参考資料

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# TEST DATA OF MGS3243R3

Regulated DC Power Supply
March 30, 2016

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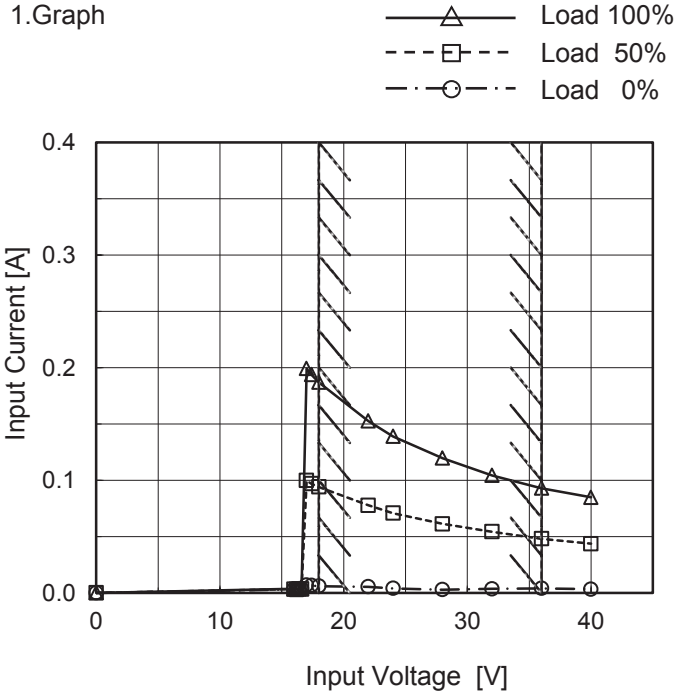
COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| 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 |
| 16.0 | 0.003 | 0.003 | 0.004 |
| 16.2 | 0.004 | 0.003 | 0.003 |
| 16.4 | 0.003 | 0.004 | 0.004 |
| 16.6 | 0.003 | 0.003 | 0.004 |
| 17.0 | 0.007 | 0.100 | 0.199 |
| 17.4 | 0.007 | 0.097 | 0.194 |
| 18.0 | 0.006 | 0.094 | 0.187 |
| 22.0 | 0.005 | 0.078 | 0.153 |
| 24.0 | 0.004 | 0.071 | 0.139 |
| 28.0 | 0.003 | 0.061 | 0.120 |
| 32.0 | 0.004 | 0.054 | 0.104 |
| 36.0 | 0.004 | 0.048 | 0.093 |
| 40.0 | 0.003 | 0.044 | 0.085 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



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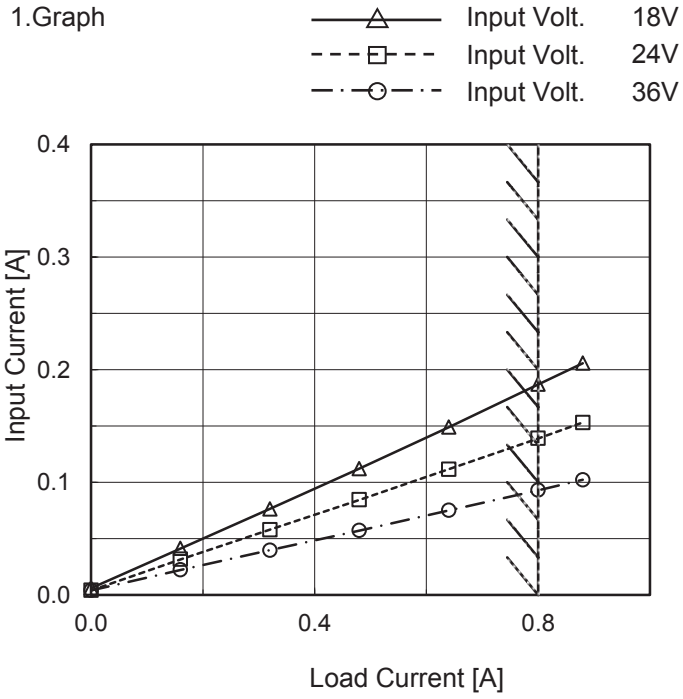
COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| 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

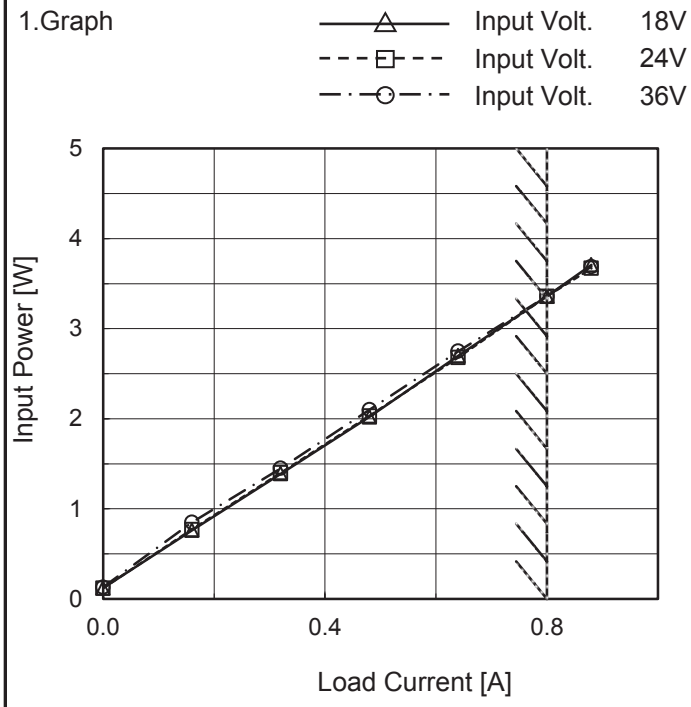
| Load Current [A] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.00 | 0.006 | 0.004 | 0.004 |
| 0.16 | 0.041 | 0.032 | 0.022 |
| 0.32 | 0.076 | 0.058 | 0.040 |
| 0.48 | 0.112 | 0.084 | 0.057 |
| 0.64 | 0.149 | 0.112 | 0.075 |
| 0.80 | 0.187 | 0.139 | 0.093 |
| 0.88 | 0.206 | 0.153 | 0.102 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| 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] |
| 0.00 | 0.12 | 0.12 | 0.13 |
| 0.16 | 0.76 | 0.77 | 0.85 |
| 0.32 | 1.39 | 1.40 | 1.45 |
| 0.48 | 2.02 | 2.03 | 2.10 |
| 0.64 | 2.70 | 2.68 | 2.75 |
| 0.80 | 3.36 | 3.36 | 3.36 |
| 0.88 | 3.71 | 3.67 | 3.69 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

