COSEL

TEST DATA OF SUCS30512

Regulated DC Power Supply
Mar 22, 2005

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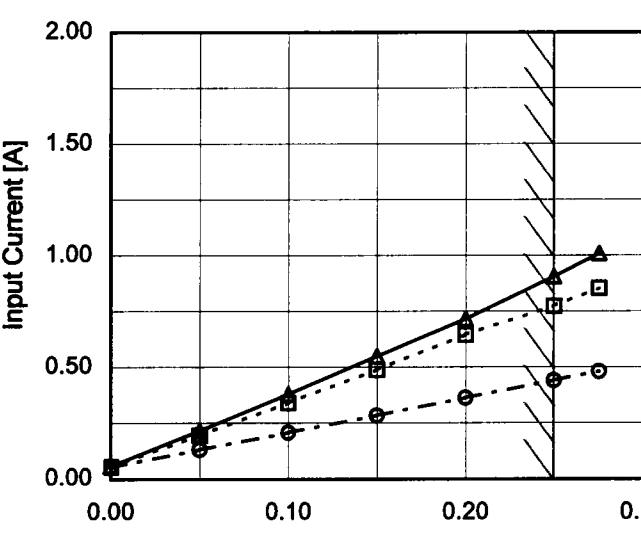Hayato Nakatsubo   Design Engineer

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Model	SUCS30512
Item	Input Current (by Input Voltage)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

— △ — Load 100%
- - - ⊟ - - - Load 50%
— · —○— · — Load 0%

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%
0.00	0.000	0.000	0.000
1.70	0.000	0.000	0.000
2.00	0.000	0.000	0.000
2.49	0.083	0.961	0.018
2.83	0.075	0.800	2.067
3.00	0.074	0.717	1.805
4.00	0.062	0.518	1.043
4.50	0.058	0.457	0.896
5.00	0.055	0.410	0.790
6.00	0.050	0.345	0.644
7.00	0.049	0.300	0.559
8.00	0.049	0.268	0.490
9.00	0.051	0.246	0.437
10.00	0.054	0.229	0.403
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Model	SUCS30512
Item	Input Current (by Load Current)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

— △ — Input Volt.   4.5V
– – ☐ – – Input Volt.   5V
— · — ○ — · — Input Volt.   9V

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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	0.058	0.055	0.051
0.050	0.216	0.196	0.130
0.100	0.380	0.340	0.207
0.150	0.549	0.488	0.284
0.200	0.715	0.646	0.362
0.250	0.905	0.774	0.440
0.275	1.008	0.854	0.480
--	-	-	-
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--	-	-	-

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Model	SUCS30512
Item	Input Power (by Load Current)
Object	————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

	Input Volt.	4.5V
— △ —	Input Volt.	4.5V
- - □ - - -	Input Volt.	5V
— · —○— · · —	Input Volt.	9V

Input Power [W] (y-axis)
Load Current [A] (x-axis)

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	0.26	0.28	0.47
0.050	0.96	0.98	1.18
0.100	1.68	1.68	1.87
0.150	2.41	2.40	2.56
0.200	3.18	3.15	3.27
0.250	4.00	3.91	3.97
0.275	4.44	4.32	4.33
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	SUCS30512
Item	Efficiency (by Input Voltage)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

- - -⊟- - -   Load 50%
———△———   Load 100%

Input Voltage [V]

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
4.0	73.8	73.6
4.5	74.2	75.8
5.0	74.4	77.0
6.0	73.8	77.9
7.0	72.3	78.0
8.0	70.5	77.2
9.0	68.6	76.4
9.5	67.4	75.8
--	-	-

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Model	SUCS30512
Item	Efficiency (by Load Current)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   4.5V
– – –☐– – – Input Volt.   5V
—·—◯—·— Input Volt.   9V

