COSEL

TEST DATA OF SUS10243R3
SUCS10243R3

Regulated DC Power Supply
Mar 28, 2005

Approved by : *Tetsuo Sugimori*

Tetsuo Sugimori   **Design Manager**

Prepared by : *Yoshimichi Hirokawa*

Yoshimichi Hirokawa   **Design Engineer**

COSEL CO.,LTD.

CO$EL

CONTENTS

(Final Page 18)

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Input Current (by Input Voltage)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

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

Input Current [A] vs 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	0.000	0.000	0.000
4.0	0.000	0.000	0.000
8.0	0.001	0.001	0.001
12.0	0.001	0.001	0.001
12.4	0.001	0.001	0.001
16.0	0.023	0.329	0.648
18.0	0.024	0.294	0.574
20.0	0.024	0.264	0.510
24.0	0.024	0.222	0.428
28.0	0.025	0.194	0.371
32.0	0.025	0.175	0.327
36.0	0.026	0.158	0.294
40.0	0.027	0.146	0.268
---	-	-	-
---	-	-	-
---	-	-	-
---	-	-	-
---	-	-	-

BC-3804

参考資料

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Input Current (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 18V
Input Volt. 24V
Input Volt. 36V

Load Current [A]

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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.023	0.024	0.026
0.52	0.127	0.103	0.078
1.04	0.235	0.183	0.131
1.56	0.351	0.267	0.185
2.08	0.459	0.352	0.241
2.60	0.577	0.437	0.299
2.86	0.638	0.475	0.326
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
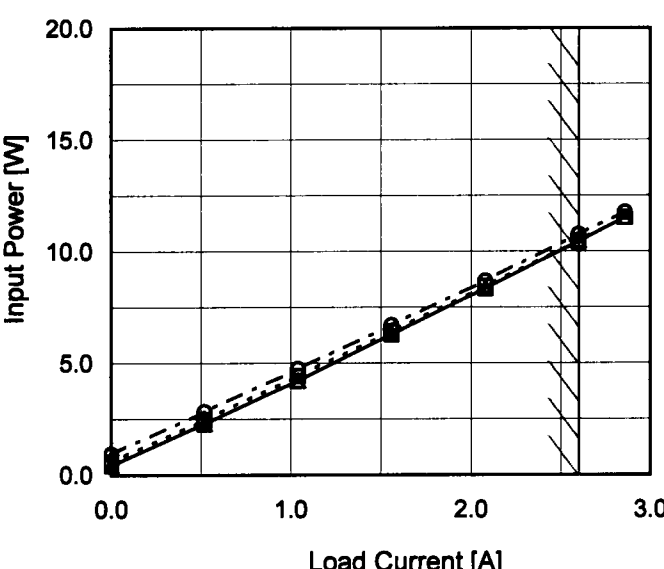
- 2 - BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Input Power (by Load Current)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph
———△——— Input Volt. 18V
---☐--- Input Volt. 24V
—·—○—·· Input Volt. 36V

Input Power [W] vs Load Current [A]

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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.43	0.59	0.94
0.52	2.31	2.48	2.83
1.04	4.23	4.42	4.74
1.56	6.30	6.41	6.69
2.08	8.35	8.43	8.68
2.60	10.44	10.46	10.76
2.86	11.53	11.51	11.76
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3
Item	Efficiency (by Input Voltage)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

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


Efficiency [%] vs Input Voltage [V]

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
16	81.7	81.8
18	81.2	82.5
20	81.2	82.7
24	81.1	82.4
30	77.9	81.4
36	75.3	80.1
40	73.8	79.2
--	-	-
--	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3
Item	Efficiency (by Load Current)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

