



TEST DATA OF R150-18

Regulated DC Power Supply
Mar 14, 2005

Approved by : K. Shiho K. Shiho Design Manager

Prepared by : S. Ueda S. Ueda Design Engineer

COSEL CO.,LTD.



CONTENTS

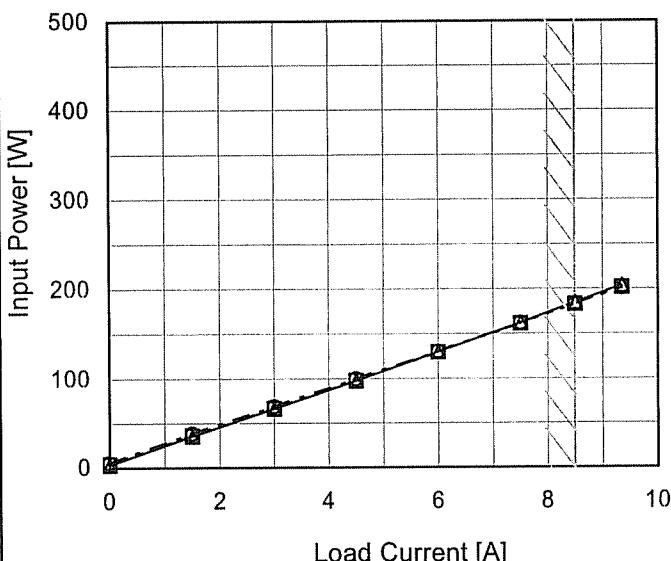
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Model	R150-18	Temperature Testing Circuitry	25°C Figure A																																																				
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Object	_____	2.Values																																																					
1.Graph	<p style="text-align: center;"> △ Input Volt. 85V □ Input Volt. 100V ○ Input Volt. 132V </p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.110</td><td>0.113</td><td>0.122</td></tr> <tr><td>1.50</td><td>0.889</td><td>0.822</td><td>0.706</td></tr> <tr><td>3.00</td><td>1.567</td><td>1.425</td><td>1.199</td></tr> <tr><td>4.50</td><td>2.240</td><td>2.004</td><td>1.672</td></tr> <tr><td>6.00</td><td>2.907</td><td>2.572</td><td>2.132</td></tr> <tr><td>7.50</td><td>3.551</td><td>3.148</td><td>2.610</td></tr> <tr><td>8.50</td><td>3.970</td><td>3.525</td><td>2.914</td></tr> <tr><td>9.35</td><td>4.340</td><td>3.846</td><td>3.168</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> </tbody> </table>			Load Current [A]	Input Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.00	0.110	0.113	0.122	1.50	0.889	0.822	0.706	3.00	1.567	1.425	1.199	4.50	2.240	2.004	1.672	6.00	2.907	2.572	2.132	7.50	3.551	3.148	2.610	8.50	3.970	3.525	2.914	9.35	4.340	3.846	3.168	--	-	-	-	--	-	-	-	--	-	-	-
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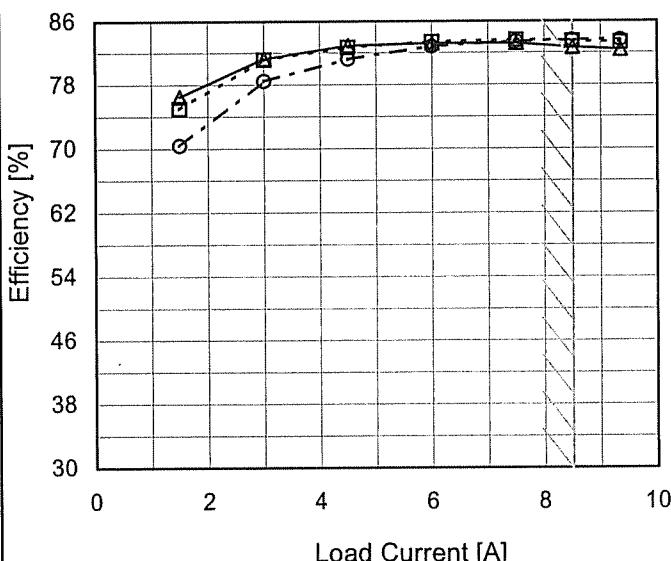
