参考資料

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# TEST DATA OF TUNS1200F12

Regulated DC Power Supply
July 21, 2020

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**COSEL CO.,LTD.**

参考資料

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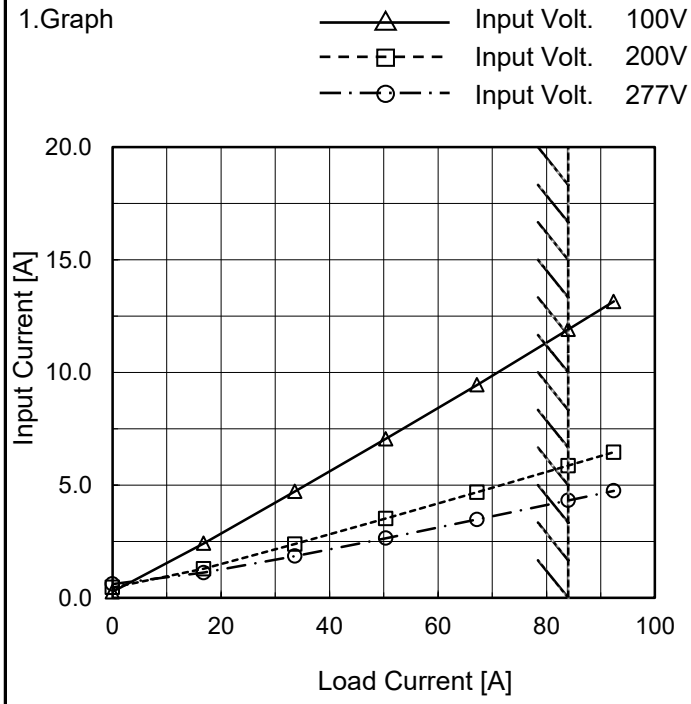
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Input Current (by Load Current) |
| Object | ―――――――― |

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. 100[V] | Input Volt. 200[V] | Input Volt. 277[V] |
| 0.0 | 0.261 | 0.454 | 0.610 |
| 16.8 | 2.419 | 1.290 | 1.117 |
| 33.6 | 4.720 | 2.381 | 1.849 |
| 50.4 | 7.060 | 3.515 | 2.645 |
| 67.2 | 9.450 | 4.680 | 3.478 |
| 84.0 | 11.910 | 5.860 | 4.320 |
| 92.4 | 13.150 | 6.460 | 4.750 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



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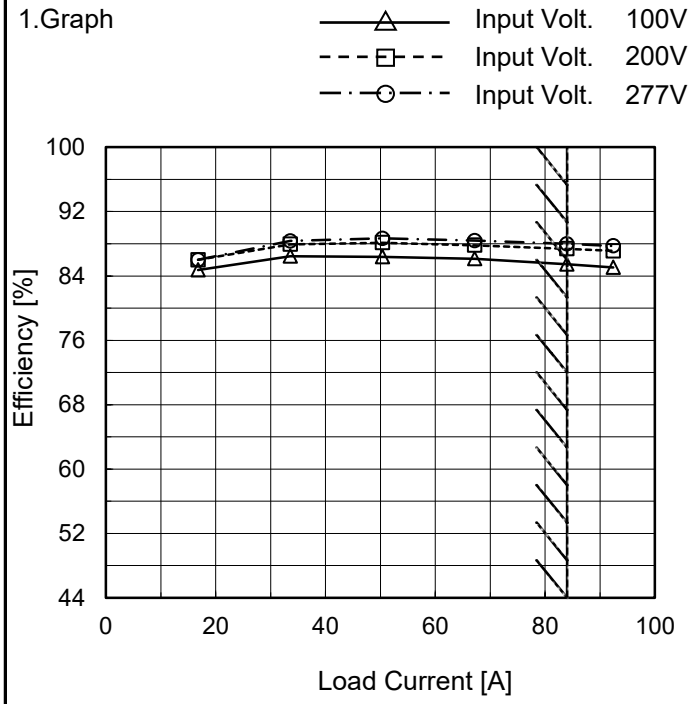
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Efficiency (by Load Current) |
| Object | ―――――――― |

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. 100[V] | Input Volt. 200[V] | Input Volt. 277[V] |
| 0.0 | - | - | - |
| 16.8 | 84.7 | 86.0 | 86.0 |
| 33.6 | 86.5 | 87.9 | 88.4 |
| 50.4 | 86.4 | 88.1 | 88.7 |
| 67.2 | 86.1 | 87.8 | 88.4 |
| 84.0 | 85.5 | 87.4 | 88.0 |
| 92.4 | 85.1 | 87.1 | 87.7 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



