



TEST DATA OF CQS48025-45

Regulated DC Power Supply
Sep.4, 2003

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Nobuyuki Shiraishi Design Engineer

COSEL CO.,LTD.

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(Final Page 19)

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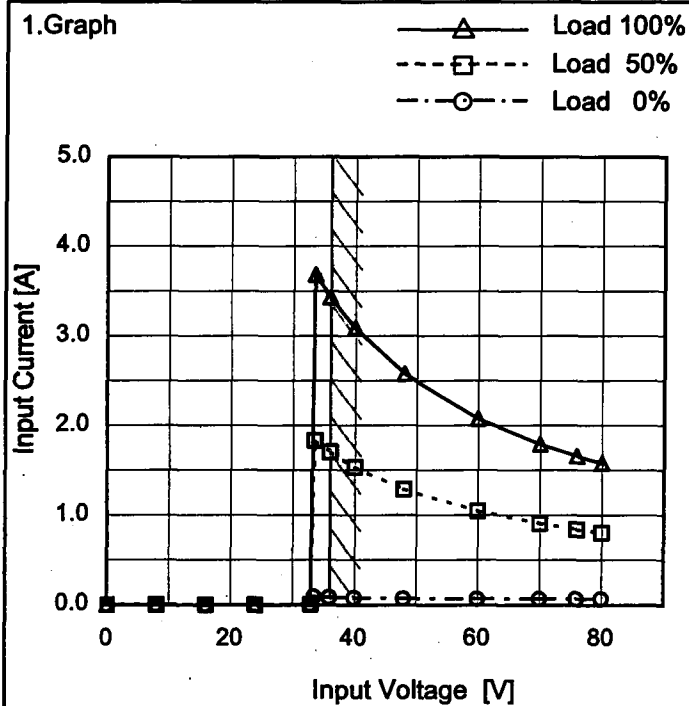
Model CQS48025-45

Item Input Current (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

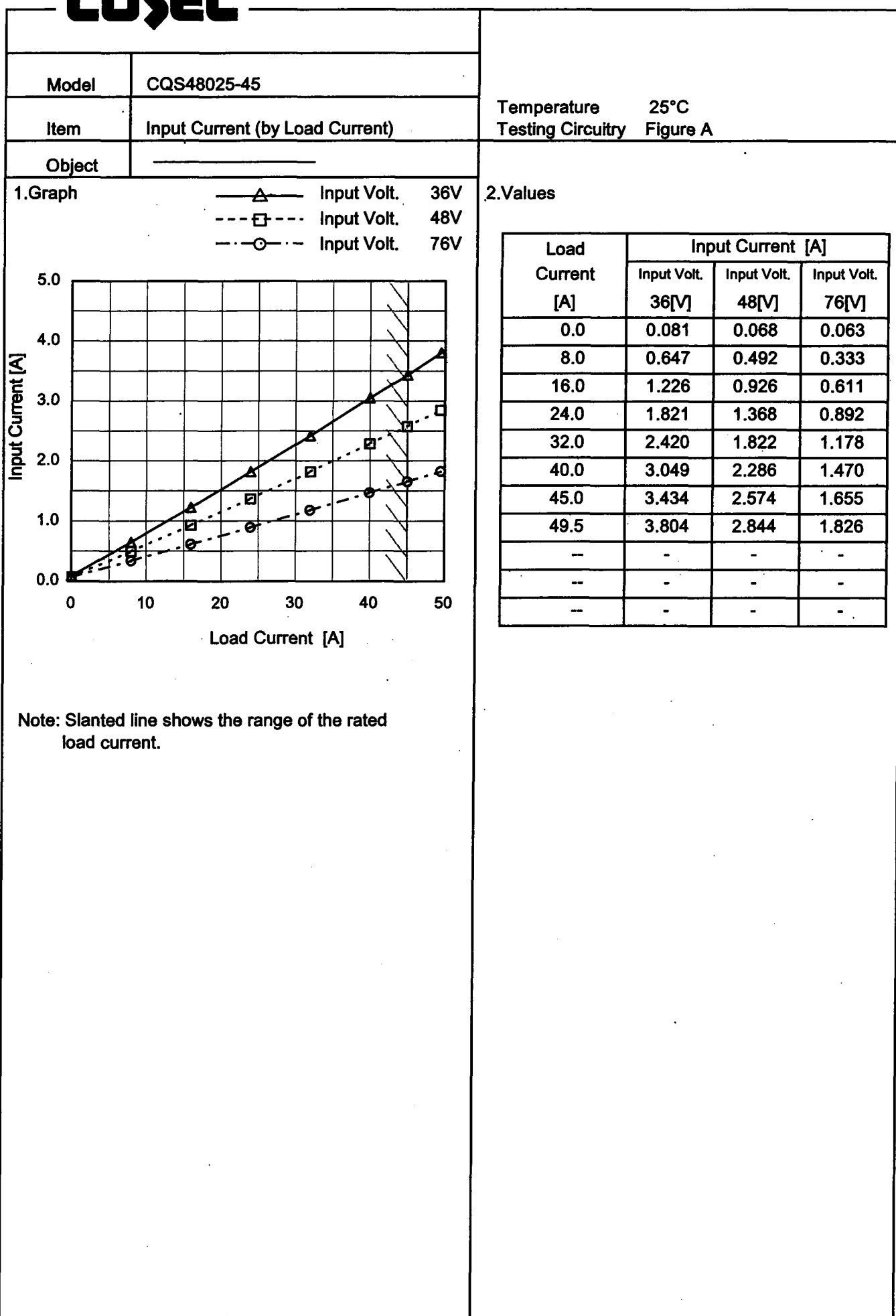


Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	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	0.002	0.002	0.002
34	0.089	1.834	3.684
36	0.082	1.705	3.430
40	0.075	1.533	3.088
48	0.069	1.290	2.580
60	0.066	1.045	2.075
70	0.064	0.908	1.792
76	0.064	0.841	1.658
80	0.063	0.803	1.580
--	-	-	-
--	-	-	-
--	-	-	-

