

# TEST DATA OF CBS3504832

Regulated DC Power Supply  
Dec.21. 2004

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**COSEL CO.,LTD.**

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(Final Page 19)

# COSEL

Model

CBS3504832

Item

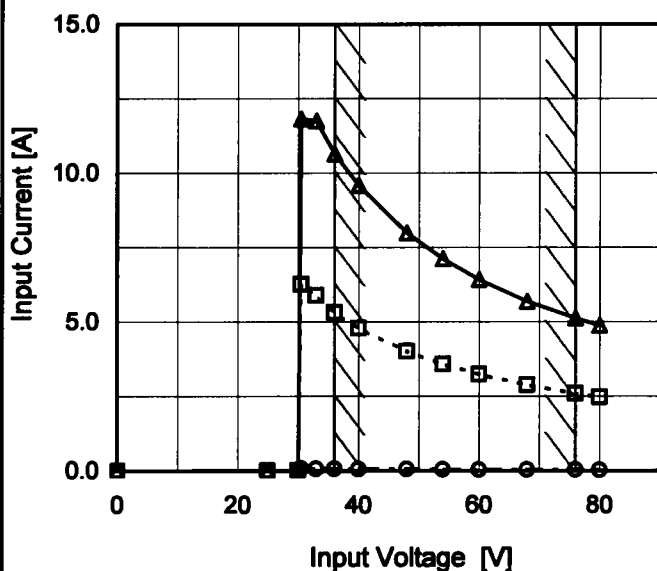
Input Current (by Input Voltage)

Object

Temperature  
Testing Circuitry25°C  
Figure A

1. Graph

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



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
25.0	0.005	0.009	0.010
30.0	0.012	0.008	0.005
30.5	0.083	6.269	11.818
33.0	0.075	5.892	11.753
36.0	0.071	5.326	10.647
40.0	0.065	4.793	9.585
48.0	0.061	4.017	7.993
54.0	0.054	3.589	7.119
60.0	0.047	3.244	6.428
68.0	0.044	2.884	5.693
76.0	0.042	2.599	5.129
80.0	0.033	2.480	4.885
—	—	—	—
—	—	—	—
—	—	—	—

# COSEL

Model

CBS3504832

Item

Input Current (by Load Current)

Object

Temperature

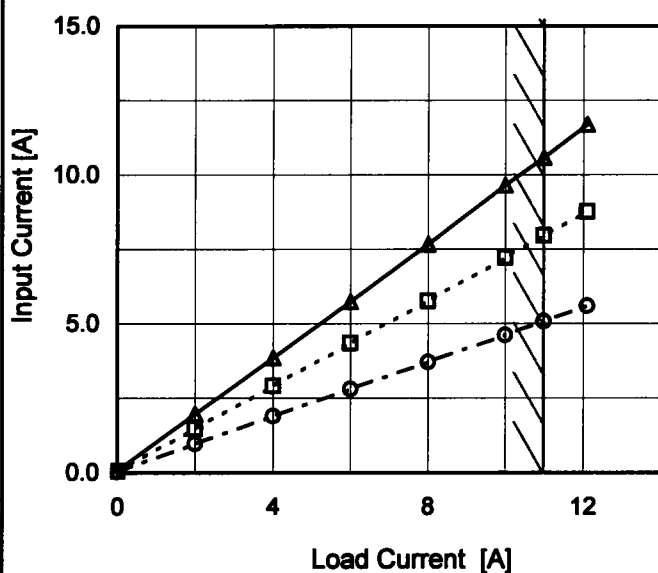
25°C

Testing Circuitry

Figure A

1. Graph

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



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	0.073	0.059	0.037
2.0	1.974	1.492	0.976
4.0	3.857	2.925	1.909
6.0	5.740	4.348	2.809
8.0	7.674	5.767	3.720
10.0	9.650	7.221	4.623
11.0	10.587	7.958	5.084
12.1	11.689	8.775	5.599
—	—	—	—
—	—	—	—
—	—	—	—

# COSEL

Model

CBS3504832

Item

Input Power (by Load Current)

Object

Temperature

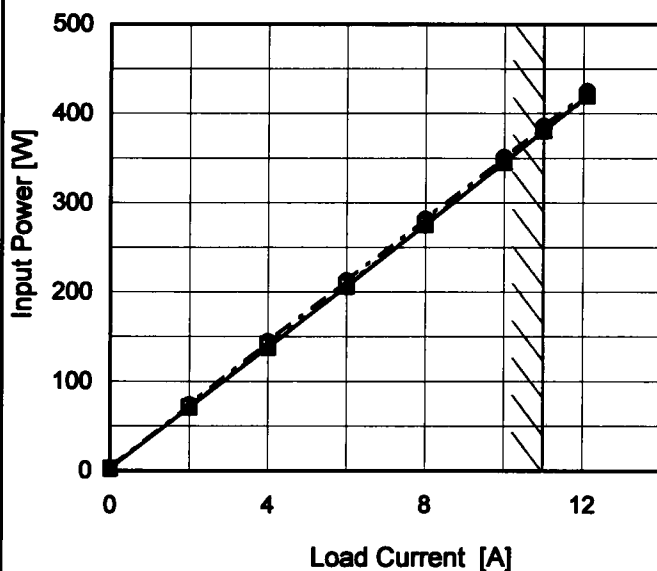
25°C

Testing Circuitry

Figure A

1. Graph

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



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	2.6	2.8	2.8
2.0	71.0	71.5	74.1
4.0	138.3	140.0	144.9
6.0	206.6	207.9	213.1
8.0	275.6	276.6	282.1
10.0	345.6	346.0	351.3
11.0	381.1	381.1	386.2
12.1	420.3	419.9	425.2
—	—	—	—
—	—	—	—
—	—	—	—