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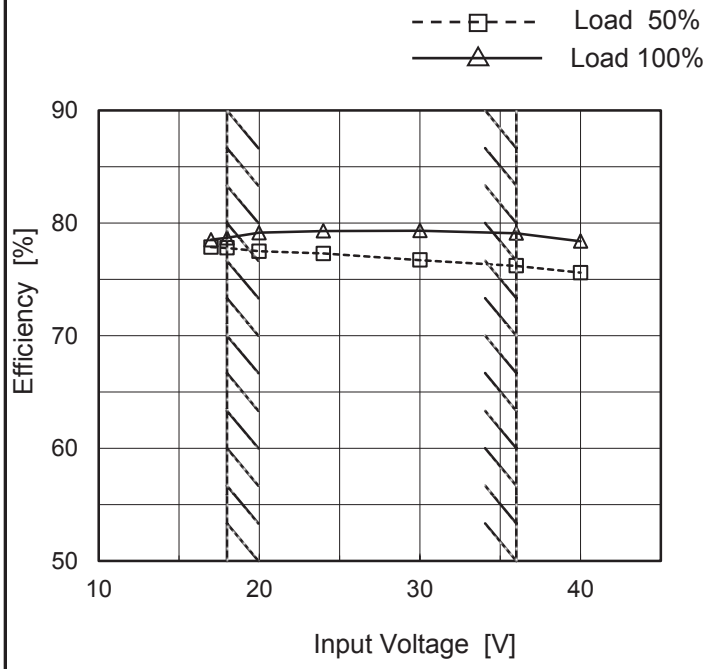
|---|---|
| Model | MGS3243R3 |
| Item | Efficiency (by Input Voltage) |
| Object | ―――――――――――― |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

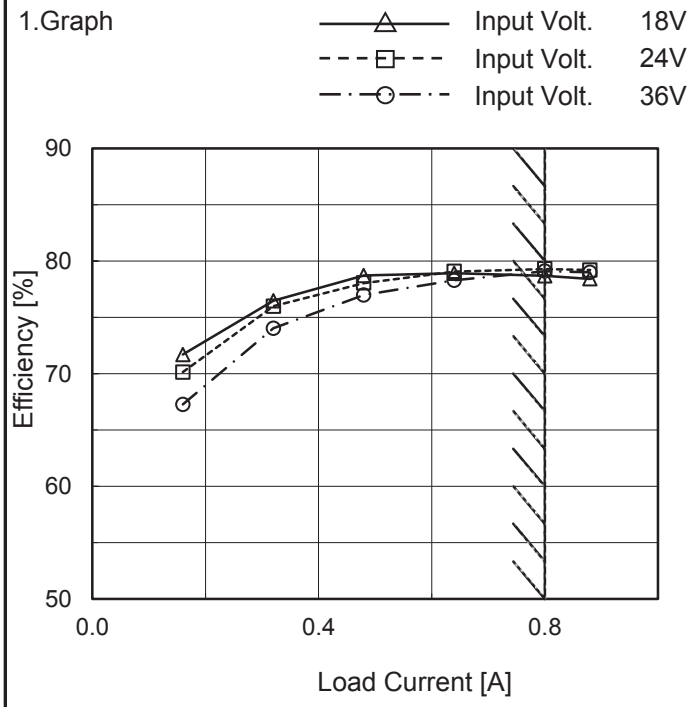
| Input Voltage [V] | Efficiency [%] | |
|---|---|---|
| | Load 50% | Load 100% |
| 17 | 77.9 | 78.5 |
| 18 | 77.8 | 78.7 |
| 20 | 77.5 | 79.2 |
| 24 | 77.3 | 79.3 |
| 30 | 76.7 | 79.3 |
| 36 | 76.2 | 79.1 |
| 40 | 75.6 | 78.4 |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| 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] |
| 0.00 | - | - | - |
| 0.16 | 71.7 | 70.1 | 67.3 |
| 0.32 | 76.5 | 76.0 | 74.0 |
| 0.48 | 78.7 | 78.1 | 77.0 |
| 0.64 | 78.9 | 79.1 | 78.3 |
| 0.80 | 78.7 | 79.3 | 79.1 |
| 0.88 | 78.4 | 79.2 | 79.0 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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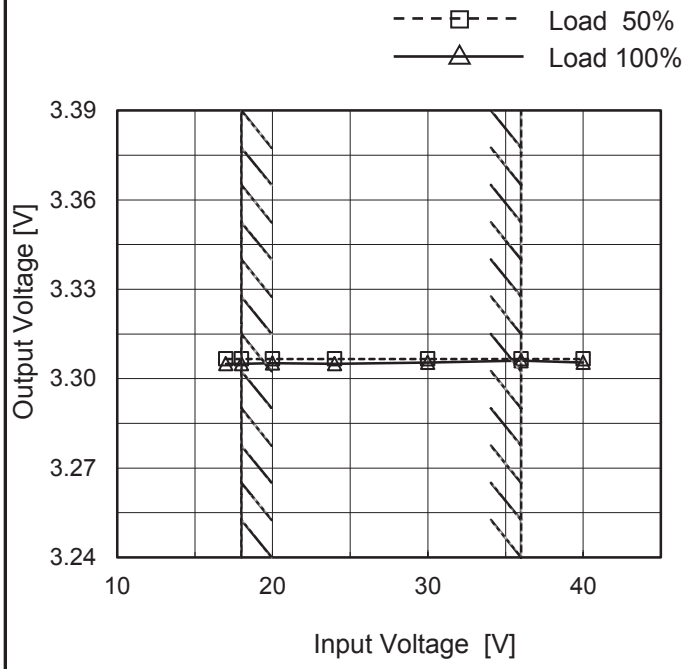
|---|---|
| Model | MGS3243R3 |
| Item | Line Regulation |
| Object | +3.3V0.8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

