COSEL

TEST DATA OF SUCS1R51215

Regulated DC Power Supply
Sep 17, 2004

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Model	SUCS1R51215
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	0.000	0.000	0.000
2.0	0.000	0.000	0.000
2.4	0.066	0.064	0.003
3.6	0.037	0.357	0.348
4.0	0.034	0.308	0.350
5.6	0.029	0.190	0.377
6.0	0.028	0.174	0.348
8.0	0.025	0.130	0.242
9.0	0.024	0.117	0.215
10.0	0.023	0.106	0.193
12.0	0.021	0.091	0.161
14.0	0.020	0.080	0.140
16.0	0.019	0.071	0.124
18.0	0.018	0.065	0.112
20.0	0.018	0.061	0.102
--	-	-	-

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Model	SUCS1R51215
Item	Input Current (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△———	Input Volt.	9V
- - -□- - -	Input Volt.	12V
—·—○—·—	Input Volt.	18V

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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	0.024	0.021	0.018
0.02	0.062	0.050	0.038
0.04	0.099	0.077	0.056
0.06	0.137	0.105	0.075
0.08	0.176	0.134	0.094
0.10	0.217	0.162	0.112
0.11	0.237	0.177	0.122
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS1R51215
Item	Input Power (by Load Current)
Object	————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———△——— Input Volt.   9V
- - -▣- - - Input Volt.   12V
—·—○—·— Input Volt.   18V

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	0.22	0.25	0.32
0.02	0.55	0.59	0.68
0.04	0.89	0.92	1.01
0.06	1.23	1.26	1.35
0.08	1.57	1.59	1.68
0.10	1.93	1.93	2.01
0.11	2.11	2.11	2.18
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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Model	SUCS1R51215
Item	Efficiency (by Input Voltage)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

--- ⊟ --- Load 50%
—△— Load 100%

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8	71.7	77.2
9	71.0	77.5
10	70.3	77.6
12	68.7	77.2
15	66.5	76.0
18	63.7	74.4
20	61.7	73.0
—	-	-
—	-	-

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参考資料

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Model	SUCS1R51215
Item	Efficiency (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———△——— Input Volt.   9V
- - -⊟- - - Input Volt.   12V
—·-○-·— Input Volt.   18V

Efficiency [%] vs Load Current [A]

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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	-	-	-
0.02	55.0	51.1	44.6
0.04	67.7	65.0	59.4
0.06	73.3	71.4	66.7
0.08	76.0	75.1	71.3
0.10	77.5	77.2	74.2
0.11	77.9	77.9	75.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS1R51215
Item	Line Regulation
Object	+15V0.1A
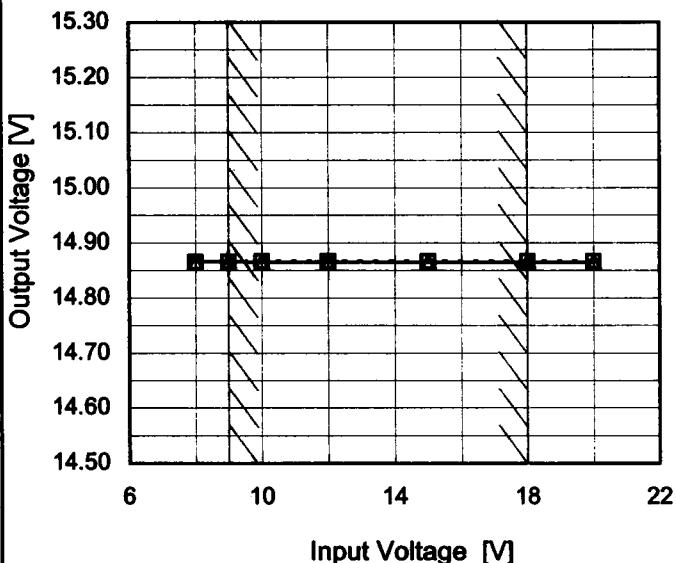
Temperature	25°C
Testing Circuitry	Figure A

1.Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	14.866	14.866
9	14.866	14.866
10	14.867	14.866
12	14.867	14.865
15	14.867	14.865
18	14.867	14.865
20	14.867	14.865
—	-	-
—	-	-

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Model	SUCS1R51215
Item	Load Regulation
Object	+15V0.1A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