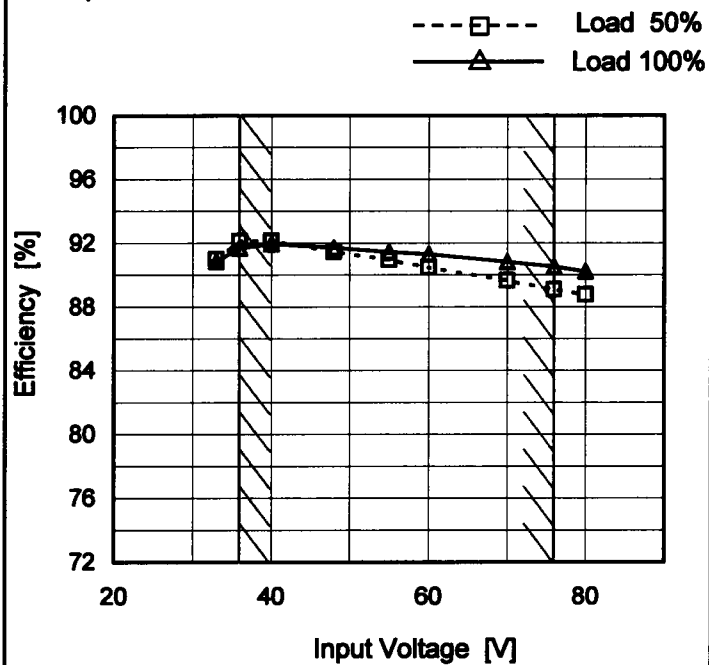
# COSEL

**Model** CBS3504832

**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%
33	91.0	90.8
36	92.1	91.7
40	92.2	92.0
48	91.5	91.7
55	91.0	91.5
60	90.5	91.3
70	89.7	90.8
76	89.1	90.5
80	88.8	90.2

# COSEL

Model

CBS3504832

Item

Efficiency (by Load Current)

Object

Temperature

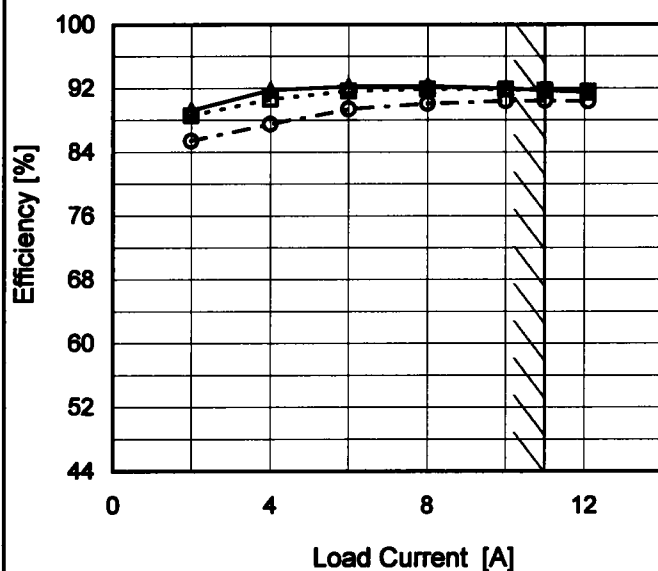
25°C

Testing Circuitry

Figure A

## 1. Graph

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

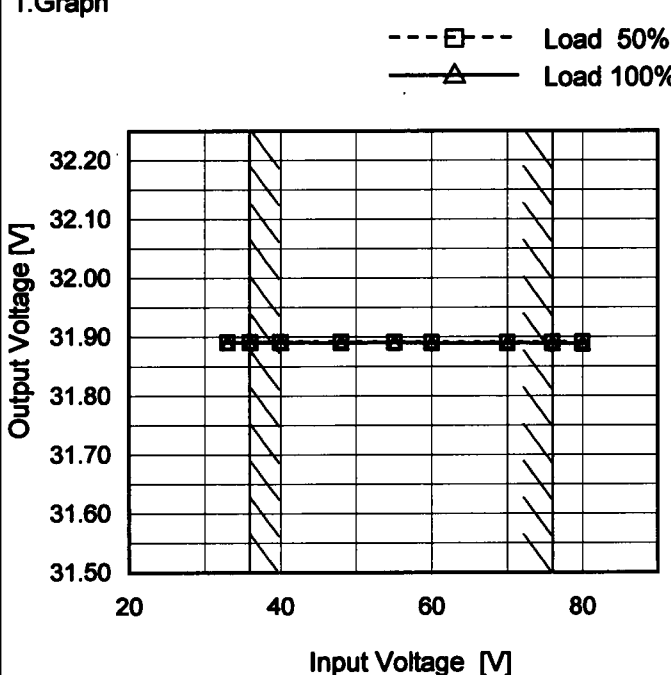


Note: Slanted line shows the range of the rated load current.