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Model CQS48025-45

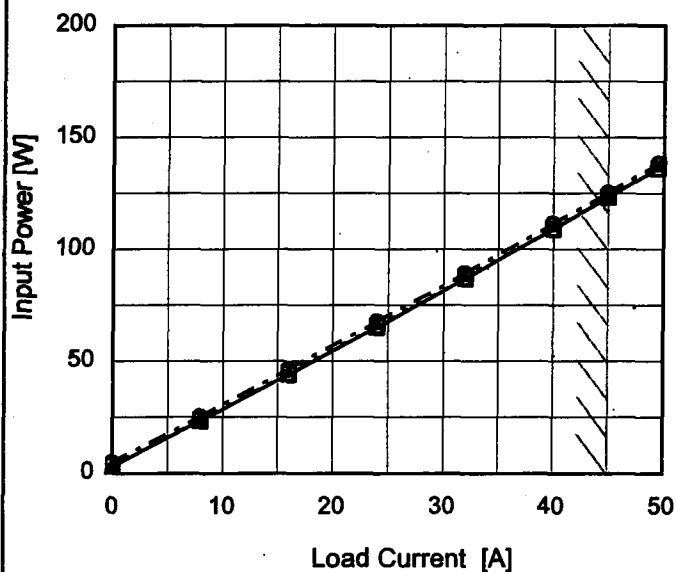
Item Input Power (by Load Current)

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

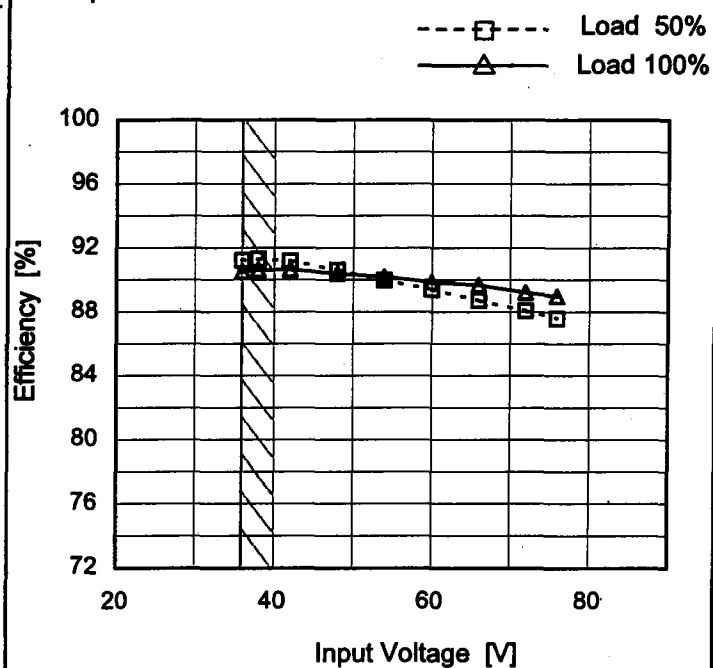
Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	2.9	3.3	4.8
8.0	23.3	23.7	25.3
16.0	44.0	44.5	46.4
24.0	65.1	65.6	67.7
32.0	86.8	87.2	89.3
40.0	109.0	109.2	111.4
45.0	123.2	123.4	125.3
49.5	136.2	136.2	138.4
--	-	-	-
--	-	-	-
--	-	-	-

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Model CQS48025-45

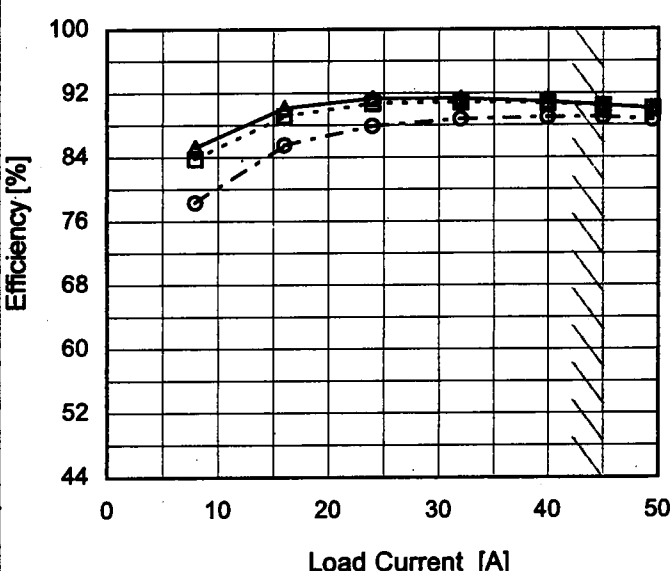
Item Efficiency (by Input Voltage)