		Input Volt.	9V
		Input Volt.	12V
		Input Volt.	18V

Output Voltage [V] vs Load Current [A]

15.30
15.20
15.10
15.00
14.90
14.80
14.70
14.60
14.50

0.00   0.04   0.08   0.12

Load Current [A]

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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	14.867	14.868	14.868
0.02	14.867	14.868	14.869
0.04	14.867	14.867	14.868
0.06	14.867	14.867	14.868
0.08	14.867	14.867	14.868
0.10	14.867	14.866	14.867
0.11	14.866	14.866	14.867
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS1R51215		
Item	Dynamic Load Response	Temperature	25°C
Object	+15V0.1A	Testing Circuitry	Figure A

Input Volt.　12　V
Cycle　100　mS

t_1、t_2 = 50µs

Load Current

t_1　　　　t_2
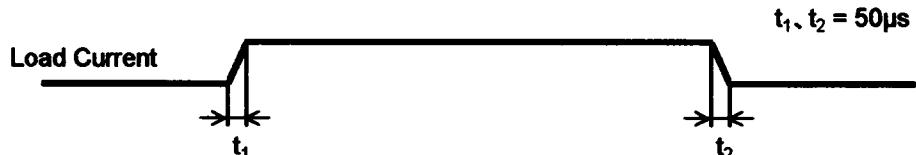
Min. Load (0A) ←→
　Load 100% (0.1A)

100mV/div

2ms/div　　　2ms/div
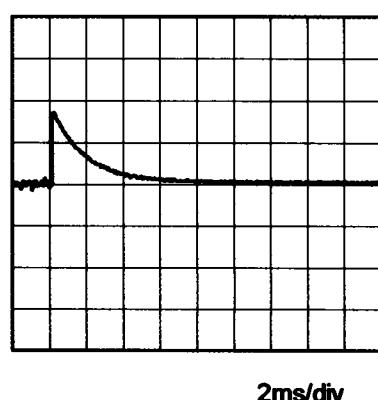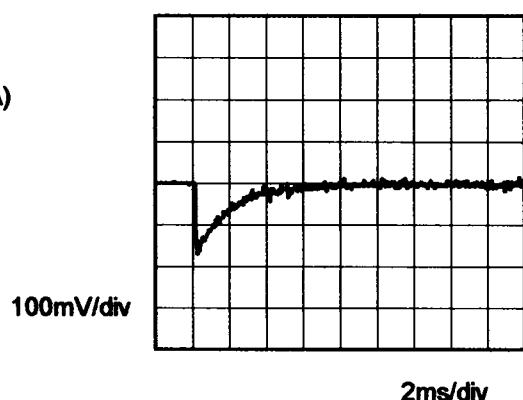
Min. Load (0A) ←→
　Load 50% (0.05A)

100mV/div

2ms/div　　　2ms/div

Load 50% (0.05A) ←→
　Load 100% (0.1A)

100mV/div

2ms/div　　　2ms/div

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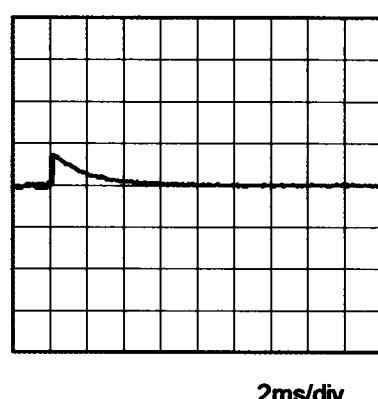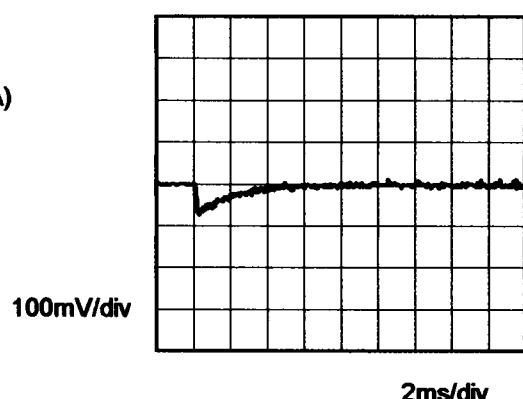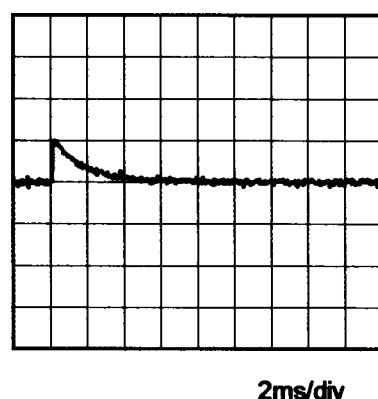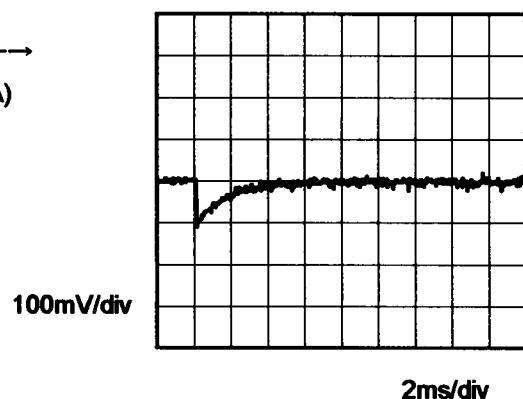
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Model	SUCS1R51215
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

