参考資料

# TEST DATA OF MGFW32415

Regulated DC Power Supply
January 6, 2017

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**COSEL CO.,LTD.**

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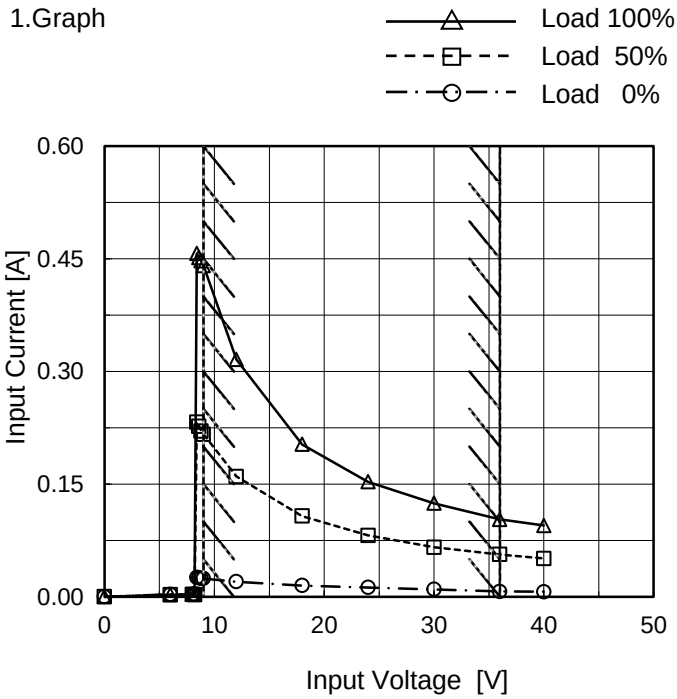
| | |
|---|---|
| Model | MGFW32415 |
| Item | Input Current (by Input Voltage) |
| Object | ———————— |

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 |
| 6.0 | 0.003 | 0.003 | 0.003 |
| 8.0 | 0.003 | 0.003 | 0.003 |
| 8.2 | 0.003 | 0.003 | 0.003 |
| 8.4 | 0.026 | 0.233 | 0.457 |
| 8.6 | 0.025 | 0.227 | 0.452 |
| 8.8 | 0.025 | 0.221 | 0.447 |
| 9.0 | 0.024 | 0.216 | 0.441 |
| 12.0 | 0.020 | 0.160 | 0.316 |
| 18.0 | 0.015 | 0.108 | 0.203 |
| 24.0 | 0.012 | 0.082 | 0.153 |
| 30.0 | 0.010 | 0.066 | 0.125 |
| 36.0 | 0.007 | 0.056 | 0.103 |
| 40.0 | 0.007 | 0.051 | 0.095 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



BC-11007

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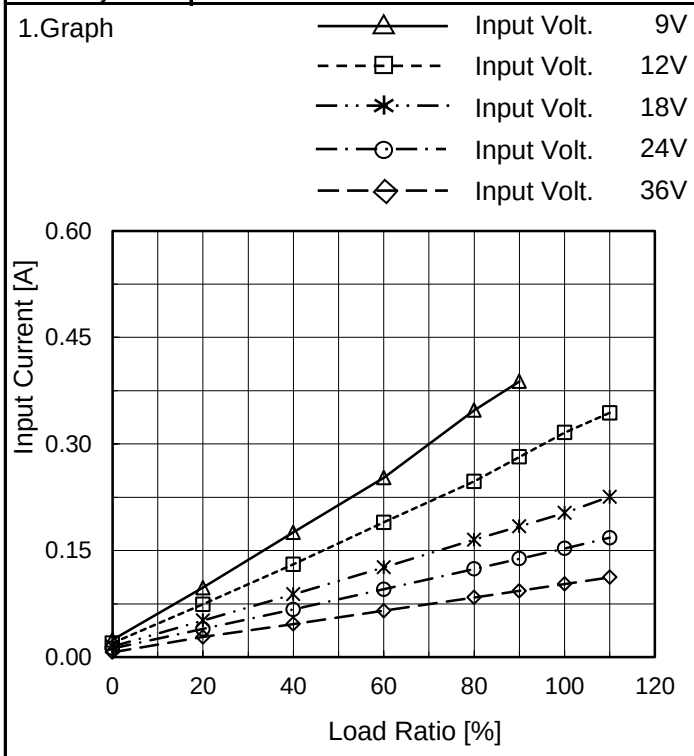
| | |
|---|---|
| Model | MGFW32415 |
| Item | Input Current (by Load Ratio) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ratio [%] | Input Current [A] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0 | 0.024 | 0.020 | 0.015 | 0.012 | 0.007 |
| 20 | 0.098 | 0.074 | 0.052 | 0.040 | 0.028 |
| 40 | 0.176 | 0.131 | 0.089 | 0.067 | 0.047 |
| 60 | 0.253 | 0.190 | 0.126 | 0.095 | 0.065 |
| 80 | 0.348 | 0.247 | 0.165 | 0.124 | 0.084 |
| 90 | 0.388 | 0.282 | 0.184 | 0.138 | 0.093 |
| 100 | - ※ | 0.316 | 0.203 | 0.153 | 0.103 |
| 110 | - ※ | 0.344 | 0.226 | 0.168 | 0.112 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

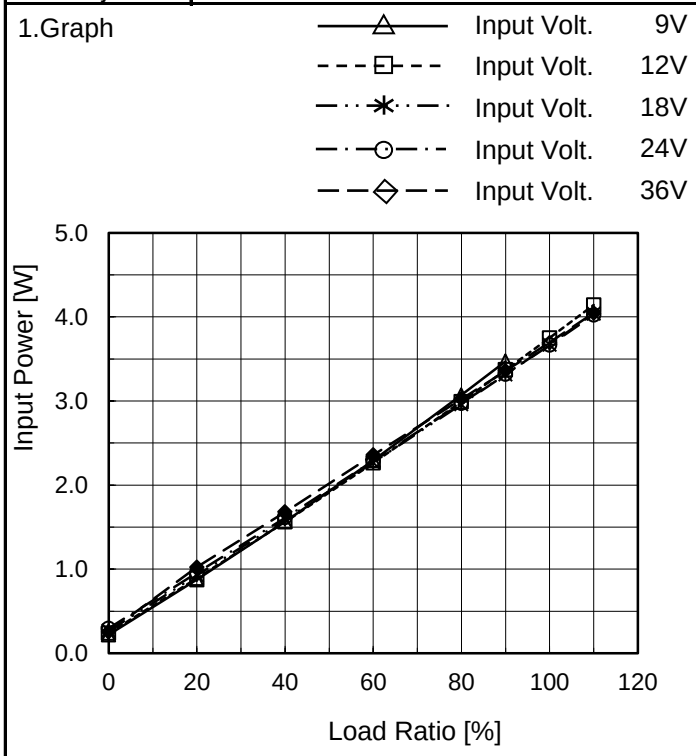
※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Input Power (by Load Ratio) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ratio [%] | Input Power [W] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0 | 0.22 | 0.24 | 0.27 | 0.30 | 0.25 |
| 20 | 0.87 | 0.89 | 0.93 | 0.95 | 1.02 |
| 40 | 1.56 | 1.56 | 1.59 | 1.61 | 1.68 |
| 60 | 2.29 | 2.26 | 2.27 | 2.29 | 2.36 |
| 80 | 3.07 | 2.99 | 2.96 | 2.97 | 3.02 |
| 90 | 3.47 | 3.37 | 3.31 | 3.32 | 3.36 |
| 100 | - ※ | 3.75 | 3.67 | 3.66 | 3.69 |
| 110 | - ※ | 4.14 | 4.04 | 4.02 | 4.05 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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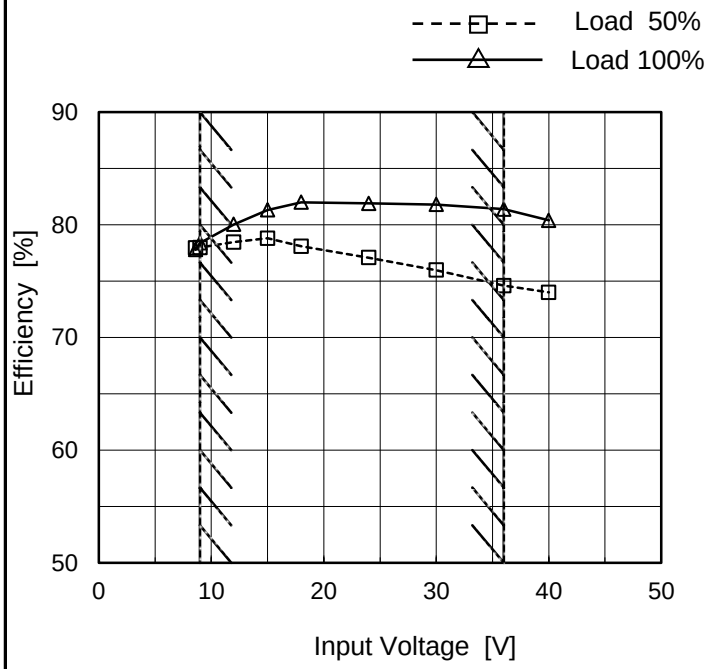
| | |
|---|---|
| Model | MGFW32415 |
| Item | Efficiency (by Input Voltage) |
| Object | ―――――――――― |

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% |
| 8.6 | 77.9 | 77.8 ※1 |
| 9.0 | 78.0 | 78.4 ※1 |
| 12.0 | 78.5 | 80.0 |
| 15.0 | 78.8 | 81.3 |
| 18.0 | 78.1 | 82.0 |
| 24.0 | 77.1 | 81.9 |
| 30.0 | 76.0 | 81.8 |
| 36.0 | 74.6 | 81.4 |
| 40.0 | 74.0 | 80.4 |