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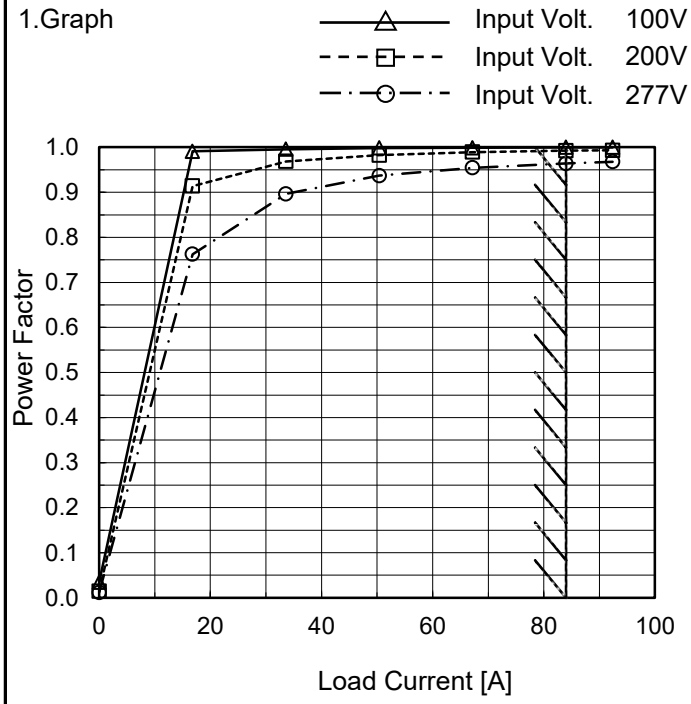
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Power Factor (by Load Current) |
| Object | ―――――――― |

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] | Power Factor | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 277[V] |
| 0.0 | 0.034 | 0.014 | 0.012 |
| 16.8 | 0.991 | 0.914 | 0.763 |
| 33.6 | 0.996 | 0.969 | 0.896 |
| 50.4 | 0.999 | 0.982 | 0.937 |
| 67.2 | 0.999 | 0.989 | 0.954 |
| 84.0 | 0.999 | 0.992 | 0.964 |
| 92.4 | 0.999 | 0.993 | 0.968 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |



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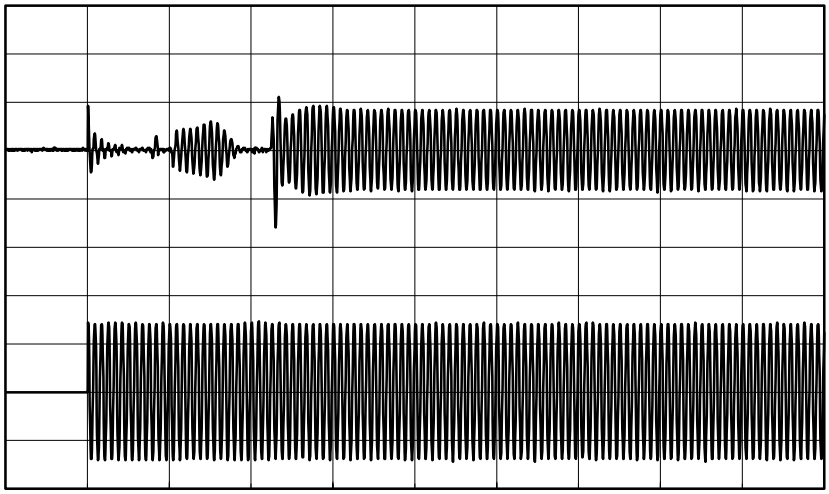
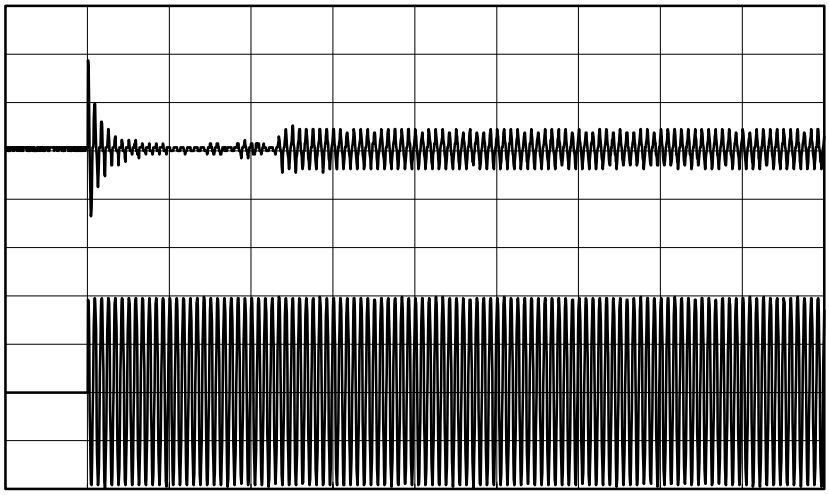
| | | |
|---|---|---|
| Model | TUNS1200F12 | |
| Item | Inrush Current | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | ―――――― | |



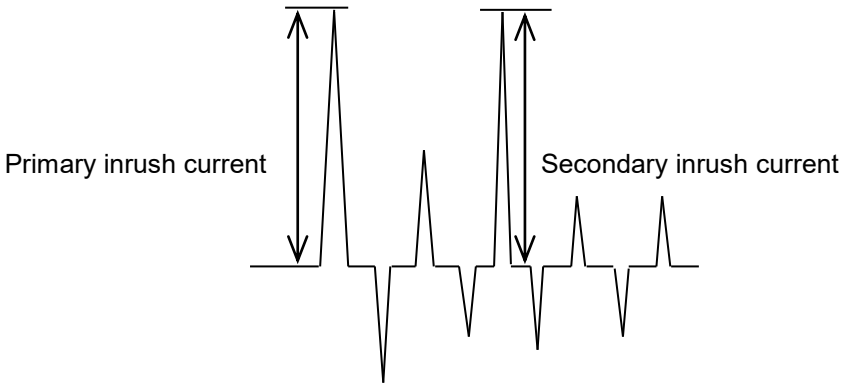

Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
18.5 A
Secondary inrush current :
31.9 A




