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参考資料

# TEST DATA OF MGS152415

Regulated DC Power Supply
September 14, 2010

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Junki Nakayama Design Engineer

**COSEL CO.,LTD.**

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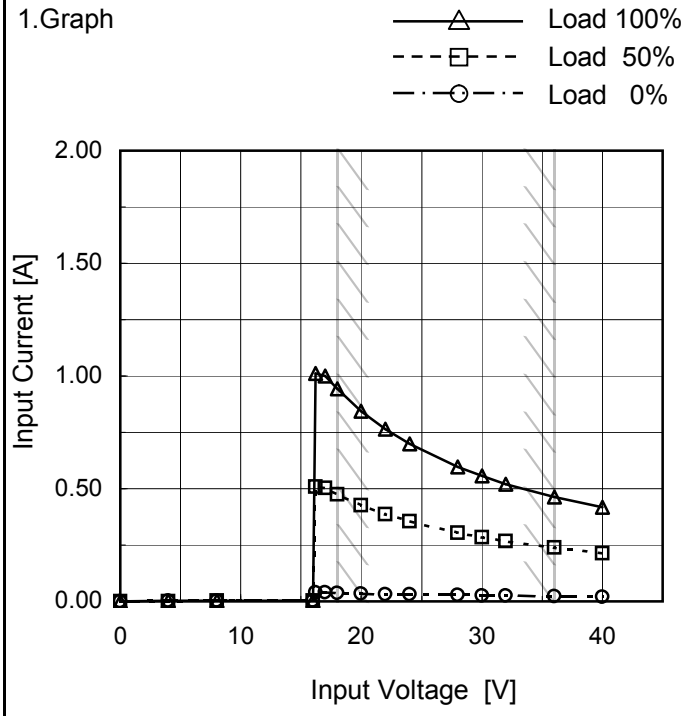
| | |
|---|---|
| Model | MGS152415 |
| Item | Input Current (by Input Voltage) |
| Object | ———————— |

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 |
| 4.0 | 0.002 | 0.001 | 0.002 |
| 8.0 | 0.002 | 0.003 | 0.002 |
| 16.0 | 0.003 | 0.003 | 0.002 |
| 16.2 | 0.040 | 0.509 | 1.011 |
| 17.0 | 0.039 | 0.503 | 1.000 |
| 18.0 | 0.038 | 0.474 | 0.942 |
| 20.0 | 0.035 | 0.425 | 0.843 |
| 22.0 | 0.032 | 0.386 | 0.764 |
| 24.0 | 0.030 | 0.354 | 0.698 |
| 28.0 | 0.027 | 0.304 | 0.596 |
| 30.0 | 0.026 | 0.284 | 0.556 |
| 32.0 | 0.025 | 0.266 | 0.520 |
| 36.0 | 0.023 | 0.237 | 0.462 |
| 40.0 | 0.021 | 0.214 | 0.417 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



BC-10446

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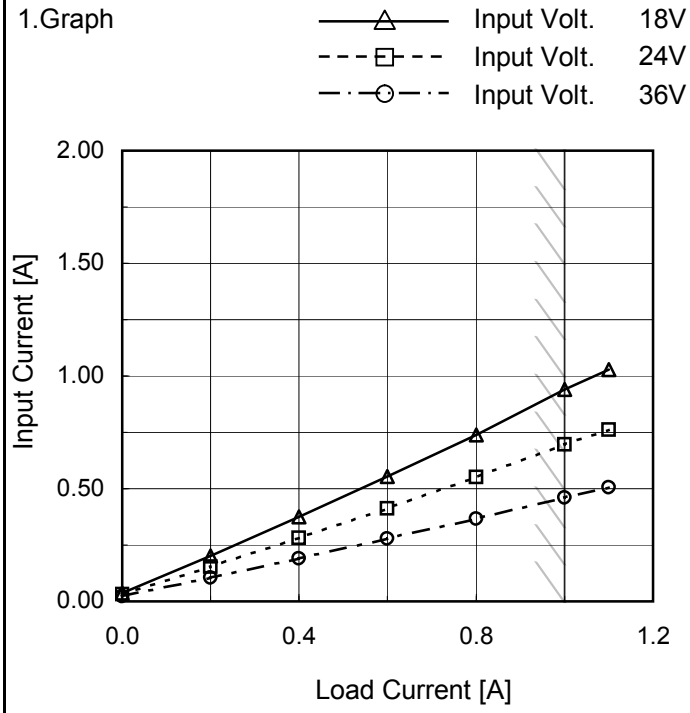
| | |
|---|---|
| Model | MGS152415 |
| Item | Input Current (by Load Current) |
| Object | ———————— |

