Wall Industries, Inc.

TECHNICAL DATASHEET
Rev. D

FEMLV-1275

MIL-STD-1275D
Front End Filter Module for LV Series DC/DC Converters

Applications:

- **MIL-STD-1275D 28V Vehicle Electrical System Compliance**
- **Voltage Surge and Spike Filtering**

Features:

- **Surge and Spike Protection for up to 150 Watts**
- **PS Shutdown Pin to Remotely Disable Downstream Device for Protection**
- **Allows LV Series to Operate Through MIL-STD-1275 Disturbances**

Description:

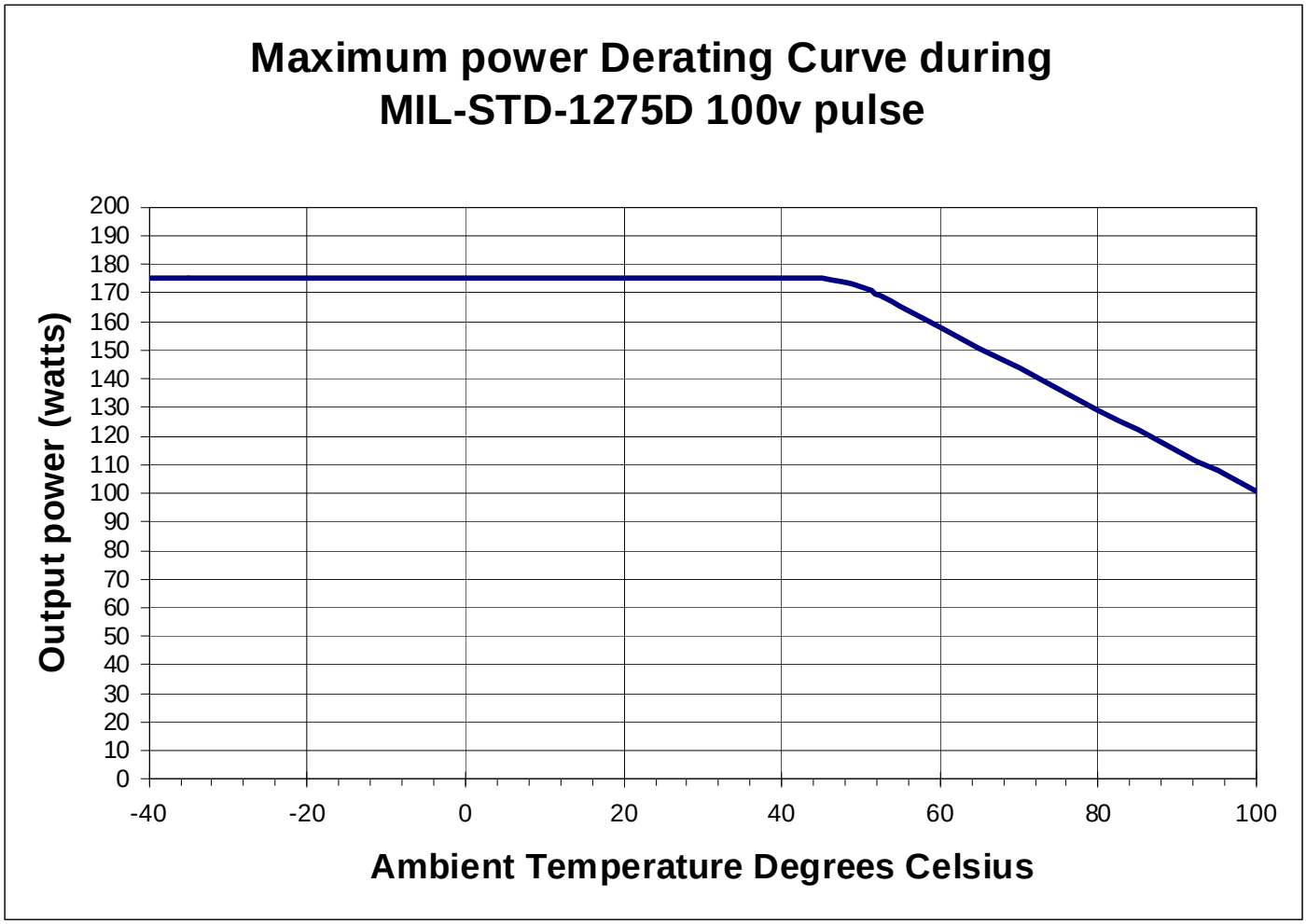
The Wall Industries Front End filter Module (FEMLV-1275) was designed with the LV Series DC-DC converter in mind. This Module will allow an LV series DC-DC converter to be used safely in 28V Vehicle Electrical System requirements set forth by MIL-STD-1275D. Other requirements such as MIL-STD-461E may apply but are not discussed in this data sheet and additional circuitry may be required.

