

TEST DATA OF DHS50B05

Regulated DC Power Supply
May 22, 2009

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Tatsuya Mano Design Manager

Prepared by : Shuuhei Sawada
Shuuhei Sawada Design Engineer

COSEL CO.,LTD.



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Model	DHS50B05	Temperature Testing Circuitry 25°C Figure A																																																																																	
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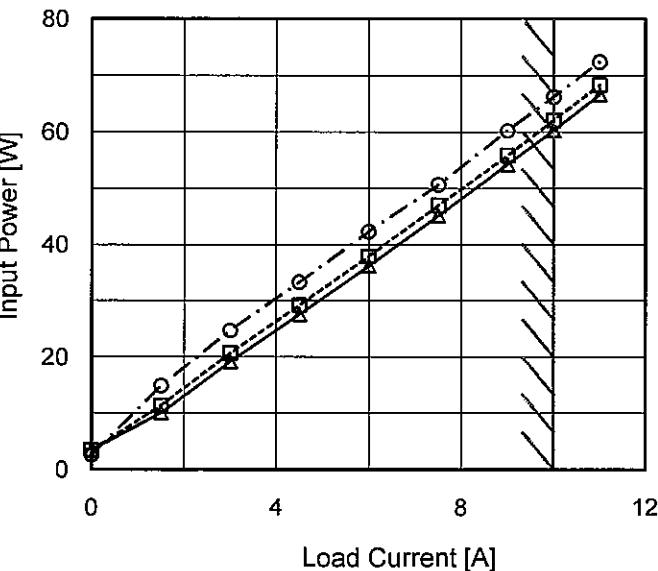
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<p>The graph plots Efficiency [%] on the y-axis (40 to 96) against Input Voltage [V] on the x-axis (100 to 500). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a general downward trend as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>195</td><td>82.5</td><td>83.4</td></tr> <tr><td>200</td><td>82.8</td><td>83.1</td></tr> <tr><td>240</td><td>80.9</td><td>82.2</td></tr> <tr><td>280</td><td>78.2</td><td>81.0</td></tr> <tr><td>320</td><td>75.2</td><td>79.3</td></tr> <tr><td>360</td><td>71.8</td><td>77.4</td></tr> <tr><td>400</td><td>68.5</td><td>75.4</td></tr> <tr><td>420</td><td>66.0</td><td>73.5</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>				Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	195	82.5	83.4	200	82.8	83.1	240	80.9	82.2	280	78.2	81.0	320	75.2	79.3	360	71.8	77.4	400	68.5	75.4	420	66.0	73.5	--	-	-
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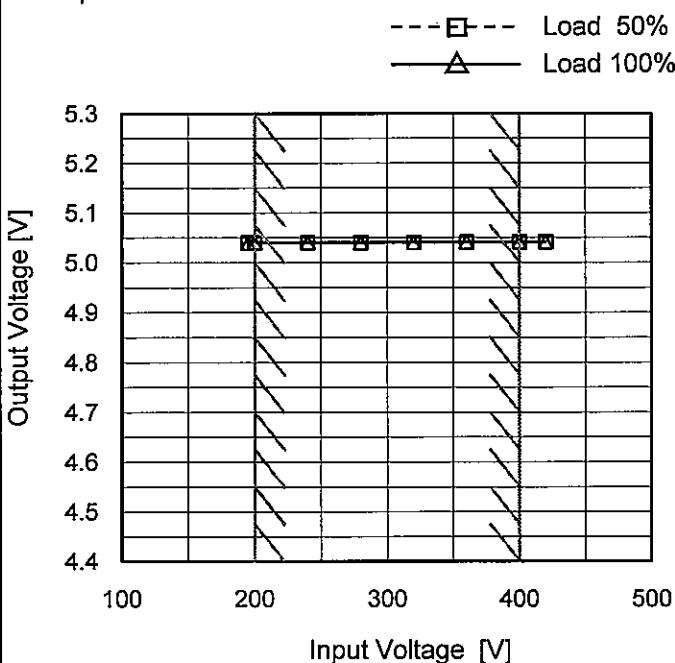
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																						

