.6</td><td>83.7</td></tr><tr><td>70</td><td>75.4</td><td>82.4</td></tr><tr><td>76</td><td>73.8</td><td>81.5</td></tr><tr><td>78</td><td>73.1</td><td>81.2</td></tr></table>			Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	34	82.5	85.3	36	82.1	85.3	40	81.5	85.2	48	80.2	84.8	55	78.7	84.3	60	77.6	83.7	70	75.4	82.4	76	73.8	81.5	78	73.1	81.2
Input Voltage [V]	Efficiency [%]																																	
	Load 50%	Load 100%																																
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Model	SFS10481R8																																
Item	Line Regulation	Temperature	25°C																														
Object	+1.8V3A	Testing Circuitry	Figure A																														
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>34</td><td>1.812</td><td>1.800</td></tr><tr><td>36</td><td>1.814</td><td>1.801</td></tr><tr><td>40</td><td>1.816</td><td>1.802</td></tr><tr><td>48</td><td>1.819</td><td>1.801</td></tr><tr><td>55</td><td>1.819</td><td>1.801</td></tr><tr><td>60</td><td>1.819</td><td>1.800</td></tr><tr><td>70</td><td>1.816</td><td>1.798</td></tr><tr><td>76</td><td>1.815</td><td>1.796</td></tr><tr><td>78</td><td>1.814</td><td>1.795</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%	Output Voltage [V] Load 100%	34	1.812	1.800	36	1.814	1.801	40	1.816	1.802	48	1.819	1.801	55	1.819	1.801	60	1.819	1.800	70	1.816	1.798	76	1.815	1.796	78	1.814	1.795		
Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%																															
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78	1.814	1.795																															



Model	SFS10481R8	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+1.8V3A		

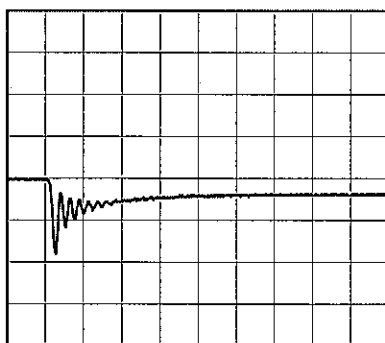
Input Volt. 48 V
Cycle 1000 ms

Load Current 3A/200 μ sec

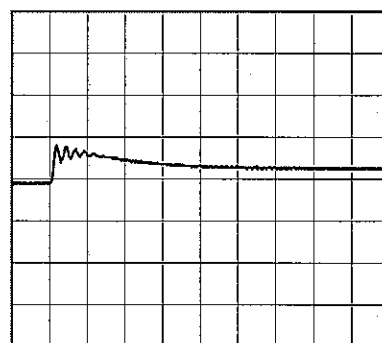
Min. Load (0A)

Load 100% (3A)

100 mV/div



200 μ s/div

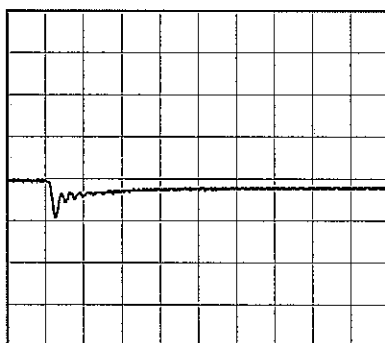


200 μ s/div

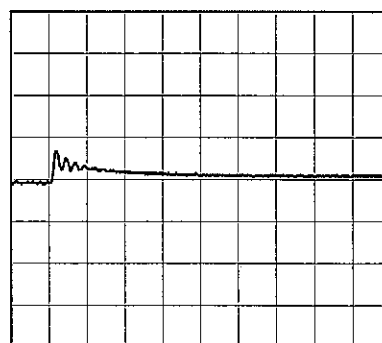
Min. Load (0A)

Load 50% (1.5A)

