

TEST DATA OF CQHS3004850

Regulated DC Power Supply
October 28, 2010

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COSEL CO.,LTD.

CONTENTS

1.Input Current (by Input Voltage)	1
2.Input Current (by Load Current)	2
3.Input Power (by Load Current)	3
4.Efficiency (by Input Voltage)	4
5.Efficiency (by Load Current)	5
6.Line Regulation	6
7.Load Regulation	7
8.Dynamic Load Response	8
9.Ripple Voltage (by Load Current)	9
10.Ripple-Noise	10
11.Ripple Voltage (by Ambient Temperature)	11
12.Ambient Temperature Drift	12
13.Output Voltage Accuracy	13
14.Time Lapse Drift	14
15.Rise and Fall Time	15
16.Minimum Input Voltage for Regulated Output Voltage	16
17.Overcurrent Protection	17
18.Overvoltage Protection	18
19.Figure of Testing Circuitry	19

(Final Page 19)

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Model

CQHS3004850

Item

Input Current (by Input Voltage)

Object

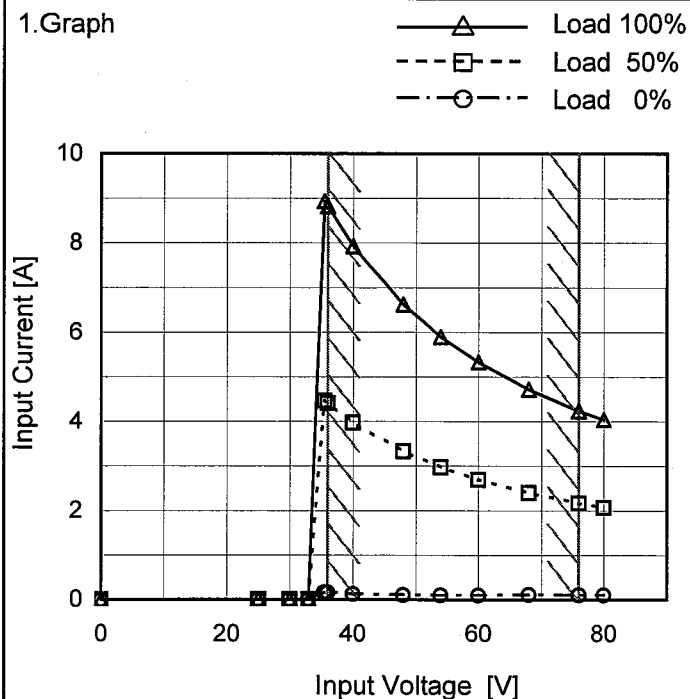
Temperature

25°C

Testing Circuitry

Figure A

1.Graph

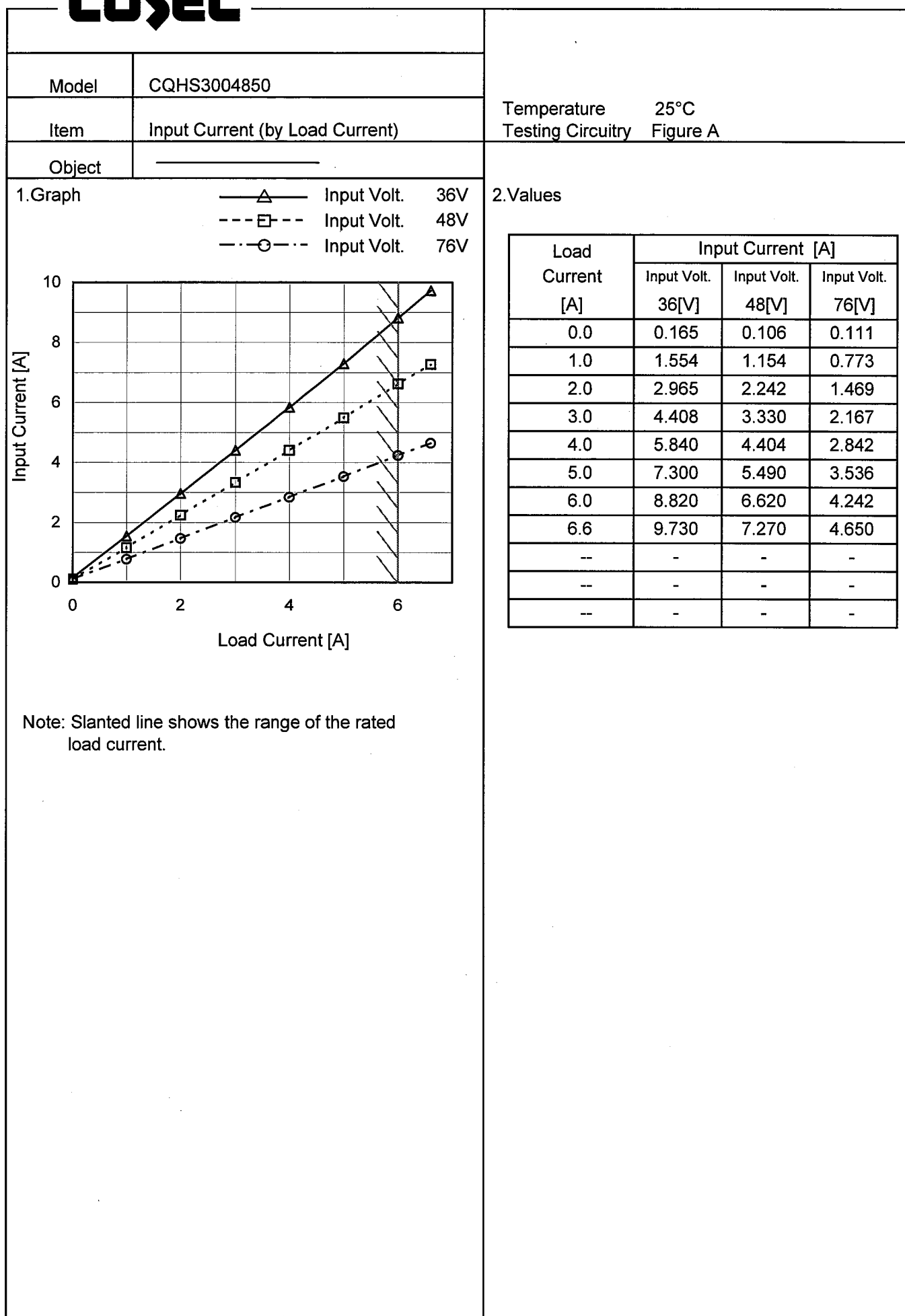


Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
25.0	0.010	0.010	0.010
30.0	0.006	0.006	0.006
33.0	0.007	0.007	0.007
35.5	0.168	4.470	8.940
36.0	0.165	4.408	8.820
40.0	0.131	3.970	7.930
48.0	0.106	3.330	6.620
54.0	0.103	2.976	5.900
60.0	0.101	2.694	5.330
68.0	0.113	2.400	4.720
76.0	0.111	2.167	4.242
80.0	0.110	2.068	4.042
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model		CQHS3004850		Temperature 25°C																																																				
