# NW25S

## 25 Watts Output Power

***SINGLE OUTPUT***

## How to Order:

**NW 25 S I / 5 - A - F**

- Series: NW
- Total Output Power: 25
- Single Output: S
- Unscreened (I) or Screened (M): I
- Output Voltage: Max.current as stated in selection chart: 5
- Options: A - F
  - STD - pins out top of unit
  - Options:
    - A - Terminal Block
    - I - M2.5 inserts
    - F - EMI Filter (internal)

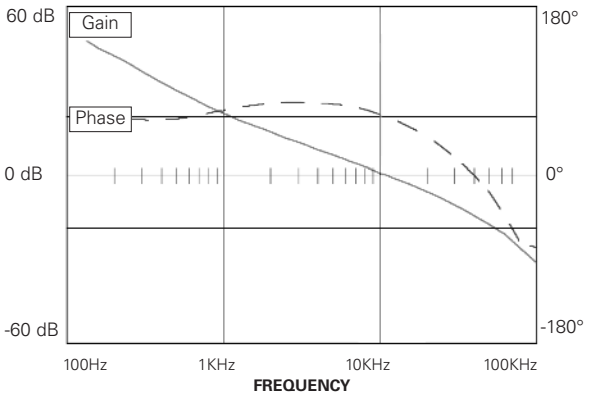
## FEATURES

- **Over Temperature Protection**
- **Remote Turn On (TTL)**
- **Output Overvoltage Protection**
- **Output Overcurrent Protection**
- **100% Environmental Screening (M Version)**
- **Remote Sense**

## INPUT CHARACTERISTICS

| | Per Channel | | | |
|---|---|---|---|---|
| | Min. | Typ. | Max. | Units |
| Input Voltage (47-440 Hz) | 90 | 110 | 130 | Vac |
| | 120 | 150 | 184 | Vdc |
| Brown Out (75% of Full Load) [fig. I]* | | | 80 | Vac |
| No Load Power Dissipation | | 1.0 | 1.5 | Watt |
| Inrush Current [fig. VI]* | | 15 | | A |
| Logic Disable Current (Sink) | | 5 | 6 | mA |
| Logic Disable Power In | | 1.0 | 1.5 | Watt |
| Efficiency (FL) [fig. II, III]* | 75 | 80-86 | | % |
| 3.3 Vdc Output (FL) | 70 | 74 | | % |
| 2 Vdc Output (FL) | 60 | 65 | | % |
| Power Factor (110 Vac, 60Hz) | | | | |
| Half Load | | 0.55 | | |
| Full Load | | 0.59 | | |
| EMI: Units conform to Mil-Std-461D (on input pins) with optional internal filter (-F) | | | | |
| Input Transient: Units can withstand 180Vac transients up to 0.1 second | | | | |

### STABILITY




## SELECTION CHART

| Nominal Output Voltage | Output Current (Amps) | Model Number (Unscreened) | Model Number (Screened) |
|---|---|---|---|
| 2 | 5.0 | NW25SI/2 | NW5SM/2 |
| 3.3 | 5.0 | NW25SI/3.3 | NW25SM/3.3 |
| 5 | 5.0 | NW25SI/5 | NW25SM/5 |
| 5.2 | 4.8 | NW25SI/5.2 | NW25SM/5.2 |
| 9 | 2.8 | NW25SI/9 | NW25SM/9 |
| 12 | 2.1 | NW25S/12 | NW25SM/12 |
| 15 | 1.66 | NW25SI/15 | NW25SM/15 |
| 24 | 1.1 | NW25SI/24 | NW25SM/24 |
| 28 | 0.9 | NW25SI/28 | NW25SM/28 |