100 mV/div



200 μ s/div

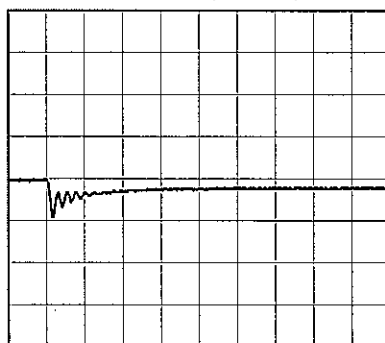


200 μ s/div

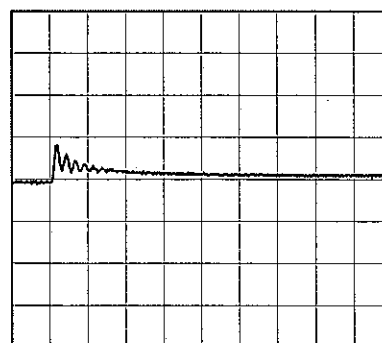
Load 50% (1.5A)

Load 100% (3A)

100 mV/div



200 μ s/div



200 μ s/div

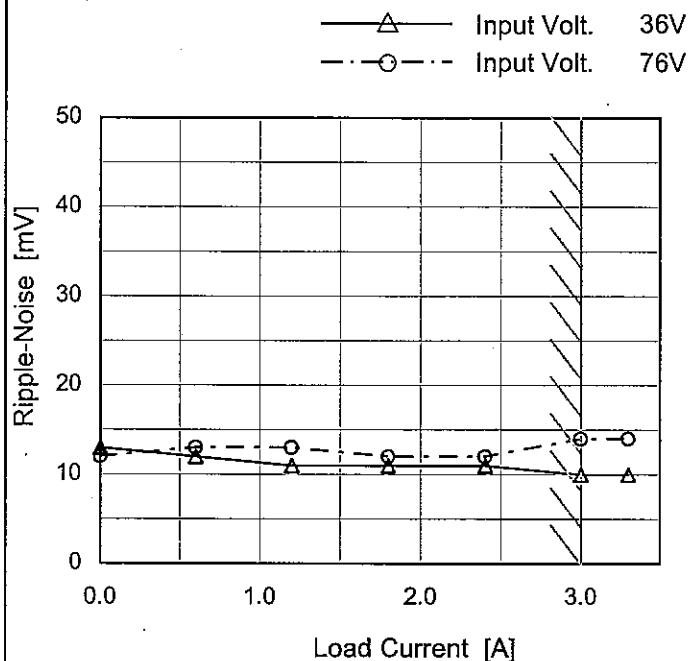
Model		SFS10481R8		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure C																																							
Object		+1.8V3A																																									
1.Graph				2.Values																																							
<div><div><div>—△— Input Volt. 36V</div><div>-·-○-·- Input Volt. 76V</div></div><div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 36 [V]</th><th>Input Volt. 76 [V]</th></tr><tr><td>0.0</td><td>3</td><td>3</td></tr><tr><td>0.6</td><td>3</td><td>3</td></tr><tr><td>1.2</td><td>3</td><td>3</td></tr><tr><td>1.8</td><td>3</td><td>3</td></tr><tr><td>2.4</td><td>3</td><td>3</td></tr><tr><td>3.0</td><td>3</td><td>3</td></tr><tr><td>3.3</td><td>3</td><td>3</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>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	3	3	0.6	3	3	1.2	3	3	1.8	3	3	2.4	3	3	3.0	3	3	3.3	3	3	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																										
	Input Volt. 36 [V]	Input Volt. 76 [V]																																									
0.0	3	3																																									
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<p>Measured by 100 MHz Oscilloscope.</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																											
<div><div><p>Ripple [mVp-p]</p><p>Fig.Complex Ripple Wave Form</p></div></div>																																											

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Model	SFS10481R8
Item	Ripple-Noise
Object	+1.8V3A

1.Graph



Measured by 100 MHz Oscilloscope.

