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参考資料

# TEST DATA OF MMC75B-1

Regulated DC Power Supply
December 29, 2010

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Naoki Tonami Design Manager

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Hironobu Shimizu Design Engineer

**COSEL CO.,LTD.**

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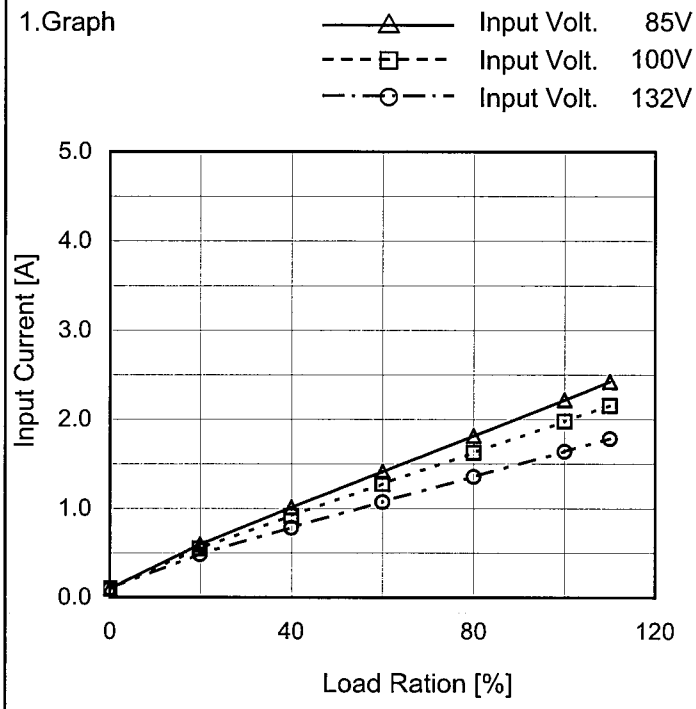
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Input Current (by Load Current) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ration [%] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0 | 0.099 | 0.100 | 0.102 |
| 20 | 0.598 | 0.549 | 0.485 |
| 40 | 1.014 | 0.917 | 0.784 |
| 60 | 1.417 | 1.274 | 1.073 |
| 80 | 1.816 | 1.626 | 1.358 |
| 100 | 2.220 | 1.978 | 1.642 |
| 110 | 2.424 | 2.156 | 1.786 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



BC-10536

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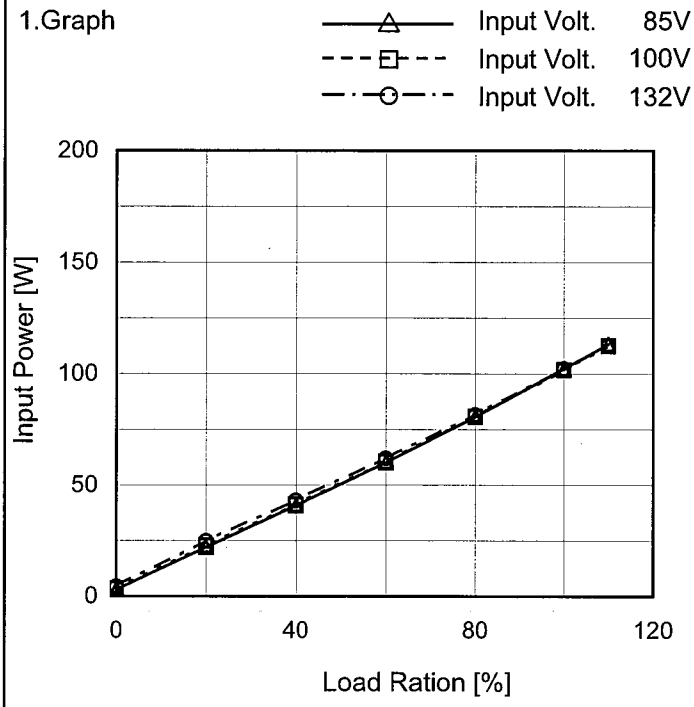
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Input Power (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ration [%] | Input Power [W] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0 | 3.0 | 3.5 | 4.4 |
| 20 | 22.1 | 22.8 | 24.8 |
| 40 | 40.8 | 41.3 | 43.1 |
| 60 | 60.2 | 60.5 | 62.0 |
| 80 | 80.7 | 80.7 | 81.6 |
| 100 | 102.3 | 101.7 | 102.3 |
| 110 | 113.4 | 112.5 | 112.8 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



BC-10536

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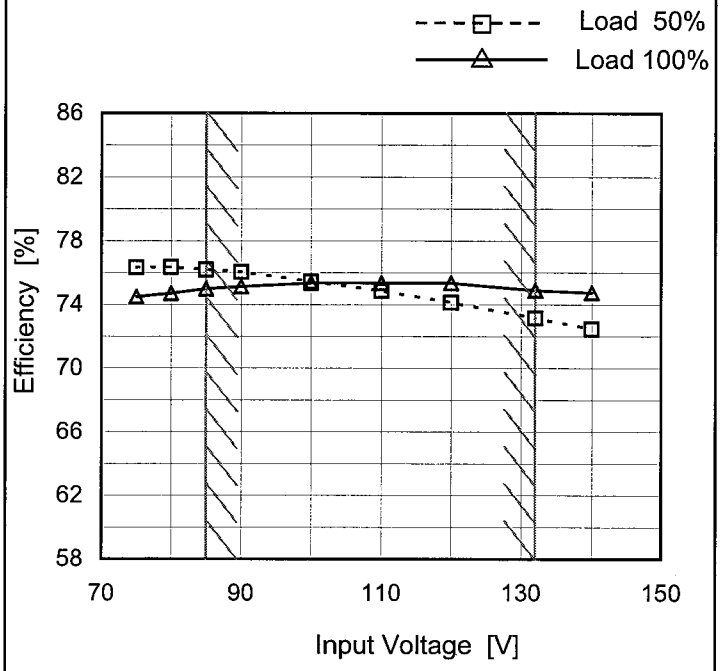
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Efficiency (by Input Voltage) |
| Object | ——————————— |

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% |
| 75 | 76.3 | 74.5 |
| 80 | 76.3 | 74.7 |
| 85 | 76.2 | 75.0 |
| 90 | 76.0 | 75.1 |
| 100 | 75.4 | 75.4 |
| 110 | 74.9 | 75.4 |
| 120 | 74.1 | 75.4 |
| 132 | 73.2 | 74.9 |
| 140 | 72.5 | 74.8 |

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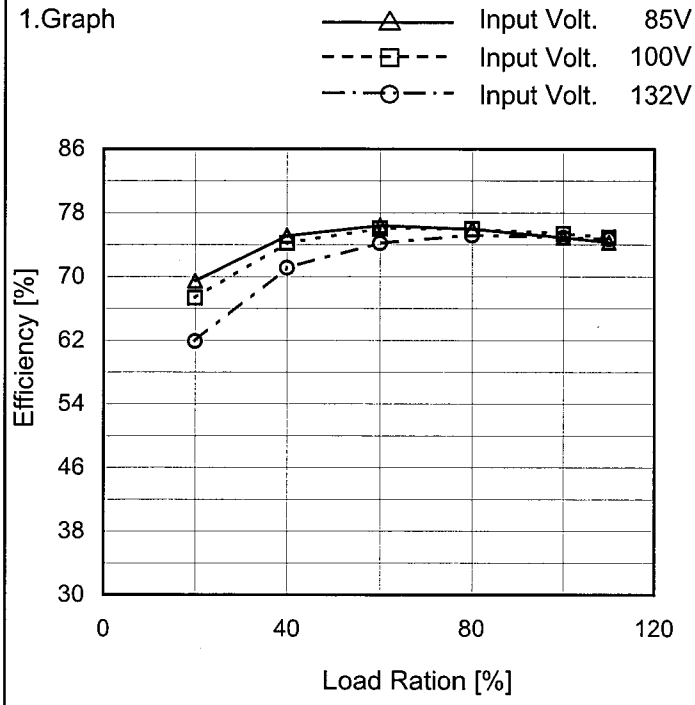
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Efficiency (by Load Current) |
| Object | ——————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ration [%] | Efficiency [%] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0 | - | - | - |
| 20 | 69.5 | 67.3 | 61.9 |
| 40 | 75.1 | 74.2 | 71.1 |
| 60 | 76.4 | 76.0 | 74.2 |
| 80 | 76.0 | 76.0 | 75.2 |
| 100 | 74.9 | 75.4 | 74.9 |
| 110 | 74.3 | 74.9 | 74.7 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



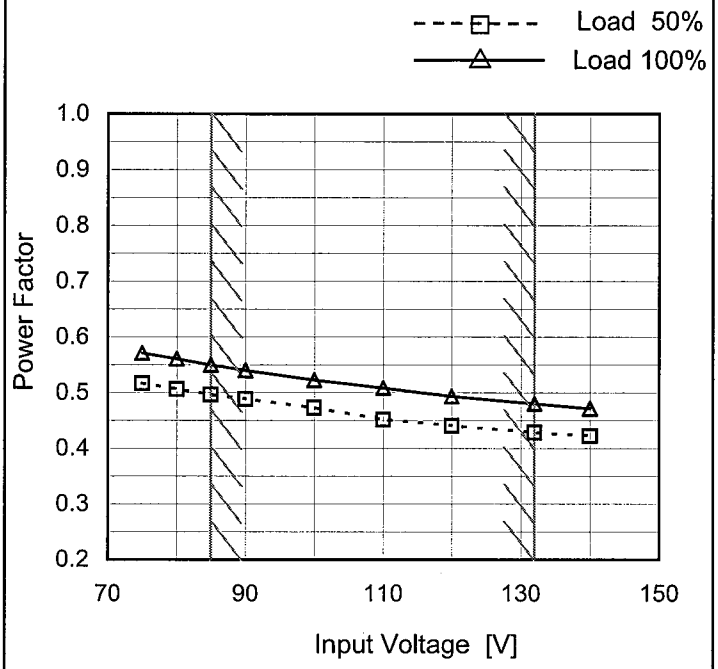
BC-10536

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Power Factor (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] | Power Factor | |
|---|---|---|
| | Load 50% | Load 100% |
| 75 | 0.516 | 0.571 |
| 80 | 0.506 | 0.561 |
| 85 | 0.497 | 0.550 |
| 90 | 0.488 | 0.540 |
| 100 | 0.473 | 0.523 |
| 110 | 0.451 | 0.509 |
| 120 | 0.441 | 0.493 |
| 132 | 0.429 | 0.481 |
| 140 | 0.422 | 0.472 |

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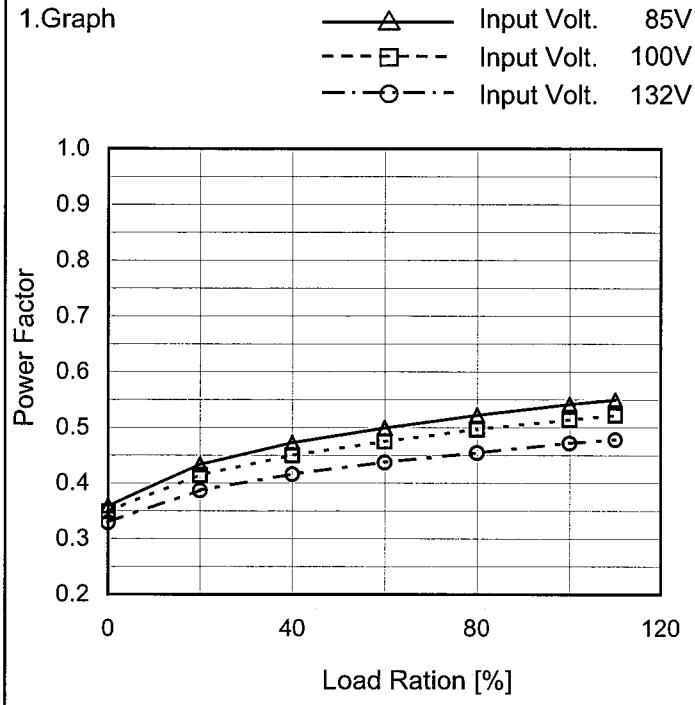
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Power Factor (by Load Current) |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




2.Values

| Load Ration [%] | Power Factor | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0 | 0.359 | 0.349 | 0.329 |
| 20 | 0.434 | 0.415 | 0.387 |
| 40 | 0.473 | 0.450 | 0.416 |
| 60 | 0.499 | 0.475 | 0.437 |
| 80 | 0.522 | 0.496 | 0.455 |
| 100 | 0.542 | 0.514 | 0.472 |
| 110 | 0.550 | 0.522 | 0.478 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

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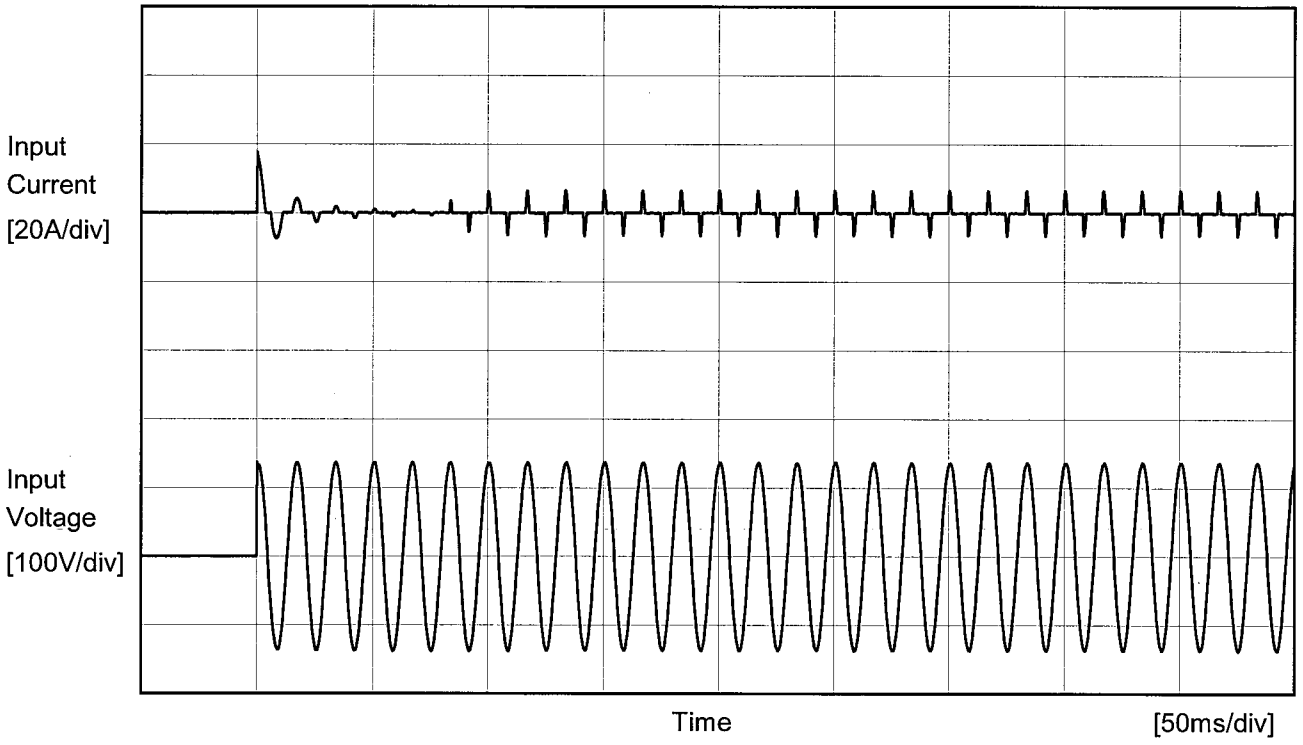
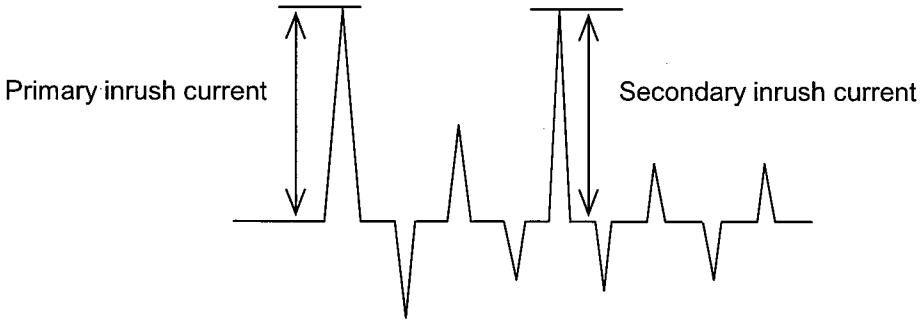
|---|---|
| Model | MMC75B-1 |
| Item | Inrush Current |
| Object | ———————— |

