COSEL

参考資料

# TEST DATA OF MGS301215

Regulated DC Power Supply
December 4, 2010

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Sho Saito Design Engineer

**COSEL CO.,LTD.**

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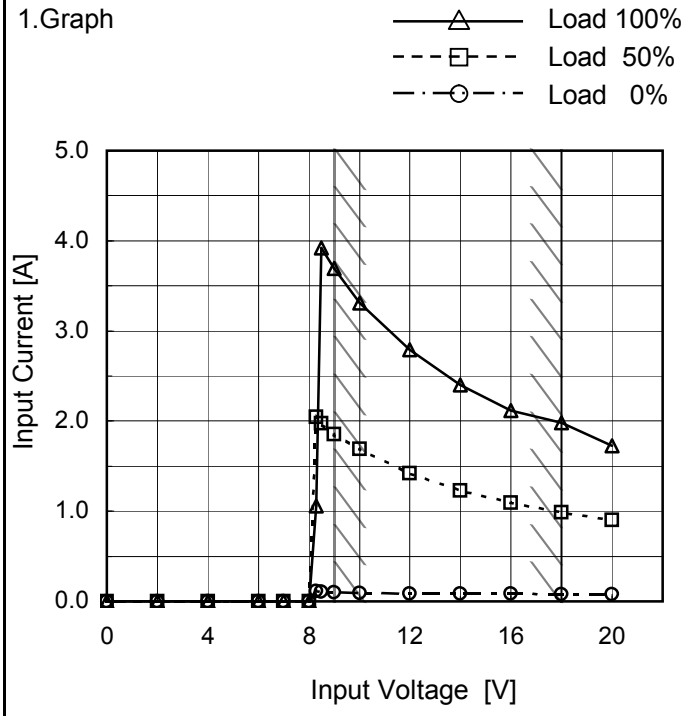
| | |
|---|---|
| Model | MGS301215 |
| Item | Input Current (by Input Voltage) |
| Object | ———————— |

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 | 0.000 | 0.000 | 0.000 |
| 2.0 | 0.000 | 0.000 | 0.000 |
| 4.0 | 0.002 | 0.002 | 0.002 |
| 6.0 | 0.002 | 0.002 | 0.002 |
| 7.0 | 0.002 | 0.002 | 0.002 |
| 8.0 | 0.002 | 0.002 | 0.002 |
| 8.3 | 0.110 | 2.042 | 1.056 |
| 8.5 | 0.105 | 1.975 | 3.921 |
| 9.0 | 0.099 | 1.857 | 3.696 |
| 10.0 | 0.093 | 1.688 | 3.307 |
| 12.0 | 0.088 | 1.417 | 2.792 |
| 14.0 | 0.084 | 1.229 | 2.402 |
| 16.0 | 0.082 | 1.097 | 2.115 |
| 18.0 | 0.081 | 0.990 | 1.985 |
| 20.0 | 0.080 | 0.904 | 1.727 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



BC-10504

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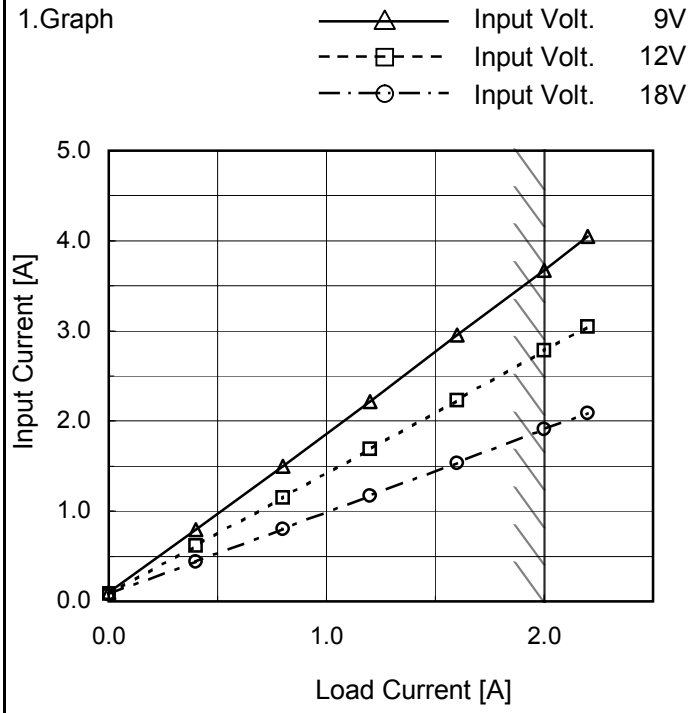
| | |
|---|---|
| Model | MGS301215 |
| Item | Input Current (by Load Current) |
| Object | ———————— |

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. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| 0.0 | 0.102 | 0.088 | 0.081 |
| 0.4 | 0.797 | 0.617 | 0.440 |
| 0.8 | 1.499 | 1.149 | 0.806 |
| 1.2 | 2.217 | 1.693 | 1.169 |
| 1.6 | 2.953 | 2.232 | 1.534 |
| 2.0 | 3.675 | 2.784 | 1.911 |
| 2.2 | 4.050 | 3.044 | 2.091 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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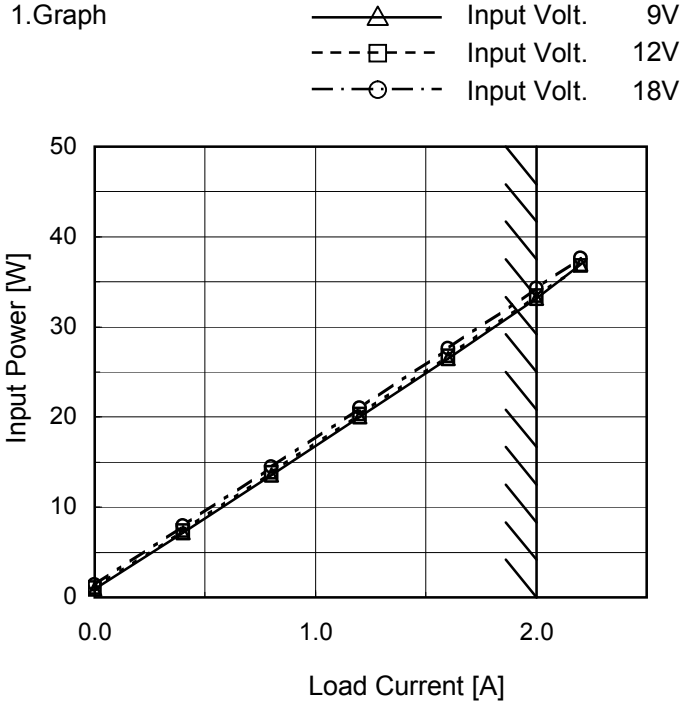
|---|---|
| Model | MGS301215 |
| Item | Input Power (by Load Current) |
| Object | ——————— |