Object
Temperature 25°C
Testing Circuitry Figure A

1. Graph

2. Values

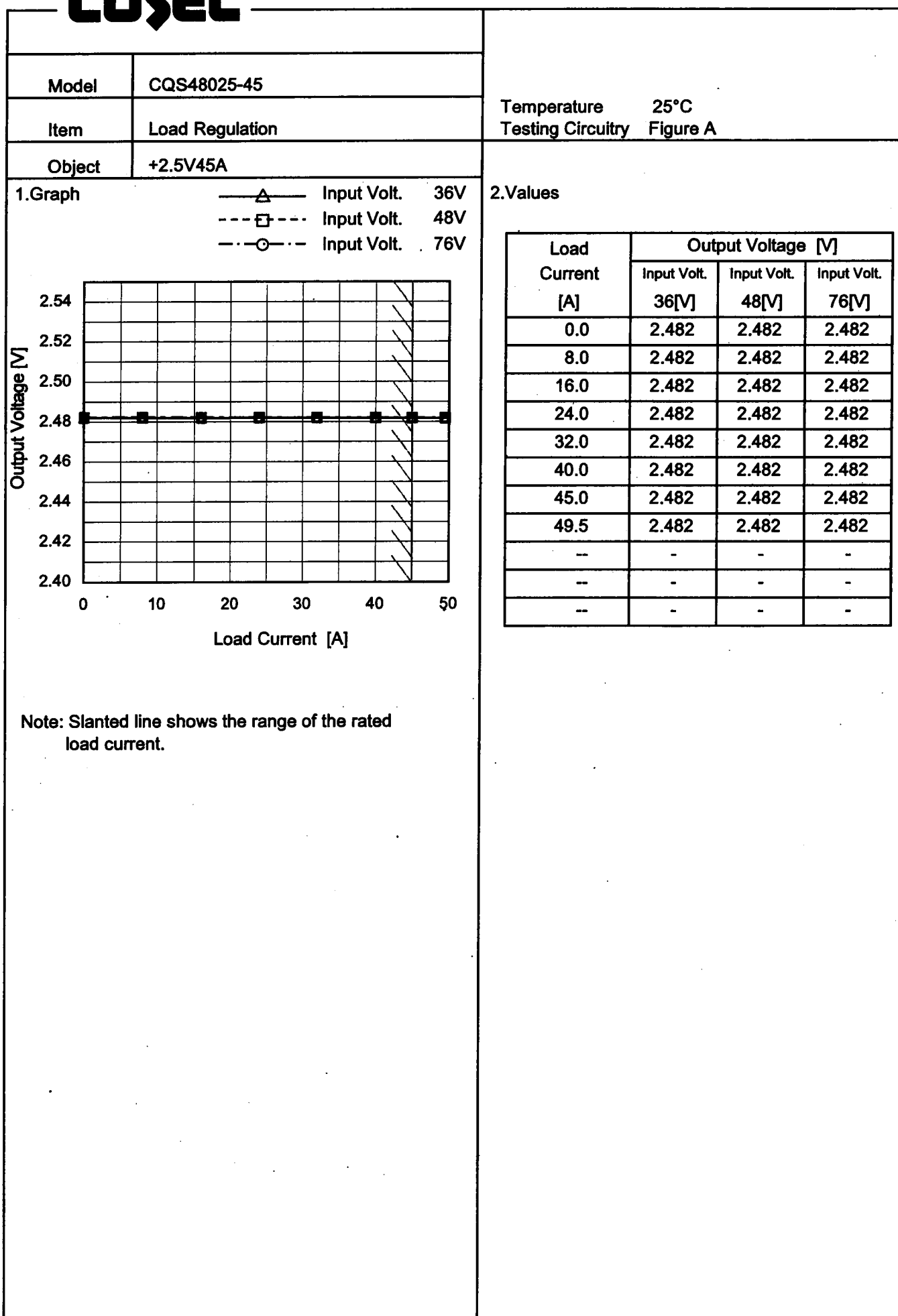
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
36	91.2	90.5
38	91.3	90.6
42	91.2	90.6
48	90.6	90.4
54	90.0	90.2
60	89.4	89.9
66	88.7	89.7
72	88.1	89.2
76	87.6	89.0

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Model		CQS48025-45		Temperature 25°C																																																				
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div>—△— Input Volt. 36V</div><div>---□--- Input Volt. 48V</div><div>-○- Input Volt. 76V</div></div> 		2.Values																																																				
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</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>-</td><td>-</td><td>-</td></tr><tr><td>8.0</td><td>85.2</td><td>83.8</td><td>78.3</td></tr><tr><td>16.0</td><td>90.1</td><td>89.1</td><td>85.5</td></tr><tr><td>24.0</td><td>91.4</td><td>90.7</td><td>87.9</td></tr><tr><td>32.0</td><td>91.3</td><td>90.9</td><td>88.8</td></tr><tr><td>40.0</td><td>91.0</td><td>90.7</td><td>89.0</td></tr><tr><td>45.0</td><td>90.5</td><td>90.4</td><td>89.0</td></tr><tr><td>49.5</td><td>90.1</td><td>90.1</td><td>88.6</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]	Efficiency [%]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	-	-	-	8.0	85.2	83.8	78.3	16.0	90.1	89.1	85.5	24.0	91.4	90.7	87.9	32.0	91.3	90.9	88.8	40.0	91.0	90.7	89.0	45.0	90.5	90.4	89.0	49.5	90.1	90.1	88.6	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.																																																								