Temperature 25°C
Testing Circuitry Figure A




| | |
|---|---|
| Input Voltage | 100 V |
| Frequency | 60 Hz |
| Load | 100 % |
| Primary inrush current | 17.7 A |
| Secondary inrush current | 6.7 A |



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|---|---|---|
| Model | MMC75B-1 | |
| Item | Leakage Current | Temperature 25°C<br>Testing Circuitry Figure B |
| Object | ——————————— | |

1.Results

| Standards | Leakage Current [mA] | | |
|---|---|---|---|
| | Input Volt. 85 [V] | Input Volt. 100 [V] | Input Volt. 132 [V] |
| (A)DEN-AN | 0.11 | 0.13 | 0.18 |
| (B)IEC60950-1 | 0.22 | 0.26 | 0.36 |

| Standards | Leakage Current [mA] | | |
|---|---|---|---|
| | Input Volt. 170 [V] | Input Volt. 240 [V] | Input Volt. 264 [V] |
| (B)IEC60950-1 | - | - | - |

2.Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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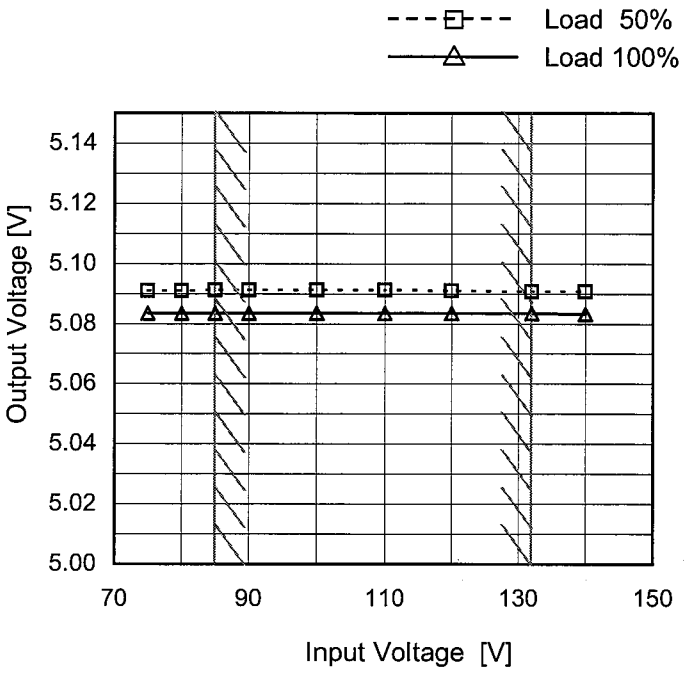
|---|---|
| Model | MMC75B-1 |
| Item | Line Regulation |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph

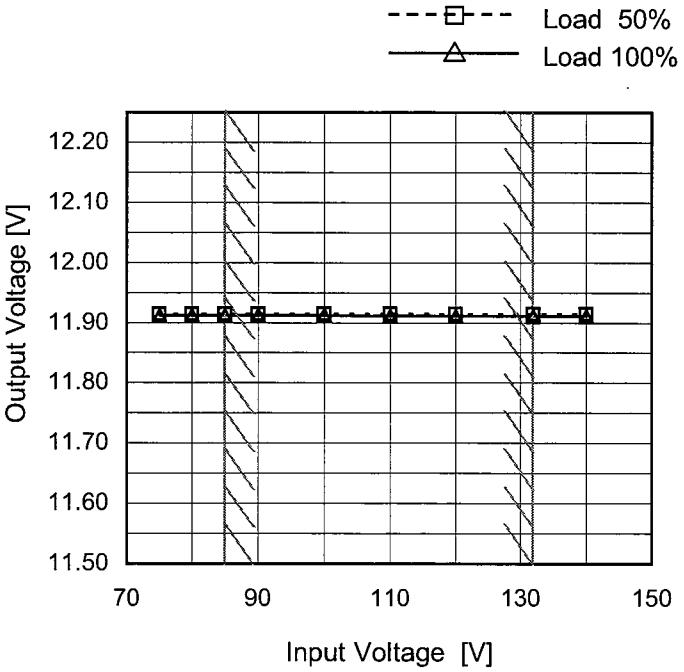



2.Values

| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 75 | 5.091 | 5.084 |
| 80 | 5.091 | 5.084 |
| 85 | 5.091 | 5.084 |
| 90 | 5.091 | 5.084 |
| 100 | 5.091 | 5.084 |
| 110 | 5.091 | 5.084 |
| 120 | 5.091 | 5.084 |
| 132 | 5.091 | 5.084 |
| 140 | 5.091 | 5.083 |

| | |
|---|---|
| Object | +12V2.5A |

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% |
| 75 | 11.914 | 11.912 |
| 80 | 11.914 | 11.912 |
| 85 | 11.914 | 11.912 |
| 90 | 11.914 | 11.912 |
| 100 | 11.914 | 11.912 |
| 110 | 11.914 | 11.912 |
| 120 | 11.914 | 11.912 |
| 132 | 11.914 | 11.912 |
| 140 | 11.914 | 11.912 |

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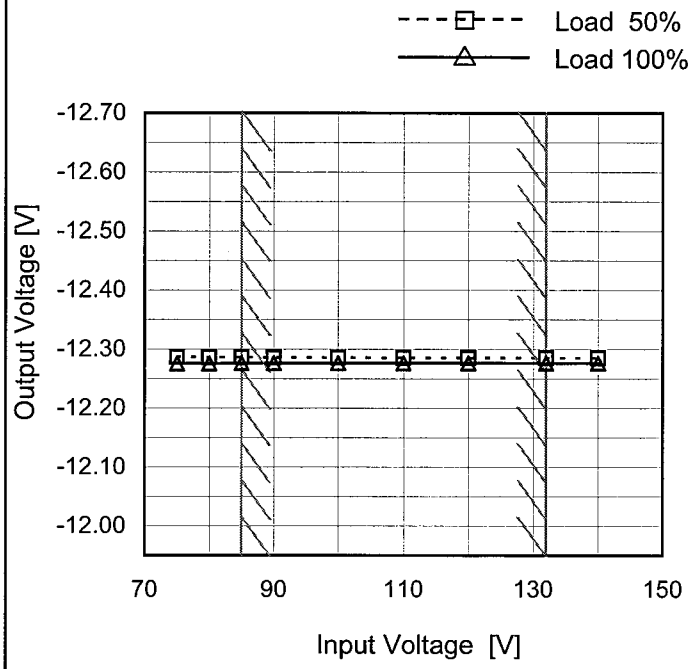
| | |
|---|---|
| Model | MMC75B-1 |
| Item | Line Regulation |
| Object | -12V0.5A |

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% |
| 75 | -12.287 | -12.276 |
| 80 | -12.286 | -12.276 |
| 85 | -12.286 | -12.276 |
| 90 | -12.286 | -12.276 |
| 100 | -12.285 | -12.276 |
| 110 | -12.285 | -12.276 |
| 120 | -12.285 | -12.276 |
| 132 | -12.285 | -12.276 |
| 140 | -12.285 | -12.276 |

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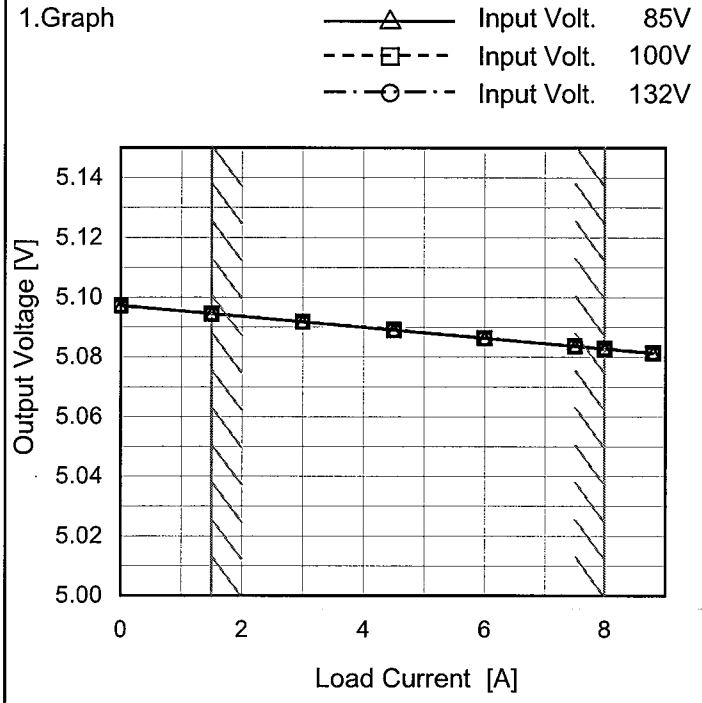
| Model | MMC75B-1 |
|---|---|
| Item | Load Regulation |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph

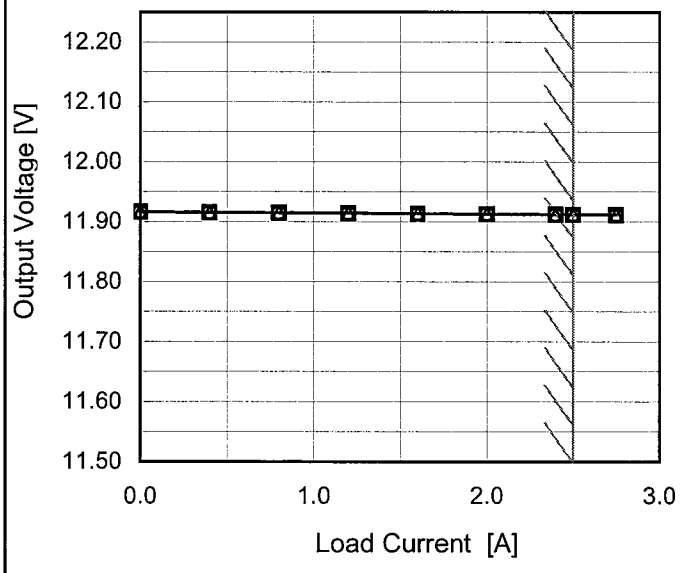



2.Values

| Load Current [A] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0.0 | 5.097 | 5.097 | 5.097 |
| 1.5 | 5.095 | 5.095 | 5.094 |
| 3.0 | 5.092 | 5.092 | 5.092 |
| 4.5 | 5.089 | 5.089 | 5.089 |
| 6.0 | 5.086 | 5.086 | 5.086 |
| 7.5 | 5.084 | 5.084 | 5.084 |
| 8.0 | 5.083 | 5.083 | 5.083 |
| 8.8 | 5.081 | 5.081 | 5.081 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

| Object | +12V2.5A |
|---|---|

1.Graph




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

2.Values

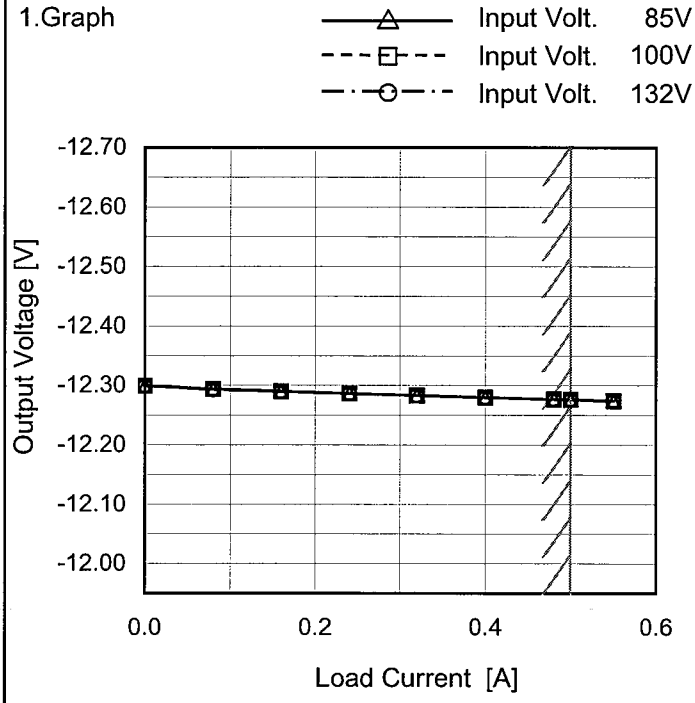
| Load Current [A] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0.00 | 11.917 | 11.917 | 11.916 |
| 0.40 | 11.916 | 11.916 | 11.915 |
| 0.80 | 11.915 | 11.915 | 11.915 |
| 1.20 | 11.914 | 11.914 | 11.914 |
| 1.60 | 11.914 | 11.913 | 11.913 |
| 2.00 | 11.913 | 11.913 | 11.913 |
| 2.40 | 11.912 | 11.912 | 11.912 |
| 2.50 | 11.912 | 11.912 | 11.912 |
| 2.75 | 11.911 | 11.911 | 11.911 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Load Regulation |
| Object | -12V0.5A |

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. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0.00 | -12.300 | -12.299 | -12.299 |
| 0.08 | -12.294 | -12.294 | -12.293 |
| 0.16 | -12.291 | -12.290 | -12.290 |
| 0.24 | -12.287 | -12.287 | -12.286 |
| 0.32 | -12.284 | -12.283 | -12.283 |
| 0.40 | -12.280 | -12.280 | -12.280 |
| 0.48 | -12.277 | -12.277 | -12.277 |
| 0.50 | -12.277 | -12.276 | -12.276 |
| 0.55 | -12.275 | -12.274 | -12.274 |
| -- | - | - | - |
| -- | - | - | - |