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. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| 0.0 | 0.92 | 1.06 | 1.46 |
| 0.4 | 7.21 | 7.41 | 7.95 |
| 0.8 | 13.56 | 13.82 | 14.51 |
| 1.2 | 20.00 | 20.32 | 21.05 |
| 1.6 | 26.46 | 26.80 | 27.64 |
| 2.0 | 33.15 | 33.43 | 34.30 |
| 2.2 | 36.90 | 36.80 | 37.66 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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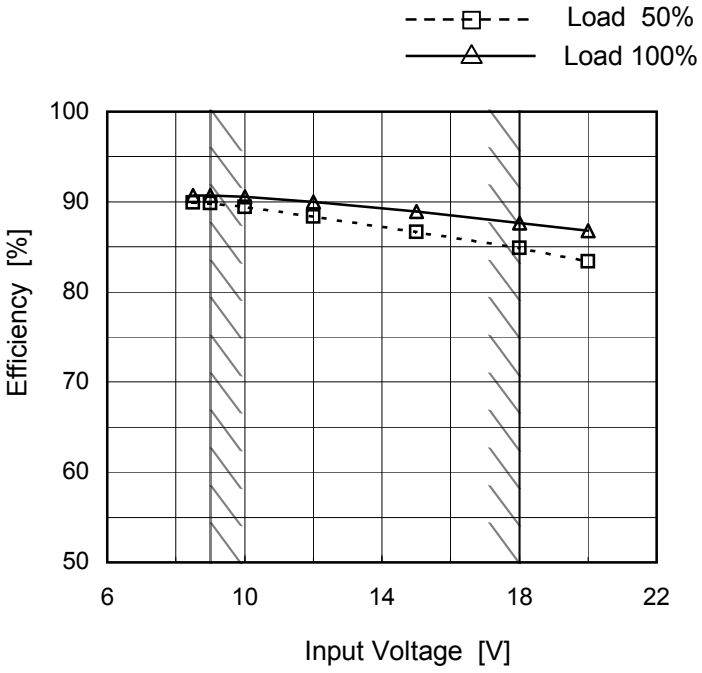
|---|---|
| Model | MGS301215 |
| Item | Efficiency (by Input Voltage) |
| Object | ―――――――――― |

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% |
| 8.5 | 89.9 | 90.7 |
| 9.0 | 89.8 | 90.7 |
| 10.0 | 89.4 | 90.6 |
| 12.0 | 88.3 | 90.0 |
| 15.0 | 86.7 | 88.9 |
| 18.0 | 84.8 | 87.7 |
| 20.0 | 83.4 | 86.8 |
| -- | - | - |
| -- | - | - |

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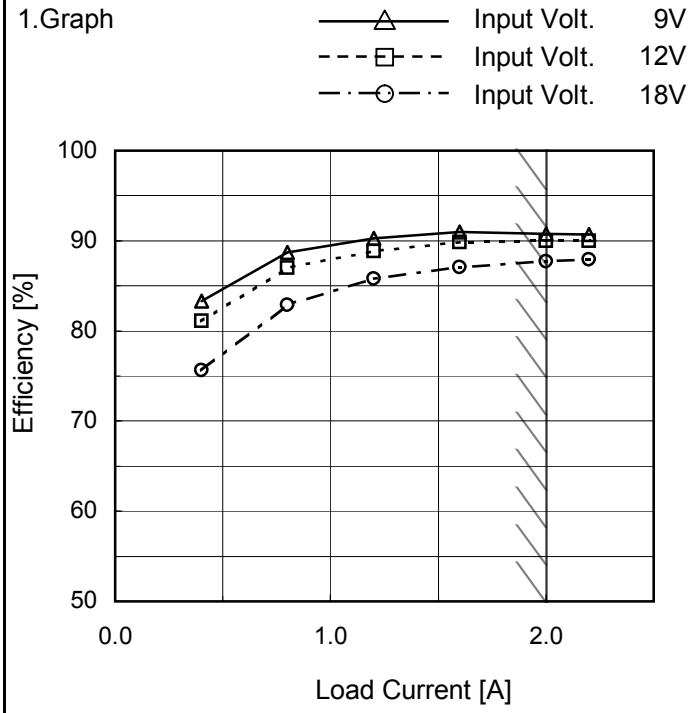
|---|---|
| Model | MGS301215 |
| Item | Efficiency (by Load Current) |
| Object | ———————— |