## OUTPUT CHARACTERISTICS

| | Per Channel | | | |
|---|---|---|---|---|
| | Min. | Typ. | Max. | Units |
| Set Point Accuracy | | | 1 † | % $V_{out}$ |
| Load Regulation | | 0.1 | 0.2 | % $V_{out}$ |
| Line Regulation | | 0.1 | 0.2 | % $V_{out}$ |
| Ripple P-P (10 MHz) [fig. IV]* | | 50 | 150 | mV |
| Remote Sense Compensation | | 0.5 | | Vdc |
| Overvoltage Protection | | 125 | | % $V_{out}$ |
| Transient Response ($V_{out}$ 1%) Time/Overshoot | | | | |
| 20-80% Load | | 500/300 | | µS/mV |
| Low Line - High Line | | 500/300 | | µS/mV |
| 50-100% Load [fig.V]* | | 500/300 | | µS/mV |
| Temperature Drift | | 0.01 | 0.02 | %/°C |
| Long Term Drift | | 0.01 | | %/1KHrs |
| Current Limit | | 130 | | % $I_{out}$ |
| Short Circuit Current | | 50 | | % $I_{out}$ |
| Turn On Time [fig. IX]* | | 200 | | mS |
| Logic Turn On Time [fig. VII]* | | 3 | | mS |

† 1% or 50mV (whichever is greater)
* figures on page 6

All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

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# NW25S

## HIGH DENSITY AC TO DC CONVERTERS

Industrial & Military Grades

## TEMPERATURE CHARACTERISTICS

| | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Operating | -40 | | +90 | °C |
| Storage - Ambient | -55 | | +115 | °C |
| Over Temperature Shutdown | | +95 | | °C |
| Thermal Resistance Case- Ambient | | 5 | | °C/W |

## M- GRADE - ENVIRONMENTAL SCREENING

| | |
|---|---|
| Stabilization Bake: | +115°C for 24 hours similar to Mil-Std-883, M1008.2, Condition B |
| Temperature Cycling: | 10 cycles at -55°C to +115°C (transition period 5°C /min) similar to Mil-Std-883, M1010, Condition B |
| Burn in: | 160 hours @ 75°C minimum |
| Final Testing | |

## I- GRADE - ENVIRONMENTAL SCREENING

| | |
|---|---|
| Burn in: | 16 hours @ 75°C minimum |
| Final Testing | |

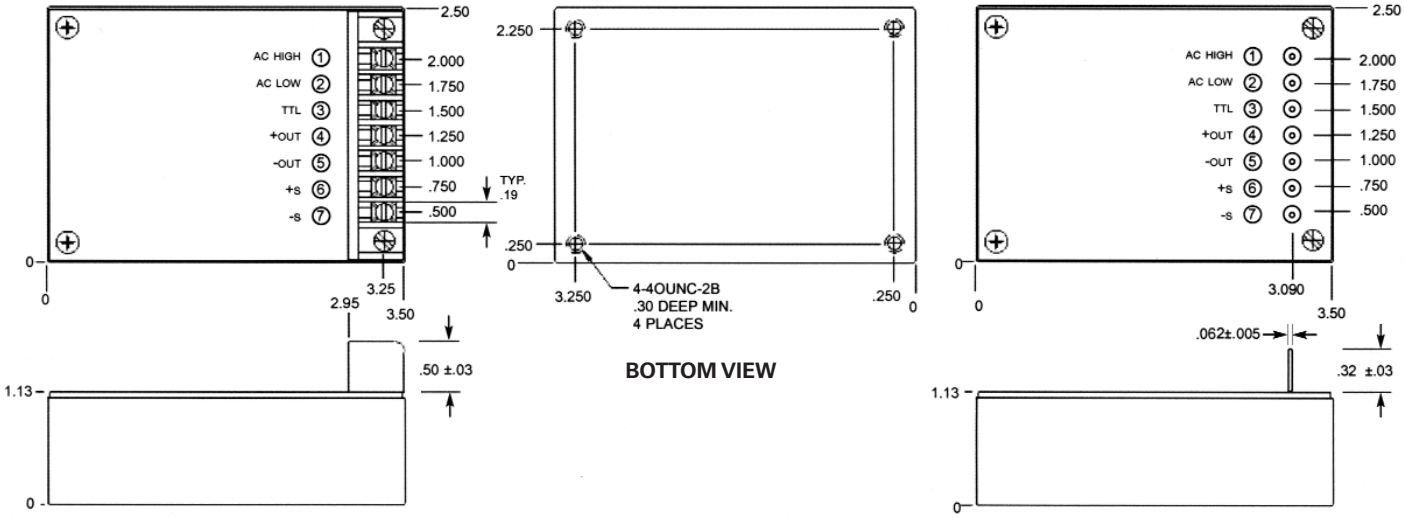
## ISOLATION CHARACTERISTICS

| | Min. | Units |
|---|---|---|
| Isolation: | | |
| Input to Output | 500 | Vdc |
| Output to Base | 500 | Vdc |
| Input to Base | 500 | Vdc |
| Insulation Resistance (@50 Vdc) | 50 | MOhm |