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 <p>The graph plots Input Power [W] on the Y-axis (0 to 500) against Load Current [A] on the X-axis (0 to 10). Three curves are shown for input voltages of 85V, 100V, and 132V. The 85V curve starts at (0,0) and ends at approximately (9.35, 204.0). The 100V curve starts at (0,0) and ends at approximately (9.35, 201.8). The 132V curve starts at (0,0) and ends at approximately (9.35, 183.0). A slanted line is drawn through the points (0,0), (9.35, 204.0), and (9.35, 201.8), representing the rated load current range.</p>																																																						
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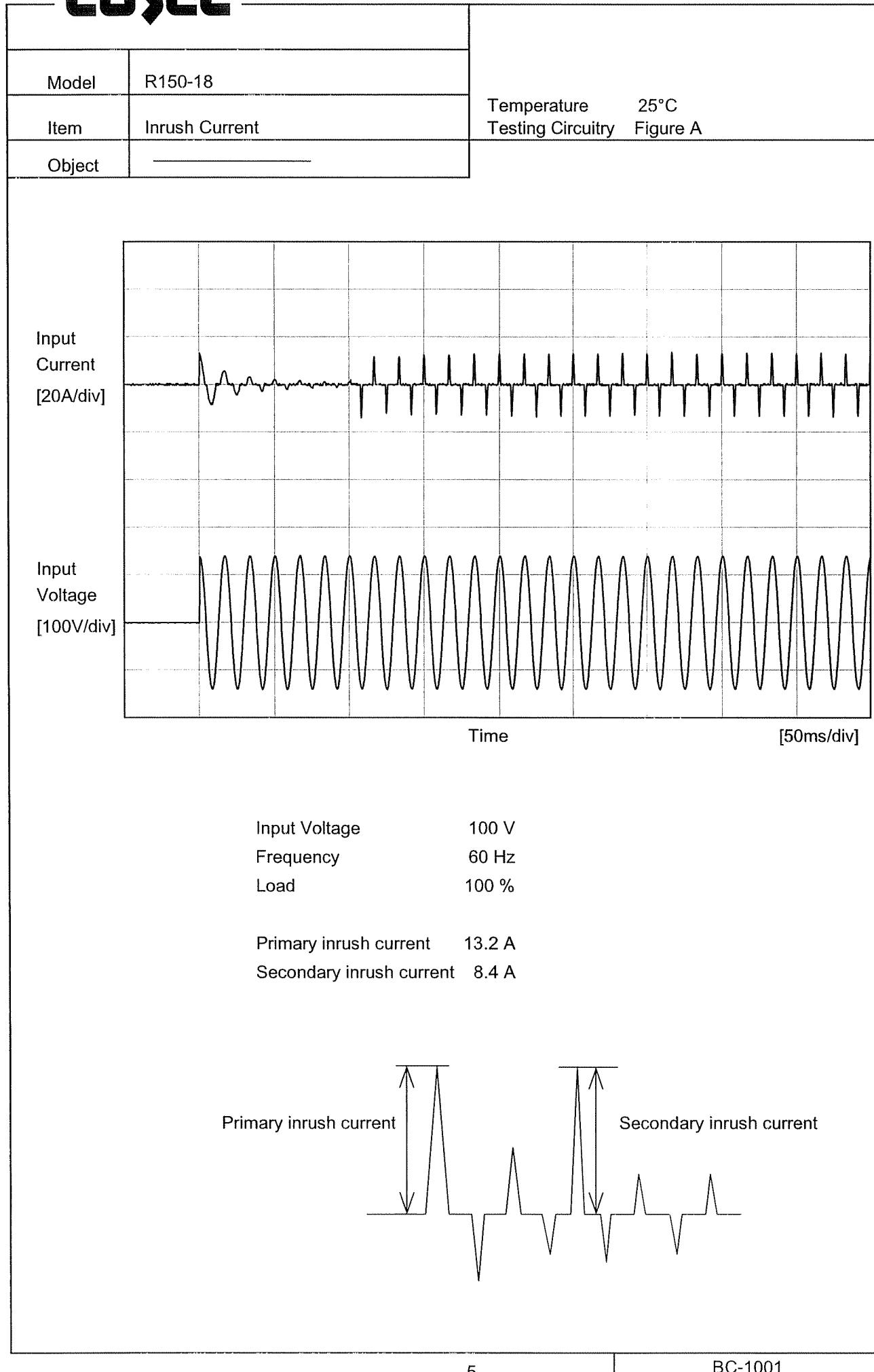
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<p>The graph plots Efficiency [%] on the y-axis (58 to 86) against Input Voltage [V] on the x-axis (70 to 150). Two data series are shown: Load 50% (dashed line with open squares) and Load 100% (solid line with open triangles). Both series show efficiency remaining relatively constant around 83% across the input voltage range. A slanted line indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>75</td><td>83.0</td><td>81.8</td></tr> <tr><td>80</td><td>83.0</td><td>82.4</td></tr> <tr><td>85</td><td>82.9</td><td>82.8</td></tr> <tr><td>90</td><td>82.9</td><td>83.1</td></tr> <tr><td>100</td><td>82.4</td><td>83.3</td></tr> <tr><td>110</td><td>82.6</td><td>83.6</td></tr> <tr><td>120</td><td>82.1</td><td>83.6</td></tr> <tr><td>132</td><td>81.3</td><td>83.5</td></tr> <tr><td>140</td><td>80.9</td><td>83.3</td></tr> </tbody> </table>				Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	75	83.0	81.8	80	83.0	82.4	85	82.9	82.8	90	82.9	83.1	100	82.4	83.3	110	82.6	83.6	120	82.1	83.6	132	81.3	83.5	140	80.9	83.3		
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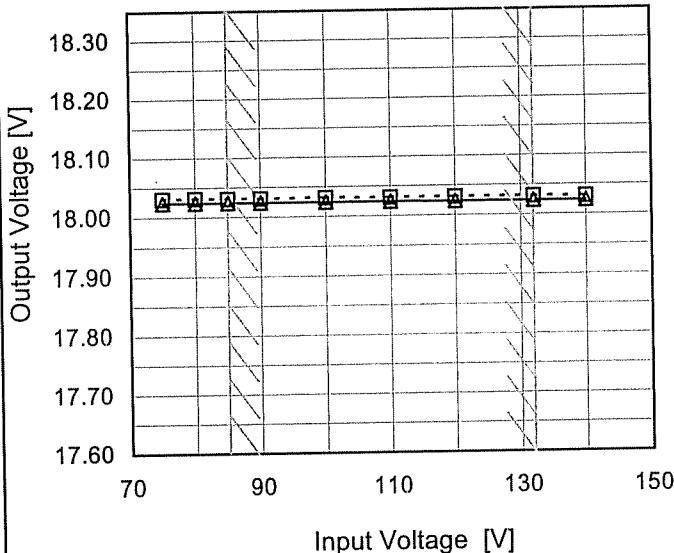


