

# TEST DATA OF DHS200A05

Regulated DC Power Supply  
Aug 3, 2010

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Prepared by : Hou Ryou  
Hou Ryou Design Engineer

**COSEL CO.,LTD.**

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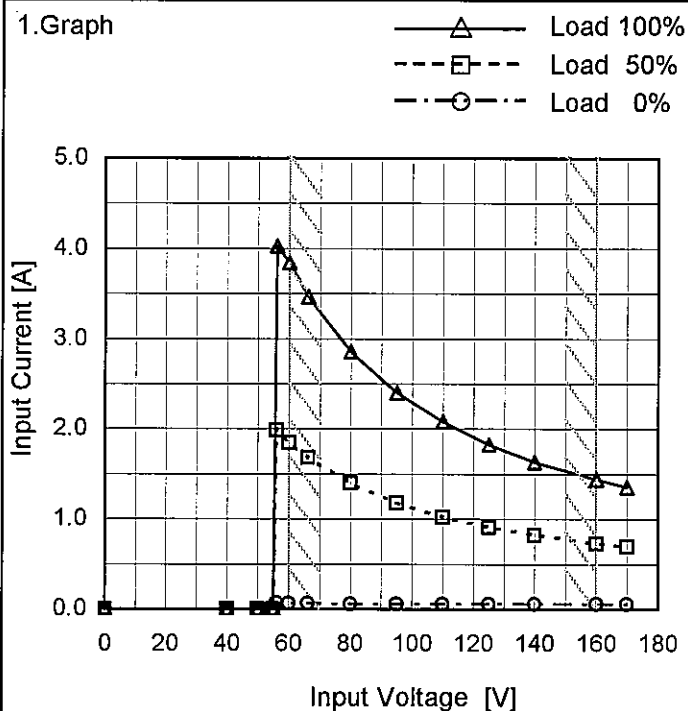
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(Final Page 19)

Model DHS200A05

Item Input Current (by Input Voltage)

Object

Temperature 25°C  
Testing Circuitry Figure A


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
40	0.000	0.000	0.000
50	0.000	0.000	0.000
55	0.000	0.000	0.000
56	0.069	1.990	4.030
60	0.065	1.848	3.845
66	0.063	1.683	3.464
80	0.059	1.397	2.852
95	0.057	1.178	2.398
110	0.054	1.025	2.080
125	0.054	0.911	1.826
140	0.054	0.822	1.634
160	0.056	0.731	1.445
170	0.057	0.693	1.360
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model

DHS200A05

Item

Input Current (by Load Current)

Object

Temperature

25°C

Testing Circuitry

Figure A

1.Graph

—△—

Input Volt.

60V

---□---

Input Volt.

110V

-·-○-·-

Input Volt.

160V

Input Current [A]

5.0

4.0

3.0

2.0

1.0

0.0

0

10

20

30

40

50

Load Current [A]

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0	0.065	0.054	0.056
8	0.762	0.435	0.321
16	1.481	0.829	0.595
24	2.234	1.230	0.869
32	3.014	1.642	1.150
40	3.845	2.080	1.445
44	4.256	2.290	1.586
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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BC-10435

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Model

DHS200A05

Item

Input Power (by Load Current)

Object

Temperature

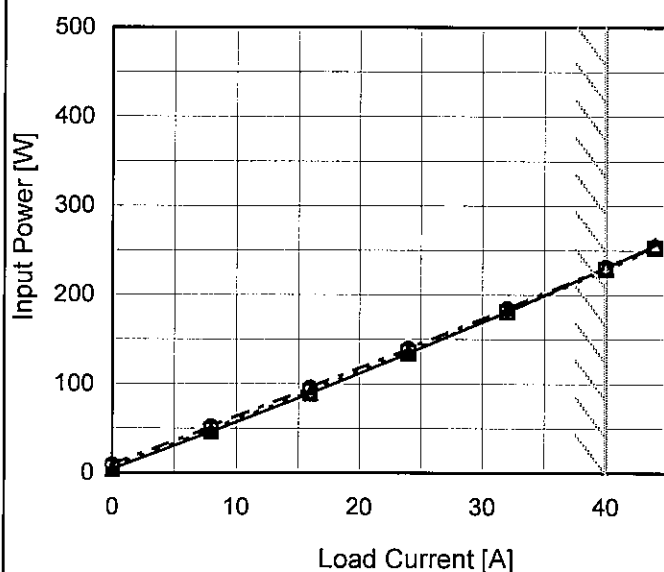
25°C

Testing Circuitry

Figure A

## 1. Graph

—△— Input Volt. 60V  
 ---□--- Input Volt. 110V  
 -·-○-·- Input Volt. 160V



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

## 2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0	4.0	6.2	8.8
8	45.8	48.0	51.6
16	89.0	91.4	95.4
24	134.3	135.6	139.3
32	181.1	180.8	184.4
40	230.5	228.4	231.0
44	255.6	252.6	254.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model		DHS200A05	
Item		Efficiency (by Input Voltage)	
Object			