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Model	CQS48025-45	Temperature 25°C Testing Circuitry Figure A																																	
Item	Line Regulation																																		
Object	+2.5V45A																																		
1.Graph		2.Values																																	
<div><div><div>-----□----- Load 50%</div><div>-----△----- Load 100%</div></div><div>Output Voltage [V]</div><div>Input Voltage [V]</div></div>		<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>36</td><td>2.482</td><td>2.482</td></tr><tr><td>38</td><td>2.482</td><td>2.482</td></tr><tr><td>42</td><td>2.482</td><td>2.482</td></tr><tr><td>48</td><td>2.482</td><td>2.482</td></tr><tr><td>54</td><td>2.482</td><td>2.482</td></tr><tr><td>60</td><td>2.482</td><td>2.482</td></tr><tr><td>66</td><td>2.482</td><td>2.482</td></tr><tr><td>72</td><td>2.482</td><td>2.482</td></tr><tr><td>76</td><td>2.482</td><td>2.482</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	36	2.482	2.482	38	2.482	2.482	42	2.482	2.482	48	2.482	2.482	54	2.482	2.482	60	2.482	2.482	66	2.482	2.482	72	2.482	2.482	76	2.482	2.482
Input Voltage [V]	Output Voltage [V]																																		
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36	2.482	2.482																																	
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66	2.482	2.482																																	
72	2.482	2.482																																	
76	2.482	2.482																																	
Note: Slanted line shows the range of the rated input voltage.																																			

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Model	CQS48025-45	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+2.5V45A		

Input Volt. 48 V
Cycle 10 ms

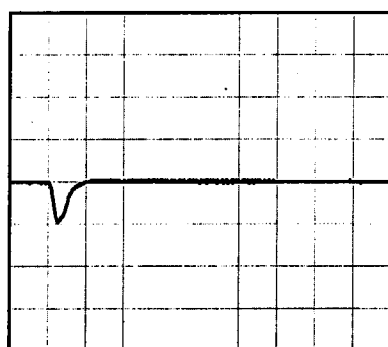
Load Current

1A/μs

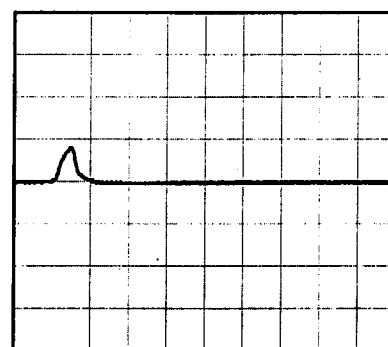
Min. Load (0A) ←→

Load 100% (45A)

100 mV/div



100 μs/div

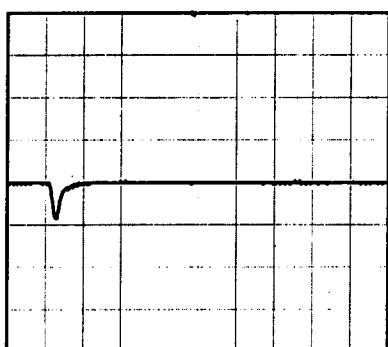


100 μs/div

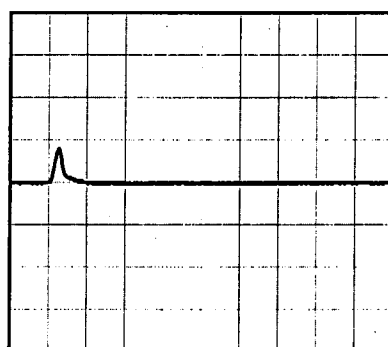
Min. Load (0A) ←→

Load 50% (22.5A)

100 mV/div



100 μs/div

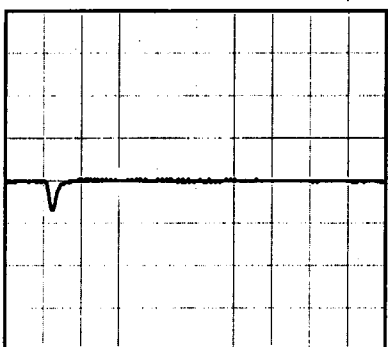


100 μs/div

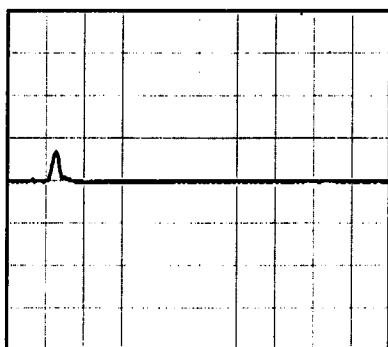
Load 50% (22.5A) ←→

Load 100% (45A)

