

Filter Cards

Filter Cards for Single Phase Loads:
Brushed Motors, Voice Coils, and other Single Phase Loads

| Model Number | Inductance Line to Line | Continuous Current | Voltage Rating |
|--------------|-------------------------|--------------------|----------------|
| FC1010 | 20 μ H | 10A | 200V |
| FC10010 | 200 μ H | 10A | 250V |
| FC15030 | 300 μ H | 30A | 400V |
| BFC1010 | 20 μ H | 10A | 200V |
| BFC10010 | 200 μ H | 10A | 250V |
| BFC15030 | 300 μ H | 30A | 400V |
| BFC15030800 | 300 μ H | 30A | 800V |

Filter Cards for Three Phase Loads:
Brushless Motors, Linear Motors, and other Three Phase Loads



FC1010



FC10010



FC15030



BFC1010



BFC10010



BFC15030



BFC15030800

Description

The FC and BFC series of filter cards have been designed to complement **ADVANCED Motion Controls'** servo drives. These filters contain two inductors for single phase loads and three inductors for three phase loads.

Inductive filter cards have two typical applications:

1. **To increase the inductance to meet the minimum load inductance requirement of *ADVANCED Motion Controls* servo drives.**

Some motors have inductances that are less than the minimum load inductance requirement for the servo drive. For example, "basket-wound" and "pancake" motors do not have a conventional iron core rotor so the winding inductance is usually less than 25 μ H. For this type of application the filter card should be sized so the total inductance of the motor plus filter card meets or exceeds the inductance requirements of the servo drive. The filter card must also be rated to the required current.

2. **To reduce the DV/DT of the motor outputs.**

The main source of emitted drive noise is the high DV/DT (typically about 1V/nanosecond) of the drive's output power stage. Unfiltered motor outputs can introduce noise in digital encoder signals. For applications with noise sensitive devices (e.g. video cameras, magnetic/capacitive sensors) the use of an external inductive filter card may reduce emitted noise.

Note: Most applications do not require external filters.

Features

- ▲ Increases Load Inductance
- ▲ Small Size, Low Cost, Ease of Use
- ▲ Provides Dramatic Noise Reduction

Agency Approvals



US and Canadian safety compliance with UL 508c, the industrial standard for power conversion electronics. UL registered under file number E140173. Note that machine components compliant with UL are considered UL registered as opposed to UL listed, as would be the case for commercial products.



Compliant with European CE for both the Class A EMC Directive 2004/108/EC on Electromagnetic Compatibility (specifically EN 61000-6-4:2007 and EN 61000-6-2:2005) and LVD requirements of directive 2006/95/EC (specifically EN 60204-1:2006), a low voltage directive to protect users from electrical shock.