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

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

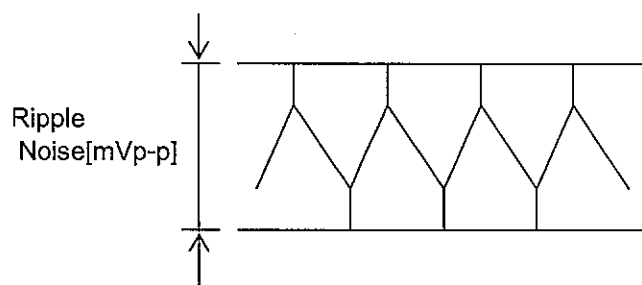


Fig.Complex Ripple Noise Wave Form

Temperature 25°C
Testing Circuitry Figure C

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	13	12
0.6	12	13
1.2	11	13
1.8	11	12
2.4	11	12
3.0	10	14
3.3	10	14
--	-	-
--	-	-
--	-	-
--	-	-

Model	SFS10481R8	Testing Circuitry Figure C																																							
Item	Ripple Voltage (by Ambient Temp.)																																								
Object	+1.8V3A																																								
1.Graph		2.Values																																							
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <p>Input Volt. 48V</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-50</td><td>5</td><td>5</td></tr><tr><td>-40</td><td>4</td><td>4</td></tr><tr><td>-20</td><td>3</td><td>3</td></tr><tr><td>0</td><td>3</td><td>3</td></tr><tr><td>25</td><td>3</td><td>3</td></tr><tr><td>85</td><td>3</td><td>3</td></tr><tr><td>90</td><td>3</td><td>3</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]	Ripple Voltage [mV]		Load 50%	Load 100%	-50	5	5	-40	4	4	-20	3	3	0	3	3	25	3	3	85	3	3	90	3	3	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																								
	Load 50%	Load 100%																																							
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-40	4	4																																							
-20	3	3																																							
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25	3	3																																							
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--	-	-																																							
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Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.																																									

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Model		SFS10481R8																																																				
Item		Ambient Temperature Drift																																																				
Object		+1.8V3A																																																				
1.Graph		2.Values																																																				
<div><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>Output Voltage [V]</div><div>Ambient Temperature [°C]</div><div>Load 100%</div></div><div>Note: Slanted line shows the range of the rated ambient temperature.</div></div>		<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>1.820</td><td>1.817</td><td>1.802</td></tr><tr><td>-40</td><td>1.818</td><td>1.816</td><td>1.802</td></tr><tr><td>-20</td><td>1.812</td><td>1.811</td><td>1.800</td></tr><tr><td>0</td><td>1.807</td><td>1.808</td><td>1.799</td></tr><tr><td>25</td><td>1.800</td><td>1.800</td><td>1.795</td></tr><tr><td>50</td><td>1.792</td><td>1.793</td><td>1.789</td></tr><tr><td>85</td><td>1.781</td><td>1.783</td><td>1.779</td></tr><tr><td>90</td><td>1.779</td><td>1.782</td><td>1.777</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	1.820	1.817	1.802	-40	1.818	1.816	1.802	-20	1.812	1.811	1.800	0	1.807	1.808	1.799	25	1.800	1.800	1.795	50	1.792	1.793	1.789	85	1.781	1.783	1.779	90	1.779	1.782	1.777	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
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		Testing Circuitry Figure A
Model	SFS10481R8	
Item	Output Voltage Accuracy	
Object	+1.8V3A	

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

* 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	76	0	1.836	±29	±1.6
Minimum Voltage	85	76	3	1.778		