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Model	R150-18
Item	Line Regulation
Object	+18V8.5A

1. Graph

---□--- Load 50%
—△— Load 100%



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

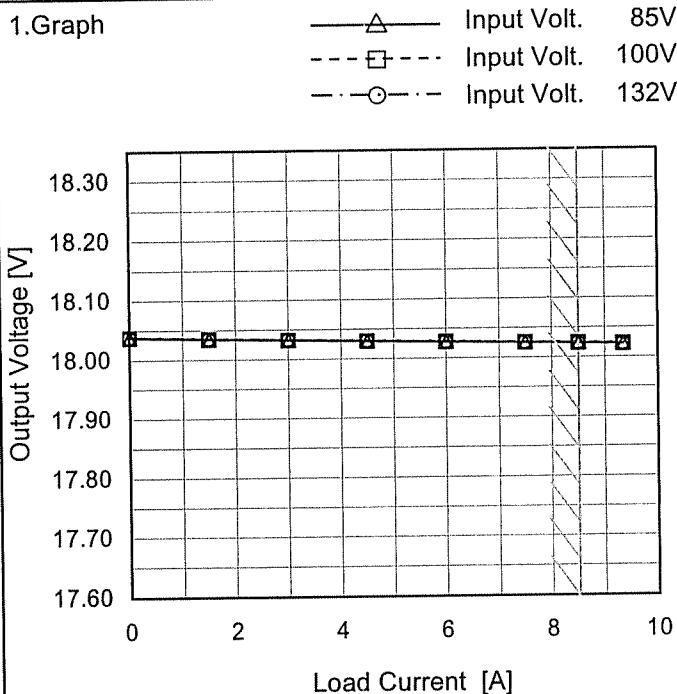
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	18.031	18.025
80	18.032	18.025
85	18.031	18.025
90	18.031	18.025
100	18.032	18.025
110	18.031	18.025
120	18.031	18.024
132	18.031	18.024
140	18.031	18.024

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Model R150-18

Item Load Regulation

Object +18V8.5A



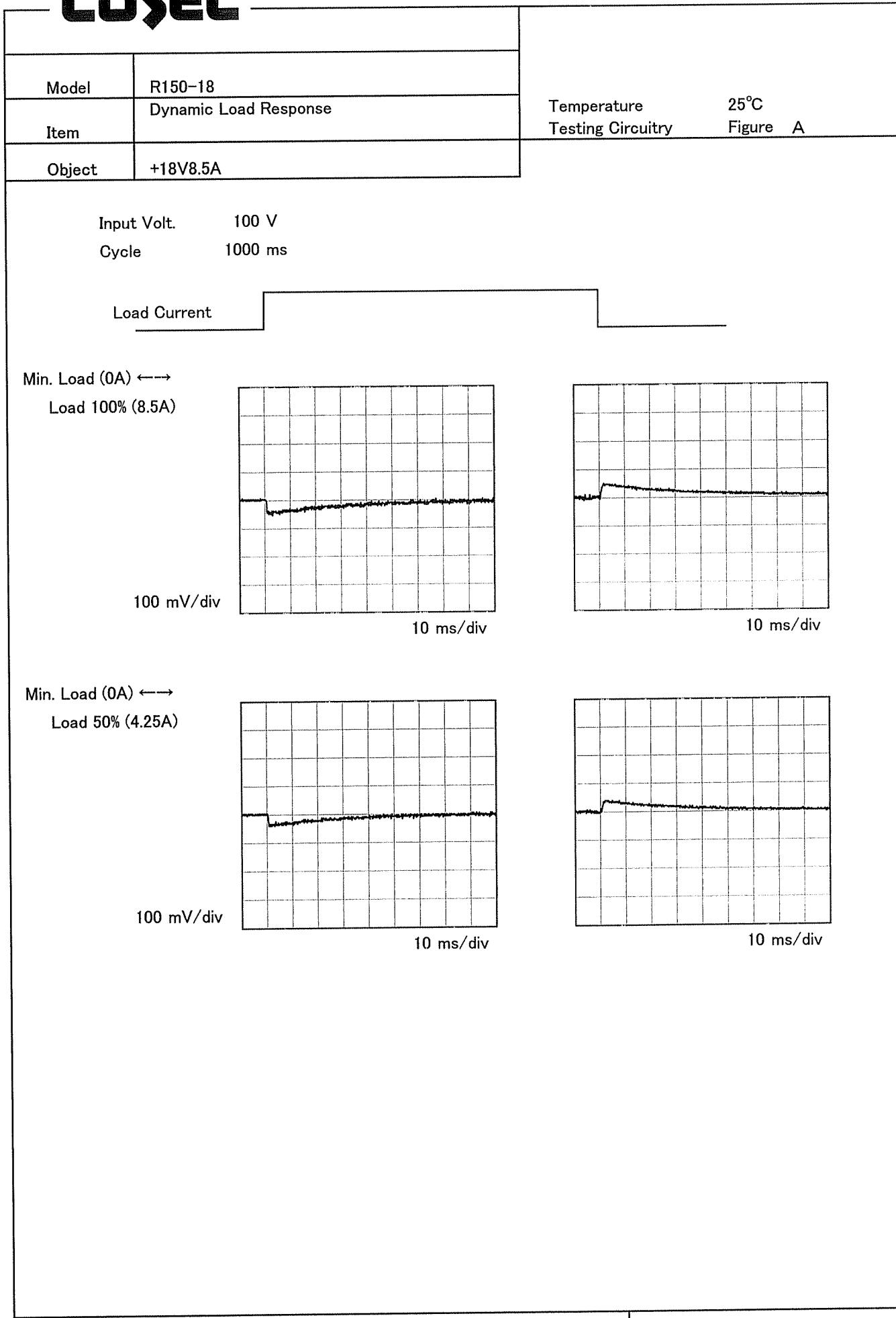
Note: Slanted line shows the range of the rated load current.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	18.038	18.038	18.038
1.50	18.035	18.035	18.035
3.00	18.033	18.032	18.033
4.50	18.030	18.030	18.030
6.00	18.028	18.028	18.027
7.50	18.026	18.025	18.025
8.50	18.024	18.024	18.024
9.35	18.022	18.022	18.022
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--	-	-	-