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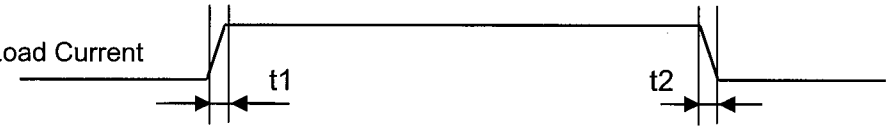
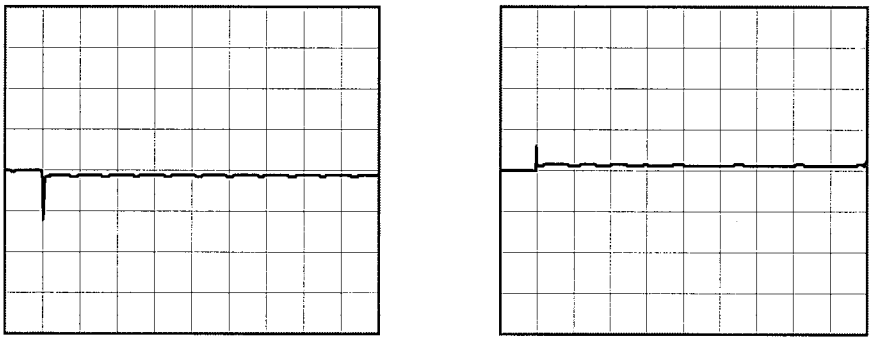
|---|---|---|---|
| Model | MMC75B-1 | | |
| Item | Dynamic Load Response | Temperature | 25°C |
| | | Testing Circuitry | Figure A |
| Object | +5V8A | | |

Input Volt. 100 V
Cycle 200 ms

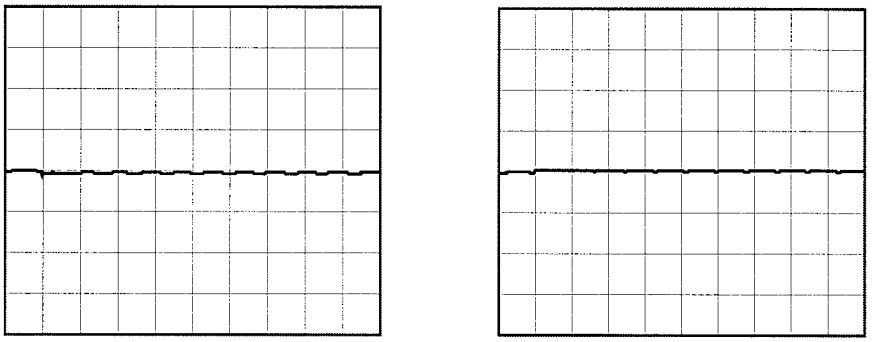
Response. t1=t2=50us. Typ




Min. Load 18.75% (1.5A) ⟷
Load 100% (8A)




Min. Load 18.75% (1.5A) ⟷
Load 50% (4A)



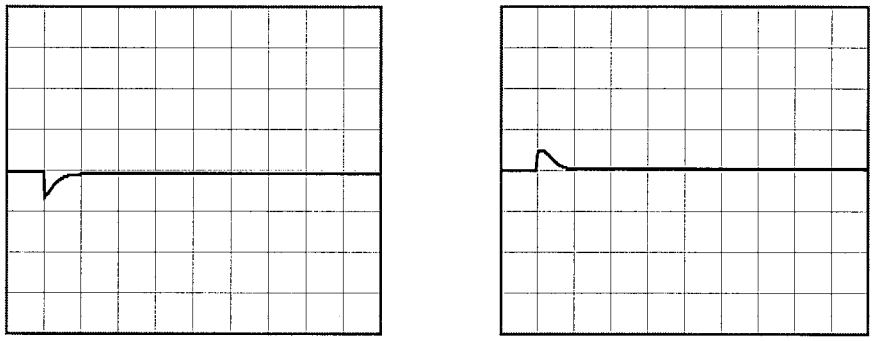
COSEL

| | | | |
|---|---|---|---|
| Model | MMC75B-1 | | |
| Item | Dynamic Load Response | Temperature<br>Testing Circuitry | 25°C<br>Figure A |
| Object | +12V2.5A | | |

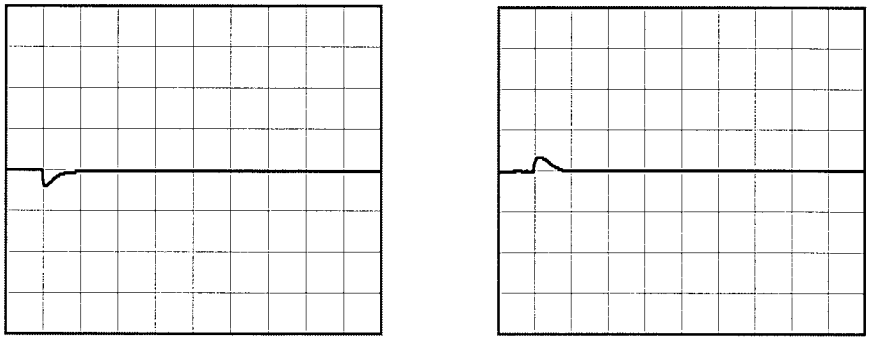
Input Volt. 100 V
Cycle 200 ms

Response. t1=t2=50us. Typ


Min. Load 0% (0A) ⟷
Load 100% (2.5A)




Min. Load 0% (0A) ⟷
Load 50% (1.25A)



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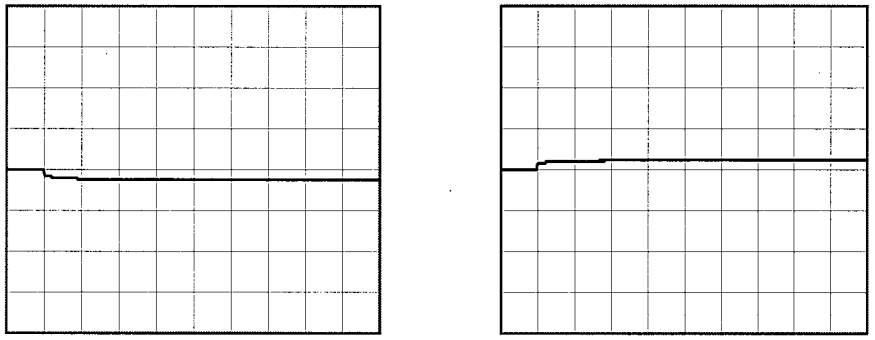
| | | | |
|---|---|---|---|
| Model | MMC75B-1 | | |
| Item | Dynamic Load Response | Temperature | 25˚C |
| | | Testing Circuitry | Figure A |
| Object | -12V0.5A | | |

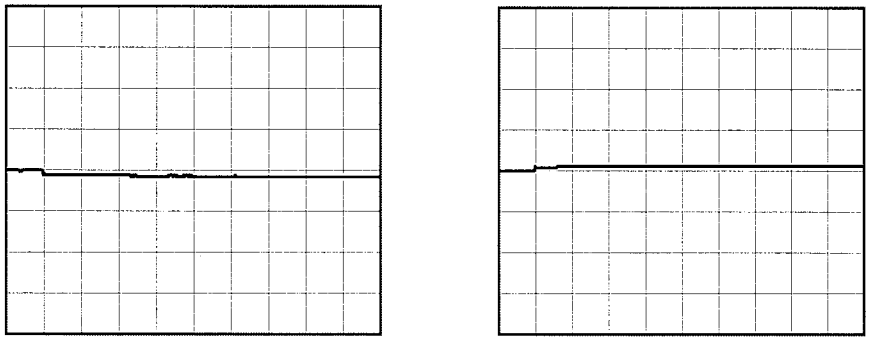
Input Volt. 100 V
Cycle 200 ms

Response. t1=t2=50us. Typ


Min. Load 0% (0A) ⟷
Load 100% (0.5A)




Min. Load 0% (0A) ⟷
Load 50% (0.25A)

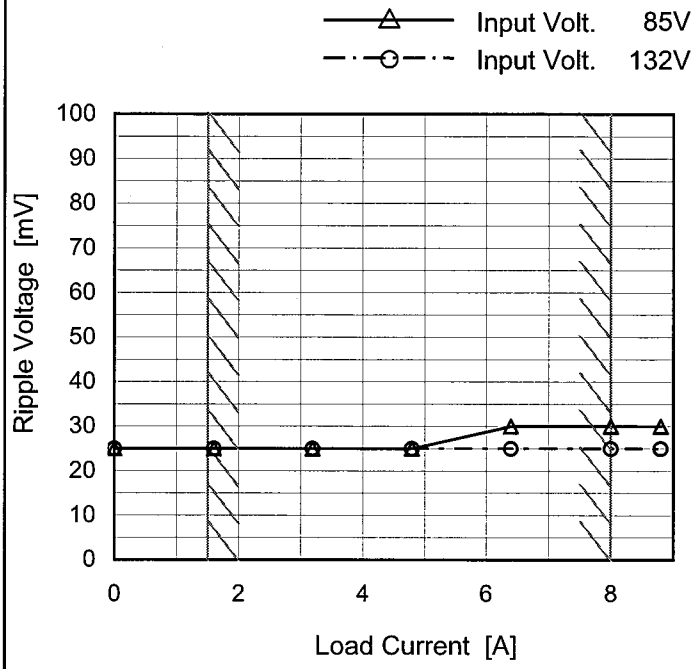


COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple Voltage (by Load Current) |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

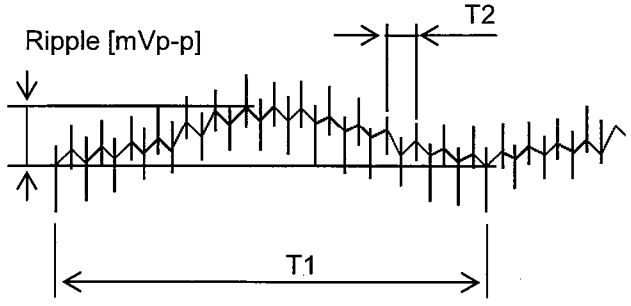



Fig. Complex Ripple Wave Form

2.Values

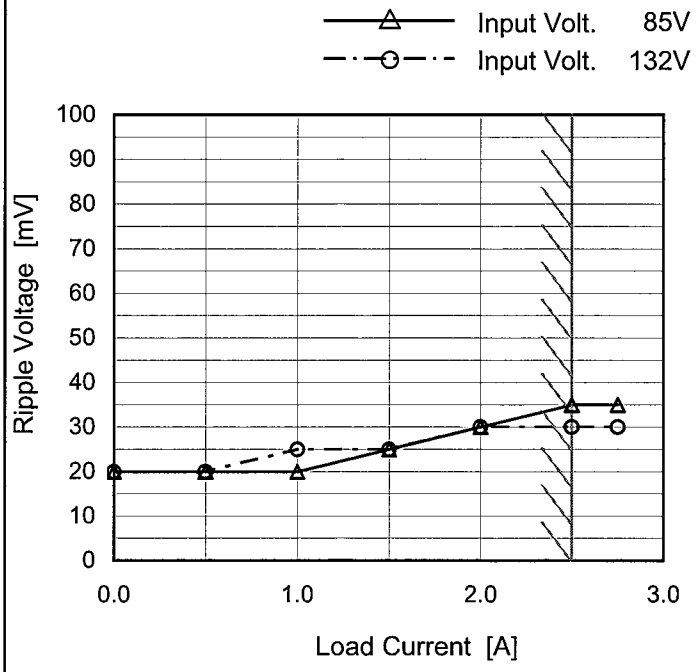
| Load Current [A] | Ripple Voltage [mV] Input Volt. 85 [V] | Ripple Voltage [mV] Input Volt. 132 [V] |
|---|---|---|
| 0.0 | 25 | 25 |
| 1.6 | 25 | 25 |
| 3.2 | 25 | 25 |
| 4.8 | 25 | 25 |
| 6.4 | 30 | 25 |
| 8.0 | 30 | 25 |
| 8.8 | 30 | 25 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple Voltage (by Load Current) |
| Object | +12V2.5A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

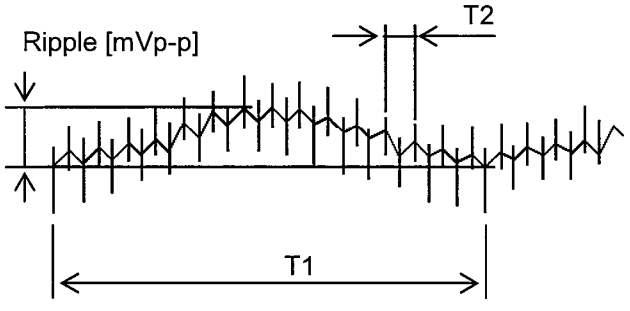



Fig. Complex Ripple Wave Form

2.Values

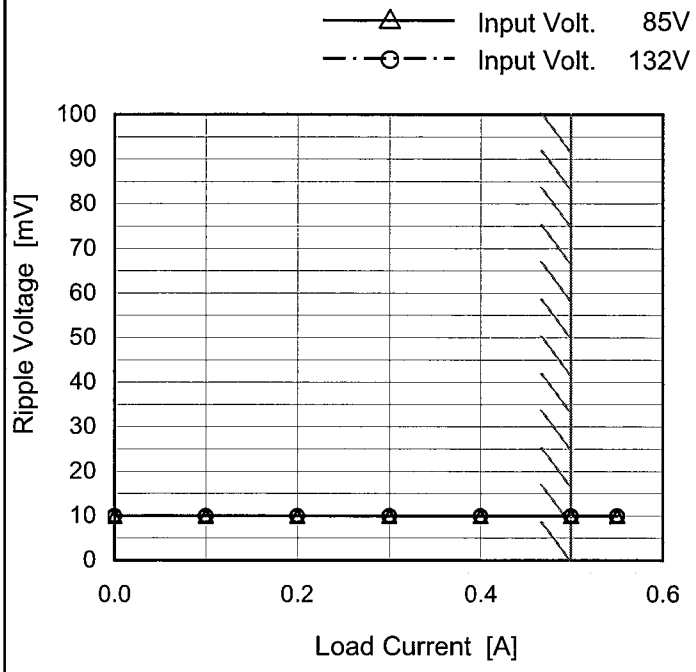
| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 85 [V] | Input Volt. 132 [V] |
| 0.00 | 20 | 20 |
| 0.50 | 20 | 20 |
| 1.00 | 20 | 25 |
| 1.50 | 25 | 25 |
| 2.00 | 30 | 30 |
| 2.50 | 35 | 30 |
| 2.75 | 35 | 30 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple Voltage (by Load Current) |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