———△——— Input Volt. 9V
— ·—O— ·— Input Volt. 18V

Ripple Voltage [mV] vs Load Current [A]
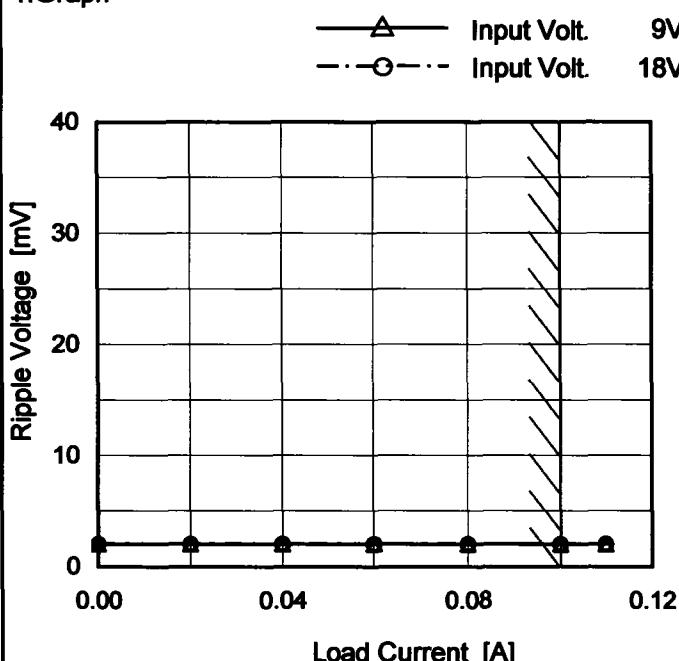
2.Values

| Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	2	2
0.02	2	2
0.04	2	2
0.06	2	2
0.08	2	2
0.10	2	2
0.11	2	2
—	-	-
—	-	-
—	-	-
—	-	-

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]
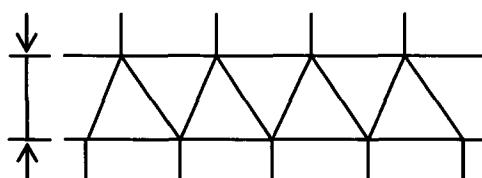
Fig.Complex Ripple Wave Form

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Model	SUCS1R51215
Item	Ripple-Noise
Object	+15V0.1A