※1：Load 80%

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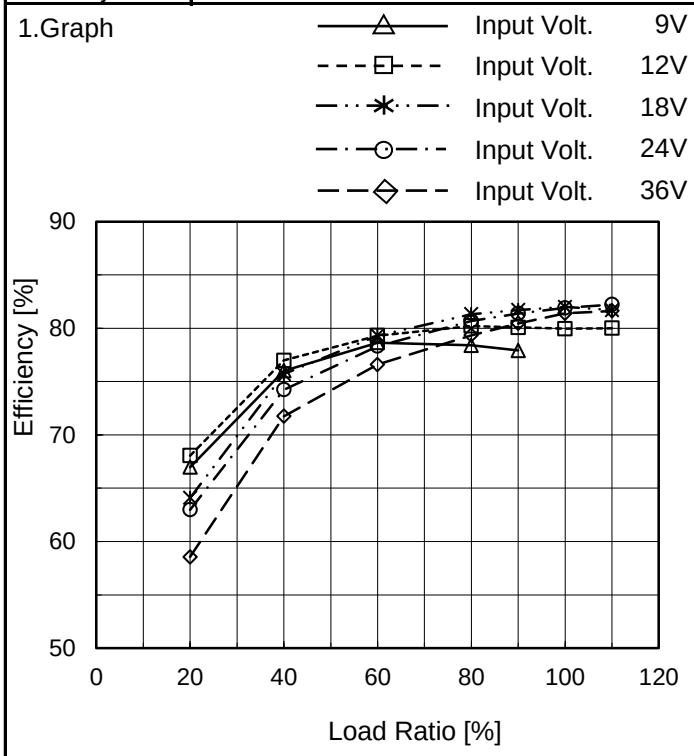
| | |
|---|---|
| Model | MGFW32415 |
| Item | Efficiency (by Load Ratio) |
| Object | ―――――― |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ratio [%] | Efficiency [%] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0 | - | - | - | - | - |
| 20 | 67.0 | 68.1 | 64.1 | 63.0 | 58.6 |
| 40 | 76.0 | 77.0 | 75.7 | 74.2 | 71.7 |
| 60 | 78.7 | 79.3 | 79.3 | 78.3 | 76.6 |
| 80 | 78.4 | 80.2 | 81.3 | 80.7 | 79.3 |
| 90 | 77.9 | 80.1 | 81.7 | 81.4 | 80.4 |
| 100 | - ※ | 80.0 | 82.0 | 81.9 | 81.4 |
| 110 | - ※ | 80.0 | 81.7 | 82.2 | 81.6 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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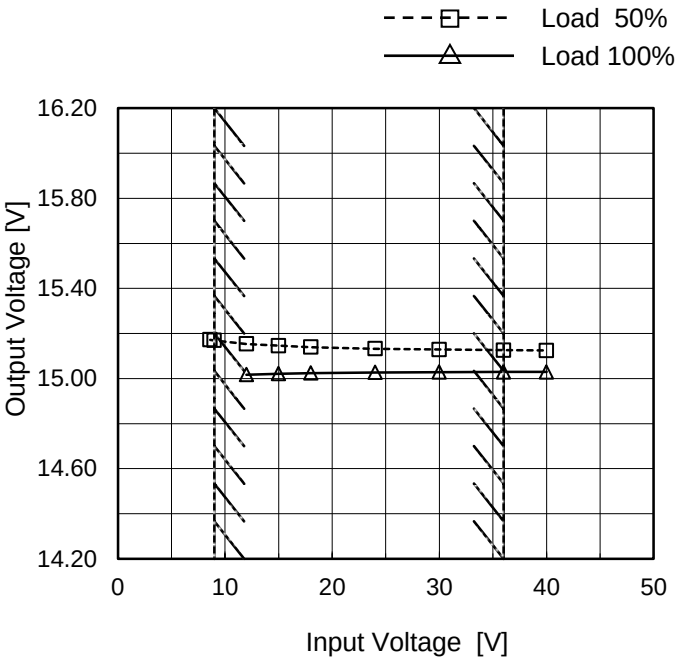
| | |
|---|---|
| Model | MGFW32415 |
| Item | Line Regulation |
| Object | +15V0.1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



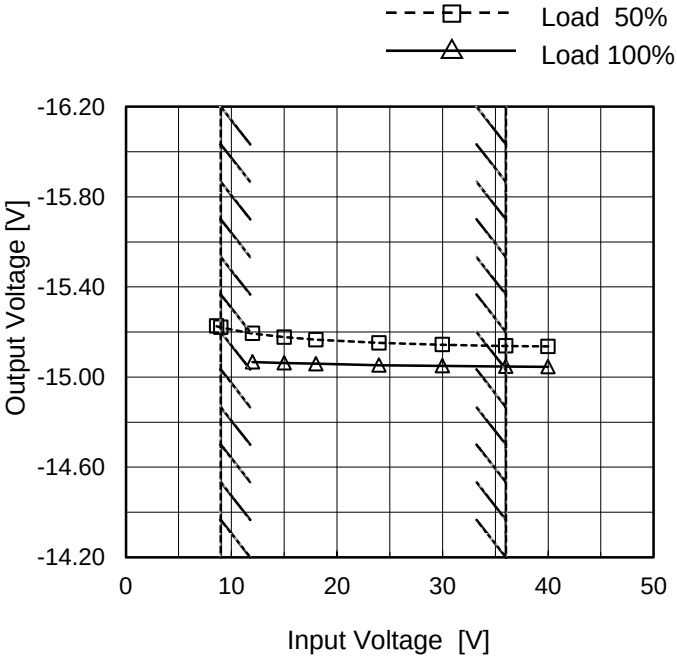

2.Values

| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 8.6 | 15.172 | - ※ |
| 9.0 | 15.169 | - ※ |
| 12.0 | 15.154 | 15.017 |
| 15.0 | 15.146 | 15.022 |
| 18.0 | 15.139 | 15.024 |
| 24.0 | 15.133 | 15.027 |
| 30.0 | 15.129 | 15.028 |
| 36.0 | 15.126 | 15.029 |
| 40.0 | 15.125 | 15.029 |

-15V: Rated Load Current

| | |
|---|---|
| Object | -15V0.1A |

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% |
| 8.6 | -15.226 | - ※ |
| 9.0 | -15.220 | - ※ |
| 12.0 | -15.194 | -15.067 |
| 15.0 | -15.177 | -15.063 |
| 18.0 | -15.166 | -15.059 |
| 24.0 | -15.152 | -15.053 |
| 30.0 | -15.144 | -15.050 |
| 36.0 | -15.138 | -15.047 |
| 40.0 | -15.136 | -15.046 |

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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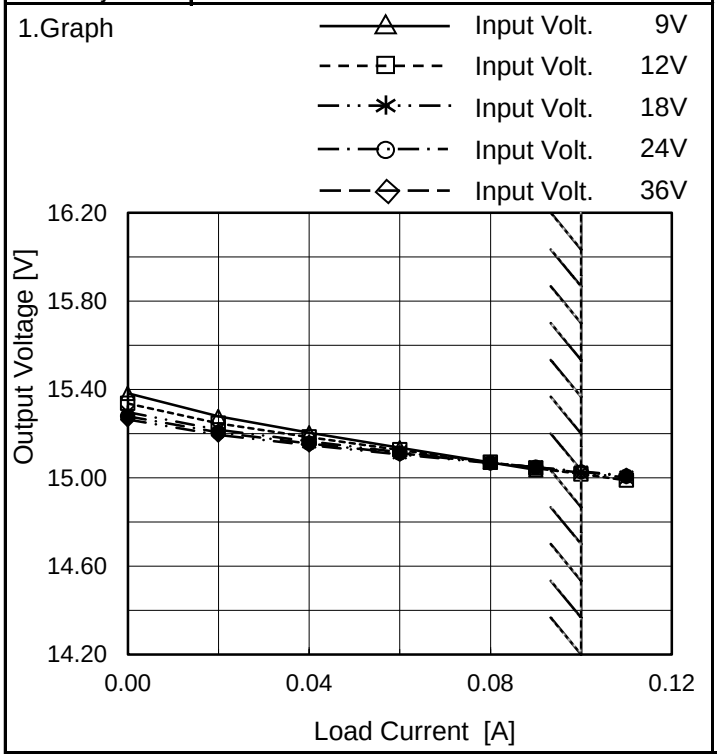
| Model | MGFW32415 |
|---|---|
| Item | Load Regulation |
| Object | +15V0.1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