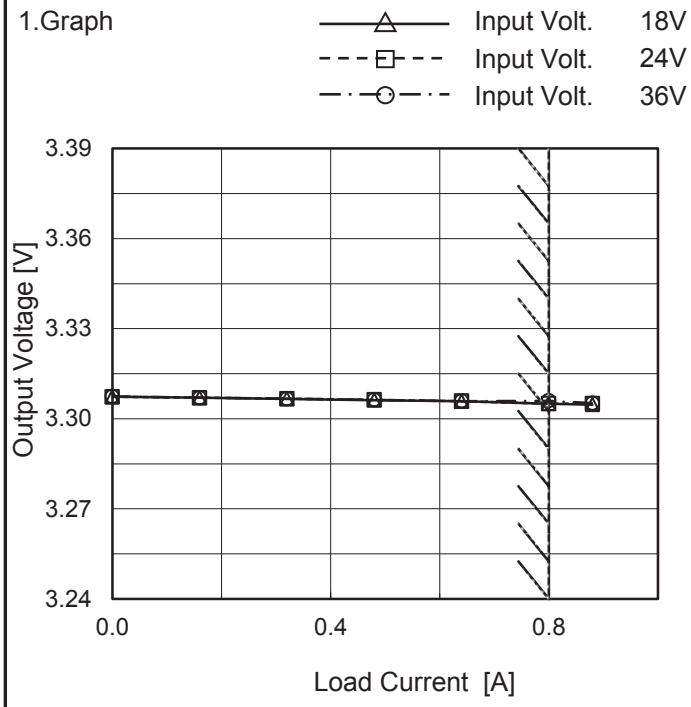
| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 17 | 3.307 | 3.305 |
| 18 | 3.307 | 3.305 |
| 20 | 3.307 | 3.305 |
| 24 | 3.307 | 3.305 |
| 30 | 3.307 | 3.305 |
| 36 | 3.307 | 3.306 |
| 40 | 3.307 | 3.305 |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Load Regulation |
| Object | +3.3V0.8A |

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] |
| 0.00 | 3.307 | 3.307 | 3.307 |
| 0.16 | 3.307 | 3.307 | 3.307 |
| 0.32 | 3.307 | 3.307 | 3.307 |
| 0.48 | 3.306 | 3.306 | 3.306 |
| 0.64 | 3.306 | 3.306 | 3.306 |
| 0.80 | 3.305 | 3.305 | 3.306 |
| 0.88 | 3.305 | 3.305 | 3.305 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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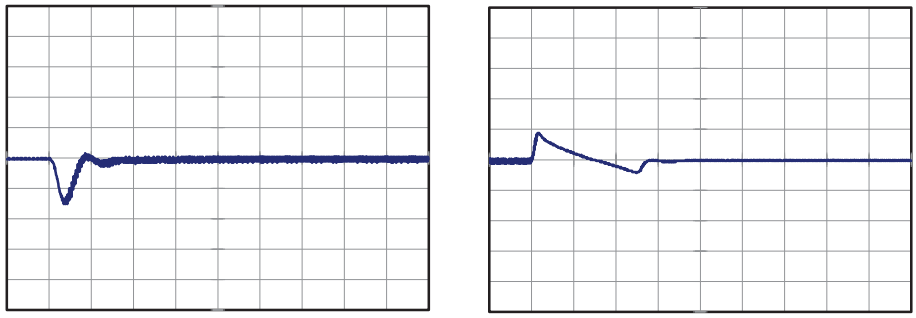
|---|---|
| Model | MGS3243R3 |
| Item | Dynamic Load Response |
| Object | +3.3V0.8A |

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 24 V
Cycle 1000 ms

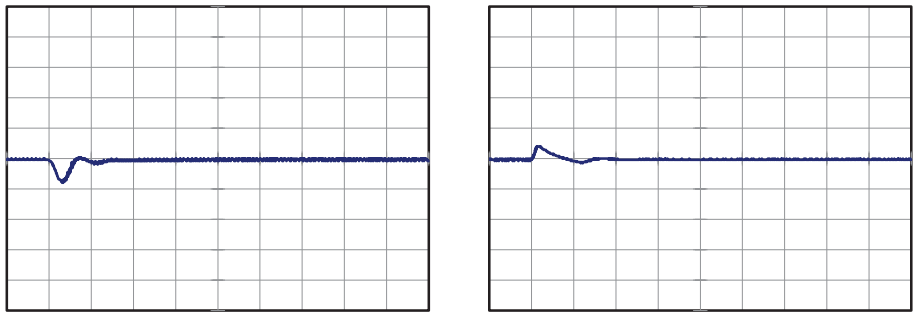
Min.Load (0A)←→
Load 100% (0.8A)