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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.0 | 0.038 | 0.030 | 0.023 |
| 0.2 | 0.201 | 0.152 | 0.104 |
| 0.4 | 0.374 | 0.281 | 0.189 |
| 0.6 | 0.555 | 0.413 | 0.277 |
| 0.8 | 0.740 | 0.550 | 0.367 |
| 1.0 | 0.941 | 0.697 | 0.461 |
| 1.1 | 1.028 | 0.760 | 0.506 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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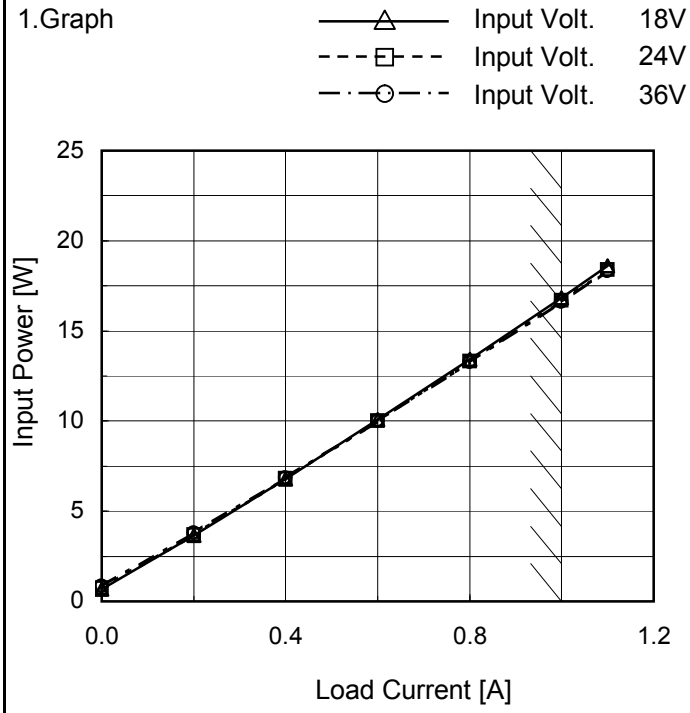
| | |
|---|---|
| Model | MGS152415 |
| Item | Input Power (by Load Current) |
| Object | ——————— |

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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.0 | 0.66 | 0.76 | 0.84 |
| 0.2 | 3.65 | 3.71 | 3.80 |
| 0.4 | 6.78 | 6.82 | 6.84 |
| 0.6 | 10.07 | 10.02 | 10.02 |
| 0.8 | 13.41 | 13.31 | 13.28 |
| 1.0 | 16.84 | 16.68 | 16.63 |
| 1.1 | 18.62 | 18.40 | 18.32 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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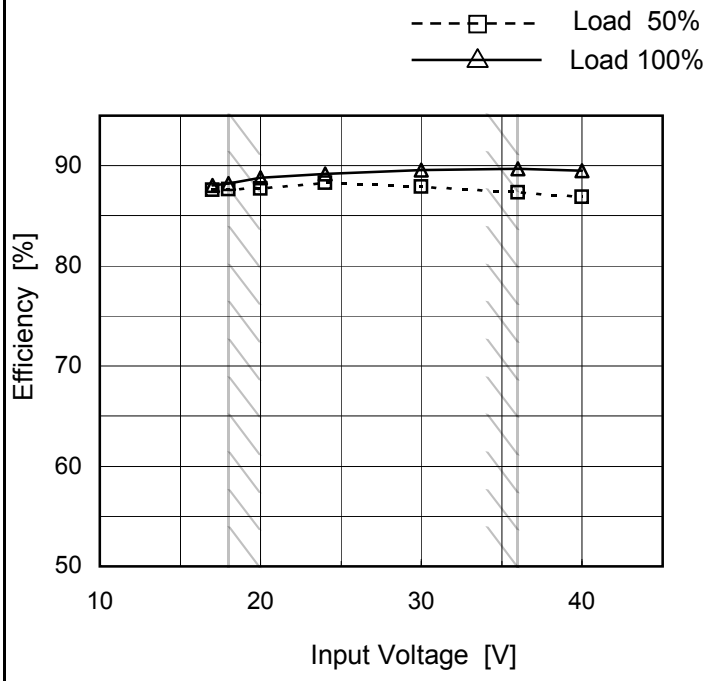
|---|---|
| Model | MGS152415 |
| Item | Efficiency (by Input Voltage) |
| Object | ―――――――――― |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

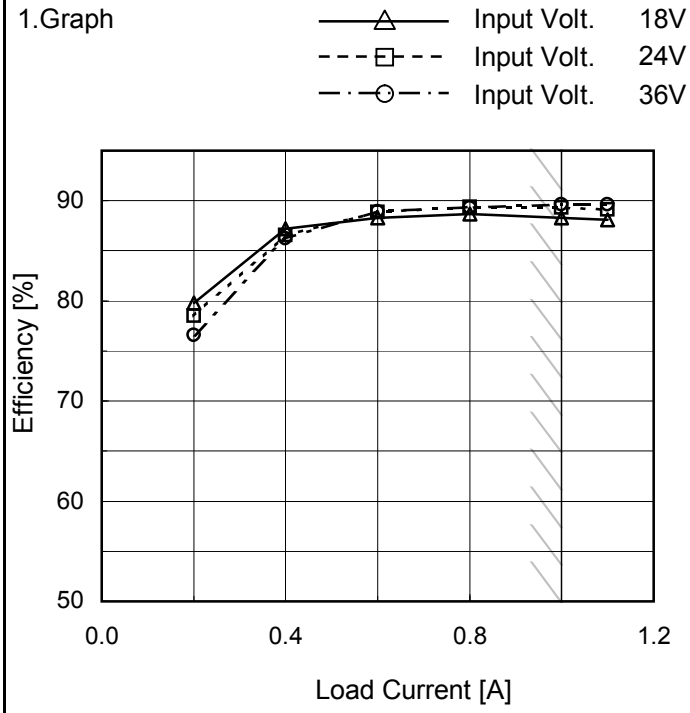
| Input Voltage [V] | Efficiency [%] | |
|---|---|---|
| | Load 50% | Load 100% |
| 17 | 87.6 | 88.1 |
| 18 | 87.7 | 88.2 |
| 20 | 87.7 | 88.8 |
| 24 | 88.3 | 89.2 |
| 30 | 87.9 | 89.6 |
| 36 | 87.3 | 89.7 |
| 40 | 86.9 | 89.5 |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS152415 |
| 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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.0 | - | - | - |
| 0.2 | 79.8 | 78.5 | 76.6 |
| 0.4 | 87.2 | 86.6 | 86.2 |
| 0.6 | 88.3 | 88.9 | 88.9 |
| 0.8 | 88.7 | 89.4 | 89.3 |
| 1.0 | 88.3 | 89.3 | 89.6 |
| 1.1 | 88.1 | 89.1 | 89.6 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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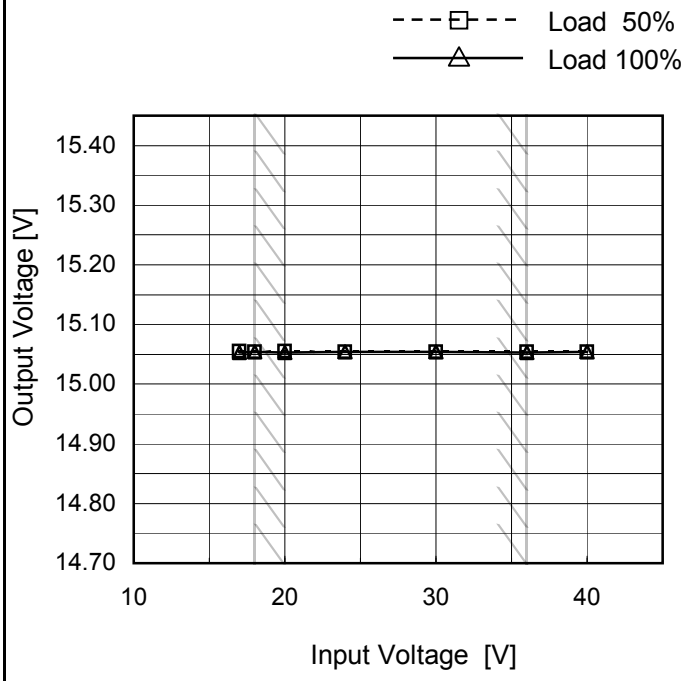
|---|---|
| Model | MGS152415 |
| Item | Line Regulation |
| Object | +15V1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