Input Voltage 277 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
37.3 A
Secondary inrush current :
10.3 A



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| | | |
|---|---|---|
| Model | TUNS1200F12 | |
| Item | Leakage Current | Temperature 25°C<br>Testing Circuitry Figure B |
| Object | ―――――――――――― | |

1.Results

[mA]

| Standards | Testing Circuitry | Measuring Method | Input Volt. | | | Note |
|---|---|---|---|---|---|---|
| | | | 100 [V] | 200 [V] | 240 [V] | |
| IEC60601-1 | Figure B | Both phases | 0.16 | 0.35 | 0.44 | Operation |
| | | One of phases | 0.30 | 0.62 | 0.77 | Stand by |

The value for "One of phases" is the reference value only.

2.Condition

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

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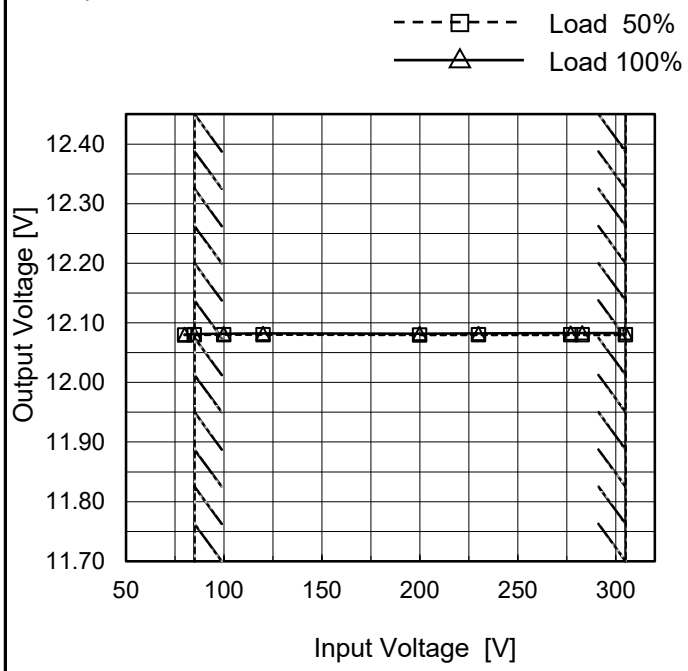
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Line Regulation |
| Object | +12V84A |

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% |
| 80 | 12.079 | 12.080 |
| 85 | 12.080 | 12.081 |
| 100 | 12.080 | 12.082 |
| 120 | 12.080 | 12.082 |
| 200 | 12.080 | 12.082 |
| 230 | 12.080 | 12.082 |
| 277 | 12.080 | 12.083 |
| 283 | 12.080 | 12.083 |
| 305 | 12.080 | 12.083 |

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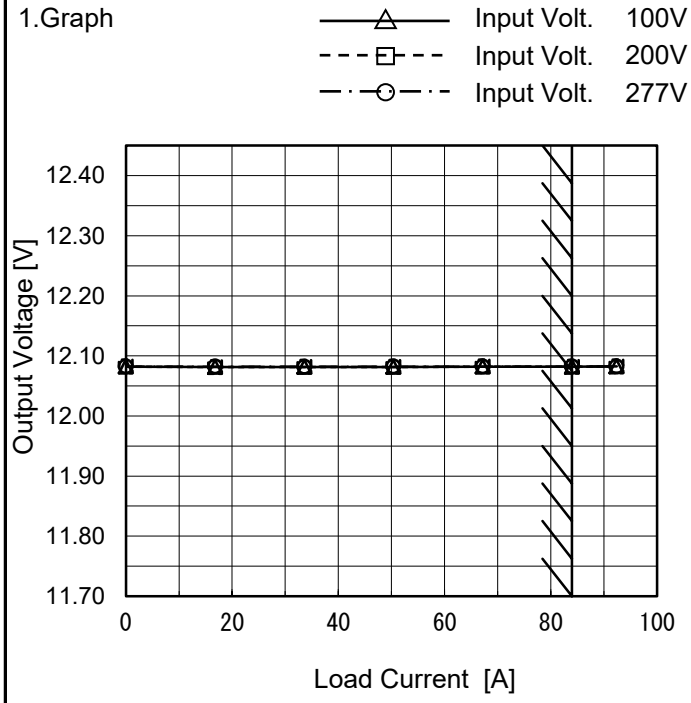
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Load Regulation |
| Object | +12V84A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