200 mV/div

100 μs/div 200 μs/div

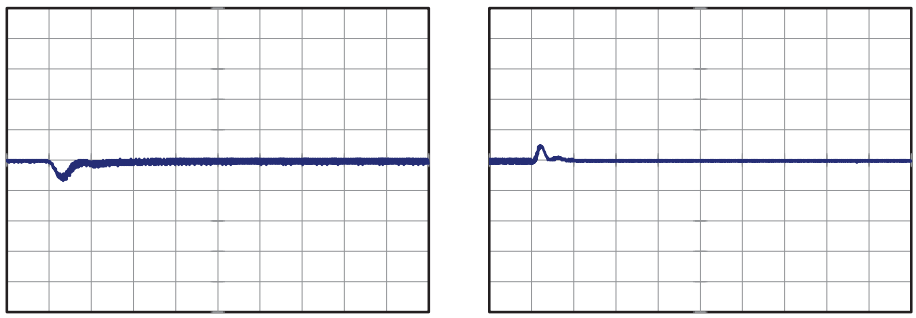
Min.Load (0A)←→
Load 50% (0.4A)



200 mV/div

100 μs/div 200 μs/div

Load 50% (0.4A)←→
Load 100% (0.8A)



200 mV/div

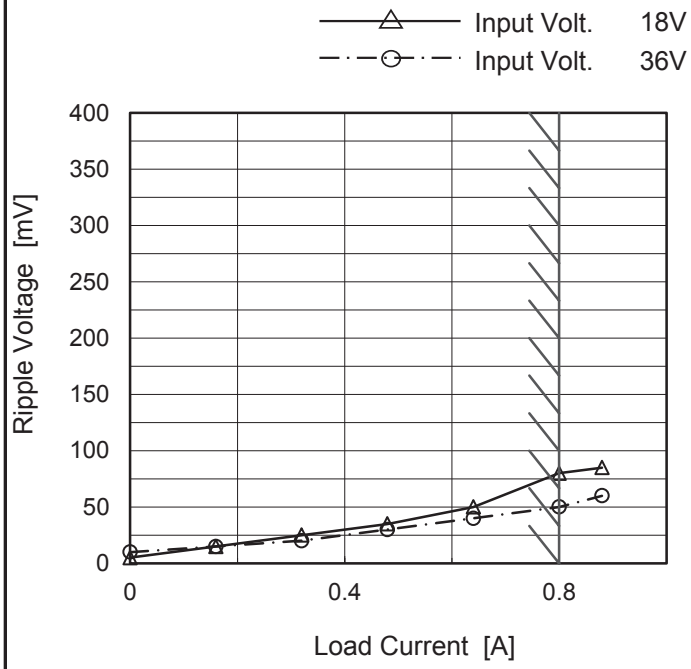
100 μs/div 200 μs/div

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Ripple Voltage (by Load Current) |
| Object | +3.3V0.8A |

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.

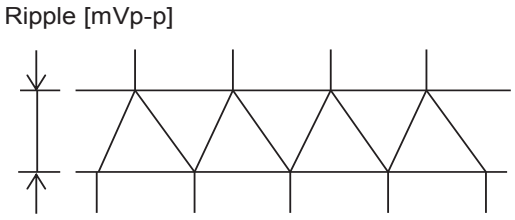



Fig.Complex Ripple Wave Form

2.Values

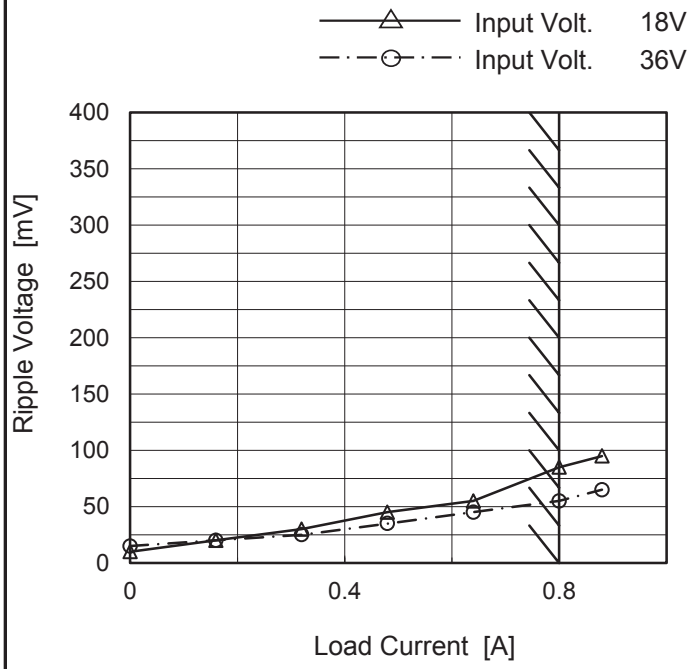
| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 18 [V] | Input Volt. 36 [V] |
| 0.00 | 5 | 10 |
| 0.16 | 15 | 15 |
| 0.32 | 25 | 20 |
| 0.48 | 35 | 30 |
| 0.64 | 50 | 40 |
| 0.80 | 80 | 50 |
| 0.88 | 85 | 60 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Ripple-Noise |
| Object | +3.3V0.8A |

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.