100 mV/div



100 μs/div



100 μs/div

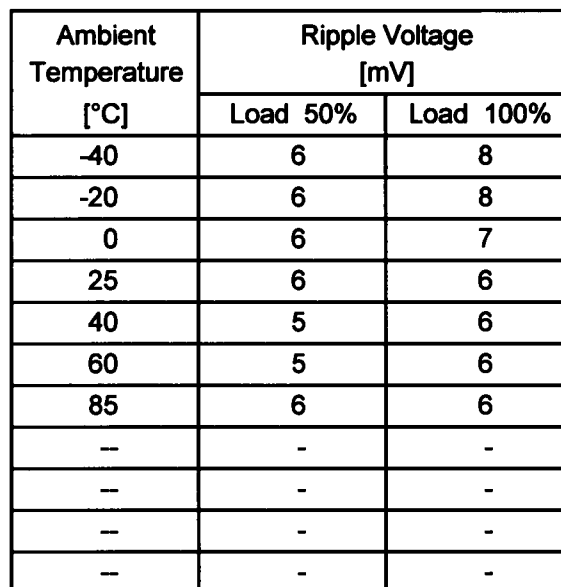
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Model	CQS48025-45																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+2.5V45A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 36V</div><div>- - -○- - - Input Volt. 76V</div></div><p>Ripple Voltage [mV]</p><p>Load Current [A]</p></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>5</td><td>6</td></tr><tr><td>8.0</td><td>5</td><td>6</td></tr><tr><td>16.0</td><td>5</td><td>6</td></tr><tr><td>24.0</td><td>5</td><td>7</td></tr><tr><td>32.0</td><td>5</td><td>7</td></tr><tr><td>40.0</td><td>5</td><td>7</td></tr><tr><td>45.0</td><td>5</td><td>8</td></tr><tr><td>49.5</td><td>5</td><td>8</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	5	6	8.0	5	6	16.0	5	6	24.0	5	7	32.0	5	7	40.0	5	7	45.0	5	8	49.5	5	8	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
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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><p>Ripple [mVp-p]</p><p>Fig.Complex Ripple Wave Form</p></div>																																									

Model	CQS48025-45																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+2.5V45A	Testing Circuitry	Figure B																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 36V</div><div>- -○- - Input Volt. 76V</div></div><p>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.</p></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [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>15</td></tr><tr><td>8.0</td><td>10</td><td>15</td></tr><tr><td>16.0</td><td>30</td><td>30</td></tr><tr><td>24.0</td><td>40</td><td>45</td></tr><tr><td>32.0</td><td>40</td><td>45</td></tr><tr><td>40.0</td><td>45</td><td>50</td></tr><tr><td>45.0</td><td>50</td><td>55</td></tr><tr><td>49.5</td><td>50</td><td>55</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-Noise [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	10	15	8.0	10	15	16.0	30	30	24.0	40	45	32.0	40	45	40.0	45	50	45.0	50	55	49.5	50	55	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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24.0	40	45																																							
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--	-	-																																							
<div><div><div>Ripple Noise[mVp-p]</div><p>Fig.Complex Ripple Noise Wave Form</p></div></div>																																									

Testing Circuitry Figure B

2.Values



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

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Model

CQS48025-45

Item

Ambient Temperature Drift

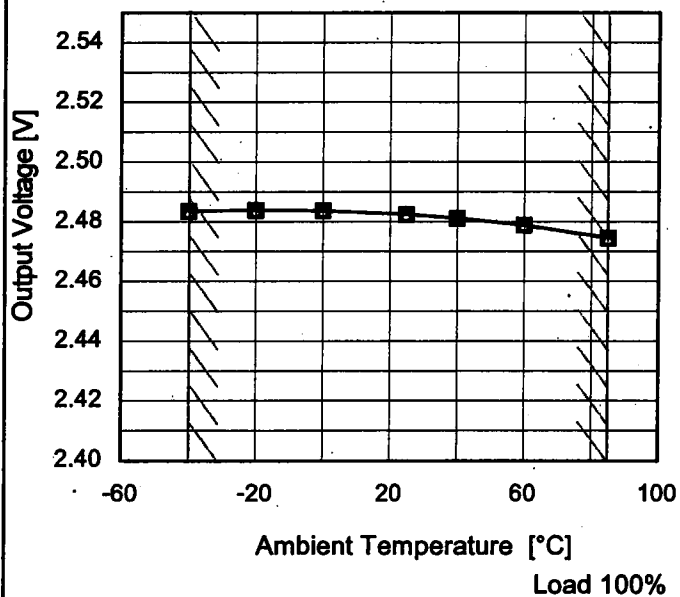
Object

+2.5V45A

Testing Circuitry Figure A

1. Graph

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



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

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-40	2.484	2.484	2.483
-20	2.484	2.484	2.484
0	2.484	2.484	2.484
25	2.483	2.482	2.482
40	2.481	2.481	2.481
60	2.479	2.479	2.479
85	2.475	2.475	2.474
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—



Model		CQS48025-45	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+2.5V45A	

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 - 45A

* 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	36	0	2.484	±5	±0.2
Minimum Voltage	85	76	45	2.474		