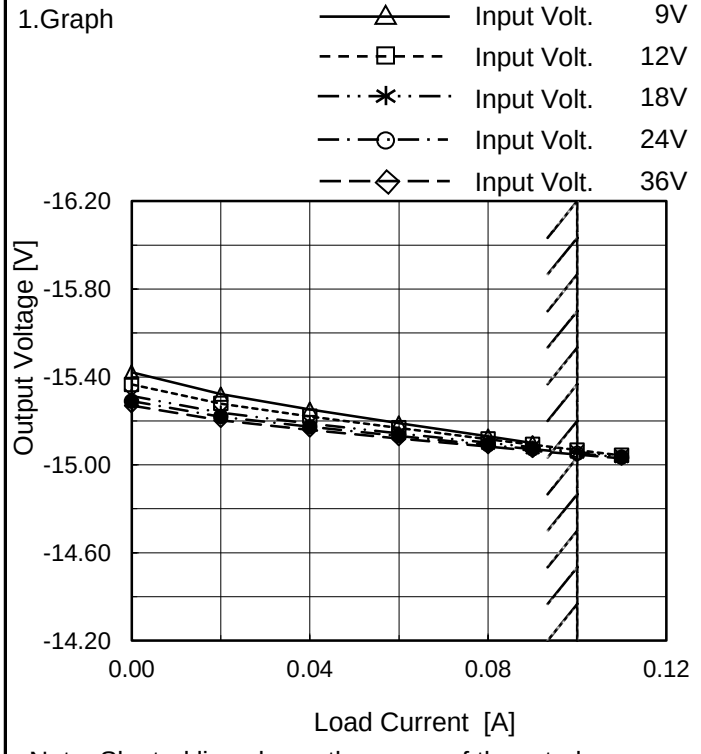

2.Values

| Load Current [A] | Output Voltage [V] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.00 | 15.383 | 15.337 | 15.297 | 15.279 | 15.264 |
| 0.02 | 15.278 | 15.247 | 15.218 | 15.206 | 15.194 |
| 0.04 | 15.204 | 15.184 | 15.165 | 15.156 | 15.148 |
| 0.06 | 15.136 | 15.126 | 15.116 | 15.111 | 15.106 |
| 0.08 | 15.070 | 15.070 | 15.069 | 15.068 | 15.067 |
| 0.09 | 15.036 | 15.044 | 15.047 | 15.048 | 15.048 |
| 0.10 | - ※ | 15.017 | 15.024 | 15.027 | 15.029 |
| 0.11 | - ※ | 14.989 | 15.001 | 15.006 | 15.010 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

-15V: Rated Load Current

| Object | -15V0.1A |
|---|---|

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] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.00 | -15.422 | -15.365 | -15.314 | -15.290 | -15.270 |
| 0.02 | -15.322 | -15.279 | -15.238 | -15.219 | -15.202 |
| 0.04 | -15.253 | -15.221 | -15.189 | -15.173 | -15.159 |
| 0.06 | -15.190 | -15.168 | -15.144 | -15.132 | -15.120 |
| 0.08 | -15.130 | -15.117 | -15.101 | -15.091 | -15.083 |
| 0.09 | -15.099 | -15.092 | -15.080 | -15.072 | -15.065 |
| 0.10 | - ※ | -15.067 | -15.059 | -15.053 | -15.047 |
| 0.11 | - ※ | -15.043 | -15.038 | -15.034 | -15.030 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

+15V: Rated Load Current

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.



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| | |
|---|---|
| Model | MGFW32415 |
| Item | Dynamic Load Response |
| Object | +15V0.1A |

Temperature 25°C
Testing Circuitry Figure A

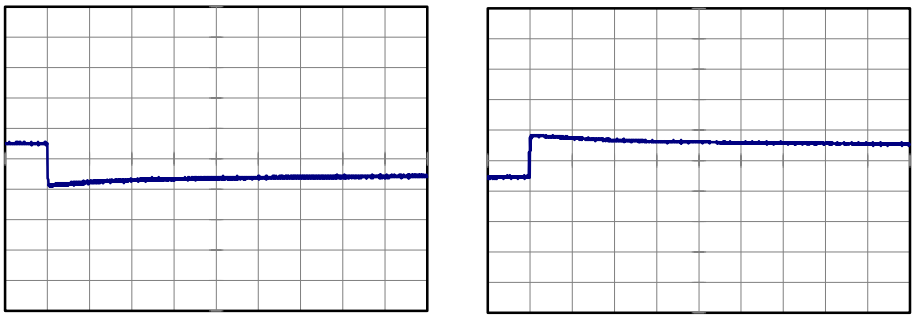
Input Volt. 24 V
-15V:rated load current.
Cycle 100 ms

t1,t2 = 100 μs

Load Current

t1 t2

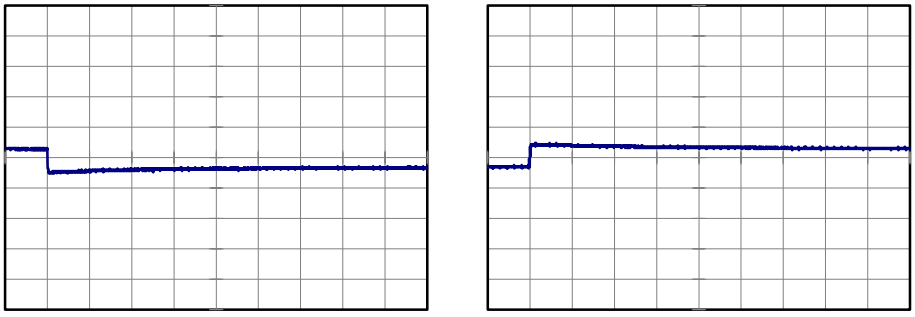
Min.Load (0A)←→
Load 100% (0.1A)



200 mV/div

4 ms/div 4 ms/div

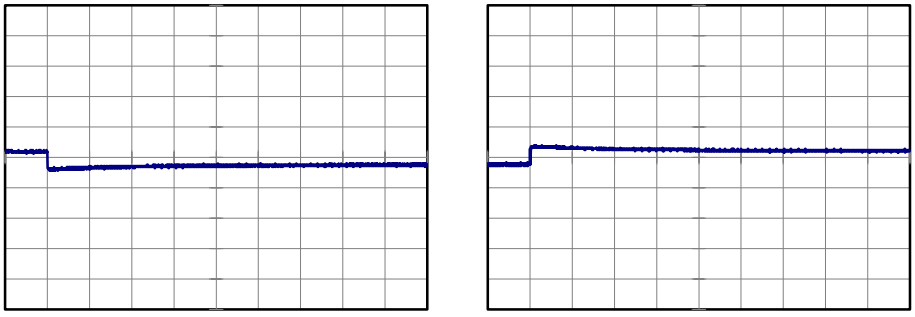
Min.Load (0A)←→
Load 50% (0.05A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.05A)←→
Load 100% (0.1A)



200 mV/div

4 ms/div 4 ms/div

COSEL

| | | |
|---|---|---|
| Model | MGFW32415 | |
| Item | Dynamic Load Response | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | -15V0.1A | |

Input Volt. 24 V

+15V:rated load current.

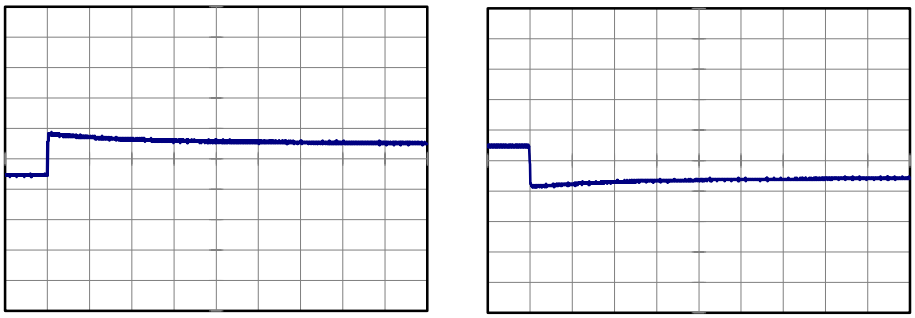
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

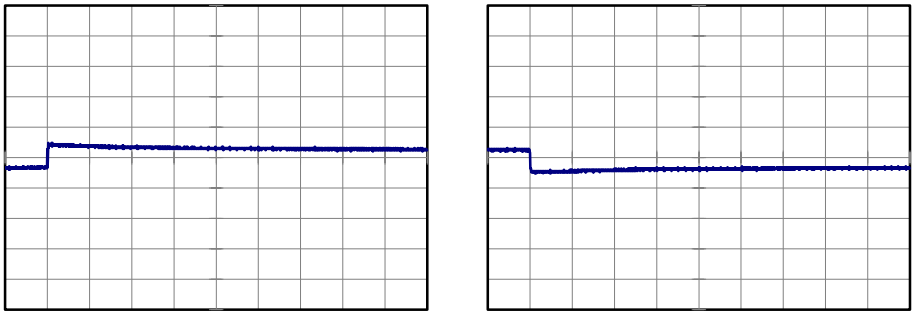
Min.Load (0A)←→
Load 100% (0.1A)



200 mV/div

4 ms/div 4 ms/div

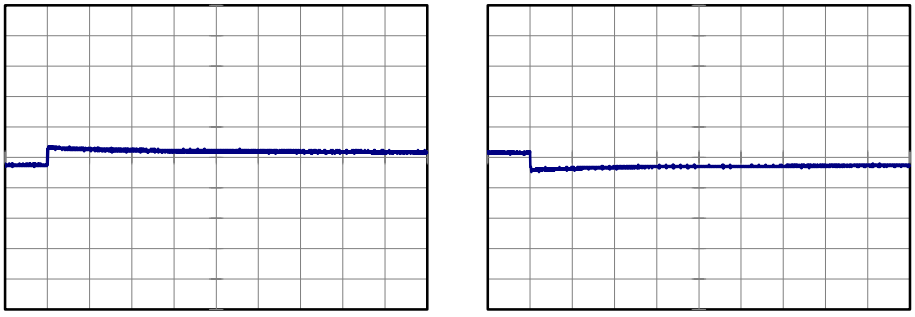
Min.Load (0A)←→
Load 50% (0.05A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.05A)←→
Load 100% (0.1A)



