



TEST DATA OF CES48033-25

Regulated DC Power Supply
Jul.18. 2003

Approved by : *Kazuyoshi Shimano*
Kazuyoshi Shimano Design Manager

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COSEL CO.,LTD.

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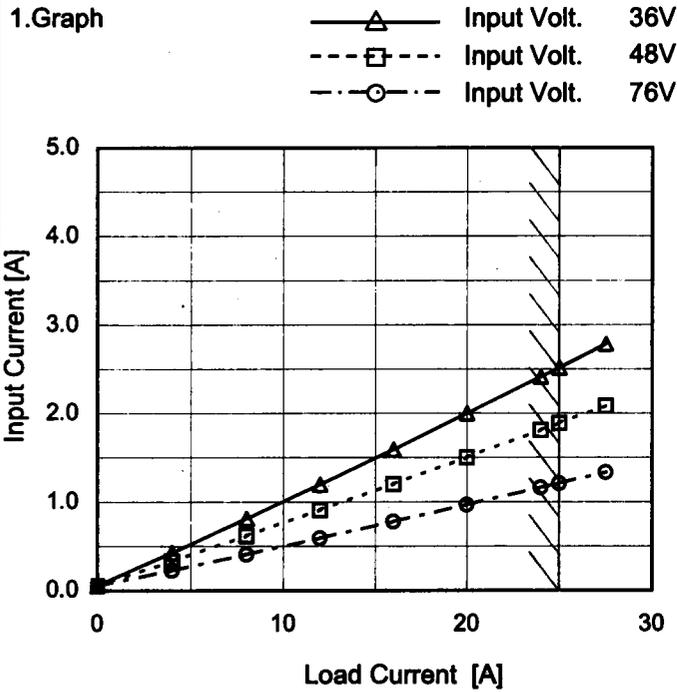


Model		CES48033-25		Temperature		25°C																																																																								
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Model	CES48033-25
Item	Input Current (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
	0.0	0.055	0.051
4.0	0.429	0.332	0.227
8.0	0.810	0.617	0.407
12.0	1.196	0.907	0.590
16.0	1.590	1.201	0.776
20.0	1.999	1.503	0.966
24.0	2.412	1.812	1.159
25.0	2.516	1.890	1.208
27.5	2.782	2.085	1.331
-	-	-	-
-	-	-	-

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



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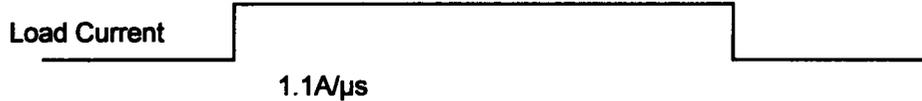


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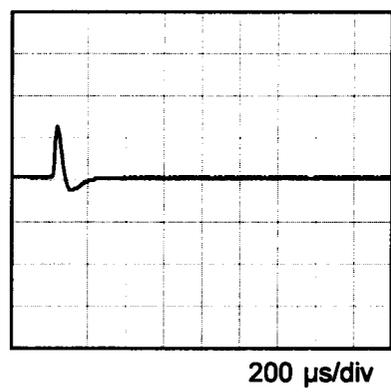
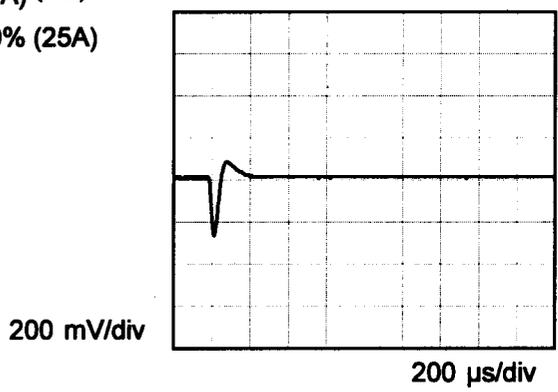


