



TEST DATA OF DBS700B28-XCMN

Regulated DC Power Supply
Apr 19, 2006

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Tatsuya Mano Design Manager

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Takayuki Fukuda Design Engineer

COSEL CO.,LTD.

CONTENTS

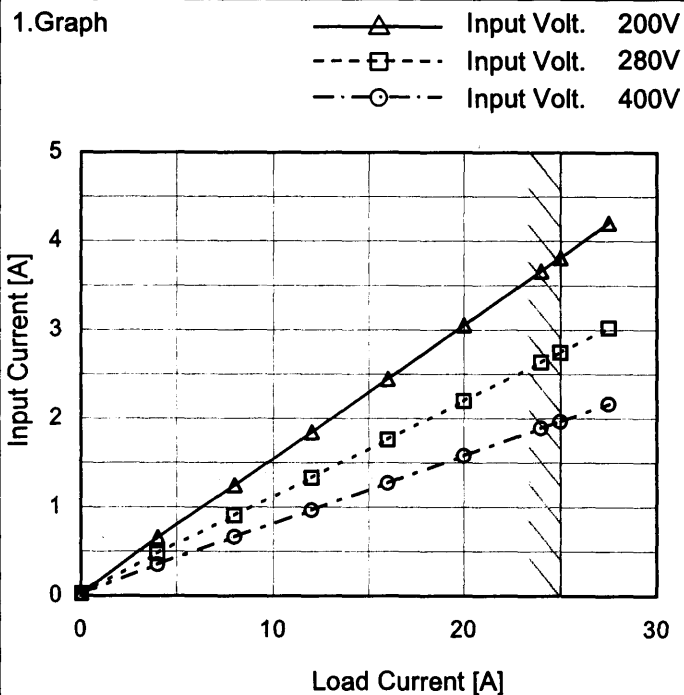
1.Input Current (by Input Voltage)	1
2.Input Current (by Load Current)	2
3.Input Power (by Load Current)	3
4.Efficiency (by Input Voltage)	4
5.Efficiency (by Load Current)	5
6.Line Regulation	6
7.Load Regulation	7
8.Dynamic Load Response	8
9.Ripple Voltage (by Load Current)	9
10.Ripple-Noise	10
11.Ripple 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)

Model		DBS700B28-XCMN		
Item		Input Current (by Input Voltage)		
Object				
1.Graph				
		Load 100% Load 50% Load 0%		
Input Current [A] Input Voltage [V] 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
50		0.000	0.000	0.000
100		0.000	0.000	0.000
150		0.000	0.000	0.000
170		0.000	0.000	0.000
180		0.029	2.142	4.242
200		0.027	1.926	3.812
250		0.024	1.549	3.058
300		0.023	1.305	2.568
350		0.024	1.135	2.224
400		0.024	1.009	1.966
420		0.025	0.967	1.882
--		-	-	-
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--		-	-	-
--		-	-	-
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Model	DBS700B28-XCMN
Item	Input Current (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A



2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	0.027	0.023	0.025
4.0	0.657	0.478	0.352
8.0	1.248	0.906	0.663
12.0	1.846	1.333	0.968
16.0	2.446	1.763	1.272
20.0	3.052	2.200	1.580
24.0	3.662	2.638	1.892
25.0	3.816	2.748	1.970
27.5	4.205	3.024	2.166
--	-	-	-
--	-	-	-