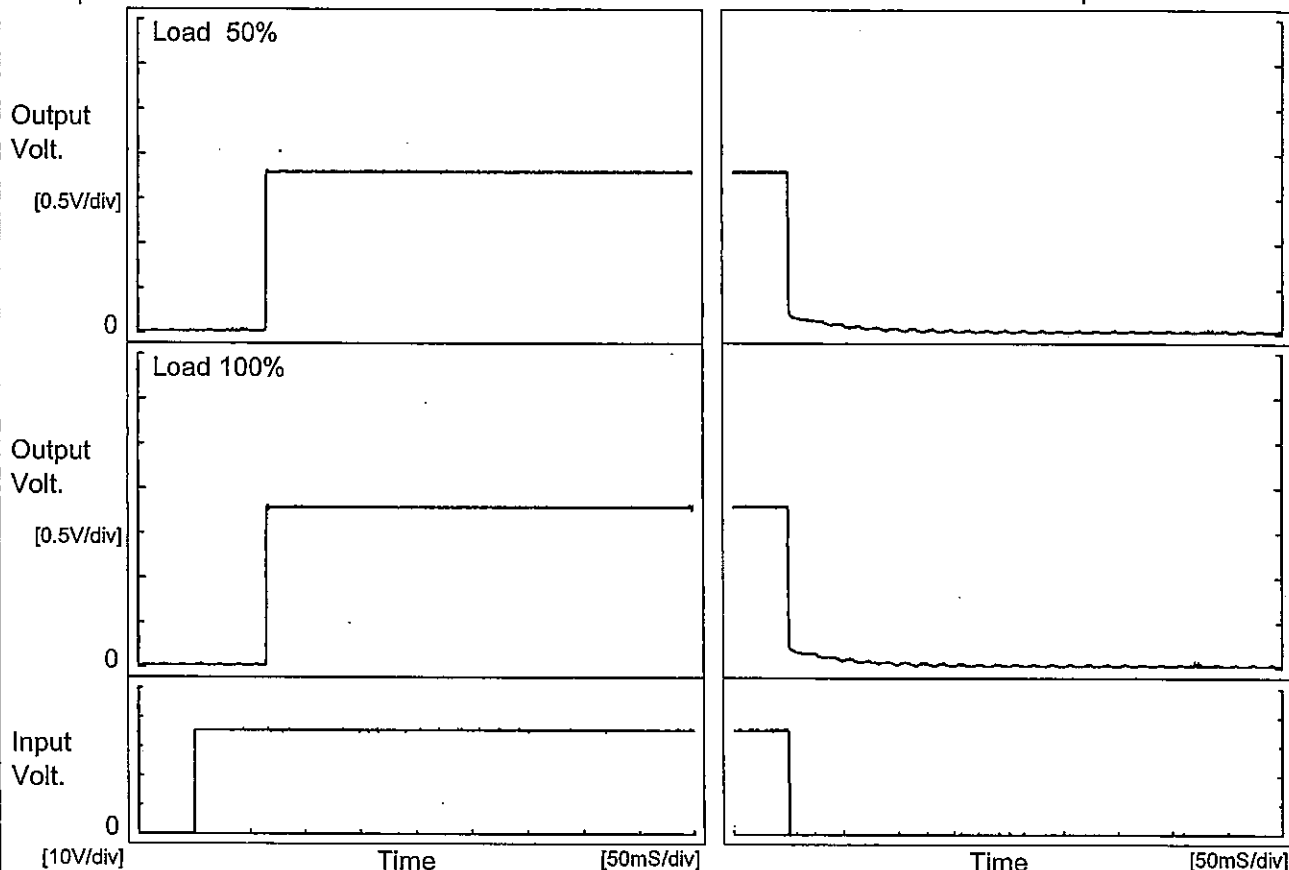
COSEL

Model	SFS10481R8																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+1.8V3A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><div><div>1.900</div><div>1.850</div><div>1.800</div><div>1.750</div><div>1.700</div><div>1.650</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div><div><div>Output Voltage [V]</div><div>Time [H]</div></div></div> <div><div>Input Volt.</div><div>48V</div><div>Load</div><div>100%</div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>1.803</td></tr><tr><td>0.5</td><td>1.801</td></tr><tr><td>1.0</td><td>1.801</td></tr><tr><td>2.0</td><td>1.801</td></tr><tr><td>3.0</td><td>1.801</td></tr><tr><td>4.0</td><td>1.801</td></tr><tr><td>5.0</td><td>1.801</td></tr><tr><td>6.0</td><td>1.801</td></tr><tr><td>7.0</td><td>1.801</td></tr><tr><td>8.0</td><td>1.801</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	1.803	0.5	1.801	1.0	1.801	2.0	1.801	3.0	1.801	4.0	1.801	5.0	1.801	6.0	1.801	7.0	1.801	8.0	1.801
Time since start [H]	Output Voltage [V]																								