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Model

CQS48025-45

Item

Time Lapse Drift

Object

+2.5V45A

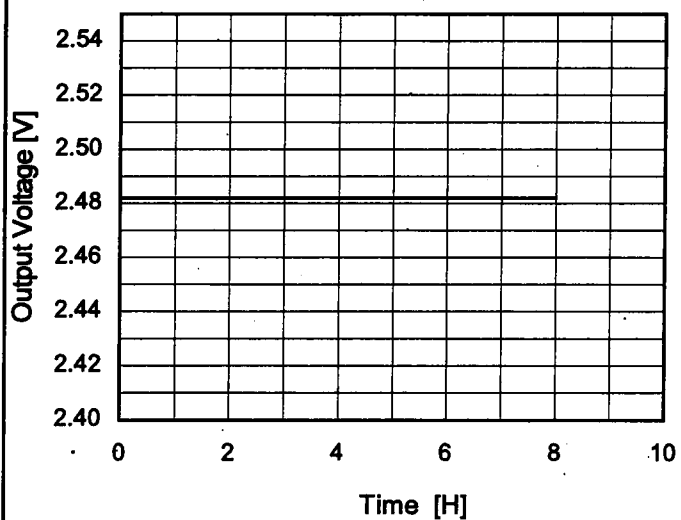
Temperature

25°C

Testing Circuitry

Figure A

1.Graph



Input Volt.

48V

Load

100%

2.Values

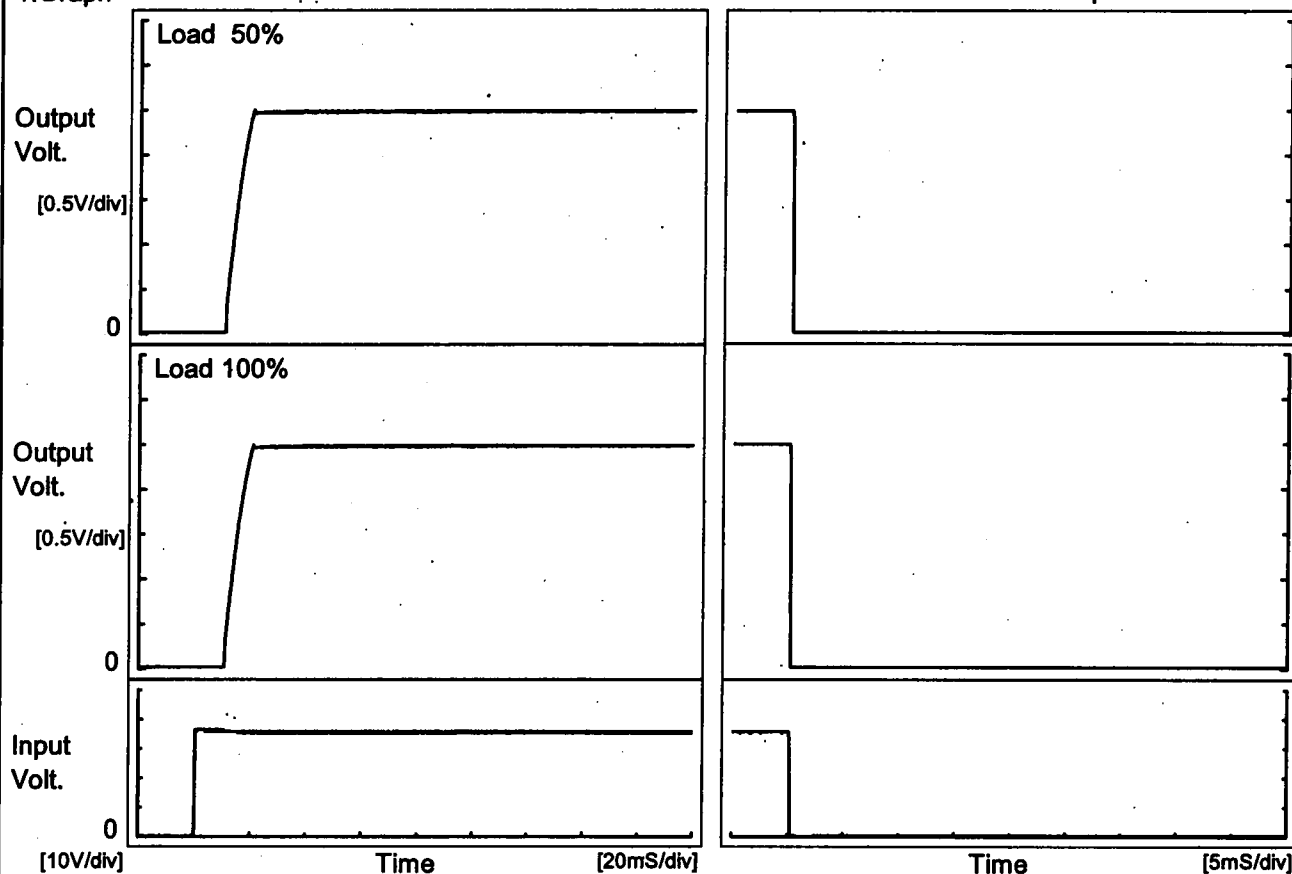
Time since start [H]	Output Voltage [V]
0.0	2.483
0.5	2.482
1.0	2.482
2.0	2.482
3.0	2.482
4.0	2.482
5.0	2.482
6.0	2.482
7.0	2.482
8.0	2.482

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Model	CQS48025-45	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+2.5V45A		