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<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><div><div>500</div><div>400</div><div>300</div><div>200</div><div>100</div><div>0</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div></div></div> <div><div>Input Power [W]</div><div>Load Current [A]</div></div>		2.Values																																																				
		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</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>5.9</td><td>5.0</td><td>8.4</td></tr><tr><td>1.0</td><td>55.7</td><td>55.2</td><td>58.6</td></tr><tr><td>2.0</td><td>106.2</td><td>107.4</td><td>111.2</td></tr><tr><td>3.0</td><td>157.7</td><td>158.8</td><td>163.8</td></tr><tr><td>4.0</td><td>209.5</td><td>210.8</td><td>215.4</td></tr><tr><td>5.0</td><td>262.3</td><td>263.2</td><td>267.9</td></tr><tr><td>6.0</td><td>315.8</td><td>316.1</td><td>320.4</td></tr><tr><td>6.6</td><td>348.0</td><td>348.5</td><td>352.0</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]	Input Power [W]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	5.9	5.0	8.4	1.0	55.7	55.2	58.6	2.0	106.2	107.4	111.2	3.0	157.7	158.8	163.8	4.0	209.5	210.8	215.4	5.0	262.3	263.2	267.9	6.0	315.8	316.1	320.4	6.6	348.0	348.5	352.0	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Power [W]																																																							
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Note: Slanted line shows the range of the rated load current.																																																								

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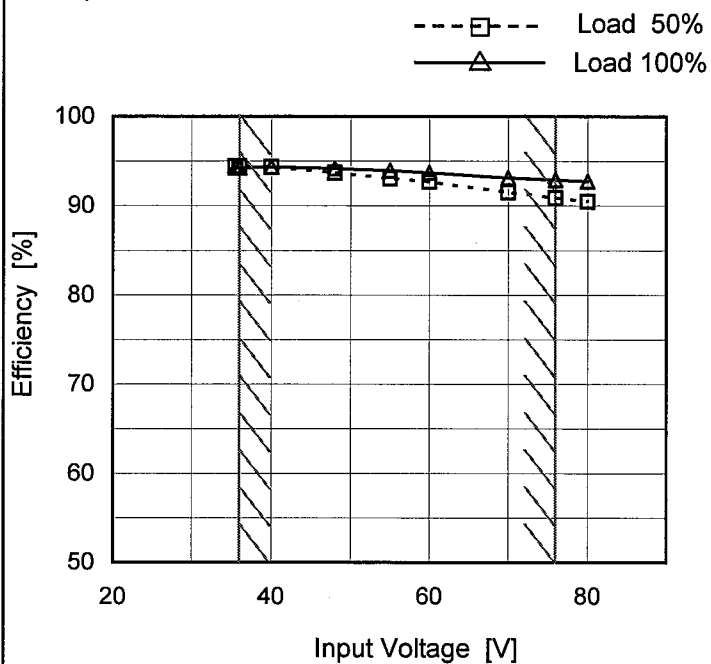
Model CQHS3004850