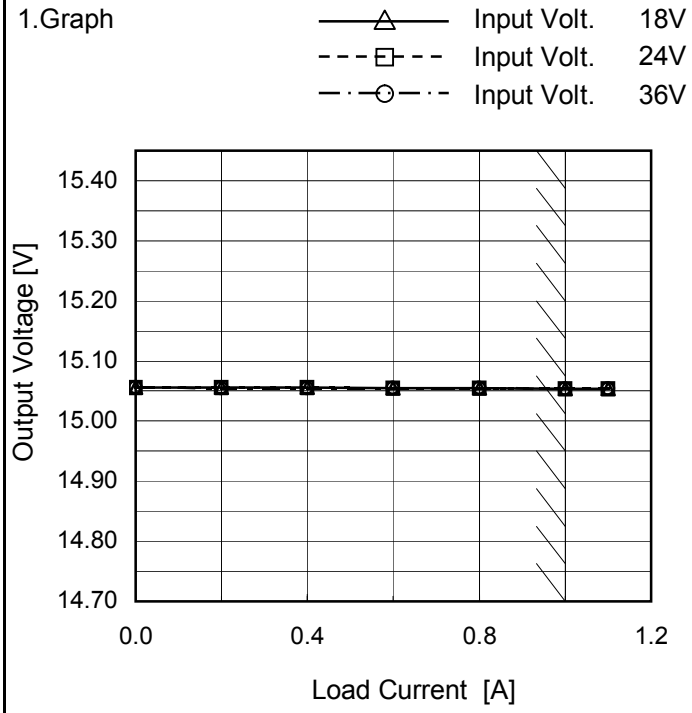
| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 17 | 15.055 | 15.053 |
| 18 | 15.055 | 15.054 |
| 20 | 15.055 | 15.054 |
| 24 | 15.055 | 15.054 |
| 30 | 15.054 | 15.054 |
| 36 | 15.054 | 15.054 |
| 40 | 15.054 | 15.054 |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS152415 |
| Item | Load Regulation |
| Object | +15V1A |

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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.0 | 15.056 | 15.056 | 15.056 |
| 0.2 | 15.056 | 15.056 | 15.055 |
| 0.4 | 15.056 | 15.056 | 15.055 |
| 0.6 | 15.055 | 15.055 | 15.055 |
| 0.8 | 15.055 | 15.055 | 15.054 |
| 1.0 | 15.054 | 15.054 | 15.054 |
| 1.1 | 15.054 | 15.054 | 15.054 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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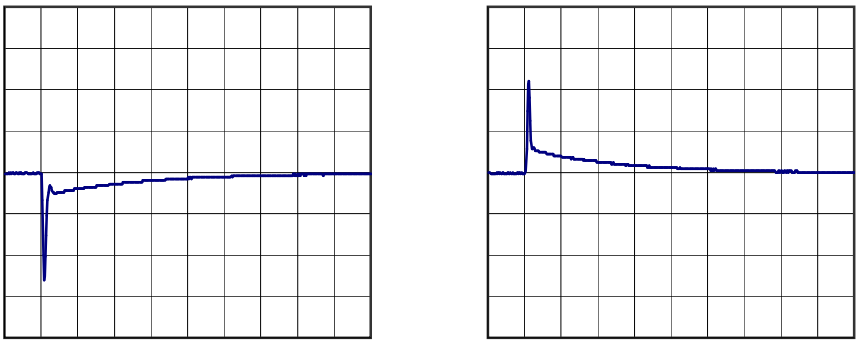
|---|---|
| Model | MGS152415 |
| Item | Dynamic Load Response |
| Object | +15V1A |