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. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| 0.0 | - | - | - |
| 0.4 | 83.3 | 81.1 | 75.6 |
| 0.8 | 88.7 | 87.0 | 82.9 |
| 1.2 | 90.3 | 88.9 | 85.8 |
| 1.6 | 91.0 | 89.8 | 87.1 |
| 2.0 | 90.8 | 90.0 | 87.7 |
| 2.2 | 90.7 | 90.0 | 87.9 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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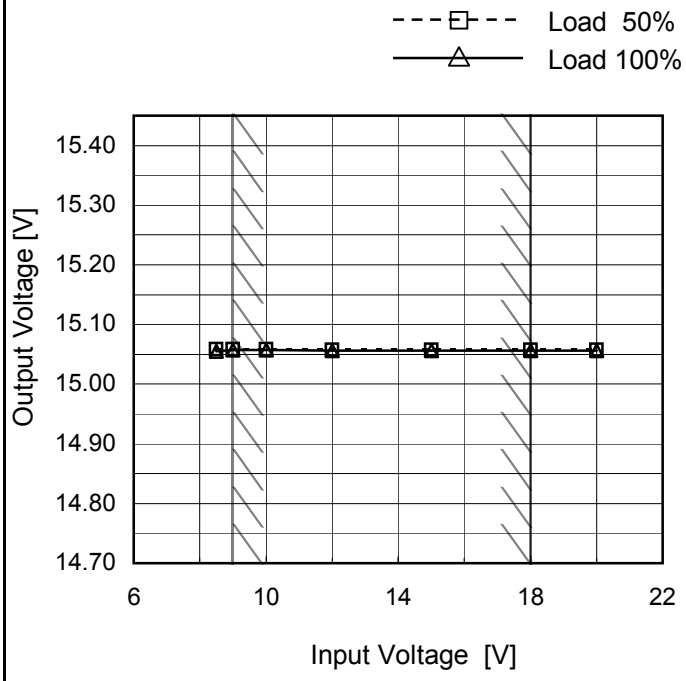
|---|---|
| Model | MGS301215 |
| Item | Line Regulation |
| Object | +15V2A |

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% |
| 8.5 | 15.058 | 15.055 |
| 9.0 | 15.058 | 15.057 |
| 10.0 | 15.058 | 15.057 |
| 12.0 | 15.058 | 15.057 |
| 15.0 | 15.057 | 15.056 |
| 18.0 | 15.057 | 15.056 |
| 20.0 | 15.057 | 15.056 |
| -- | - | - |
| -- | - | - |

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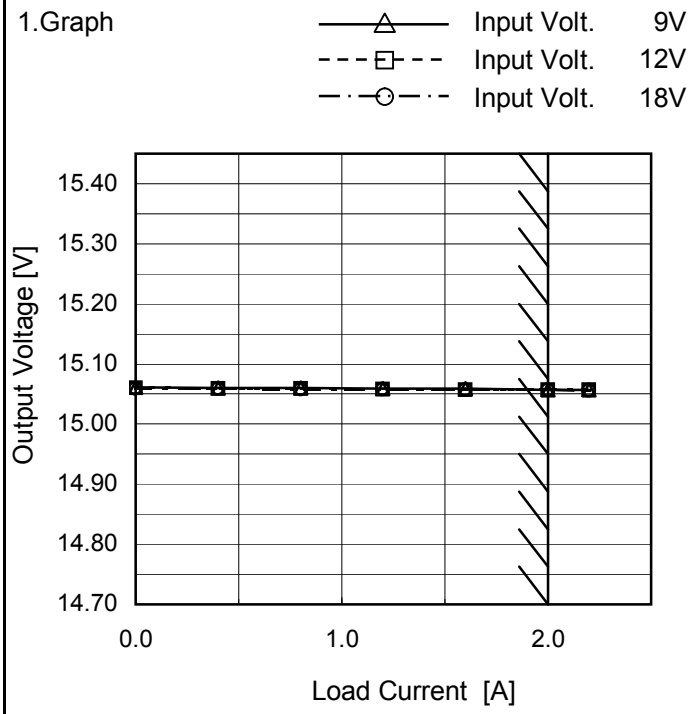
| | |
|---|---|
| Model | MGS301215 |
| Item | Load Regulation |
| Object | +15V2A |

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. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| 0.0 | 15.061 | 15.060 | 15.059 |
| 0.4 | 15.060 | 15.060 | 15.059 |
| 0.8 | 15.060 | 15.059 | 15.058 |
| 1.2 | 15.059 | 15.058 | 15.058 |
| 1.6 | 15.059 | 15.057 | 15.057 |
| 2.0 | 15.057 | 15.057 | 15.057 |
| 2.2 | 15.057 | 15.057 | 15.056 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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|---|---|
| Model | MGS301215 |
| Item | Dynamic Load Response |
| Object | +15V2A |

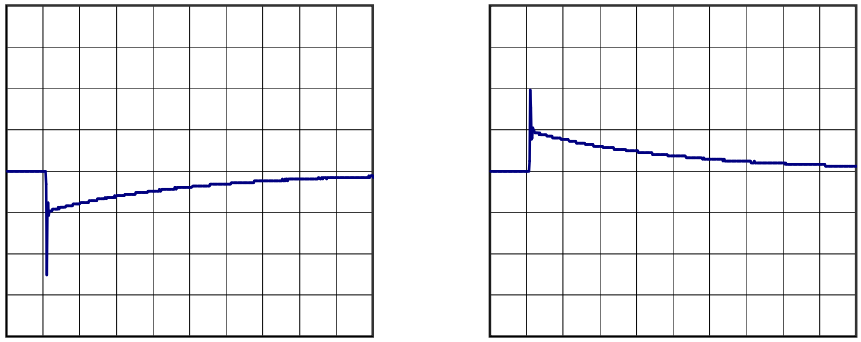
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 12 V
Cycle 1000 ms