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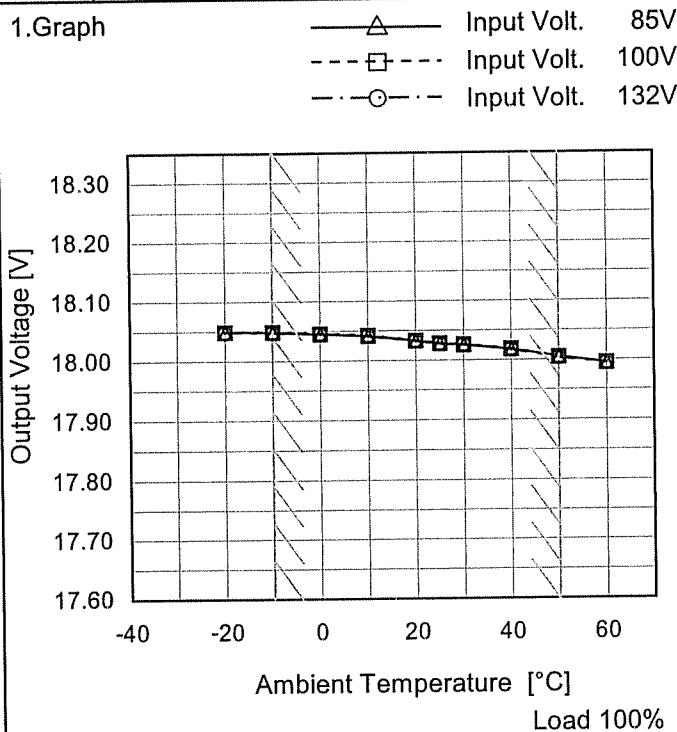
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<p>Measured by 20 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																									
<p>Fig. Complex Ripple Wave Form</p>																																									

Model	R150-18	Temperature	25°C																																						
Item	Ripple-Noise	Testing Circuitry	Figure A																																						
Object	+18V8.5A																																								
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<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The graph compares two input voltages: 85V (solid line with open circles) and 132V (dashed line with open circles). The x-axis represents Load Current [A] from 0 to 10, and the y-axis represents Ripple-Noise [mV] from 0 to 200. Both curves show a slight increase in noise as load current increases, with the 132V curve generally higher than the 85V curve. 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] (85V)</th> <th>Ripple-Noise [mV] (132V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>20</td><td>20</td></tr> <tr><td>1.50</td><td>25</td><td>30</td></tr> <tr><td>3.00</td><td>30</td><td>30</td></tr> <tr><td>4.50</td><td>30</td><td>30</td></tr> <tr><td>6.00</td><td>35</td><td>35</td></tr> <tr><td>7.50</td><td>35</td><td>35</td></tr> <tr><td>8.50</td><td>35</td><td>35</td></tr> <tr><td>9.35</td><td>40</td><td>35</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> </tbody> </table>				Load Current [A]	Ripple-Noise [mV] (85V)	Ripple-Noise [mV] (132V)	0.00	20	20	1.50	25	30	3.00	30	30	4.50	30	30	6.00	35	35	7.50	35	35	8.50	35	35	9.35	40	35	...	-	-	--	-	-	--	-	-		
Load Current [A]	Ripple-Noise [mV] (85V)	Ripple-Noise [mV] (132V)																																							
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<p>Measured by 20 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Fig. Complex Ripple Wave Form</p>																																									

<p>Model R150-18</p> <p>Item Ripple Voltage (by Ambient Temp.)</p> <p>Object +18V8.5A</p>	Testing Circuitry Figure A																																						
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COSEL

Model	R150-18
Item	Ambient Temperature Drift
Object	+18V8.5A



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	18.049	18.049	18.048
-10	18.049	18.049	18.048
0	18.045	18.046	18.045
10	18.042	18.042	18.041
20	18.033	18.033	18.033
25	18.028	18.028	18.028
30	18.026	18.026	18.026
40	18.018	18.019	18.018
50	18.006	18.005	18.004
60	17.995	17.995	17.995
--	-	-	-