COSEL

Model	DHS50B05
Item	Line Regulation
Object	+5V10A

 Temperature 25°C
 Testing Circuitry Figure A

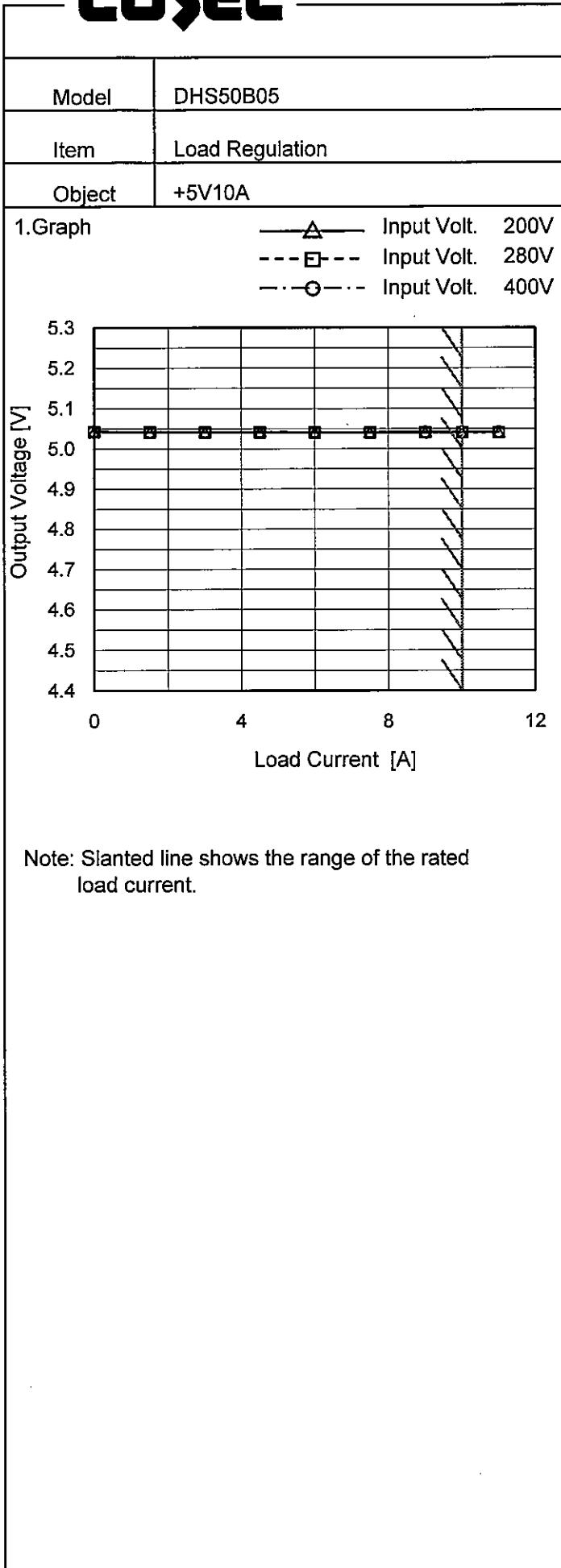
1.Graph



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

2.Values

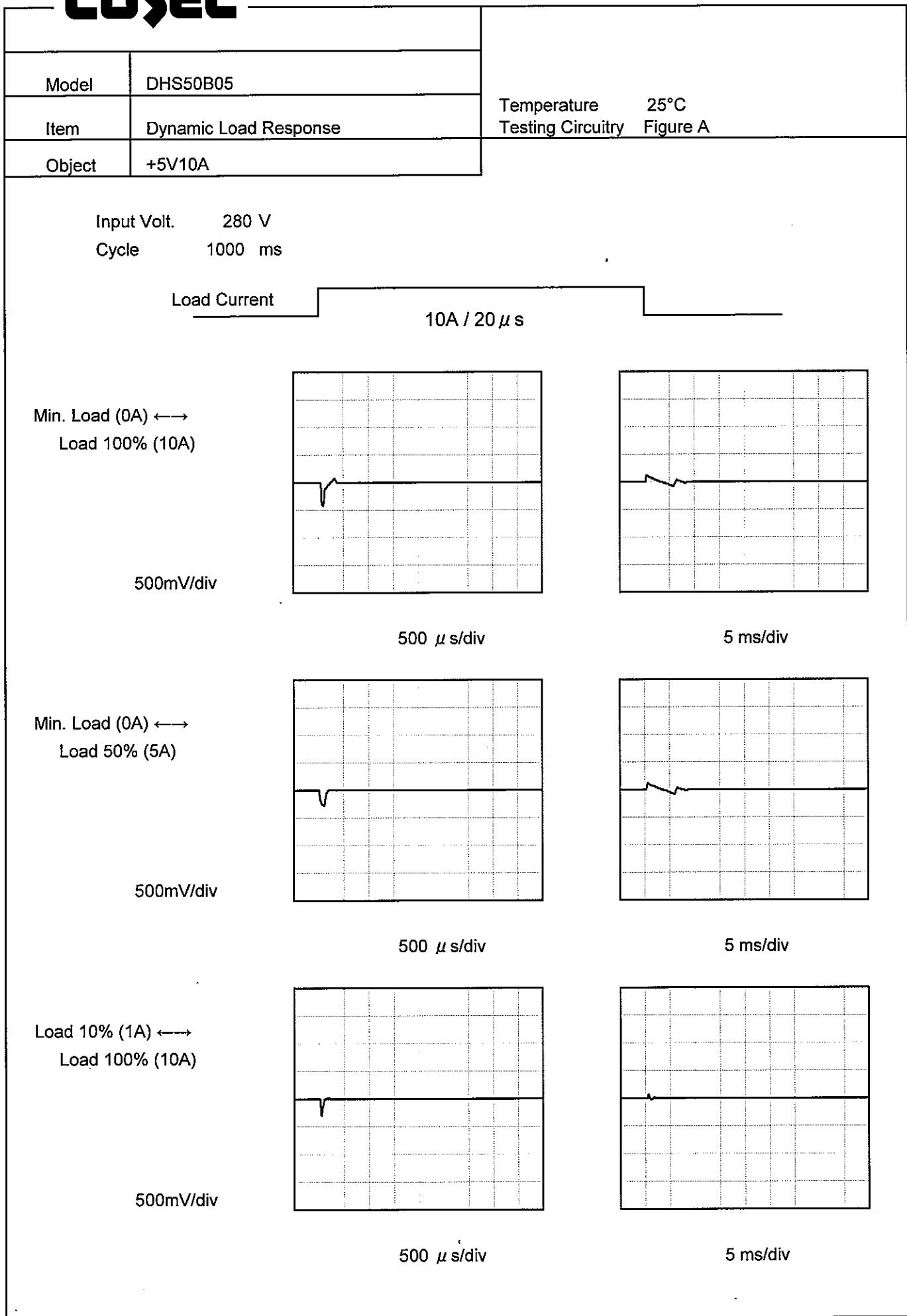
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
195	5.040	5.040
200	5.040	5.040
240	5.040	5.040
280	5.041	5.041
320	5.041	5.041
360	5.041	5.041
400	5.041	5.041
420	5.042	5.041
--	-	-

COSEL

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	5.042	5.042	5.043