Model CES48033-25		Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+3.3V25A	

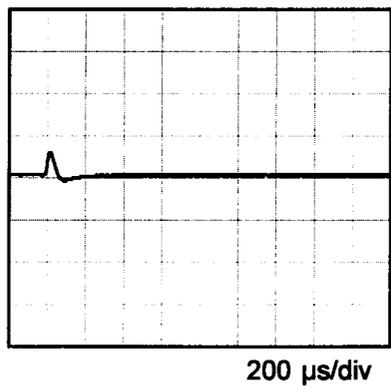
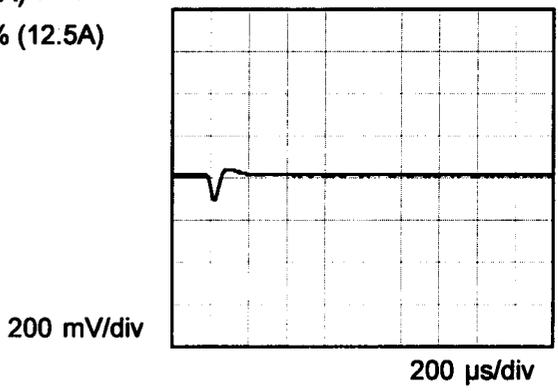
Input Volt. 48 V
Cycle 10 ms



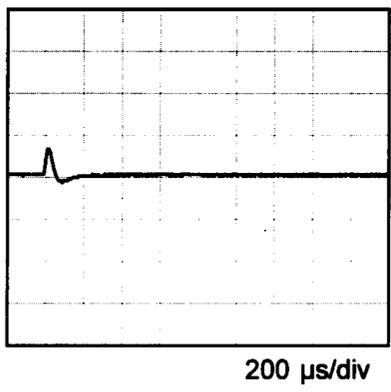
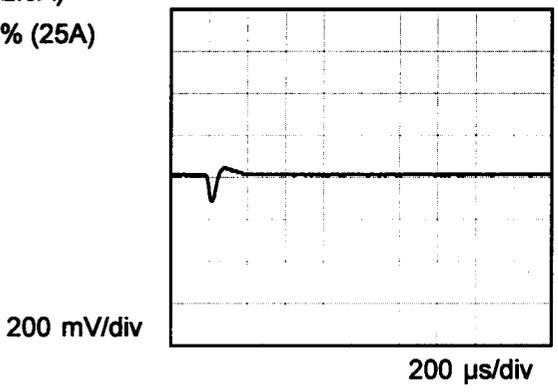
Min. Load (0A) ←→
Load 100% (25A)



Min. Load (0A) ←→
Load 50% (12.5A)



Load 50% (12.5A) ←→
Load 100% (25A)





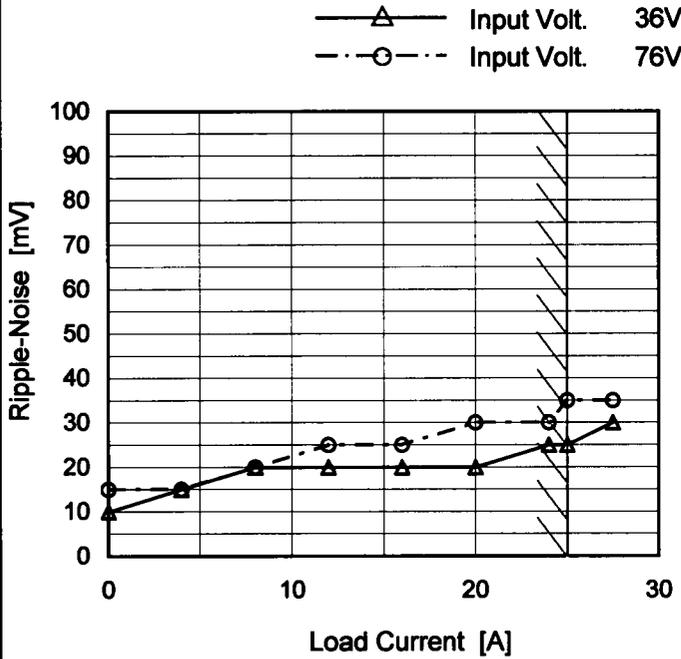
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Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B																																						
Object	+3.3V25A																																								
<p>1. Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 36V</p> <p>- -○- - Input Volt. 76V</p> </div> <p style="text-align: center;">Load Current [A]</p>		<p>2. Values</p> <table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.0</td><td>5</td><td>5</td></tr> <tr><td>4.0</td><td>5</td><td>5</td></tr> <tr><td>8.0</td><td>5</td><td>5</td></tr> <tr><td>12.0</td><td>5</td><td>5</td></tr> <tr><td>16.0</td><td>5</td><td>5</td></tr> <tr><td>20.0</td><td>5</td><td>5</td></tr> <tr><td>24.0</td><td>5</td><td>5</td></tr> <tr><td>25.0</td><td>5</td><td>5</td></tr> <tr><td>27.5</td><td>5</td><td>5</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	5	5	4.0	5	5	8.0	5	5	12.0	5	5	16.0	5	5	20.0	5	5	24.0	5	5	25.0	5	5	27.5	5	5	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 36 [V]	Input Volt. 76 [V]																																							
0.0	5	5																																							
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<p>Measured by 100 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>Ripple [mVp-p]</p> <p style="text-align: center;">Fig. Complex Ripple Wave Form</p>																																									