## MECHANICAL CHARACTERISTICS

| | | |
|---|---|---|
| Weight | 14.4<br>408.2 | oz.<br>grams |
| Size | 3.5 x 2.5 x 1.13<br>88.9 x 63.5 x 28.7 | inch<br>mm |
| Volume | 9.89<br>162 | $inch^3$<br>$cm^3$ |
| Material | 24GA CRS | |
| Finish | Nickel Plating | |
| Mounting | 4-40 Inserts | |

## CASE DRAWINGS




(-A OPTIONAL TERMINAL BLOCK)

(STANDARD PINS)

1. Wire Clamping Screws Standard
2. Wire Range: 18 - 22 AWG
3. Screw No. 3 - 48 UNC

**Tolerances:** inches - x.xx = ±0.03
x.xxx = ±0.015

All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

# NW50D

## 50 Watts Output Power

***DUAL OUTPUT***

## *How to Order:*

**NW 50 D M / 5 / 12 - A - F**

- Series
- Total Output Power
- Dual Output
- Unscreened (I) or Screened (M)
- Output Voltages: Max.current as stated in selection chart
- Options:
  - STD - pins out top of unit
  - Options:
    - A - Terminal Block
    - I - M2.5 inserts
    - F - EMI Filter (internal)

## FEATURES

- **Over Temperature Protection**
- **Remote Turn On (TTL)**
- **Output Overvoltage Protection**
- **Output Overcurrent Protection**
- **100% Environmental Screening (M Version)**

**Model Numbering Example:**
An environmentally screened, 50 watts, dual output, 5 Vdc and 15 Vdc, the model number would be NW50MI/5/15. A non-environmentally screened dual output, 12 Vdc and 15 Vdc, would be model number NW50DI/12/15. The first output voltage in the model number is located on channel 1, and the second output voltage in the model number is located on channel 2 (see case drawing).

## INPUT CHARACTERISTICS

| | PER CHANNEL | | | |
|---|---|---|---|---|
| | Min. | Typ. | Max. | Units |
| Input Voltage (47-440 Hz) | 90 | 110 | 130 | Vac |
| | 120 | 150 | 184 | Vdc |
| Brown Out (75% of Full Load) [fig. I]* | | | 80 | Vac |
| No Load Power Dissipation | | 1.0 | 1.5 | Watt |
| Inrush Current [fig. VI]* | | 15 | | A |
| Logic Disable Current (Sink) | | 5 | 6 | mA |
| Logic Disable Power In | | 1.0 | 1.5 | Watt |
| Efficiency (FL) [fig. II, III]* | 75 | 80-86 | | % |
| 3.3 Vdc Output (FL) | 70 | 74 | | % |
| 2 Vdc Output (FL) | 60 | 65 | | % |
| Power Factor (110 Vac, 60Hz) | | | | |
| Half Load | | 0.55 | | |
| Full Load | | 0.59 | | |
| EMI: Units conform to Mil-Std-461D (on input pins) with optional internal filter (-F) | | | | |
| Input Transient: Units can withstand 180Vac transients up to 0.1 second | | | | |

## SELECTION CHART

| Nominal Output Voltage | Dual Per Channel Current (Amps) |
|---|---|
| 2 | 5.0 |
| 3.3 | 5.0 |
| 5 | 5.0 |
| 5.2 | 4.8 |
| 9 | 2.8 |
| 12 | 2.1 |
| 15 | 1.66 |
| 24 | 1.1 |
| 28 | 0.9 |

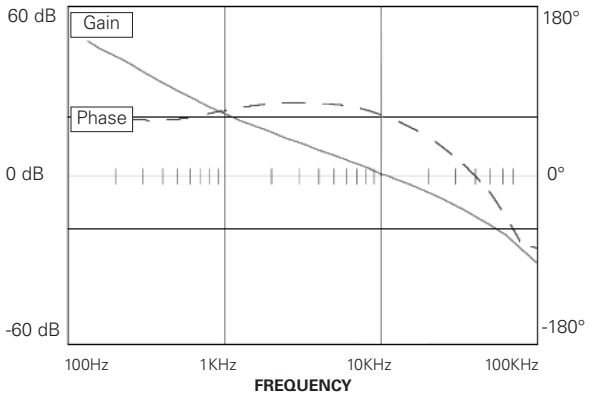
**NOTE :** Any output voltage can be located in either Channel 1 or Channel 2