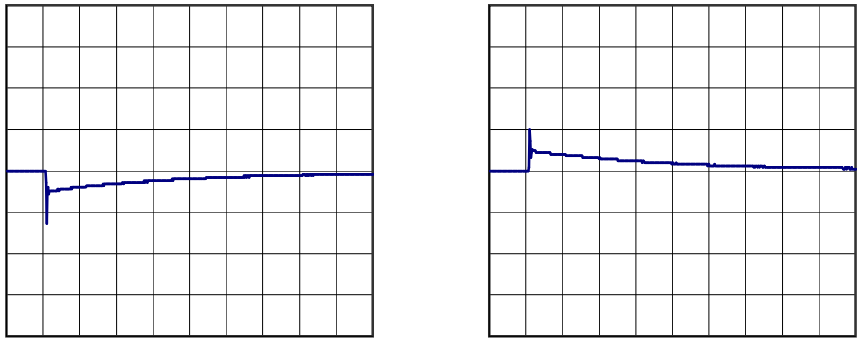
$t_1$、$t_2$ = 50μs

Load Current

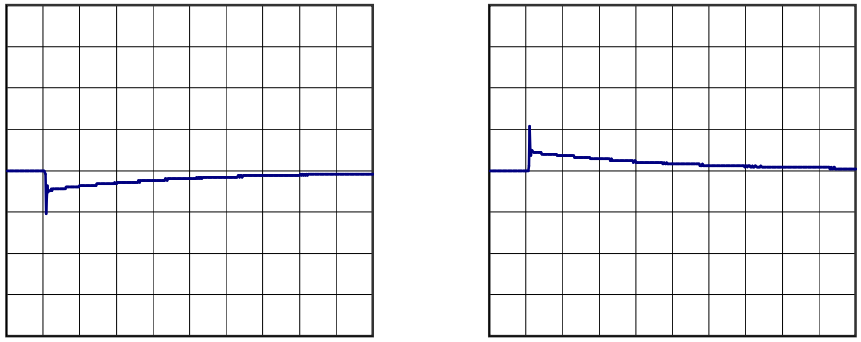

Min. Load (0A) ⟷ Load 100% (2A)




Min. Load (0A) ⟷ Load 50% (1A)




Load 50% (1A) ⟷ Load 100% (2A)



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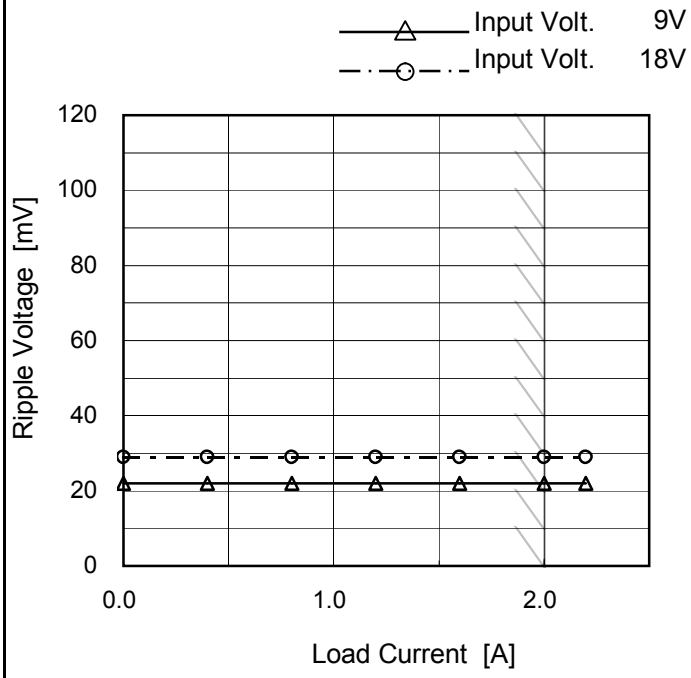
|---|---|
| Model | MGS301215 |
| Item | Ripple Voltage (by Load Current) |
| Object | +15V2A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

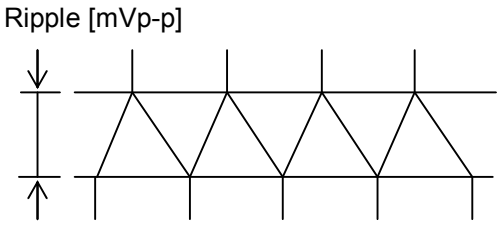



Fig.Complex Ripple Wave Form

2.Values

| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 9 [V] | Input Volt. 18 [V] |
| 0.0 | 22 | 29 |
| 0.4 | 22 | 29 |
| 0.8 | 22 | 29 |
| 1.2 | 22 | 29 |
| 1.6 | 22 | 29 |
| 2.0 | 22 | 29 |
| 2.2 | 22 | 29 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

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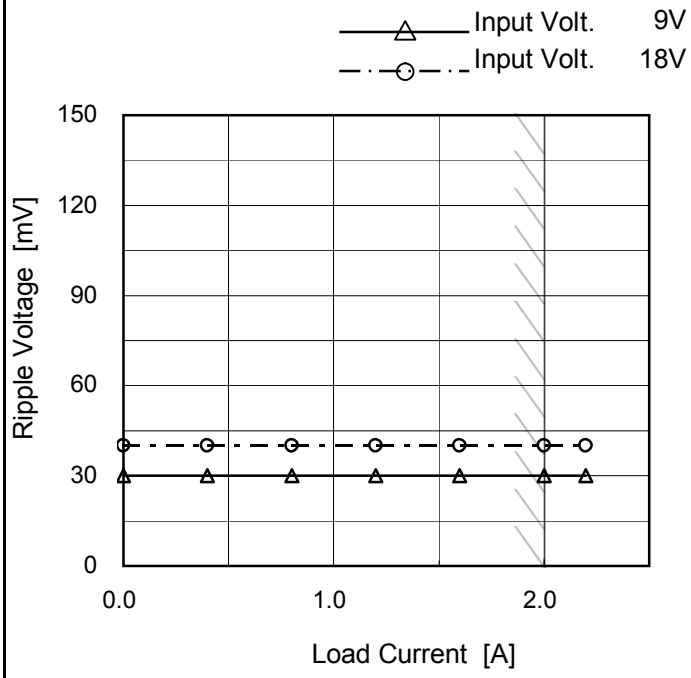
|---|---|
| Model | MGS301215 |
| Item | Ripple-Noise |
| Object | +15V2A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