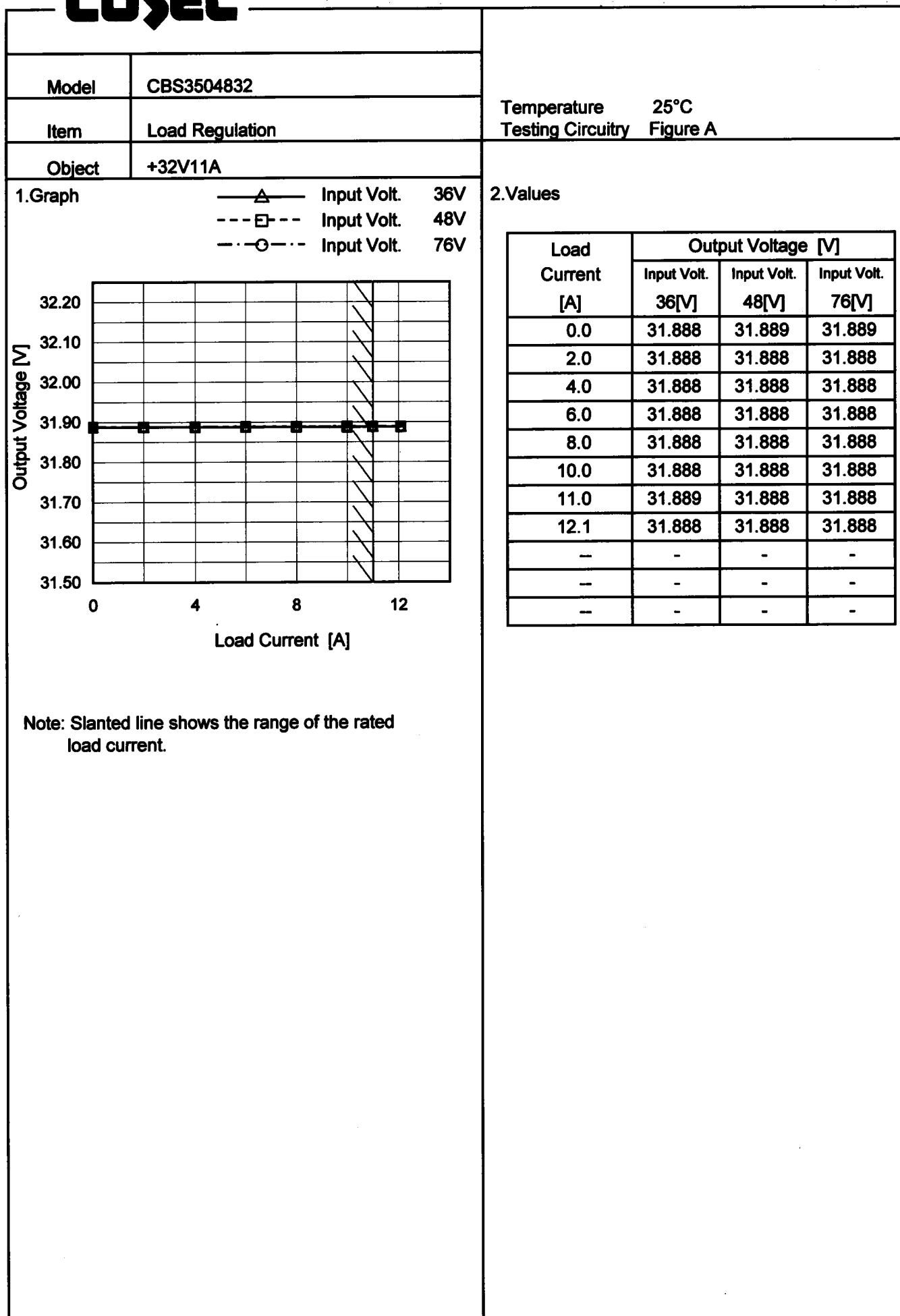
## 2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-
2.0	89.3	88.6	85.5
4.0	91.8	90.7	87.5
6.0	92.2	91.7	89.4
8.0	92.3	91.9	90.1
10.0	92.0	91.9	90.4
11.0	91.8	91.7	90.5
12.1	91.5	91.6	90.4
-	-	-	-
-	-	-	-
-	-	-	-