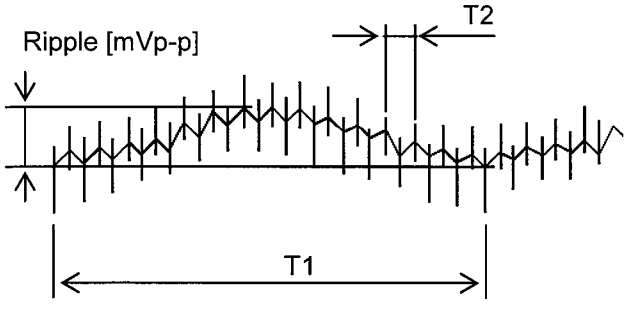



Fig. Complex Ripple Wave Form

2.Values

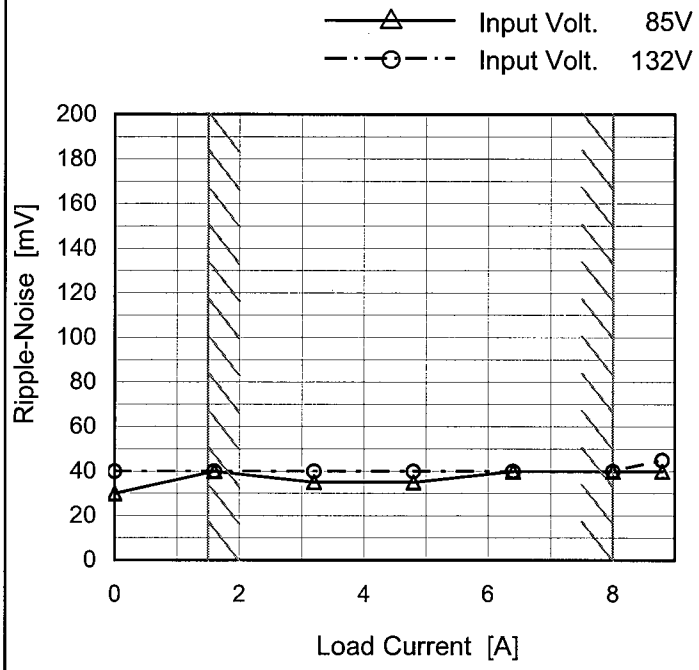
| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 85 [V] | Input Volt. 132 [V] |
| 0.000 | 10 | 10 |
| 0.100 | 10 | 10 |
| 0.200 | 10 | 10 |
| 0.300 | 10 | 10 |
| 0.400 | 10 | 10 |
| 0.500 | 10 | 10 |
| 0.550 | 10 | 10 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple-Noise |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 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. 85 [V] | Input Volt. 132 [V] |
| 0.0 | 30 | 40 |
| 1.6 | 40 | 40 |
| 3.2 | 35 | 40 |
| 4.8 | 35 | 40 |
| 6.4 | 40 | 40 |
| 8.0 | 40 | 40 |
| 8.8 | 40 | 45 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

T1: Due to AC Input Line
T2: Due to Switching

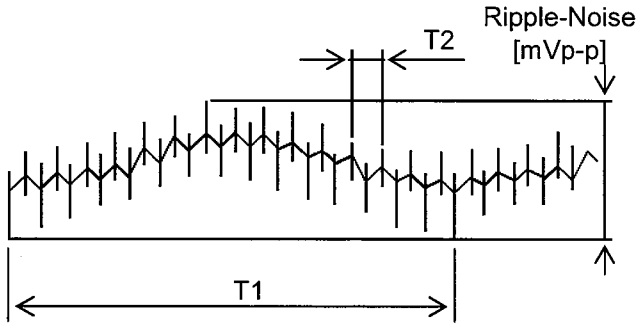


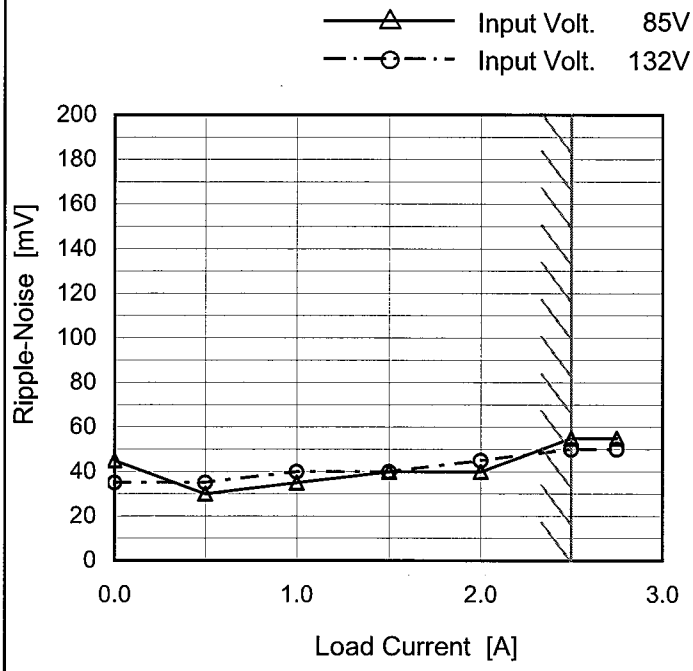

Fig. Complex Ripple Wave Form

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple-Noise |
| Object | +12V2.5A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 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. 85 [V] | Input Volt. 132 [V] |
| 0.00 | 45 | 35 |
| 0.50 | 30 | 35 |
| 1.00 | 35 | 40 |
| 1.50 | 40 | 40 |
| 2.00 | 40 | 45 |
| 2.50 | 55 | 50 |
| 2.75 | 55 | 50 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

T1: Due to AC Input Line
T2: Due to Switching

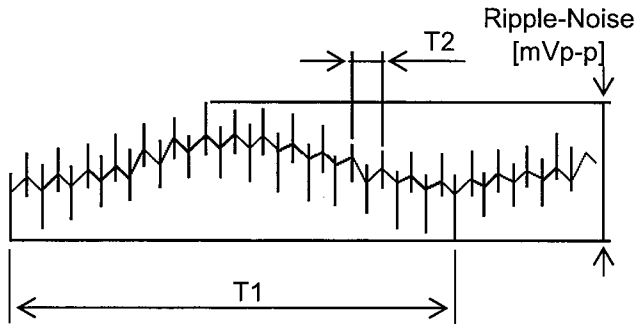



Fig. Complex Ripple Wave Form



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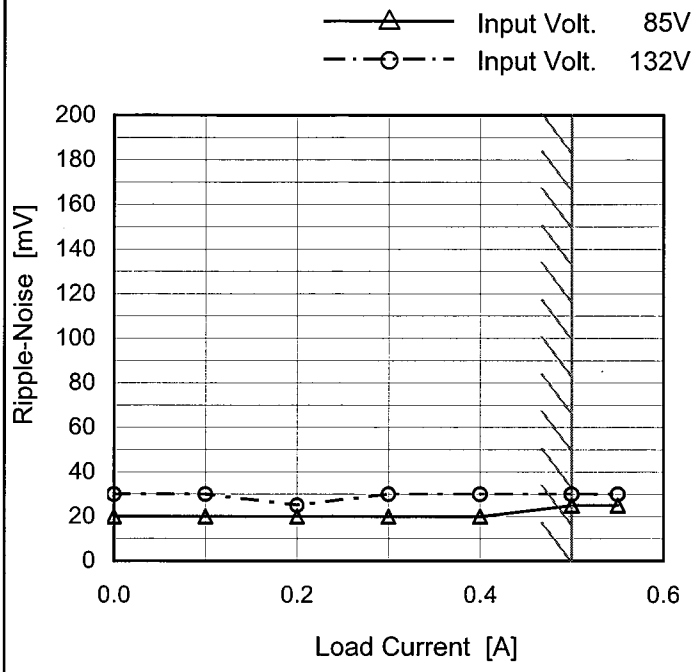
COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple-Noise |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure B

1.Graph




Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

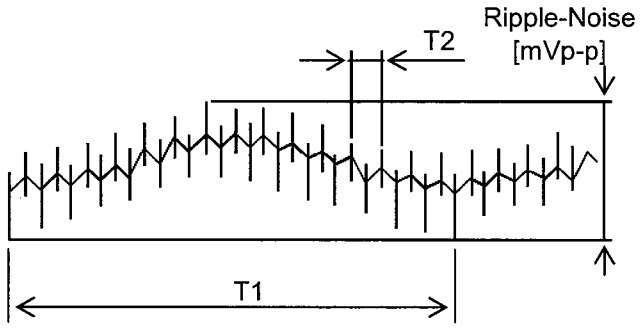



Fig. Complex Ripple Wave Form

2.Values

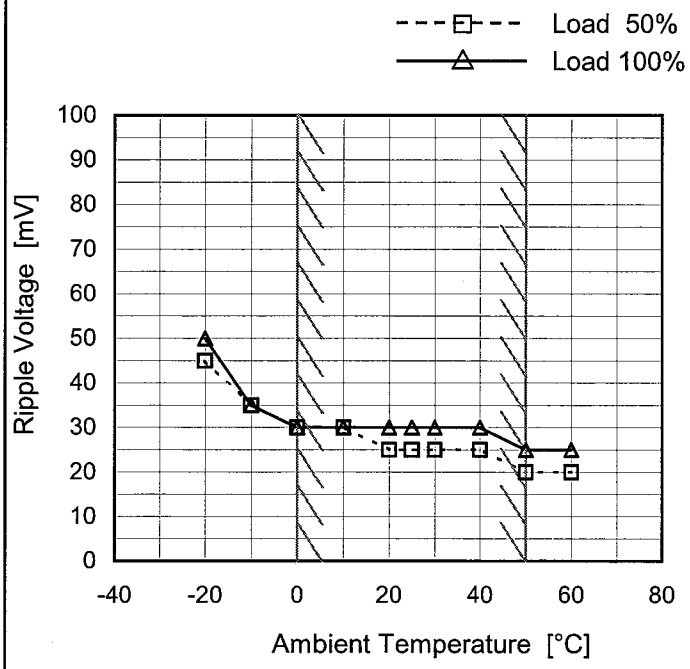
| Load Current [A] | Ripple-Noise [mV] | |
|---|---|---|
| | Input Volt. 85 [V] | Input Volt. 132 [V] |
| 0.000 | 20 | 30 |
| 0.100 | 20 | 30 |
| 0.200 | 20 | 25 |
| 0.300 | 20 | 30 |
| 0.400 | 20 | 30 |
| 0.500 | 25 | 30 |
| 0.550 | 25 | 30 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| Model | MMC75B-1 |
|---|---|
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +5V8A |

Testing Circuitry Figure A

1.Graph



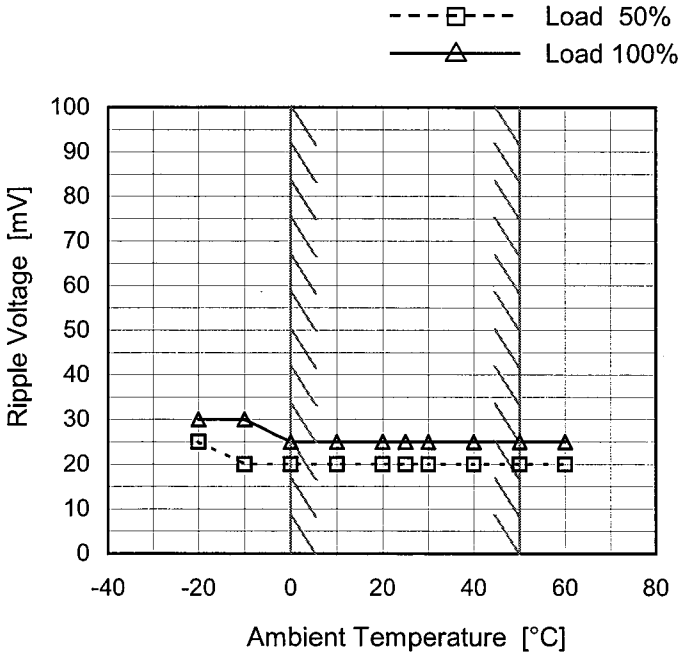

Input Volt. 100V

2.Values

| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 45 | 50 |
| -10 | 35 | 35 |
| 0 | 30 | 30 |
| 10 | 30 | 30 |
| 20 | 25 | 30 |
| 25 | 25 | 30 |
| 30 | 25 | 30 |
| 40 | 25 | 30 |
| 50 | 20 | 25 |
| 60 | 20 | 25 |
| -- | - | - |

| Object | +12V2.5A |
|---|---|

1.Graph




Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

2.Values

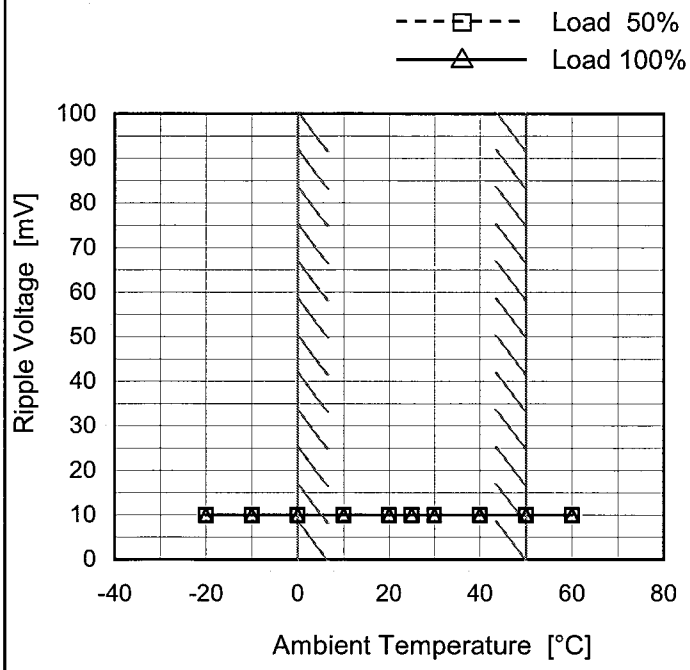
| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 25 | 30 |
| -10 | 20 | 30 |
| 0 | 20 | 25 |
| 10 | 20 | 25 |
| 20 | 20 | 25 |
| 25 | 20 | 25 |
| 30 | 20 | 25 |
| 40 | 20 | 25 |
| 50 | 20 | 25 |
| 60 | 20 | 25 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | -12V0.5A |