Temperature	25°C
Testing Circuitry	Figure B

1.Graph

```
——△——  Input Volt.   9V
— ·—O—·· —  Input Volt.   18V
```

Ripple-Noise [mV] vs Load Current [A]
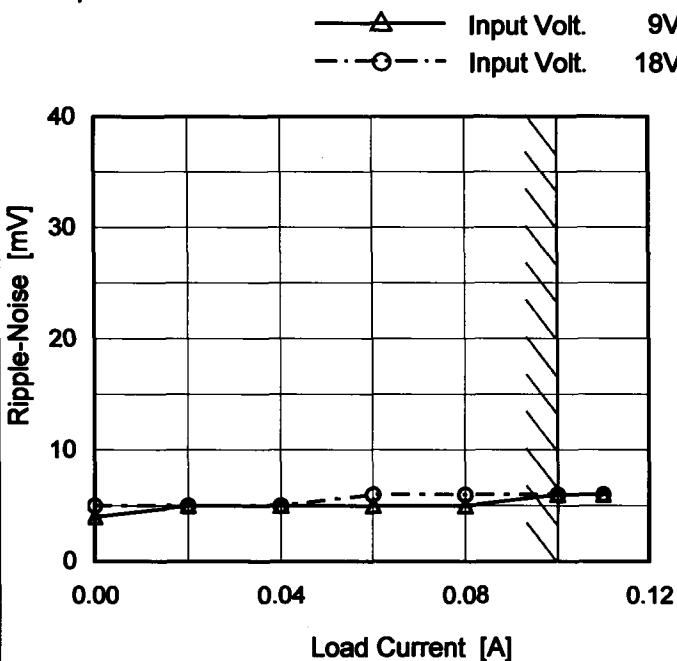
Measured by 100 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	4	5
0.02	5	5
0.04	5	5
0.06	5	6
0.08	5	6
0.10	6	6
0.11	6	6
—	-	-
—	-	-
—	-	-
—	-	-

Ripple Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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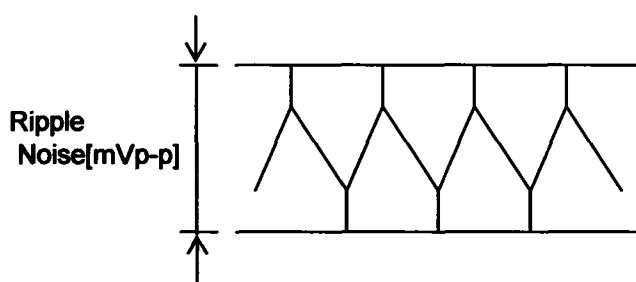
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Model	SUCS1R51215
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry   Figure B

1.Graph

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

Ambient Temperature [°C]

Input Volt.   12V
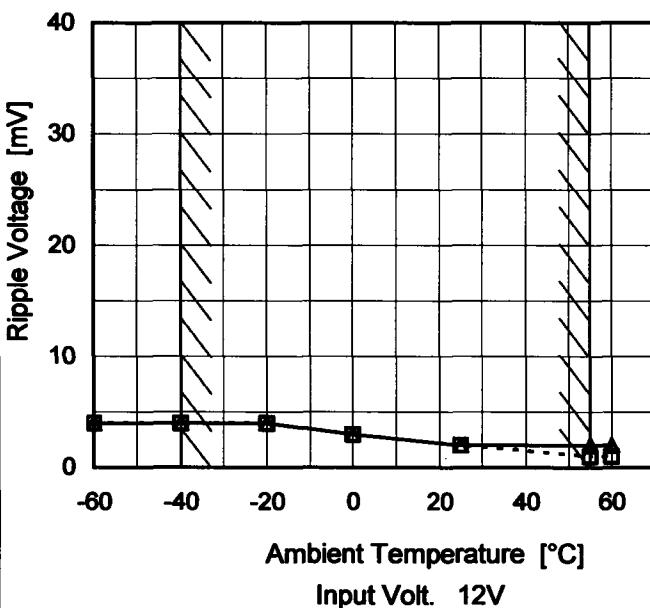
Measured by 100 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	4
-40	4	4
-20	4	4
0	3	3
25	2	2
55	1	2
60	1	2
--	-	-
--	-	-
--	-	-
--	-	-

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Model	SUCS1R51215
Item	Ambient Temperature Drift
Object	+15V0.1A

Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   9V
---□--- Input Volt.   12V
—·—○—·— Input Volt.   18V

Output Voltage [V] vs 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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	14.899	14.899	14.899
-40	14.902	14.902	14.901
-20	14.898	14.897	14.896
0	14.887	14.886	14.885
25	14.866	14.865	14.864
55	14.833	14.832	14.831
60	14.826	14.825	14.823
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCS1R51215	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V0.1A	

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 : 9 - 18V

Load Current   : 0 - 0.1A

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

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	12	0	14.904	±37	±0.2
Minimum Voltage	55	18	0.1	14.831		

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Model	SUCS1R51215
Item	Time Lapse Drift
Object	+15V0.1A

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

Input Volt.　　12V
Load　　　　100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.875
0.5	14.866
1.0	14.867
2.0	14.867
3.0	14.866
4.0	14.867
5.0	14.867
6.0	14.867
7.0	14.867
8.0	14.867

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Model	SUCS1R51215
Item	Rise and Fall Time
Object	+15V0.1A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   9 V

Load 50%

Output
Volt.

