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参考資料

# TEST DATA OF SUS1R54812

Regulated DC Power Supply
Sep 28, 2004

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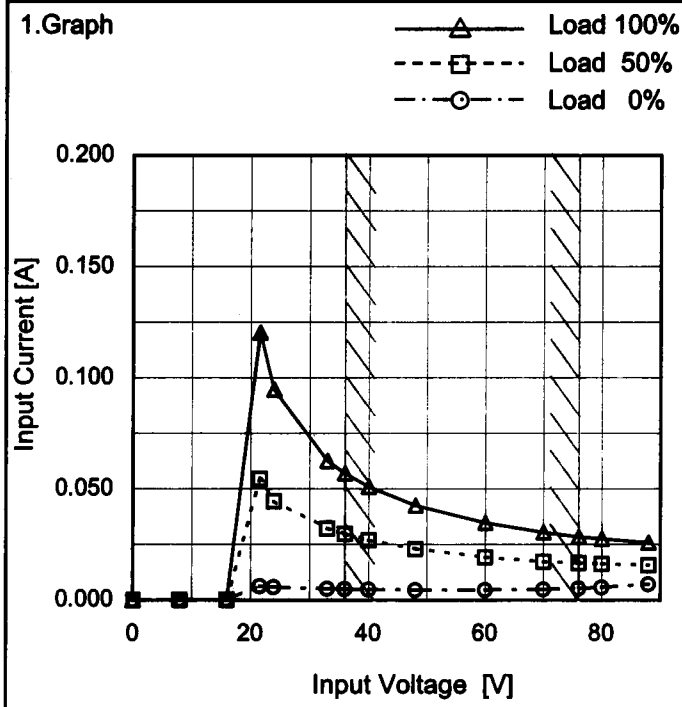
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Input Current (by Input Voltage) |
| Object | ———————— |

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] | Input Current [A] | | |
|---|---|---|---|
| | Load 0% | Load 50% | Load 100% |
| 0 | 0.000 | 0.000 | 0.000 |
| 8.0 | 0.000 | 0.000 | 0.000 |
| 16.0 | 0.000 | 0.000 | 0.000 |
| 21.6 | 0.006 | 0.054 | 0.120 |
| 24.0 | 0.006 | 0.044 | 0.095 |
| 33.0 | 0.005 | 0.032 | 0.063 |
| 36.0 | 0.005 | 0.030 | 0.057 |
| 40.0 | 0.005 | 0.027 | 0.051 |
| 48.0 | 0.004 | 0.023 | 0.043 |
| 60.0 | 0.004 | 0.019 | 0.035 |
| 70.0 | 0.005 | 0.017 | 0.030 |
| 76.0 | 0.005 | 0.017 | 0.029 |
| 80.0 | 0.006 | 0.016 | 0.028 |
| 88.0 | 0.007 | 0.016 | 0.026 |
| – | - | - | - |
| – | - | - | - |

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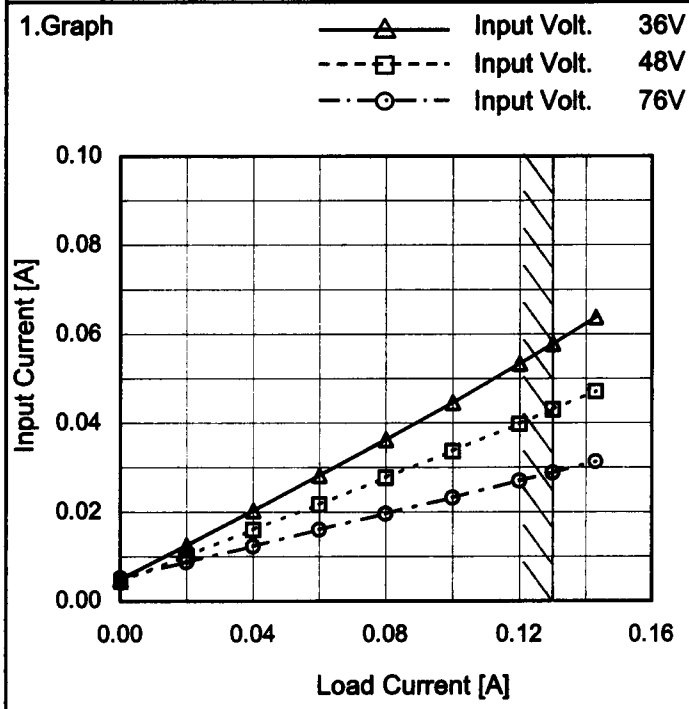
| Model | SUS1R54812 |
|---|---|
| Item | Input Current (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 0.000 | 0.005 | 0.004 | 0.005 |
| 0.020 | 0.013 | 0.010 | 0.009 |
| 0.040 | 0.020 | 0.016 | 0.012 |
| 0.060 | 0.028 | 0.022 | 0.016 |
| 0.080 | 0.036 | 0.028 | 0.020 |
| 0.100 | 0.045 | 0.034 | 0.023 |
| 0.120 | 0.053 | 0.040 | 0.027 |
| 0.130 | 0.058 | 0.043 | 0.029 |
| 0.143 | 0.064 | 0.047 | 0.031 |
| -- | - | - | - |
| -- | - | - | - |