Model	R150-18	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+18V8.5A	

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 : -10 - 50°C

Input Voltage : 85 - 132V

Load Current : 0 - 8.5A

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

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

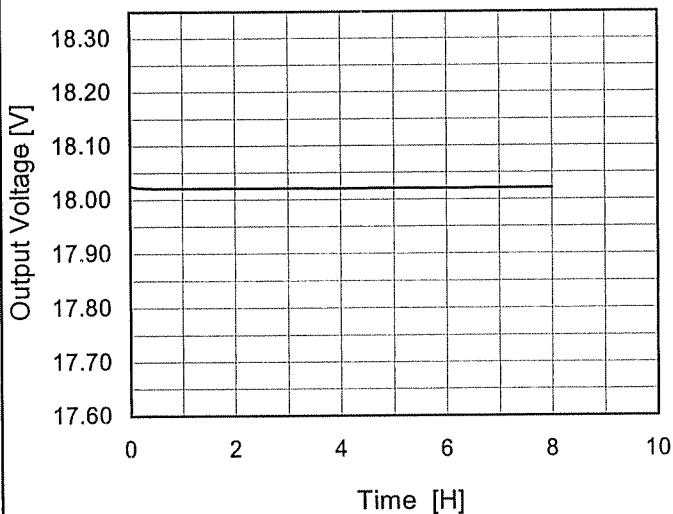
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	132	0	18.062	±29	±0.2
Minimum Voltage	50	85	8.5	18.004		

COSEL

Model	R150-18
Item	Time Lapse Drift
Object	+18V8.5A

1.Graph



Temperature 25°C
Testing Circuitry Figure A

2.Values

Time since start [H]	Output Voltage [V]
0.0	18.029
0.5	18.022
1.0	18.021
2.0	18.021
3.0	18.022
4.0	18.021
5.0	18.021
6.0	18.021
7.0	18.022
8.0	18.021