Model		DBS700B28-XCMN		Temperature 25°C																																																		
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																		
Object																																																						
1.Graph		—△— Input Volt. 200V ---□--- Input Volt. 280V -·-○-·- Input Volt. 400V		2.Values																																																		
Input Power [W] 1000 800 600 400 200 0 0 10 20 30 Load Current [A]		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>0.0</td><td>5.4</td><td>6.5</td><td>10.0</td></tr><tr><td>4.0</td><td>131.3</td><td>133.7</td><td>140.6</td></tr><tr><td>8.0</td><td>249.6</td><td>253.4</td><td>265.1</td></tr><tr><td>12.0</td><td>369.0</td><td>373.2</td><td>387.0</td></tr><tr><td>16.0</td><td>488.0</td><td>493.4</td><td>509.0</td></tr><tr><td>20.0</td><td>610.0</td><td>616.0</td><td>632.0</td></tr><tr><td>24.0</td><td>733.0</td><td>738.0</td><td>756.0</td></tr><tr><td>25.0</td><td>763.0</td><td>769.0</td><td>787.0</td></tr><tr><td>27.5</td><td>841.0</td><td>847.0</td><td>866.0</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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.0	5.4	6.5	10.0	4.0	131.3	133.7	140.6	8.0	249.6	253.4	265.1	12.0	369.0	373.2	387.0	16.0	488.0	493.4	509.0	20.0	610.0	616.0	632.0	24.0	733.0	738.0	756.0	25.0	763.0	769.0	787.0	27.5	841.0	847.0	866.0	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.																																																						

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BC-10054

Model		DBS700B28-XCMN																																	
Item		Efficiency (by Input Voltage)																																	
Object																																			
1.Graph		2.Values																																	
Load 50% Load 100% Efficiency [%] Input Voltage [V] Note: Slanted line shows the range of the rated input voltage.		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>170</td><td>-</td><td>-</td></tr><tr><td>180</td><td>90.4</td><td>91.0</td></tr><tr><td>200</td><td>90.6</td><td>91.1</td></tr><tr><td>240</td><td>90.2</td><td>90.9</td></tr><tr><td>280</td><td>89.4</td><td>90.5</td></tr><tr><td>320</td><td>88.5</td><td>89.8</td></tr><tr><td>360</td><td>87.4</td><td>88.9</td></tr><tr><td>400</td><td>86.3</td><td>88.3</td></tr><tr><td>420</td><td>85.7</td><td>87.8</td></tr></table>		Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	170	-	-	180	90.4	91.0	200	90.6	91.1	240	90.2	90.9	280	89.4	90.5	320	88.5	89.8	360	87.4	88.9	400	86.3	88.3	420	85.7	87.8
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Model		DBS700B28-XCMN		Temperature		25°C																																																				
Item		Efficiency (by Load Current)		Testing Circuitry		Figure A																																																				
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Model	DBS700B28-XCMN																													
Item	Line Regulation	Temperature	25°C																											
Object	+28V25A	Testing Circuitry	Figure A																											
1.Graph		2.Values																												
---□--- Load 50% —△— Load 100% <table><thead><tr><th>Input Voltage [V]</th><th>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>180</td><td>28.074</td><td>28.057</td></tr><tr><td>200</td><td>28.072</td><td>28.051</td></tr><tr><td>240</td><td>28.073</td><td>28.049</td></tr><tr><td>280</td><td>28.071</td><td>28.045</td></tr><tr><td>320</td><td>28.070</td><td>28.041</td></tr><tr><td>360</td><td>28.066</td><td>28.036</td></tr><tr><td>400</td><td>28.060</td><td>28.030</td></tr><tr><td>420</td><td>28.056</td><td>28.027</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	180	28.074	28.057	200	28.072	28.051	240	28.073	28.049	280	28.071	28.045	320	28.070	28.041	360	28.066	28.036	400	28.060	28.030	420	28.056	28.027		
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Object	+28V25A	Testing Circuitry	Figure A																																																			
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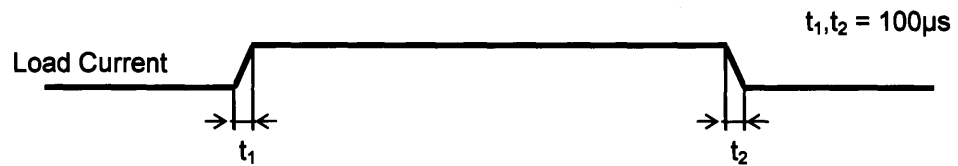
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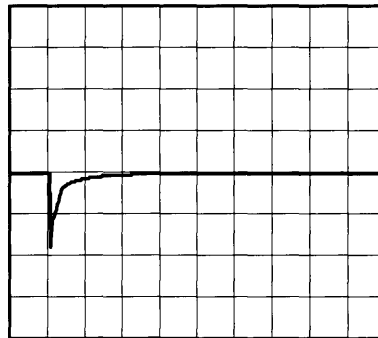
Model	DBS700B28-XCMN	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+28V25A		