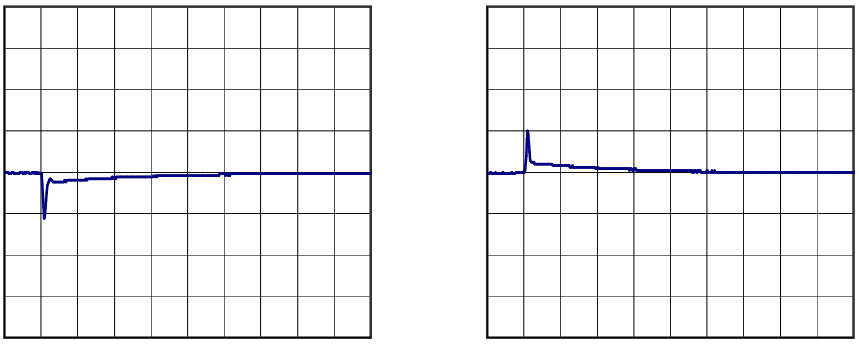
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 24 V
Cycle 1000 ms

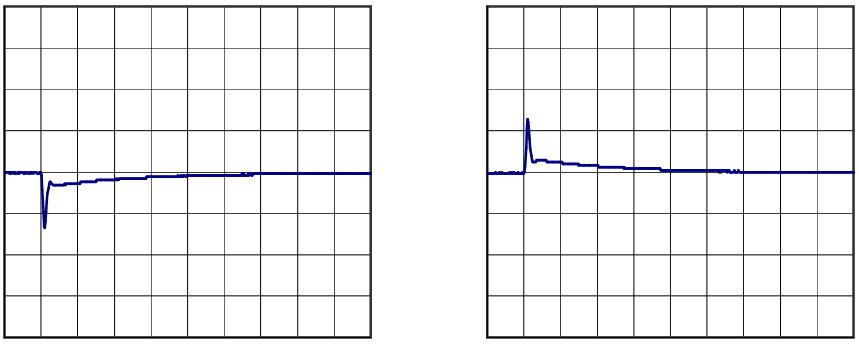

Min. Load (0A) ⟷ Load 100% (1A)




Min. Load (0A) ⟷ Load 50% (0.5A)




Load 50% (0.5A) ⟷ Load 100% (1A)



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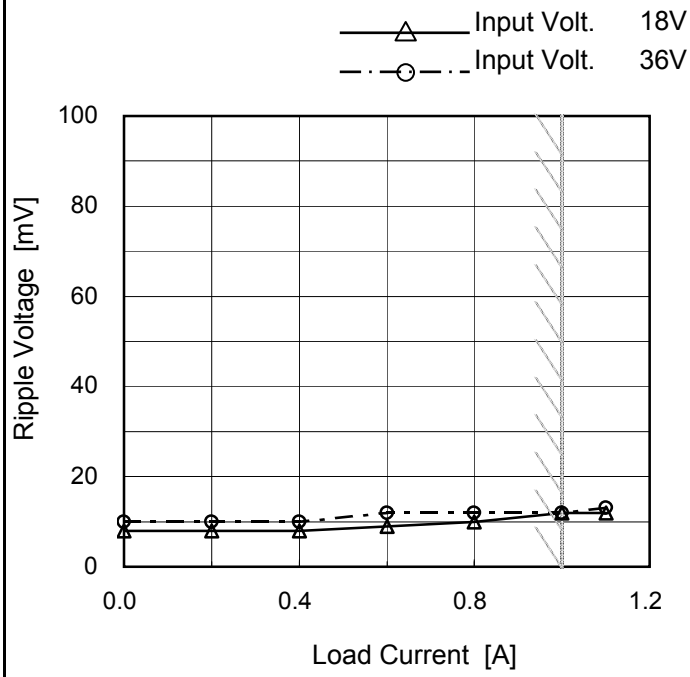
|---|---|
| Model | MGS152415 |
| Item | Ripple Voltage (by Load Current) |
| Object | +15V1A |

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.

Ripple [mVp-p]

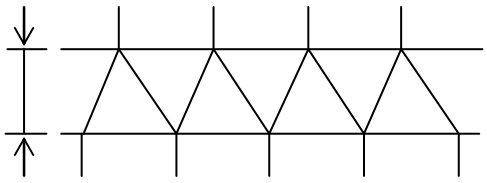


Fig.Complex Ripple Wave Form

2.Values

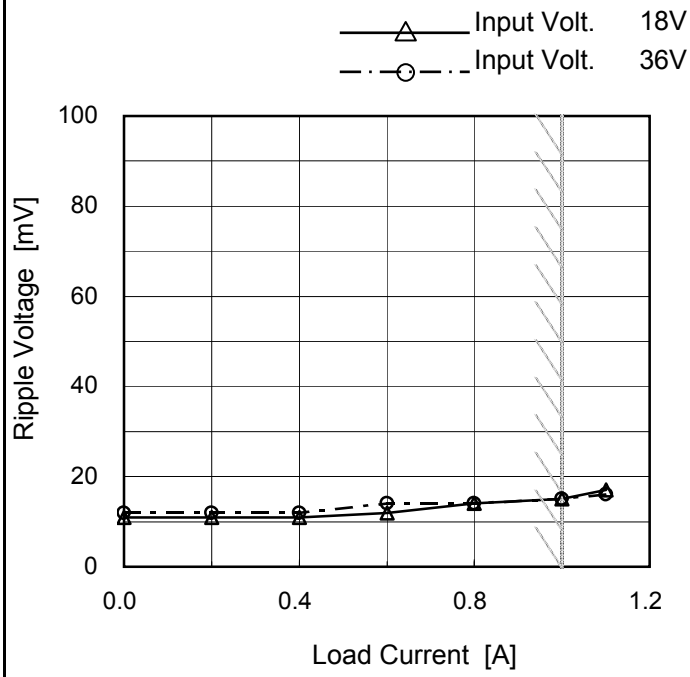
| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 18 [V] | Input Volt. 36 [V] |
| 0.0 | 8 | 10 |
| 0.2 | 8 | 10 |
| 0.4 | 8 | 10 |
| 0.6 | 9 | 12 |
| 0.8 | 10 | 12 |
| 1.0 | 12 | 12 |
| 1.1 | 12 | 13 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS152415 |
| Item | Ripple-Noise |
| Object | +15V1A |

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.