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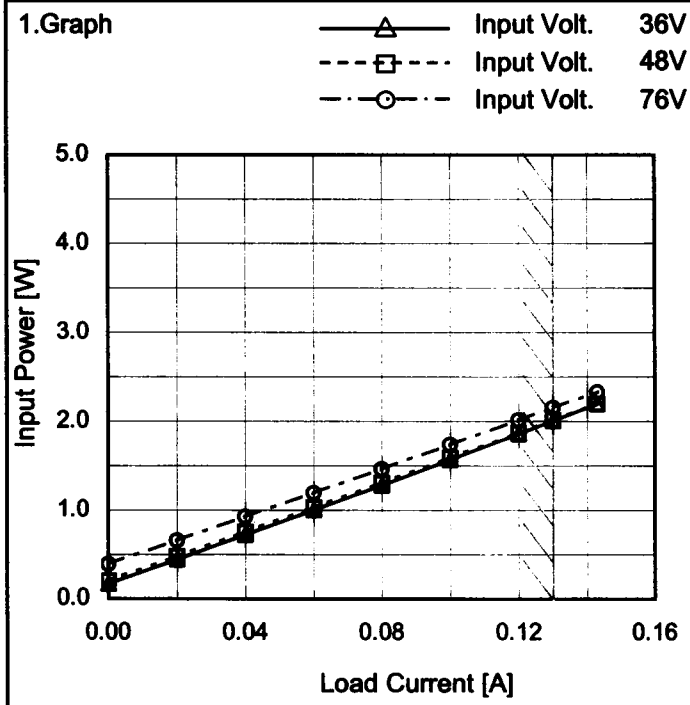
|---|---|
| Model | SUS1R54812 |
| Item | Input Power (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Input Power [W] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 0.000 | 0.17 | 0.21 | 0.39 |
| 0.020 | 0.45 | 0.48 | 0.66 |
| 0.040 | 0.72 | 0.76 | 0.93 |
| 0.060 | 1.00 | 1.03 | 1.20 |
| 0.080 | 1.28 | 1.31 | 1.47 |
| 0.100 | 1.57 | 1.59 | 1.74 |
| 0.120 | 1.86 | 1.87 | 2.02 |
| 0.130 | 2.01 | 2.02 | 2.15 |
| 0.143 | 2.20 | 2.20 | 2.33 |
| -- | - | - | - |
| -- | - | - | - |

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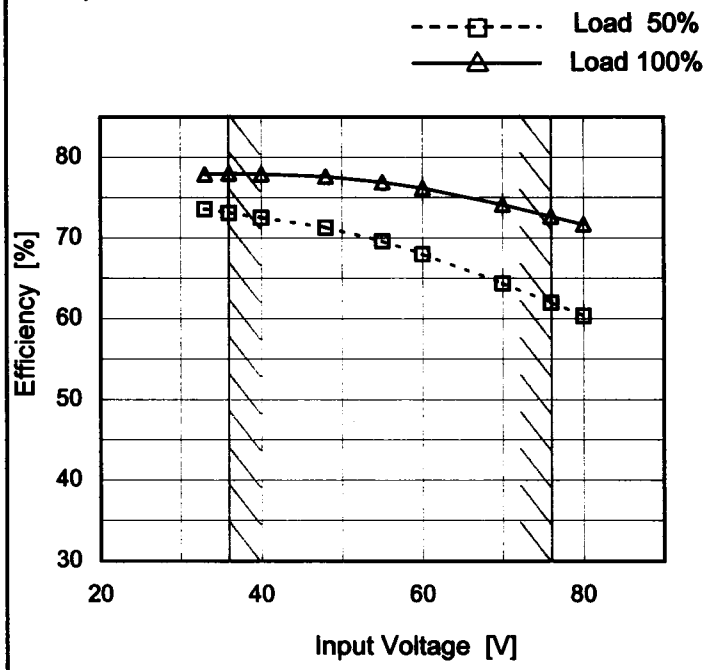
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Efficiency (by Input Voltage) |
| Object | ——— |

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] | Efficiency [%] | |
|---|---|---|
| | Load 50% | Load 100% |
| 33 | 73.6 | 77.9 |
| 36 | 73.1 | 78.0 |
| 40 | 72.5 | 77.9 |
| 48 | 71.3 | 77.6 |
| 55 | 69.6 | 76.9 |
| 60 | 68.0 | 76.2 |
| 70 | 64.4 | 74.1 |
| 76 | 62.0 | 72.7 |
| 80 | 60.3 | 71.7 |

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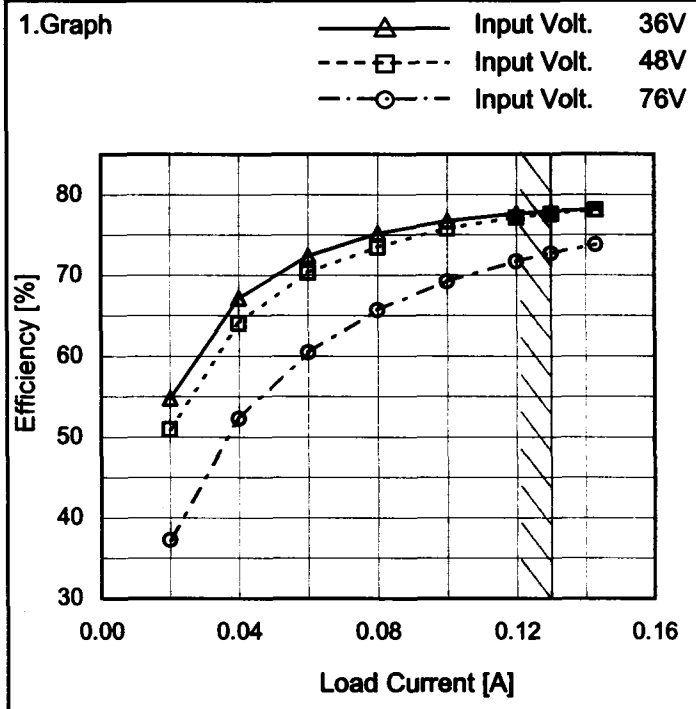
| Model | SUS1R54812 |
|---|---|
| Item | Efficiency (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Efficiency [%] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 0.000 | - | - | - |
| 0.020 | 54.8 | 51.0 | 37.3 |
| 0.040 | 67.1 | 64.1 | 52.3 |
| 0.060 | 72.3 | 70.3 | 60.5 |
| 0.080 | 75.2 | 73.5 | 65.7 |
| 0.100 | 76.7 | 75.8 | 69.2 |
| 0.120 | 77.7 | 77.2 | 71.7 |
| 0.130 | 78.0 | 77.6 | 72.7 |
| 0.143 | 78.2 | 78.1 | 73.8 |
| — | - | - | - |
| — | - | - | - |