Input Volt. 280 V
Cycle 1000 mS

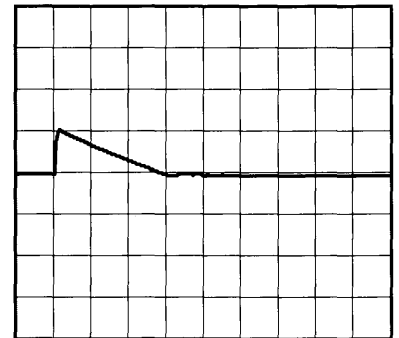


Min. Load (0A) $\longleftrightarrow$
Load 100% (25A)

1 V/div



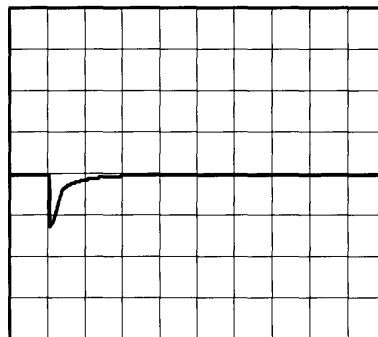
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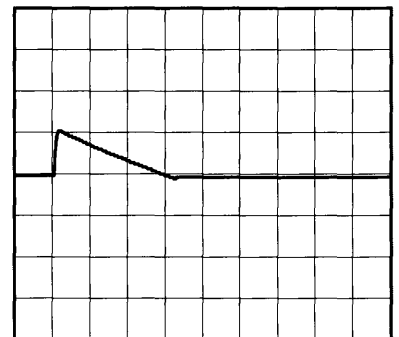
10ms/div

Min. Load (0A) $\longleftrightarrow$
Load 50% (12.5A)

1 V/div



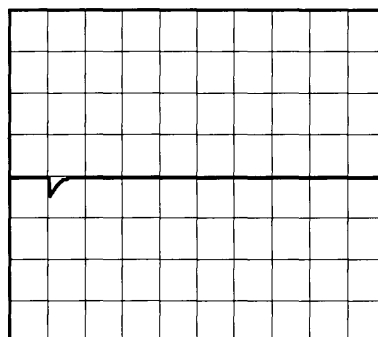
10ms/div



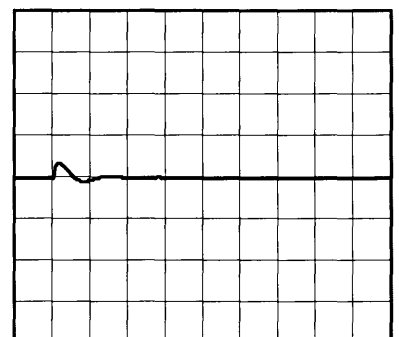
10ms/div

Load 10% (2.5A) $\longleftrightarrow$
Load 100% (25A)