MIL-STD-1275D Test Results

Detailed Requirements	Test Conditions	Detailed Results	Figure or Picture
5.1.2.1 Starting Disturbances			
5.1.2.2 Initial Engagement Surges	Vehicle System Voltage pulsed to 6V for less than 1 Second.	No damage to converter. Converter operates normally before, and after.	Photo 1.
5.1.2.3 Cranking Level	Vehicle System Voltage at 16V for 30 Seconds. Returned to 28V for 1 Minute 30 Seconds, and repeated 2 more times.	No damage to converter. Converter operates normally before, and after.	Photo 2.
5.1.3 Normal Operation Mode			
5.1.3.1 Steady-state Voltage	Vehicle System Voltage = 25 – 30V.	No damage to converter. Converter operates normally before, during, and after.	Photo 3.
5.1.3.2 Ripple	Vehicle System Voltage = 25 – 30V with ±2V ripple, Frequency @ 50Hz, 12kHz, 48kHz and 200kHz	No damage to converter. Converter operates normally before, during, and after.	Figure 1.
5.1.3.3 Surges	Vehicle System Voltage = 25 – 30V. Pulse of +40V, 50mS duration imported.	No damage to converter. Converter operates normally before, during, and after.	Photo 4 and Figure 2.
5.1.3.4 Spikes	Vehicle System Voltage = 25 - 30V. Pulse of ±250V, 70µS duration	No damage to converter. Converter operates normally before, during, and after.	Photo 6 and Figure 3.

5.1.4 Generator-Only Mode			
5.1.4.1 Steady-State Voltage	Vehicle System Voltage = 23 – 33V.	No damage to converter. Converter operates normally before, during, and after.	Photo 3.
5.1.4.2 Ripple	Vehicle System Voltage = 23 – 33V with ±7V ripple, Frequency @ 50Hz, 12kHz, 48kHz and 200kHz	No damage to converter. Converter operates normally before, during, and after.	Figure 1.
5.1.4.3 Surges	Vehicle System Voltage = 23 – 33V. Pulse of +100V, 50mS duration imported.	No damage to converter. Converter should operate normally before, during and after. Output of Filter Module will be briefly interrupted and PS Control will be pulled low.	Photo 5 and Figure 2.
5.1.4.4 Spikes	Vehicle System Voltage = 23 – 33V	No damage to converter. Converter operates normally before, during, and after.	Photo 6 and Figure 3.
5.3.2.2 Voltage Spikes Exported	Vehicle System Voltage = 23 - 33V.	No spikes, outside of Normal Operating Mode were transmitted to converter.	