Testing Circuitry Figure A

1.Graph




Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

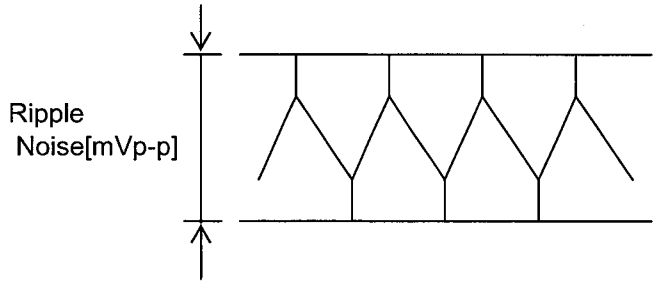



Fig.Complex Ripple Noise Wave Form

2.Values

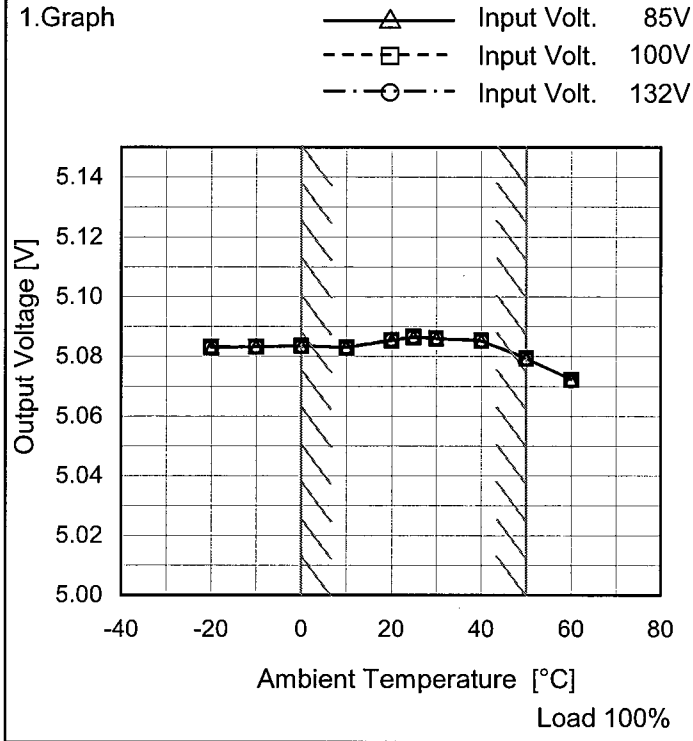
| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 10 | 10 |
| -10 | 10 | 10 |
| 0 | 10 | 10 |
| 10 | 10 | 10 |
| 20 | 10 | 10 |
| 25 | 10 | 10 |
| 30 | 10 | 10 |
| 40 | 10 | 10 |
| 50 | 10 | 10 |
| 60 | 10 | 10 |
| -- | - | - |

COSEL

| Model | MMC75B-1 |
|---|---|
| Item | Ambient Temperature Drift |
| Object | +5V8A |

Testing Circuitry Figure A

1.Graph

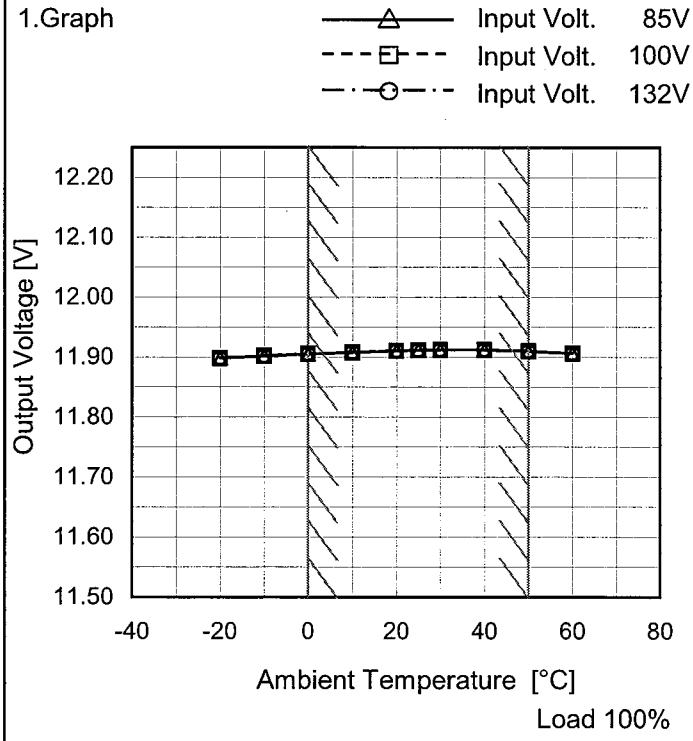



2.Values

| Ambient Temperature [°C] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| -20 | 5.083 | 5.083 | 5.083 |
| -10 | 5.083 | 5.083 | 5.083 |
| 0 | 5.084 | 5.084 | 5.084 |
| 10 | 5.083 | 5.083 | 5.083 |
| 20 | 5.085 | 5.086 | 5.086 |
| 25 | 5.087 | 5.087 | 5.087 |
| 30 | 5.086 | 5.086 | 5.086 |
| 40 | 5.085 | 5.085 | 5.085 |
| 50 | 5.079 | 5.079 | 5.079 |
| 60 | 5.072 | 5.072 | 5.072 |
| -- | - | - | - |

| Object | +12V2.5A |
|---|---|

1.Graph




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

2.Values

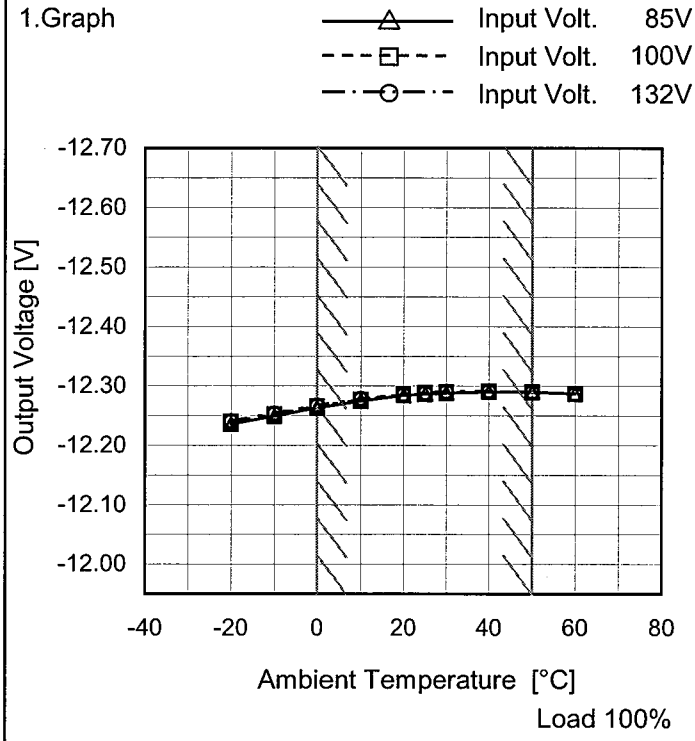
| Ambient Temperature [°C] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| -20 | 11.898 | 11.898 | 11.898 |
| -10 | 11.902 | 11.902 | 11.902 |
| 0 | 11.905 | 11.905 | 11.905 |
| 10 | 11.908 | 11.908 | 11.908 |
| 20 | 11.911 | 11.911 | 11.911 |
| 25 | 11.912 | 11.912 | 11.912 |
| 30 | 11.912 | 11.912 | 11.912 |
| 40 | 11.912 | 11.912 | 11.912 |
| 50 | 11.910 | 11.910 | 11.910 |
| 60 | 11.906 | 11.906 | 11.906 |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Ambient Temperature Drift |
| Object | -12V0.5A |

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. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| -20 | -12.236 | -12.240 | -12.241 |
| -10 | -12.250 | -12.252 | -12.254 |
| 0 | -12.264 | -12.266 | -12.267 |
| 10 | -12.275 | -12.277 | -12.279 |
| 20 | -12.284 | -12.286 | -12.286 |
| 25 | -12.287 | -12.288 | -12.289 |
| 30 | -12.289 | -12.290 | -12.290 |
| 40 | -12.291 | -12.291 | -12.292 |
| 50 | -12.290 | -12.290 | -12.290 |
| 60 | -12.287 | -12.287 | -12.287 |
| -- | - | - | - |



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COSEL

| Model | MMC75B-1 | |
|---|---|---|
| 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 : 0 - 50°C

Input Voltage : 85 - 132V

Load Current (AVR 1) : 1.5 - 8A (AVR 2) : 0 - 2.5A (AVR 3) : 0 - 0.5A

* 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

| Object | +5V8A | | | | | |
|---|---|---|---|---|---|---|
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 30 | 100 | 1.5 | 5.098 | ±10 | ±0.2 |
| Minimum Voltage | 50 | 85 | 8 | 5.079 | | |

| Object | +12V2.5A | | | | | |
|---|---|---|---|---|---|---|
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 40 | 100 | 0 | 11.918 | ±7 | ±0.1 |
| Minimum Voltage | 0 | 132 | 2.5 | 11.904 | | |

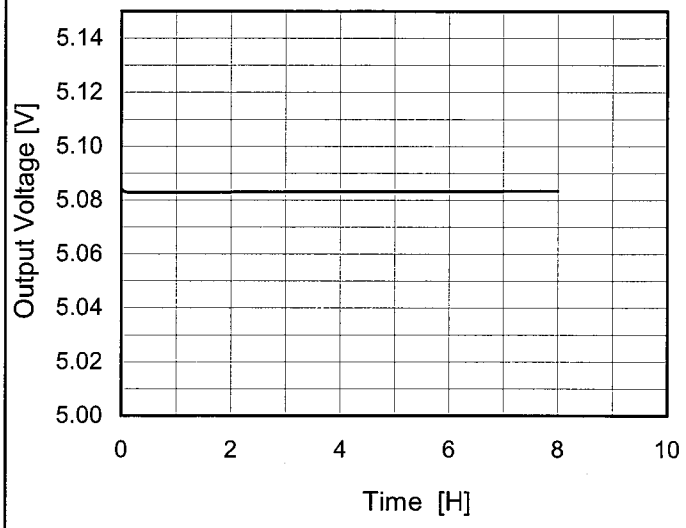
| Object | -12V0.5A | | | | | |
|---|---|---|---|---|---|---|
| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 50 | 85 | 0 | -12.317 | ±36 | ±0.3 |
| Minimum Voltage | 0 | 85 | 0.5 | -12.246 | | |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Time Lapse Drift |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph



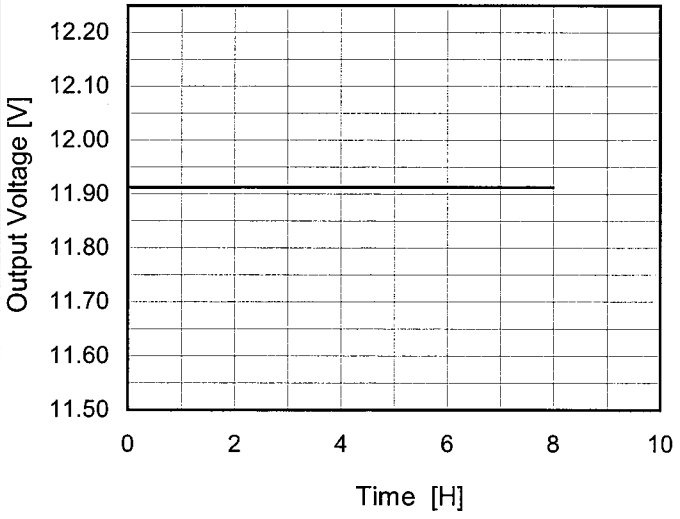

Input Volt. 100V
Load 100%

2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 5.084 |
| 0.5 | 5.083 |
| 1.0 | 5.083 |
| 2.0 | 5.083 |
| 3.0 | 5.083 |
| 4.0 | 5.083 |
| 5.0 | 5.083 |
| 6.0 | 5.083 |
| 7.0 | 5.083 |
| 8.0 | 5.083 |

| | |
|---|---|
| Object | +12V2.5A |

1.Graph




Input Volt. 100V
Load 100%

2.Values

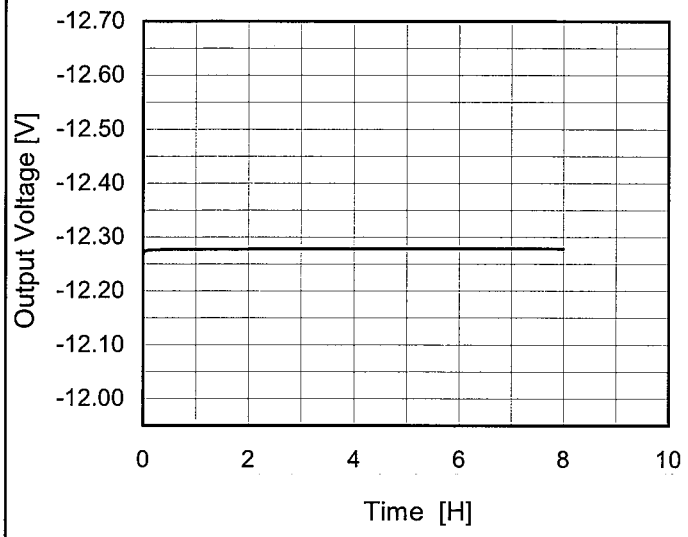
| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 11.913 |
| 0.5 | 11.912 |
| 1.0 | 11.912 |
| 2.0 | 11.912 |
| 3.0 | 11.912 |
| 4.0 | 11.912 |
| 5.0 | 11.912 |
| 6.0 | 11.912 |
| 7.0 | 11.912 |
| 8.0 | 11.912 |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Time Lapse Drift |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




Input Volt. 100V
Load 100%

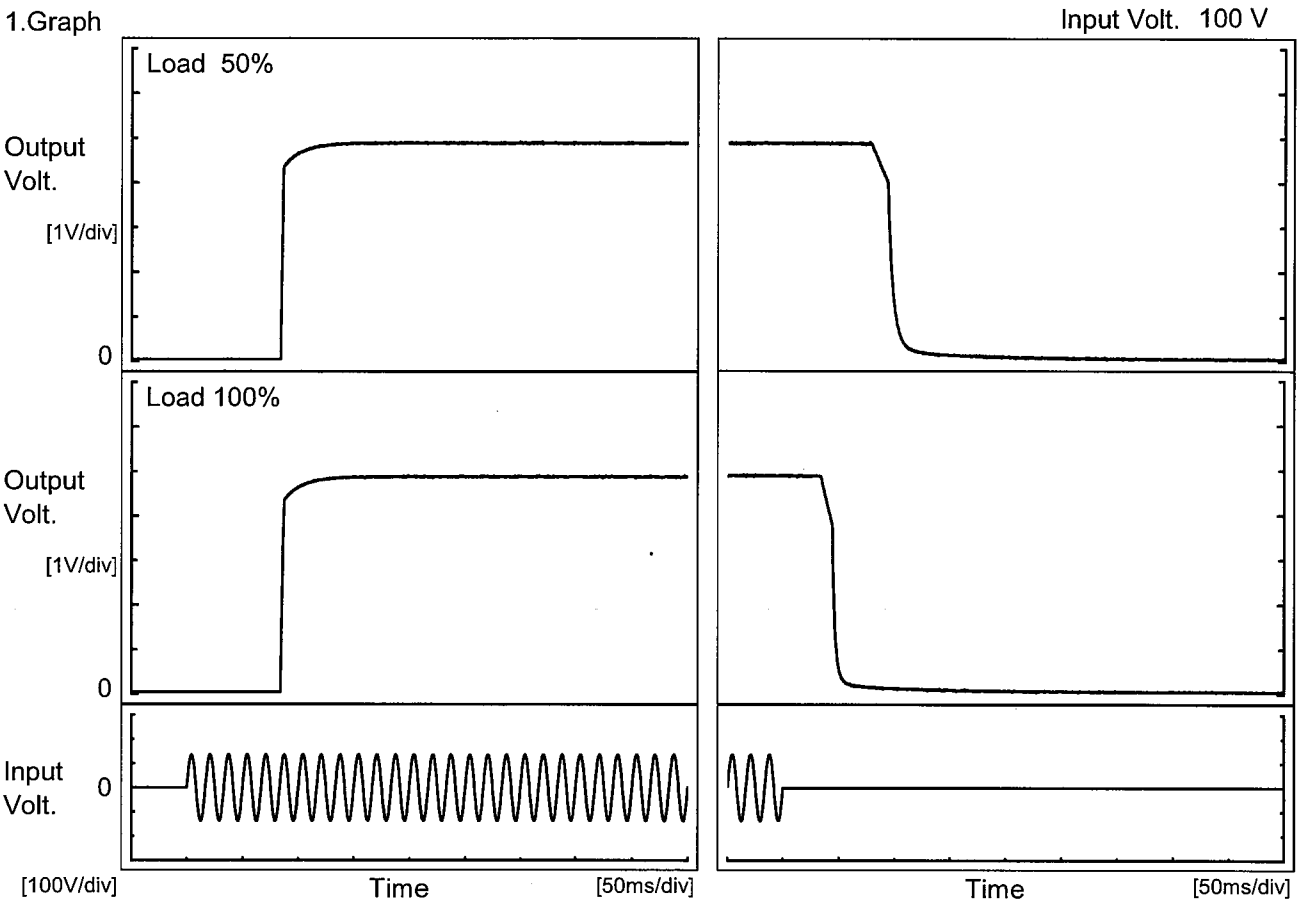
2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | -12.267 |
| 0.5 | -12.277 |
| 1.0 | -12.278 |
| 2.0 | -12.278 |
| 3.0 | -12.278 |
| 4.0 | -12.278 |
| 5.0 | -12.278 |
| 6.0 | -12.279 |
| 7.0 | -12.278 |
| 8.0 | -12.279 |