COSEL

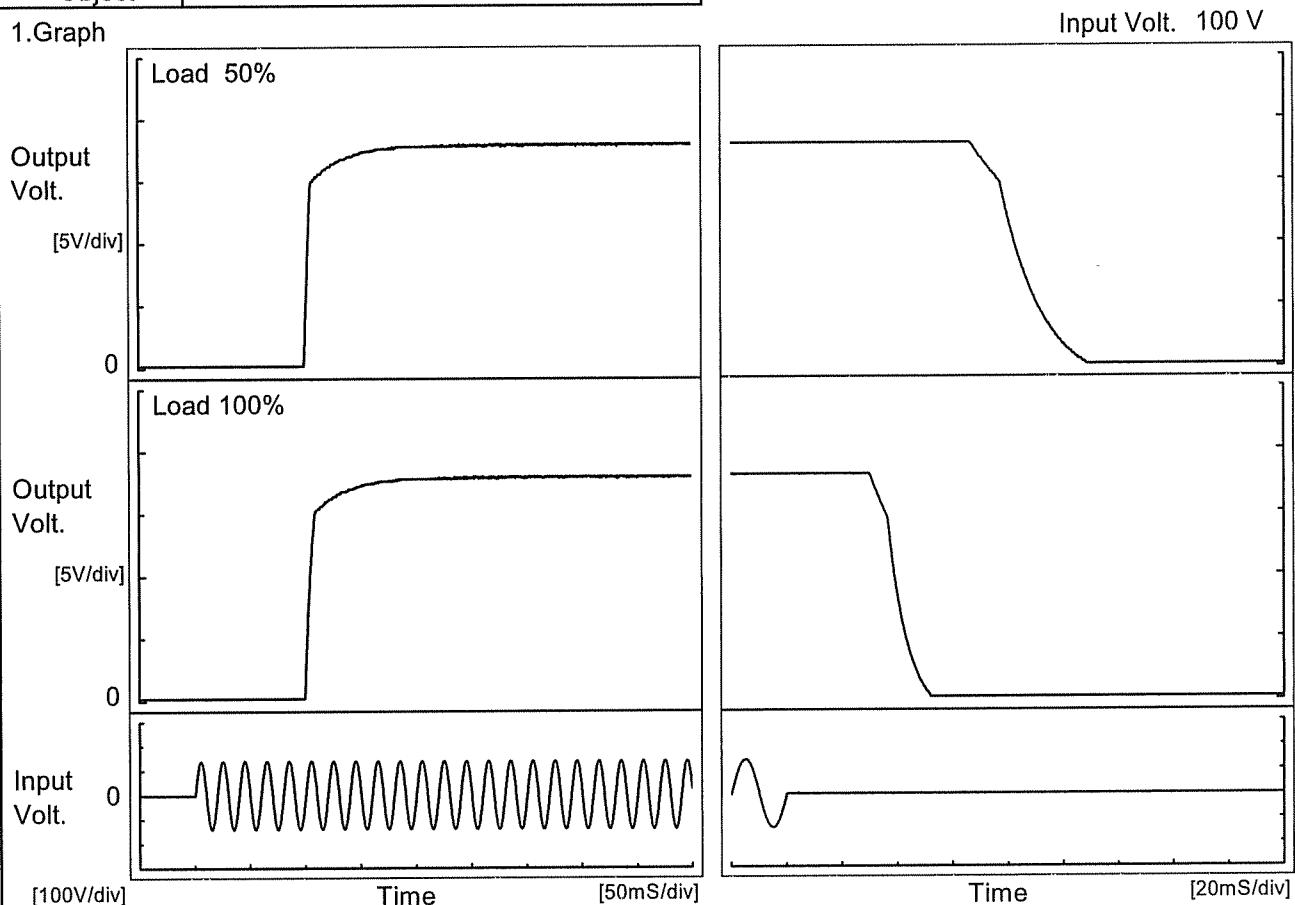
Model R150-18

Item Rise and Fall Time

Object +18V8.5A

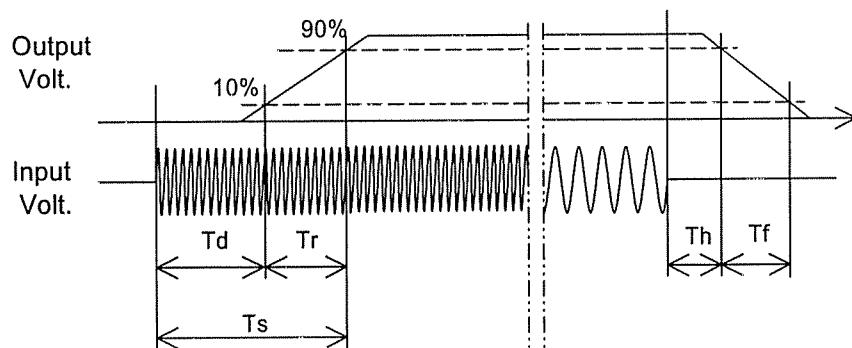
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

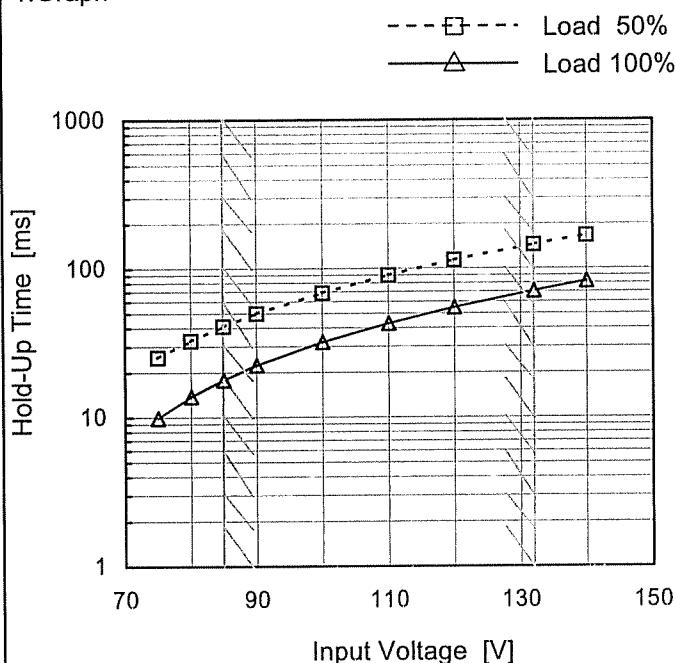
Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		100.3	24.3	124.6	71.4	27.7	
100 %		100.5	25.5	126.0	33.0	14.6	



COSEL

Model	R150-18
Item	Hold-Up Time
Object	+18V8.5A

1.Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
 Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C
 Testing Circuitry Figure A

2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	25	10
80	33	14
85	41	18
90	50	22
100	69	32
110	90	43
120	114	55
132	144	71
140	166	82

COSEL

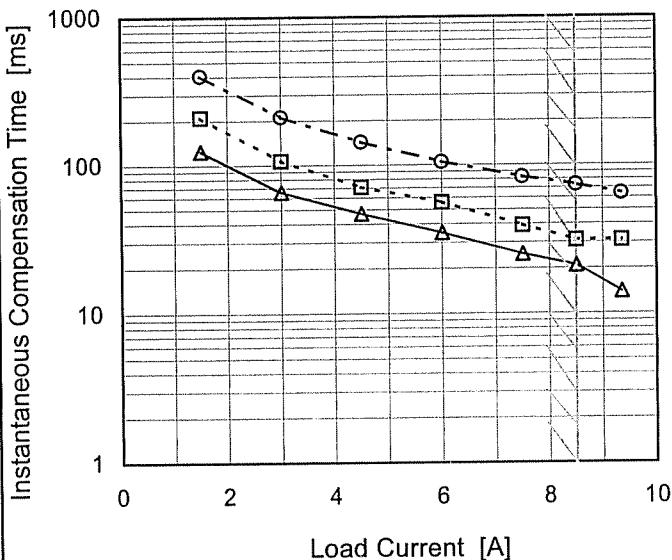
Model R150-18

Item Instantaneous Interruption Compensation

Object +18V8.5A

1. Graph

—△— Input Volt. 85V
 - -□--- Input Volt. 100V
 - -○--- Input Volt. 132V



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

Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
1.50	125	212	405
3.00	66	107	213
4.50	47	71	144
6.00	35	56	105
7.50	25	39	83
8.50	21	31	73
9.35	14	31	64
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--	-	-	-
--	-	-	-