## OUTPUT CHARACTERISTICS

| | PER CHANNEL | | | |
|---|---|---|---|---|
| | Min. | Typ. | Max. | Units |
| Set Point Accuracy | | | 1 † | % $V_{out}$ |
| Load Regulation | | 0.1 | 0.2 | % $V_{out}$ |
| Line Regulation | | 0.1 | 0.2 | % $V_{out}$ |
| Ripple P-P (10 MHz) [fig. IV]* | | 50 | 150 | mV |
| Overvoltage Protection | | 125 | | % $V_{out}$ |
| Transient Response ($V_{out}$ 1%) Time/Overshoot | | | | |
| 20-80% Load | | 500/300 | | µS/mV |
| Low Line - High Line | | 500/300 | | µS/mV |
| 50-100% Load [fig. V]* | | 500/300 | | µS/mV |
| Temperature Drift | | 0.01 | 0.02 | %/°C |
| Long Term Drift | | 0.01 | | %/1KHrs |
| Current Limit | | 130 | | % $I_{out}$ |
| Short Circuit Current | | 50 | | % $I_{out}$ |
| Turn On Time [fig. IX]* | | 200 | | mS |
| Logic Turn On Time [fig. VII]* | | 3 | | mS |

† 1% or 50mV (whichever is greater)
* figures on page 6

## STABILITY




All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

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# NW50D

## HIGH DENSITY AC TO DC CONVERTERS

Industrial & Military Grades

## TEMPERATURE CHARACTERISTICS

| | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Operating | -40 | | +90 | °C |
| Storage - Ambient | -55 | | +115 | °C |
| Over Temperature Shutdown | | +95 | | °C |
| Thermal Resistance Case- Ambient | | 5 | | °C/W |

## M- GRADE - ENVIRONMENTAL SCREENING

| | |
|---|---|
| Stabilization Bake: | +115°C for 24 hours similar to Mil-Std-883, M1008.2, Condition B |
| Temperature Cycling: | 10 cycles at -55°C to +115°C (transition period 5°C /min) similar to Mil-Std-883, M1010, Condition B |
| Burn in: | 160 hours @ 75°C minimum |
| Final Testing | |

## I- GRADE - ENVIRONMENTAL SCREENING

| | |
|---|---|
| Burn in: | 16 hours @ 75°C minimum |
| Final Testing | |

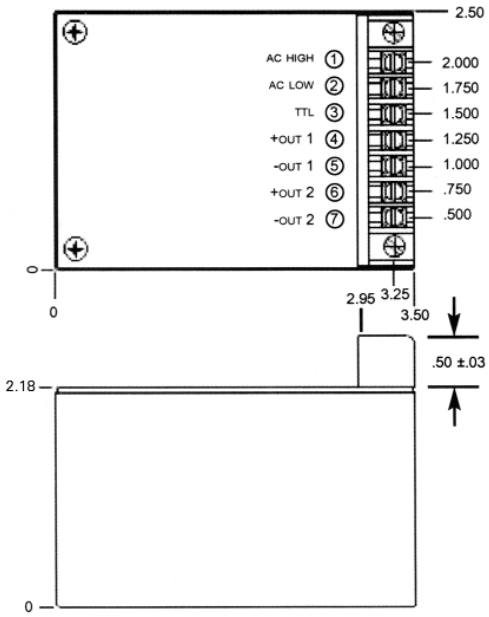
## ISOLATION CHARACTERISTICS

| | Min. | Units |
|---|---|---|
| Isolation: | | |
| Input to Output | 500 | Vdc |
| Output to Base | 500 | Vdc |
| Input to Base | 500 | Vdc |
| Insulation Resistance (@50 Vdc) | 50 | MOhm |