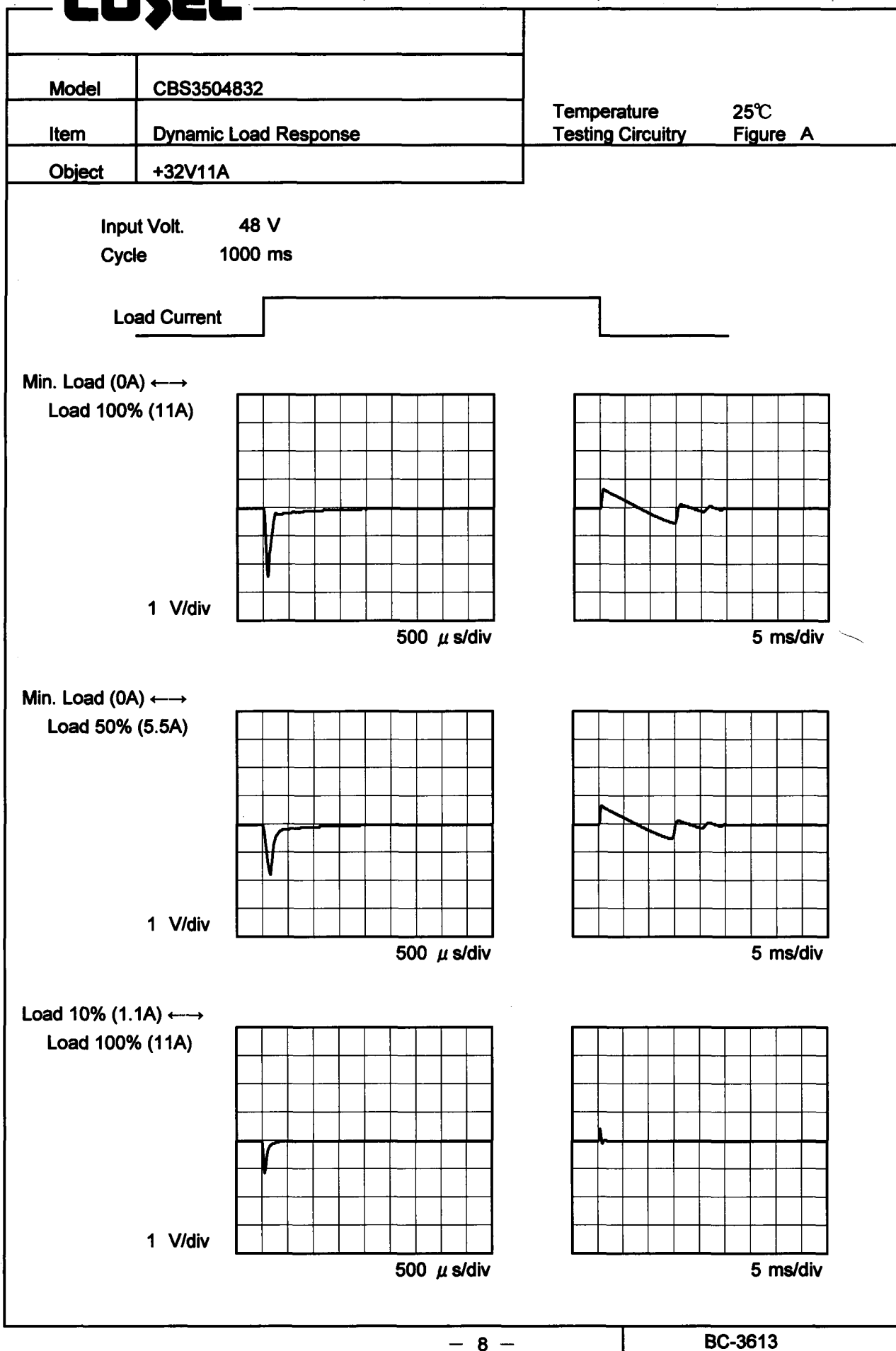
**COSEL**

Model		CBS3504832																																	
Item		Line Regulation																																	
Object		+32V11A																																	
1.Graph		Temperature 25°C Testing Circuitry Figure A																																	
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>---△---</div><div>Load 100%</div></div></div>  <p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>		2.Values																																	
		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>33</td><td>31.891</td><td>31.891</td></tr><tr><td>36</td><td>31.891</td><td>31.891</td></tr><tr><td>40</td><td>31.892</td><td>31.891</td></tr><tr><td>48</td><td>31.892</td><td>31.891</td></tr><tr><td>55</td><td>31.891</td><td>31.891</td></tr><tr><td>60</td><td>31.891</td><td>31.890</td></tr><tr><td>70</td><td>31.891</td><td>31.890</td></tr><tr><td>76</td><td>31.891</td><td>31.889</td></tr><tr><td>80</td><td>31.891</td><td>31.889</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	33	31.891	31.891	36	31.891	31.891	40	31.892	31.891	48	31.892	31.891	55	31.891	31.891	60	31.891	31.890	70	31.891	31.890	76	31.891	31.889	80	31.891	31.889
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
33	31.891	31.891																																	
36	31.891	31.891																																	
40	31.892	31.891																																	
48	31.892	31.891																																	
55	31.891	31.891																																	
60	31.891	31.890																																	
70	31.891	31.890																																	
76	31.891	31.889																																	
80	31.891	31.889																																	