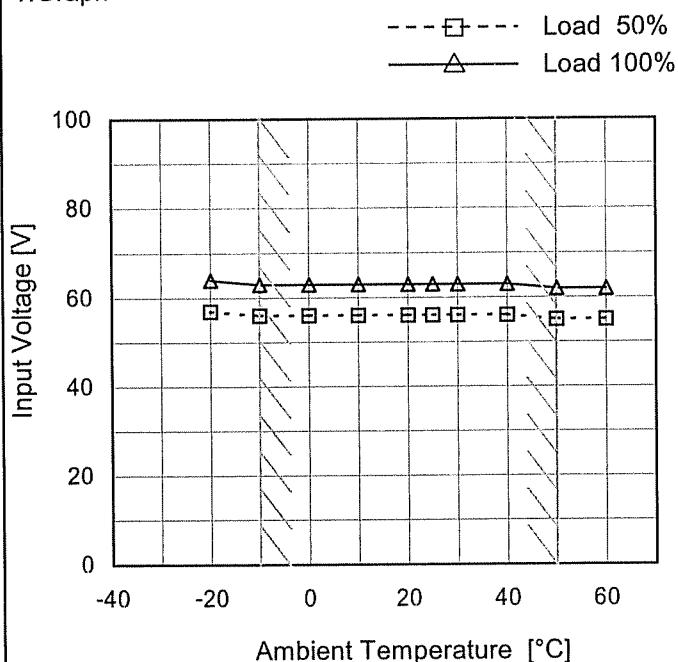
COSEL

Model R150-18

Item Minimum Input Voltage
for Regulated Output Voltage

Object +18V8.5A

1. Graph



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

Testing Circuitry Figure A

2. Values

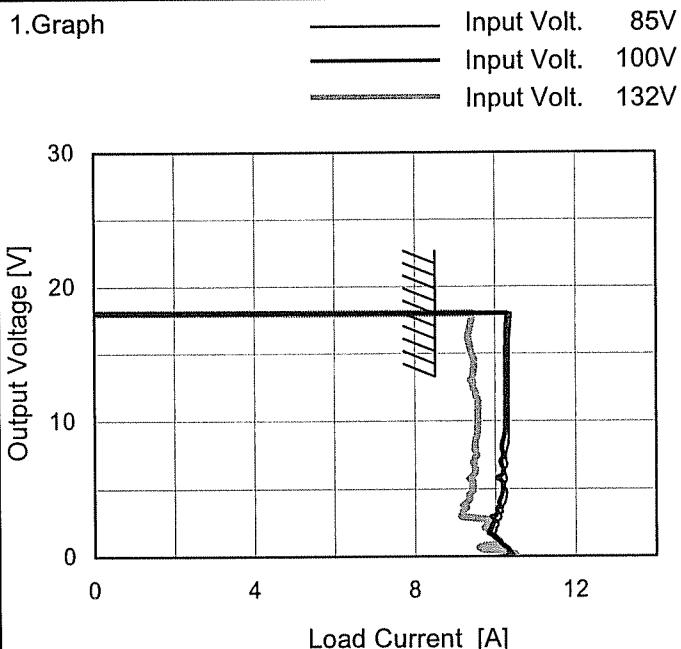
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	57	64
-10	56	63
0	56	63
10	56	63
20	56	63
25	56	63
30	56	63
40	56	63
50	55	62
60	55	62
--	-	-

COSEL

Model R150-18

Item Overcurrent Protection

Object +18V8.5A



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
18.0	10.40	10.31	9.43
17.1	10.38	10.28	9.38
16.2	10.36	10.27	9.32
14.4	10.34	10.26	9.47
12.6	10.34	10.25	9.44
10.8	10.34	10.25	9.57
9.0	10.33	10.22	9.55
7.2	10.26	10.16	9.48
5.4	10.23	10.19	9.42
3.6	10.17	10.04	9.24
1.8	9.98	9.83	9.87
0.0	10.25	10.04	10.09

COSEL

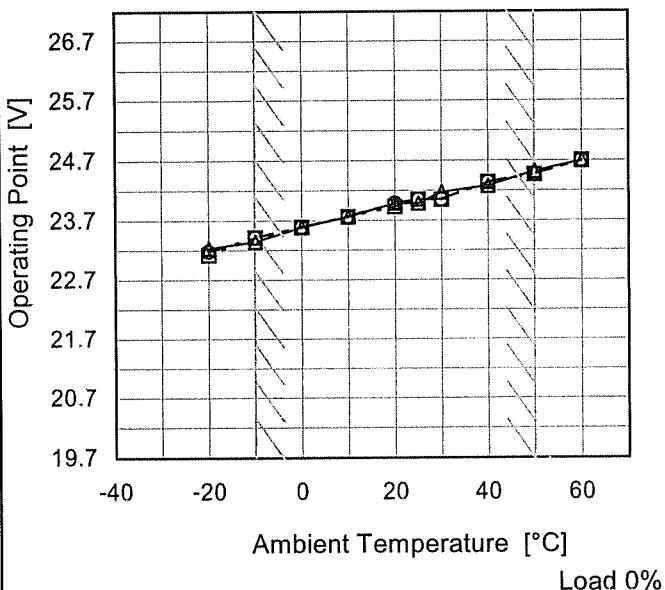
Model R150-18

Item Overvoltage Protection

Object +18V8.5A

1.Graph

—△— Input Volt. 85V
 - - -□--- Input Volt. 100V
 - -○--- Input Volt. 132V



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	23.20	23.08	23.14
-10	23.31	23.38	23.38
0	23.55	23.55	23.55
10	23.72	23.72	23.72
20	23.95	23.89	23.95
25	23.95	24.01	24.01
30	24.13	24.01	24.01
40	24.24	24.30	24.30
50	24.48	24.43	24.43
60	24.66	24.66	24.66
--	-	-	-