1.Graph

---

□

---

Load 50%

—

△

—

Load 100%

Efficiency [%]

96

88

80

72

64

56

48

40

50

70

90

110

130

150

170

Input Voltage [V]

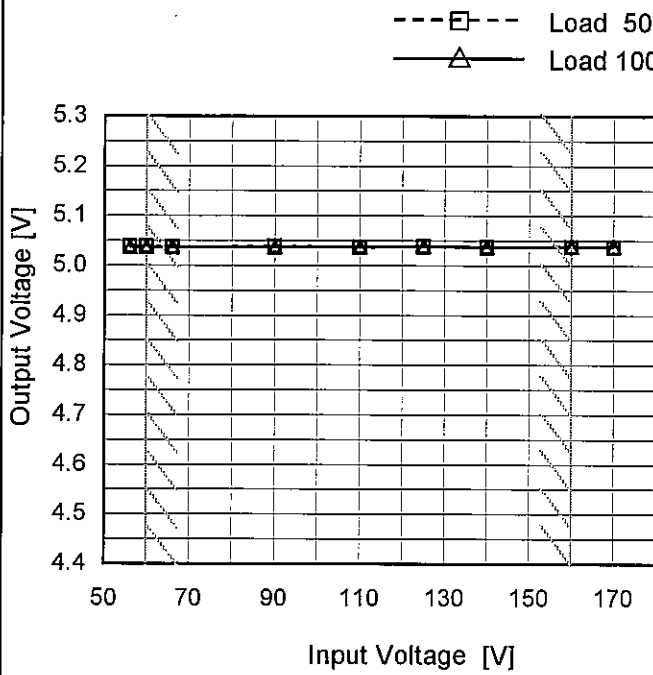
Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
56	89.7	87.0
60	89.7	87.3
66	90.1	87.5
90	89.4	88.0
110	88.5	88.0
125	87.9	88.0
140	87.0	87.6
160	85.6	87.1
170	84.9	86.7

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Model		DHS200A05																																																				
Item		Efficiency (by Load Current)																																																				
Object																																																						
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>---□---</div><div>- - -○- -</div></div><div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div></div><div><div>60V</div><div>110V</div><div>160V</div></div></div> <p>Efficiency [%]</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 60[V]</th><th>Input Volt. 110[V]</th><th>Input Volt. 160[V]</th></tr><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>8</td><td>87.8</td><td>83.8</td><td>77.9</td></tr><tr><td>16</td><td>90.3</td><td>87.9</td><td>84.2</td></tr><tr><td>24</td><td>89.8</td><td>88.9</td><td>86.5</td></tr><tr><td>32</td><td>88.7</td><td>88.9</td><td>87.2</td></tr><tr><td>40</td><td>87.3</td><td>88.0</td><td>87.1</td></tr><tr><td>44</td><td>86.5</td><td>87.5</td><td>86.9</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></table>		Load Current [A]	Efficiency [%]			Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]	0	-	-	-	8	87.8	83.8	77.9	16	90.3	87.9	84.2	24	89.8	88.9	86.5	32	88.7	88.9	87.2	40	87.3	88.0	87.1	44	86.5	87.5	86.9	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]																																																			
0	-	-	-																																																			
8	87.8	83.8	77.9																																																			
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Note: Slanted line shows the range of the rated load current.																																																						