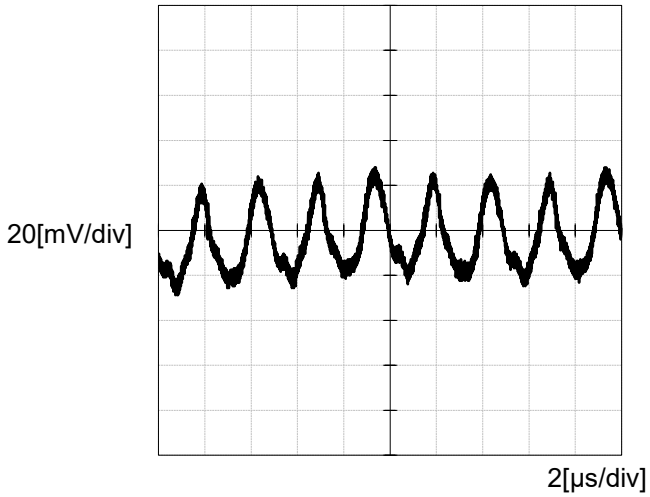
| Load Current [A] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 277[V] |
| 0.0 | 12.082 | 12.082 | 12.082 |
| 16.8 | 12.082 | 12.081 | 12.082 |
| 33.6 | 12.082 | 12.082 | 12.082 |
| 50.4 | 12.082 | 12.082 | 12.082 |
| 67.2 | 12.082 | 12.082 | 12.082 |
| 84.0 | 12.082 | 12.082 | 12.082 |
| 92.4 | 12.083 | 12.082 | 12.082 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

| | |
|---|---|
| Item | Ripple-Noise |
| Object | +12V84A |

Temperature 25°C
Testing Circuitry Figure C

1.Graph

Input Voltage 200V
Load 100%



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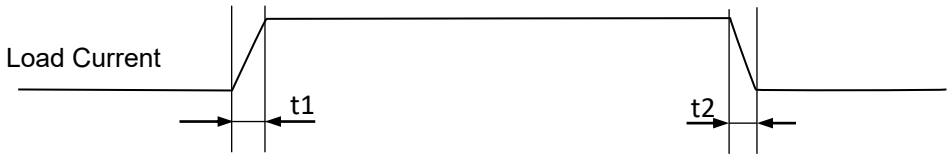
| | | |
|---|---|---|
| Model | TUNS1200F12 | |
| Item | Dynamic Load Response | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +12V84A | |

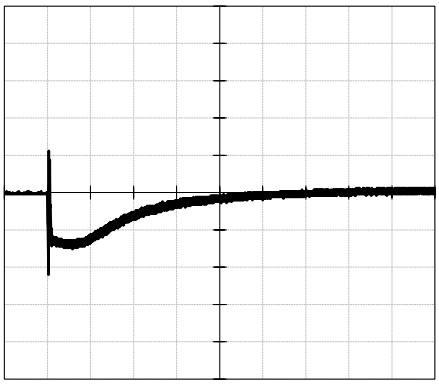
Input Volt. 100 V

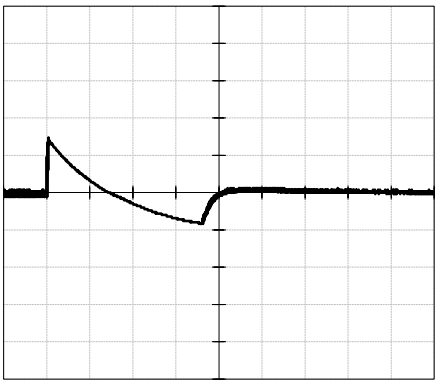
Cycle 1000 ms

Response. t1=t2=50µs. Typ




Load 0%(0A) ←→
Load 100%(84A)



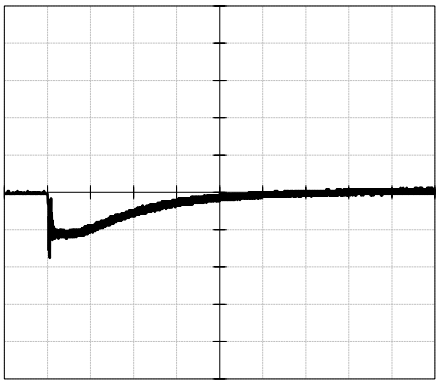


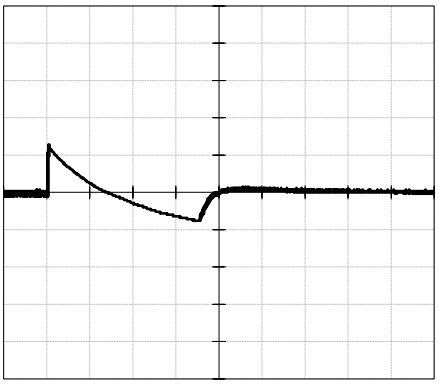
500[mV/div]

1[ms/div]

10[ms/div]

Load 0%(0A) ←→
Load 50%(42A)





500[mV/div]