COSEL

| | | |
|---|---|---|
| Model | MMC75B-1 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +5V8A | |

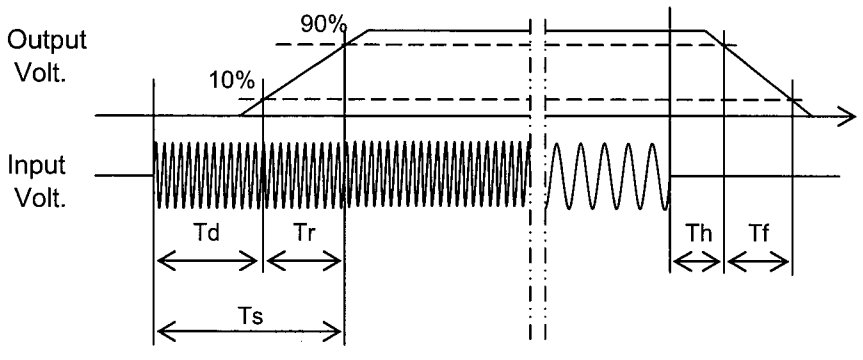
1.Graph




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 84.3 | 9.8 | 94.1 | 84.3 | 20.8 |
| 100 % | 84.5 | 10.0 | 94.5 | 37.0 | 13.0 |

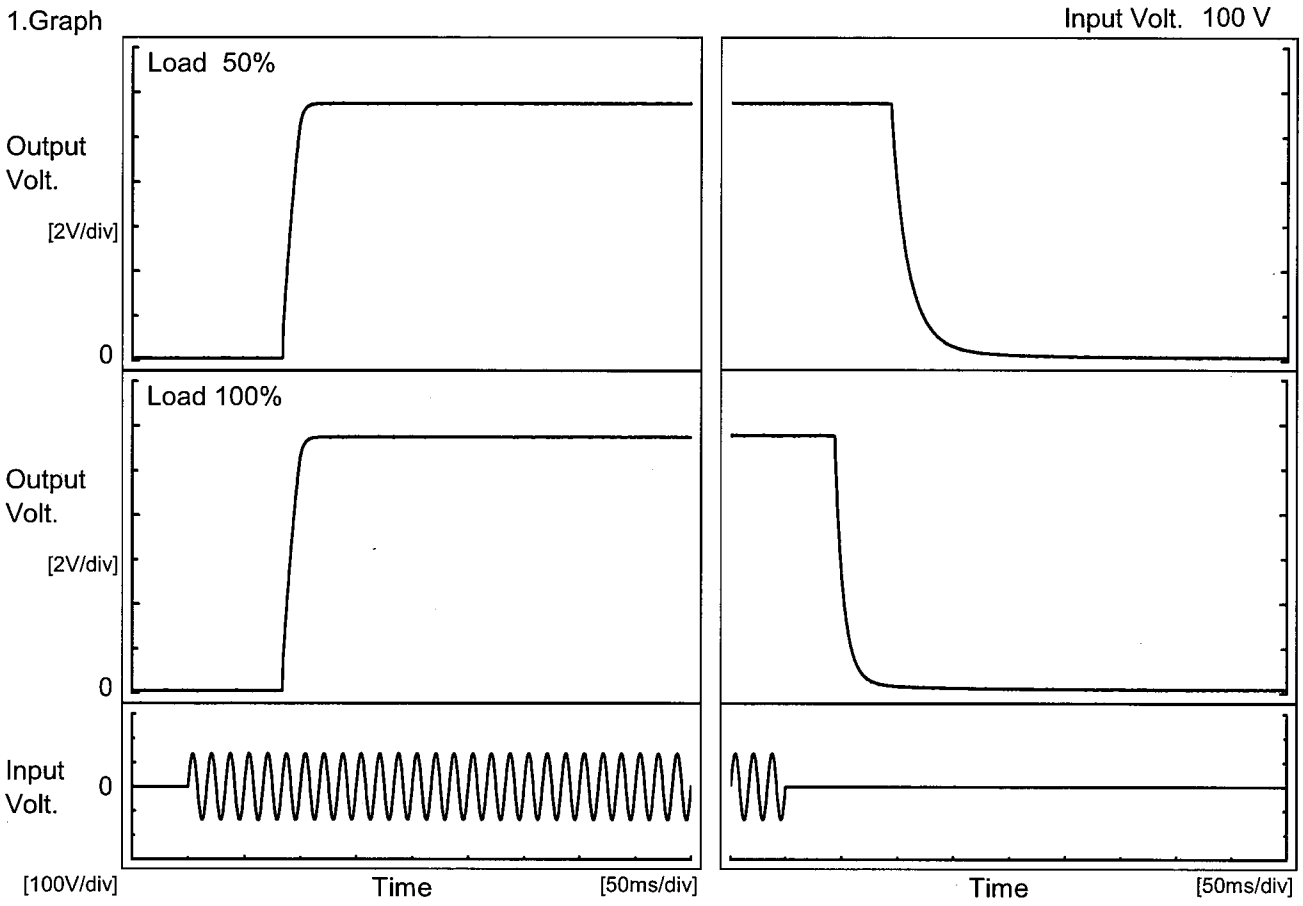


COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Rise and Fall Time |
| Object | +12V2.5A |

Temperature 25°C
Testing Circuitry Figure A

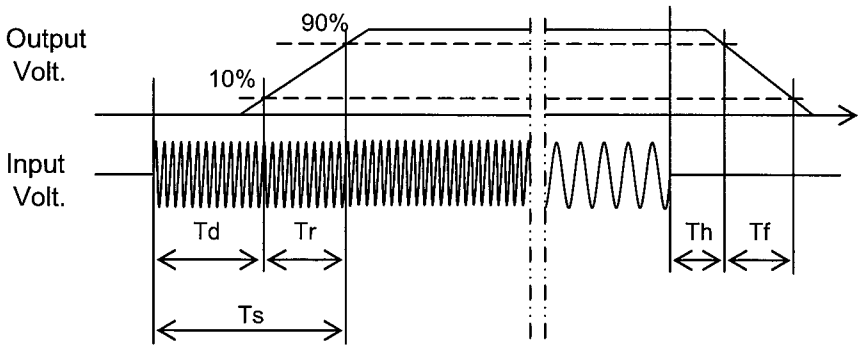
1.Graph




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 84.3 | 16.5 | 100.8 | 94.0 | 37.5 |
| 100 % | 84.5 | 16.3 | 100.8 | 44.5 | 19.3 |



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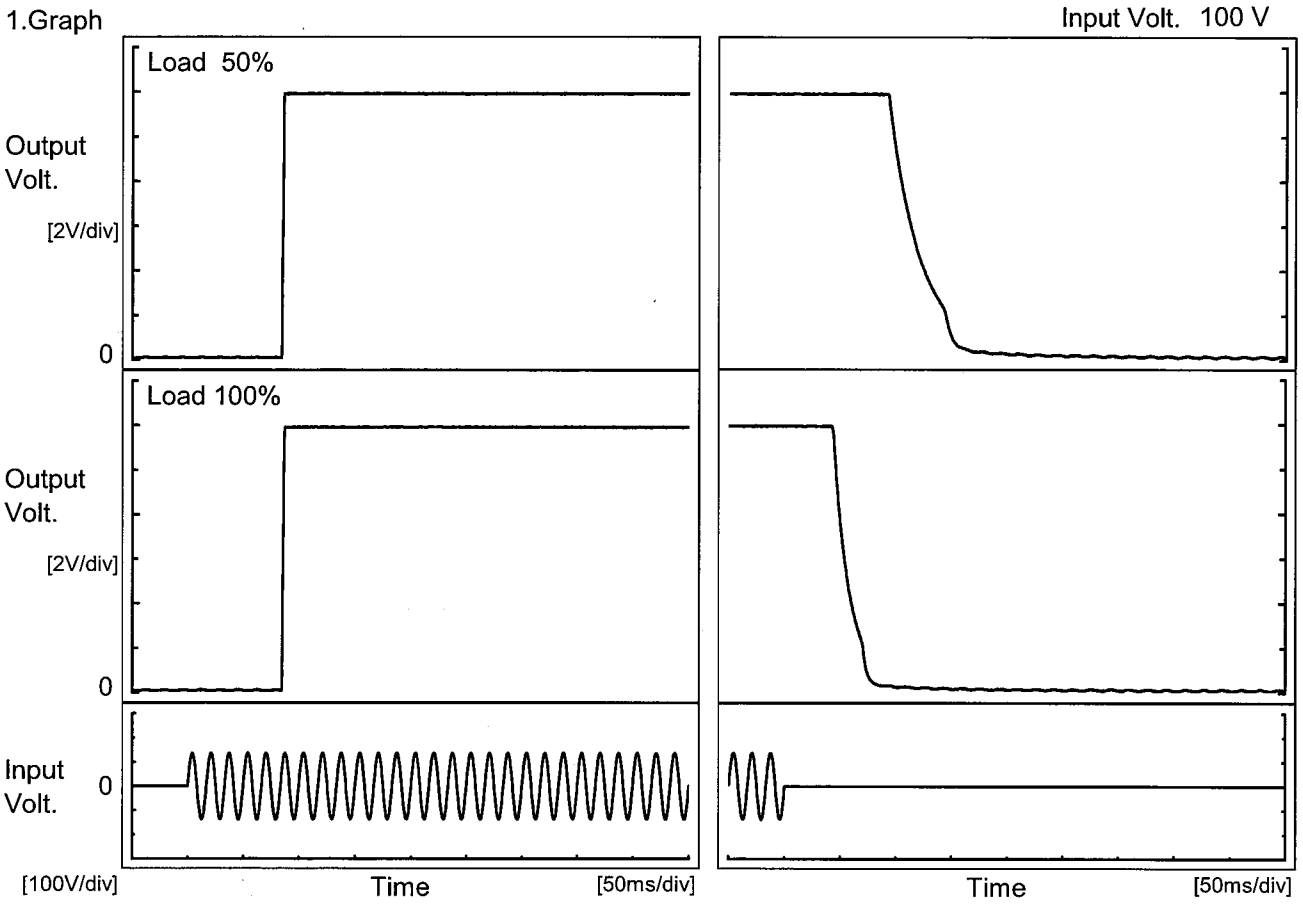
COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Rise and Fall Time |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure A

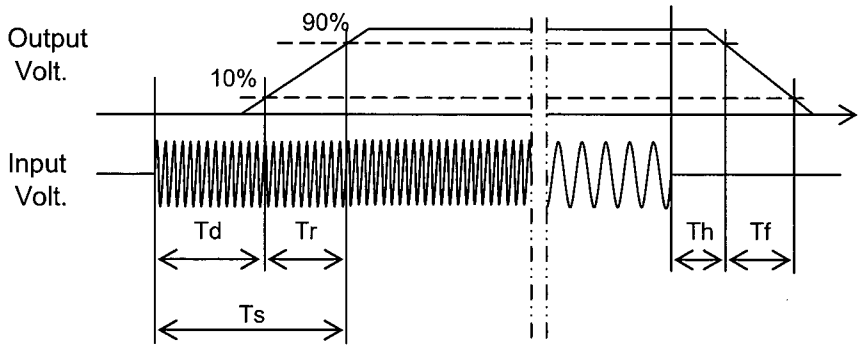
1.Graph




2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 84.8 | 1.5 | 86.3 | 95.5 | 52.3 |
| 100 % | 84.8 | 2.0 | 86.8 | 45.0 | 27.3 |



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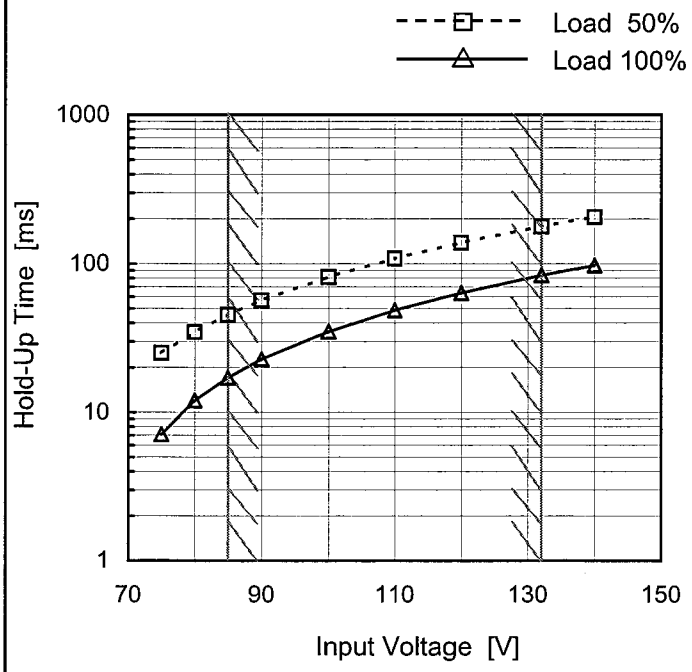
COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Hold-Up Time |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