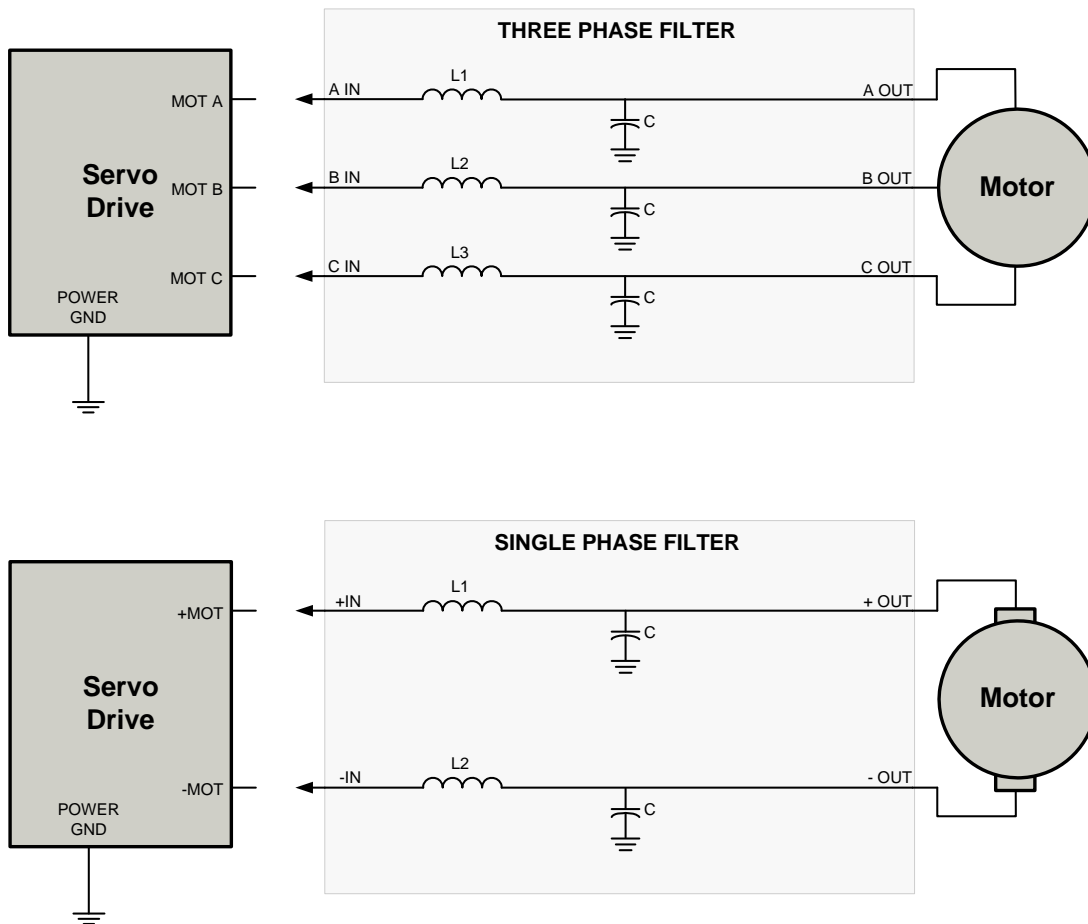


RoHS (Reduction of Hazardous Substances) is intended to prevent hazardous substances such as lead from being manufactured in electrical and electronic equipment.

SPECIFICATIONS

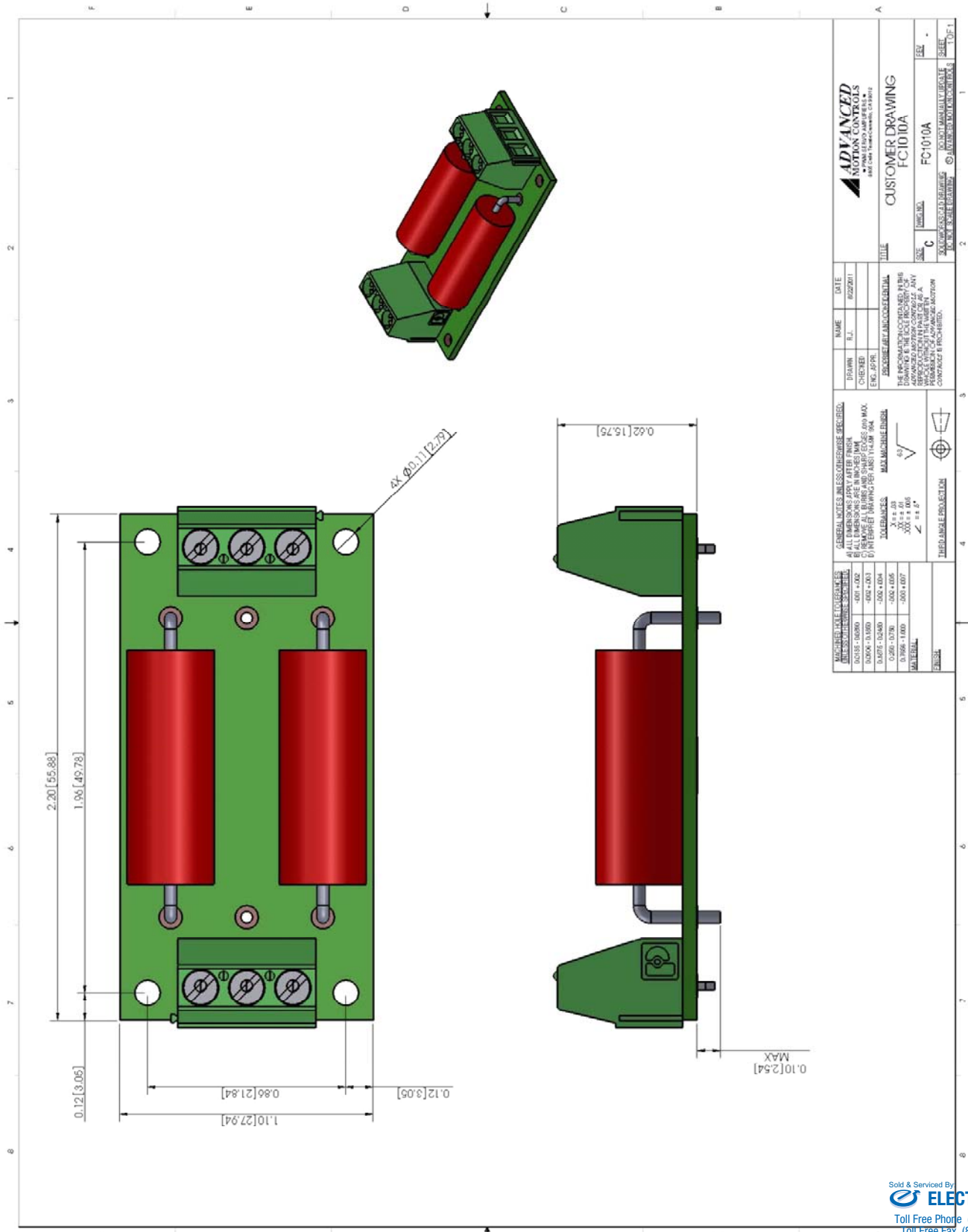
| Power Specifications | | | | | | | | |
|-----------------------------|----------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|--------------------------------------|
| Description | Units | FC1010 | FC10010 | FC15030 | BFC1010 | BFC10010 | BFC15030 | BFC15030800 |
| Inductance (Line to Line) | μH | 20 | 200 | 300 | 20 | 200 | 300 | 300 |
| Continuous Current | A | 10 | 10 | 30 | 10 | 10 | 30 | 30 |
| Voltage Rating | VDC | 200 | 250 | 400 | 200 | 250 | 400 | 800 |
| Capacitance (C) | μF | - | .01 | .068 | - | .01 | - | - |
| Mechanical Specifications | | | | | | | | |
| Description | Units | FC1010 | FC10010 | FC15030 | BFC1010 | BFC10010 | BFC15030 | BFC15030800 |
| Connector | - | Screw Terminals | | | | | | |
| Size (HxWxD) | mm (in) | 56.5x28.0x15.8 (2.23x1.10x0.62) | 65.3x51.3x25.7 (2.57x2.02x1.01) | 101.6x88.9x44.5 (4.00x3.5x1.75) | 56.5x28.6x15.8 (2.23x1.13x0.62) | 65.3x64.8x25.7 (2.57x2.55x1.01) | 134.6x113.7x43.5 (5.30x4.48x1.71) | 173.7x113.7x52.4 (6.84x4.48x2.06) |
| Weight | kg (lbs) | 0.027 (0.06) | 0.14 (0.32) | 0.95 (2.1) | 0.037 (0.08) | 0.21 (0.46) | 1.43 (3.16) | 1.63 (3.60) |
| Operating Temperature Range | °C (°F) | -40 - 75 (-40 - 167) | | | | | | |