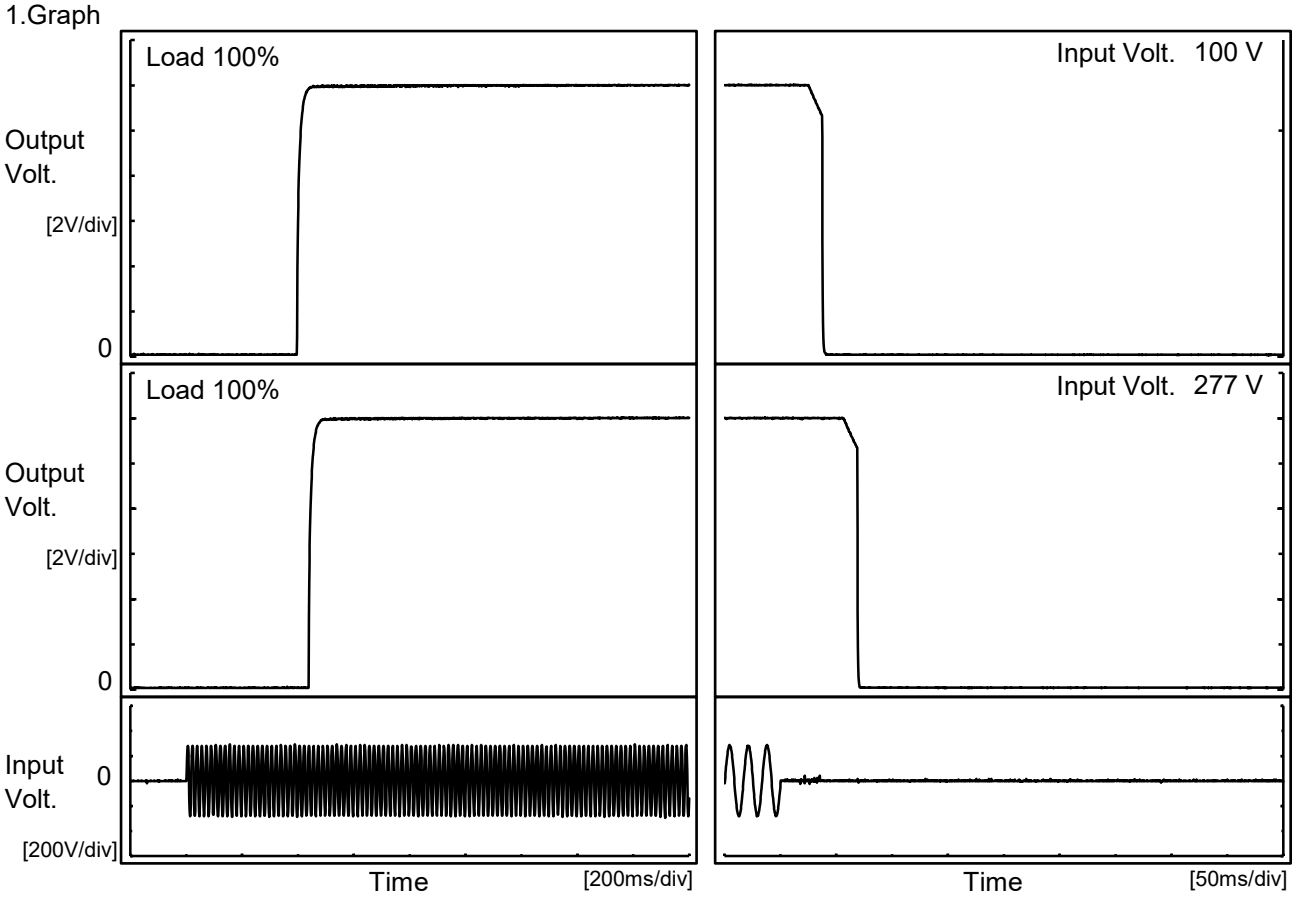
1[ms/div]

10[ms/div]

COSEL

| | | |
|---|---|---|
| Model | TUNS1200F12 | |
| Item | Rise and Fall Time | Temperature 25°C<br>Testing Circuitry Figure A |
| Object | +12V84A | |

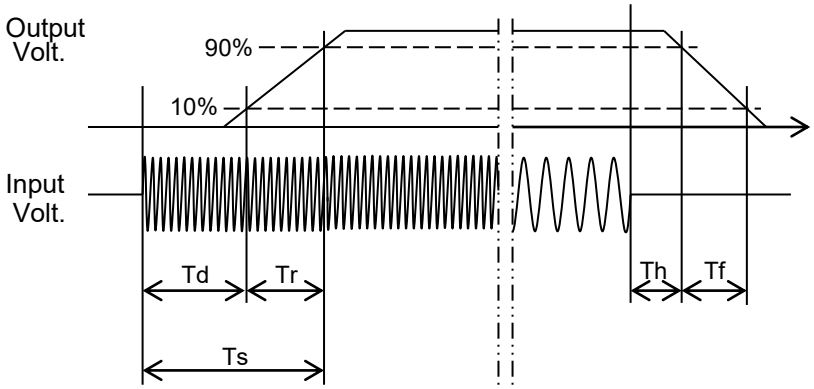
1.Graph




2.Values

[ms]

| Input Volt. \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 100 V | 397.0 | 20.0 | 417.0 | 35.3 | 3.3 |
| 277 V | 437.0 | 21.0 | 458.0 | 66.8 | 3.0 |