Graph 1: De-rating Curve of FEMLV-1275



Max case temperature: 100 degrees Celsius
Max average current (under normal operating voltages): 15 amps
Max peak single pulse current less than 50ms (under normal operating voltages): 50 amps

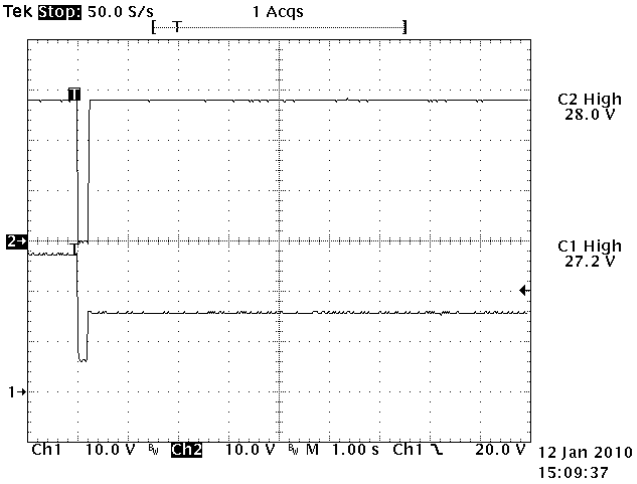


Photo 1: Ch1 – Vin;
Ch2 – Vout of LV Module

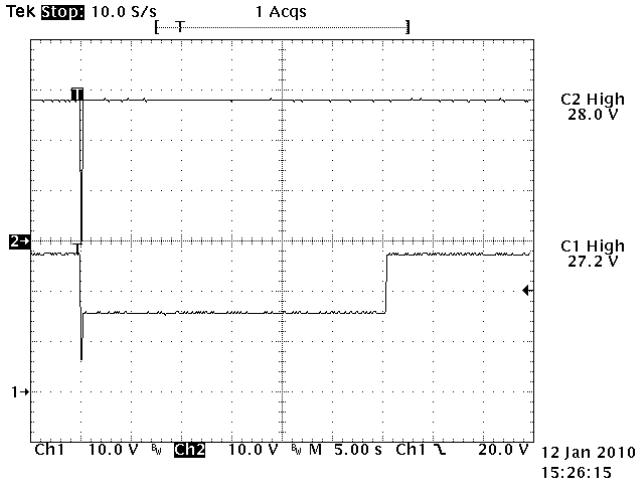


Photo 2: Ch1 – Vin;
Ch2 – Vout of LV Module

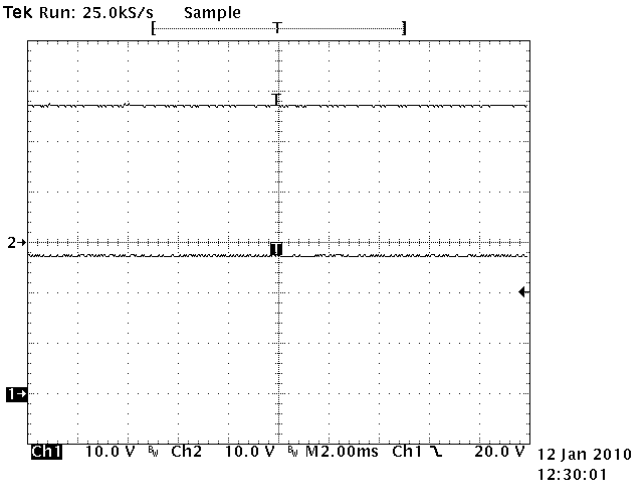


Photo 3: Ch1 – Vin;