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%
35.5	94.4	94.3
36.0	94.4	94.3
40.0	94.3	94.4
48.0	93.7	94.2
55.0	93.1	94.0
60.0	92.7	93.7
70.0	91.5	93.1
76.0	90.9	92.9
80.0	90.5	92.7

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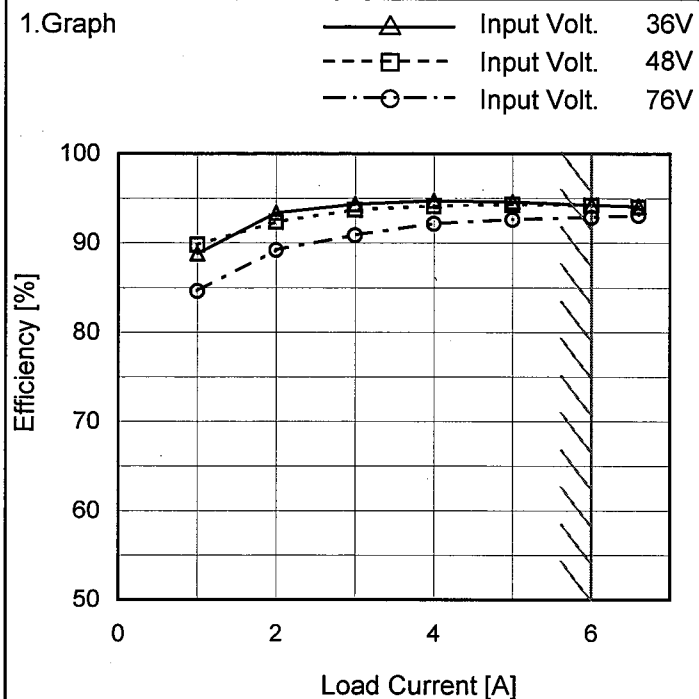
Model CQHS3004850

Item Efficiency (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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

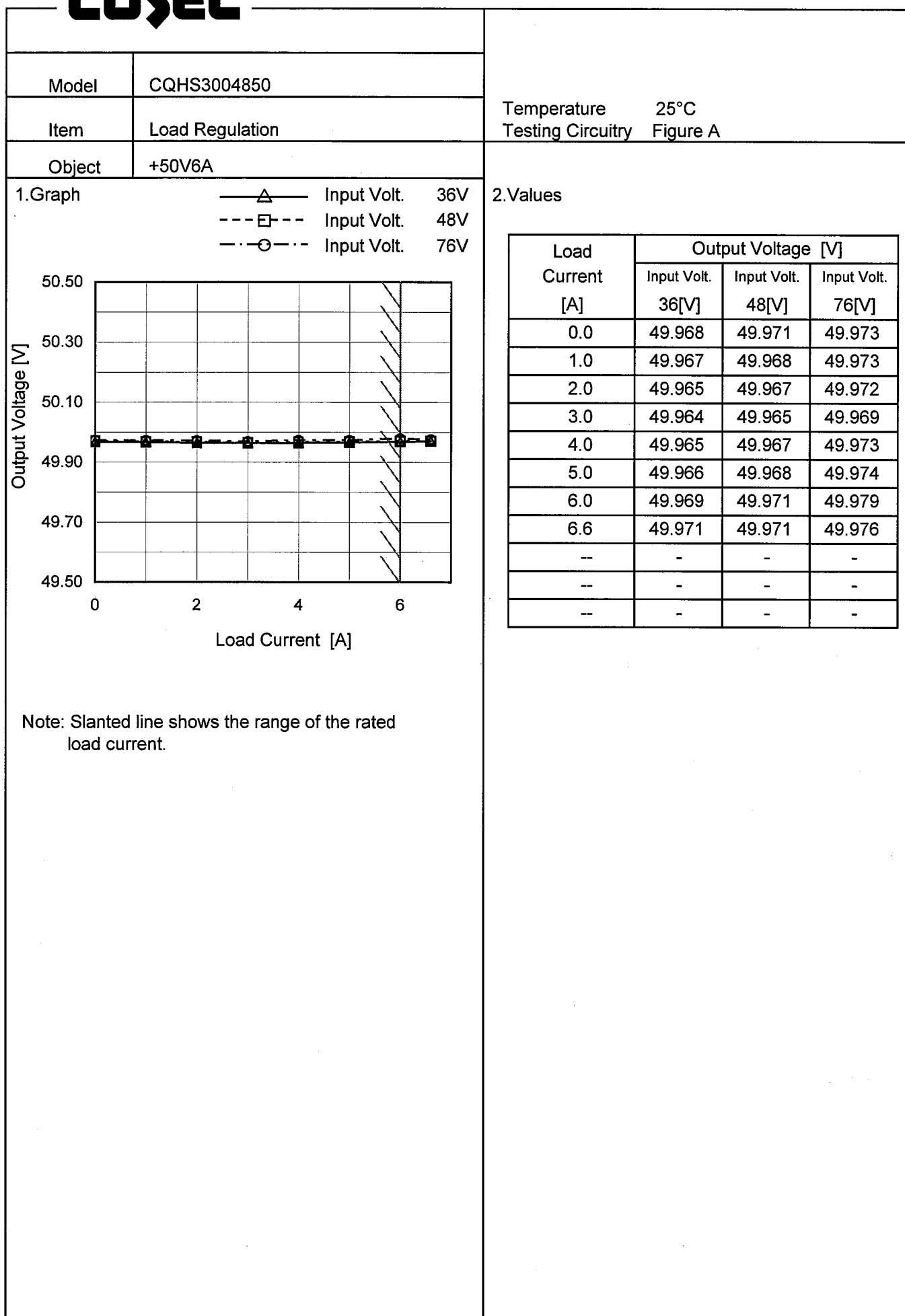
2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-
1.0	88.8	89.8	84.6
2.0	93.4	92.4	89.2
3.0	94.4	93.7	90.9
4.0	94.8	94.1	92.2
5.0	94.6	94.3	92.6
6.0	94.3	94.2	92.9
6.6	94.1	94.0	93.1
--	-	-	-
--	-	-	-
--	-	-	-