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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	-	-	-
0.050	63.1	62.3	51.4
0.100	72.2	72.2	64.7
0.150	75.2	75.6	70.8
0.200	76.0	76.8	74.1
0.250	75.5	77.4	76.2
0.275	74.9	77.0	76.8
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS30512
Item	Line Regulation
Object	+12V0.25A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

--- ☐ --- Load 50%
——— △ ——— Load 100%

Output Voltage [V] vs Input Voltage [V]

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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	12.064	12.062
4.5	12.064	12.062
5.0	12.064	12.062
6.0	12.064	12.062
7.0	12.064	12.062
8.0	12.064	12.062
9.0	12.063	12.062
9.5	12.064	12.062
--	-	-

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Model	SUCS30512
Item	Load Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

——△—— Input Volt. 4.5V
---☐--- Input Volt. 5V
—·—○—·— Input Volt. 9V

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	12.066	12.066	12.065
0.050	12.065	12.065	12.064
0.100	12.064	12.064	12.064
0.150	12.063	12.063	12.063
0.200	12.063	12.063	12.062
0.250	12.062	12.062	12.062
0.275	12.062	12.062	12.062
---	-	-	-
---	-	-	-
---	-	-	-
---	-	-	-

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

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Model	SUCS30512
Item	Dynamic Load Response
Object	+12V0.25A

Temperature　　25℃
Testing Circuitry　Figure A

Input Volt.　　5　V
Cycle　　　　100　mS

t_1、t_2 = 50μs

Load Current

t_1　　　　　　　　　　t_2

Min. Load (0A) ←→
Load 100% (0.25A)

200mV/div

2ms/div　　　　　　　　2ms/div

Min. Load (0A) ←→
Load 50% (0.125A)

200mV/div

2ms/div　　　　　　　　2ms/div

Load 50% (0.125A) ←→
Load 100% (0.25A)

200mV/div

2ms/div　　　　　　　　2ms/div

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Model	SUCS30512
Item	Ripple Voltage (by Load Current)
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

———△——— Input Volt. 4.5V
—·—○—·— Input Volt. 9V

Ripple Voltage [mV] vs Load Current [A]

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.000	2	1
0.050	2	1
0.100	2	1
0.150	3	1
0.200	4	2
0.250	5	3
0.275	6	4
--	-	-
--	-	-
--	-	-
--	-	-

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

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Model	SUCS30512
Item	Ripple-Noise
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

—△— Input Volt. 4.5V
—·—○—·— Input Volt. 9V

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. 4.5 [V]	Input Volt. 9 [V]
0.000	4	5
0.050	5	6
0.100	6	7
0.150	7	7
0.200	7	7
0.250	8	8
0.275	8	8
---	-	-
---	-	-
---	-	-
---	-	-

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Model	SUCS30512
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.25A

Testing Circuitry   Figure B

1.Graph

--- ☐ --- Load 50%
—— △ —— Load 100%

Ripple Voltage [mV] vs Ambient Temperature [°C]

Input Volt.   5V

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%
-60	7	9
-40	7	9
-20	6	9
0	6	8
25	4	6
55	4	5
60	4	5
--	-	-
--	-	-
--	-	-
--	-	-

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参考資料

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Model	SUCS30512
Item	Ambient Temperature Drift
Object	+12V0.25A

Testing Circuitry   Figure A

1.Graph
— △ — Input Volt.   4.5V
- - □ - - Input Volt.   5V
— · —○— · — Input Volt.   9V

Output Voltage [V]
Ambient Temperature [°C]
Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	12.000	12.002	12.003
-40	12.023	12.025	12.026
-20	12.040	12.041	12.042
0	12.053	12.054	12.054
25	12.061	12.062	12.062
55	12.063	12.062	12.062
60	12.062	12.062	12.062
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS30512	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V0.25A	

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 - 55°C

Input Voltage : 4.5 - 9V

Load Current   : 0 - 0.25A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* Output Voltage Accuracy (Ration) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$ × 100

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	55	4.5	0	12.066	±22	±0.2
Minimum Voltage	-40	4.5	0.25	12.023		

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Model	SUCS30512
Item	Time Lapse Drift
Object	+12V0.25A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

Input Volt.   5V
Load   100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.063
0.5	12.061
1.0	12.061
2.0	12.061
3.0	12.061
4.0	12.061
5.0	12.061
6.0	12.061
7.0	12.061
8.0	12.061

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Model	SUCS30512
Item	Rise and Fall Time
Object	+12V0.25A

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

Input Volt.　5 V

Load 50%

Output Volt.