## MECHANICAL CHARACTERISTICS

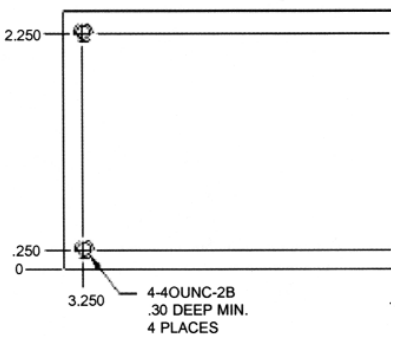
| | | |
|---|---|---|
| Weight | 28.8<br>816.4 | oz.<br>grams |
| Size | 3.5 x 2.5 x 2.18<br>88.9 x 63.5 x 55.4 | inch<br>mm |
| Volume | 19.08<br>312.7 | $inch^3$<br>$cm^3$ |
| Material | 24GA CRS | |
| Finish | Nickel Plating | |
| Mounting | 4-40 Inserts | |

## CASE DRAWINGS

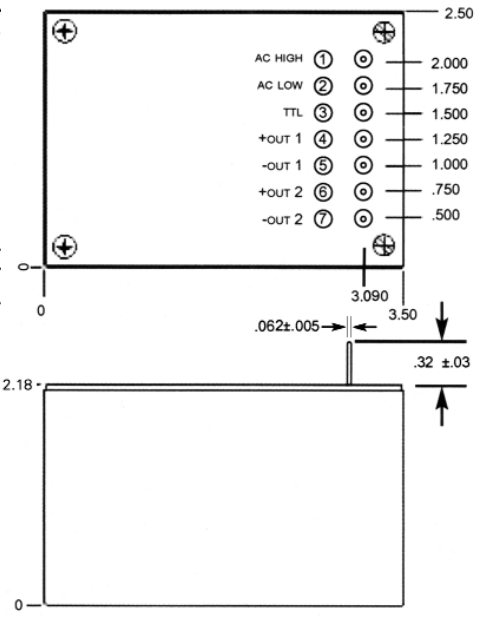



(-A OPTIONAL TERMINAL BLOCK)

Wire Guage: 18 AWG Max




(STANDARD INSERTS)




(STANDARD PINS)

**Tolerances:** inches - x.xx = ±0.03
x.xxx = ±0.015

All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.



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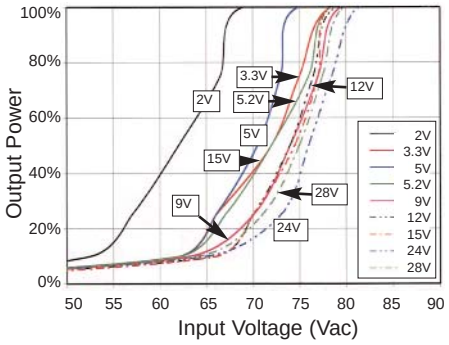
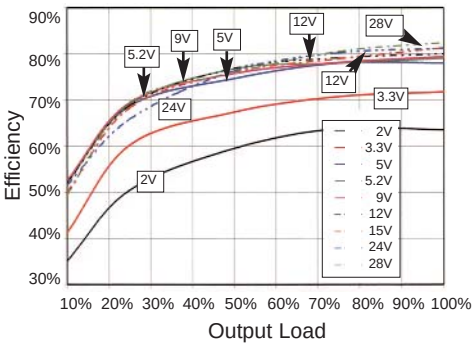
# NW25S NW50D