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Model	CQHS3004850																																		
Item	Line Regulation	Temperature	25°C																																
Object	+50V6A	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> <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">Output Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>35.5</td><td>49.965</td><td>49.967</td></tr><tr><td>36.0</td><td>49.964</td><td>49.969</td></tr><tr><td>40.0</td><td>49.964</td><td>49.970</td></tr><tr><td>48.0</td><td>49.965</td><td>49.971</td></tr><tr><td>55.0</td><td>49.966</td><td>49.973</td></tr><tr><td>60.0</td><td>49.968</td><td>49.974</td></tr><tr><td>70.0</td><td>49.968</td><td>49.976</td></tr><tr><td>76.0</td><td>49.969</td><td>49.979</td></tr><tr><td>80.0</td><td>49.970</td><td>49.980</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	35.5	49.965	49.967	36.0	49.964	49.969	40.0	49.964	49.970	48.0	49.965	49.971	55.0	49.966	49.973	60.0	49.968	49.974	70.0	49.968	49.976	76.0	49.969	49.979	80.0	49.970	49.980
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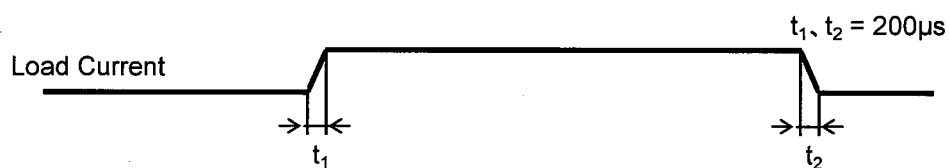
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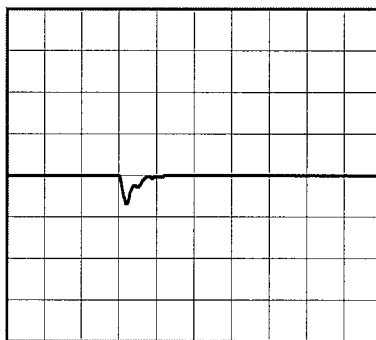
Model	CQHS3004850	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+50V6A	

Input Volt. 48 V
Cycle 1000 mS

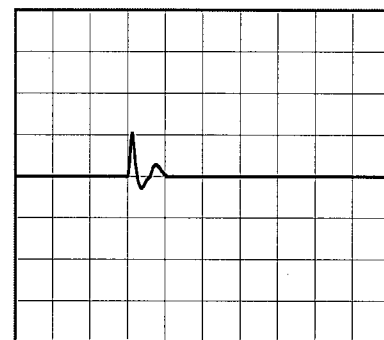


Min. Load (0A) \longleftrightarrow
Load 100% (6A)

500mV/div



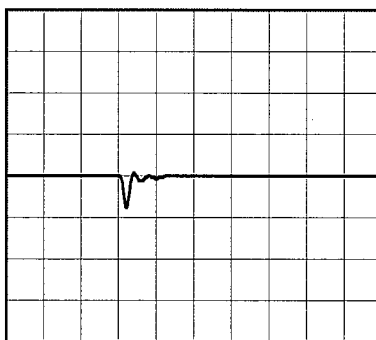
1ms/div



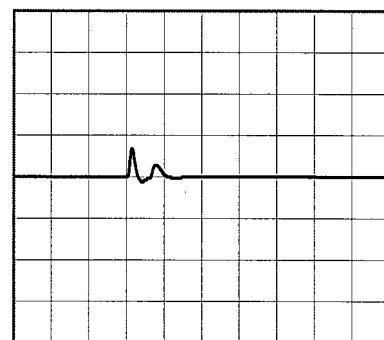
1ms/div

Min. Load (0A) \longleftrightarrow
Load 50% (3A)