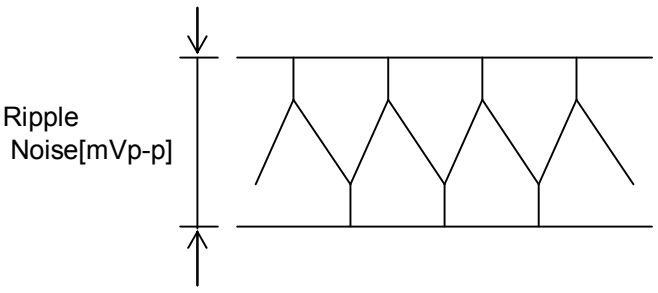



Fig.Complex Ripple Noise Wave Form

2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 9 [V] | Input Volt. 18 [V] |
| 0.0 | 30 | 40 |
| 0.4 | 30 | 40 |
| 0.8 | 30 | 40 |
| 1.2 | 30 | 40 |
| 1.6 | 30 | 40 |
| 2.0 | 30 | 40 |
| 2.2 | 30 | 40 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

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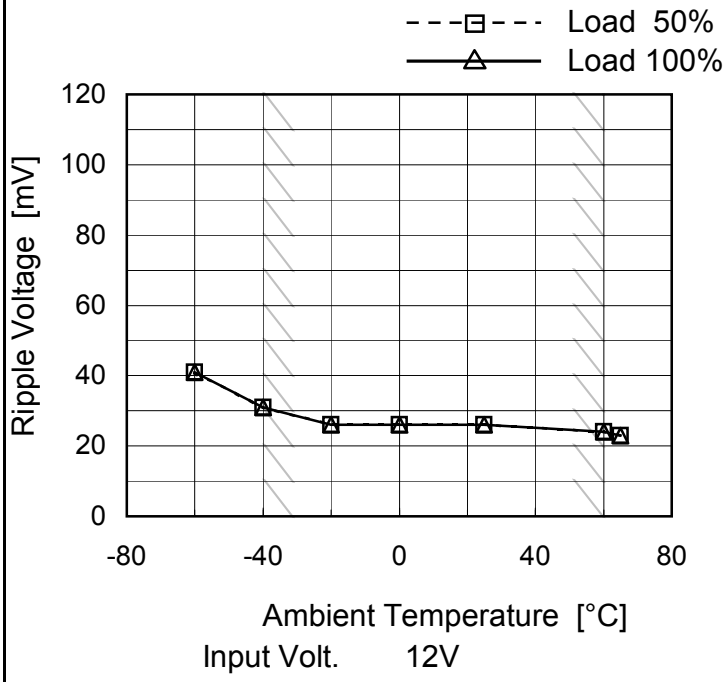
|---|---|
| Model | MGS301215 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +15V2A |

Testing Circuitry Figure B

1.Graph




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 | 41 | 41 |
| -40 | 31 | 31 |
| -20 | 26 | 26 |
| 0 | 26 | 26 |
| 25 | 26 | 26 |
| 60 | 24 | 24 |
| 65 | 23 | 23 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

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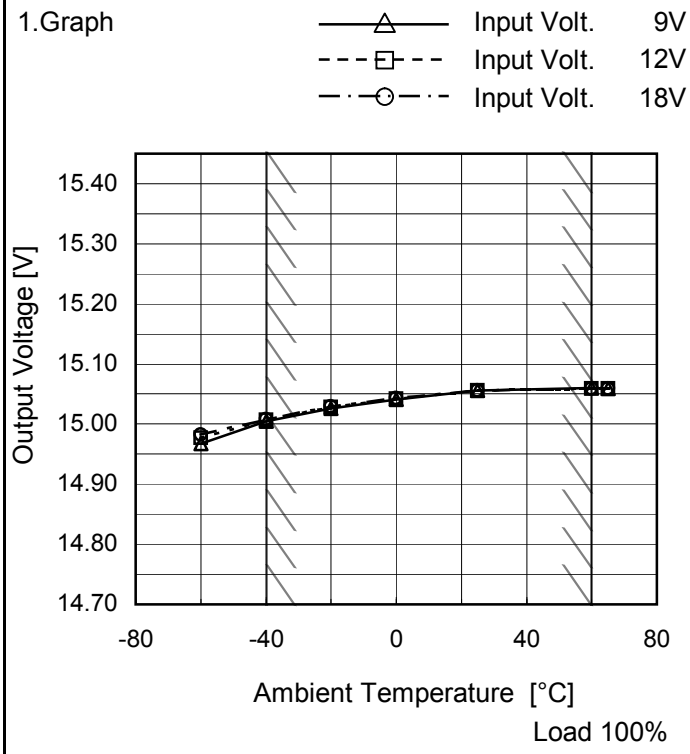
|---|---|
| Model | MGS301215 |
| Item | Ambient Temperature Drift |
| Object | +15V2A |

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. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| -60 | 14.967 | 14.977 | 14.982 |
| -40 | 15.004 | 15.007 | 15.008 |
| -20 | 15.026 | 15.028 | 15.029 |
| 0 | 15.041 | 15.042 | 15.043 |
| 25 | 15.056 | 15.056 | 15.056 |
| 60 | 15.060 | 15.060 | 15.059 |
| 65 | 15.059 | 15.059 | 15.059 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | | |
|---|---|---|
| Model | MGS301215 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +15V2A | |

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 - 60°C
Input Voltage : 9 - 18V
Load Current : 0 - 2A

* 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 | 60 | 9 | 0 | 15.063 | ±30 | ±0.2 |
| Minimum Voltage | -40 | 9 | 0 | 15.004 | | |