1.5	5.041	5.042	5.042
3.0	5.041	5.041	5.042
4.5	5.041	5.041	5.042
6.0	5.040	5.041	5.041
7.5	5.040	5.041	5.041
9.0	5.040	5.041	5.041
10.0	5.040	5.041	5.041
11.0	5.040	5.041	5.041
--	-	-	-
--	-	-	-

COSEL

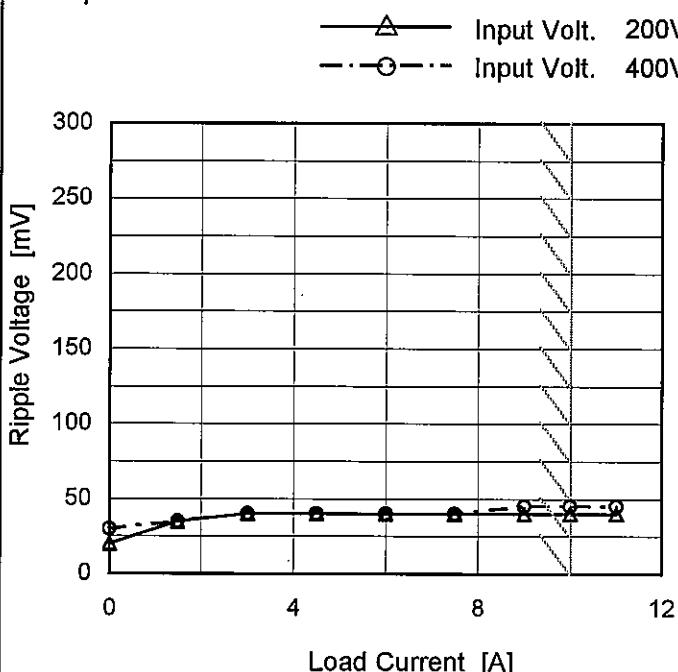


COSEL

Model	DHS50B05
Item	Ripple Voltage (by Load Current)
Object	+5V10A

Temperature 25°C
 Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	20	30
1.5	35	40
3.0	35	40
4.5	35	40
6.0	35	40
7.5	40	40
9.0	40	40
10.0	40	40
11.0	40	40
--	-	-
--	-	-

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.