200 mV/div

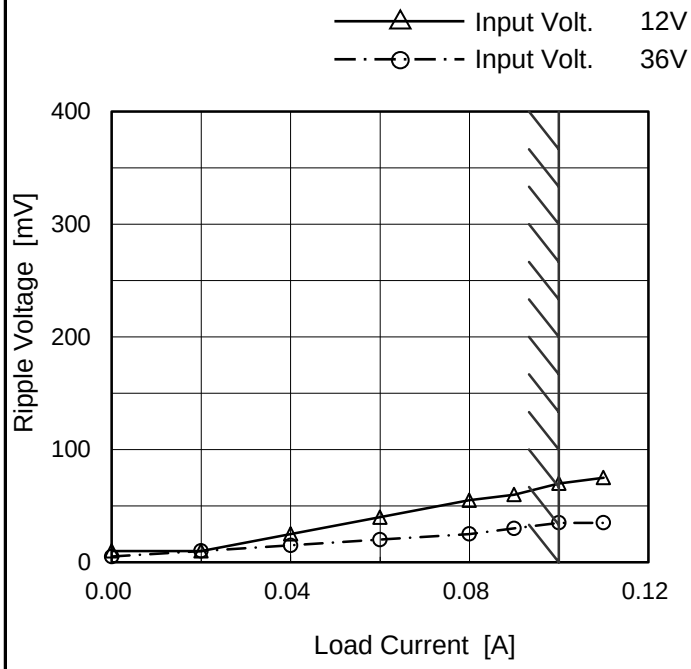
4 ms/div 4 ms/div

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Ripple Voltage (by Load Current) |
| Object | +15V0.1A |

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]

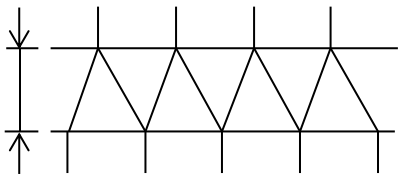


Fig.Complex Ripple Wave Form

2.Values

| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 12 [V] | Input Volt. 36 [V] |
| 0.00 | 10 | 5 |
| 0.02 | 10 | 10 |
| 0.04 | 25 | 15 |
| 0.06 | 40 | 20 |
| 0.08 | 55 | 25 |
| 0.09 | 60 | 30 |
| 0.10 | 70 | 35 |
| 0.11 | 75 | 35 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

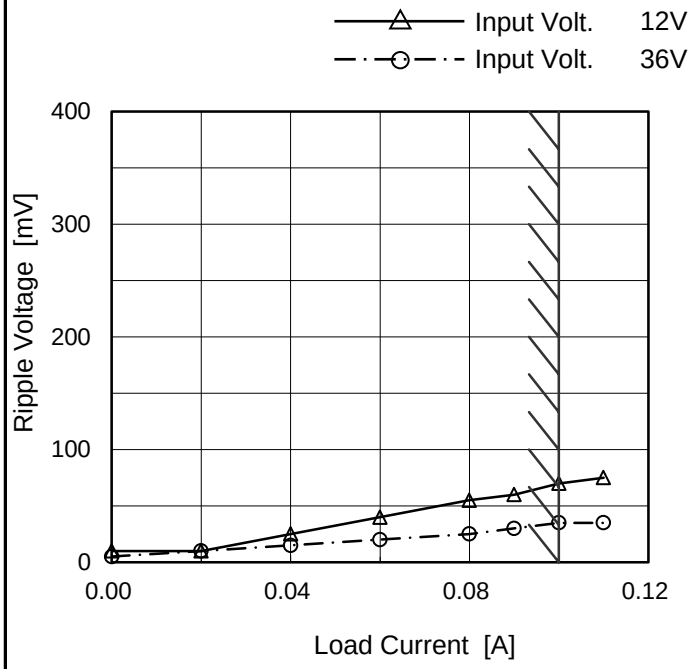
-15V: Rated Load Current

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Ripple Voltage (by Load Current) |
| Object | -15V0.1A |

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]

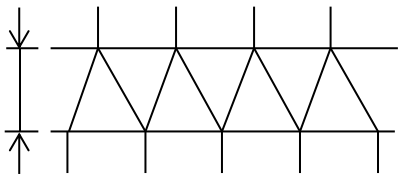


Fig.Complex Ripple Wave Form

2.Values

| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 12 [V] | Input Volt. 36 [V] |
| 0.00 | 10 | 5 |
| 0.02 | 10 | 10 |
| 0.04 | 25 | 15 |
| 0.06 | 40 | 20 |
| 0.08 | 55 | 25 |
| 0.09 | 60 | 30 |
| 0.10 | 70 | 35 |
| 0.11 | 75 | 35 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

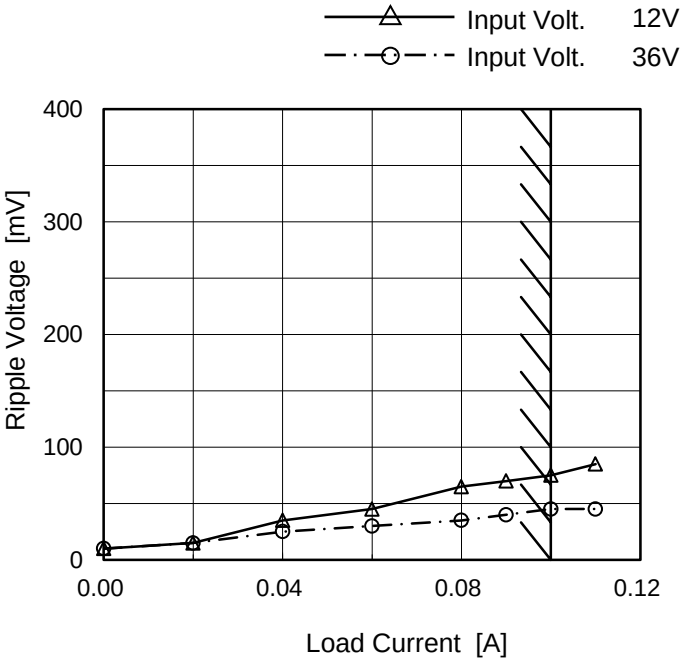
+15V: Rated Load Current

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Ripple-Noise |
| Object | +15V0.1A |

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.

Ripple Noise[mVp-p]

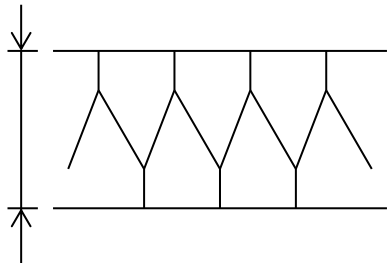


Fig.Complex Ripple Noise Wave Form

2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 12 [V] | Input Volt. 36 [V] |
| 0.00 | 10 | 10 |
| 0.02 | 15 | 15 |
| 0.04 | 35 | 25 |
| 0.06 | 45 | 30 |
| 0.08 | 65 | 35 |
| 0.09 | 70 | 40 |
| 0.10 | 75 | 45 |
| 0.11 | 85 | 45 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

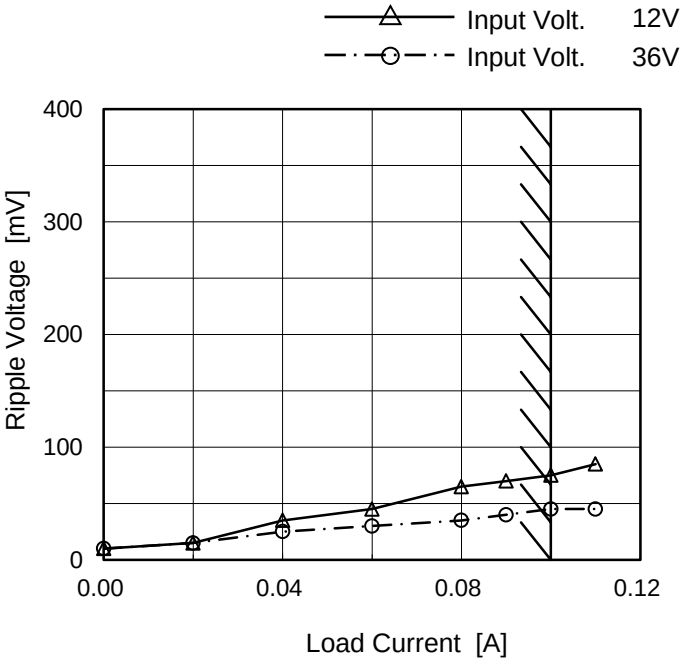
-15V: Rated Load Current

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Ripple-Noise |
| Object | -15V0.1A |

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.

Ripple Noise[mVp-p]

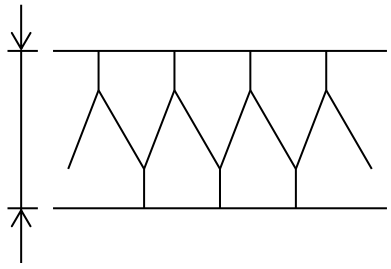


Fig.Complex Ripple Noise Wave Form

2.Values

| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 12 [V] | Input Volt. 36 [V] |
| 0.00 | 10 | 10 |
| 0.02 | 15 | 15 |
| 0.04 | 35 | 25 |
| 0.06 | 45 | 30 |
| 0.08 | 65 | 35 |
| 0.09 | 70 | 40 |
| 0.10 | 75 | 45 |
| 0.11 | 85 | 45 |
| -- | - | - |
| -- | - | - |
| -- | - | - |