Model	DHS200A05																																		
Item	Line Regulation	Temperature	25°C																																
Object	+5V40A	Testing Circuitry	Figure A																																
1.Graph		2.Values																																	
<div><div>---□--- Load 50%</div><div>—△— Load 100%</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>56</td><td>5.038</td><td>5.038</td></tr><tr><td>60</td><td>5.038</td><td>5.038</td></tr><tr><td>66</td><td>5.038</td><td>5.038</td></tr><tr><td>90</td><td>5.038</td><td>5.038</td></tr><tr><td>110</td><td>5.038</td><td>5.038</td></tr><tr><td>125</td><td>5.038</td><td>5.038</td></tr><tr><td>140</td><td>5.038</td><td>5.038</td></tr><tr><td>160</td><td>5.038</td><td>5.038</td></tr><tr><td>170</td><td>5.038</td><td>5.038</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	56	5.038	5.038	60	5.038	5.038	66	5.038	5.038	90	5.038	5.038	110	5.038	5.038	125	5.038	5.038	140	5.038	5.038	160	5.038	5.038	170	5.038	5.038
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
56	5.038	5.038																																	
60	5.038	5.038																																	
66	5.038	5.038																																	
90	5.038	5.038																																	
110	5.038	5.038																																	
125	5.038	5.038																																	
140	5.038	5.038																																	
160	5.038	5.038																																	
170	5.038	5.038																																	



Model	DHS200A05
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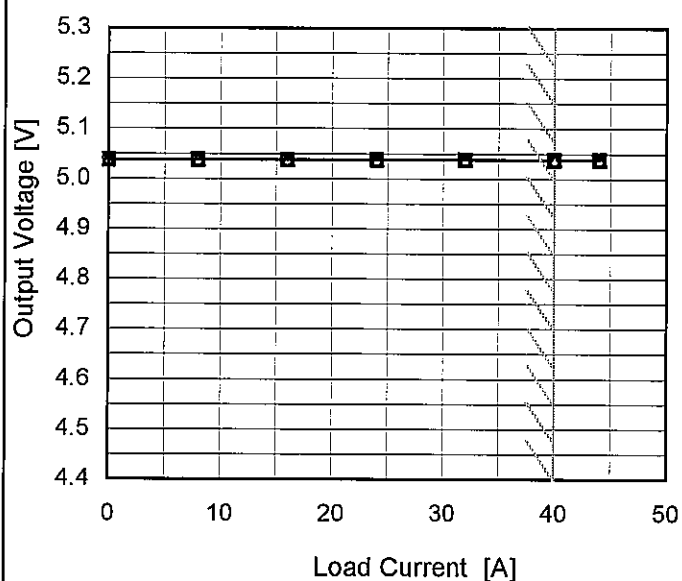
Item	Load Regulation
------	-----------------

Object	+5V40A
--------	--------

Temperature	25°C
Testing Circuitry	Figure A

## 1. Graph

—△—	Input Volt.	60V
---□---	Input Volt.	110V
---○---	Input Volt.	160V



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

## 2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0	5.038	5.038	5.038
8	5.038	5.038	5.038
16	5.038	5.038	5.038
24	5.038	5.038	5.038
32	5.038	5.038	5.038
40	5.038	5.038	5.038
44	5.038	5.038	5.038
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	DHS200A05	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+5V40A	

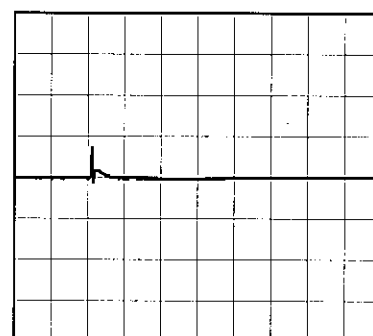
Input Volt. 110 V  
Cycle 1000 ms

Load Current

40A / 50  $\mu$ s

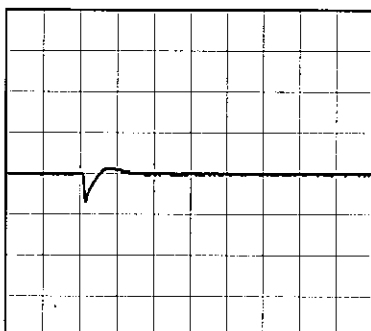
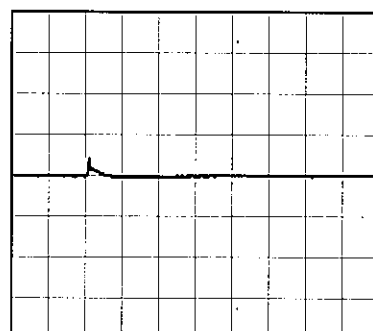
Min. Load (0A)  $\longleftrightarrow$   
Load 100% (40A)