Ch2 – Vout

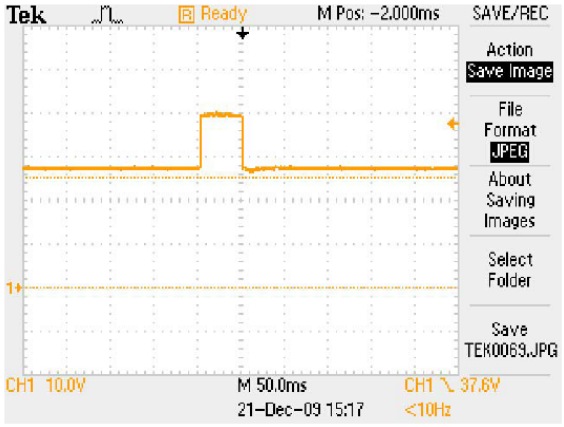


Photo 4: Ch1 - Vin

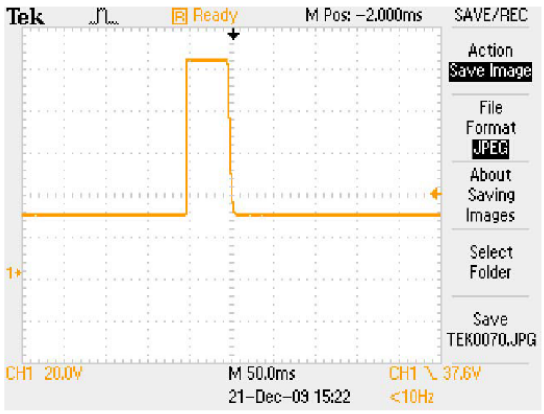


Photo 5: Ch1 – Vin

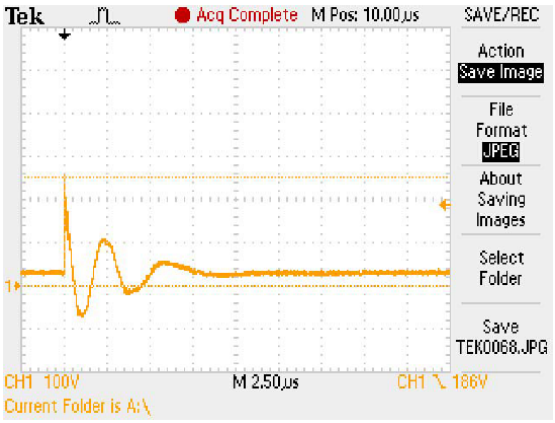


Photo 6: Ch1 - Vin

Figure 1: Ripple Test Set-Up