**COSEL**

# COSEL



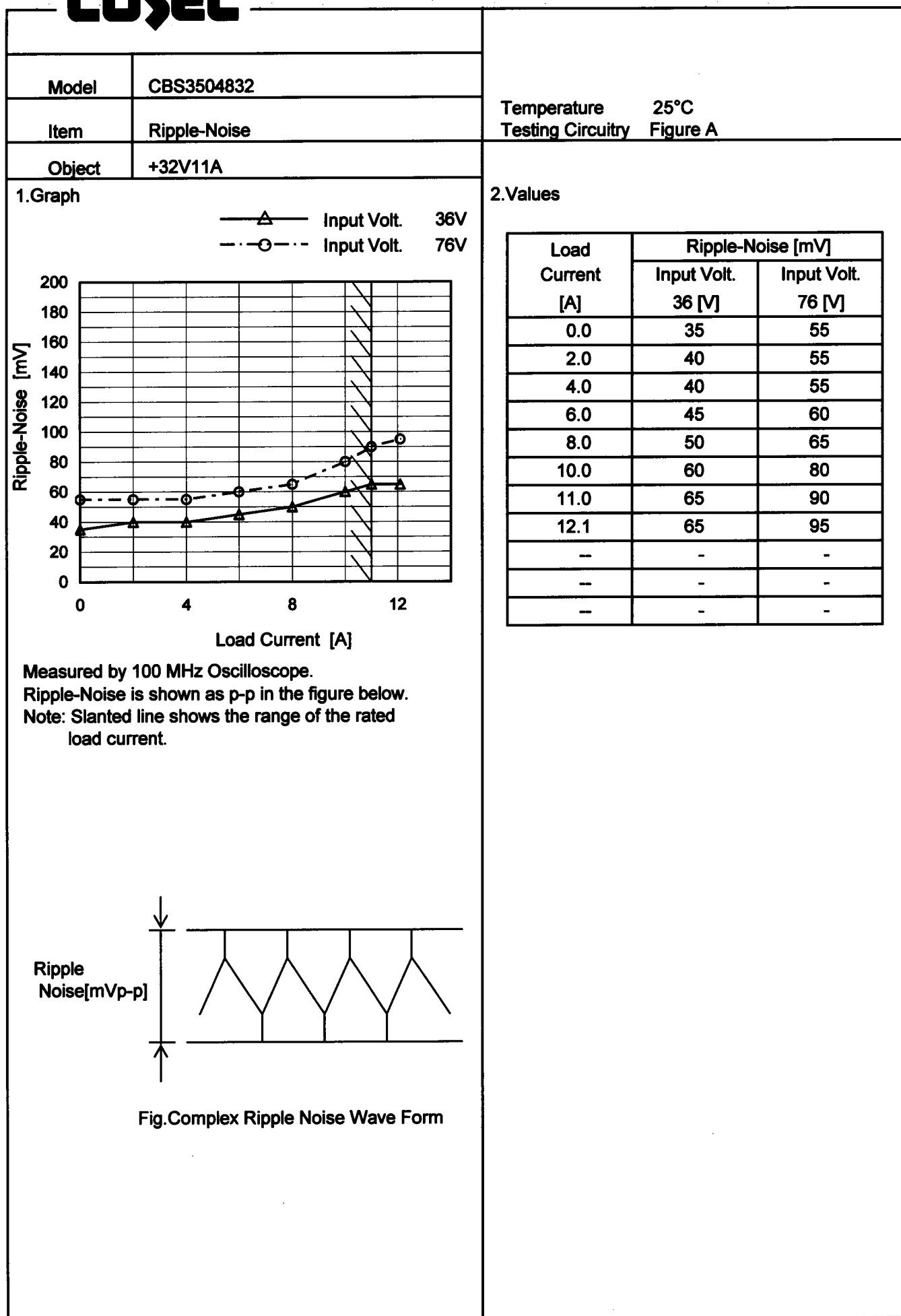
**COSEL**

Model		CBS3504832																																							
Item		Ripple Voltage (by Load Current)																																							
Object		+32V11A																																							
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 36V</div><div>-·-○-·- Input Volt. 76V</div></div><div>Y-axis: Ripple Voltage [mV] X-axis: Load Current [A]</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>10</td><td>35</td></tr><tr><td>2.0</td><td>30</td><td>50</td></tr><tr><td>4.0</td><td>30</td><td>50</td></tr><tr><td>6.0</td><td>30</td><td>50</td></tr><tr><td>8.0</td><td>30</td><td>50</td></tr><tr><td>10.0</td><td>30</td><td>50</td></tr><tr><td>11.0</td><td>30</td><td>50</td></tr><tr><td>12.1</td><td>30</td><td>50</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	10	35	2.0	30	50	4.0	30	50	6.0	30	50	8.0	30	50	10.0	30	50	11.0	30	50	12.1	30	50	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 36 [V]	Input Volt. 76 [V]																																							
0.0	10	35																																							
2.0	30	50																																							
4.0	30	50																																							
6.0	30	50																																							
8.0	30	50																																							
10.0	30	50																																							
11.0	30	50																																							
12.1	30	50																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<div>Measured by 100 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div>																																									
<div><div>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div>																																									

- 9 -

BC-3613

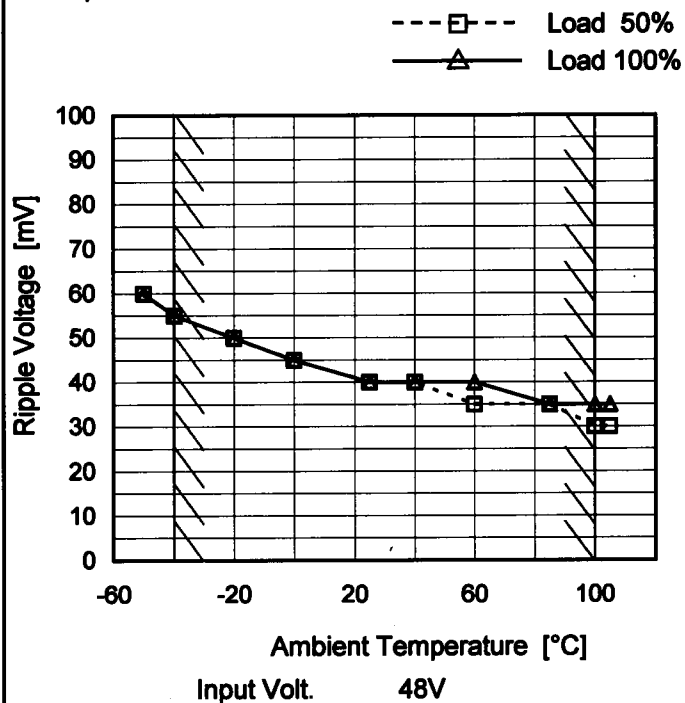
# COSEL



**COSEL**

Model	CBS3504832
Item	Ripple Voltage (by Ambient Temp.)
Object	+32V11A

## 1. Graph



Measured by 100 MHz Oscilloscope.

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

## Testing Circuitry Figure A

## 2. Values

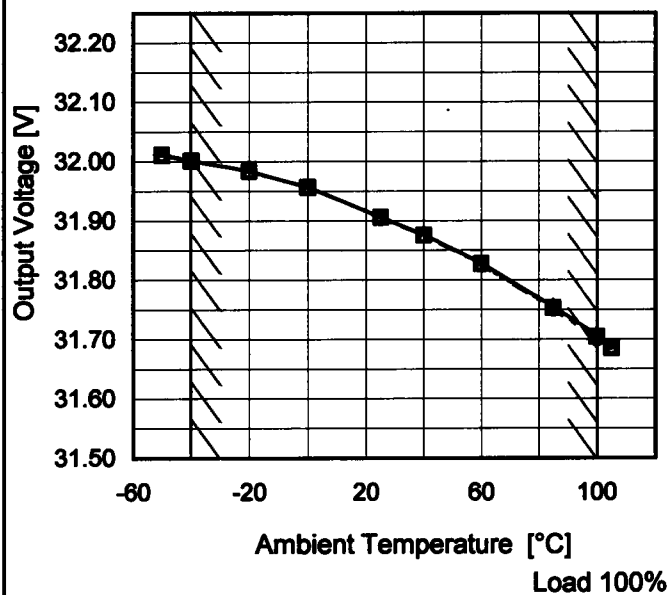
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	60	60
-40	55	55
-20	50	50
0	45	45
25	40	40
40	40	40
60	35	40
85	35	35
100	30	35
105	30	35
—	-	-