1 V/div



10ms/div



10ms/div

Model	DBS700B28-XCMN																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
Object	+28V25A	Testing Circuitry	Figure A																																						
1.Graph		2.Values																																							
—△— Input Volt. 200V - - ○ - - Input Volt. 400V Ripple Voltage [mV] Load Current [A]		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 200 [V]</th><th>Input Volt. 400 [V]</th></tr><tr><td>0.0</td><td>16</td><td>21</td></tr><tr><td>4.0</td><td>15</td><td>23</td></tr><tr><td>8.0</td><td>15</td><td>22</td></tr><tr><td>12.0</td><td>15</td><td>22</td></tr><tr><td>16.0</td><td>15</td><td>22</td></tr><tr><td>20.0</td><td>15</td><td>22</td></tr><tr><td>24.0</td><td>15</td><td>22</td></tr><tr><td>25.0</td><td>15</td><td>22</td></tr><tr><td>27.5</td><td>16</td><td>22</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. 200 [V]	Input Volt. 400 [V]	0.0	16	21	4.0	15	23	8.0	15	22	12.0	15	22	16.0	15	22	20.0	15	22	24.0	15	22	25.0	15	22	27.5	16	22	—	-	-	—	-	-
Load Current [A]	Ripple Voltage [mV]																																								
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Measured by 20 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																																									

Model	DBS700B28-XCMN																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+28V25A	Testing Circuitry	Figure A																																						
1.Graph		2.Values																																							
△ Input Volt. 200V ○ Input Volt. 400V Ripple-Noise [mV] Load Current [A] Measured by 20 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 200 [V]</th><th>Input Volt. 400 [V]</th></tr><tr><td>0.0</td><td>26</td><td>21</td></tr><tr><td>4.0</td><td>30</td><td>32</td></tr><tr><td>8.0</td><td>32</td><td>36</td></tr><tr><td>12.0</td><td>32</td><td>44</td></tr><tr><td>16.0</td><td>32</td><td>49</td></tr><tr><td>20.0</td><td>32</td><td>52</td></tr><tr><td>24.0</td><td>32</td><td>57</td></tr><tr><td>25.0</td><td>32</td><td>58</td></tr><tr><td>27.5</td><td>30</td><td>55</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. 200 [V]	Input Volt. 400 [V]	0.0	26	21	4.0	30	32	8.0	32	36	12.0	32	44	16.0	32	49	20.0	32	52	24.0	32	57	25.0	32	58	27.5	30	55	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 200 [V]	Input Volt. 400 [V]																																							
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--	-	-																																							
Ripple Noise[mVp-p] Fig.Complex Ripple Noise Wave Form																																									

1. Graph

2.Values

Measured by MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

Model	DBS700B28-XCMN																																																					
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																				
Object	+28V25A																																																					
1.Graph		2.Values																																																				
—△— Input Volt. 200V ---□--- Input Volt. 280V ---○--- Input Volt. 400V Output Voltage [V] Ambient Temperature [°C] Load 100% Note: Slanted line shows the range of the rated ambient temperature.		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>-50</td><td>28.226</td><td>28.225</td><td>28.218</td></tr><tr><td>-40</td><td>28.212</td><td>28.211</td><td>28.203</td></tr><tr><td>-20</td><td>28.178</td><td>28.176</td><td>28.168</td></tr><tr><td>0</td><td>28.134</td><td>28.130</td><td>28.116</td></tr><tr><td>25</td><td>28.065</td><td>28.060</td><td>28.050</td></tr><tr><td>40</td><td>28.022</td><td>28.017</td><td>28.006</td></tr><tr><td>55</td><td>27.976</td><td>27.972</td><td>27.959</td></tr><tr><td>70</td><td>27.921</td><td>27.921</td><td>27.907</td></tr><tr><td>85</td><td>27.874</td><td>27.876</td><td>27.856</td></tr><tr><td>90</td><td>27.862</td><td>27.863</td><td>27.846</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	-50	28.226	28.225	28.218	-40	28.212	28.211	28.203	-20	28.178	28.176	28.168	0	28.134	28.130	28.116	25	28.065	28.060	28.050	40	28.022	28.017	28.006	55	27.976	27.972	27.959	70	27.921	27.921	27.907	85	27.874	27.876	27.856	90	27.862	27.863	27.846	--	-	-	-
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		Testing Circuitry Figure A
Model	DBS700B28-XCMN	
Item	Output Voltage Accuracy	
Object	+28V25A	