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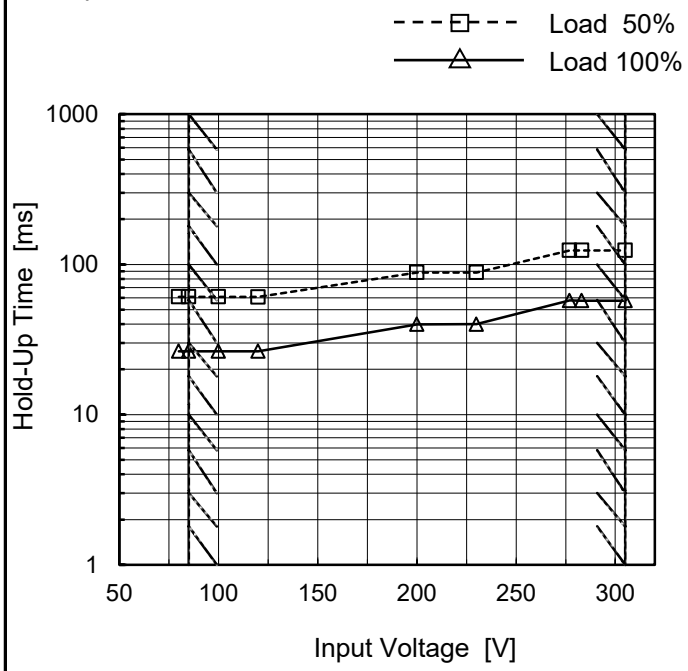
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Hold-Up Time |
| Object | +12V84A |

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% |
| 80 | 61 | 26 |
| 85 | 61 | 26 |
| 100 | 61 | 26 |
| 120 | 61 | 26 |
| 200 | 88 | 40 |
| 230 | 88 | 40 |
| 277 | 124 | 58 |
| 283 | 124 | 57 |
| 305 | 124 | 57 |



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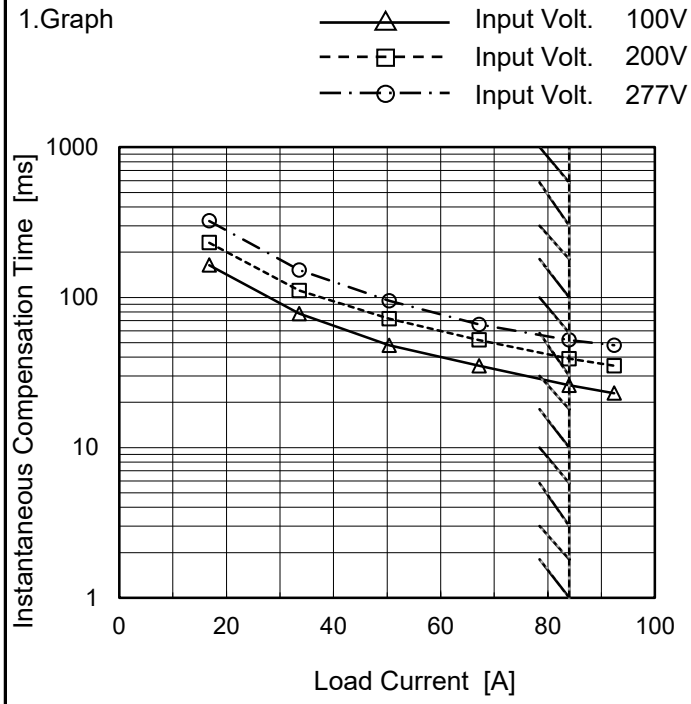
| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Instantaneous Interruption Compensation |
| Object | +12V84A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

2.Values

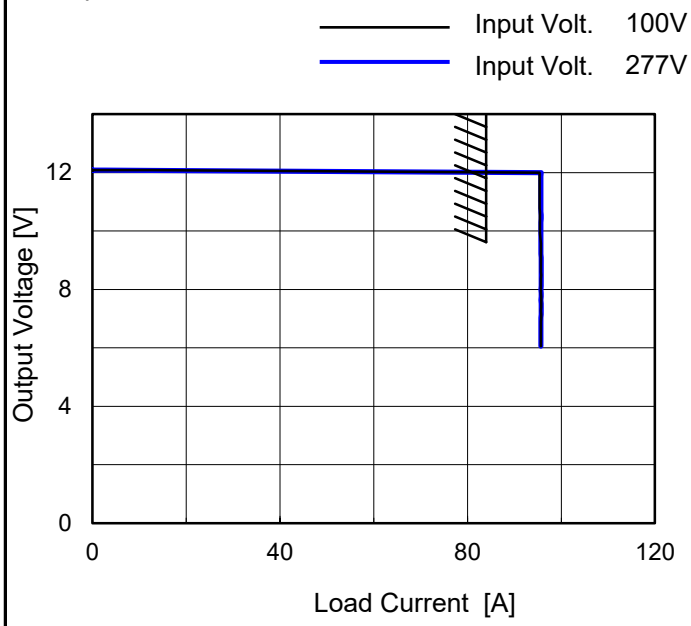
| Load Current [A] | Time [ms] | | |
|---|---|---|---|
| | Input Volt. 100[V] | Input Volt. 200[V] | Input Volt. 277[V] |
| 0.0 | - | - | - |
| 16.8 | 164 | 231 | 323 |
| 33.6 | 78 | 111 | 152 |
| 50.4 | 48 | 72 | 95 |
| 67.2 | 35 | 52 | 66 |
| 84.0 | 26 | 39 | 52 |
| 92.4 | 23 | 35 | 48 |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |
| -- | - | - | - |

COSEL

| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Overcurrent Protection |
| Object | +12V84A |

Temperature 25°C
Testing Circuitry Figure A

1.Graph




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

Hiccup mode activates when the output voltage is from 6 to 0V.