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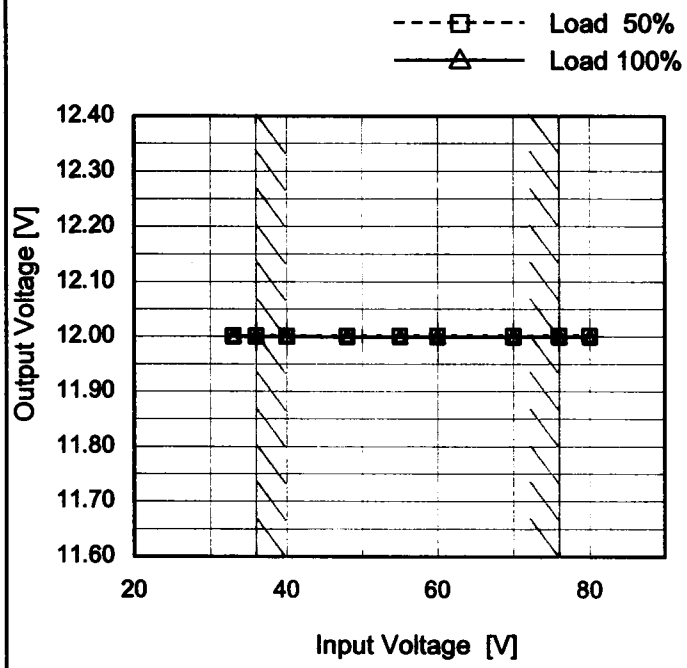
|---|---|
| Model | SUS1R54812 |
| Item | Line Regulation |
| Object | +12V0.13A |

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% |
| 33 | 12.002 | 12.001 |
| 36 | 12.001 | 12.000 |
| 40 | 12.002 | 12.001 |
| 48 | 12.002 | 12.000 |
| 55 | 12.002 | 12.000 |
| 60 | 12.002 | 12.000 |
| 70 | 12.002 | 12.000 |
| 76 | 12.002 | 12.000 |
| 80 | 12.002 | 12.000 |

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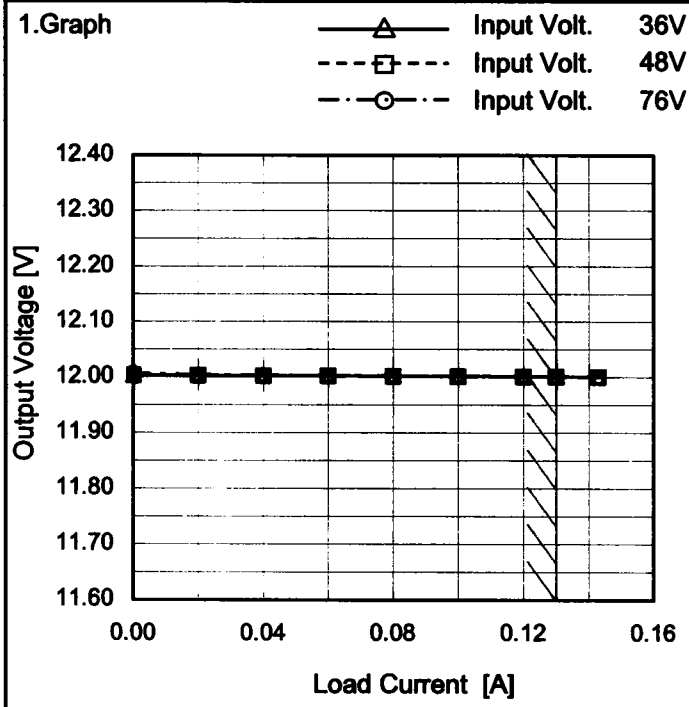
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Load Regulation |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Load Current [A] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 0.000 | 12.003 | 12.003 | 12.006 |
| 0.020 | 12.003 | 12.003 | 12.004 |
| 0.040 | 12.002 | 12.002 | 12.003 |
| 0.060 | 12.002 | 12.002 | 12.002 |
| 0.080 | 12.002 | 12.002 | 12.002 |
| 0.100 | 12.002 | 12.001 | 12.002 |
| 0.120 | 12.001 | 12.001 | 12.001 |
| 0.130 | 12.001 | 12.001 | 12.001 |
| 0.143 | 12.001 | 12.000 | 12.000 |
| — | - | - | - |
| — | - | - | - |

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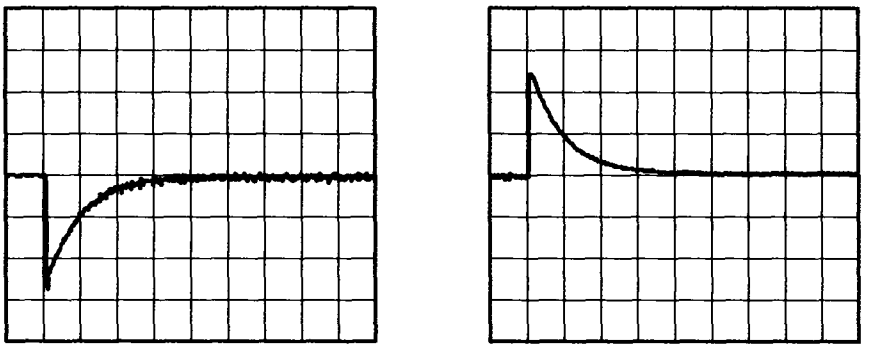
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Dynamic Load Response |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure A