Model	CES48033-25
Item	Ripple-Noise
Object	+3.3V25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	10	15
4.0	15	15
8.0	20	20
12.0	20	25
16.0	20	25
20.0	20	30
24.0	25	30
25.0	25	35
27.5	30	35
--	-	-
--	-	-

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.

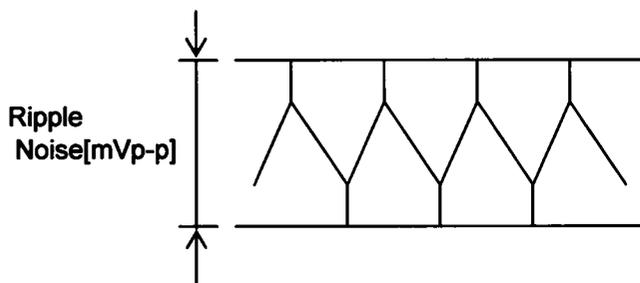


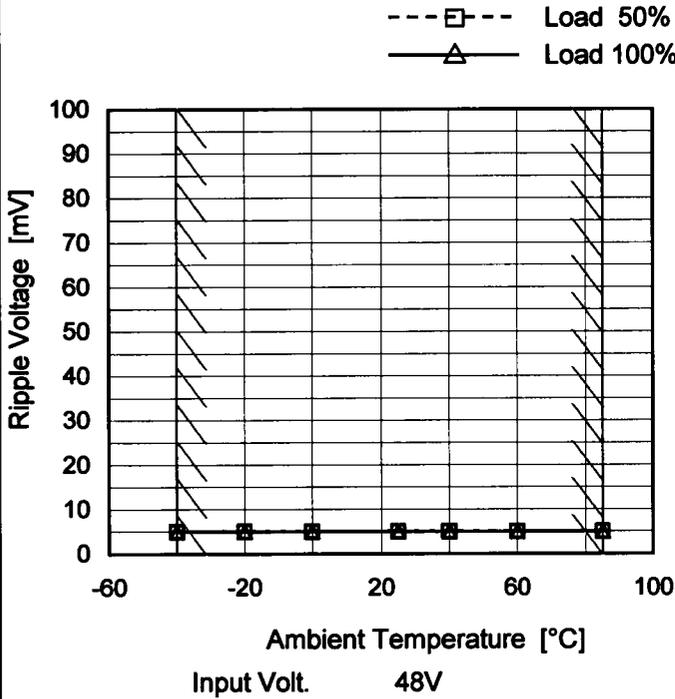
Fig.Complex Ripple Noise Wave Form



Model	
CES48033-25	
Item	
Ripple Voltage (by Ambient Temp.)	
Object	
+3.3V25A	

Testing Circuitry Figure B

1. Graph



2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	5	5
-20	5	5
0	5	5
25	5	5
40	5	5
60	5	5
85	5	5
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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