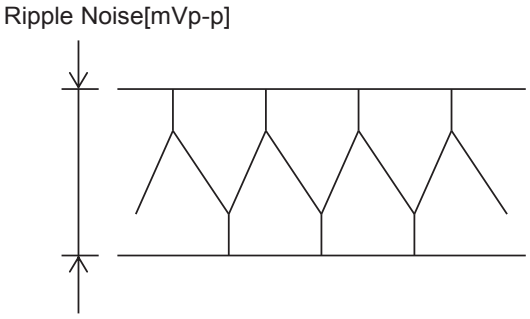



Fig.Complex Ripple Noise Wave Form

2.Values

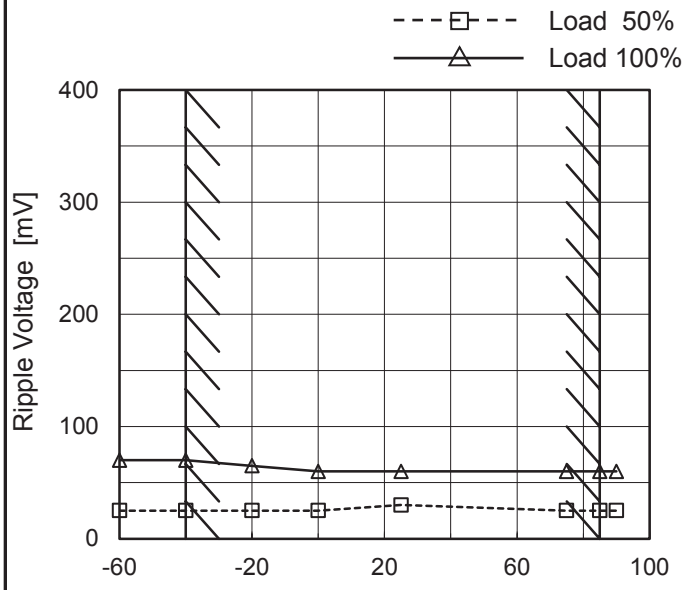
| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 18 [V] | Input Volt. 36 [V] |
| 0.00 | 10 | 15 |
| 0.16 | 20 | 20 |
| 0.32 | 30 | 25 |
| 0.48 | 45 | 35 |
| 0.64 | 55 | 45 |
| 0.80 | 85 | 55 |
| 0.88 | 95 | 65 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +3.3V0.8A |

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

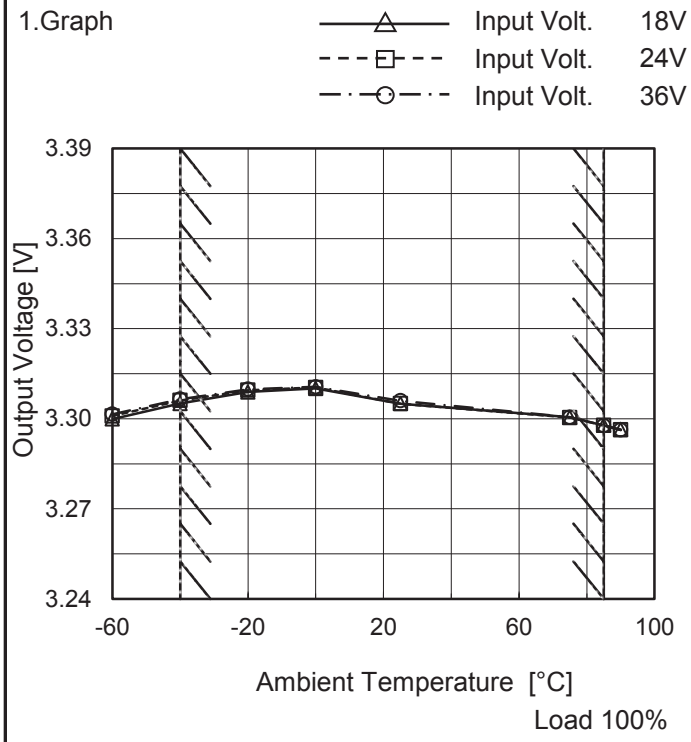
| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load 50% | Load 100% |
| -60 | 25 | 70 |
| -40 | 25 | 70 |
| -20 | 25 | 65 |
| 0 | 25 | 60 |
| 25 | 30 | 60 |
| 75 | 25 | 60 |
| 85 | 25 | 60 |
| 90 | 25 | 60 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Ambient Temperature Drift |
| Object | +3.3V0.8A |

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 | 3.300 | 3.301 | 3.302 |
| -40 | 3.305 | 3.306 | 3.307 |
| -20 | 3.309 | 3.310 | 3.310 |
| 0 | 3.310 | 3.310 | 3.311 |
| 25 | 3.305 | 3.305 | 3.306 |
| 75 | 3.301 | 3.300 | 3.301 |
| 85 | 3.298 | 3.298 | 3.298 |
| 90 | 3.296 | 3.296 | 3.296 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

| | | |
|---|---|---|
| Model | MGS3243R3 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |
| Object | +3.3V0.8A | |

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 - 85°C
Input Voltage : 18 - 36V
Load Current : 0 - 0.8A

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

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

2.Values

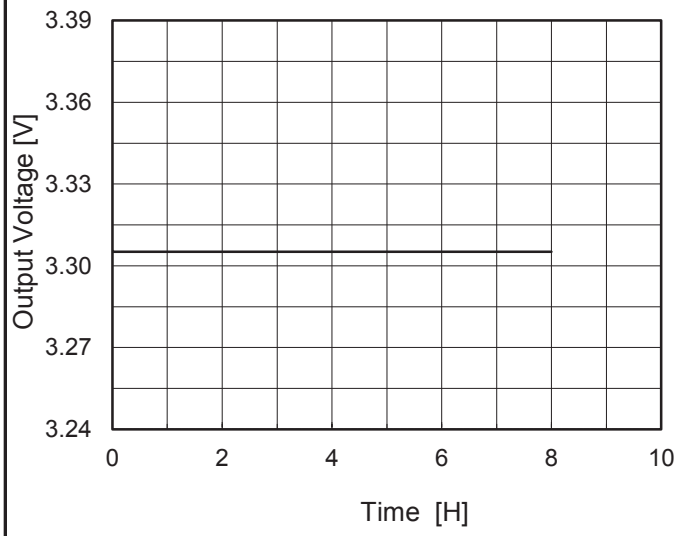
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
|---|---|---|---|---|---|---|
| | | | Current[A] | Voltage[V] | Value [mV] | Ratio [%] |
| Maximum Voltage | 0 | 18 | 0 | 3.312 | ±7 | ±0.2 |
| Minimum Voltage | 85 | 36 | 0.8 | 3.298 | | |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Time Lapse Drift |
| Object | +3.3V0.8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 24V
Load 100%