500mV/div



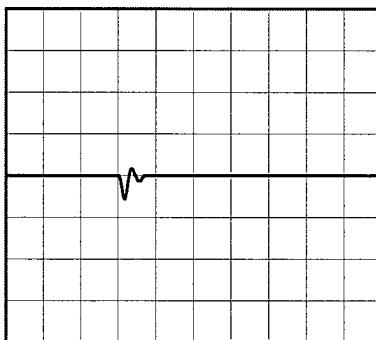
1ms/div



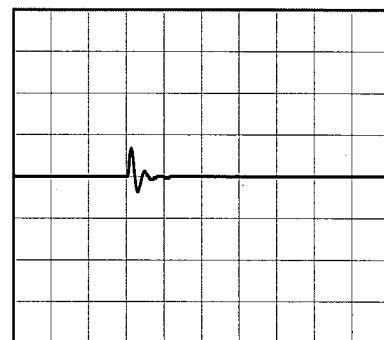
1ms/div

Load 50% (3A) \longleftrightarrow
Load 100% (6A)

500mV/div



1ms/div



1ms/div

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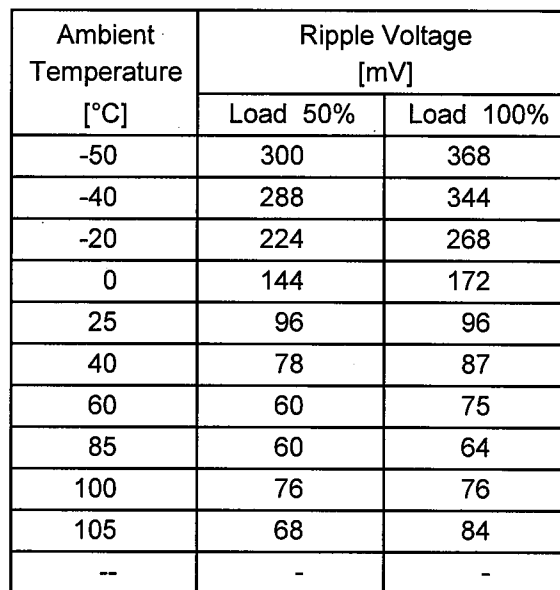
Model		CQHS3004850																																							
Item		Ripple Voltage (by Load Current)																																							
Object		+50V6A																																							
1.Graph		2.Values																																							
<div><div><div><div><div></div><div></div></div><div>Input Volt.</div><div>36V</div></div><div><div><div></div><div></div></div><div>Input Volt.</div><div>76V</div></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>73</td><td>144</td></tr><tr><td>1.0</td><td>73</td><td>144</td></tr><tr><td>2.0</td><td>72</td><td>145</td></tr><tr><td>3.0</td><td>72</td><td>145</td></tr><tr><td>4.0</td><td>72</td><td>151</td></tr><tr><td>5.0</td><td>72</td><td>155</td></tr><tr><td>6.0</td><td>75</td><td>158</td></tr><tr><td>6.6</td><td>75</td><td>158</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	73	144	1.0	73	144	2.0	72	145	3.0	72	145	4.0	72	151	5.0	72	155	6.0	75	158	6.6	75	158	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 36 [V]	Input Volt. 76 [V]																																							
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4.0	72	151																																							
5.0	72	155																																							
6.0	75	158																																							
6.6	75	158																																							
--	-	-																																							
--	-	-																																							
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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><div><div></div><div></div></div><div>Ripple [mVp-p]</div></div><div><p>Fig.Complex Ripple Wave Form</p></div></div>																																									

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Model		CQHS3004850	
Item		Ripple-Noise	
Object		+50V6A	
1.Graph		2.Values	