1.Graph

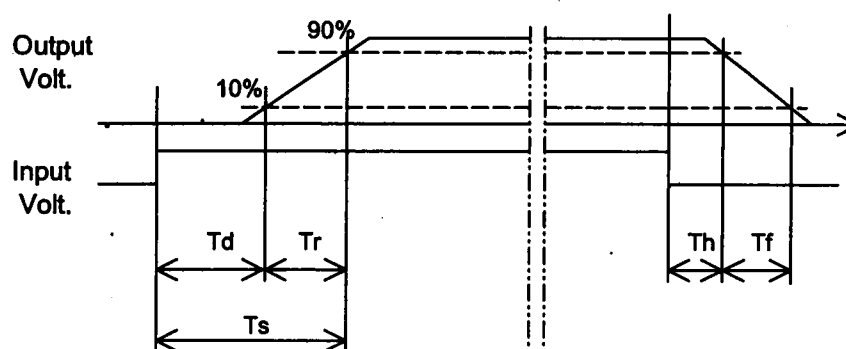
Input Volt. 36 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	10.9	8.1	19.0	0.2	0.1
100 %	10.9	8.4	19.3	0.1	0.1



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Model

CQS48025-45

Item

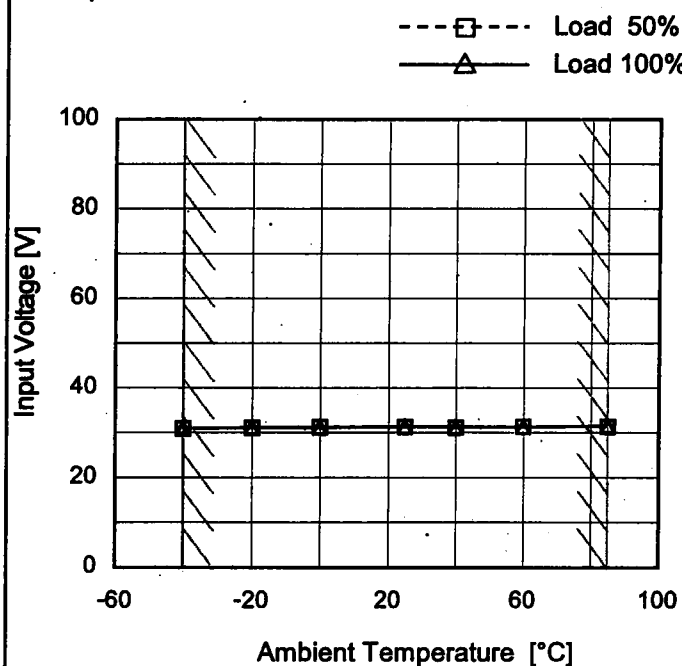
Minimum Input Voltage
for Regulated Output Voltage

Object

+2.5V45A

Testing Circuitry Figure A

1. Graph



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

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	31.0	31.0
-20	31.2	31.2
0	31.4	31.2
25	31.3	31.4
40	31.2	31.4
60	31.4	31.4
85	31.4	31.6
--	-	-
--	-	-
--	-	-
--	-	-

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Model

CQS48025-45

Item

Overcurrent Protection

Object

+2.5V45A

Temperature

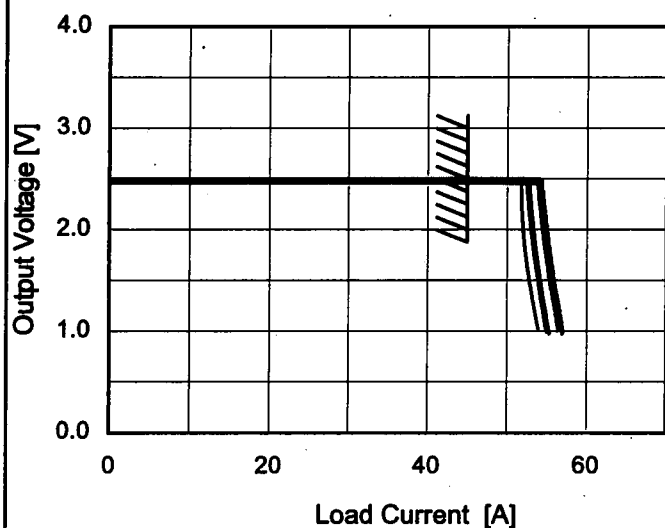
25°C

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

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
2.50	47.94	47.94	47.93
2.38	51.80	52.73	54.25
2.25	51.82	52.83	54.44
2.00	52.00	53.15	54.81
1.75	52.32	53.54	55.26
1.50	52.78	54.14	55.73
1.25	53.34	54.65	56.31
1.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.25	0.00	0.00	0.00
0.00	0.00	0.00	0.00