△ Input Volt. 18V
□ Input Volt. 24V
○ Input Volt. 36V

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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-	-	-
0.52	75.1	69.9	61.2
1.04	81.8	78.3	73.0
1.56	82.3	80.9	77.5
2.08	82.7	82.0	79.6
2.60	82.6	82.5	80.2
2.86	82.2	82.4	80.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
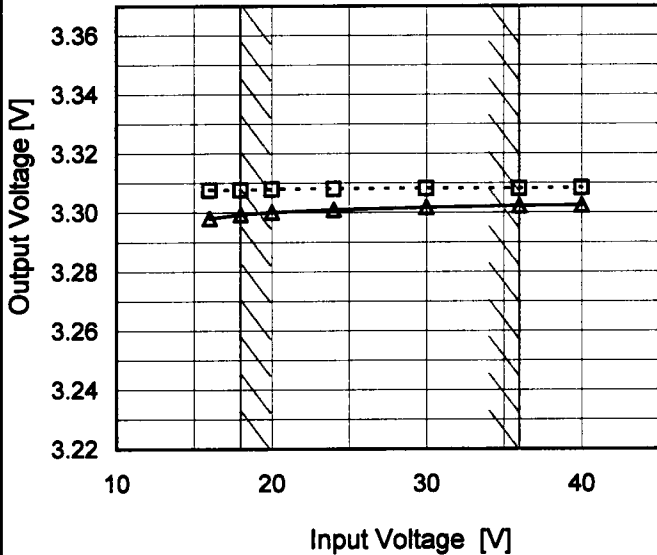
BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Line Regulation
Object	+3.3V2.6A

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%
16	3.308	3.298
18	3.308	3.299
20	3.308	3.300
24	3.308	3.301
30	3.308	3.302
36	3.308	3.302
40	3.308	3.303
--	-	-
--	-	-

BC-3804

COSEL

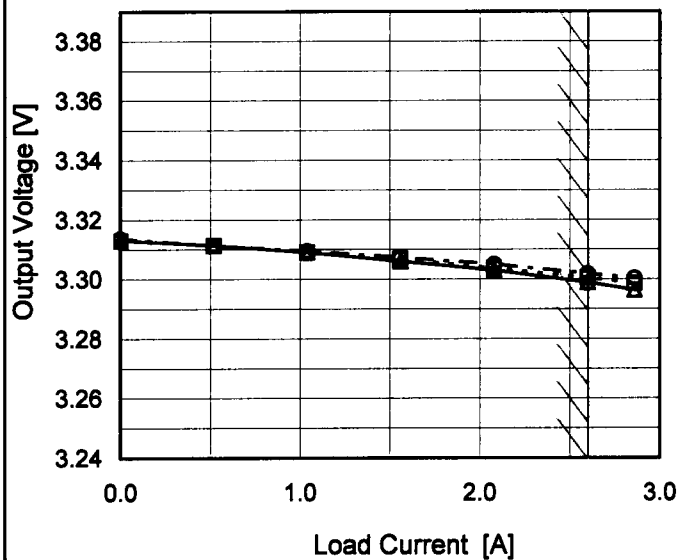| Model	SUS10243R3/SUCS10243R3
Item	Load Regulation
Object	+3.3V2.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 18V
– – ☐ – – Input Volt. 24V
— · — ○ — · · Input Volt. 36V

Load Current [A]

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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	3.313	3.313	3.314
0.52	3.311	3.311	3.311
1.04	3.309	3.309	3.310
1.56	3.306	3.307	3.307
2.08	3.303	3.304	3.305
2.60	3.299	3.300	3.302
2.86	3.296	3.299	3.300
--	-	-	-
--	-	-	-
--	-	-	-
—	-	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	+3.3V2.6A		

Input Volt.   24   V

Cycle   100   mS

t_1、t_2 = 50μs

Load Current

t_1 t_2
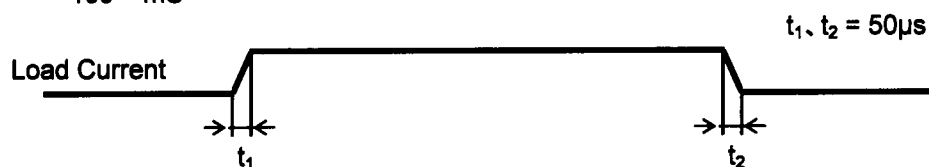
Min. Load (0A) ←→

Load 100% (2.6A)

200mV/div
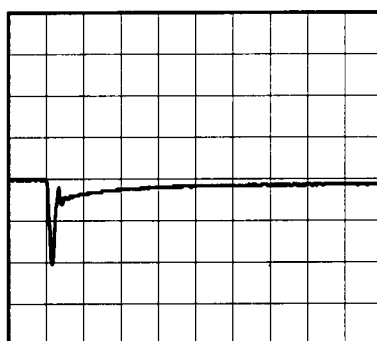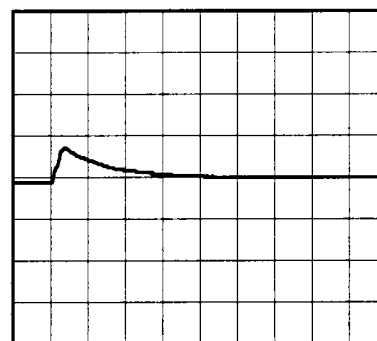
200μs/div   200μs/div