500mV/div

500  $\mu$ s/div500  $\mu$ s/div

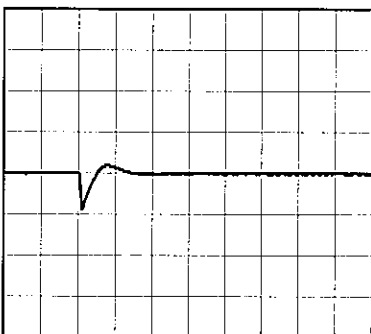
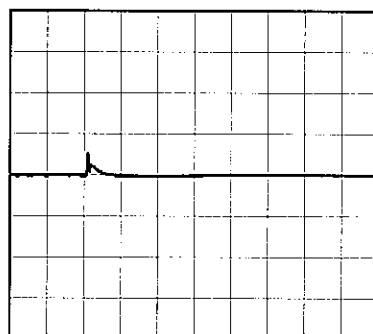
Min. Load (0A)  $\longleftrightarrow$   
Load 50% (20A)

500mV/div

500  $\mu$ s/div500  $\mu$ s/div

Load 10% (4A)  $\longleftrightarrow$   
Load 100% (40A)

500mV/div

500  $\mu$ s/div500  $\mu$ s/div

Model		DHS200A05																																							
Item		Ripple Voltage (by Load Current)																																							
Object		+5V40A																																							
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 60V</div><div>---○--- Input Volt. 160V</div></div><div>Ripple Voltage [mV]</div><div>Load Current [A]</div></div> <div><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>Ripple [mVp-p]</div><div>Fig.Complex Ripple Wave Form</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 60 [V]</th><th>Input Volt. 160 [V]</th></tr><tr><td>0</td><td>30</td><td>40</td></tr><tr><td>8</td><td>30</td><td>40</td></tr><tr><td>16</td><td>30</td><td>40</td></tr><tr><td>24</td><td>30</td><td>40</td></tr><tr><td>32</td><td>30</td><td>40</td></tr><tr><td>40</td><td>30</td><td>40</td></tr><tr><td>44</td><td>30</td><td>40</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></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 60 [V]	Input Volt. 160 [V]	0	30	40	8	30	40	16	30	40	24	30	40	32	30	40	40	30	40	44	30	40	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 60 [V]	Input Volt. 160 [V]																																							
0	30	40																																							
8	30	40																																							
16	30	40																																							
24	30	40																																							
32	30	40																																							
40	30	40																																							
44	30	40																																							
--	-	-																																							
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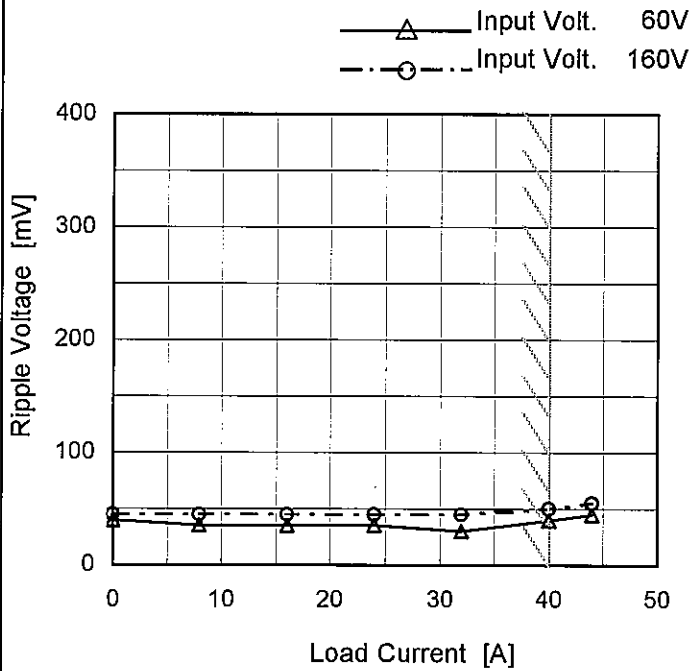
Model DHS200A05

Item Ripple-Noise

Object +5V40A

Temperature 25°C  
Testing Circuitry Figure B

## 1.Graph



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.