Ripple [mVp-p]

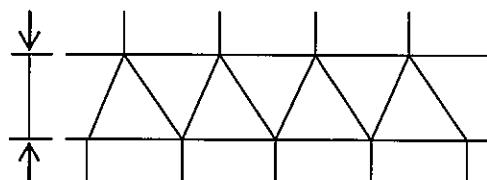
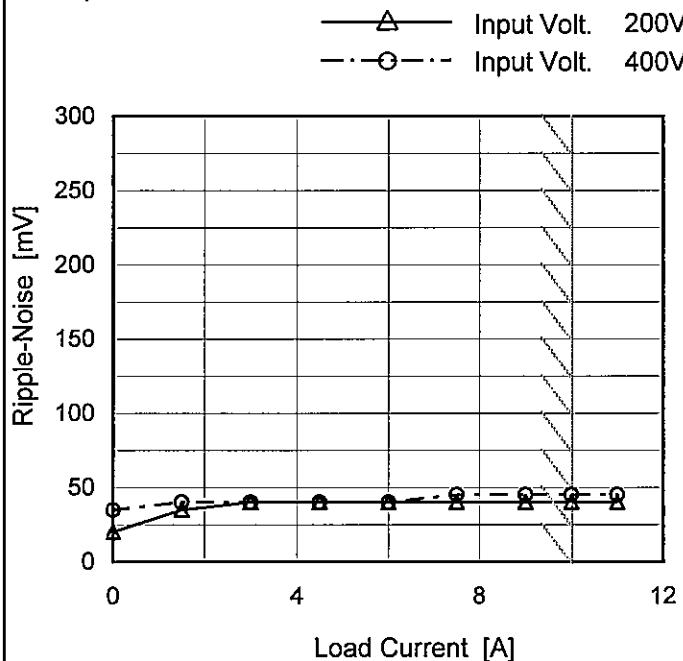


Fig.Complex Ripple Wave Form

COSEL

Model	DHS50B05
Item	Ripple-Noise
Object	+5V10A

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.

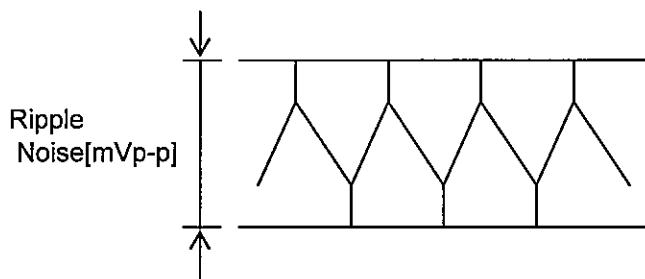


Fig.Complex Ripple Noise Wave Form

Temperature 25°C
 Testing Circuitry Figure B

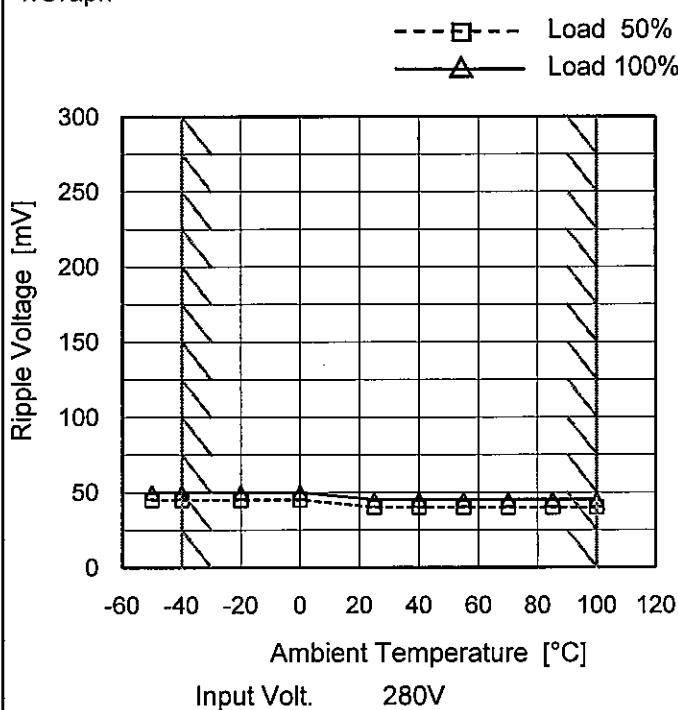
2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	20	35
1.5	35	40
3.0	40	40
4.5	40	40
6.0	40	40
7.5	40	45
9.0	40	45
10.0	40	45
11.0	40	45
--	-	-
--	-	-