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 : 200 - 400V

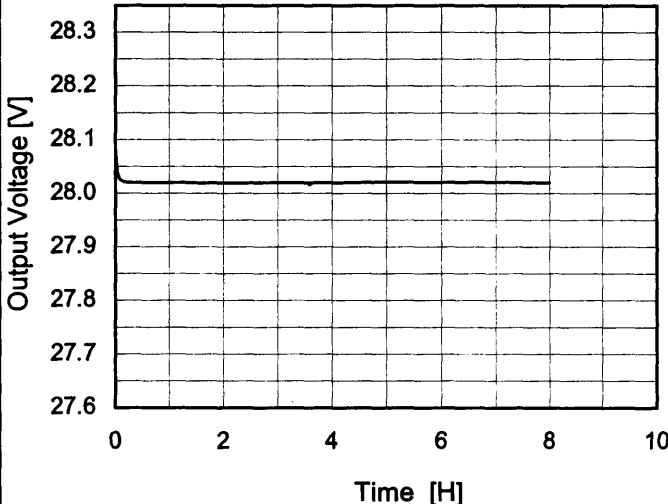
Load Current : 0 - 25A

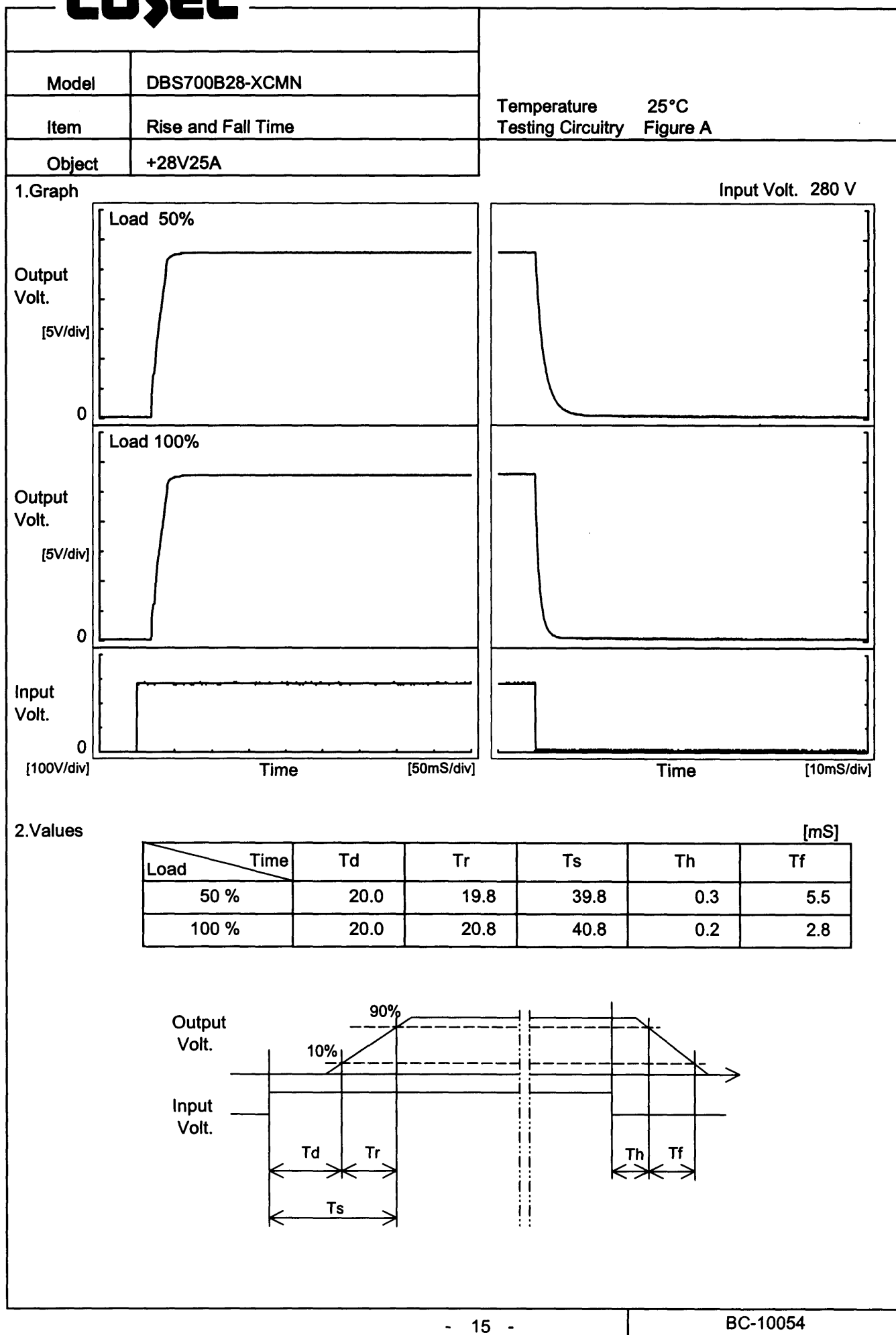
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