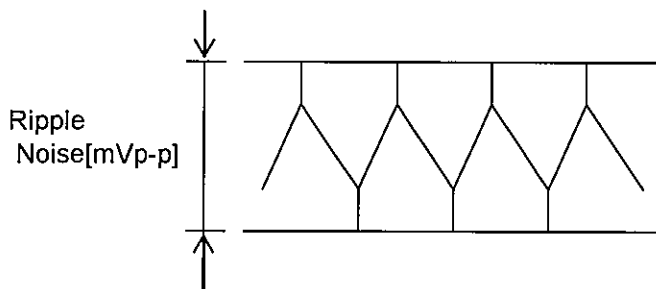


Fig.Complex Ripple Noise Wave Form

## 2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 60 [V]	Input Volt. 160 [V]
0	40	45
8	35	45
16	35	45
24	35	45
32	30	45
40	40	50
44	45	55
--	-	-
--	-	-
--	-	-
--	-	-

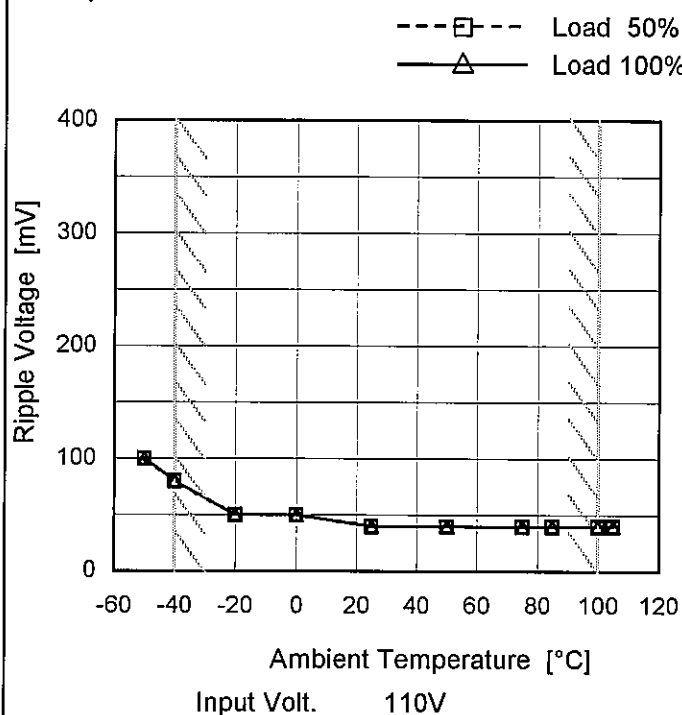
Model DHS200A05

Item Ripple Voltage (by Ambient Temp.)

Object +5V40A

Testing Circuitry Figure B

## 1. Graph



Measured by 100 MHz Oscilloscope.

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

## 2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	100	100
-40	80	80
-20	50	50
0	50	50
25	40	40
50	40	40
75	40	40
85	40	40
100	40	40
105	40	40
--	-	-

Model		DHS200A05	
Item		Ambient Temperature Drift	
Object		+5V40A	

1.Graph

△

Input Volt. 60V

□

Input Volt. 110V

○

Input Volt. 160V

Output Voltage [V]

</

		Testing Circuitry Figure A
Model	DHS200A05	
Item	Output Voltage Accuracy	
Object	+5V40A	