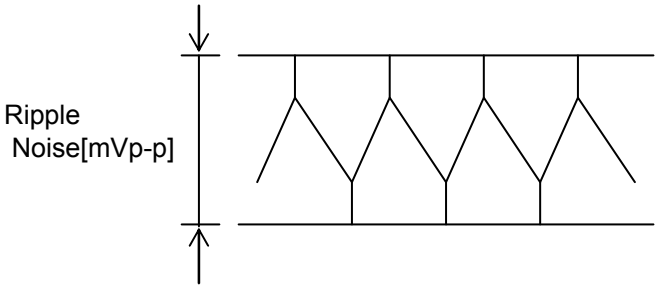



Fig.Complex Ripple Noise Wave Form

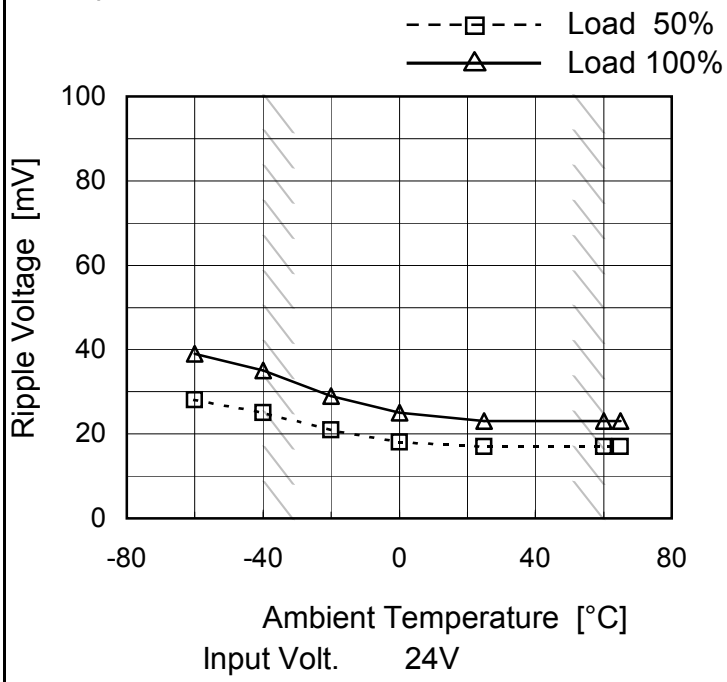
2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 18 [V] | Input Volt. 36 [V] |
| 0.0 | 11 | 12 |
| 0.2 | 11 | 12 |
| 0.4 | 11 | 12 |
| 0.6 | 12 | 14 |
| 0.8 | 14 | 14 |
| 1.0 | 15 | 15 |
| 1.1 | 17 | 16 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

| | |
|---|---|
| Model | MGS152415 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +15V1A |

Testing Circuitry Figure B

1.Graph




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 | 28 | 39 |
| -40 | 25 | 35 |
| -20 | 21 | 29 |
| 0 | 18 | 25 |
| 25 | 17 | 23 |
| 60 | 17 | 23 |
| 65 | 17 | 23 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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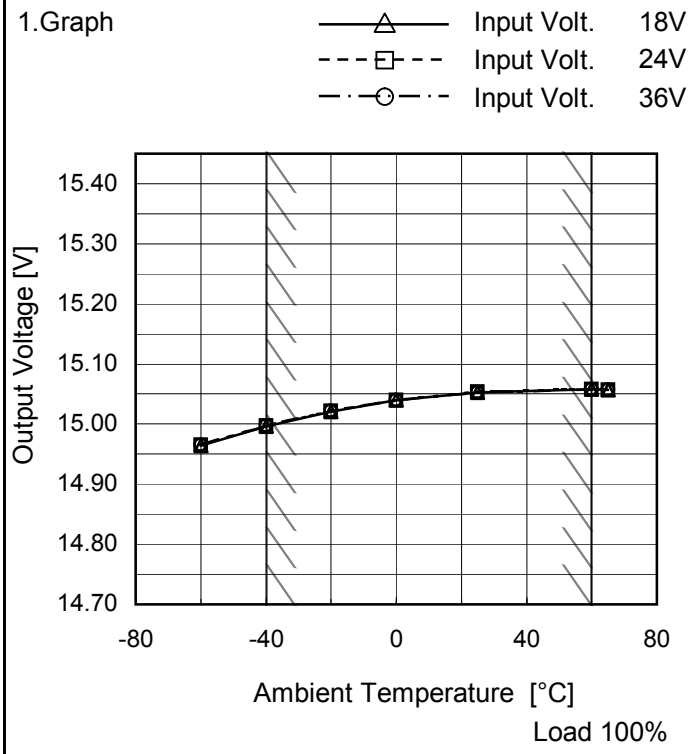
|---|---|
| Model | MGS152415 |
| Item | Ambient Temperature Drift |
| Object | +15V1A |