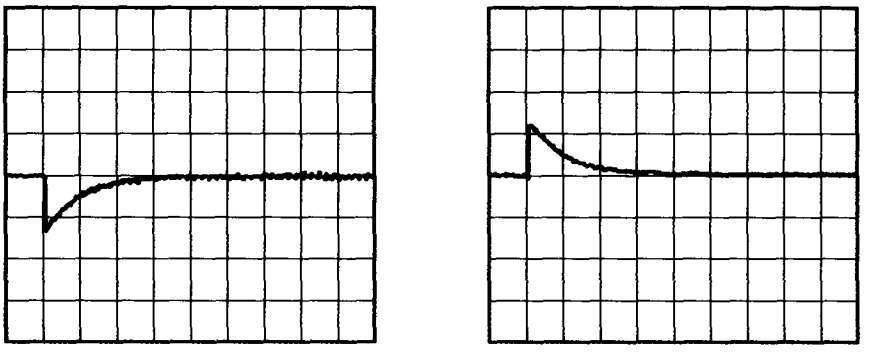
Input Volt. 48 V
Cycle 100 mS

$t_1$、$t_2$ = 50μs

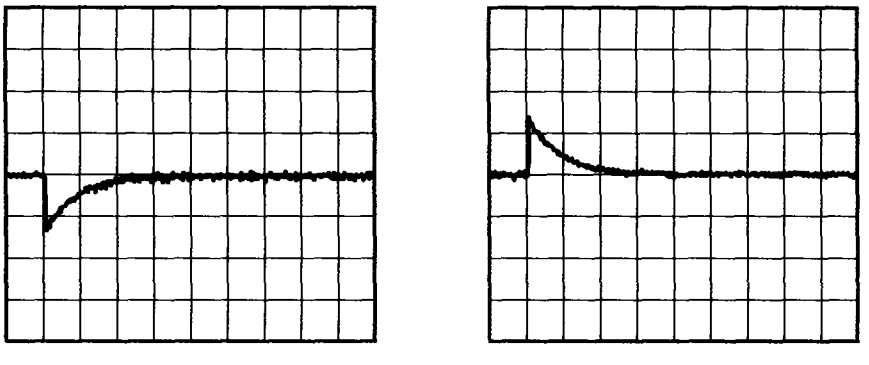
Min. Load (0A) ⟷
Load 100% (0.13A)




Min. Load (0A) ⟷
Load 50% (0.065A)




Load 50% (0.065A) ⟷
Load 100% (0.13A)



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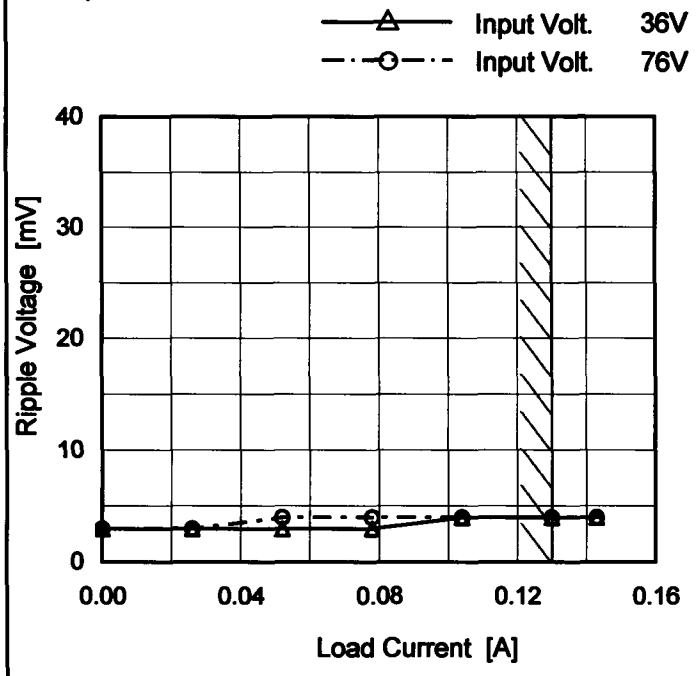
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Ripple Voltage (by Load Current) |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




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.