Min. Load (0A) ←→

Load 50% (1.3A)

200mV/div
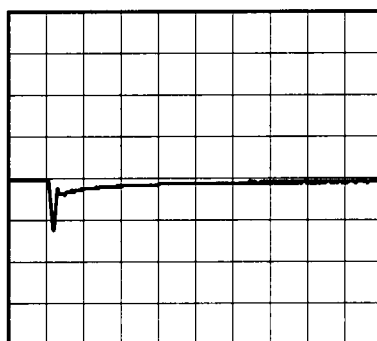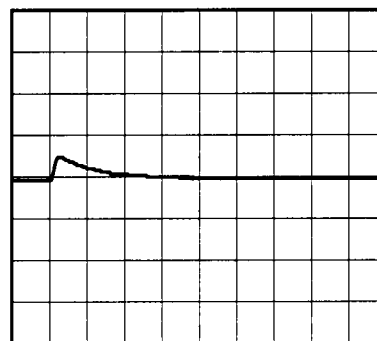
200μs/div   200μs/div

Load 50% (1.3A) ←→

Load 100% (2.6A)

200mV/div

200μs/div   200μs/div

BC-3804

CO$EL
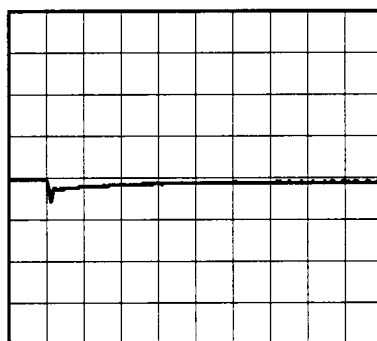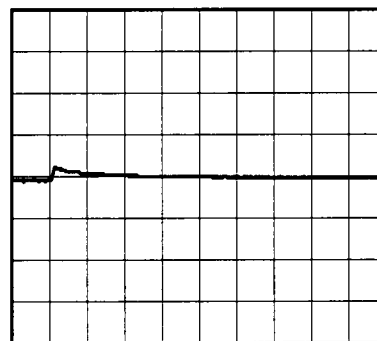
Model	SUS10243R3/SUCS10243R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V2.6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

——△—— Input Volt. 18V
—·—○—·· Input Volt. 36V
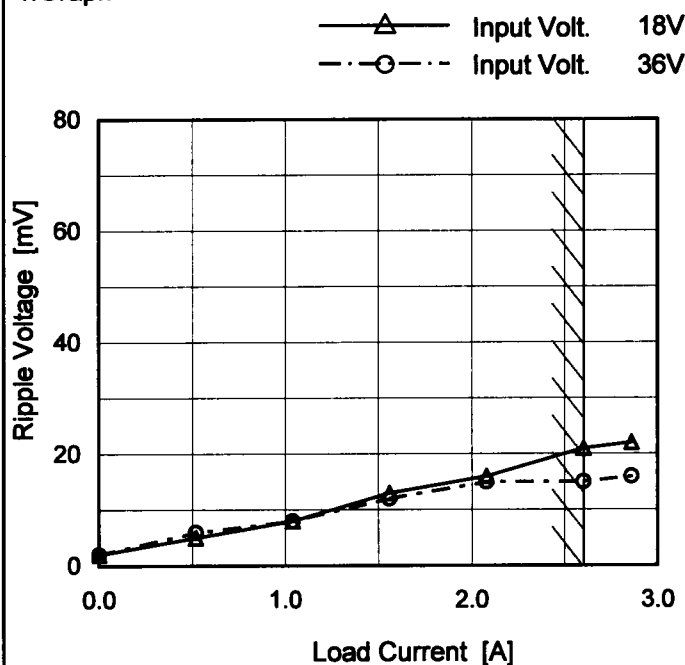
Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
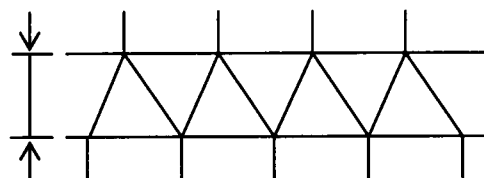   load current.