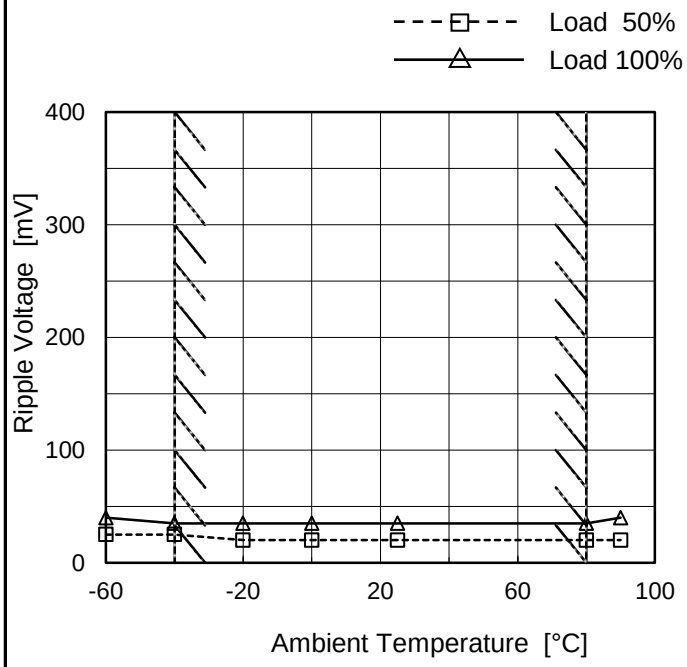
+15V: Rated Load Current

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +15V0.1A |

Testing Circuitry Figure B

1.Graph




Input Volt. 24V

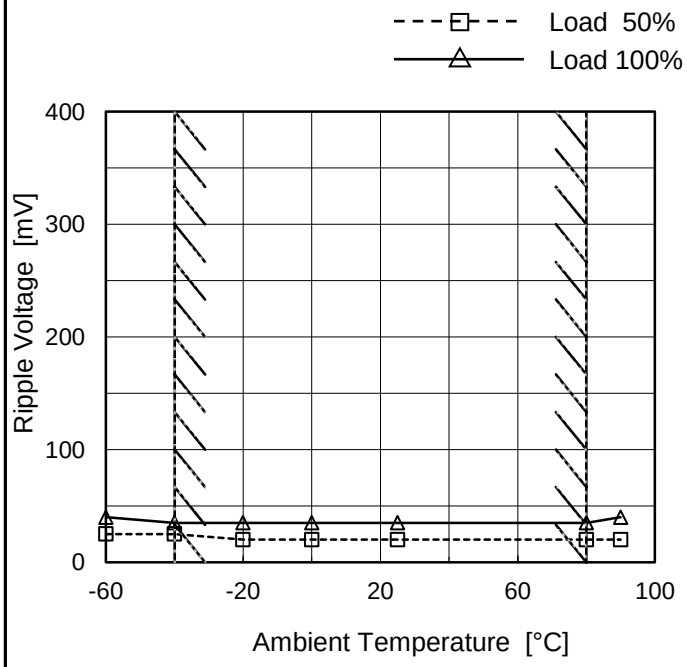
2.Values

| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load 50% | Load 100% |
| -60 | 25 | 40 |
| -40 | 25 | 35 |
| -20 | 20 | 35 |
| 0 | 20 | 35 |
| 25 | 20 | 35 |
| 80 | 20 | 35 |
| 90 | 20 | 40 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

-15V: Rated Load Current

| | |
|---|---|
| Object | -15V0.1A |

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 | 40 |
| -40 | 25 | 35 |
| -20 | 20 | 35 |
| 0 | 20 | 35 |
| 25 | 20 | 35 |
| 80 | 20 | 35 |
| 90 | 20 | 40 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

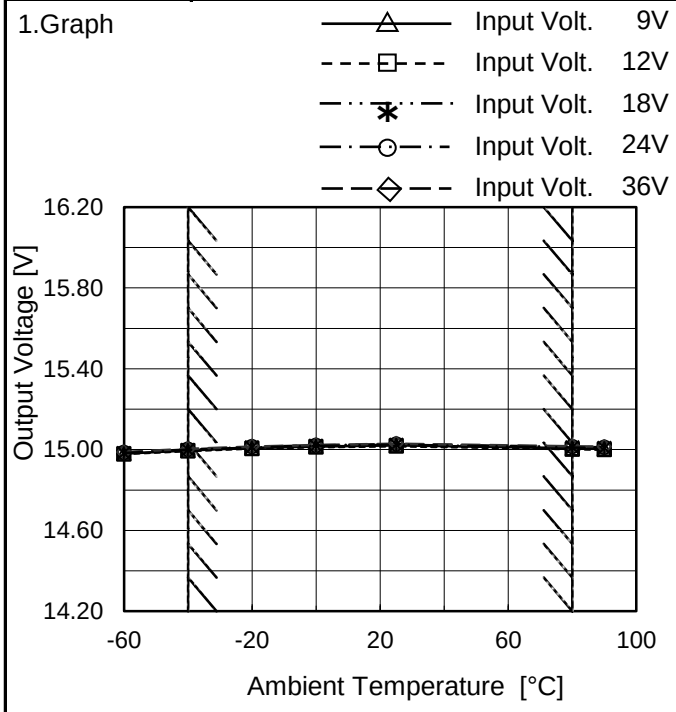
+15V: Rated Load Current

COSEL

| Model | MGFW32415 |
|---|---|
| Item | Ambient Temperature Drift |
| Object | +15V0.1A |

Testing Circuitry Figure A

1.Graph



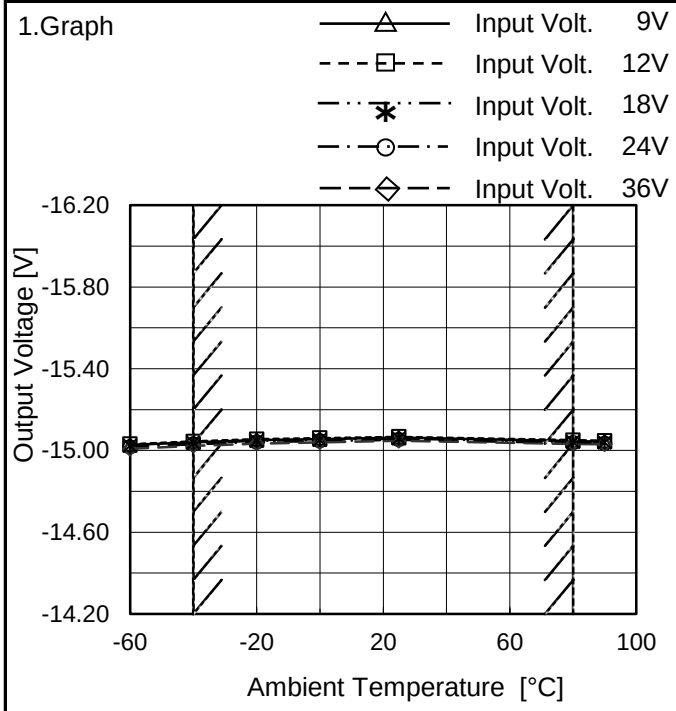

2.Values

| Ambient Temperature [°C] | Output Voltage [V] Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
|---|---|---|---|---|---|
| -60 | 14.980 | 14.978 | 14.983 | 14.985 | 14.988 |
| -40 | 14.995 | 14.993 | 14.998 | 15.001 | 15.003 |
| -20 | 15.008 | 15.005 | 15.011 | 15.014 | 15.016 |
| 0 | 15.015 | 15.012 | 15.018 | 15.021 | 15.023 |
| 25 | 15.021 | 15.017 | 15.024 | 15.027 | 15.029 |
| 80 | 15.006 | 15.002 | 15.010 | 15.014 | 15.016 |
| 90 | 15.004 | 14.999 | 15.008 | 15.011 | 15.014 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

-15V: Rated Load Current

| Object | -15V0.1A |
|---|---|

1.Graph




2.Values

| Ambient Temperature [°C] | Output Voltage [V] Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
|---|---|---|---|---|---|
| -60 | -15.027 | -15.030 | -15.024 | -15.018 | -15.008 |
| -40 | -15.040 | -15.044 | -15.037 | -15.031 | -15.023 |
| -20 | -15.051 | -15.055 | -15.047 | -15.041 | -15.034 |
| 0 | -15.056 | -15.060 | -15.052 | -15.047 | -15.040 |
| 25 | -15.063 | -15.067 | -15.059 | -15.053 | -15.047 |
| 80 | -15.046 | -15.050 | -15.042 | -15.037 | -15.032 |
| 90 | -15.044 | -15.048 | -15.039 | -15.035 | -15.030 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

+15V: Rated Load Current

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

Note: In case of Input Volt. 9V, Load 80%. Other case Load 100%.

| | | |
|---|---|---|
| Model | MGFW32415 | |
| Item | Output Voltage Accuracy | Testing Circuitry Figure A |

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 - 80°C
Input Voltage : 12 - 36V
Load Current (AVR 1) : 0 - 0.1A (AVR 2) : 0 - 0.1A

* 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

| Object | +15V0.1A | | | | | |
|---|---|---|---|---|---|---|
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
| | | | Current[A] | Voltage[V] | Value [mV] | Ratio [%] |
| Maximum Voltage | 80 | 12 | 0 | 15.339 | ±312 | ±2.1 |
| Minimum Voltage | 80 | 12 | 0.1 | 14.715 | | |

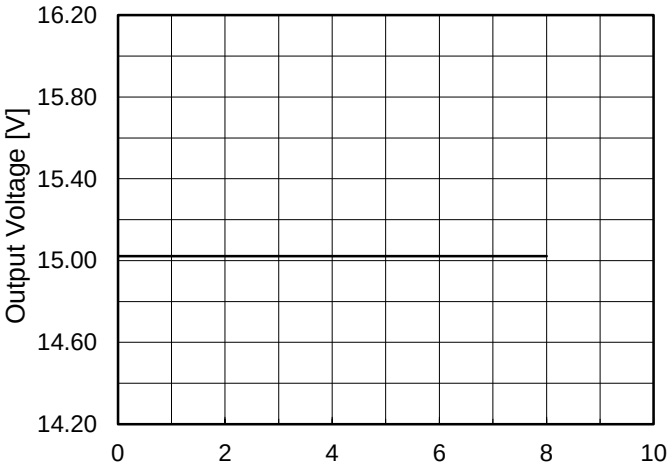
| Object | -15V0.1A | | | | | |
|---|---|---|---|---|---|---|
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
| | | | Current[A] | Voltage[V] | Value [mV] | Ratio [%] |
| Maximum Voltage | 80 | 12 | 0 | -15.364 | ±312 | ±2.1 |
| Minimum Voltage | 80 | 12 | 0.1 | -14.741 | | |