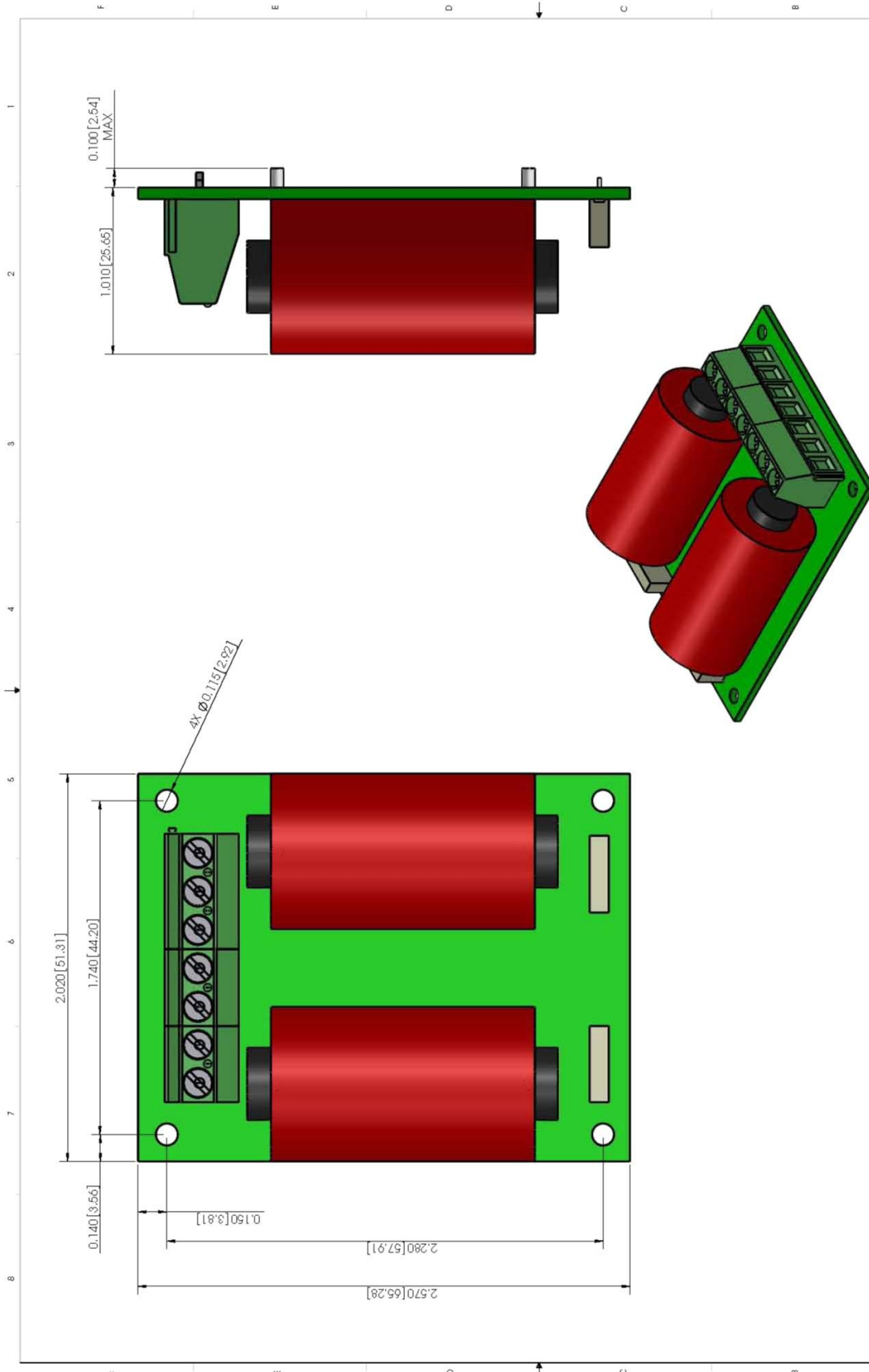
BLOCK DIAGRAM



NOTE: Capacitor is not used on all models. See Specifications above for applicable capacitance values