COSEL

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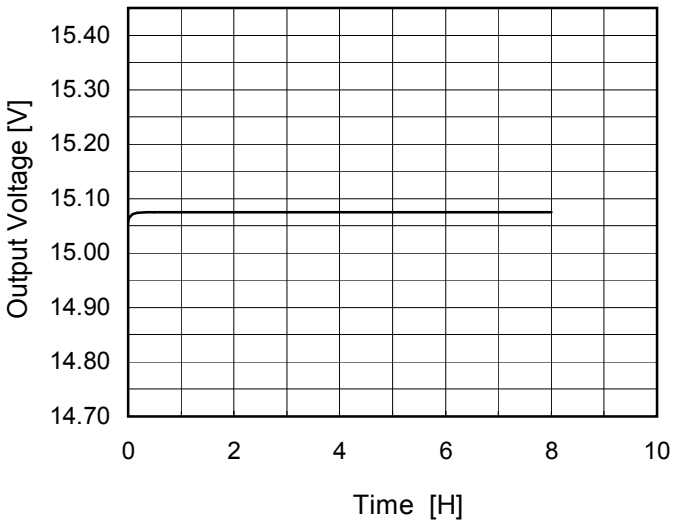
|---|---|
| Model | MGS301215 |
| Item | Time Lapse Drift |
| Object | +15V2A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 12V
Load 100%

2.Values

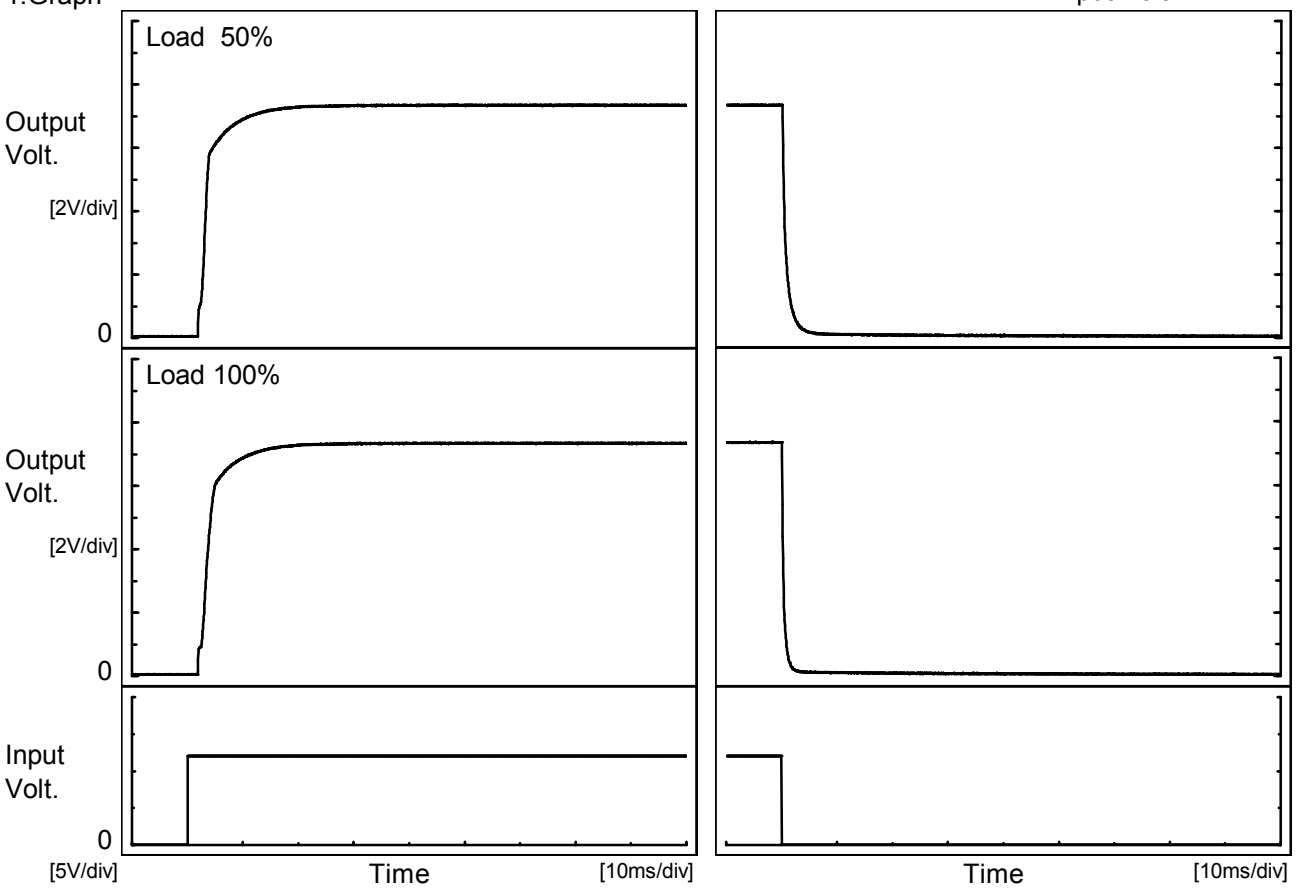
| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 15.057 |
| 0.5 | 15.075 |
| 1.0 | 15.075 |
| 2.0 | 15.075 |
| 3.0 | 15.075 |
| 4.0 | 15.075 |
| 5.0 | 15.075 |
| 6.0 | 15.075 |
| 7.0 | 15.075 |
| 8.0 | 15.075 |

COSEL

| | | |
|---|---|---|
| Model | MGS301215 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +15V2A | |

1.Graph

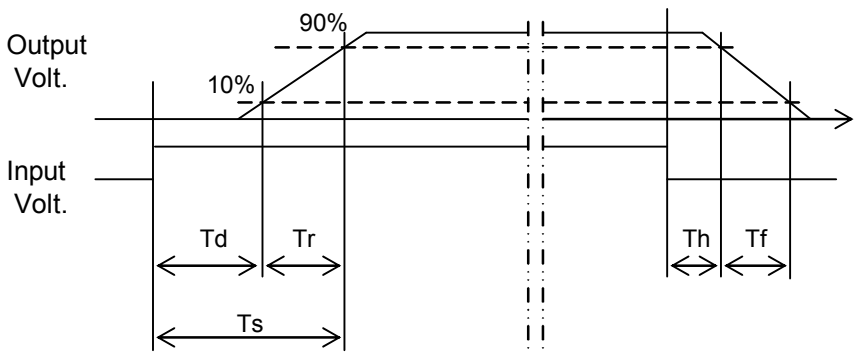
Input Volt. 12 V




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 2.1 | 6.9 | 9.0 | 0.1 | 1.9 |
| 100 % | 2.1 | 7.0 | 9.1 | 0.1 | 0.8 |