[2V/div]

0

Load 100%

Output Volt.

[2V/div]

0

Input Volt.

0

[2V/div]

Time　　　　　[10mS/div]

Time　　　　　[5mS/div]

2.Values

[mS]

Load ＼ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	6.3	6.5	0.1	2.4
100 %	0.2	6.4	6.6	0.1	1.2

Output Volt.

90%

10%

Input Volt.

Td　Tr

Th　Tf

Ts

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参考資料

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Model	SUCS30512
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.25A

Testing Circuitry   Figure A

1.Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

Ambient Temperature [°C]

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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.1	2.8
-40	2.2	2.7
-20	2.2	2.8
0	2.2	2.9
25	2.2	3.0
55	2.3	3.1
60	2.3	3.1
--	-	-
--	-	-
--	-	-
--	-	-

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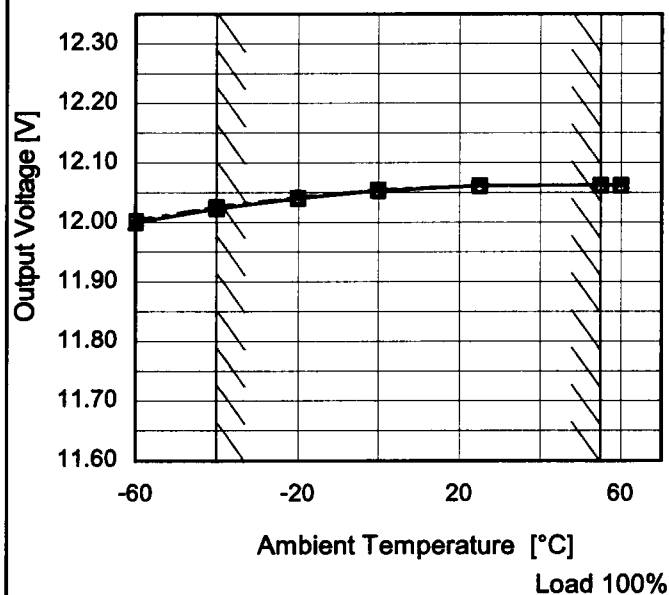| Model	SUCS30512
Item	Overcurrent Protection
Object	+12V0.25A

Temperature　　　25°C
Testing Circuitry　Figure A

1.Graph

———— Input Volt.　4.5V
———— Input Volt.　5V
———— Input Volt.　9V

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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
12.0	0.25	0.25	0.25
11.4	0.42	0.42	0.42
10.8	0.43	0.43	0.42
9.6	0.45	0.45	0.43
8.4	0.46	0.46	0.44
7.2	0.48	0.48	0.45
6.0	0.50	0.49	0.45
4.8	0.51	0.50	0.45
3.6	0.51	0.50	0.45
2.4	0.50	0.48	0.43
1.2	0.46	0.44	0.40
0.0	0.43	0.43	0.43