## Performance Characteristics

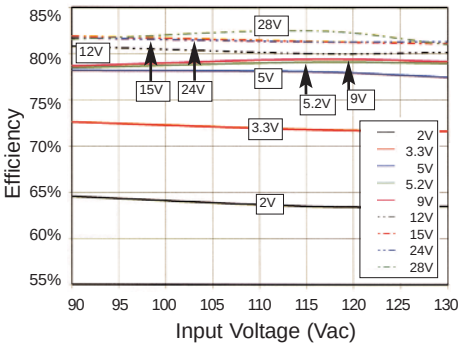
I. Input Voltage vs. Output Power



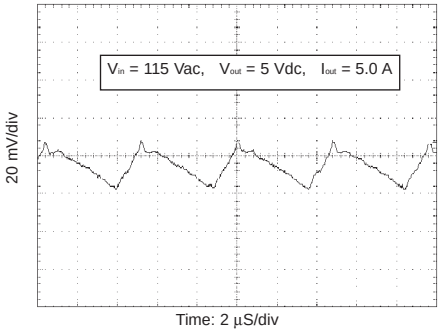

II. Efficiency vs. Output Power



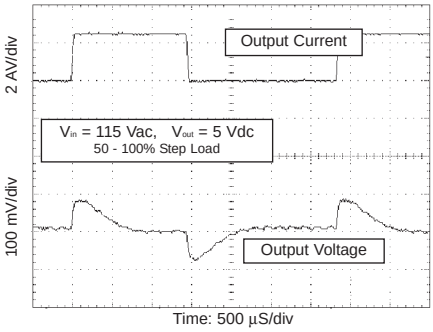

III. Efficiency vs. Input Voltage



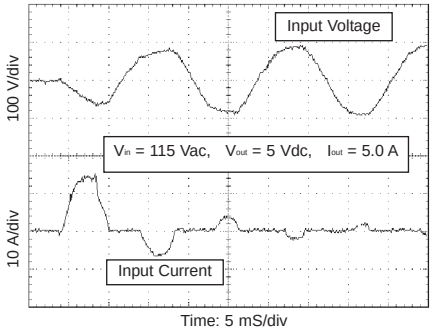

IV. Output Voltage Ripple



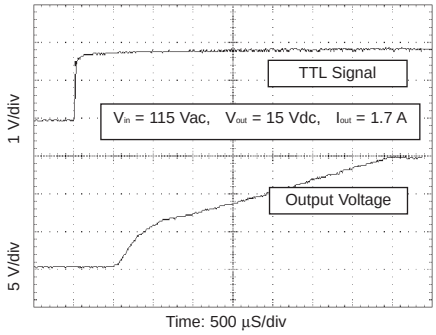

V. Load Transient Response



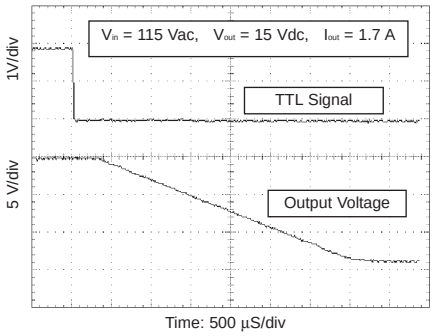

VI. Input Inrush Current



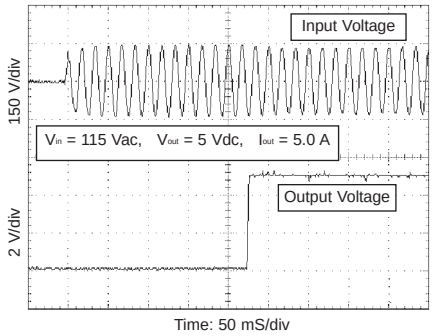

VII. TTL Turn-On



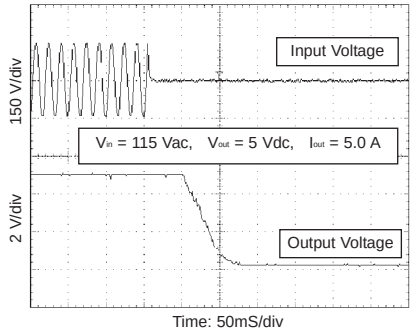

VIII. TTL Turn-Off



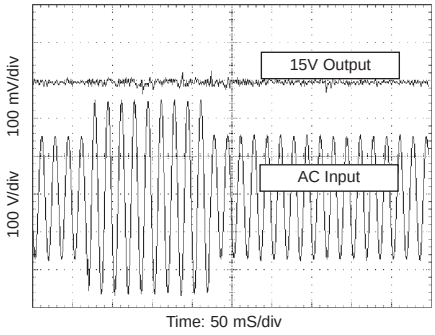

IX. AC Turn-On



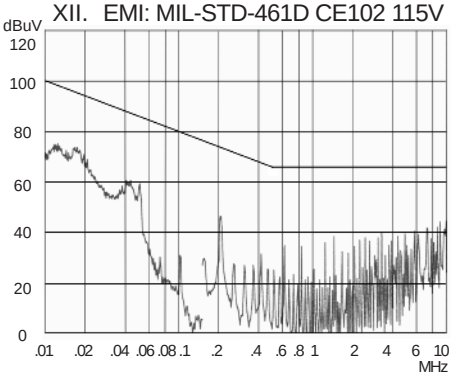

X. AC Turn-Off




XI. Input Transient Response




XII. EMI: MIL-STD-461D CE102 115V

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