MOUNTING DIMENSIONS

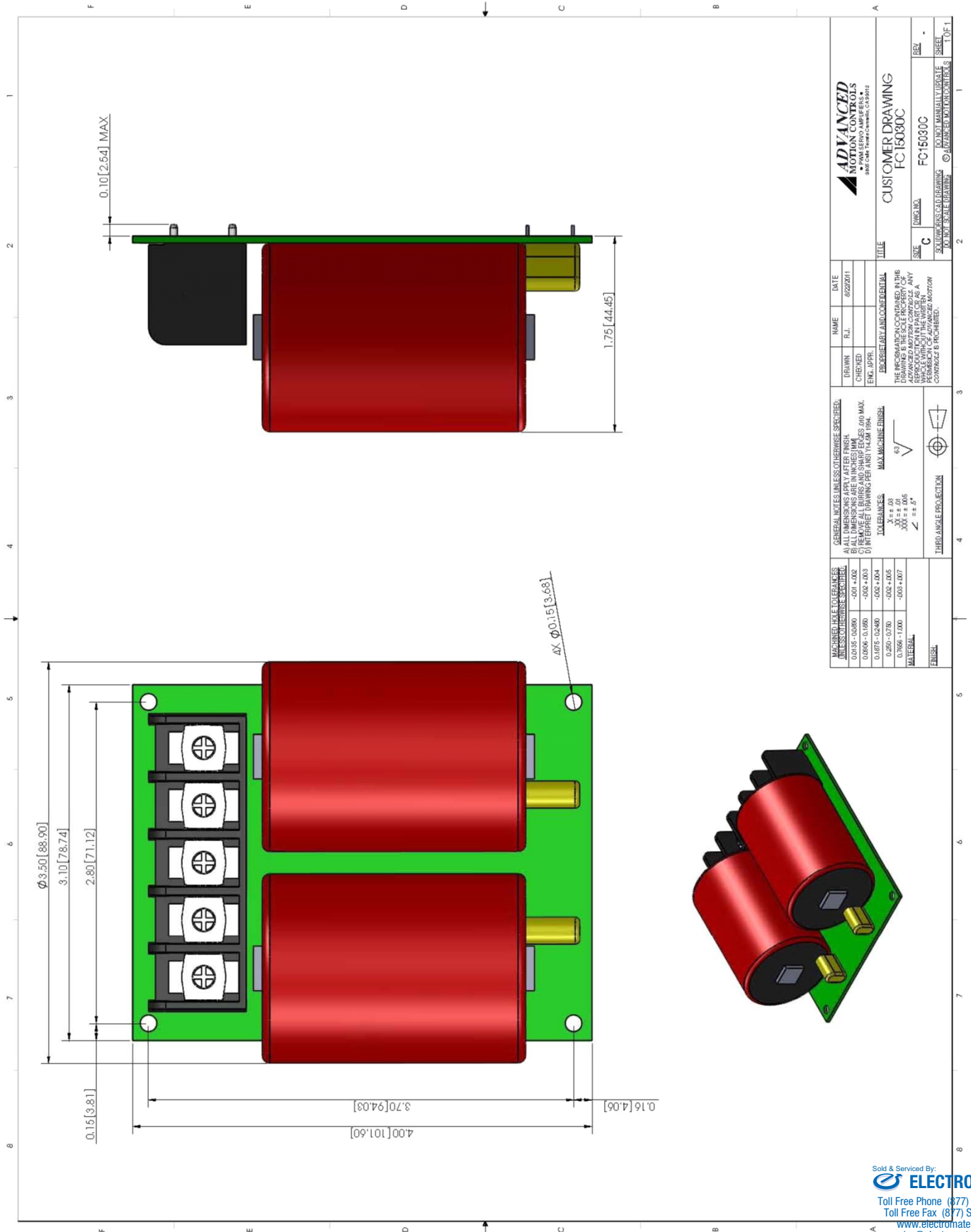


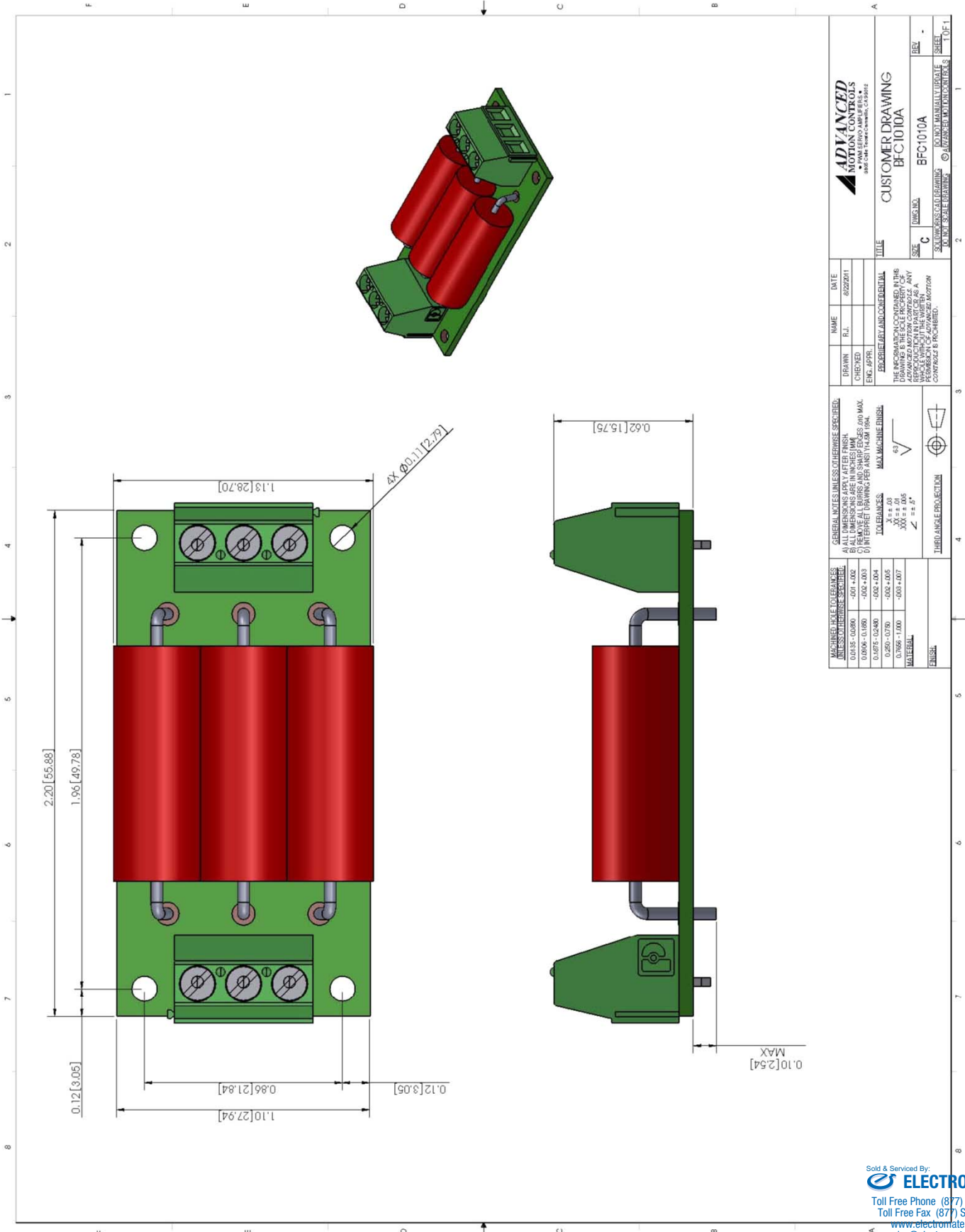


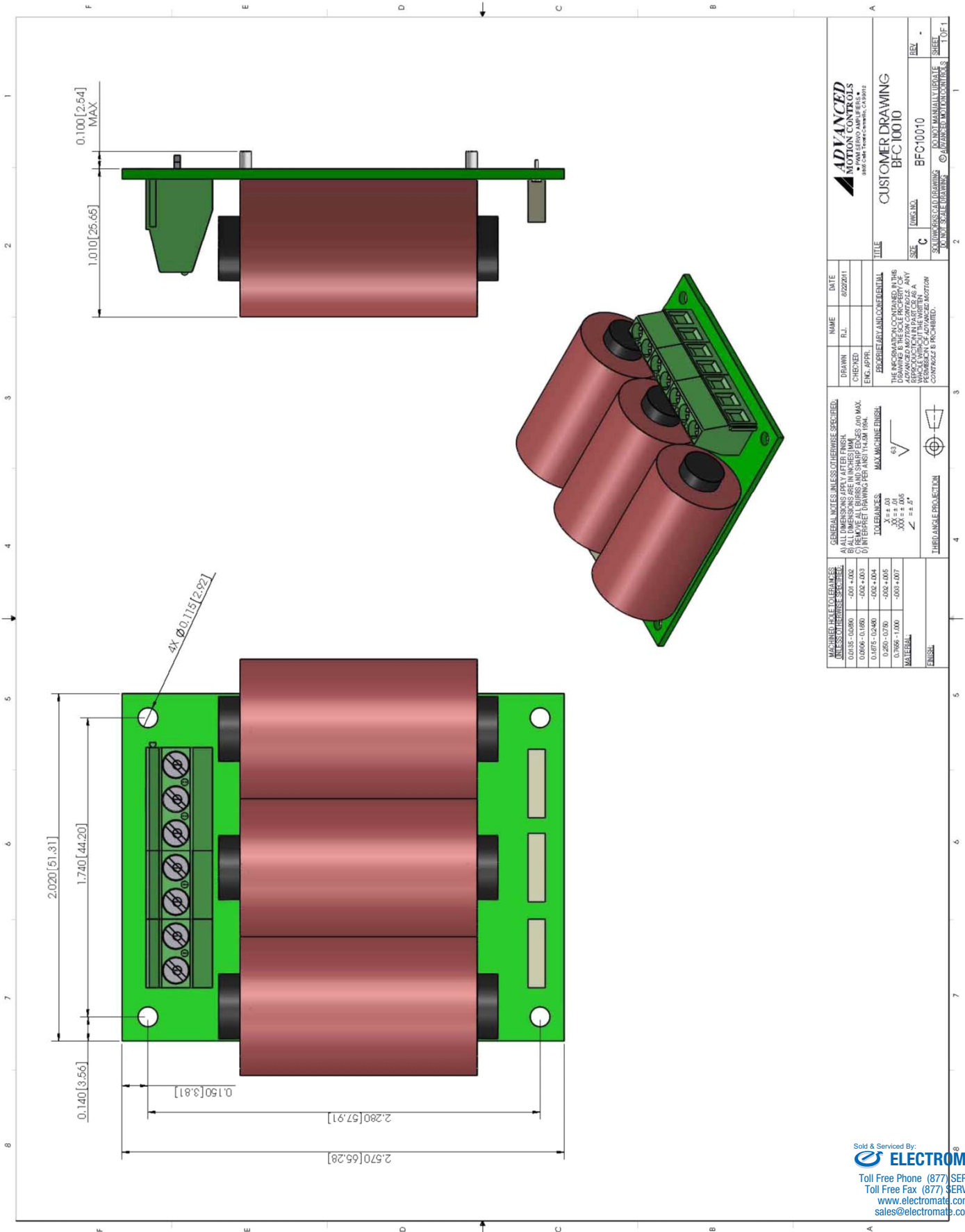
| SECTION | SCALE | DATE | NAME | DATE | NAME | DATE | NAME |
|---------|-------|------|------------|----------|------|------|------|
| 1 | | | FCI | 02/27/01 | | | |
| 2 | | | CHEKED | | | | |
| 3 | | | ENG. APPR. | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |

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| <p>GENERAL NOTES UNLESS OTHERWISE SPECIFIED:</p> <p>A) DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.</p> <p>B) ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.</p> <p>C) REMOVE ALL BURRS AND SHARP EDGES 0.00 MAX.</p> <p>D) IN CHAMFER DOWNS PER FIRST FOUR FIGS.</p> | <p>TOLERANCES:</p> <p>REL. MACHINE FINISH:</p> <p>65 / 65</p> <p>± 0.005 ± .005</p> <p>± 0.001 ± .01</p> <p>± 0.001 ± .01</p> <p>± 0.001 ± .01</p> | <p>TERMS:</p> <p>THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF ADVANCED MOTION CONTROLS AND IS TO BE USED ONLY FOR THE PROJECT AND QUANTITY SPECIFIED IN THE DRAWING CONTRACT. ANY REUSE OF THIS INFORMATION WITHOUT THE WRITTEN PERMISSION OF ADVANCED MOTION CONTROLS IS PROHIBITED.</p> | <p>TITLED ANGLE PROJECTION:</p> |
|--|--|--|--|

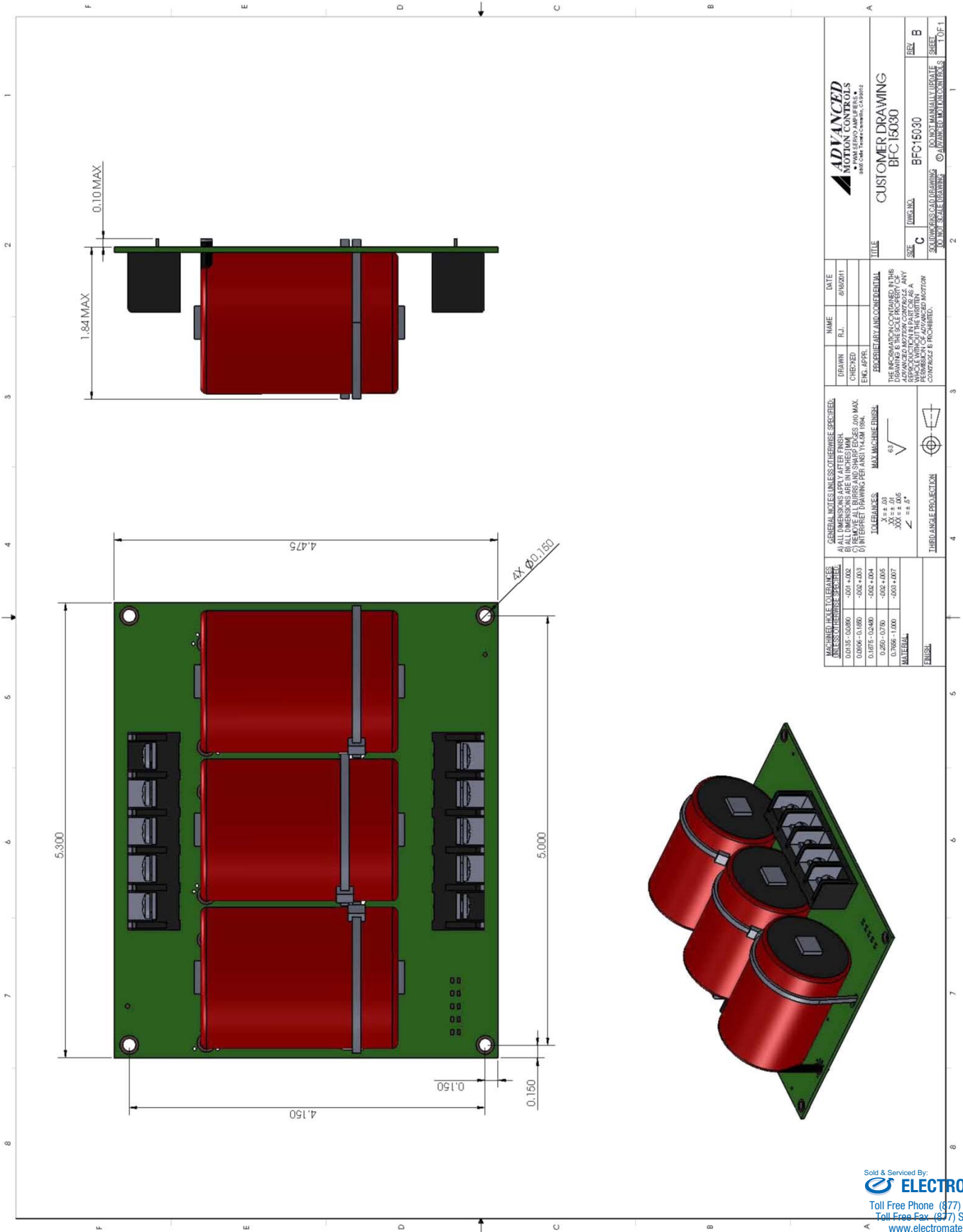
| | |
|--|-----------------------------|
| <p>ADVANCED MOTION CONTROLS</p> <p>CUSTOMER DRAWING</p> <p>FC10010</p> | <p>DATE</p> <p>02/27/01</p> |
|--|-----------------------------|