# COSEL

Model	CBS3504832
Item	Ambient Temperature Drift
Object	+32V11A

## 1. Graph

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



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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-50	32.012	32.012	32.013
-40	32.002	32.002	32.002
-20	31.984	31.984	31.984
0	31.957	31.957	31.957
25	31.906	31.906	31.905
40	31.876	31.876	31.875
60	31.829	31.828	31.826
85	31.755	31.753	31.752
100	31.707	31.705	31.702
105	31.686	31.687	31.686
—	-	-	-

**COSEL**

		Testing Circuitry Figure A
Model	CBS3504832	
Item	Output Voltage Accuracy	
Object	+32V11A	

### 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 - 100°C

Input Voltage : 36 - 76V

Load Current : 0 - 11A

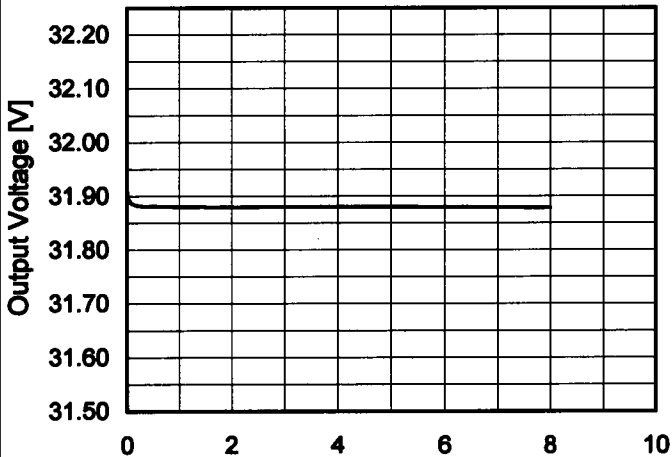
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	76	11	32.001	±154	±0.5
Minimum Voltage	100	76	11	31.693		

**COSEL**

Model	CBS3504832																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+32V11A	Testing Circuitry	Figure A																						
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>31.910</td></tr><tr><td>0.5</td><td>31.881</td></tr><tr><td>1.0</td><td>31.880</td></tr><tr><td>2.0</td><td>31.880</td></tr><tr><td>3.0</td><td>31.880</td></tr><tr><td>4.0</td><td>31.880</td></tr><tr><td>5.0</td><td>31.880</td></tr><tr><td>6.0</td><td>31.880</td></tr><tr><td>7.0</td><td>31.879</td></tr><tr><td>8.0</td><td>31.879</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	31.910	0.5	31.881	1.0	31.880	2.0	31.880	3.0	31.880	4.0	31.880	5.0	31.880	6.0	31.880	7.0	31.879	8.0	31.879
Time since start [H]	Output Voltage [V]																								
0.0	31.910																								
0.5	31.881																								
1.0	31.880																								
2.0	31.880																								
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4.0	31.880																								
5.0	31.880																								
6.0	31.880																								
7.0	31.879																								
8.0	31.879																								