COSEL

Model	DHS50B05
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V10A

1.Graph



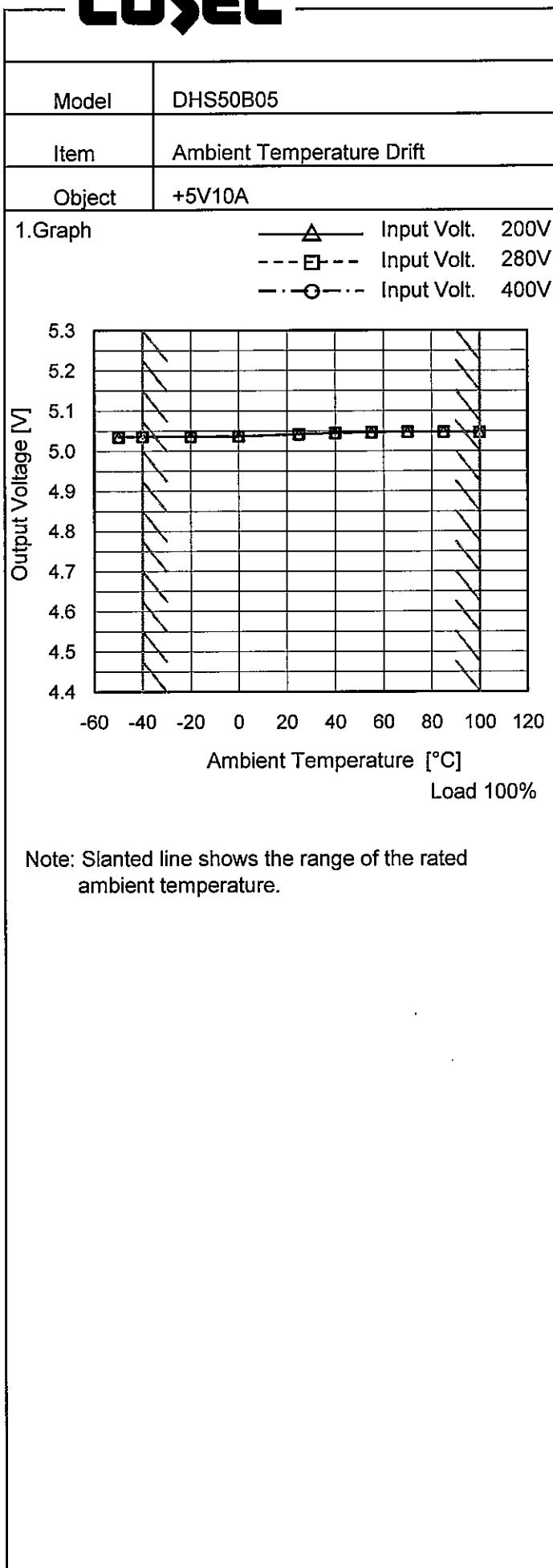
Measured by 100 MHz Oscilloscope.

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

Testing Circuitry Figure B

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	45	50
-40	45	50
-20	45	50
0	45	50
25	40	45
40	40	45
55	40	45
70	40	45
85	40	45
100	40	45
—	-	-



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	5.034	5.035	5.035
-40	5.036	5.036	5.036
-20	5.036	5.036	5.036
0	5.036	5.037	5.037
25	5.041	5.042	5.042
40	5.044	5.045	5.045
55	5.046	5.046	5.047
70	5.047	5.047	5.047
85	5.047	5.047	5.048
100	5.046	5.047	5.047
--	-	-	-



Model	DHS50B05	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V10A	

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 : 200 - 400V

Load Current : 0 - 10A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	85	200	0	5.050	± 7	± 0.1
Minimum Voltage	-40	200	10	5.036		