2.Values

| Output Voltage [V] | Load Current [A] | |
|---|---|---|
| | Input Volt. 100[V] | Input Volt. 277[V] |
| 11.4 | 95.38 | 95.46 |
| 10.8 | 95.41 | 95.66 |
| 9.6 | 95.59 | 95.68 |
| 8.4 | 95.70 | 95.69 |
| 7.2 | 95.69 | 95.69 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

COSEL

| | |
|---|---|
| Model | TUNS1200F12 |
| Item | Ambient Temperature Drift |
| Object | +12V84A |

Testing Circuitry Figure A

1.Values

Load 100%

| Ambient Temperature[℃] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 100V | Input Volt. 200V | Input Volt. 277V |
| -40 | 12.033 | 12.033 | 12.034 |
| 25 | 12.082 | 12.082 | 12.082 |
| 80 | 12.097 | 12.096 | 12.096 |
| 85 | 12.096 | 12.097 | 12.097 |

| | |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage |
| Object | +12V84A |

Testing Circuitry Figure A

1.Values

| Ambient Temperature[℃] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -40 | 68 | 68 |
| 25 | 69 | 69 |
| 80 | 69 | 69 |
| 85 | 69 | 69 |

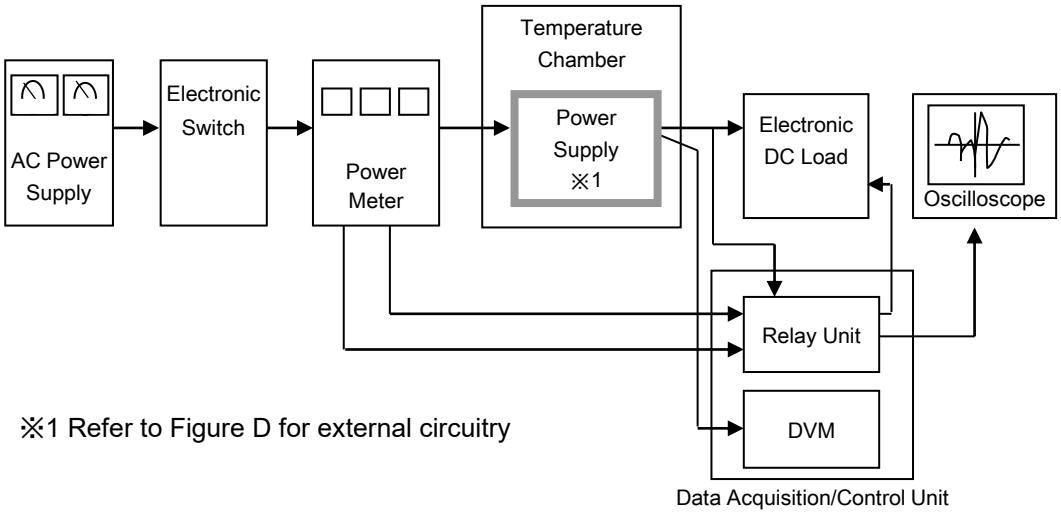
| | |
|---|---|
| Item | Overvoltage Protection |
| Object | +12V84A |

Testing Circuitry Figure A

1.Values

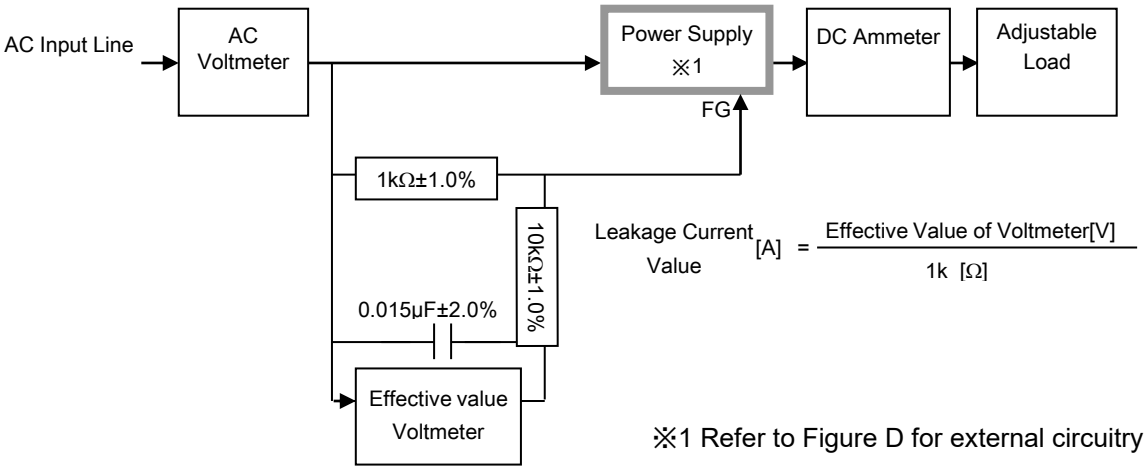
Load 0%

| Ambient Temperature[℃] | Operating Point [V] | |
|---|---|---|
| | Input Volt. 100V | Input Volt. 277V |
| -40 | 15.58 | 15.46 |
| 25 | 15.64 | 15.64 |
| 80 | 15.64 | 15.64 |
| 85 | 15.63 | 15.64 |