Model CES48033-25		Testing Circuitry Figure A																																																			
Item Ambient Temperature Drift																																																					
Object +3.3V25A																																																					
1.Graph																																																					
<p> —△— Input Volt. 36V - - - □ - - - Input Volt. 48V - - - ○ - - - Input Volt. 76V </p>		2.Values																																																			
<p style="text-align: center;">Ambient Temperature [°C] Load 100%</p>		<table border="1"> <thead> <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> </thead> <tbody> <tr><td>-40</td><td>3.320</td><td>3.321</td><td>3.321</td></tr> <tr><td>-20</td><td>3.321</td><td>3.321</td><td>3.321</td></tr> <tr><td>0</td><td>3.321</td><td>3.321</td><td>3.321</td></tr> <tr><td>25</td><td>3.320</td><td>3.320</td><td>3.320</td></tr> <tr><td>40</td><td>3.318</td><td>3.318</td><td>3.318</td></tr> <tr><td>60</td><td>3.316</td><td>3.316</td><td>3.316</td></tr> <tr><td>85</td><td>3.311</td><td>3.311</td><td>3.311</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> <tr><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-40	3.320	3.321	3.321	-20	3.321	3.321	3.321	0	3.321	3.321	3.321	25	3.320	3.320	3.320	40	3.318	3.318	3.318	60	3.316	3.316	3.316	85	3.311	3.311	3.311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																				
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]																																																		
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-20	3.321	3.321	3.321																																																		
0	3.321	3.321	3.321																																																		
25	3.320	3.320	3.320																																																		
40	3.318	3.318	3.318																																																		
60	3.316	3.316	3.316																																																		
85	3.311	3.311	3.311																																																		
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																					



COSEL		
Model	CES48033-25	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V25A	

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 - 25A

* 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	-40	76	25	3.320	±5	±0.2
Minimum Voltage	85	36	0	3.311		