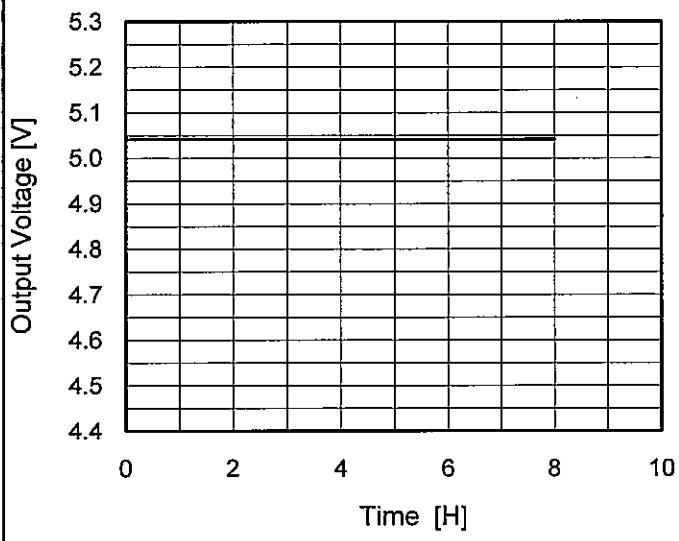
COSEL

Model DHS50B05

Item Time Lapse Drift

Object +5V10A

1.Graph

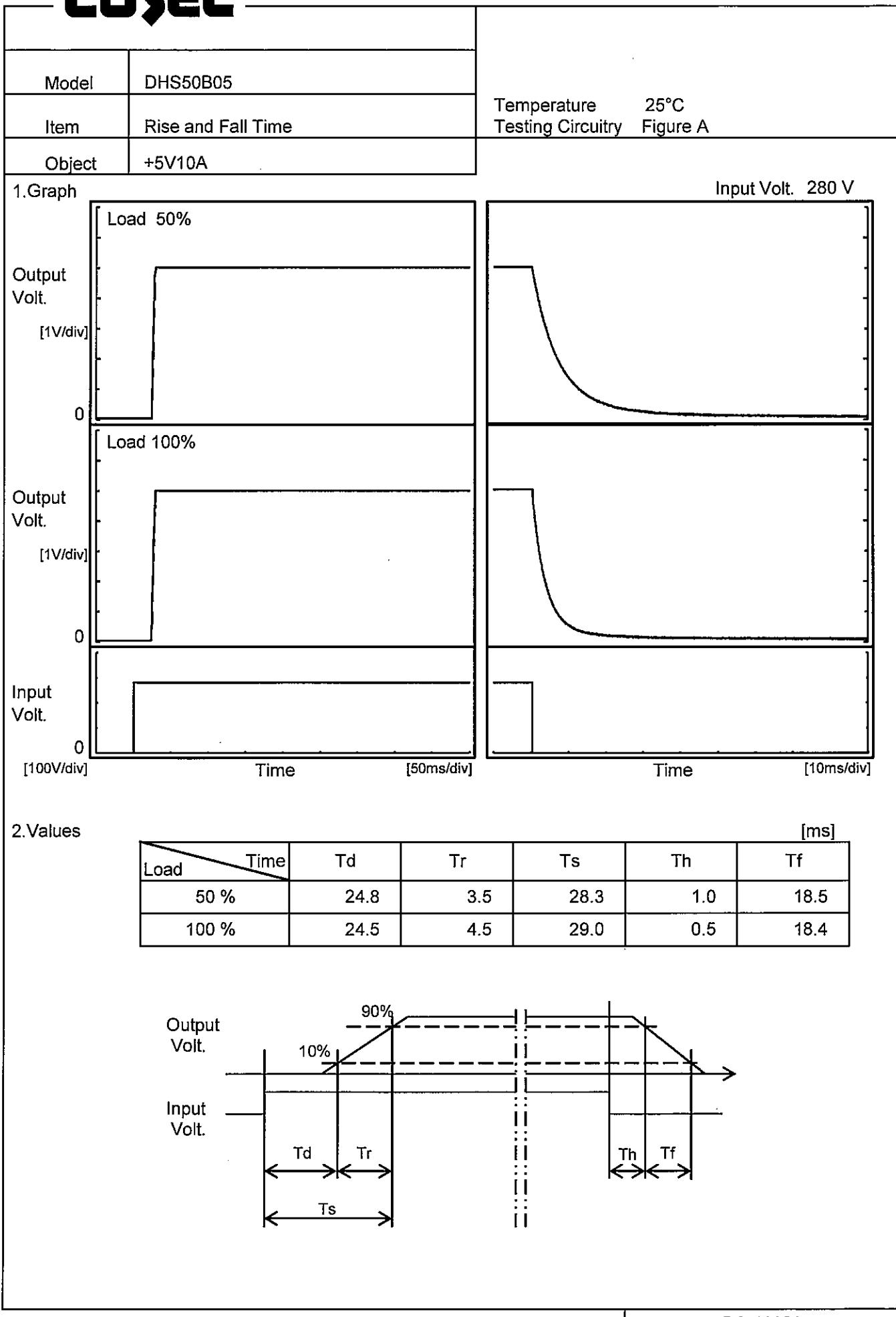


Input Volt. 280V
Load 100%

 Temperature 25°C
 Testing Circuitry Figure A

2.Values

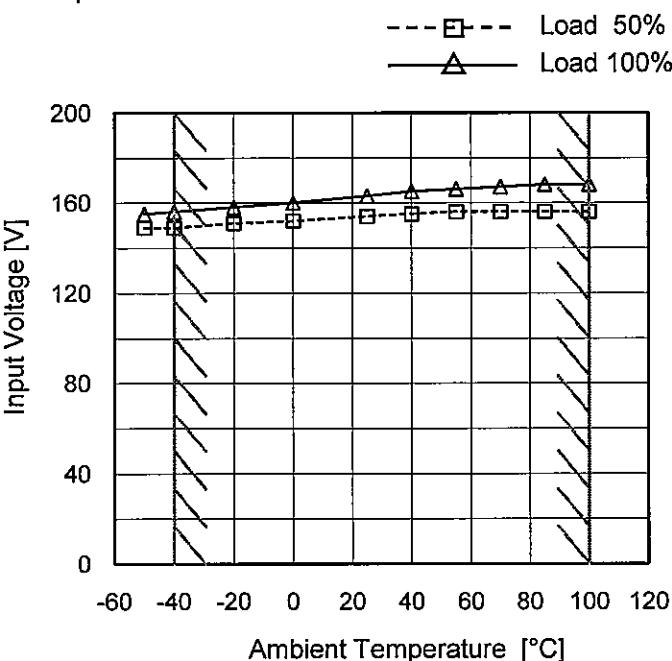
Time since start [H]	Output Voltage [V]
0.0	5.041
0.5	5.041
1.0	5.041
2.0	5.041
3.0	5.041
4.0	5.041
5.0	5.041
6.0	5.041
7.0	5.041
8.0	5.041

COSEL

Model	DHS50B05
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V10A

Testing Circuitry Figure A

1. Graph



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

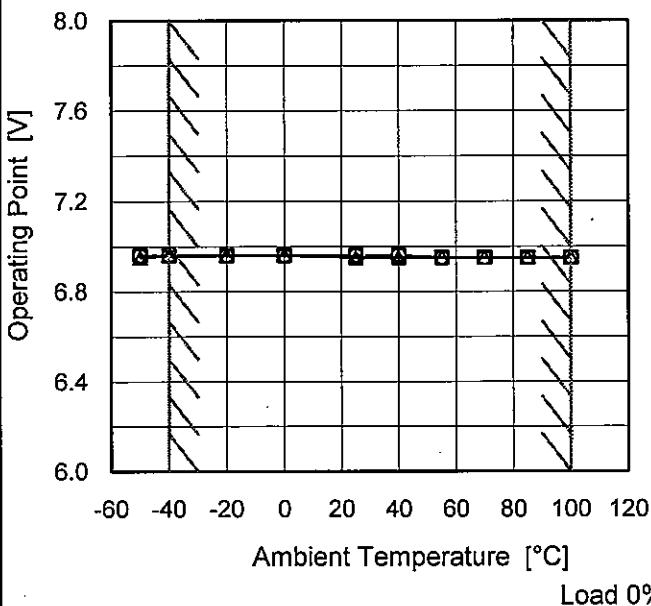
2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	149	155
-40	149	156
-20	151	158
0	152	160
25	154	163
40	155	165
55	156	166
70	156	167
85	156	168
100	156	168
--	-	-

COSEL

Model	DHS50B05	Temperature	25°C																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																							
Object	+5V10A																																																									
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<p>Intermittent operation occurs when the output voltage is from 2.5V to 0V.</p>																																																										

COSEL

Model	DHS50B05
Item	Oversupply Protection
Object	+5V10A
1.Graph	<p style="text-align: center;">—▲— Input Volt. 200V - - - □ - - Input Volt. 280V - - - ○ - - Input Volt. 400V</p>  <p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p>
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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	6.95	6.96	6.96
-40	6.96	6.96	6.96
-20	6.96	6.96	6.96
0	6.96	6.96	6.96
25	6.95	6.96	6.96
40	6.95	6.96	6.96
55	6.95	6.95	6.95
70	6.95	6.95	6.95
85	6.95	6.95	6.95
100	6.95	6.95	6.95
--	-	-	-