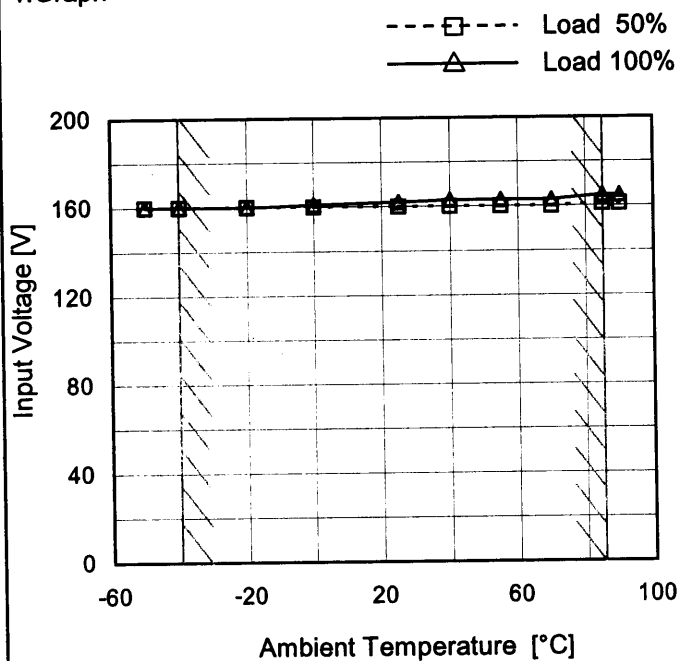
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	400	0	28.241	±193	±0.7
Minimum Voltage	85	400	25	27.856		

Model	DBS700B28-XCMN																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+28V25A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
 Input Volt. 280V Load 100%		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>28.082</td></tr><tr><td>0.5</td><td>28.020</td></tr><tr><td>1.0</td><td>28.020</td></tr><tr><td>2.0</td><td>28.020</td></tr><tr><td>3.0</td><td>28.020</td></tr><tr><td>4.0</td><td>28.020</td></tr><tr><td>5.0</td><td>28.021</td></tr><tr><td>6.0</td><td>28.021</td></tr><tr><td>7.0</td><td>28.021</td></tr><tr><td>8.0</td><td>28.020</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	28.082	0.5	28.020	1.0	28.020	2.0	28.020	3.0	28.020	4.0	28.020	5.0	28.021	6.0	28.021	7.0	28.021	8.0	28.020
Time since start [H]	Output Voltage [V]																								
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3.0	28.020																								
4.0	28.020																								
5.0	28.021																								
6.0	28.021																								
7.0	28.021																								
8.0	28.020																								



Model	DBS700B28-XCMN
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+28V25A