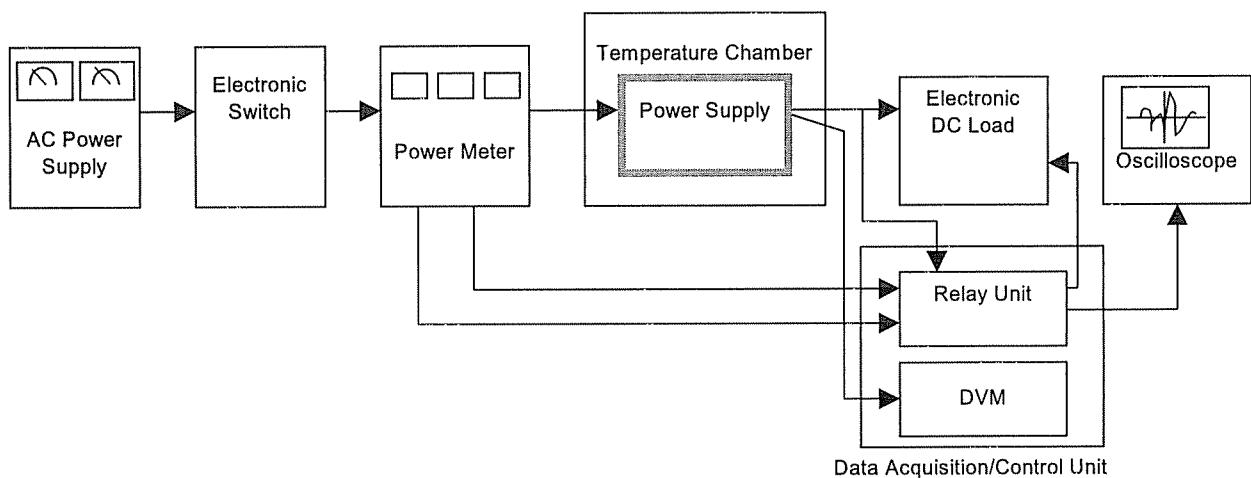


Figure A

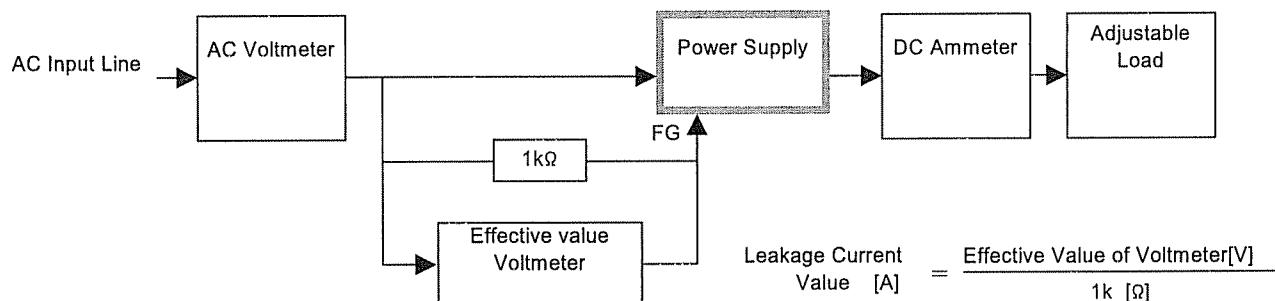


Figure B (DEN-AN)

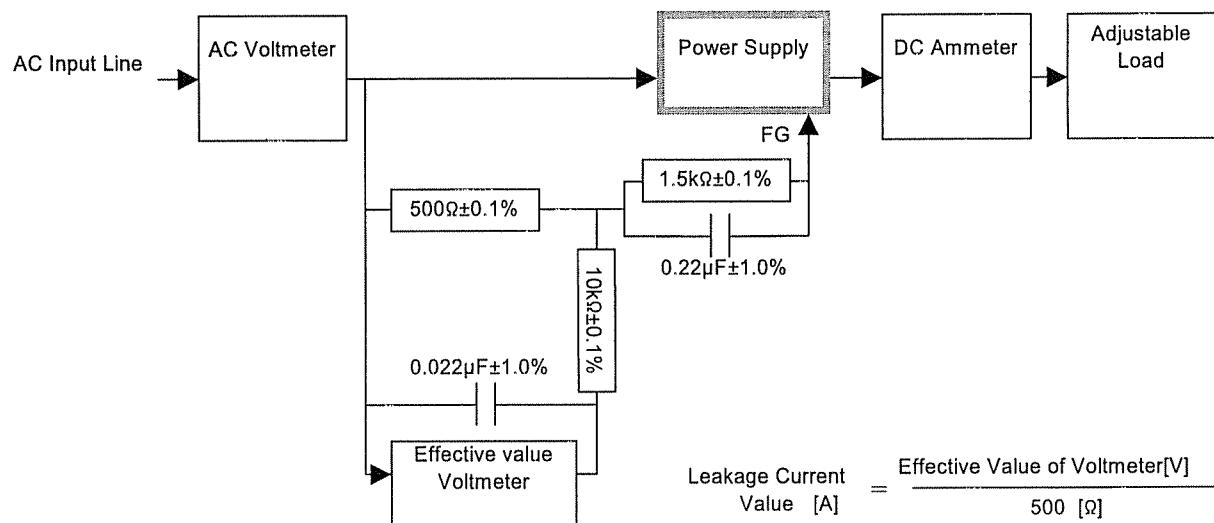


Figure B (IEC60950)