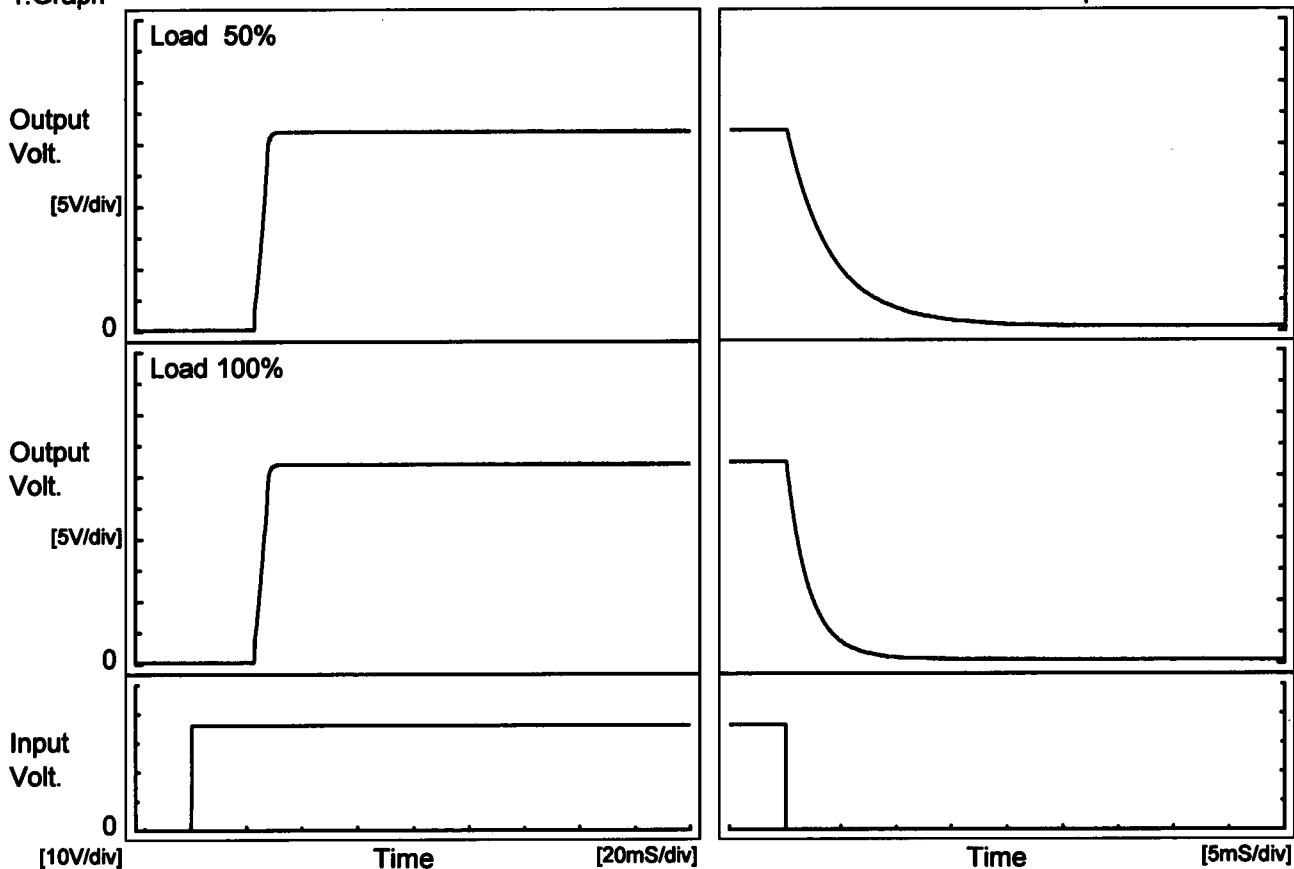


**COSEL**

Model	CBS3504832	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+32V11A		

## 1. Graph

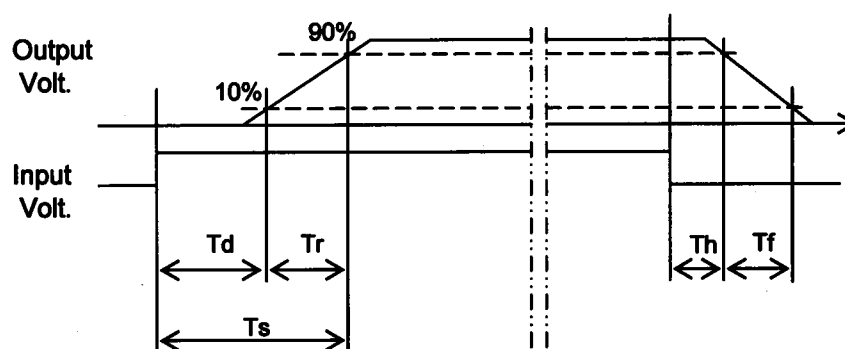
Input Volt. 36 V



## 2. Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	23.0	4.8	27.8	0.5	10.0
100 %	22.9	5.0	27.9	0.3	4.9



**COSEL**

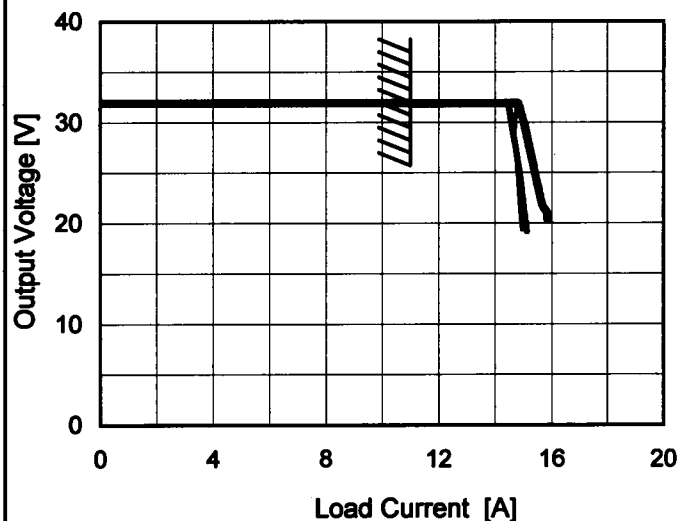
Model		CBS3504832	
Item		Minimum Input Voltage for Regulated Output Voltage	
Object		+32V11A	
1.Graph		Testing Circuitry Figure A	
<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> 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**COSEL**

Model	CBS3504832
Item	Overcurrent Protection
Object	+32V11A

1. Graph

\_\_\_\_\_ Input Volt. 36V  
 \_\_\_\_\_ Input Volt. 48V  
 \_\_\_\_\_ Input Volt. 76V



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

Intermittent operation occurs when the output voltage is from 19.2V to 0V.

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]
32.0	11.06	11.06	11.06
30.4	14.71	14.55	14.96
28.8	14.70	14.63	15.11
25.6	14.75	14.83	15.36
22.4	14.85	14.97	15.60
19.2	14.94	15.11	15.84
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

### Testing Circuitry Figure A



Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-50	41.66	41.54	41.66
-40	41.66	41.54	41.66
-20	41.66	41.66	41.66
0	41.66	41.66	41.66
25	41.77	41.77	41.77
40	41.77	41.77	41.77
60	41.66	41.66	41.66
85	41.66	41.66	41.66
100	41.66	41.66	41.66
105	41.66	41.66	41.66
—	-	-	-