[2V/div]

0

Load 100%

Output
Volt.

[2V/div]

0

Input
Volt.

0

[5V/div]   Time   [10mS/div]   Time   [5mS/div]
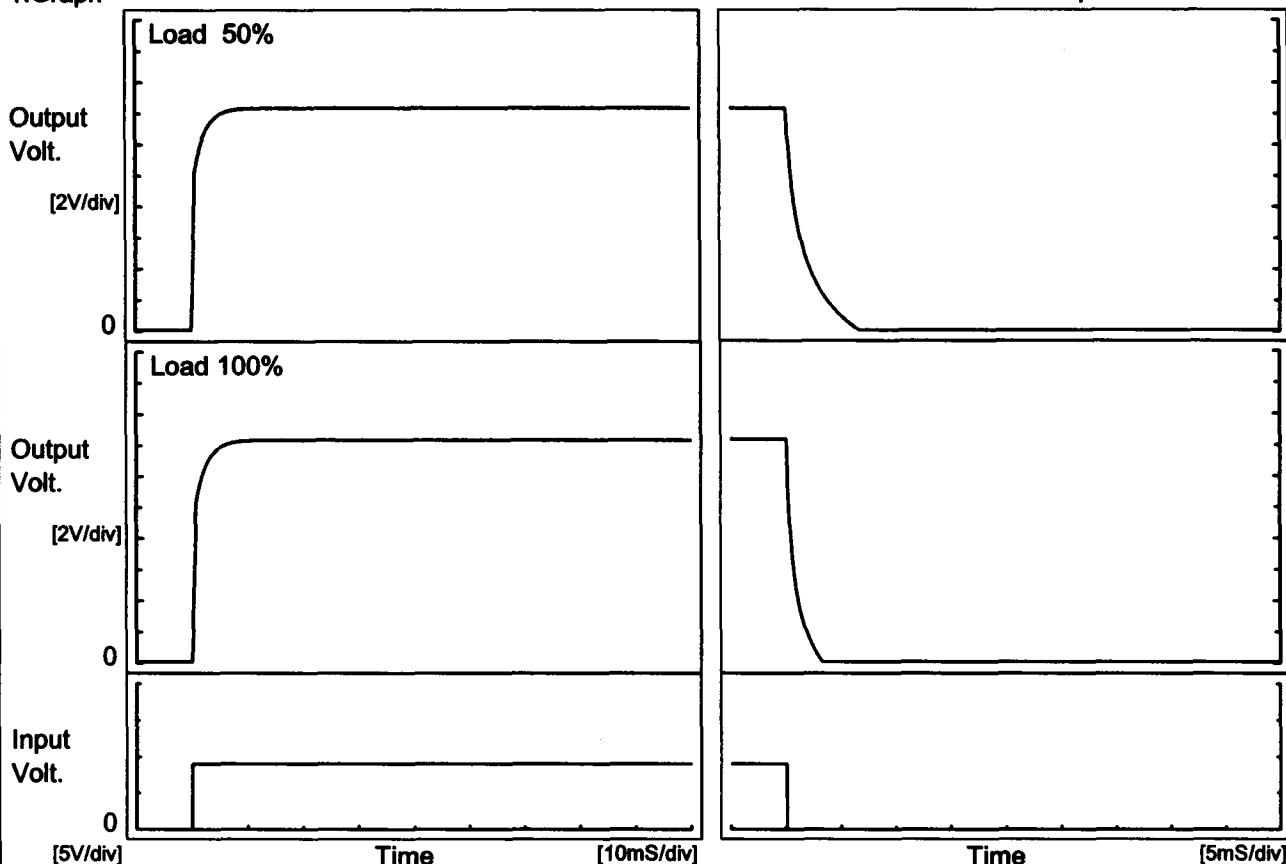
2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.9	4.0	0.1	8.5
100 %	0.1	4.0	4.1	0.1	4.2

Output
Volt.