Ripple [mVp-p]

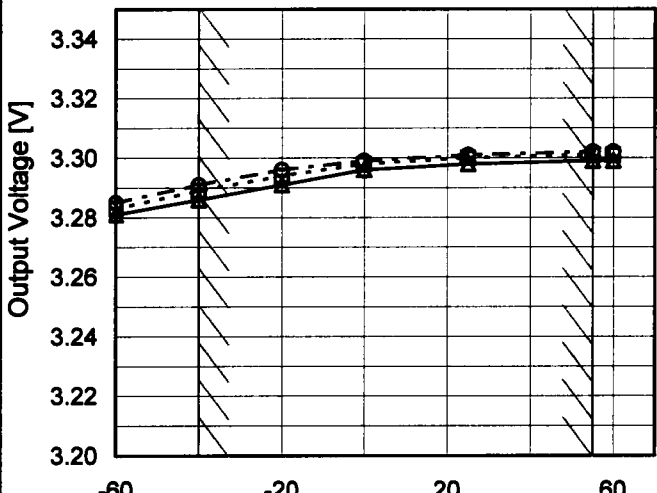Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	2	2
0.52	5	6
1.04	8	8
1.56	13	12
2.08	16	15
2.60	21	15
2.86	22	16
—	-	-
—	-	-
—	-	-
—	-	-

BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Ripple-Noise
Object	+3.3V2.6A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

— △ — Input Volt. 18V
— ○ — Input Volt. 36V

Load Current [A]

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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	5	5
0.52	18	16
1.04	26	23
1.56	32	30
2.08	40	35
2.60	48	40
2.86	55	43
—	-	-
—	-	-
—	-	-
—	-	-

Ripple Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V2.6A

Testing Circuitry   Figure B

1.Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

Ambient Temperature [°C]

Input Volt.   24V

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	26	36
-40	22	33
-20	17	26
0	14	22
25	11	18
55	9	15
60	10	15
—	-	-
—	-	-
—	-	-
—	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3
Item	Ambient Temperature Drift
Object	+3.3V2.6A

Testing Circuitry Figure A

1.Graph

————△———— Input Volt. 18V
— — —日— — — Input Volt. 24V
—·—O—··— Input Volt. 36V

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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	3.281	3.283	3.285
-40	3.286	3.289	3.291
-20	3.291	3.294	3.296
0	3.296	3.298	3.299
25	3.298	3.300	3.301
55	3.299	3.301	3.302
60	3.299	3.301	3.302
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V2.6A	

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　　:　18　-　36V
Load Current　　:　0　-　2.6A
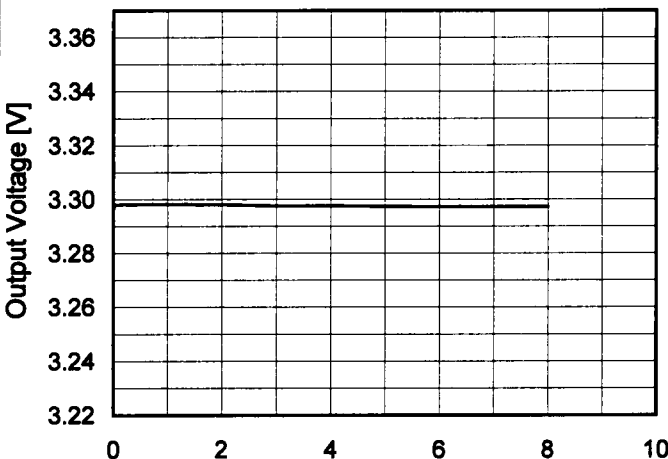
* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	3.314	±14	±0.4
Minimum Voltage	-40	18	2.6	3.286		

BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Time Lapse Drift
Object	+3.3V2.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	3.297
0.5	3.298
1.0	3.298
2.0	3.298
3.0	3.298
4.0	3.298
5.0	3.297
6.0	3.297
7.0	3.297
8.0	3.297

BC-3804

COSEL

Model	SUS10243R3/SUCS10243R3
Item	Rise and Fall Time
Object	+3.3V2.6A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   24 V

Load 50%

Output Volt.