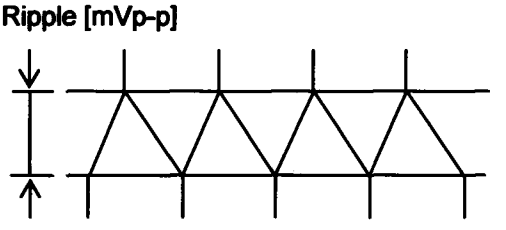



Fig.Complex Ripple Wave Form

2.Values

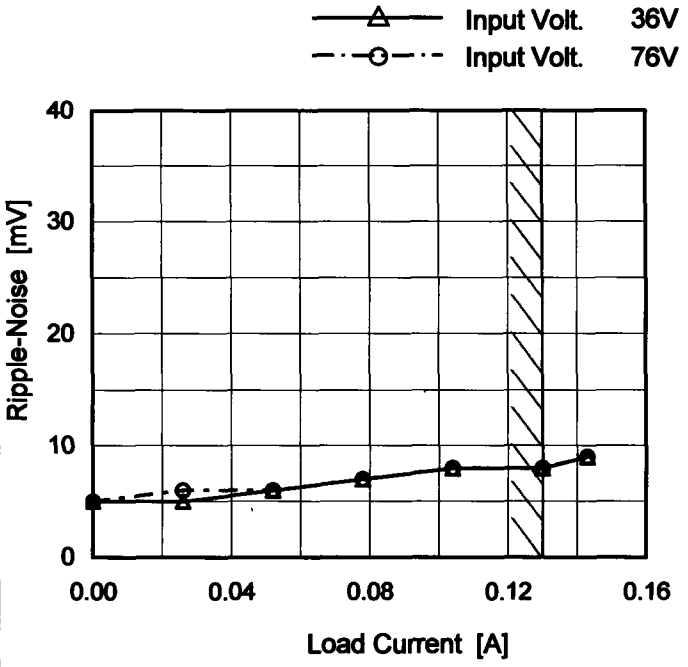
| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 36 [V] | Input Volt. 76 [V] |
| 0.000 | 3 | 3 |
| 0.026 | 3 | 3 |
| 0.052 | 3 | 4 |
| 0.078 | 3 | 4 |
| 0.104 | 4 | 4 |
| 0.130 | 4 | 4 |
| 0.143 | 4 | 4 |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |

COSEL

| | |
|---|---|
| Model | SUS1R54812 |
| Item | Ripple-Noise |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure B

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.

2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 36 [V] | Input Volt. 76 [V] |
| 0.000 | 5 | 5 |
| 0.026 | 5 | 6 |
| 0.052 | 6 | 6 |
| 0.078 | 7 | 7 |
| 0.104 | 8 | 8 |
| 0.130 | 8 | 8 |
| 0.143 | 9 | 9 |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |

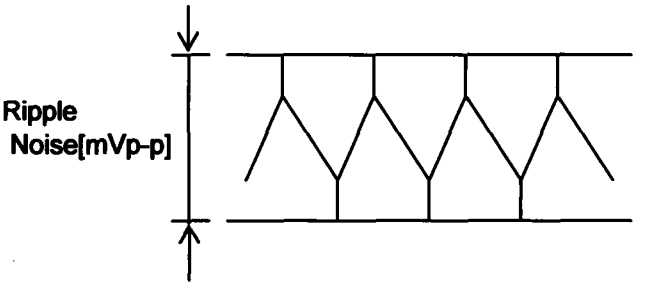



Fig.Complex Ripple Noise Wave Form

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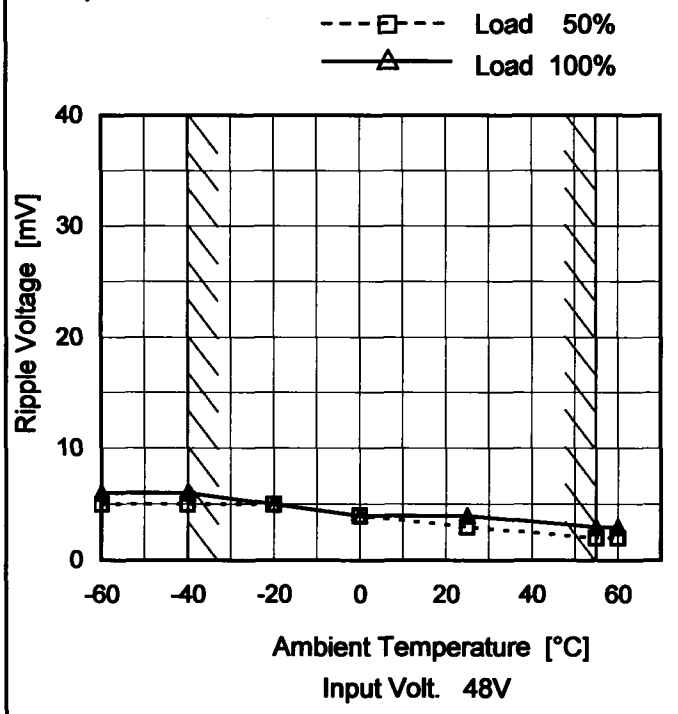
| Model | SUS1R54812 |
|---|---|
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +12V0.13A |

Testing Circuitry Figure B

1.Graph




Input Volt. 48V

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 | 5 | 6 |
| -40 | 5 | 6 |
| -20 | 5 | 5 |
| 0 | 4 | 4 |
| 25 | 3 | 4 |
| 55 | 2 | 3 |
| 60 | 2 | 3 |
| — | - | - |
| — | - | - |
| — | - | - |
| — | - | - |

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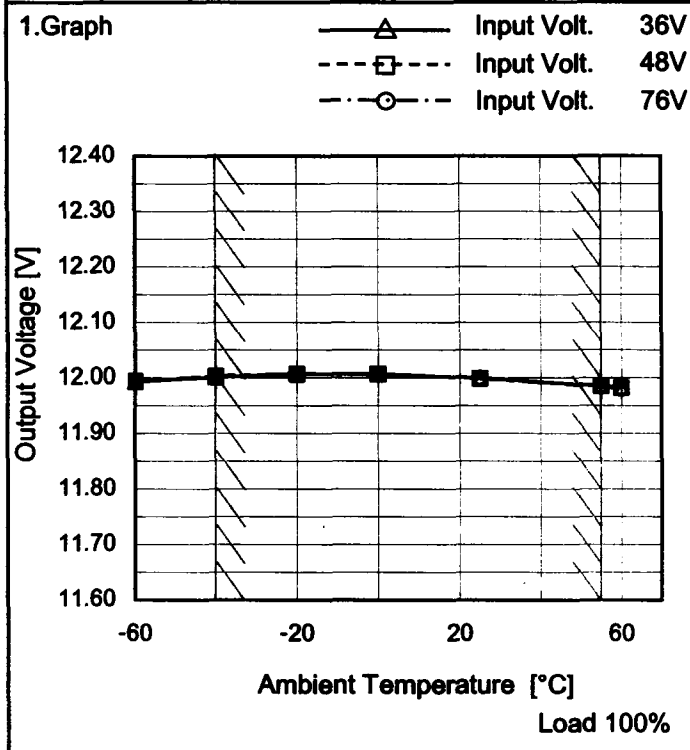
| Model | SUS1R54812 |
|---|---|
| Item | Ambient Temperature Drift |
| Object | +12V0.13A |