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Time Lapse Drift |
| Object | +15V0.1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 24V
Load 100%

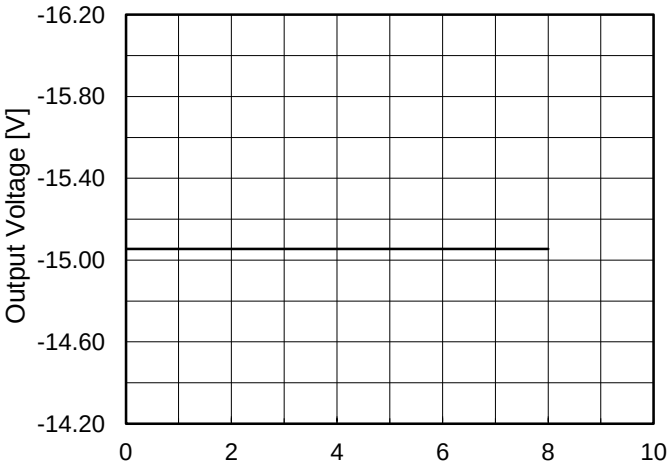
2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 15.023 |
| 0.5 | 15.022 |
| 1.0 | 15.022 |
| 2.0 | 15.022 |
| 3.0 | 15.022 |
| 4.0 | 15.022 |
| 5.0 | 15.021 |
| 6.0 | 15.022 |
| 7.0 | 15.022 |
| 8.0 | 15.022 |

-15V: Rated Load Current

| | |
|---|---|
| Object | -15V0.1A |

1.Graph




Input Volt. 24V
Load 100%

2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | -15.055 |
| 0.5 | -15.054 |
| 1.0 | -15.055 |
| 2.0 | -15.055 |
| 3.0 | -15.055 |
| 4.0 | -15.055 |
| 5.0 | -15.055 |
| 6.0 | -15.055 |
| 7.0 | -15.055 |
| 8.0 | -15.055 |

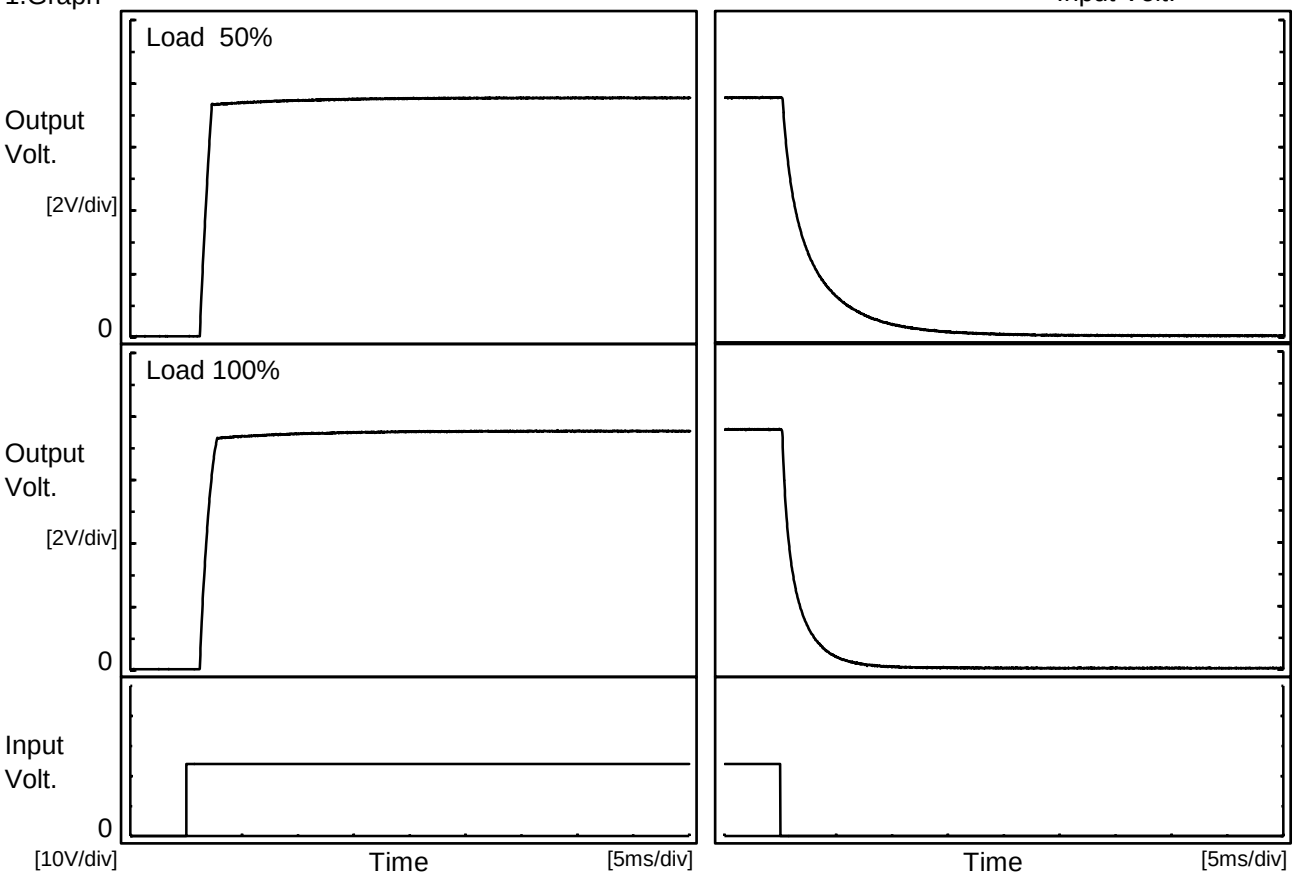
+15V: Rated Load Current

COSEL

| | | |
|---|---|---|
| Model | MGFW32415 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +15V0.1A | |

1.Graph

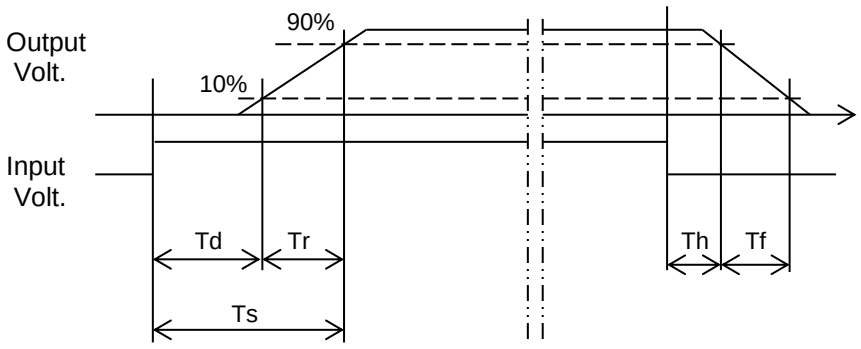
Input Volt. 24 V




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 1.3 | 0.9 | 2.2 | 0.3 | 6.7 |
| 100 % | 1.3 | 1.2 | 2.5 | 0.2 | 3.3 |

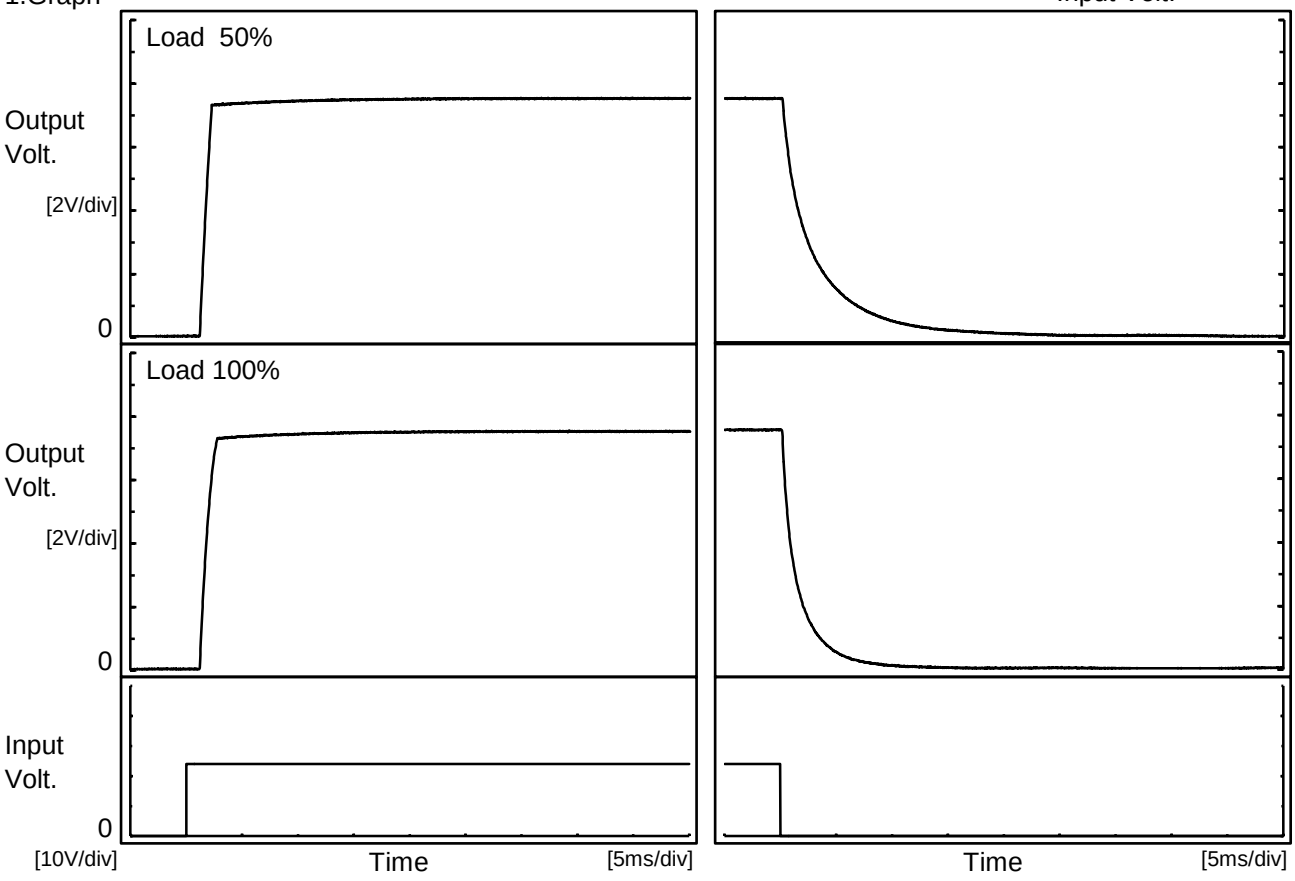


COSEL

| | | |
|---|---|---|
| Model | MGFW32415 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | -15V0.1A | |