1.Graph



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

Testing Circuitry Figure A

2.Values

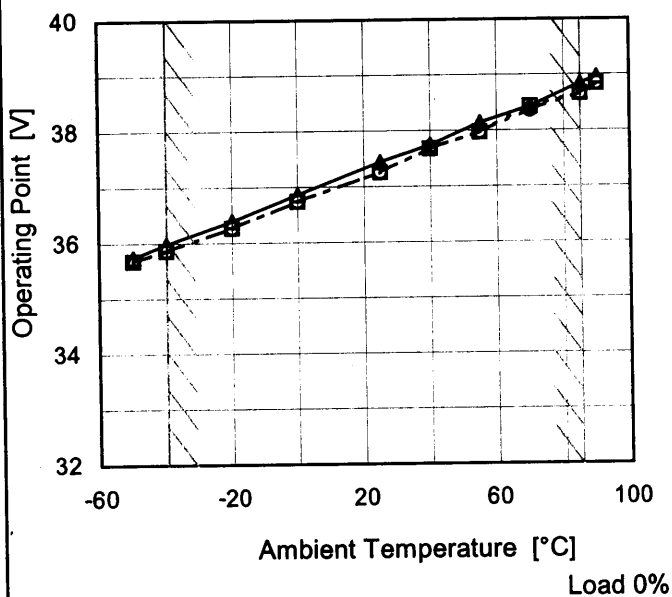
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	160	160
-40	160	160
-20	160	160
0	160	161
25	160	162
40	160	163
55	160	163
70	160	163
85	161	165
90	161	165
--	-	-

Model	DBS700B28-XCMN																																																									
Item	Overcurrent Protection																																																									
Object	+28V25A																																																									
1.Graph		2.Values																																																								
Input Volt. 200V Input Volt. 280V Input Volt. 400V Output Voltage [V] Load Current [A] Note: Slanted line shows the range of the rated load current. Intermittent operation occurs when the output voltage is from 14V to 0V.		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>28.0</td><td>25.28</td><td>25.28</td><td>25.28</td></tr><tr><td>26.6</td><td>30.75</td><td>30.46</td><td>30.19</td></tr><tr><td>25.2</td><td>30.83</td><td>30.77</td><td>30.50</td></tr><tr><td>22.4</td><td>31.17</td><td>30.96</td><td>31.18</td></tr><tr><td>19.6</td><td>31.56</td><td>31.42</td><td>31.74</td></tr><tr><td>16.8</td><td>32.02</td><td>31.94</td><td>32.54</td></tr><tr><td>14.0</td><td>32.57</td><td>32.76</td><td>33.26</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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	28.0	25.28	25.28	25.28	26.6	30.75	30.46	30.19	25.2	30.83	30.77	30.50	22.4	31.17	30.96	31.18	19.6	31.56	31.42	31.74	16.8	32.02	31.94	32.54	14.0	32.57	32.76	33.26	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	DBS700B28-XCMN
Item	Overvoltage Protection
Object	+28V25A

1. Graph

—△— Input Volt. 200V
 ---□--- Input Volt. 280V
 ---○--- Input Volt. 400V



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	35.74	35.68	35.68
-40	35.98	35.86	35.86
-20	36.39	36.27	36.27
0	36.86	36.74	36.74
25	37.44	37.26	37.26
40	37.74	37.68	37.68
55	38.14	37.97	37.97
70	38.43	38.43	38.37
85	38.84	38.66	38.66
90	38.96	38.84	38.84
--	-	-	-