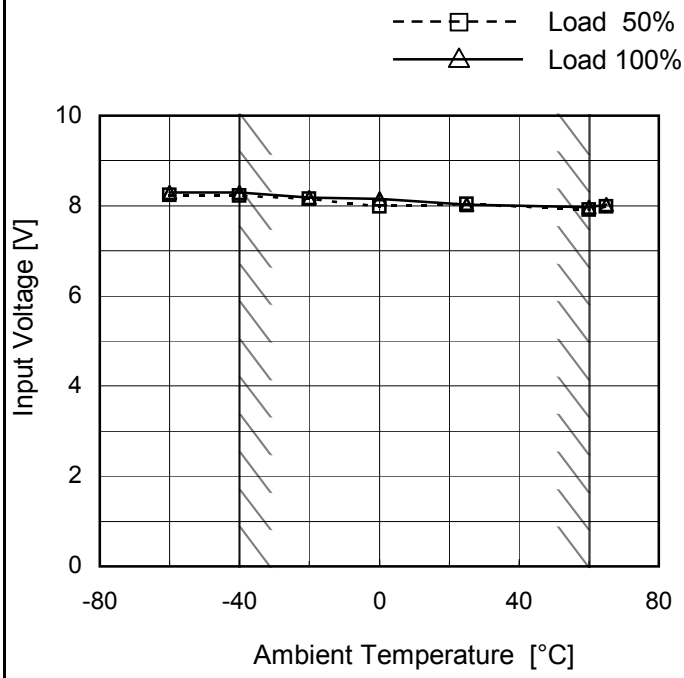


COSEL

| | |
|---|---|
| Model | MGS301215 |
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +15V2A |

Testing Circuitry Figure A

1.Graph




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

2.Values

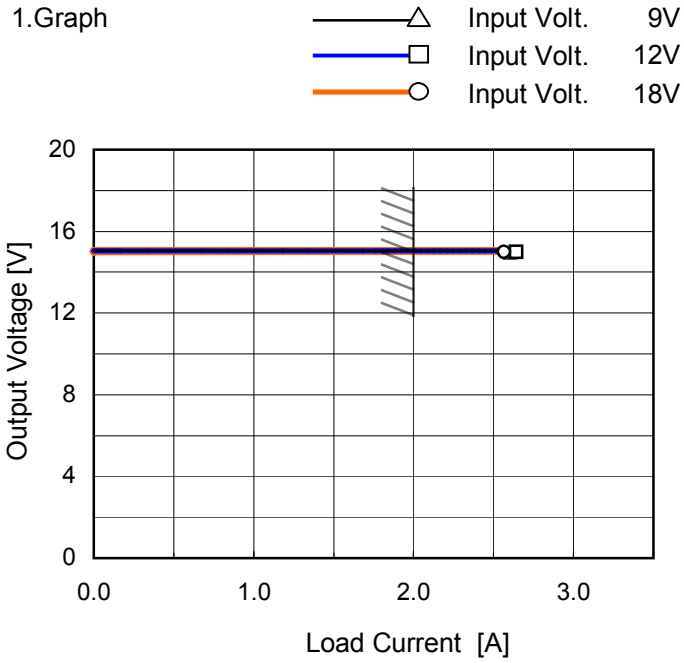
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -60 | 8.3 | 8.3 |
| -40 | 8.3 | 8.3 |
| -20 | 8.2 | 8.2 |
| 0 | 8.0 | 8.2 |
| 25 | 8.1 | 8.1 |
| 60 | 8.0 | 8.0 |
| 65 | 8.0 | 8.1 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS301215 |
| Item | Overcurrent Protection |
| Object | +15V2A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

Intermittent operation occurs when overcurrent protection is activated.

2.Values

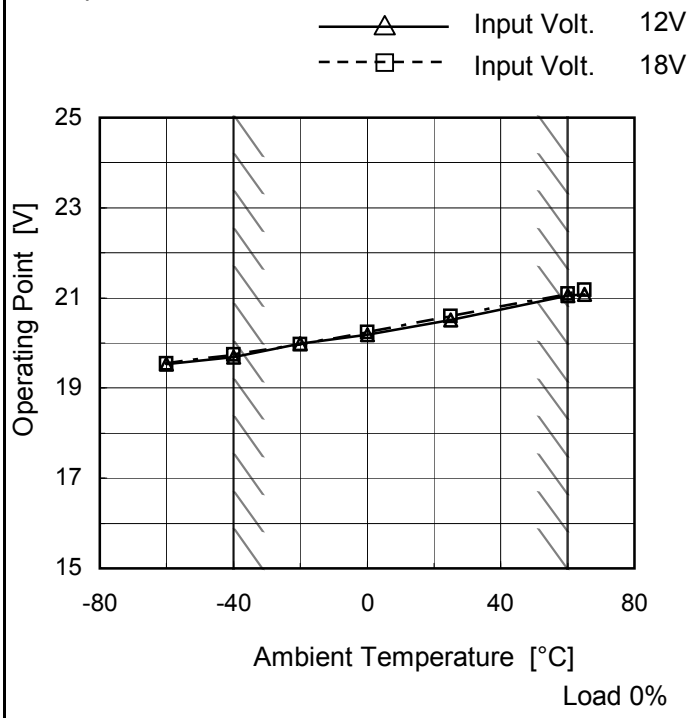
| Output Voltage [V] | Load Current [A] | | |
|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] |
| 15.0 | 2.60 | 2.64 | 2.57 |
| 14.3 | - | - | - |
| 13.5 | - | - | - |
| 12.0 | - | - | - |
| 10.5 | - | - | - |
| 9.0 | - | - | - |
| 7.5 | - | - | - |
| 6.0 | - | - | - |
| 4.5 | - | - | - |
| 3.0 | - | - | - |
| 1.5 | - | - | - |
| 0.0 | - | - | - |