1.Graph

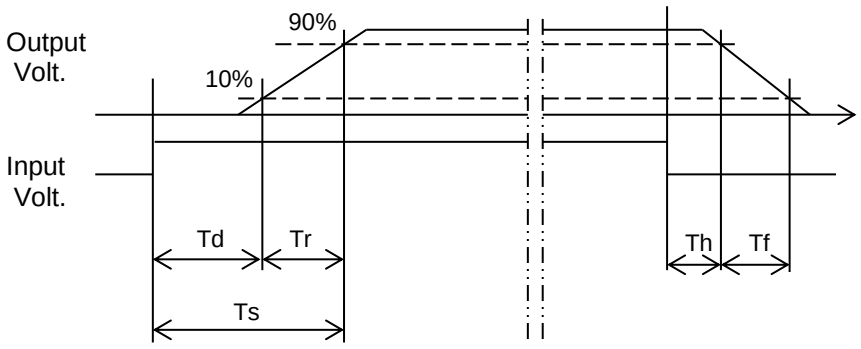
Input Volt. 24 V




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 1.3 | 0.9 | 2.2 | 0.4 | 7.6 |
| 100 % | 1.3 | 1.2 | 2.5 | 0.3 | 3.8 |



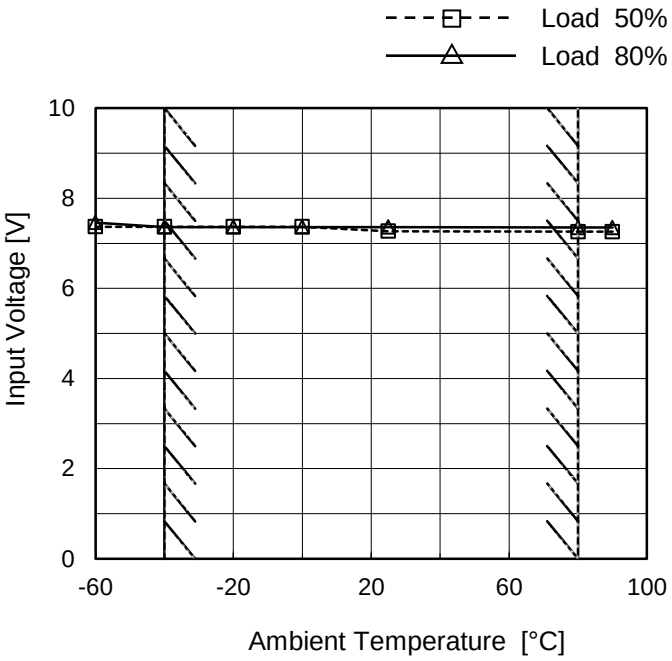
COSEL

| Model | MGFW32415 |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage |

Testing Circuitry Figure A

Object +15V0.1A

1.Graph

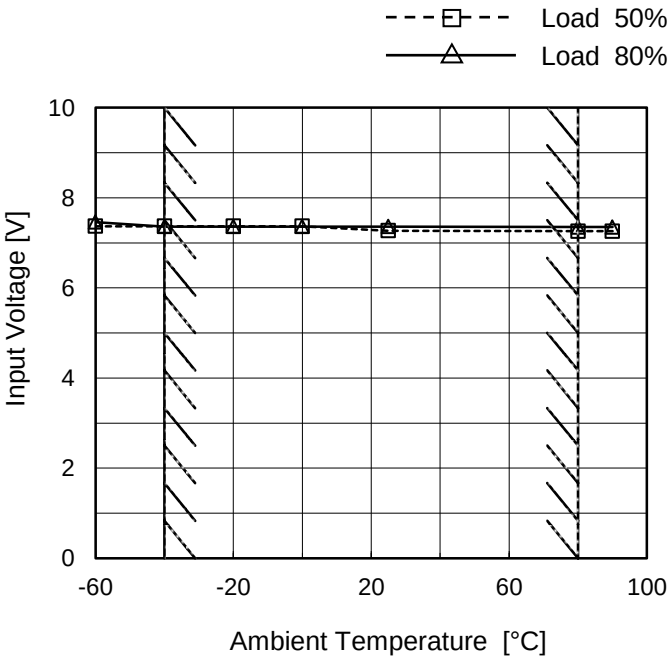



2.Values

| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 80% |
| -60 | 7.4 | 7.5 |
| -40 | 7.4 | 7.4 |
| -20 | 7.4 | 7.4 |
| 0 | 7.4 | 7.4 |
| 25 | 7.3 | 7.4 |
| 80 | 7.3 | 7.4 |
| 90 | 7.3 | 7.4 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

Object -15V0.1A

1.Graph




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

2.Values

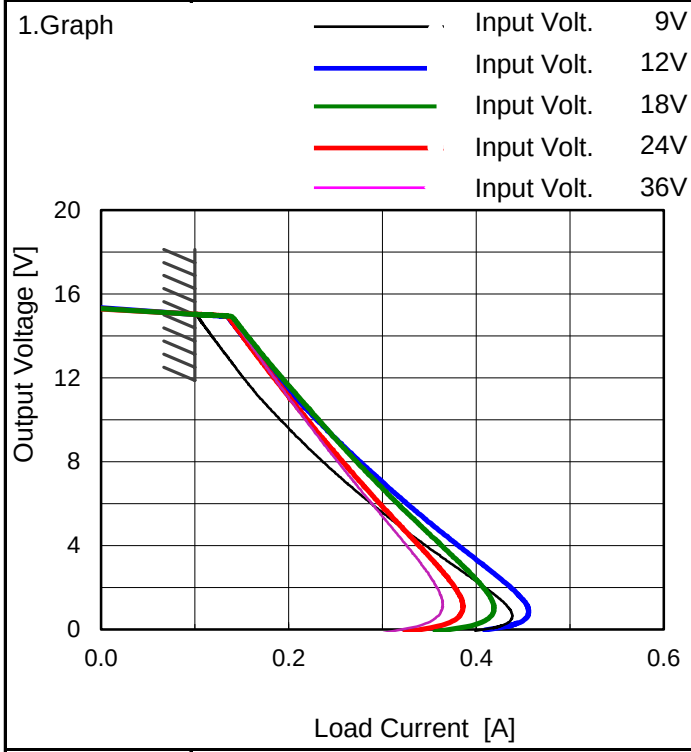
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 80% |
| -60 | 7.4 | 7.5 |
| -40 | 7.4 | 7.4 |
| -20 | 7.4 | 7.4 |
| 0 | 7.4 | 7.4 |
| 25 | 7.3 | 7.4 |
| 80 | 7.3 | 7.4 |
| 90 | 7.3 | 7.4 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Overcurrent Protection |
| Object | +15V0.1A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



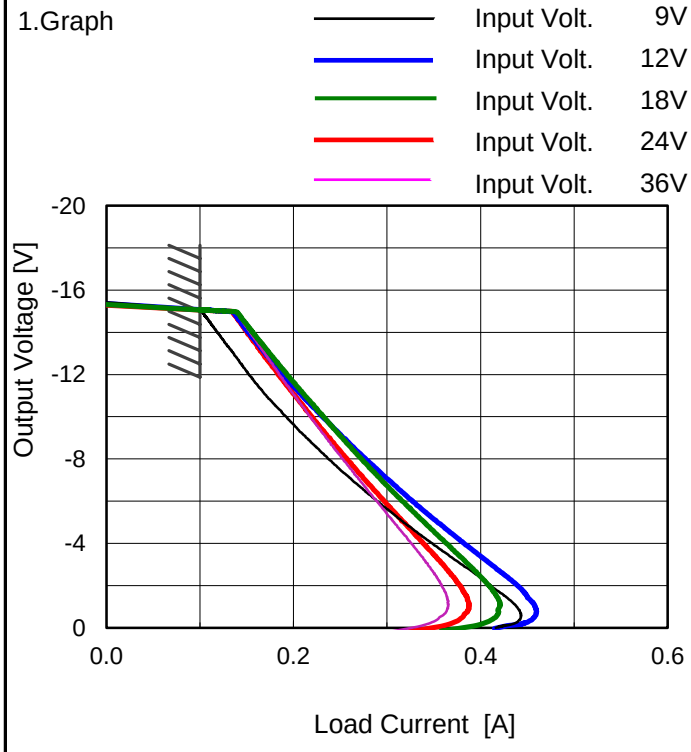

2.Values

| Output Voltage [V] | Load Current [A] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 14.3 | 0.114 | 0.146 | 0.151 | 0.147 | 0.149 |
| 13.5 | 0.126 | 0.159 | 0.165 | 0.159 | 0.160 |
| 12.0 | 0.151 | 0.188 | 0.193 | 0.184 | 0.184 |
| 10.5 | 0.181 | 0.218 | 0.221 | 0.211 | 0.208 |
| 9.0 | 0.212 | 0.252 | 0.252 | 0.238 | 0.234 |
| 7.5 | 0.248 | 0.287 | 0.283 | 0.267 | 0.261 |
| 6.0 | 0.288 | 0.326 | 0.316 | 0.297 | 0.288 |
| 4.5 | 0.330 | 0.367 | 0.351 | 0.328 | 0.316 |
| 3.0 | 0.377 | 0.410 | 0.386 | 0.359 | 0.343 |
| 1.5 | 0.424 | 0.448 | 0.415 | 0.384 | 0.363 |
| 0.0 | 0.399 | 0.409 | 0.356 | 0.324 | 0.301 |
| -- | - | - | - | - | - |