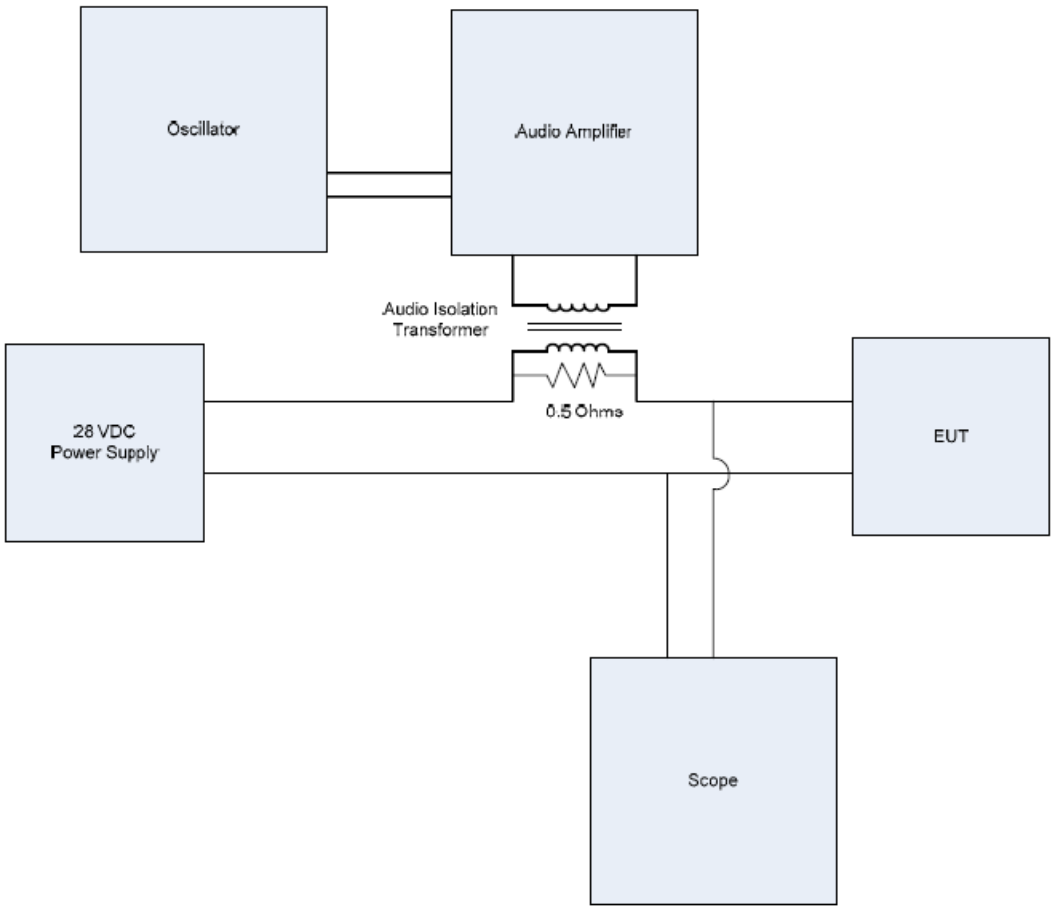


Figure 2: Imported Surge Test Set-Up

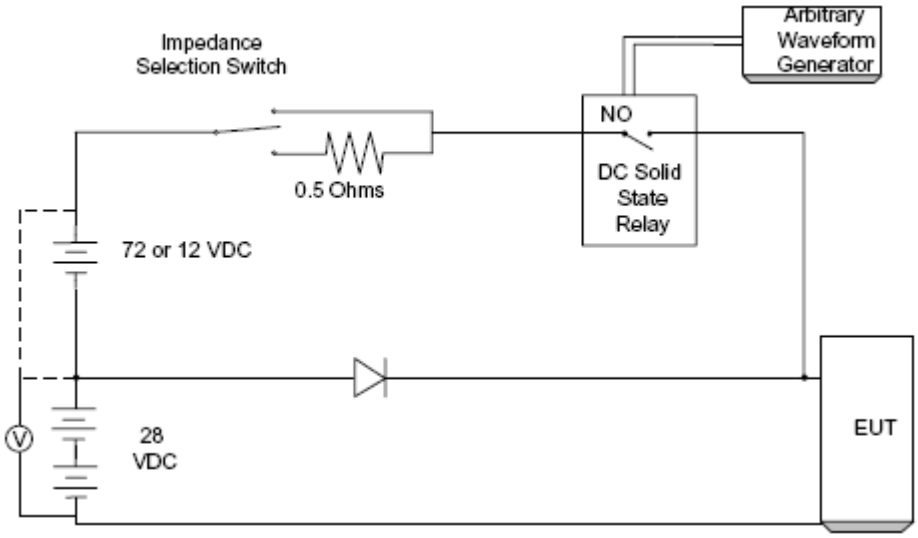


Figure 3: Imported Spikes Test Set-Up

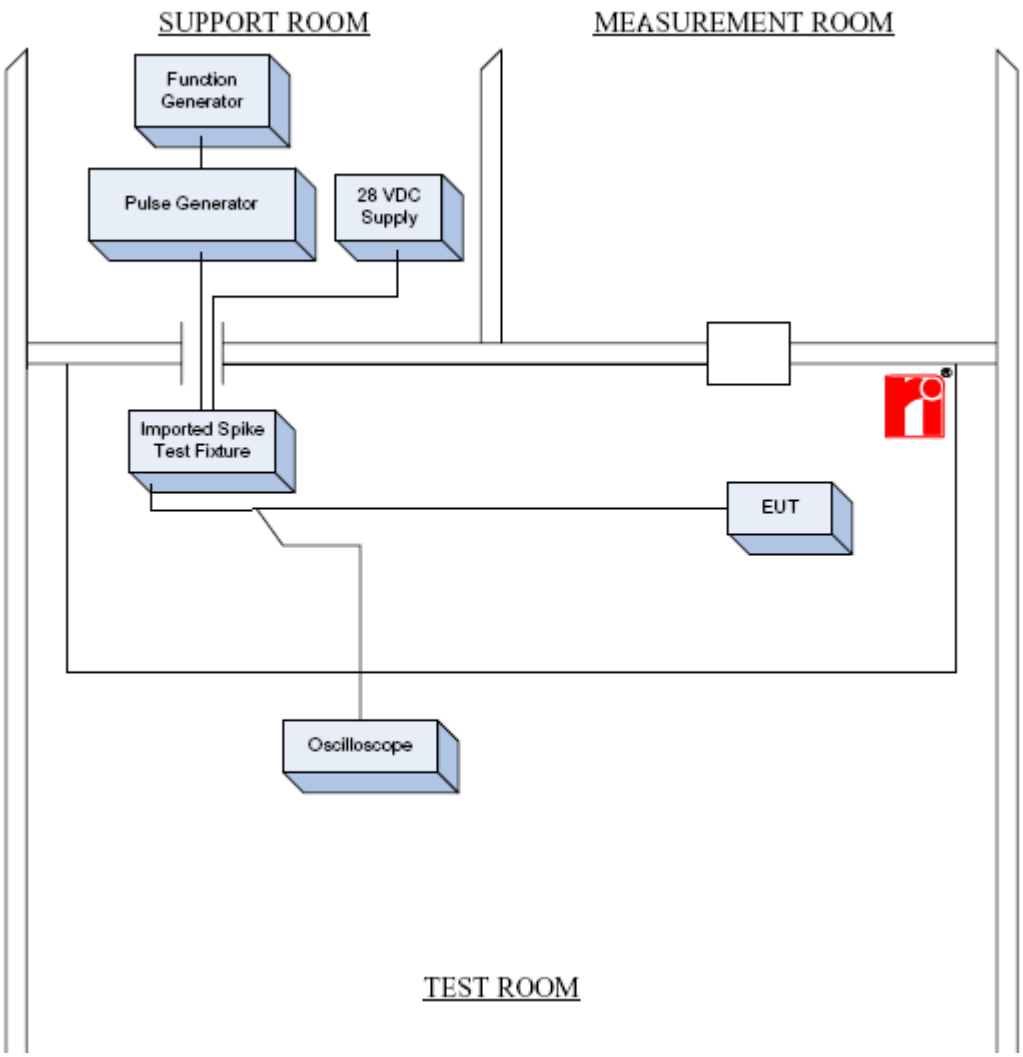
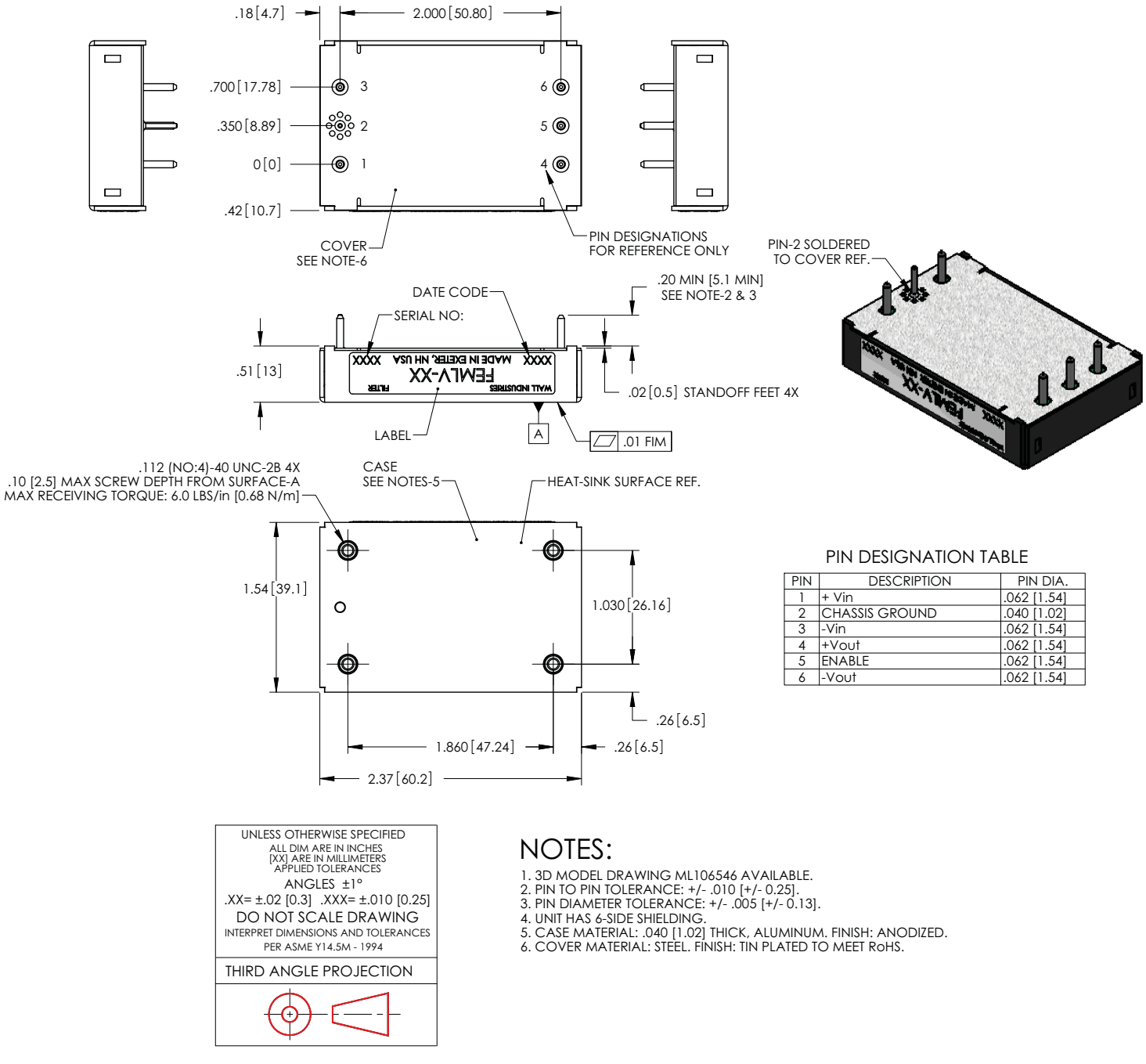