90%

10%

Input
Volt.

Td   Tr   Th   Tf

Ts

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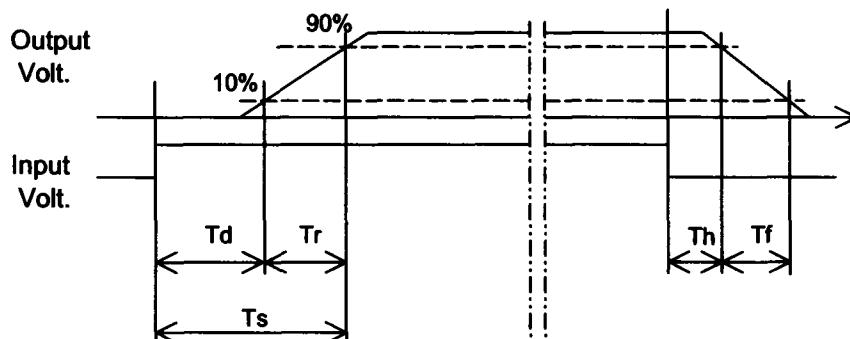
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Model	SUCS1R51215
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

Testing Circuitry   Figure A

1.Graph

--- ⊟ --- Load 50%
——△—— Load 100%

Input Voltage [V] vs Ambient Temperature [°C]

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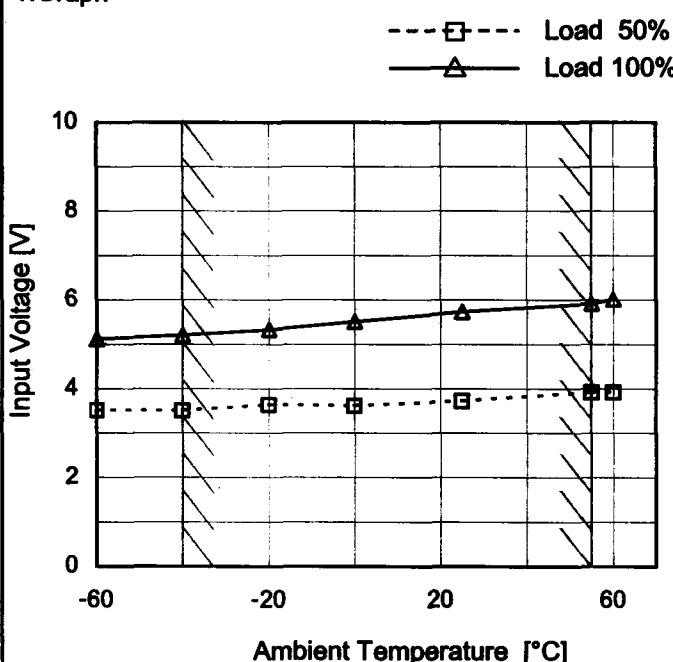
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.6	5.2
-40	3.6	5.3
-20	3.7	5.4
0	3.7	5.6
25	3.8	5.8
55	4.0	6.0
60	4.0	6.1
−	-	-
−	-	-
−	-	-
−	-	-

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Model	SUCS1R51215
Item	Overcurrent Protection
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

—————— Input Volt. 9V
—————— Input Volt. 12V
—————— Input Volt. 18V

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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
15.0	0.10	0.10	0.10
14.3	0.16	0.16	0.15
13.5	0.16	0.17	0.16
12.0	0.18	0.18	0.16
10.5	0.19	0.18	0.17
9.0	0.20	0.19	0.18
7.5	0.21	0.20	0.18
6.0	0.22	0.21	0.19
4.5	0.23	0.21	0.19
3.0	0.23	0.21	0.19
1.5	0.23	0.20	0.18
0.0	0.35	0.28	0.24

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Temperature Chamber

DC Power Supply → Electronic Switch → Power Meter → Power Supply → Electronic DC Load → Oscilloscope

Relay Unit

DVM

Data Acquisition/Control Unit

Figure A

Input pin | Output pin

Measuring board

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

+Vin | +Vout

Power Supply

C1 | C2 +

-Vin | -Vout

25mm

1.5m 50Ω Coaxial cable

R=50Ω C=10000pF

R
C

Oscilloscope Bw:100MHz

Figure B (Ripple and Ripple noise Characteristic)

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