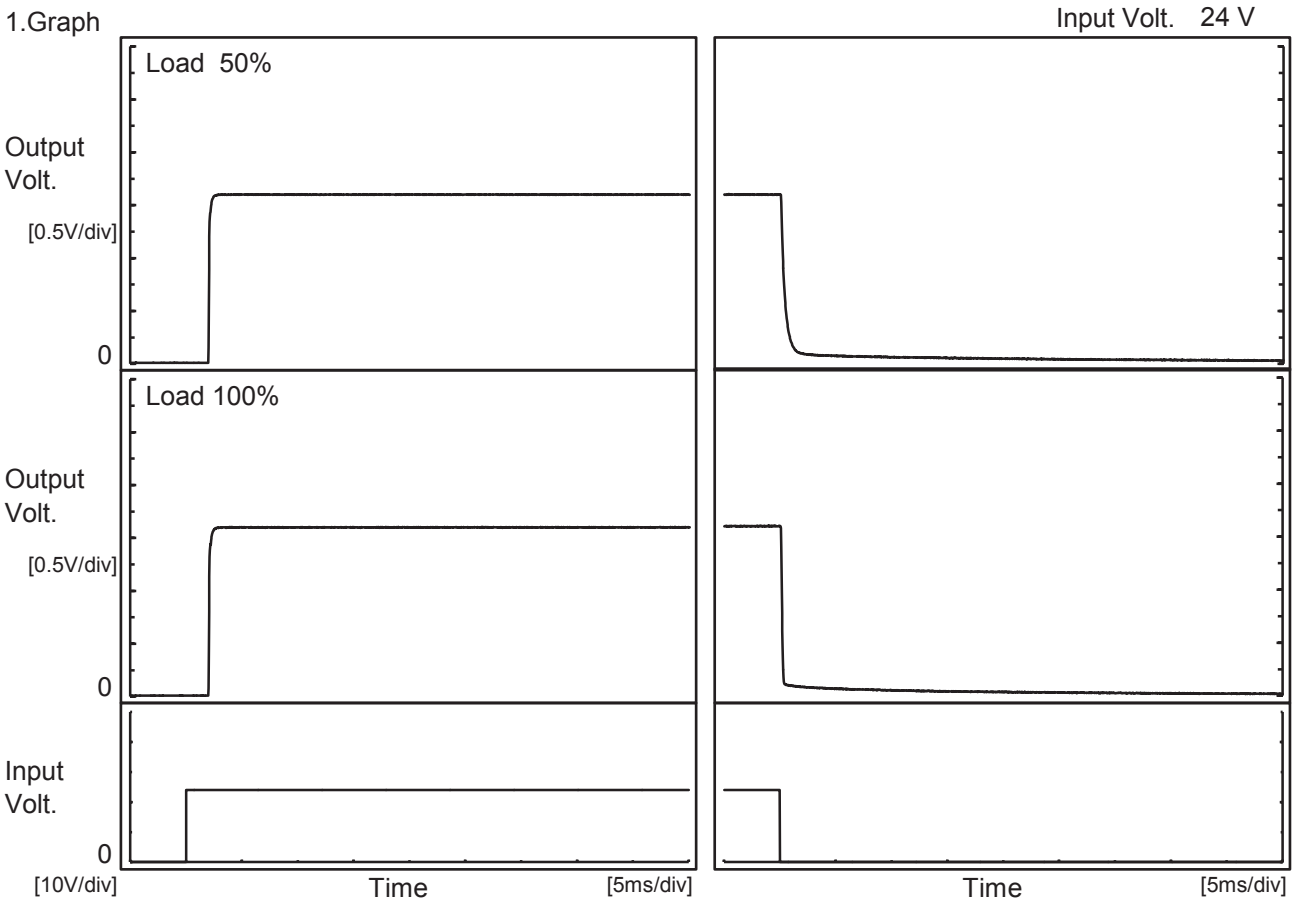
2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 3.306 |
| 0.5 | 3.305 |
| 1.0 | 3.305 |
| 2.0 | 3.305 |
| 3.0 | 3.305 |
| 4.0 | 3.305 |
| 5.0 | 3.305 |
| 6.0 | 3.305 |
| 7.0 | 3.305 |
| 8.0 | 3.305 |

COSEL

| | | |
|---|---|---|
| Model | MGS3243R3 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +3.3V0.8A | |

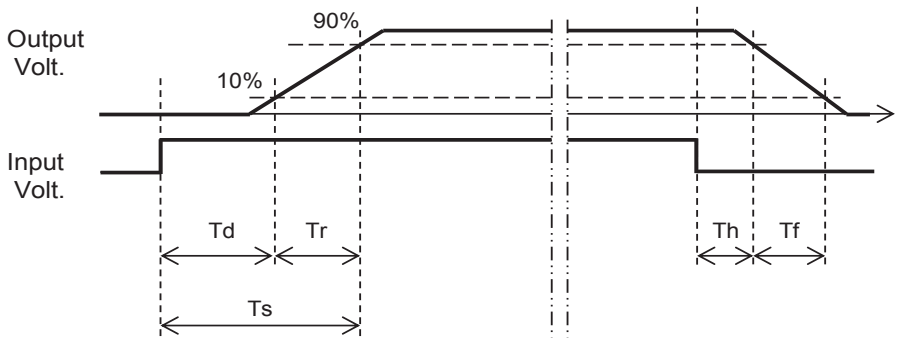
1.Graph




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 2.0 | 0.2 | 2.2 | 0.1 | 1.0 |
| 100 % | 2.0 | 0.2 | 2.2 | 0.1 | 0.2 |