### 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 : 60 - 160V

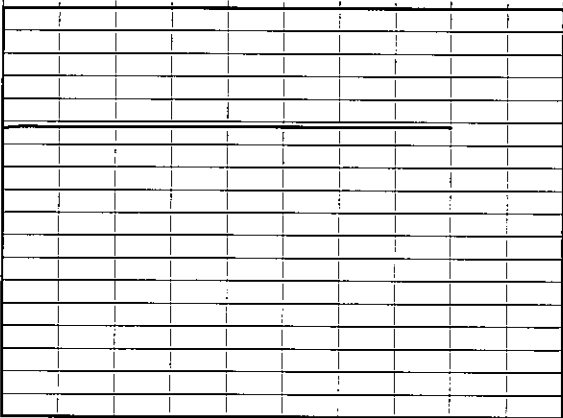
Load Current : 0 - 40A

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

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

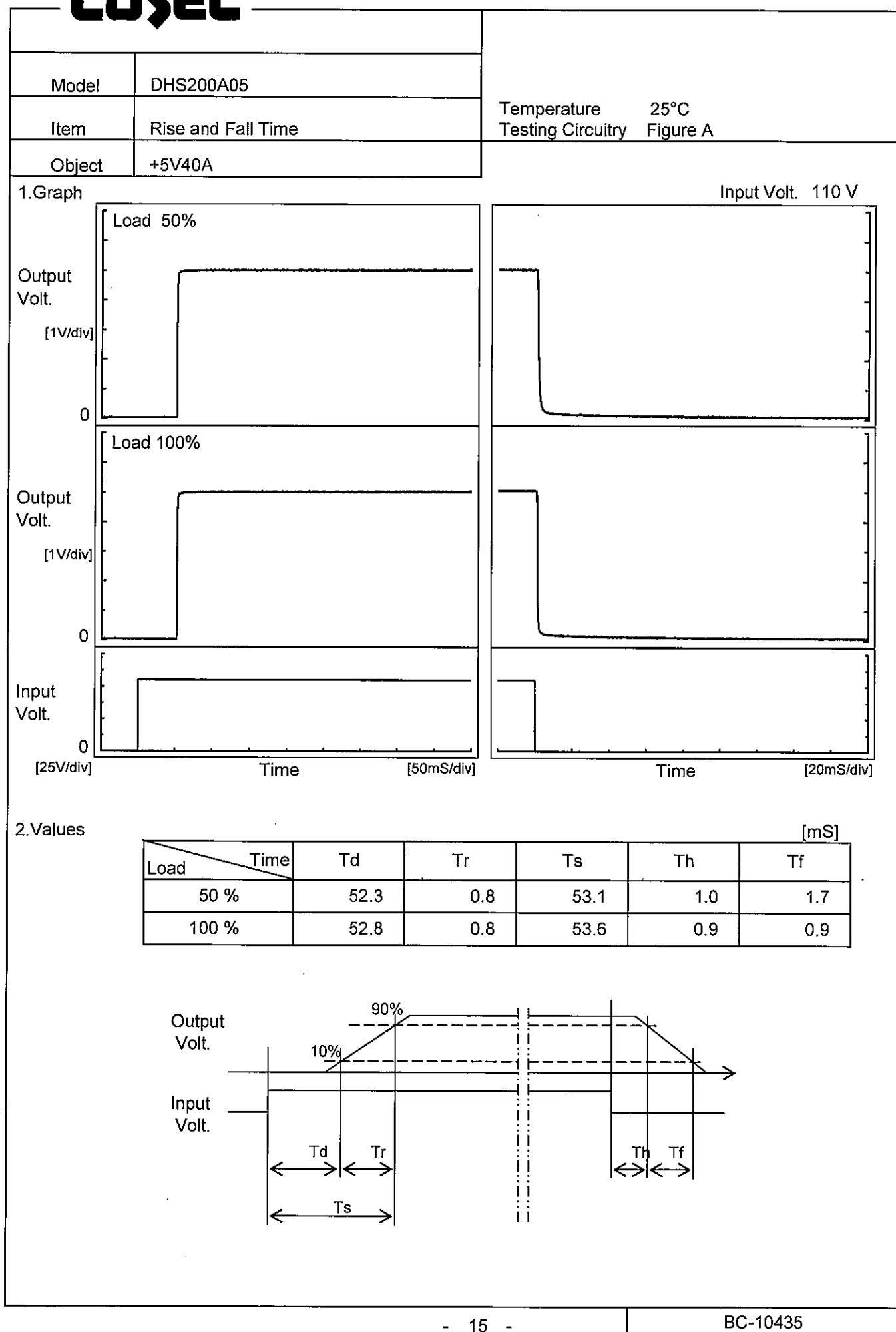
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	100	60	0	5.045	±17	±0.3
Minimum Voltage	-40	160	0	5.012		

Model	DHS200A05																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+5V40A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><div><div>5.3</div><div>5.2</div><div>5.1</div><div>5.0</div><div>4.9</div><div>4.8</div><div>4.7</div><div>4.6</div><div>4.5</div><div>4.4</div></div><div></div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div></div> <div><div>Time [H]</div><div>Input Volt. 110V</div><div>Load 100%</div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.036</td></tr><tr><td>0.5</td><td>5.039</td></tr><tr><td>1.0</td><td>5.038</td></tr><tr><td>2.0</td><td>5.039</td></tr><tr><td>3.0</td><td>5.039</td></tr><tr><td>4.0</td><td>5.039</td></tr><tr><td>5.0</td><td>5.039</td></tr><tr><td>6.0</td><td>5.039</td></tr><tr><td>7.0</td><td>5.039</td></tr><tr><td>8.0</td><td>5.039</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.036	0.5	5.039	1.0	5.038	2.0	5.039	3.0	5.039	4.0	5.039	5.0	5.039	6.0	5.039	7.0	5.039	8.0	5.039
Time since start [H]	Output Voltage [V]																								
0.0	5.036																								
0.5	5.039																								
1.0	5.038																								
2.0	5.039																								
3.0	5.039																								
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5.0	5.039																								
6.0	5.039																								
7.0	5.039																								
8.0	5.039																								