[0.5V/div]

0

Load 100%

Output Volt.

[0.5V/div]

0

Input Volt.

0

[10V/div]   Time   [10mS/div]   Time   [5mS/div]

2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	5.1	0.6	5.7	0.2	0.4
100 %	5.0	0.7	5.7	0.1	0.2

Output Volt.

90%

10%

Input Volt.

Td   Tr   Th   Tf

Ts

- 15 -

BC-3804
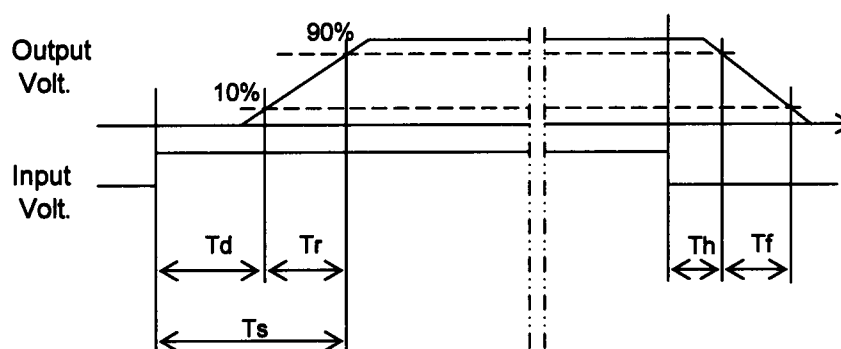
COSEL

Model	SUS10243R3/SUCS10243R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V2.6A

Testing Circuitry   Figure A
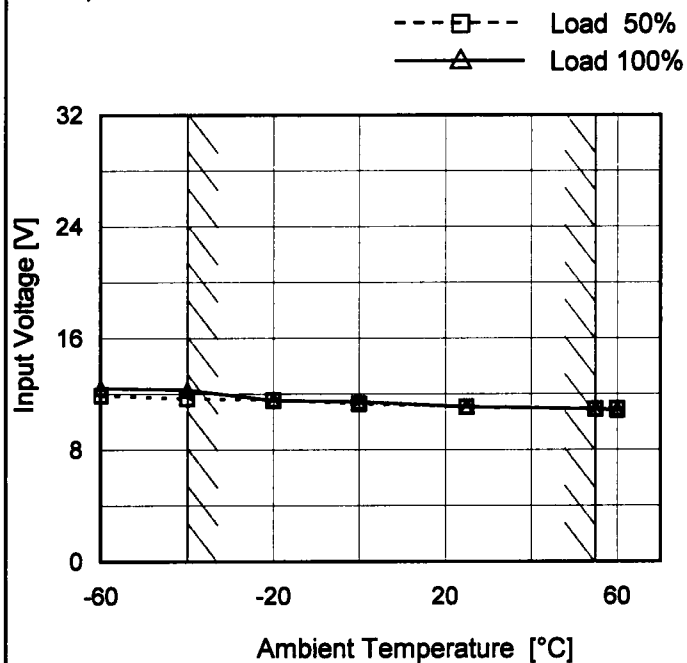
1.Graph

--- ⊟ --- Load 50%
——△—— Load 100%

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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	11.9	12.5
-40	11.7	12.3
-20	11.6	11.6
0	11.3	11.5
25	11.1	11.1
55	11.0	11.0
60	11.0	10.9
--	-	-
--	-	-
--	-	-
--	-	-

BC-3804

CO$EL

Model	SUS10243R3/SUCS10243R3
Item	Overcurrent Protection
Object	+3.3V2.6A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———— Input Volt.   18V
———— Input Volt.   24V
———— Input Volt.   36V

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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
3.30	2.89	2.93	2.96
3.14	3.98	4.20	4.13
2.97	4.16	4.41	4.36
2.64	4.43	4.73	4.63
2.31	4.65	4.86	4.71
1.98	4.74	4.96	4.70
1.65	4.81	4.99	4.61
1.32	4.89	5.05	4.46
0.99	5.03	5.11	4.14
0.66	5.31	4.96	3.83
0.33	5.26	4.83	3.57
0.00	4.99	4.66	3.25