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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| -60 | 14.965 | 14.965 | 14.966 |
| -40 | 14.997 | 14.997 | 14.997 |
| -20 | 15.021 | 15.022 | 15.022 |
| 0 | 15.040 | 15.040 | 15.040 |
| 25 | 15.053 | 15.053 | 15.053 |
| 60 | 15.058 | 15.058 | 15.058 |
| 65 | 15.057 | 15.057 | 15.057 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | | |
|---|---|---|
| Model | MGS152415 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +15V1A | |

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 : 18 - 36V
Load Current : 0 - 1A

* 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 | 24 | 0 | 15.060 | ±32 | ±0.2 |
| Minimum Voltage | -40 | 18 | 1 | 14.997 | | |

COSEL

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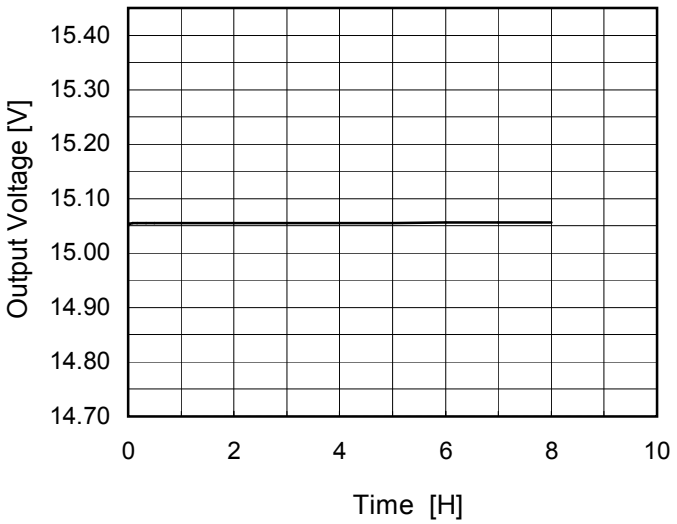
|---|---|
| Model | MGS152415 |
| Item | Time Lapse Drift |
| Object | +15V1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 24V
Load 100%

2.Values

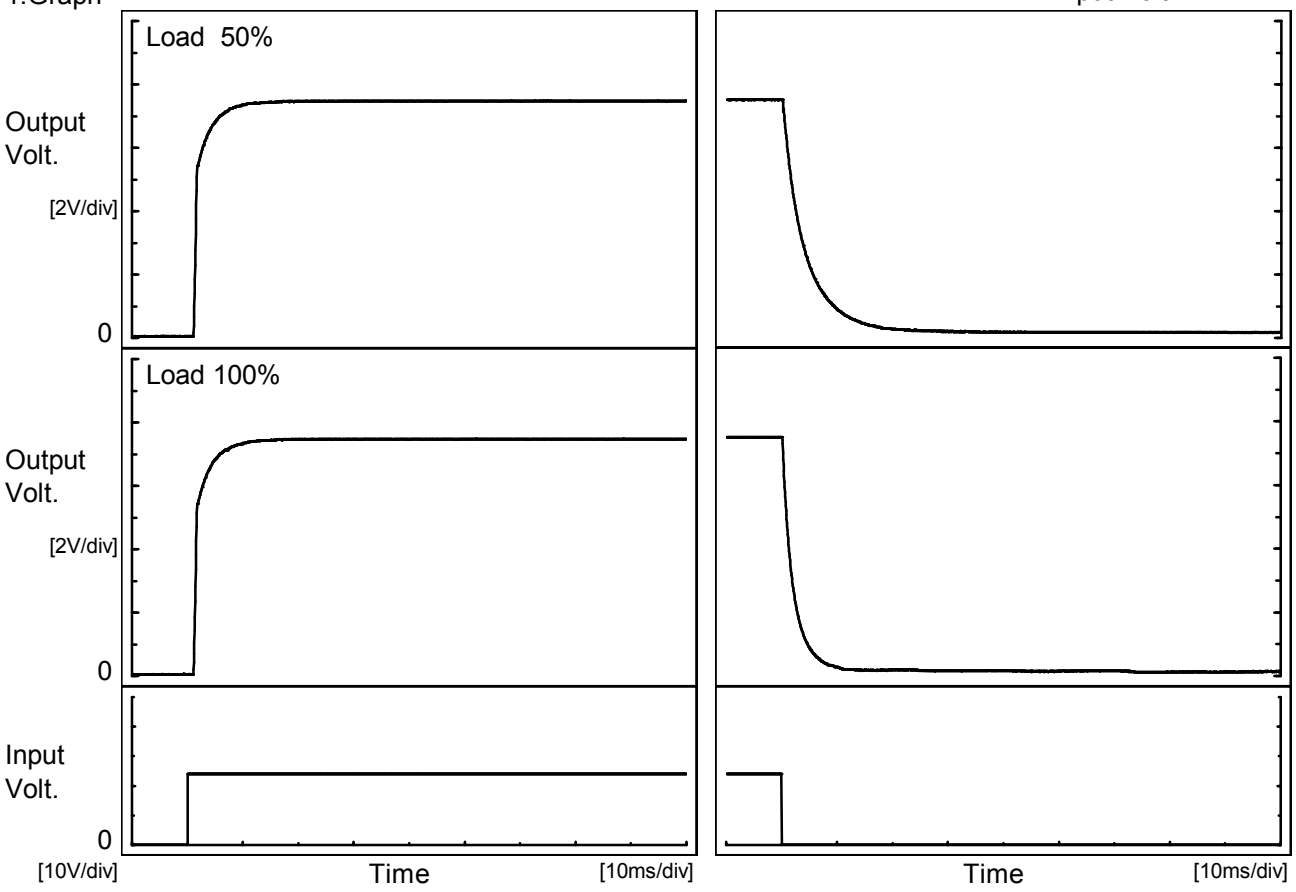
| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 15.051 |
| 0.5 | 15.055 |
| 1.0 | 15.055 |
| 2.0 | 15.055 |
| 3.0 | 15.055 |
| 4.0 | 15.056 |
| 5.0 | 15.056 |
| 6.0 | 15.056 |
| 7.0 | 15.056 |
| 8.0 | 15.056 |