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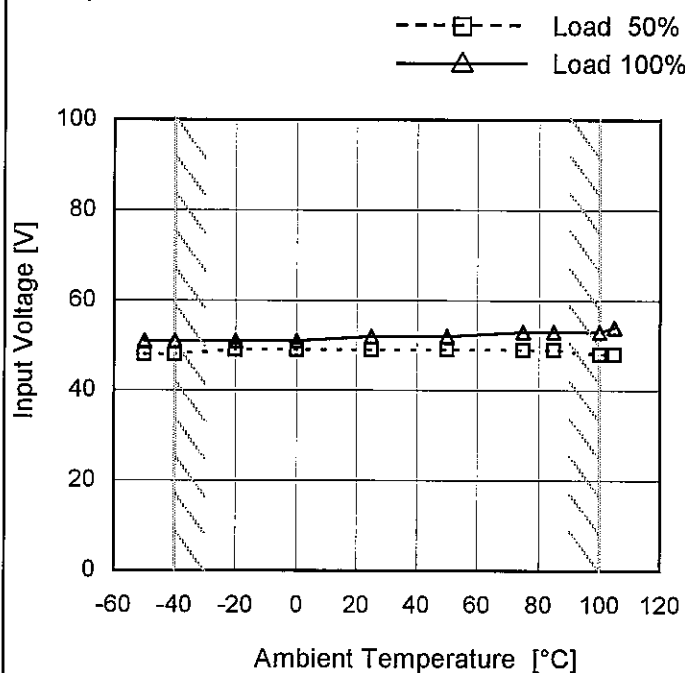
Model DHS200A05

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +5V40A

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	48	51
-40	48	51
-20	49	51
0	49	51
25	49	52
50	49	52
75	49	53
85	49	53
100	48	53
105	48	54
--	-	-

Model	DHS200A05																																																													
Item	Overcurrent Protection	Temperature	25°C																																																											
Object	+5V40A	Testing Circuitry	Figure A																																																											
1.Graph		2.Values																																																												
<div><div><div></div>Input Volt. 60V</div><div><div></div>Input Volt. 110V</div><div><div></div>Input Volt. 160V</div></div> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is from 2.5V to 0V.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 60[V]</th><th>Input Volt. 110[V]</th><th>Input Volt. 160[V]</th></tr><tr><td>4.75</td><td>47.67</td><td>50.77</td><td>50.16</td></tr><tr><td>4.50</td><td>48.69</td><td>50.91</td><td>50.85</td></tr><tr><td>4.00</td><td>50.59</td><td>50.23</td><td>52.16</td></tr><tr><td>3.50</td><td>49.97</td><td>52.06</td><td>52.95</td></tr><tr><td>3.00</td><td>53.09</td><td>54.84</td><td>53.41</td></tr><tr><td>2.50</td><td>52.78</td><td>54.29</td><td>54.29</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><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>		Output Voltage [V]	Load Current [A]			Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]	4.75	47.67	50.77	50.16	4.50	48.69	50.91	50.85	4.00	50.59	50.23	52.16	3.50	49.97	52.06	52.95	3.00	53.09	54.84	53.41	2.50	52.78	54.29	54.29	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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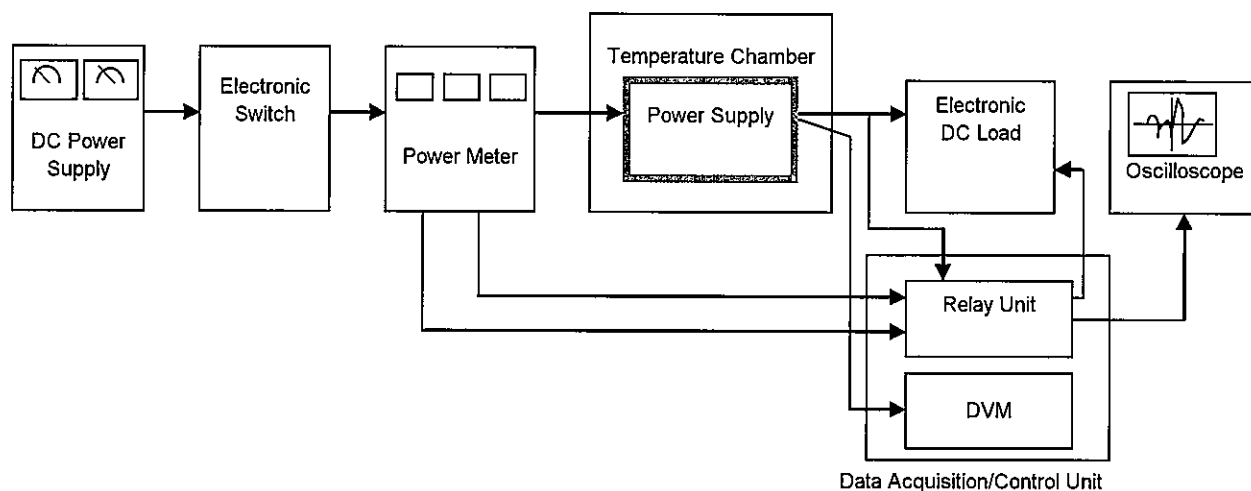