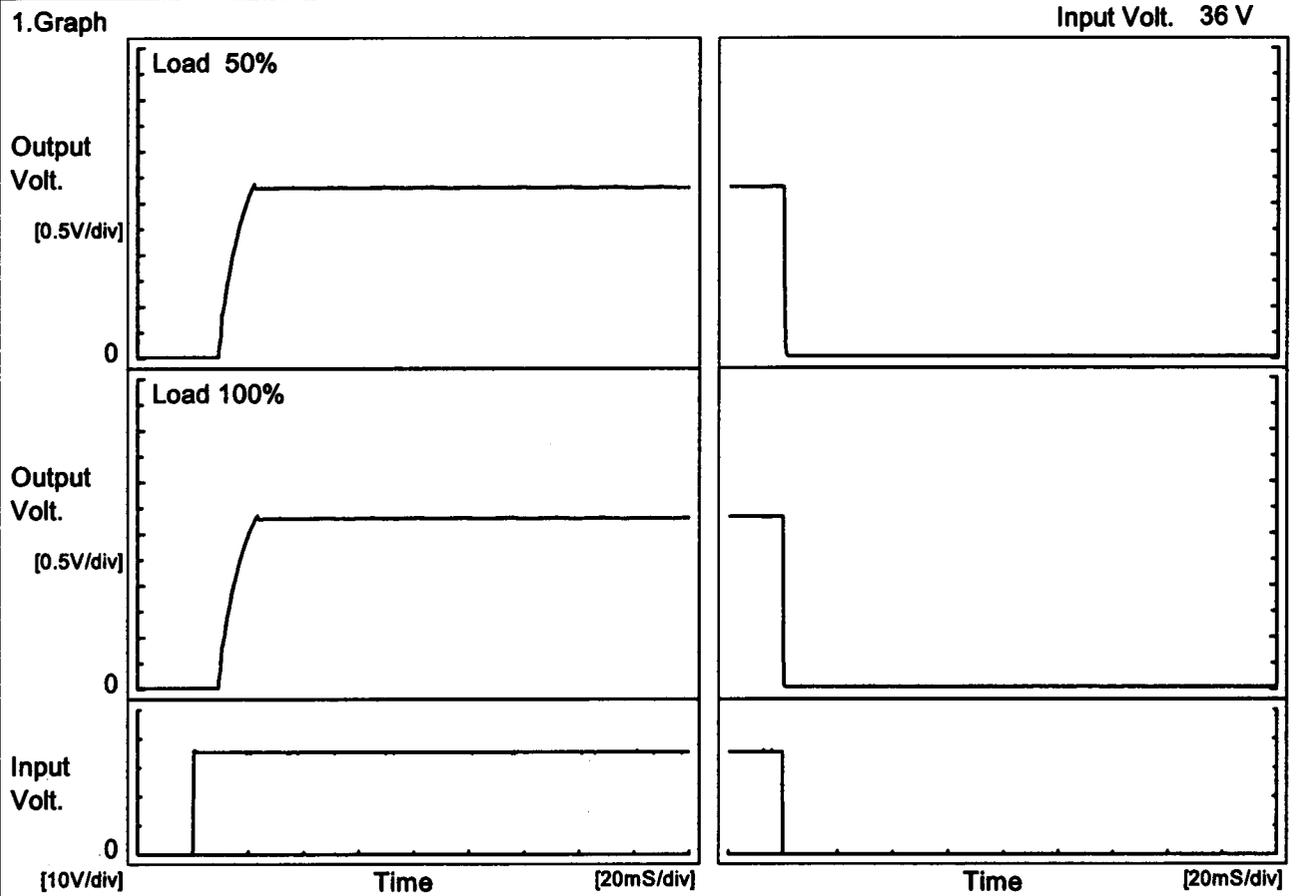


COSEL																									
Model	CES48033-25	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+3.3V25A																								
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>3.319</td></tr> <tr><td>0.5</td><td>3.318</td></tr> <tr><td>1.0</td><td>3.318</td></tr> <tr><td>2.0</td><td>3.318</td></tr> <tr><td>3.0</td><td>3.318</td></tr> <tr><td>4.0</td><td>3.318</td></tr> <tr><td>5.0</td><td>3.318</td></tr> <tr><td>6.0</td><td>3.318</td></tr> <tr><td>7.0</td><td>3.318</td></tr> <tr><td>8.0</td><td>3.318</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	3.319	0.5	3.318	1.0	3.318	2.0	3.318	3.0	3.318	4.0	3.318	5.0	3.318	6.0	3.318	7.0	3.318	8.0	3.318
Time since start [H]	Output Voltage [V]																								
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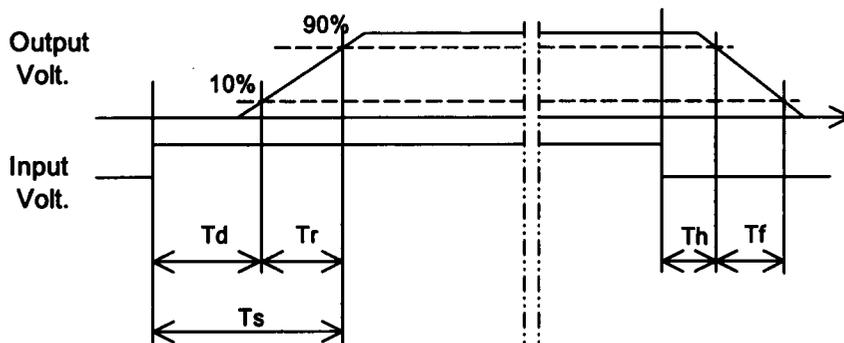
Model		CES48033-25	Temperature 25°C Testing Circuitry Figure A
Item		Rise and Fall Time	
Object		+3.3V25A	

1. Graph



2. Values

		[mS]				
Load	Time	Td	Tr	Ts	Th	Tf
	50 %	10.1	9.3	19.4	0.1	0.6
	100 %	10.1	10.1	20.2	0.1	0.3