Testing Circuitry Figure A

1.Graph




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

2.Values

| Ambient Temperature [°C] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| -60 | 11.993 | 11.994 | 11.994 |
| -40 | 12.002 | 12.003 | 12.003 |
| -20 | 12.007 | 12.007 | 12.007 |
| 0 | 12.007 | 12.007 | 12.006 |
| 25 | 12.000 | 11.999 | 11.999 |
| 55 | 11.986 | 11.985 | 11.984 |
| 60 | 11.983 | 11.982 | 11.980 |
| — | - | - | - |
| — | - | - | - |
| — | - | - | - |
| — | - | - | - |

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| | | |
|---|---|---|
| Model | SUS1R54812 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +12V0.13A | |

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 : 36 - 76V
Load Current : 0 - 0.13A

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

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

2.Values

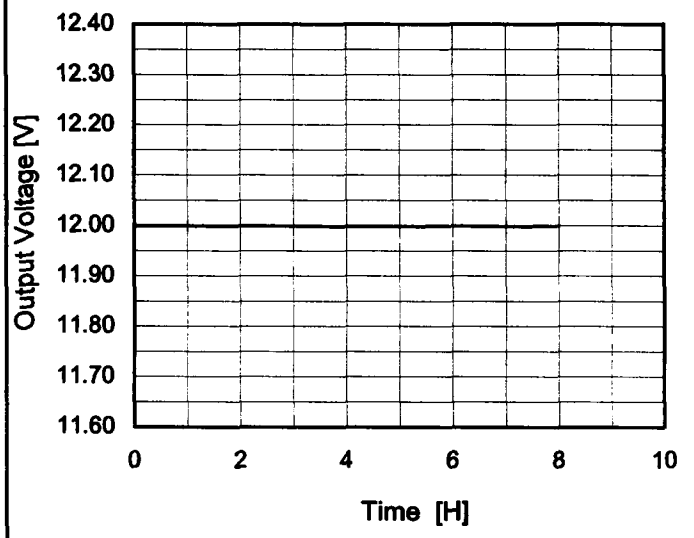
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
|---|---|---|---|---|---|---|
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 0 | 76 | 0 | 12.013 | ±15 | ±0.1 |
| Minimum Voltage | 55 | 76 | 0.13 | 11.984 | | |

COSEL

| | |
|---|---|
| Model | SUS1R54812 |
| Item | Time Lapse Drift |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 48V
Load 100%

2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 12.004 |
| 0.5 | 11.999 |
| 1.0 | 11.999 |
| 2.0 | 11.999 |
| 3.0 | 11.999 |
| 4.0 | 11.999 |
| 5.0 | 11.999 |
| 6.0 | 11.999 |
| 7.0 | 11.999 |
| 8.0 | 11.999 |

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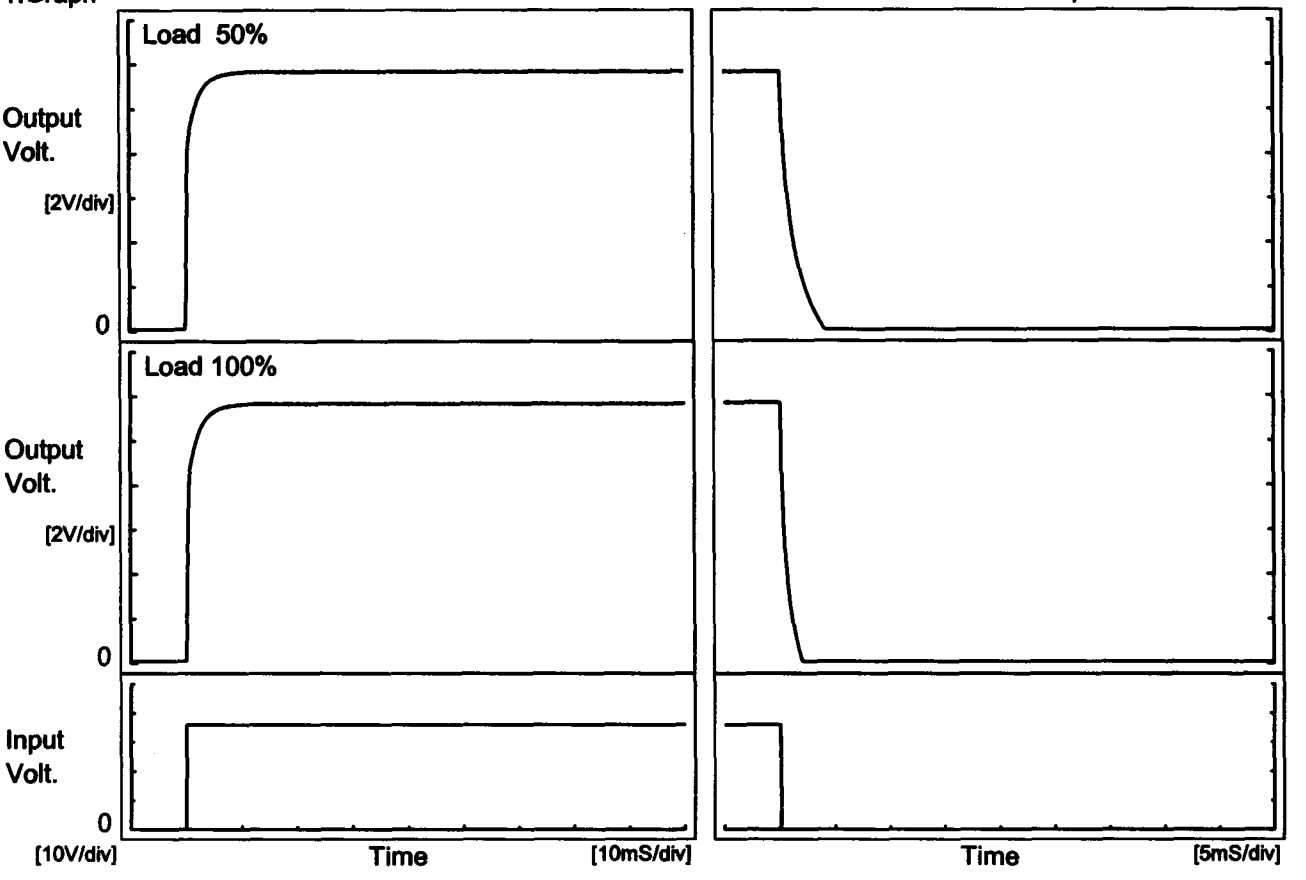
| | |
|---|---|
| Model | SUS1R54812 |
| Item | Rise and Fall Time |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph