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2.0	1.801																								
3.0	1.801																								
4.0	1.801																								
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8.0	1.801																								

Model	SFS10481R8	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+1.8V3A		

1.Graph

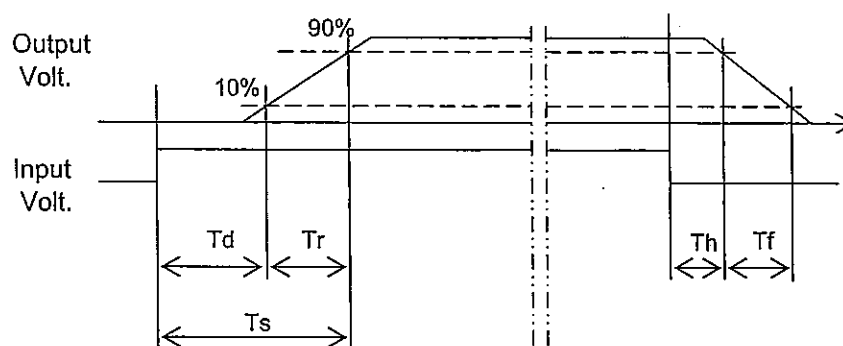
Input Volt. 36 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	64.8	0.7	65.5	0.3	2.5
100 %	64.5	0.8	65.3	0.3	3.3



Model		SFS10481R8
Item		Minimum Input Voltage for Regulated Output Voltage
Object		+1.8V3A
1.Graph		
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Model	SFS10481R8	Temperature 25°C Testing Circuitry Figure A																																																												
Item	Overcurrent Protection																																																													
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Model	SFS10481R8																																																					
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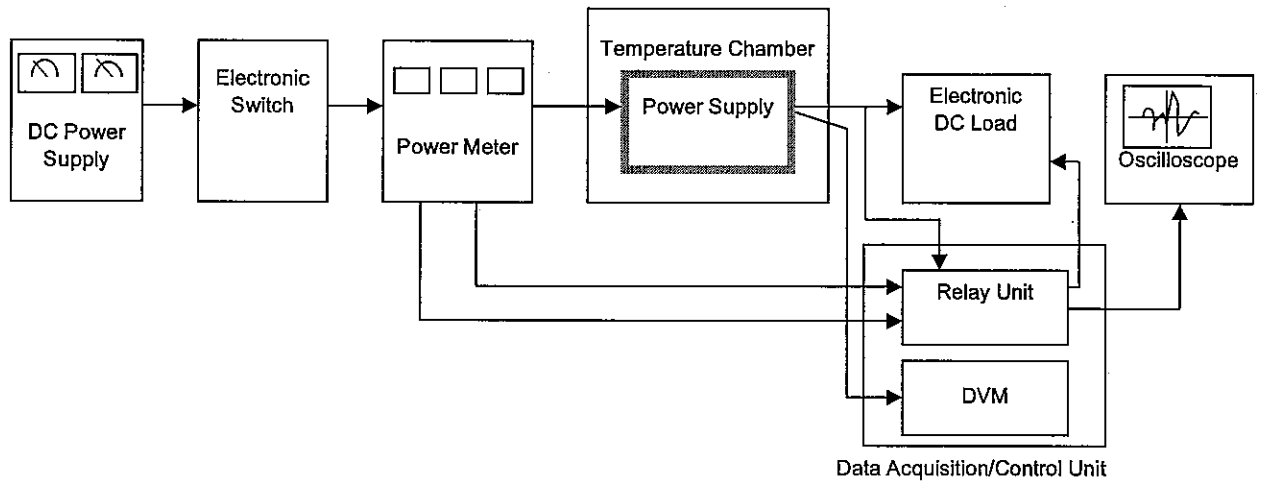