2.Values

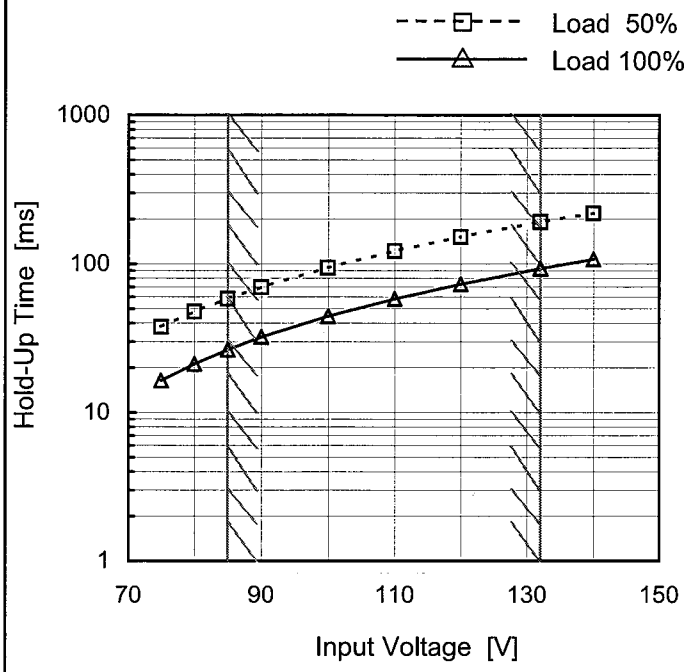
| Input Voltage [V] | Hold-Up Time [ms] | |
|---|---|---|
| | Load 50% | Load 100% |
| 75 | 25 | 7 |
| 80 | 35 | 12 |
| 85 | 45 | 17 |
| 90 | 57 | 23 |
| 100 | 81 | 35 |
| 110 | 108 | 49 |
| 120 | 138 | 64 |
| 132 | 178 | 84 |
| 140 | 206 | 98 |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Hold-Up Time |
| Object | +12V2.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

2.Values

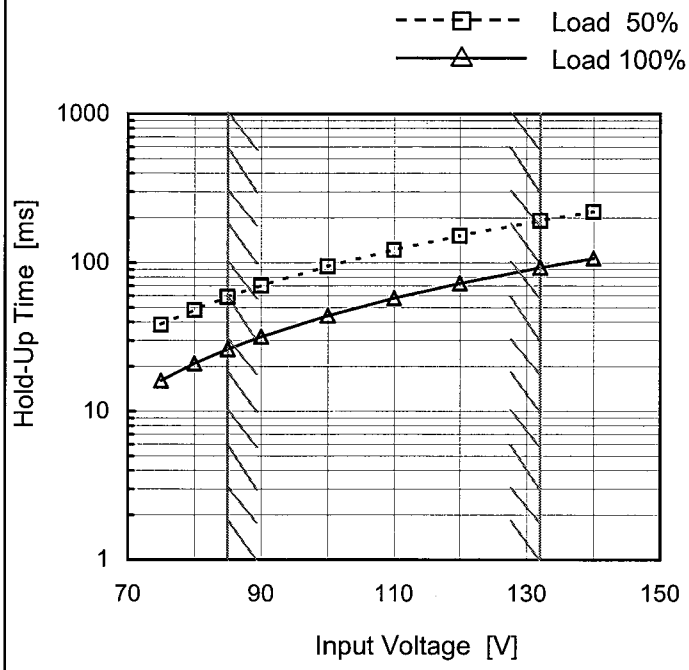
| Input Voltage [V] | Hold-Up Time [ms] | |
|---|---|---|
| | Load 50% | Load 100% |
| 75 | 38 | 16 |
| 80 | 48 | 21 |
| 85 | 58 | 27 |
| 90 | 70 | 32 |
| 100 | 94 | 45 |
| 110 | 122 | 58 |
| 120 | 152 | 73 |
| 132 | 191 | 93 |
| 140 | 220 | 108 |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Hold-Up Time |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

2.Values

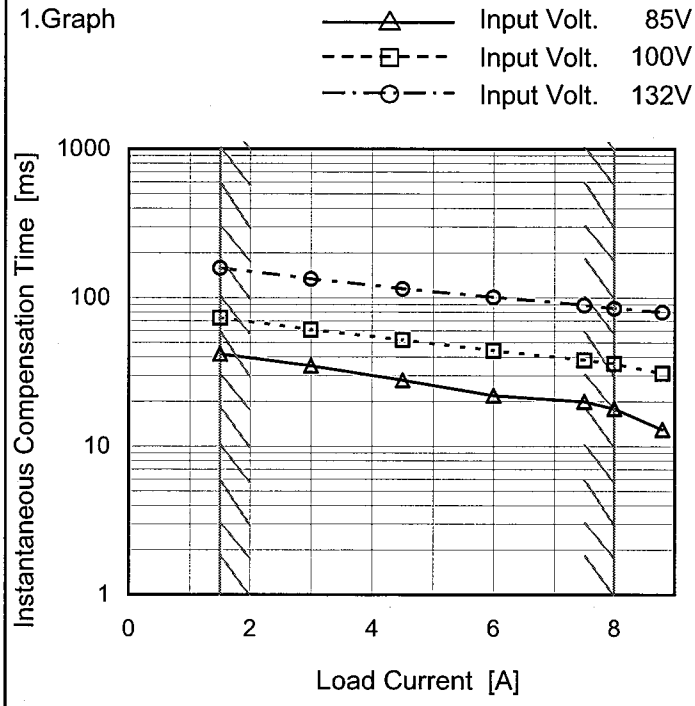
| Input Voltage [V] | Hold-Up Time [ms] | |
|---|---|---|
| | Load 50% | Load 100% |
| 75 | 38 | 16 |
| 80 | 48 | 21 |
| 85 | 59 | 26 |
| 90 | 70 | 32 |
| 100 | 95 | 44 |
| 110 | 122 | 58 |
| 120 | 152 | 73 |
| 132 | 192 | 93 |
| 140 | 220 | 107 |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Instantaneous Interruption Compensation |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

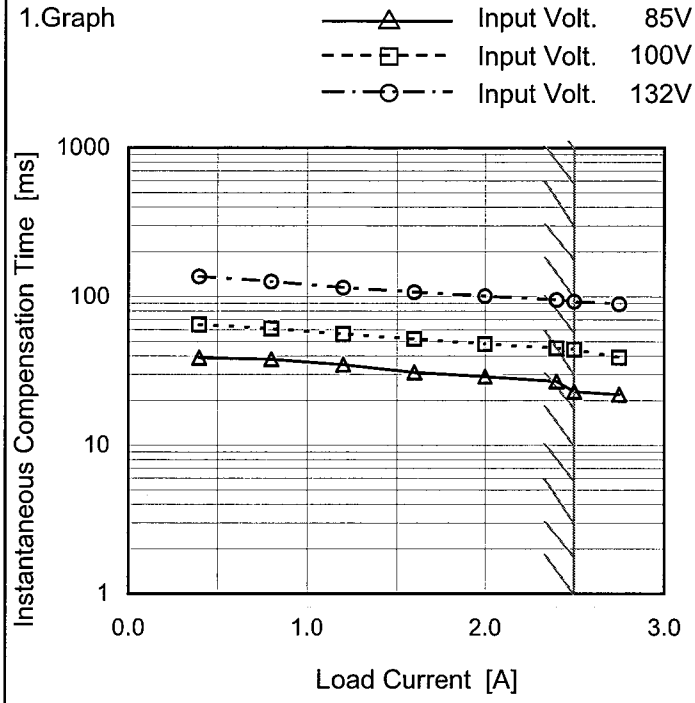
| Load Current [A] | Time [ms] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0.0 | - | - | - |
| 1.5 | 42 | 73 | 159 |
| 3.0 | 35 | 61 | 134 |
| 4.5 | 28 | 52 | 115 |
| 6.0 | 22 | 44 | 101 |
| 7.5 | 20 | 38 | 89 |
| 8.0 | 18 | 36 | 85 |
| 8.8 | 13 | 31 | 80 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Instantaneous Interruption Compensation |
| Object | +12V2.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

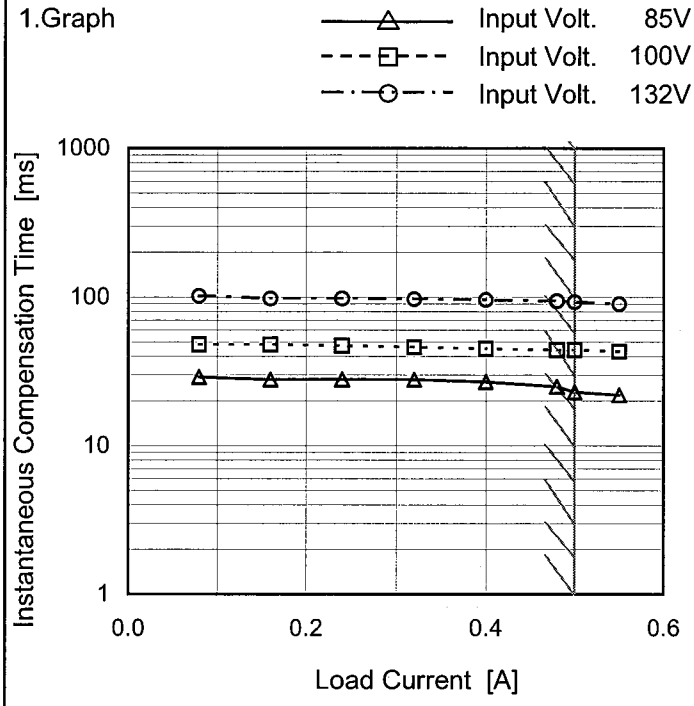
| Load Current [A] | Time [ms] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| 0.00 | - | - | - |
| 0.40 | 39 | 65 | 137 |
| 0.80 | 38 | 61 | 126 |
| 1.20 | 35 | 56 | 115 |
| 1.60 | 31 | 52 | 107 |
| 2.00 | 29 | 48 | 101 |
| 2.40 | 27 | 45 | 95 |
| 2.50 | 23 | 44 | 93 |
| 2.75 | 22 | 39 | 89 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Instantaneous Interruption Compensation |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

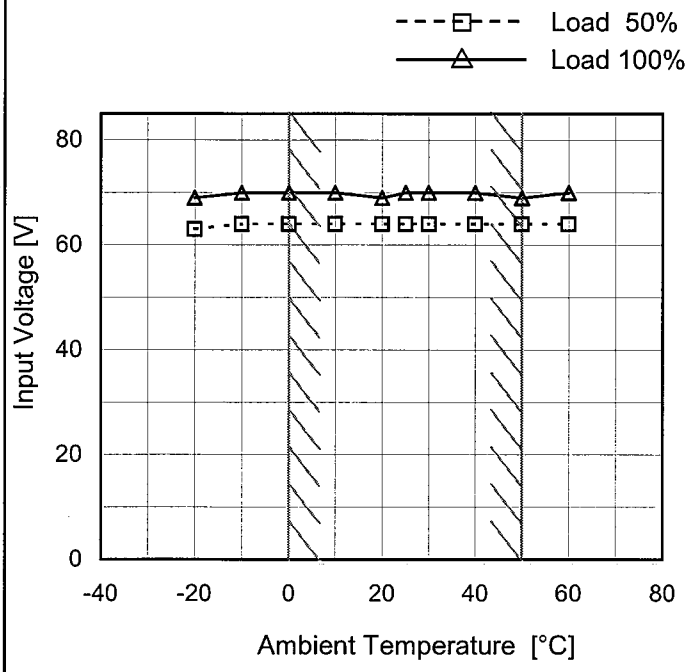
| Load Current [A] | Time [ms] Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|---|---|---|---|
| 0.00 | - | - | - |
| 0.08 | 29 | 48 | 102 |
| 0.16 | 28 | 48 | 98 |
| 0.24 | 28 | 47 | 98 |
| 0.32 | 28 | 46 | 97 |
| 0.40 | 27 | 45 | 96 |
| 0.48 | 25 | 44 | 94 |
| 0.50 | 23 | 44 | 93 |
| 0.55 | 22 | 43 | 90 |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| Model | MMC75B-1 |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +5V8A |

Testing Circuitry Figure A

1.Graph

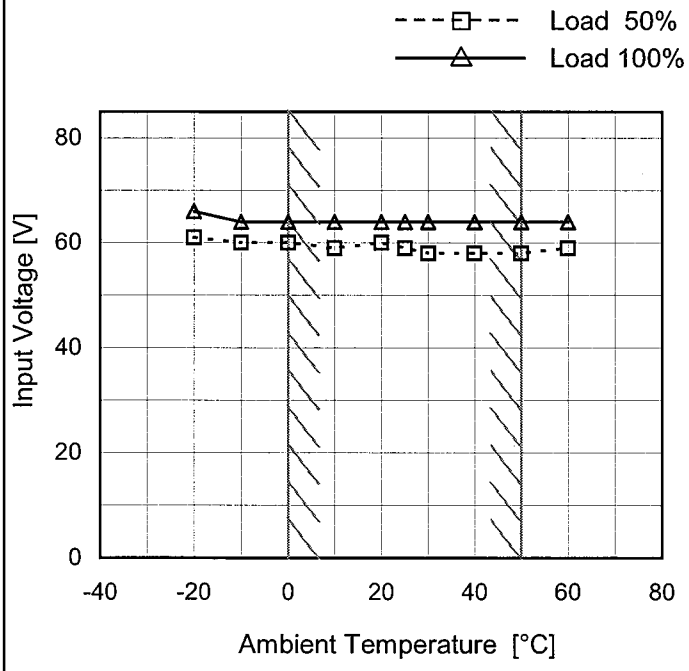



2.Values

| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 63 | 69 |
| -10 | 64 | 70 |
| 0 | 64 | 70 |
| 10 | 64 | 70 |
| 20 | 64 | 69 |
| 25 | 64 | 70 |
| 30 | 64 | 70 |
| 40 | 64 | 70 |
| 50 | 64 | 69 |
| 60 | 64 | 70 |
| -- | - | - |

| Object | +12V2.5A |
|---|---|

1.Graph




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

2.Values

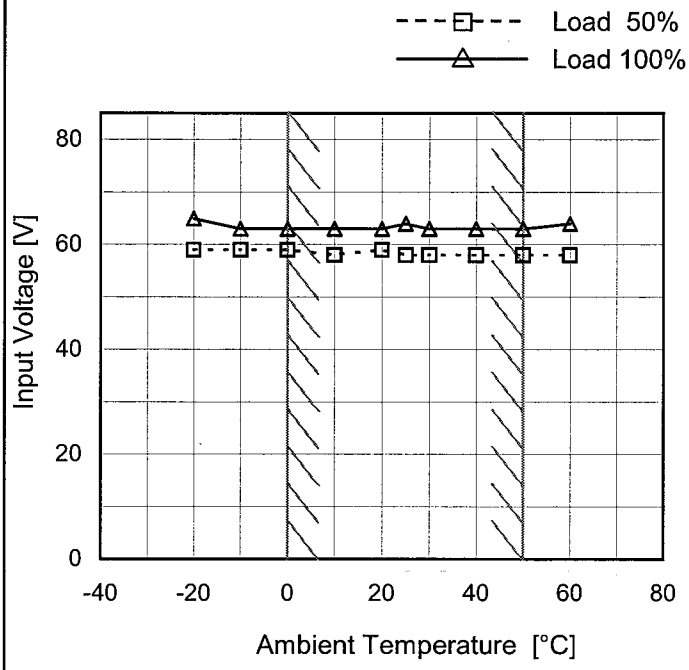
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 61 | 66 |
| -10 | 60 | 64 |
| 0 | 60 | 64 |
| 10 | 59 | 64 |
| 20 | 60 | 64 |
| 25 | 59 | 64 |
| 30 | 58 | 64 |
| 40 | 58 | 64 |
| 50 | 58 | 64 |
| 60 | 59 | 64 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | -12V0.5A |