BC-3804

COSEL
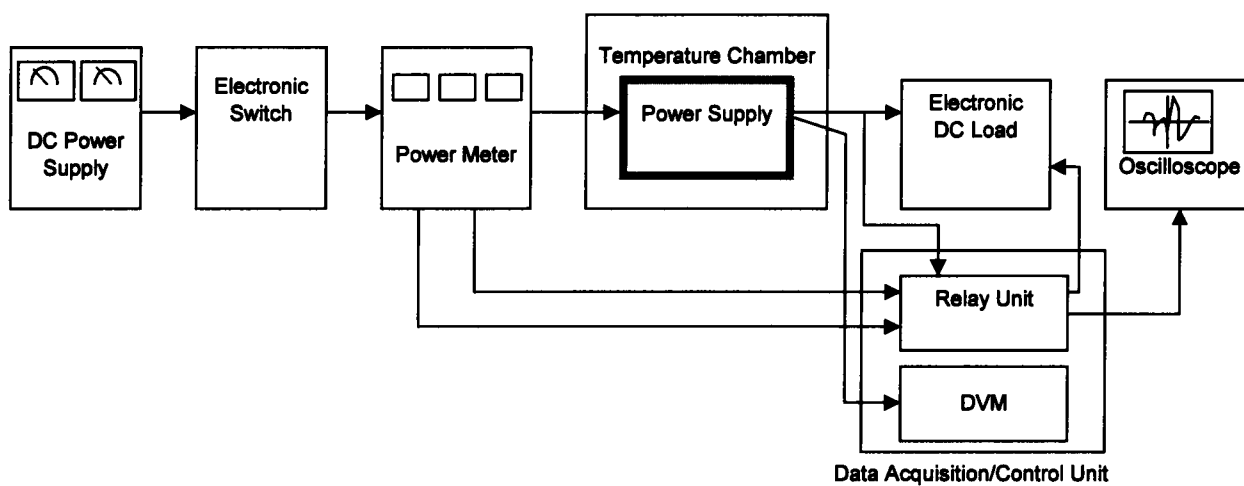

Figure A

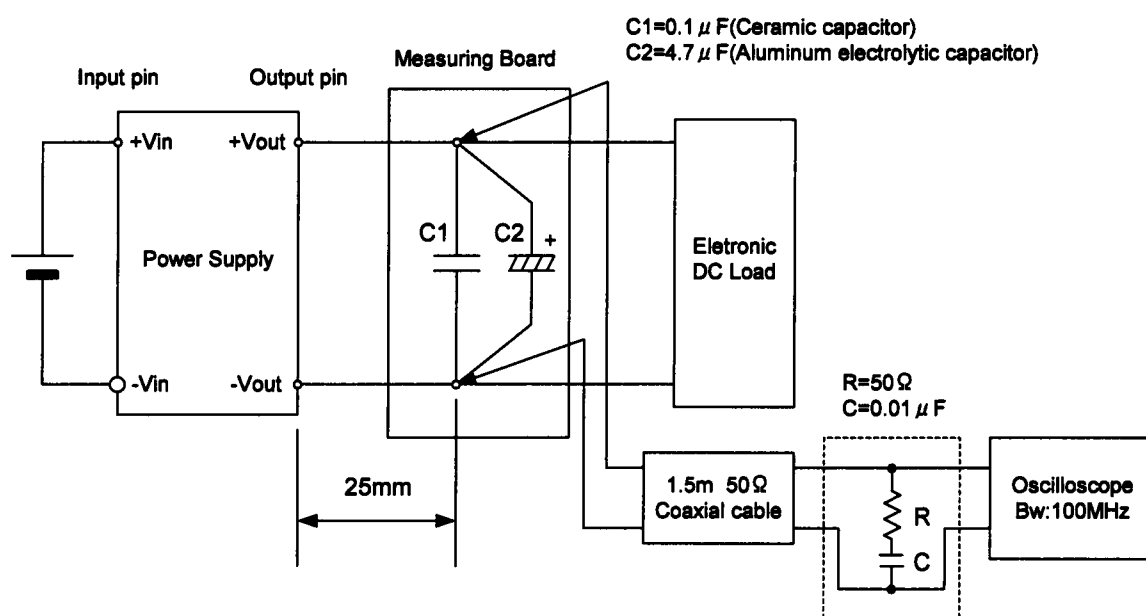

C1=0.1 μF(Ceramic capacitor)
C2=4.7 μF(Aluminum electrolytic capacitor)

Figure B (Ripple and Ripple noise Characteristic)

BC-3804