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

**COSEL**

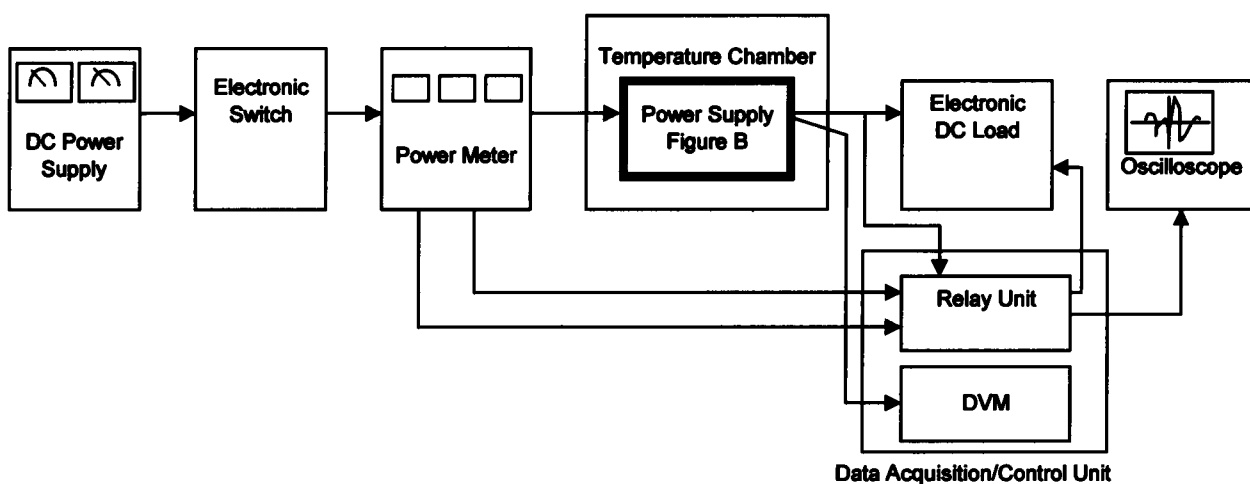


Figure A

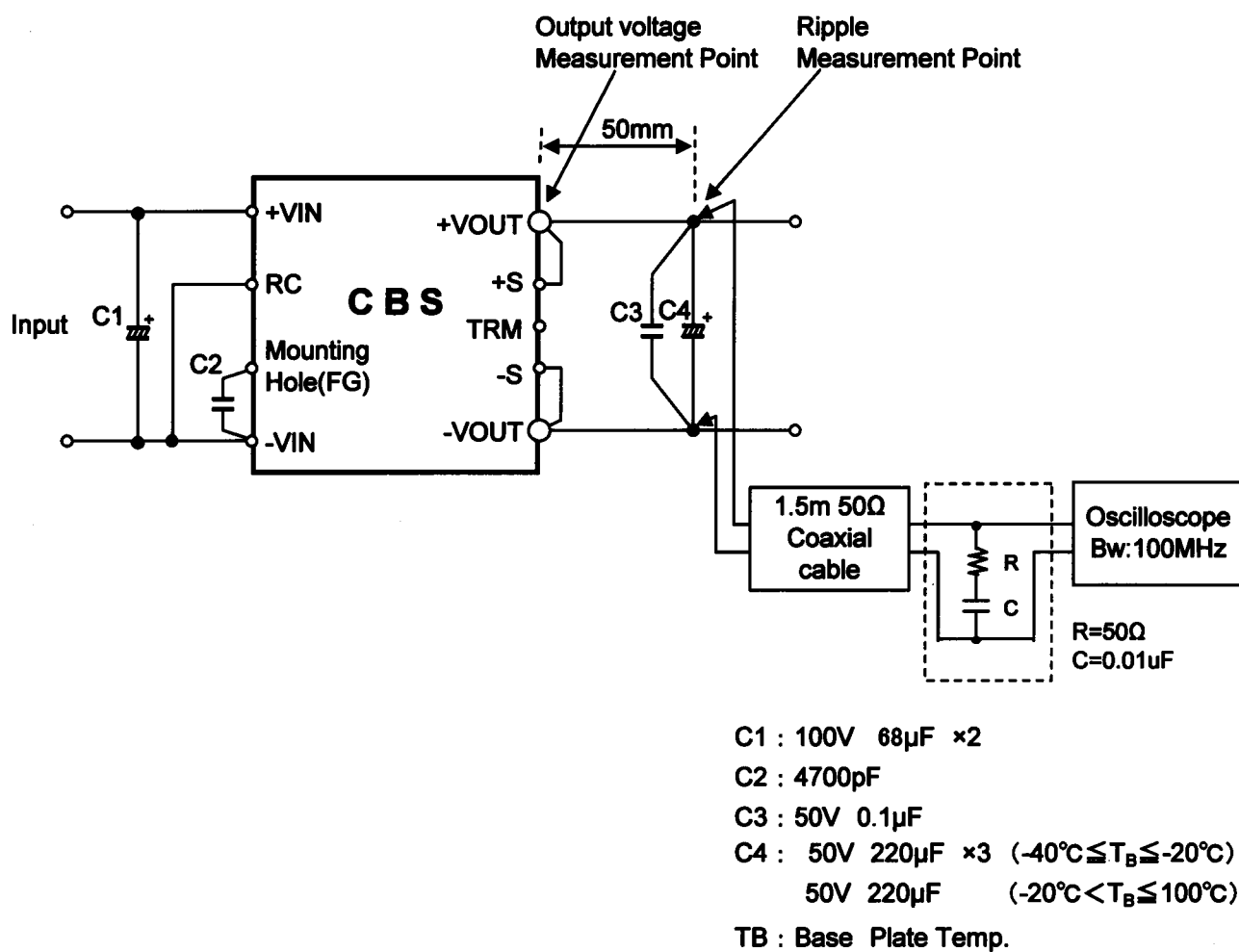


Figure B