Figure A

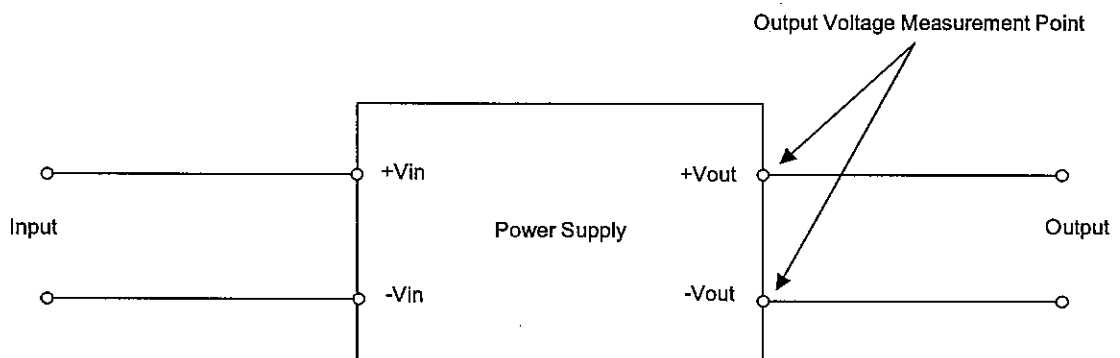


Figure B (General Electric Characteristic)

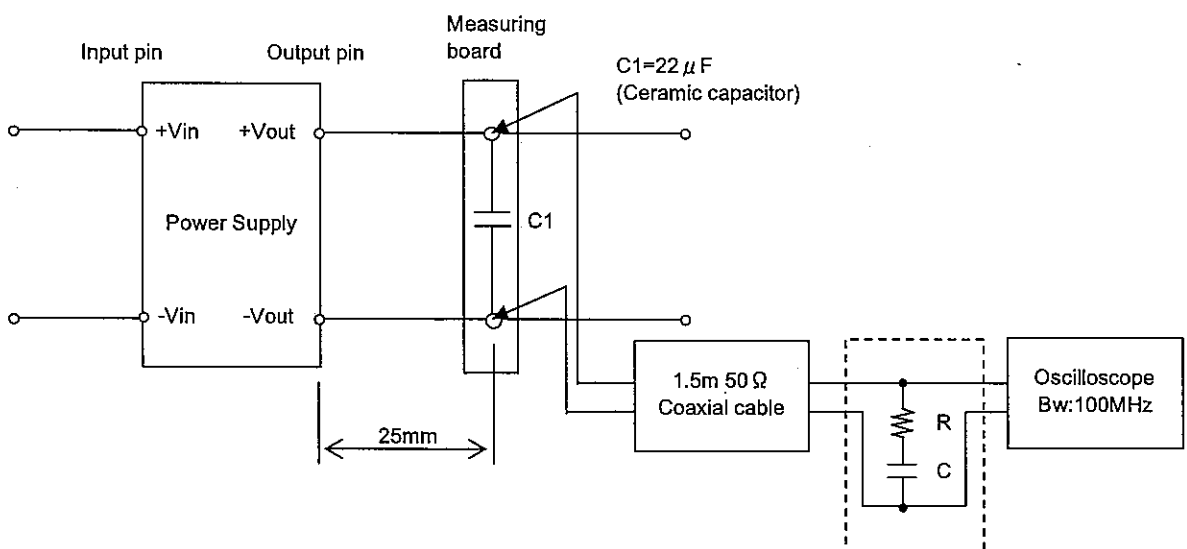


Figure C (Ripple and Ripple noise Characteristic)