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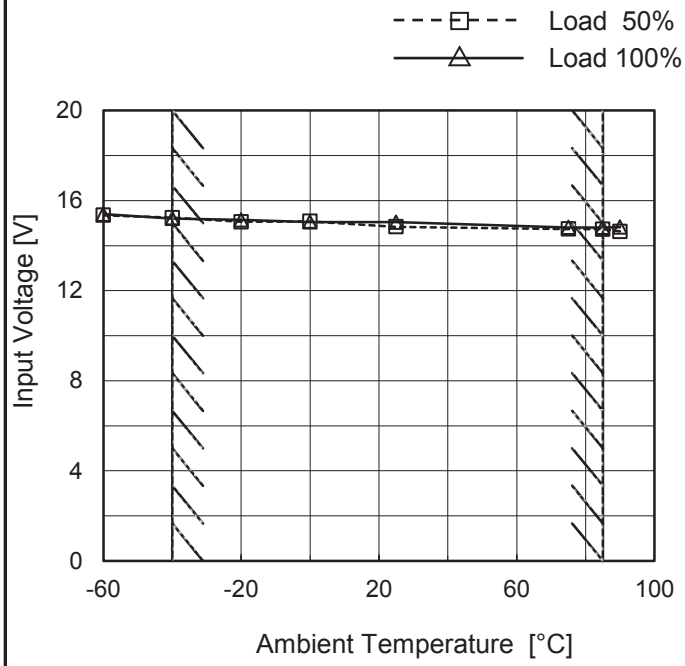
COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +3.3V0.8A |

Testing Circuitry Figure A

1.Graph




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

2.Values

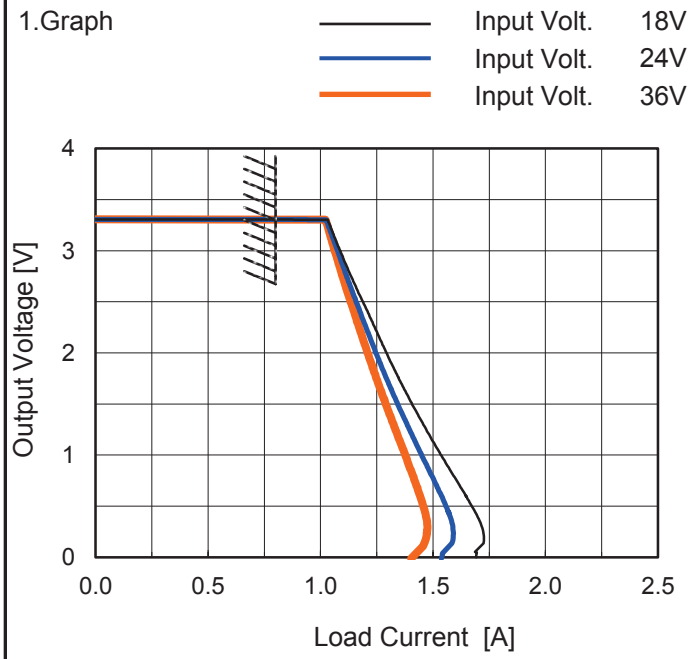
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -60 | 15.4 | 15.4 |
| -40 | 15.3 | 15.3 |
| -20 | 15.1 | 15.2 |
| 0 | 15.1 | 15.1 |
| 25 | 14.9 | 15.1 |
| 75 | 14.8 | 14.9 |
| 85 | 14.8 | 14.9 |
| 90 | 14.7 | 14.9 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Overcurrent Protection |
| Object | +3.3V0.8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

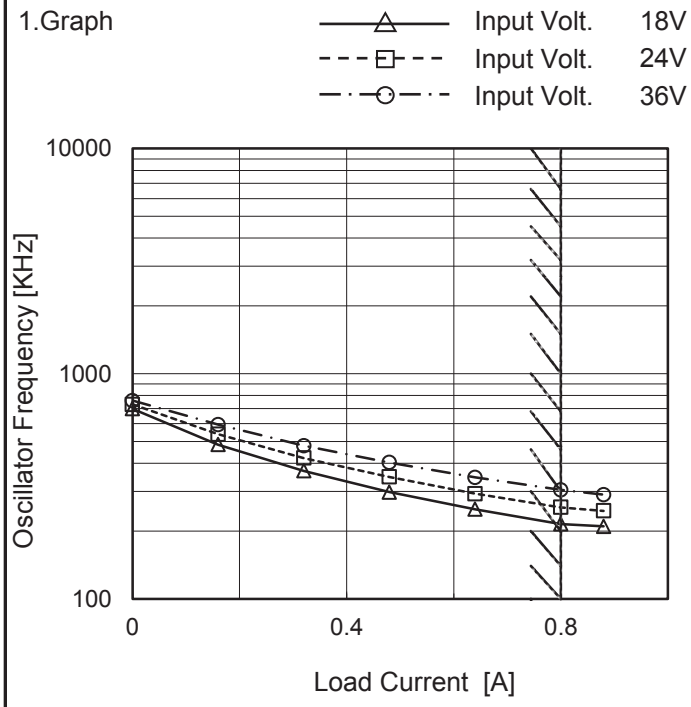
| Output Voltage [V] | Load Current [A] | | |
|---|---|---|---|
| | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 3.30 | 0.82 | 0.82 | 0.82 |
| 3.14 | 1.06 | 1.05 | 1.04 |
| 2.97 | 1.09 | 1.08 | 1.07 |
| 2.64 | 1.16 | 1.13 | 1.11 |
| 2.31 | 1.23 | 1.19 | 1.16 |
| 1.98 | 1.30 | 1.25 | 1.21 |
| 1.65 | 1.37 | 1.31 | 1.26 |
| 1.32 | 1.45 | 1.38 | 1.32 |
| 0.99 | 1.54 | 1.45 | 1.38 |
| 0.66 | 1.63 | 1.52 | 1.43 |
| 0.33 | 1.71 | 1.58 | 1.47 |
| 0.00 | 1.69 | 1.54 | 1.40 |

COSEL

| | |
|---|---|
| Model | MGS3243R3 |
| Item | Switching frequency (by Load Current) |
| Object | +3.3V0.8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

-When load current is low, MG operates intermittently, so switching frequency would not become constant.