Testing Circuitry Figure B

2.Values



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

Model		CQHS3004850																																																				
Item		Ambient Temperature Drift																																																				
Object		+50V6A																																																				
1.Graph		2.Values																																																				
<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> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<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>-50</td><td>49.544</td><td>49.547</td><td>49.556</td></tr><tr><td>-40</td><td>49.629</td><td>49.633</td><td>49.642</td></tr><tr><td>-20</td><td>49.773</td><td>49.776</td><td>49.784</td></tr><tr><td>0</td><td>49.884</td><td>49.888</td><td>49.892</td></tr><tr><td>25</td><td>49.969</td><td>49.971</td><td>49.979</td></tr><tr><td>40</td><td>50.002</td><td>50.003</td><td>50.005</td></tr><tr><td>60</td><td>50.029</td><td>50.030</td><td>50.030</td></tr><tr><td>85</td><td>50.039</td><td>50.039</td><td>50.040</td></tr><tr><td>100</td><td>50.032</td><td>50.032</td><td>50.035</td></tr><tr><td>105</td><td>50.026</td><td>50.027</td><td>50.032</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]	-50	49.544	49.547	49.556	-40	49.629	49.633	49.642	-20	49.773	49.776	49.784	0	49.884	49.888	49.892	25	49.969	49.971	49.979	40	50.002	50.003	50.005	60	50.029	50.030	50.030	85	50.039	50.039	50.040	100	50.032	50.032	50.035	105	50.026	50.027	50.032	--	-	-	-
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		Testing Circuitry Figure A
Model	CQHS3004850	
Item	Output Voltage Accuracy	
Object	+50V6A	

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 - 6A

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

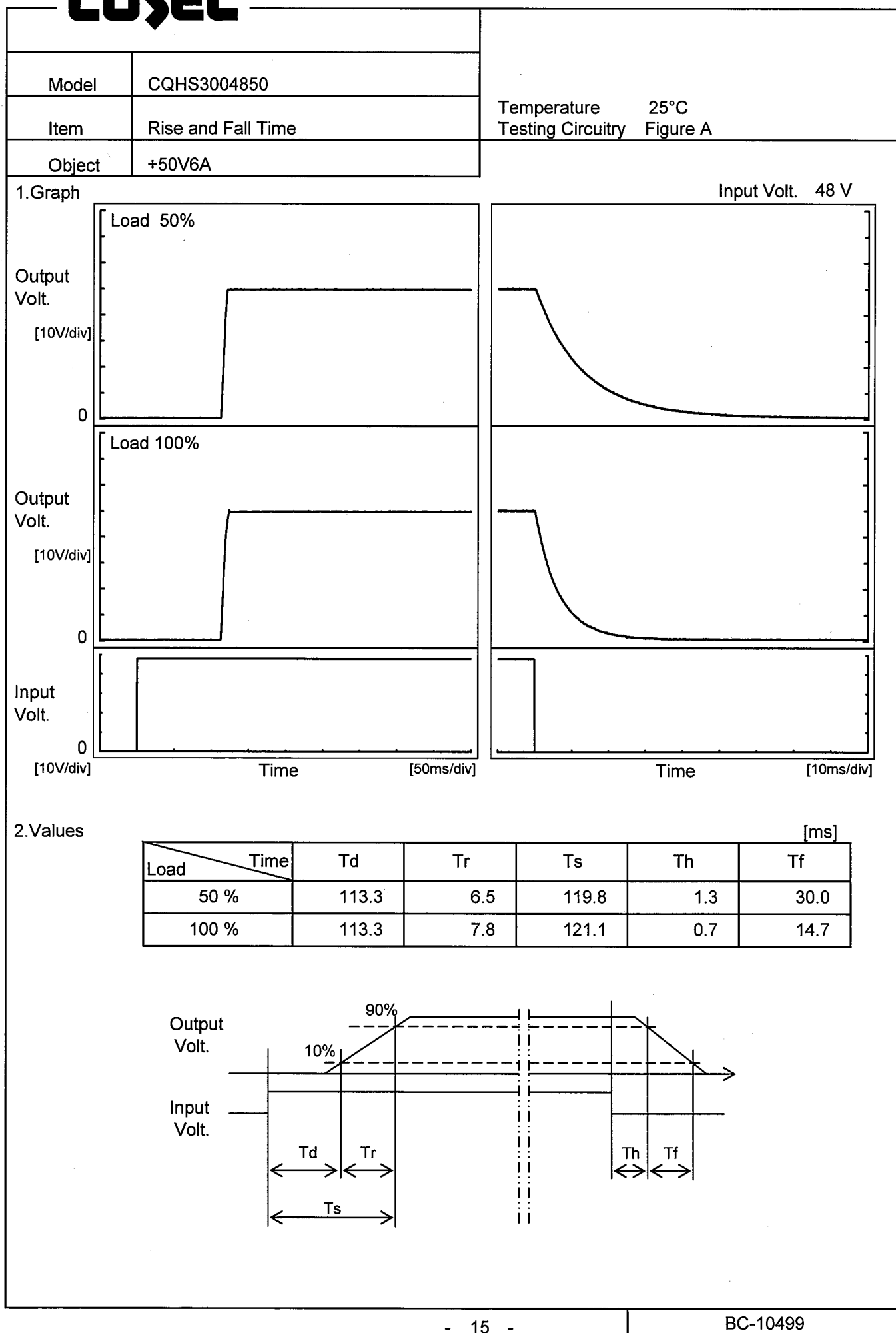
* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	85	76	0	50.040	±207	±0.4
Minimum Voltage	-40	76	0	49.627		