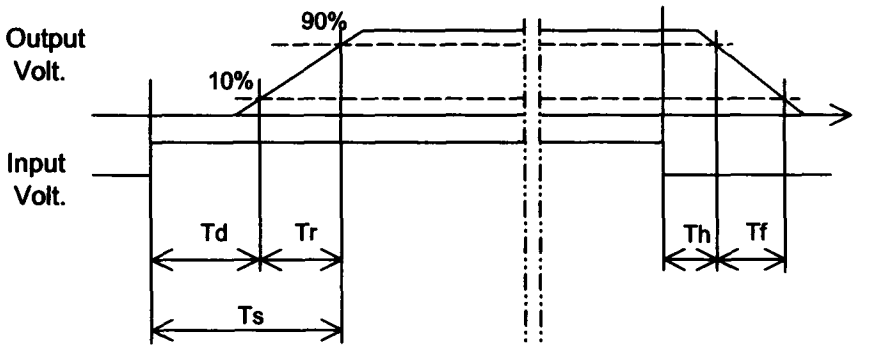
Input Volt. 36 V




2.Values

[mS]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 0.1 | 3.2 | 3.3 | 0.1 | 2.9 |
| 100 % | 0.1 | 3.3 | 3.4 | 0.1 | 1.5 |



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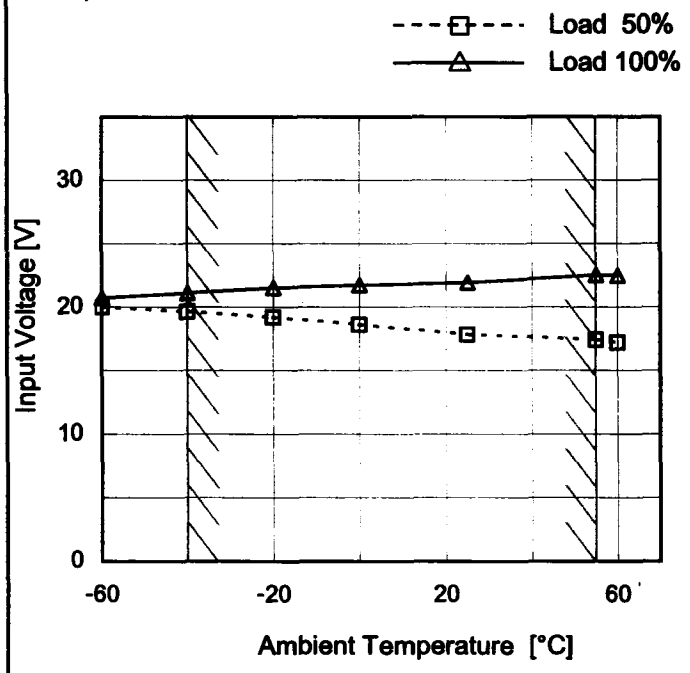
| Model | SUS1R54812 |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +12V0.13A |

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% |
| -60 | 20.0 | 20.8 |
| -40 | 19.7 | 21.2 |
| -20 | 19.2 | 21.6 |
| 0 | 18.7 | 21.8 |
| 25 | 17.9 | 22.0 |
| 55 | 17.5 | 22.6 |
| 60 | 17.2 | 22.5 |
| – | - | - |
| – | - | - |
| – | - | - |
| – | - | - |

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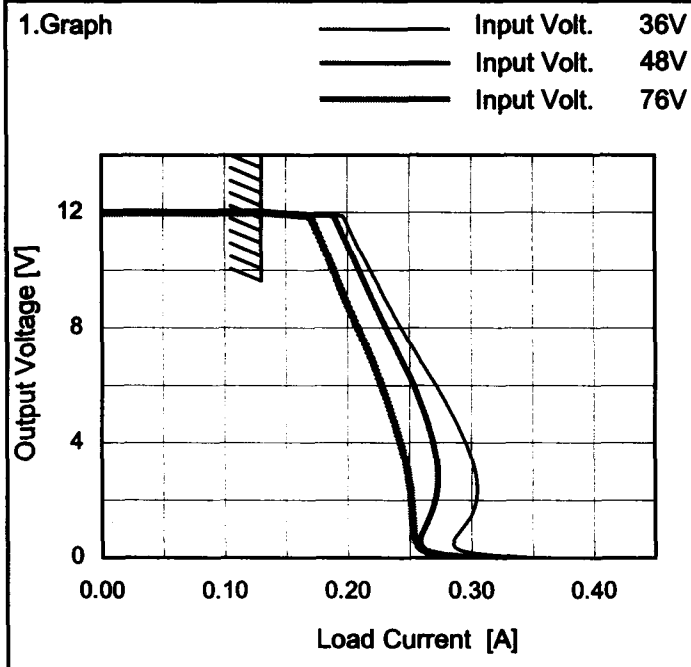
| Model | SUS1R54812 |
|---|---|
| Item | Overcurrent Protection |
| Object | +12V0.13A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