COSEL

| | | |
|---|---|---|
| Model | MGS152415 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +15V1A | |

1.Graph

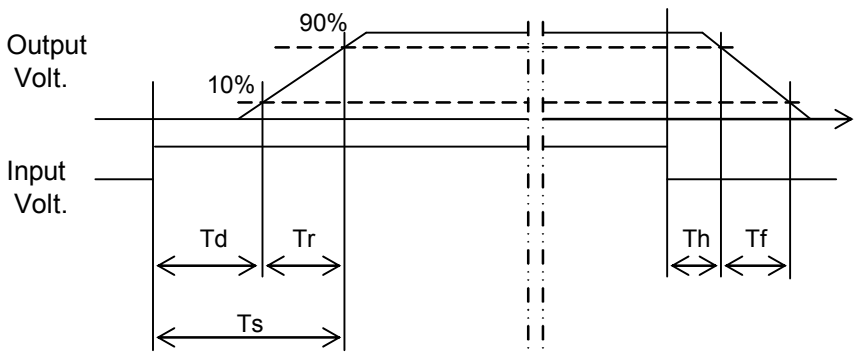
Input Volt. 24 V




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 1.3 | 3.7 | 5.0 | 0.5 | 10.4 |
| 100 % | 1.3 | 3.6 | 4.9 | 0.3 | 5.0 |

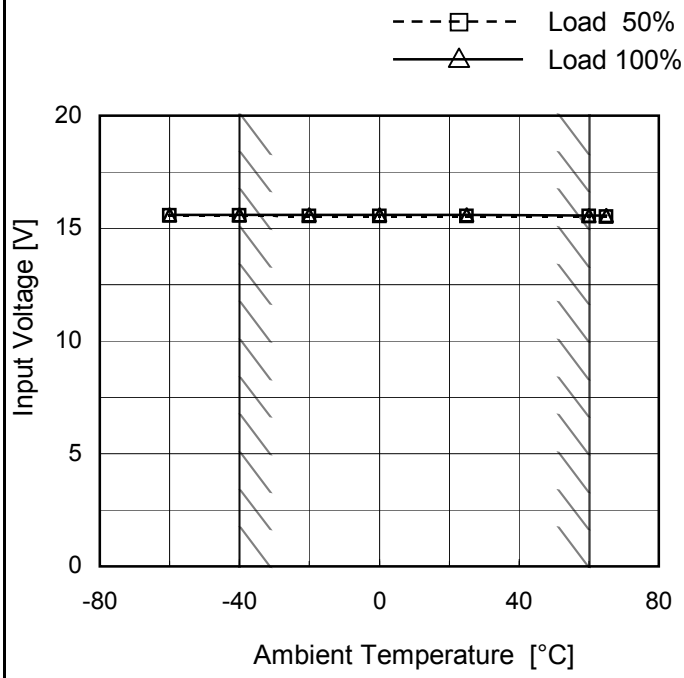


COSEL

| | |
|---|---|
| Model | MGS152415 |
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +15V1A |

Testing Circuitry Figure A

1.Graph




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

2.Values

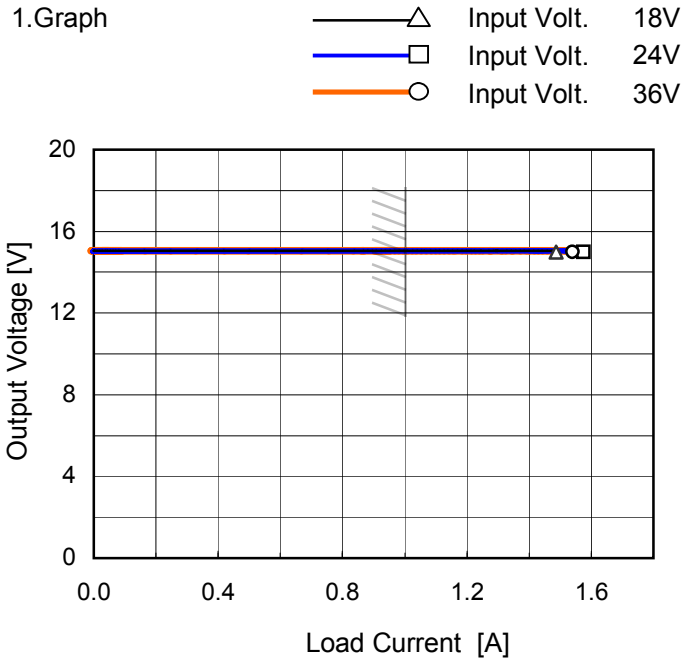
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -60 | 15.6 | 15.6 |
| -40 | 15.6 | 15.6 |
| -20 | 15.6 | 15.6 |
| 0 | 15.6 | 15.6 |
| 25 | 15.6 | 15.6 |
| 60 | 15.6 | 15.6 |
| 65 | 15.6 | 15.6 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS152415 |
| Item | Overcurrent Protection |
| Object | +15V1A |