COSEL

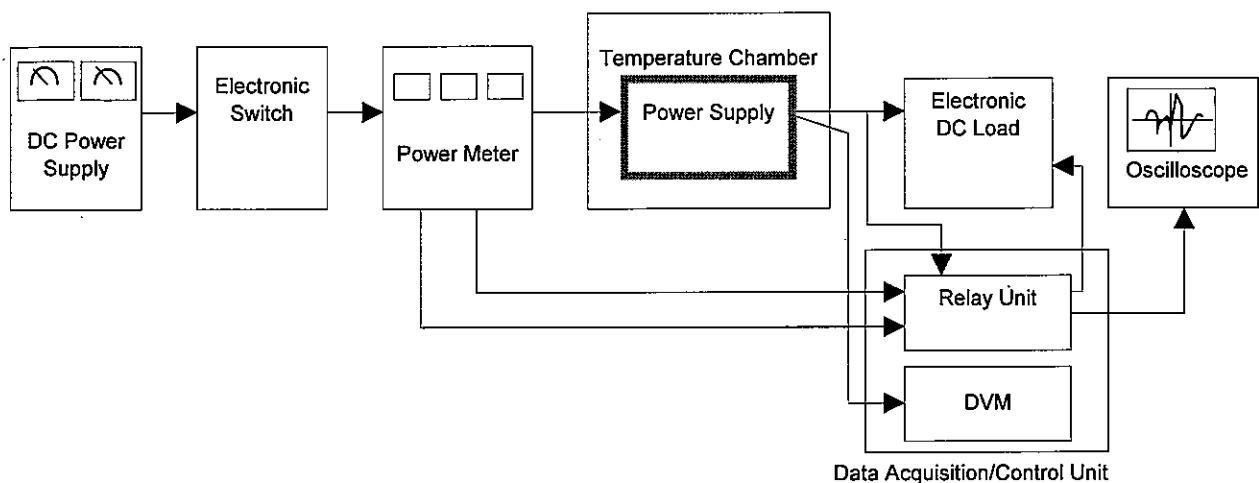
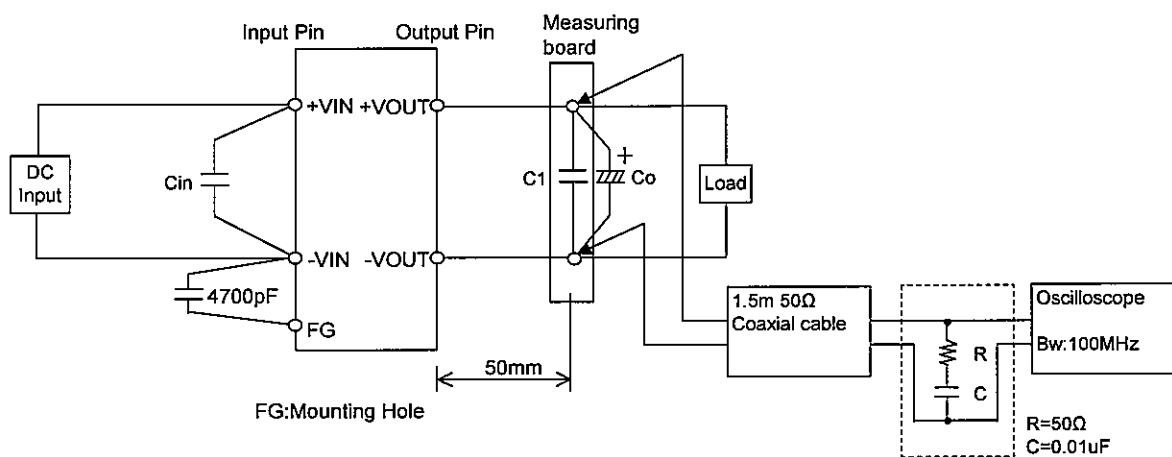


Figure A



C_1	:	DHS50B24 4.7 μF
		DHS50B28 4.7 μF
		Others 10 μF
C_o	:	DHS50B03 2200 μF
		DHS50B05 2200 μF
		DHS50B12 470 μF
		DHS50B15 470 μF
		DHS50B24 220 μF
		DHS50B28 220 μF

Figure B