COSEL

Model

CQS48025-45

Item

Overvoltage Protection

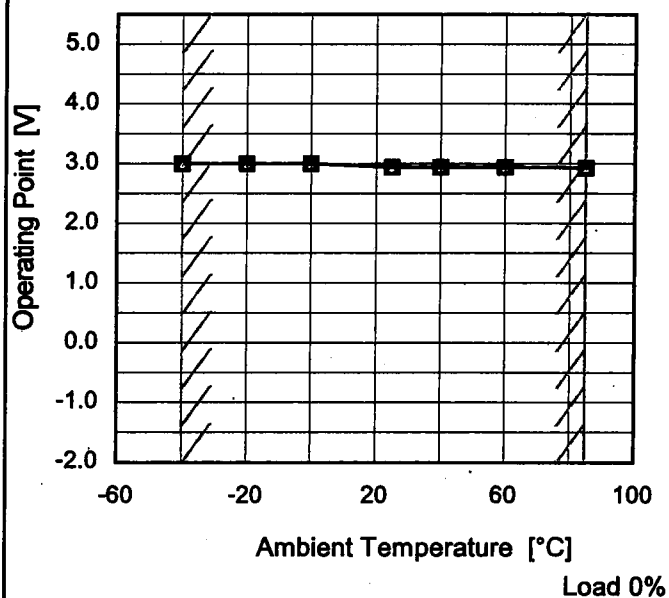
Object

+2.5V45A

Testing Circuitry Figure A

1. Graph

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



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

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-40	3.04	3.04	3.04
-20	3.04	3.04	3.04
0	3.04	3.04	3.04
25	2.98	2.98	2.98
40	2.98	2.98	2.98
60	2.98	2.98	2.98
85	2.97	2.97	2.97
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

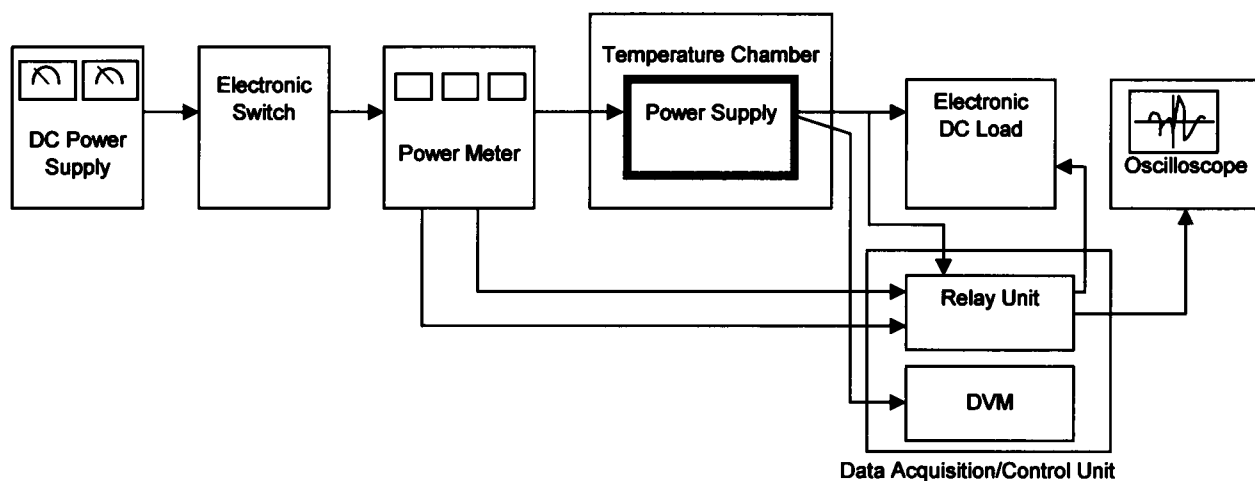


Figure A

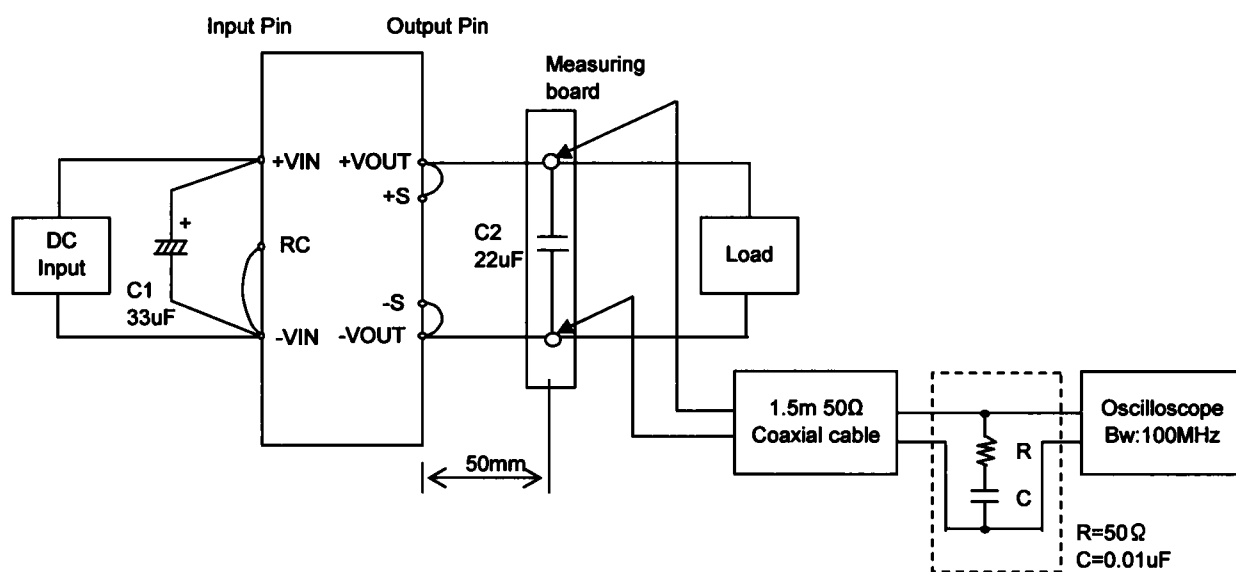


Figure B