-15V: Rated Load Current

| | |
|---|---|
| Object | -15V0.1A |

1.Graph




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] | Input Volt. 24[V] | Input Volt. 36[V] |
| -14.3 | 0.114 | 0.147 | 0.152 | 0.147 | 0.150 |
| -13.5 | 0.127 | 0.160 | 0.165 | 0.159 | 0.161 |
| -12.0 | 0.152 | 0.189 | 0.193 | 0.184 | 0.184 |
| -10.5 | 0.181 | 0.220 | 0.222 | 0.210 | 0.209 |
| -9.0 | 0.213 | 0.253 | 0.252 | 0.238 | 0.234 |
| -7.5 | 0.249 | 0.289 | 0.283 | 0.266 | 0.262 |
| -6.0 | 0.289 | 0.327 | 0.315 | 0.296 | 0.288 |
| -4.5 | 0.332 | 0.367 | 0.351 | 0.328 | 0.316 |
| -3.0 | 0.380 | 0.411 | 0.387 | 0.360 | 0.344 |
| -1.5 | 0.425 | 0.449 | 0.417 | 0.385 | 0.364 |
| 0.0 | 0.416 | 0.415 | 0.358 | 0.324 | 0.301 |
| -- | - | - | - | - | - |

+15V: Rated Load Current

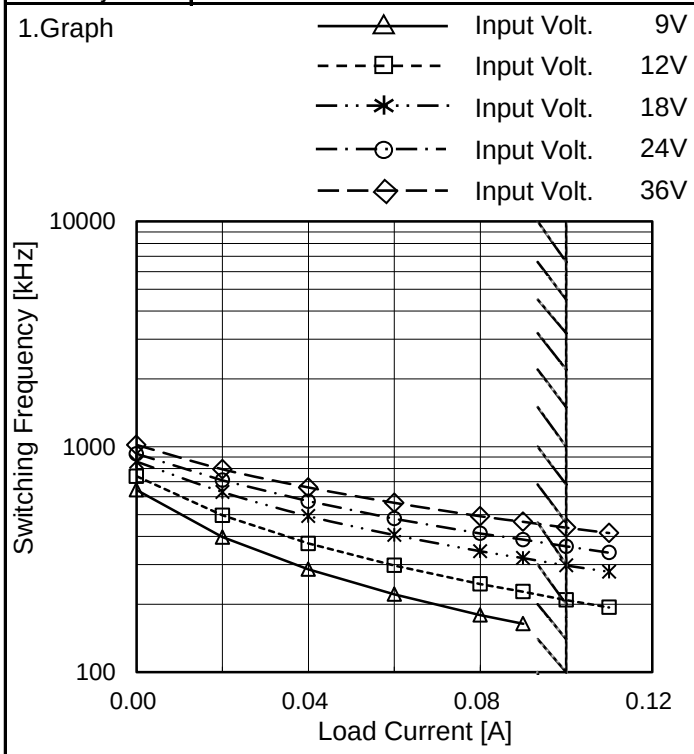
Maximum output current at minimum input Voltage is 80% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

| | |
|---|---|
| Model | MGFW32415 |
| Item | Switching frequency (by Load Current) |
| Object | +/-15V0.1A |

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] | Input Current [A] | | | | |
|---|---|---|---|---|---|
| | Input Volt. 9[V] | Input Volt. 12[V] | Input Volt. 18[V] | Input Volt. 24[V] | Input Volt. 36[V] |
| 0.00 | 644 | 740 | 860 | 930 | 1020 |
| 0.02 | 397 | 496 | 630 | 710 | 795 |
| 0.04 | 286 | 372 | 493 | 573 | 660 |
| 0.06 | 222 | 298 | 406 | 480 | 564 |
| 0.08 | 179 | 246 | 344 | 413 | 492 |
| 0.09 | 164 | 227 | 321 | 387 | 465 |
| 0.10 | - ※ | 209 | 297 | 361 | 437 |
| 0.11 | - ※ | 194 | 279 | 339 | 414 |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |
| -- | - | - | - | - | - |

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

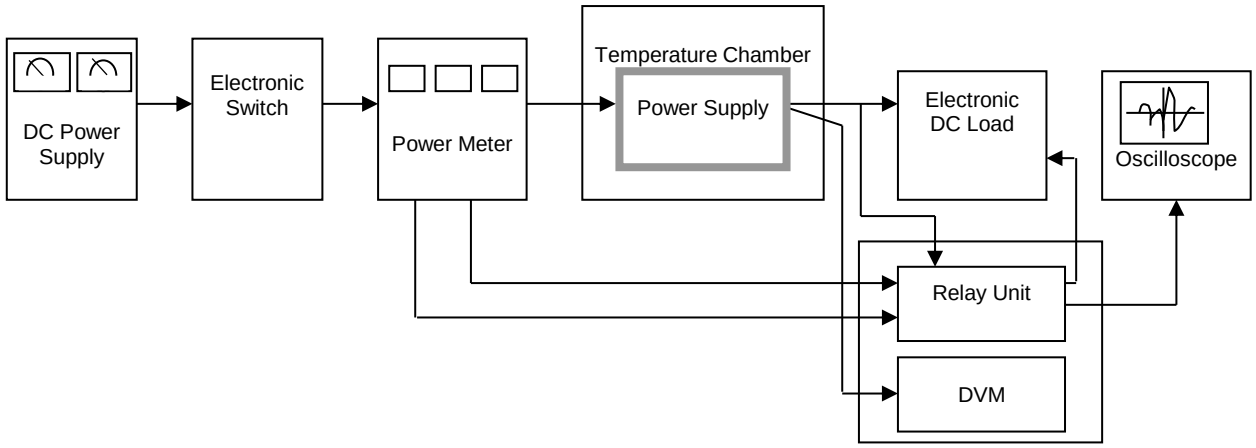



Figure A

Data Acquisition/Control Unit

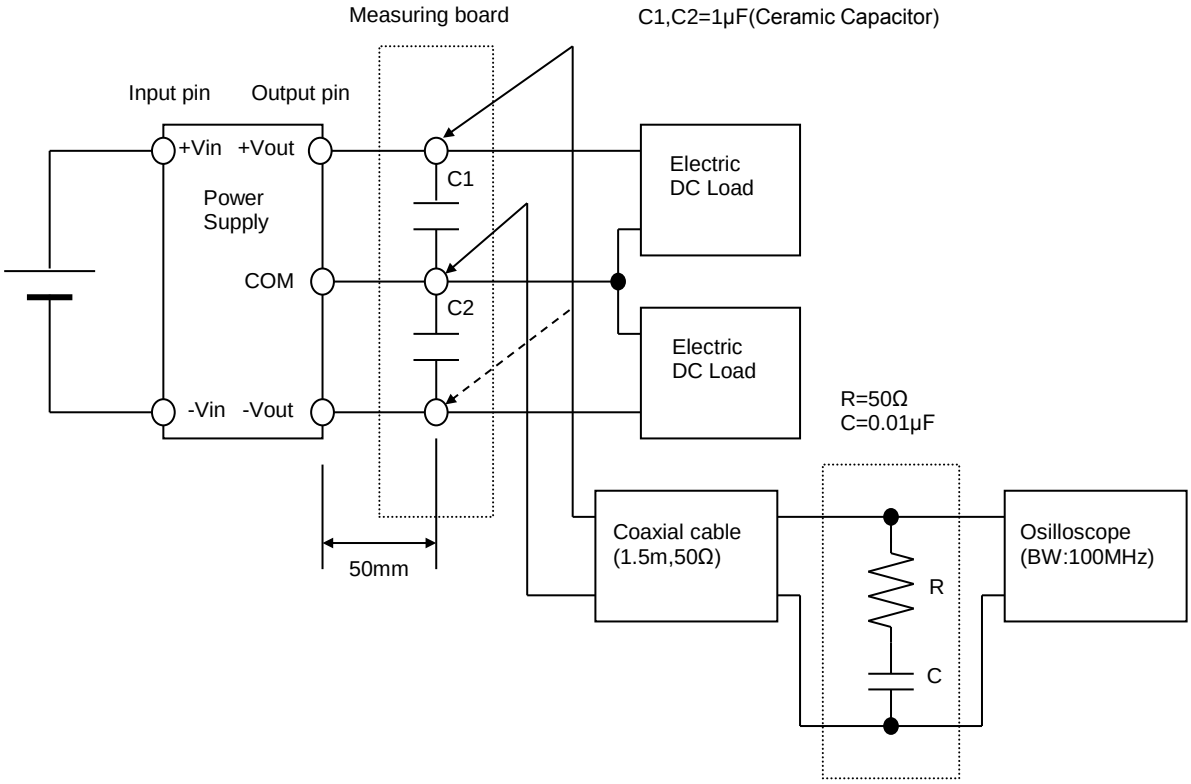



Figure B（Ripple and Ripple noise Characteristic）