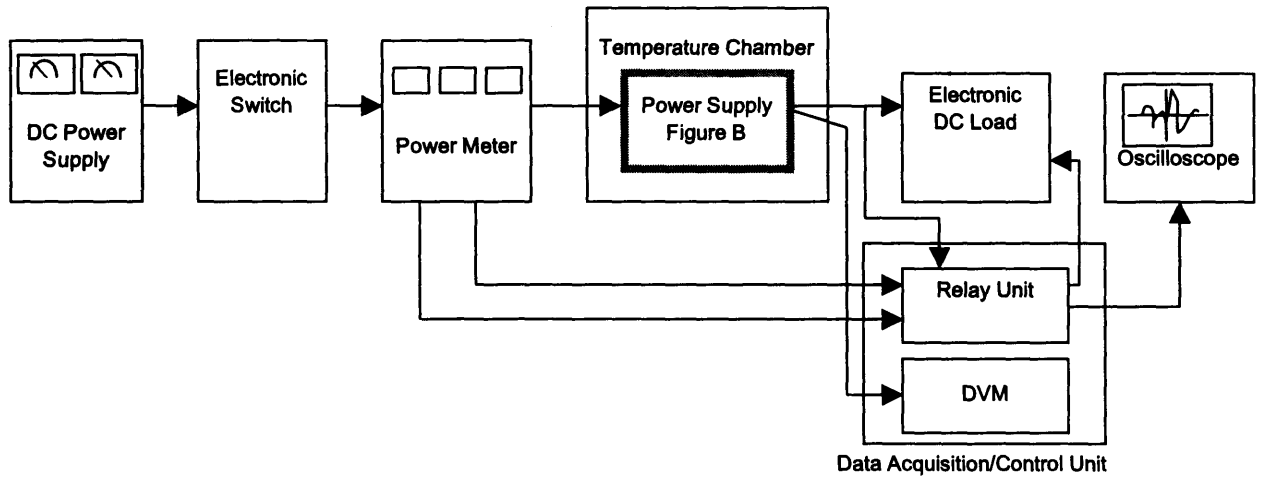


Figure A

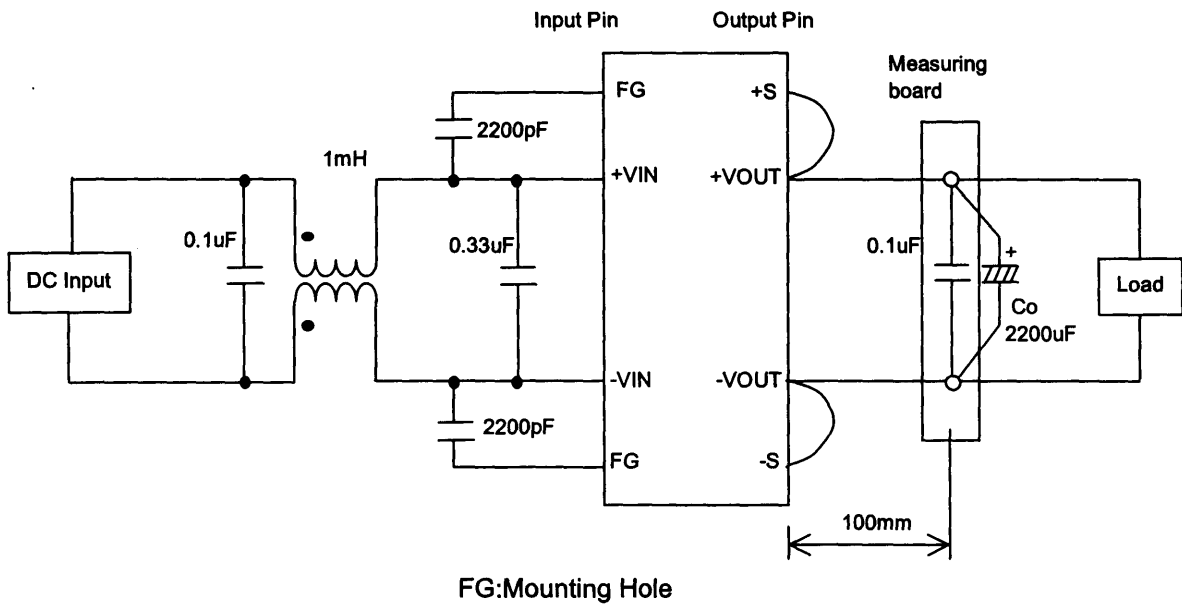


Figure B