2.Values

| Load Current [A] | Frequency [kHz] Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
|---|---|---|---|
| 0.00 | 699 | 730 | 760 |
| 0.16 | 484 | 539 | 594 |
| 0.32 | 370 | 422 | 479 |
| 0.48 | 298 | 348 | 403 |
| 0.64 | 250 | 293 | 346 |
| 0.80 | 215 | 255 | 305 |
| 0.88 | 210 | 246 | 290 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

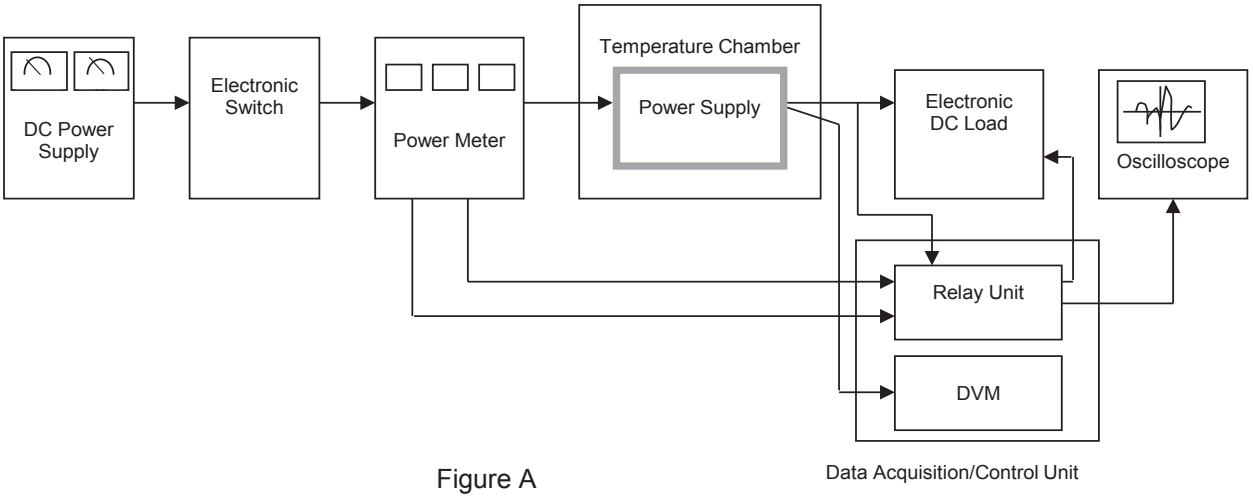



Figure A

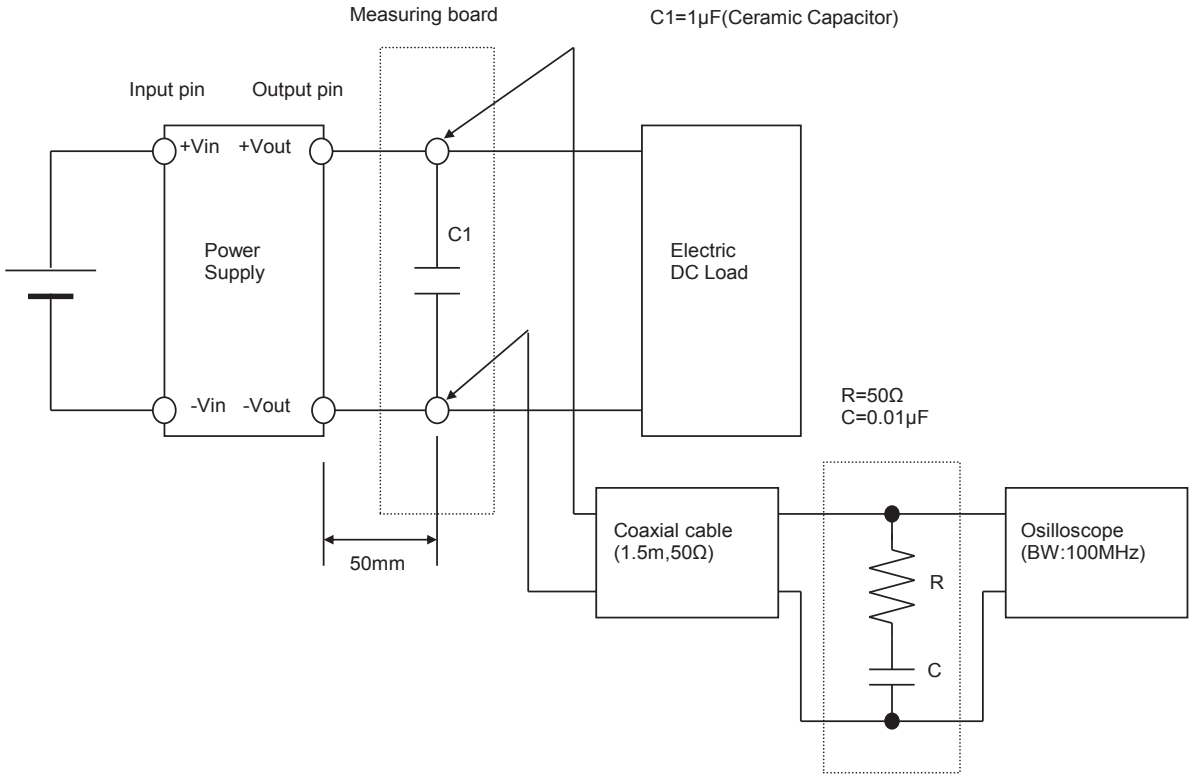



Figure B（Ripple and Ripple noise Characteristic）