Figure A

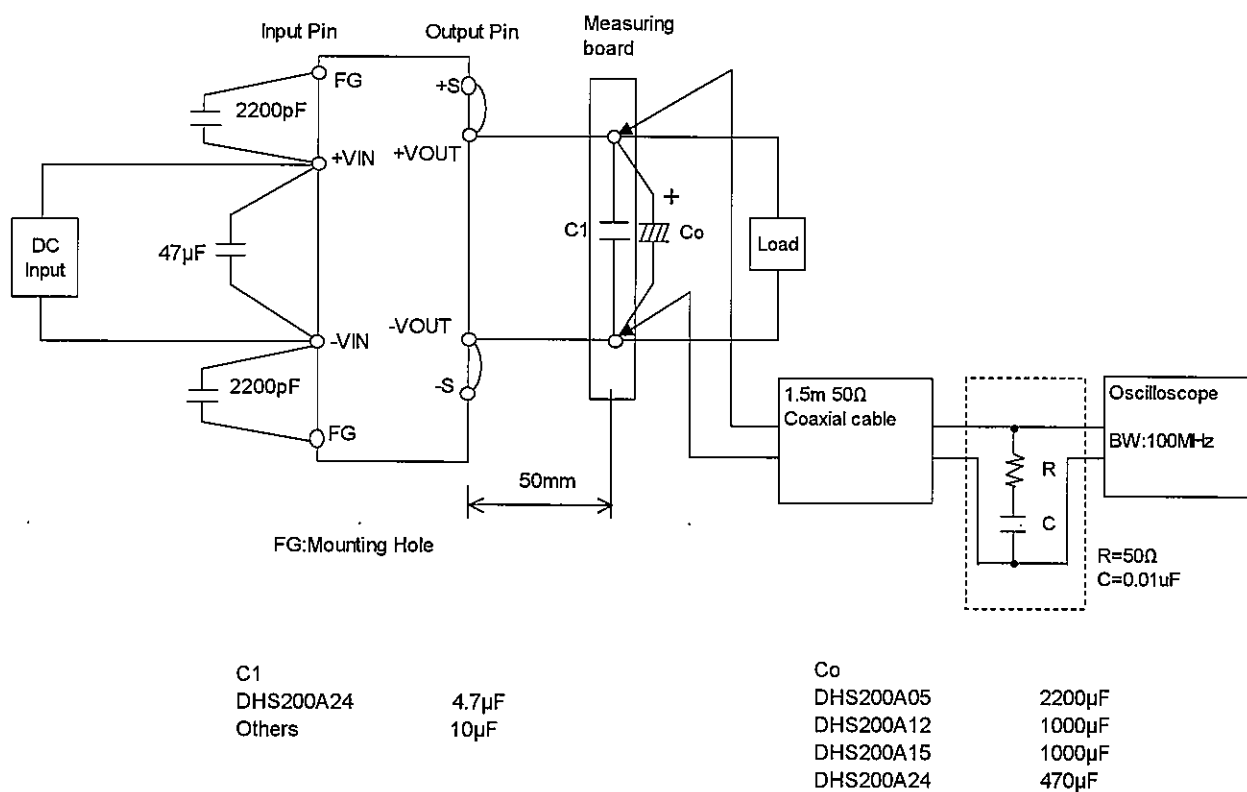


Figure B