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参考資料

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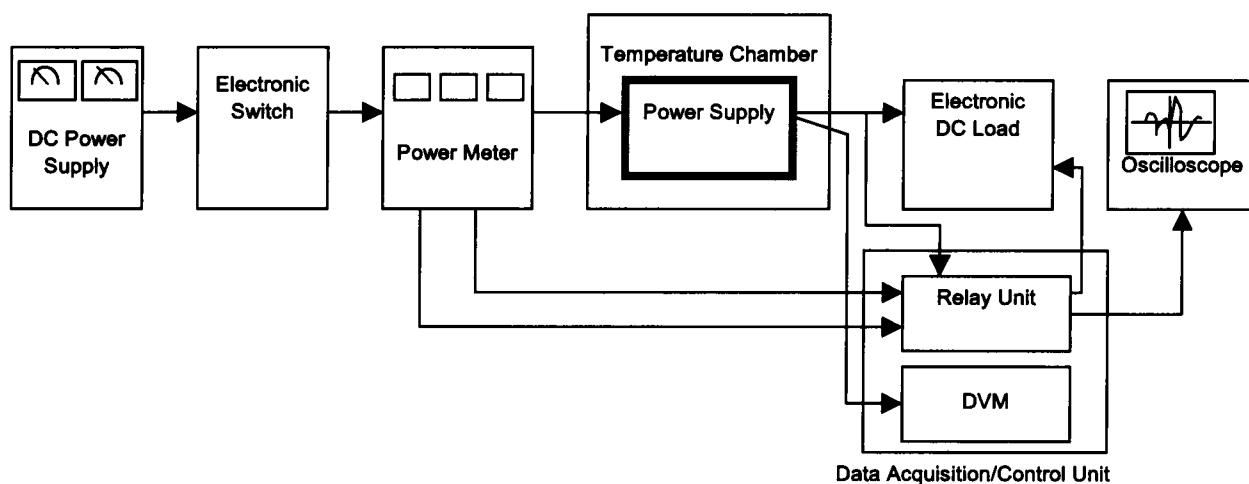

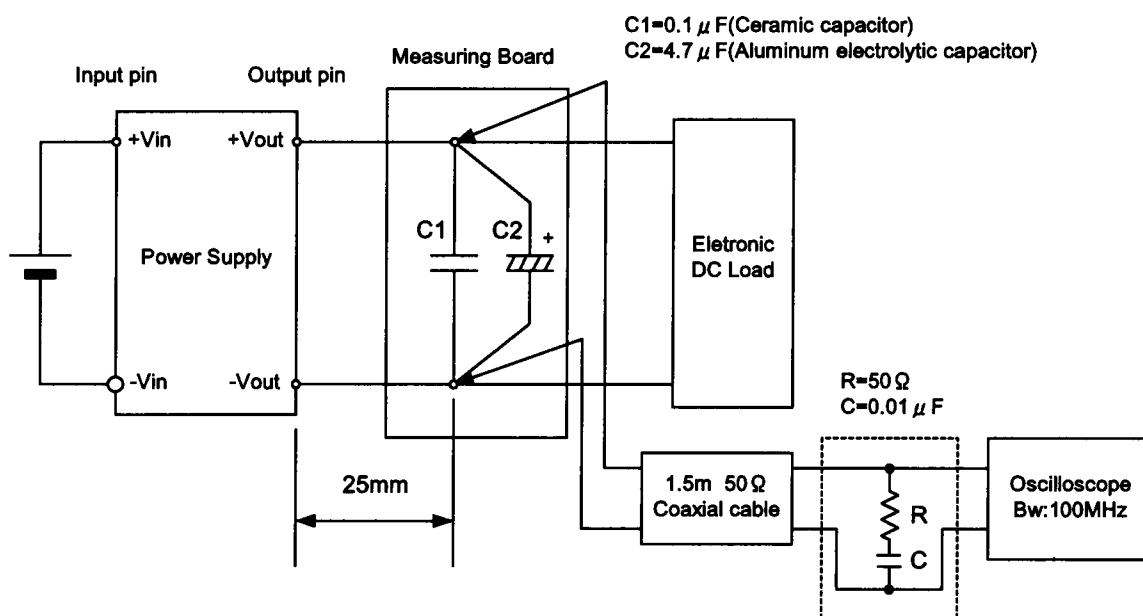Figure A

C1=0.1 μ F(Ceramic capacitor)
C2=4.7 μ F(Aluminum electrolytic capacitor)

Figure B (Ripple and Ripple noise Characteristic)

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