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Model		CQHS3004850	
Item		Time Lapse Drift	
Object		+50V6A	
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</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></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></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></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></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></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></di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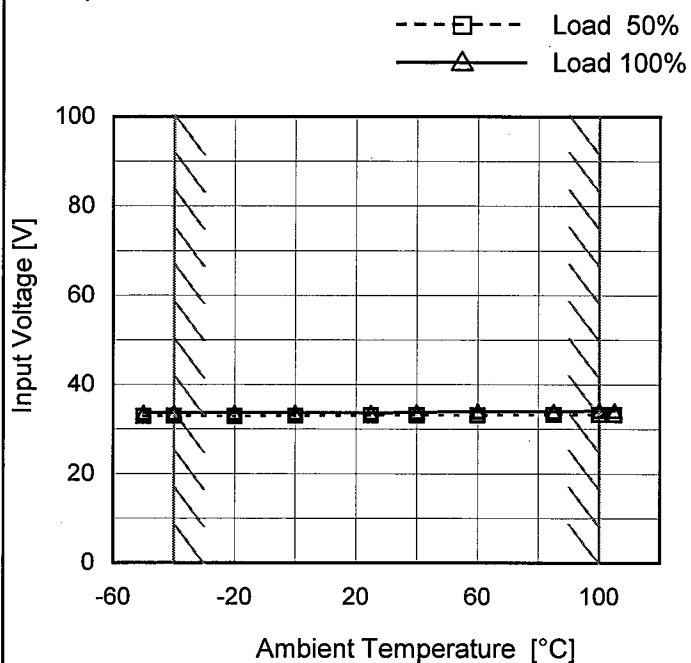
Model CQHS3004850

Item Minimum Input Voltage
for Regulated Output Voltage

Object +50V6A

Testing Circuitry Figure A

1. Graph

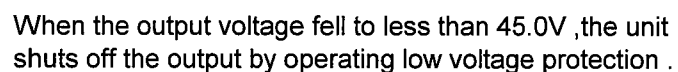


Note: Slanted line shows the range of the rated ambient temperature.

2. Values

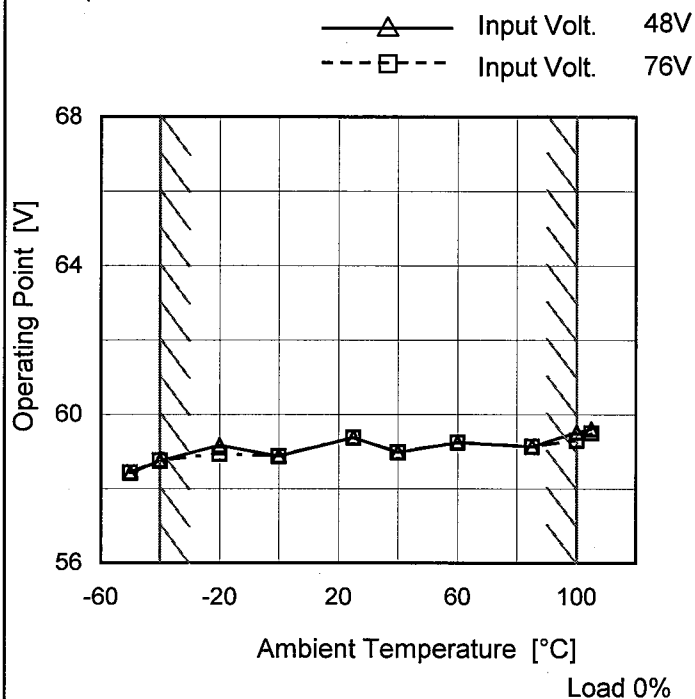
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	33.0	33.7
-40	33.0	33.7
-20	33.0	33.7
0	33.0	33.7
25	33.2	33.7
40	33.2	33.9
60	33.1	34.1
85	33.3	34.0
100	33.3	34.2
105	33.3	34.2
--	-	-

Temperature 25°C
Testing Circuitry Figure A

[illegible]

Model	CQHS3004850
Item	Overvoltage Protection
Object	+50V6A

1. Graph



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. 48[V]	Input Volt. 76[V]
-50	58.42	58.43
-40	58.75	58.76
-20	59.17	58.94
0	58.88	58.88
25	59.38	59.38
40	58.98	58.98
60	59.25	59.25
85	59.14	59.14
100	59.53	59.30
105	59.61	59.50
--	-	-