Testing Circuitry Figure A

1.Graph




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

2.Values

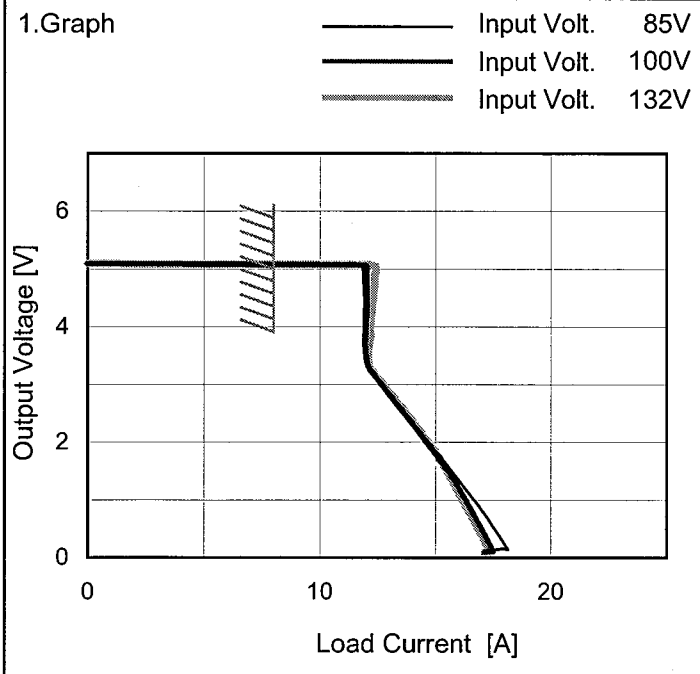
| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 59 | 65 |
| -10 | 59 | 63 |
| 0 | 59 | 63 |
| 10 | 58 | 63 |
| 20 | 59 | 63 |
| 25 | 58 | 64 |
| 30 | 58 | 63 |
| 40 | 58 | 63 |
| 50 | 58 | 63 |
| 60 | 58 | 64 |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Overcurrent Protection |
| Object | +5V8A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph

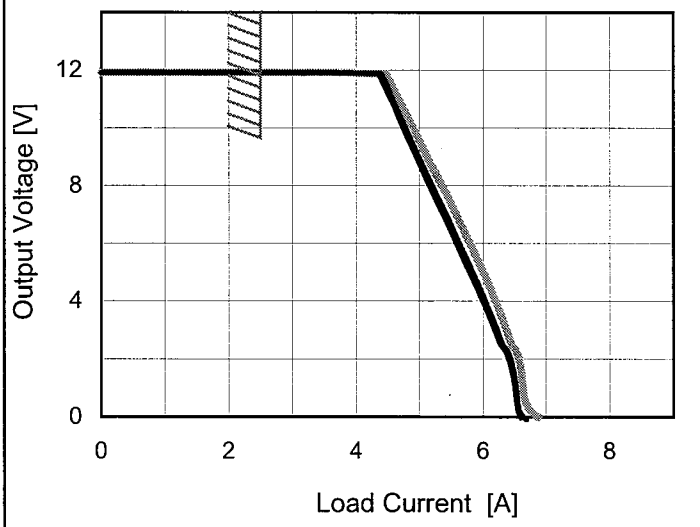



2.Values

| Output Voltage [V] | Load Current [A] Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|---|---|---|---|
| 4.75 | 11.89 | 12.05 | 12.36 |
| 4.50 | 11.92 | 12.04 | 12.30 |
| 4.00 | 11.91 | 12.00 | 12.17 |
| 3.50 | 11.93 | 11.99 | 12.10 |
| 3.00 | 12.70 | 12.60 | 12.75 |
| 2.50 | 13.70 | 13.61 | 13.70 |
| 2.00 | 14.65 | 14.62 | 14.69 |
| 1.50 | 15.67 | 15.51 | 15.47 |
| 1.00 | 16.67 | 16.27 | 16.15 |
| 0.50 | 17.53 | 16.95 | 16.83 |
| 0.00 | 17.38 | 17.11 | 17.10 |
| -- | - | - | - |

| | |
|---|---|
| Object | +12V2.5A |

1.Graph




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

2.Values

| Output Voltage [V] | Load Current [A] Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
|---|---|---|---|
| 11.40 | 4.45 | 4.51 | 4.59 |
| 10.80 | 4.56 | 4.61 | 4.72 |
| 9.60 | 4.80 | 4.85 | 4.98 |
| 8.40 | 5.04 | 5.10 | 5.24 |
| 7.20 | 5.31 | 5.37 | 5.53 |
| 6.00 | 5.56 | 5.62 | 5.78 |
| 4.80 | 5.80 | 5.88 | 6.04 |
| 3.60 | 6.05 | 6.12 | 6.26 |
| 2.40 | 6.27 | 6.33 | 6.48 |
| 1.20 | 6.47 | 6.51 | 6.62 |
| 0.00 | 6.60 | 6.69 | 6.88 |
| -- | - | - | - |



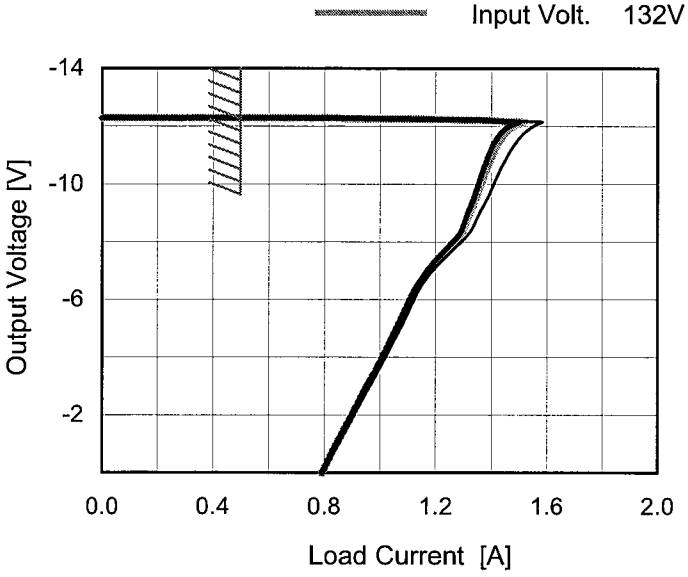
BC-10536

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Overcurrent Protection |
| Object | -12V0.5A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

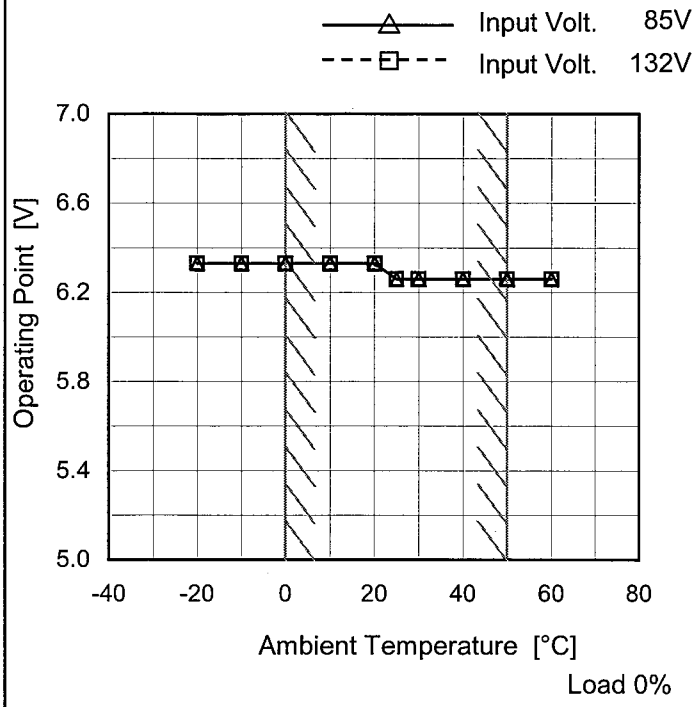
| Output Voltage [V] | Load Current [A] | | |
|---|---|---|---|
| | Input Volt. 85[V] | Input Volt. 100[V] | Input Volt. 132[V] |
| -11.4 | 1.49 | 1.41 | 1.43 |
| -10.8 | 1.45 | 1.39 | 1.40 |
| -9.6 | 1.39 | 1.34 | 1.35 |
| -8.4 | 1.33 | 1.29 | 1.30 |
| -7.2 | 1.22 | 1.19 | 1.20 |
| -6.0 | 1.13 | 1.11 | 1.11 |
| -4.8 | 1.07 | 1.05 | 1.05 |
| -3.6 | 1.00 | 0.99 | 0.99 |
| -2.4 | 0.93 | 0.92 | 0.93 |
| -1.2 | 0.86 | 0.86 | 0.86 |
| 0.0 | 0.80 | 0.79 | 0.79 |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | MMC75B-1 |
| Item | Overvoltage Protection |
| Object | +5V8A |

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. 85[V] | Input Volt. 132[V] |
| -20 | 6.33 | 6.33 |
| -10 | 6.33 | 6.33 |
| 0 | 6.33 | 6.33 |
| 10 | 6.33 | 6.33 |
| 20 | 6.33 | 6.33 |
| 25 | 6.26 | 6.26 |
| 30 | 6.26 | 6.26 |
| 40 | 6.26 | 6.26 |
| 50 | 6.26 | 6.26 |
| 60 | 6.26 | 6.26 |
| -- | - | - |

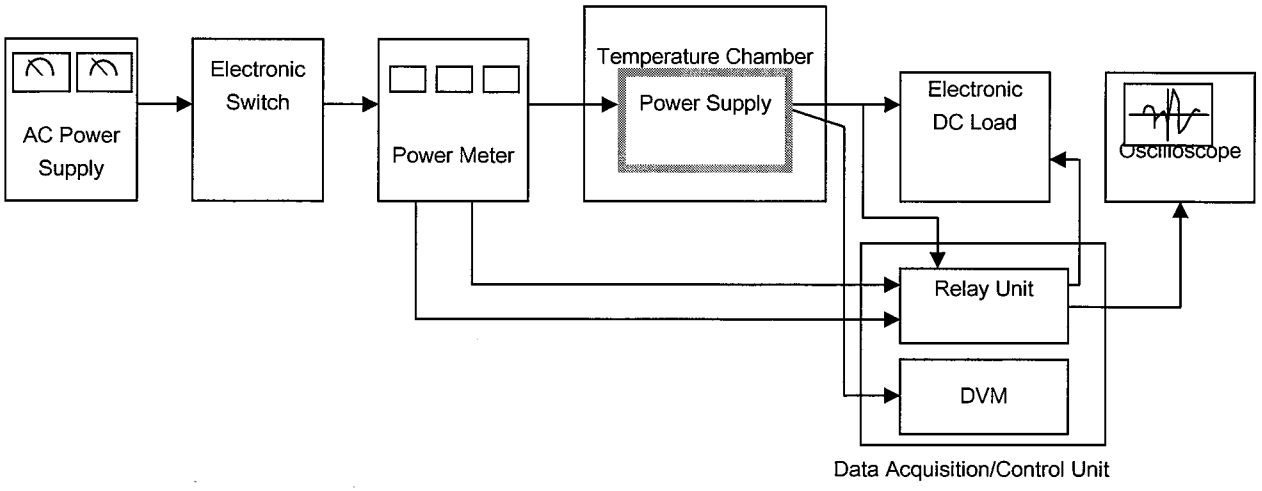



Figure A

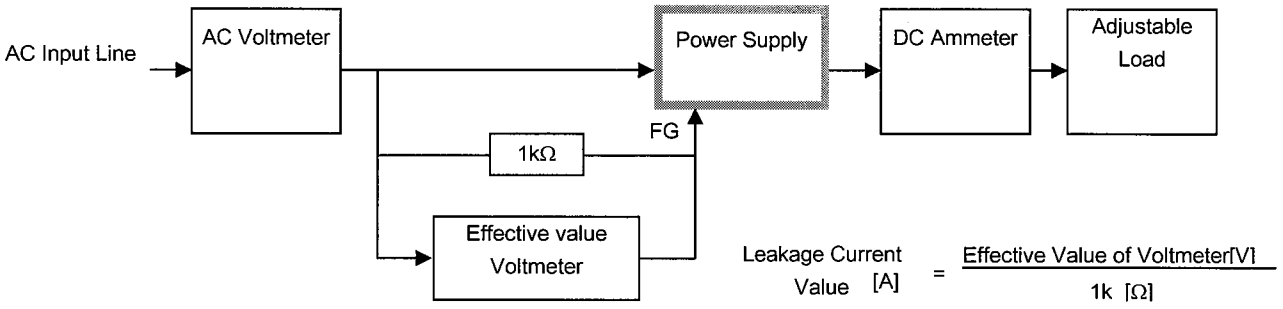



Figure B ( DEN-AN )

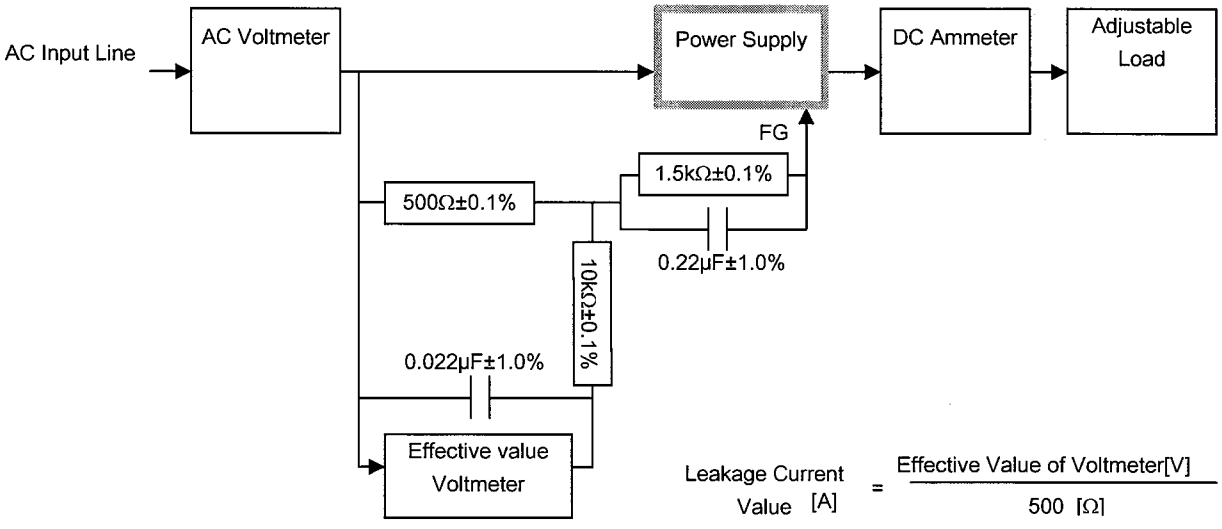



Figure B ( IEC60950-1 )