COSEL

| | |
|---|---|
| Model | MGS301215 |
| Item | Overvoltage Protection |
| Object | +15V2A |

Testing Circuitry Figure A

1.Graph




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

2.Values

| Ambient Temperature [°C] | Operating Point [V] | |
|---|---|---|
| | Input Volt. 12[V] | Input Volt. 18[V] |
| -60 | 19.54 | 19.55 |
| -40 | 19.69 | 19.74 |
| -20 | 19.99 | 19.97 |
| 0 | 20.18 | 20.24 |
| 25 | 20.51 | 20.60 |
| 60 | 21.05 | 21.10 |
| 65 | 21.08 | 21.17 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

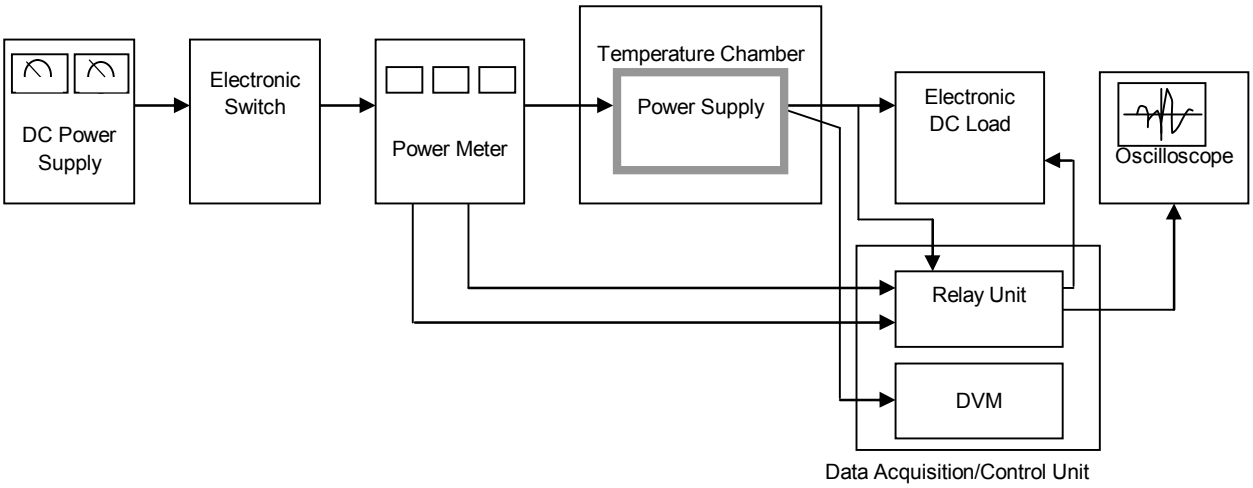



Figure A

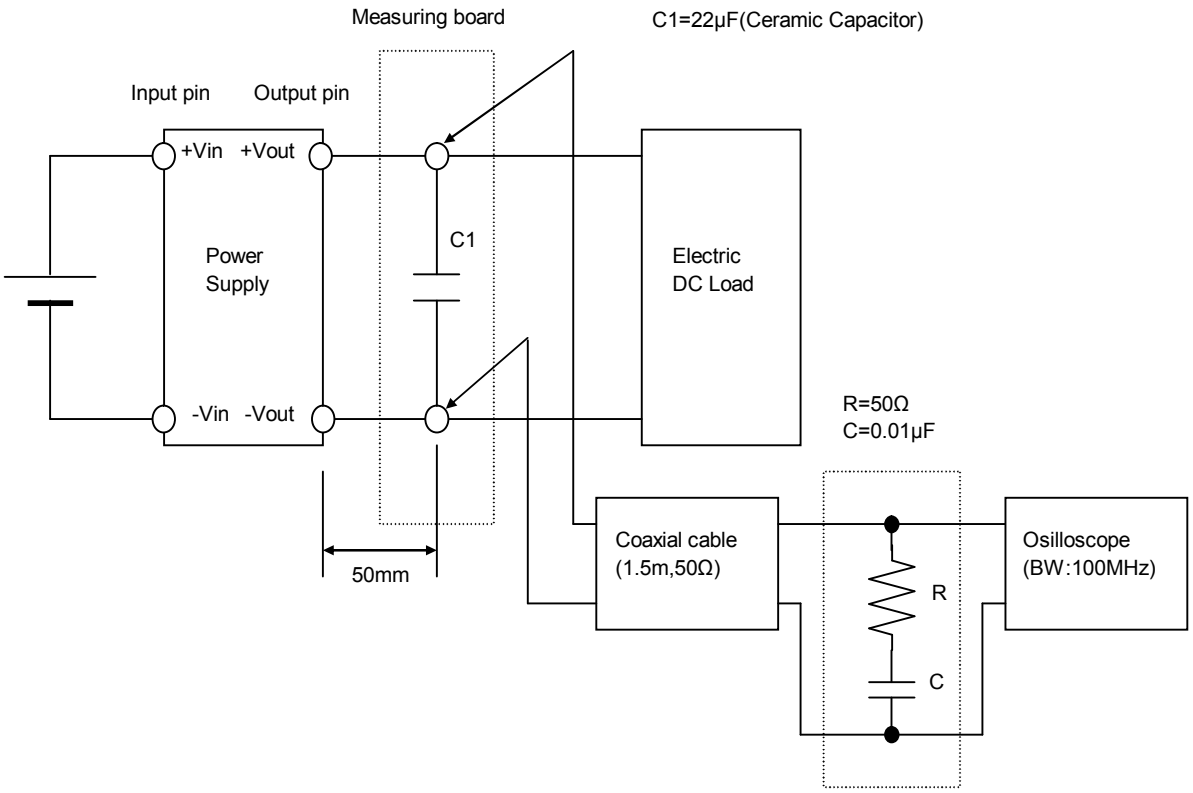



Figure B（Ripple and Ripple noise Characteristic）