| Output Voltage [V] | Load Current [A] | | |
|---|---|---|---|
| | Input Volt. 36[V] | Input Volt. 48[V] | Input Volt. 76[V] |
| 12.0 | 0.13 | 0.13 | 0.13 |
| 11.4 | 0.20 | 0.19 | 0.18 |
| 10.8 | 0.21 | 0.20 | 0.18 |
| 9.6 | 0.22 | 0.21 | 0.19 |
| 8.4 | 0.24 | 0.23 | 0.20 |
| 7.2 | 0.26 | 0.24 | 0.22 |
| 6.0 | 0.27 | 0.25 | 0.23 |
| 4.8 | 0.29 | 0.26 | 0.24 |
| 3.6 | 0.30 | 0.27 | 0.25 |
| 2.4 | 0.30 | 0.27 | 0.25 |
| 1.2 | 0.30 | 0.26 | 0.25 |
| 0.0 | 0.35 | 0.30 | 0.30 |

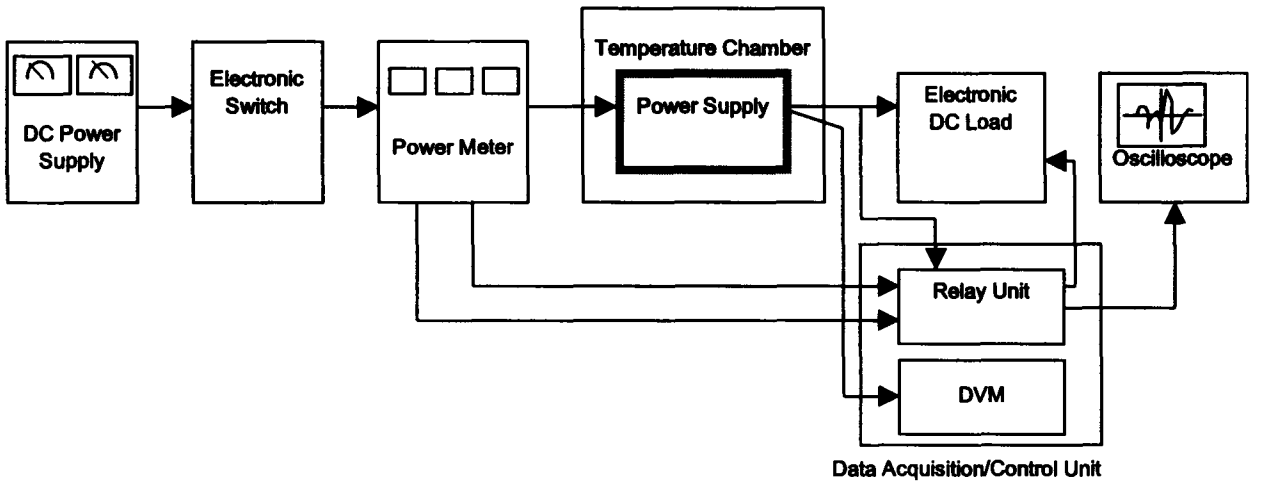



Figure A

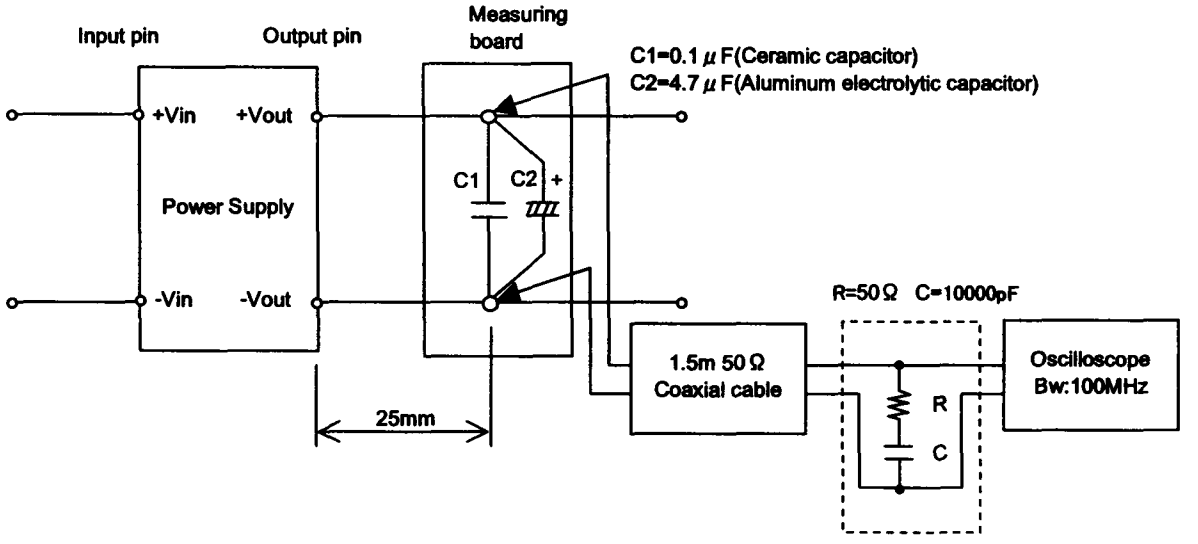



Figure B (Ripple and Ripple noise Characteristic)