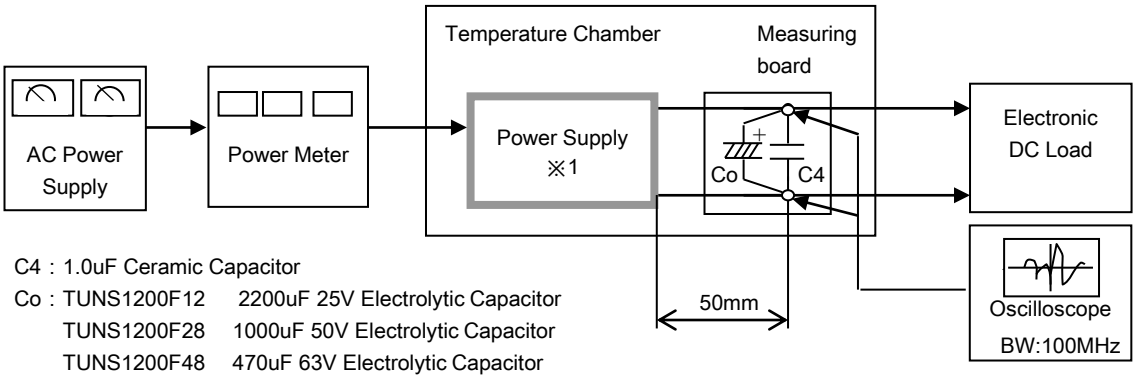

※1 Refer to Figure D for external circuitry

Figure A




※1 Refer to Figure D for external circuitry

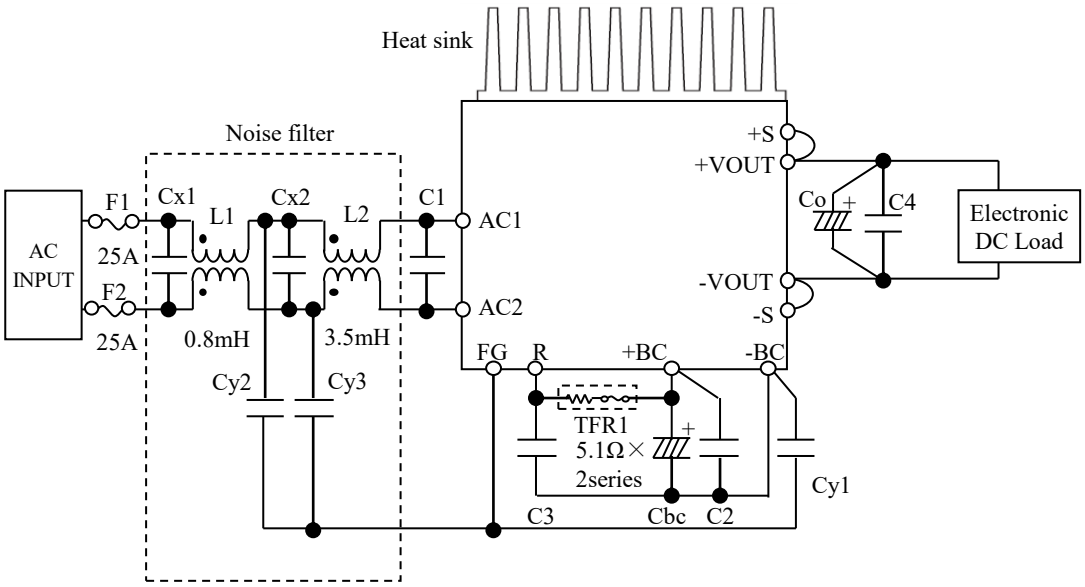
Figure B ( IEC60601-1)




C4 : 1.0uF Ceramic Capacitor
Co : TUNS1200F12 2200uF 25V Electrolytic Capacitor
TUNS1200F28 1000uF 50V Electrolytic Capacitor
TUNS1200F48 470uF 63V Electrolytic Capacitor

※1 Refer to Figure D for external circuitry

Figure C




| | | |
|---|---|---|
| L1 | : SCR25-200-1R7A008JH | |
| L2 | : SC15-E350H | |
| Cx1,Cx2 | : 1.5uF 310V Film Capacitor | |
| Cy1 | : 2200pF 400V | |
| Cy2,Cy3 | : 1500pF 400V | |
| C1 | : 1.5uF 310V Film Capacitor × 2parallel | |
| C2,C3 | : 1.0uF 630V Film Capacitor × 2parallel | |
| C4 | : 1.0uF Ceramic Capacitor | |
| Cbc | : 470uF 450V Electrolytic Capacitor × 3parallel | (0≦Ta≦85°C) |
| | 470uF 450V Electrolytic Capacitor × 6parallel | (-40≦Ta＜0°C) |
| Co | : TUNS1200F12 | 2200uF 25V Electrolytic Capacitor (0≦Ta≦85°C) |
| | | 2200uF 25V Electrolytic Capacitor × 3parallel (-40≦Ta＜0°C) |
| | TUNS1200F28 | 1000uF 50V Electrolytic Capacitor (0≦Ta≦85°C) |
| | | 1000uF 50V Electrolytic Capacitor × 3parallel (-40≦Ta＜0°C) |
| | TUNS1200F48 | 470uF 63V Electrolytic Capacitor (0≦Ta≦85°C) |
| | | 470uF 63V Electrolytic Capacitor × 3parallel (-40≦Ta＜0°C) |

Ta：Ambient Temp.

Figure D