COSEL																																								
Model	CES48033-25																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+3.3V25A																																							
<p>1. Graph</p> <p style="text-align: right;"> ---□--- Load 50% —△— Load 100% </p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-40</td><td>30.5</td><td>30.5</td></tr> <tr><td>-20</td><td>30.5</td><td>30.5</td></tr> <tr><td>0</td><td>30.5</td><td>30.5</td></tr> <tr><td>25</td><td>30.7</td><td>30.7</td></tr> <tr><td>40</td><td>30.7</td><td>30.7</td></tr> <tr><td>60</td><td>30.7</td><td>30.7</td></tr> <tr><td>85</td><td>30.7</td><td>30.7</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> </tbody> </table>	Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-40	30.5	30.5	-20	30.5	30.5	0	30.5	30.5	25	30.7	30.7	40	30.7	30.7	60	30.7	30.7	85	30.7	30.7	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
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Model CES48033-25		Temperature 25°C Testing Circuitry Figure A																																																							
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Output Voltage [V]	Load Current [A]																																																								
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Model CES48033-25		Testing Circuitry Figure A																																																			
Item Overvoltage Protection																																																					
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Ambient Temperature [°C]	Operating Point [V]																																																				
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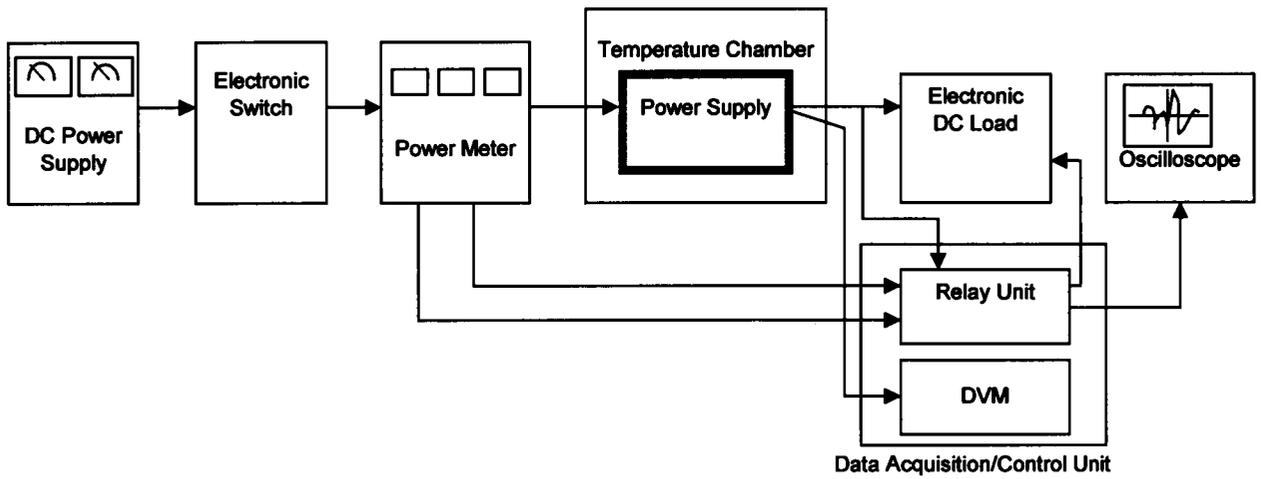


Figure A

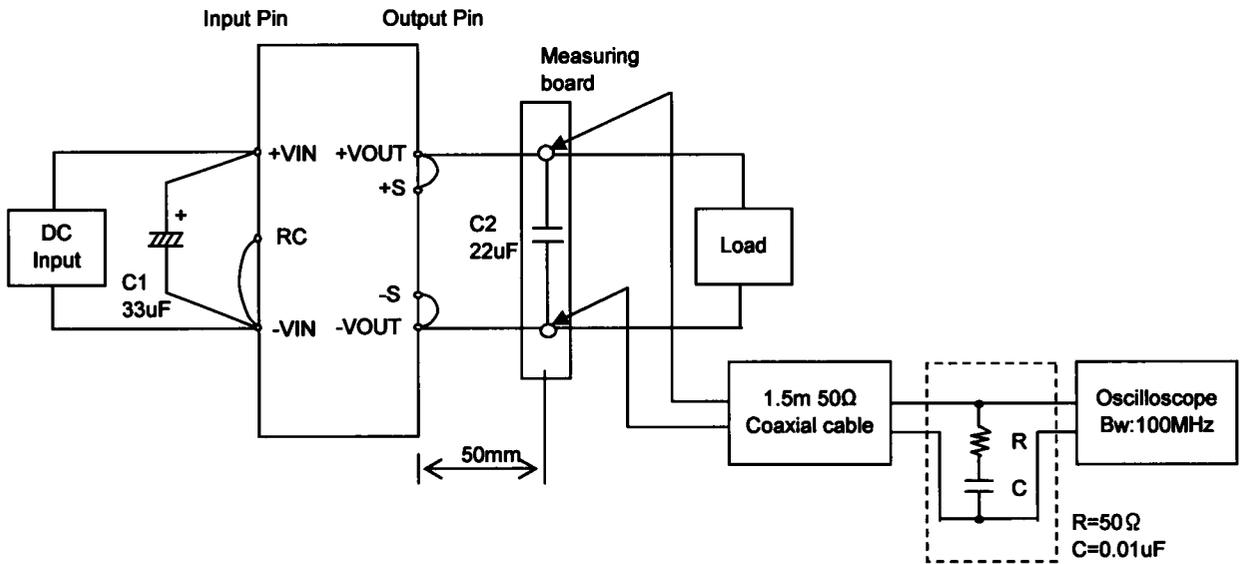


Figure B