Figure 4: Mechanical Dimensions

Unit: inches [mm]



PIN DESIGNATION TABLE

PIN	DESCRIPTION	PIN DIA.
1	+ Vin	.062 [1.54]
2	CHASSIS GROUND	.040 [1.02]
3	-Vin	.062 [1.54]
4	+Vout	.062 [1.54]
5	ENABLE	.062 [1.54]
6	-Vout	.062 [1.54]

UNLESS OTHERWISE SPECIFIED
ALL DIM ARE IN INCHES
[XX] ARE IN MILLIMETERS
APPLIED TOLERANCES
ANGLES ±1°
.XX= ±.02 [0.3] .XXX= ±.010 [0.25]
DO NOT SCALE DRAWING
INTERPRET DIMENSIONS AND TOLERANCES
PER ASME Y14.5M - 1994

THIRD ANGLE PROJECTION

NOTES:

1. 3D MODEL DRAWING ML106546 AVAILABLE.
2. PIN TO PIN TOLERANCE: +/- .010 [+/- 0.25].
3. PIN DIAMETER TOLERANCE: +/- .005 [+/- 0.13].
4. UNIT HAS 6-SIDE SHIELDING.
5. CASE MATERIAL: .040 [1.02] THICK, ALUMINUM. FINISH: ANODIZED.
6. COVER MATERIAL: STEEL. FINISH: TIN PLATED TO MEET RoHS.

Company Information:

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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