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. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 15.0 | 1.49 | 1.57 | 1.54 |
| 14.3 | - | - | - |
| 13.5 | - | - | - |
| 12.0 | - | - | - |
| 10.5 | - | - | - |
| 9.0 | - | - | - |
| 7.5 | - | - | - |
| 6.0 | - | - | - |
| 4.5 | - | - | - |
| 3.0 | - | - | - |
| 1.5 | - | - | - |
| 0.0 | - | - | - |

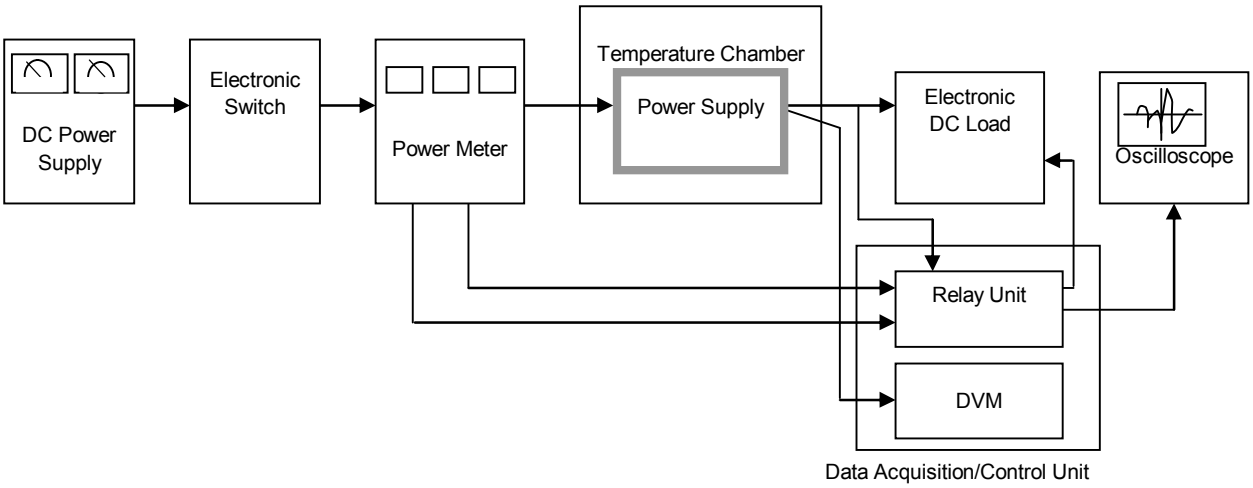



Figure A

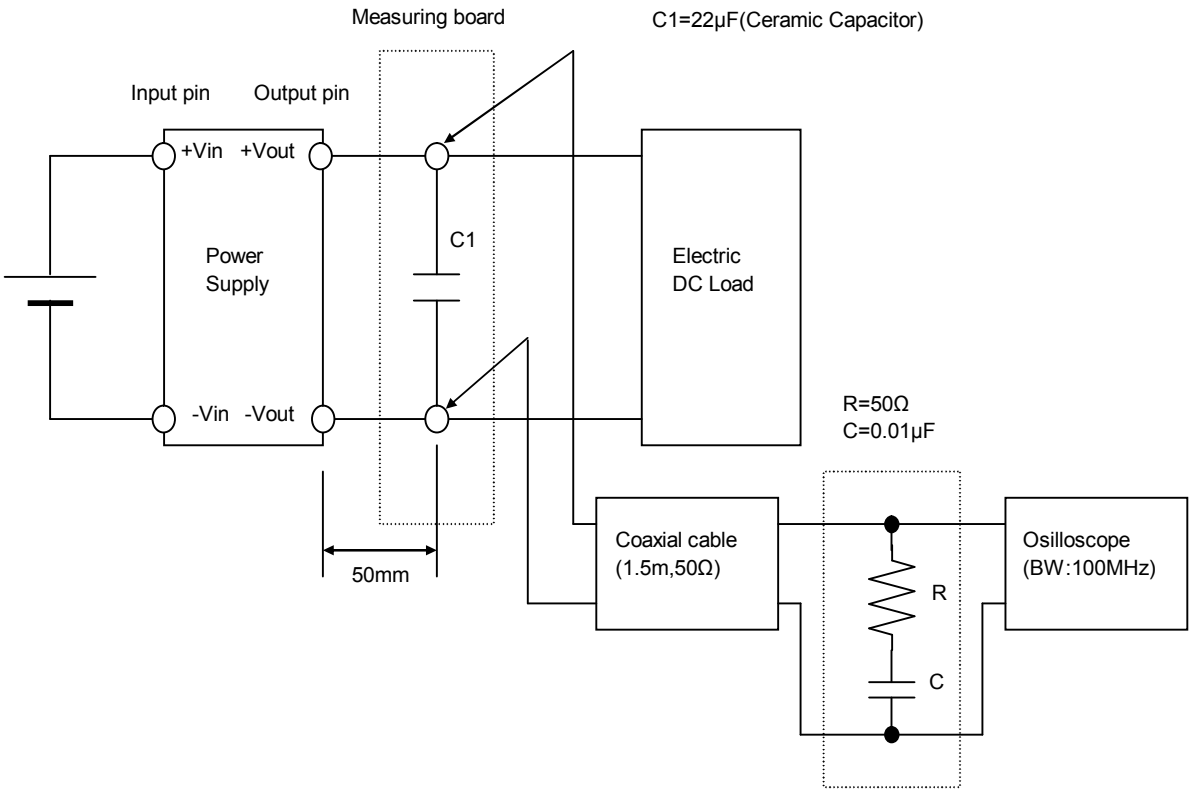



Figure B（Ripple and Ripple noise Characteristic）