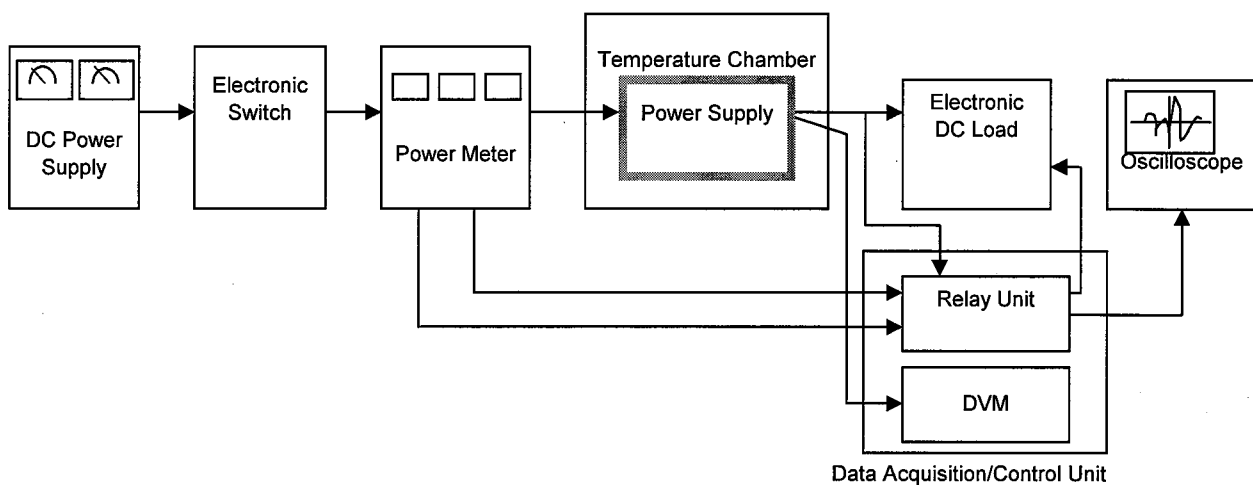


Figure A

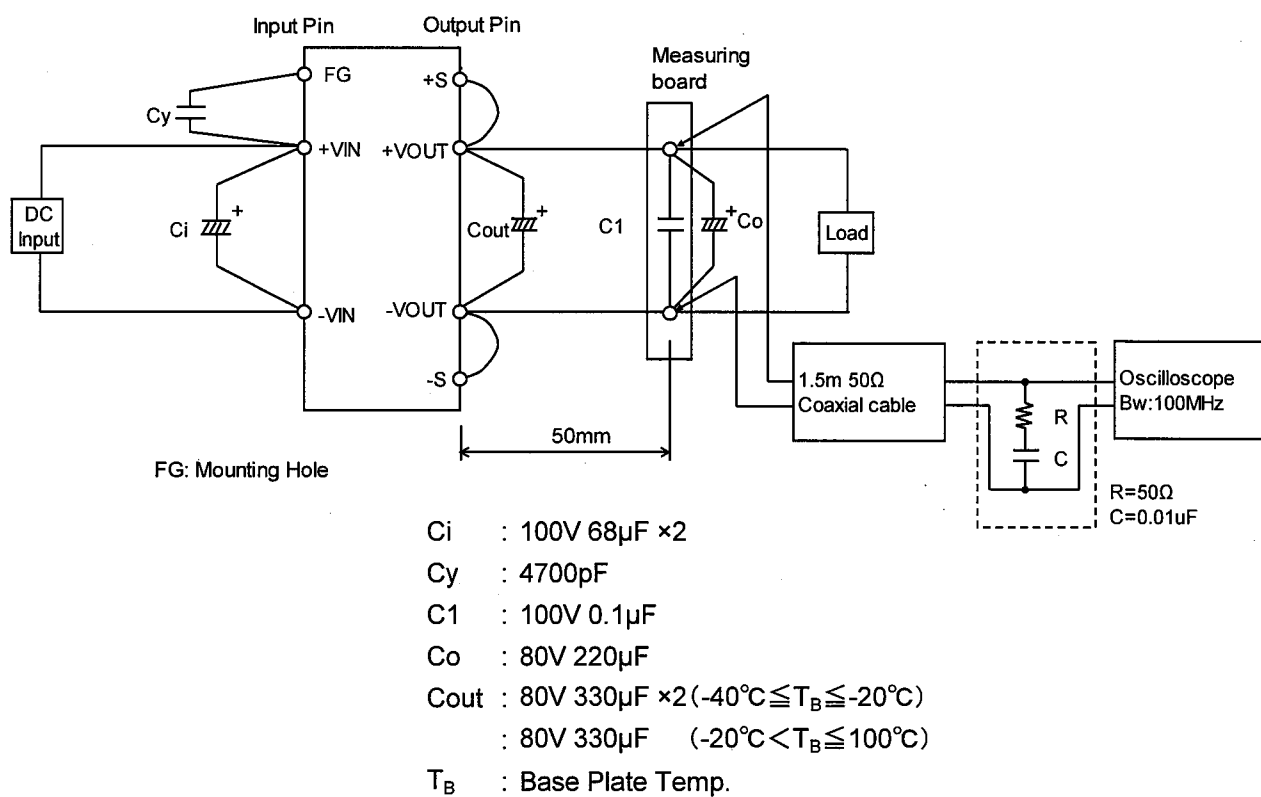


Figure B (Ripple and Ripple noise Characteristic)