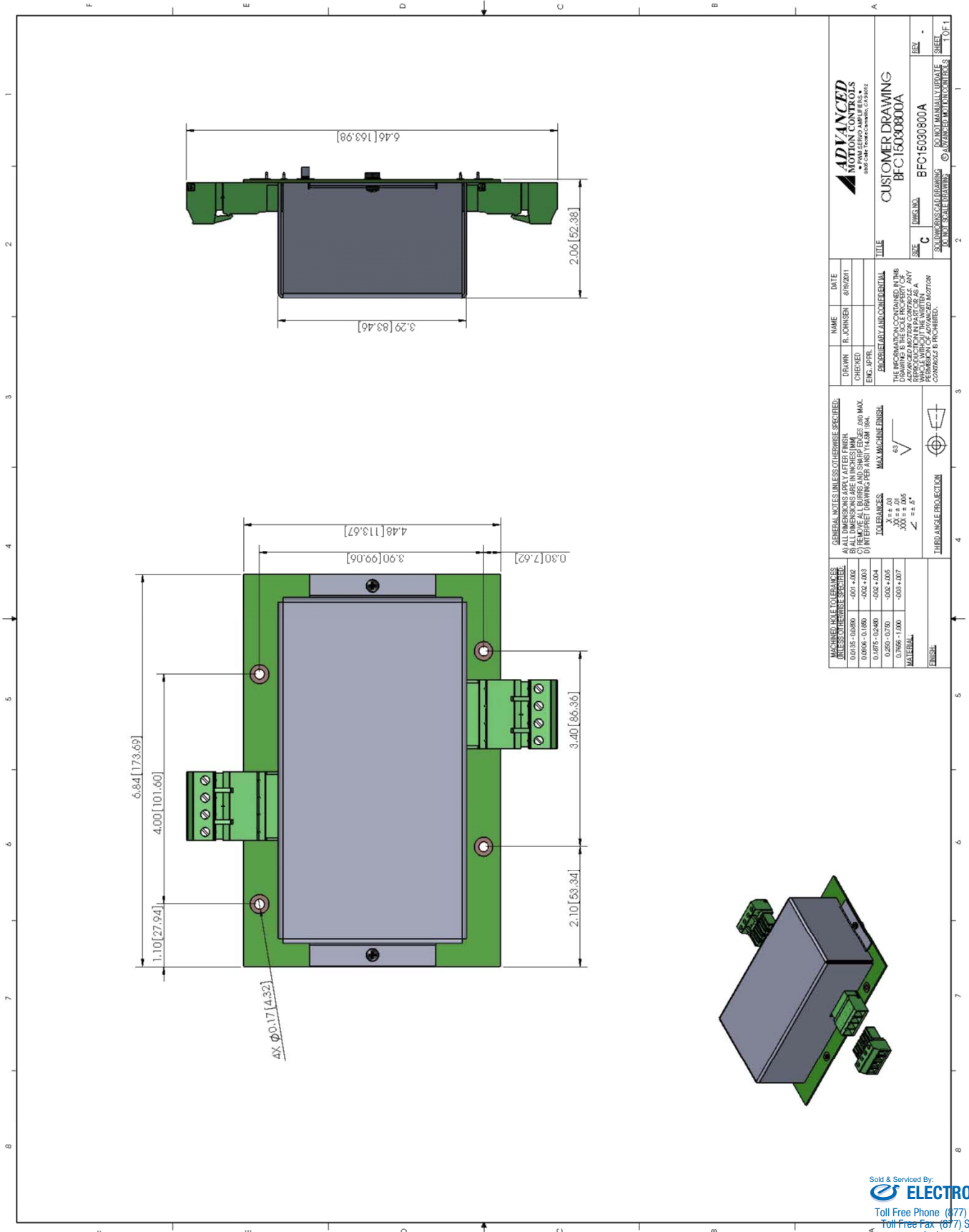




| | | | |
|--|------|--|-----------|
| ADVANCED MOTION CONTROLS 3800 GARDEN STREET • SUITE 100 • COSTA MESA, CA 92626 | | NAME | DATE |
| DRAWN | R.L. | 8/22/2011 | |
| CHECKED | | | |
| ENG. APPR. | | | |
| REGENERARY AND CO. GENERAL | | | |
| THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF ADVANCED MOTION CONTROLS. ANY REPRODUCTION OR TRANSMISSION IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN CONSENT OF ADVANCED MOTION CONTROLS IS PROHIBITED. | | | |
| GENERAL NOTES UNLESS OTHERWISE SPECIFIED: (A) ALL DIMENSIONS APPLY AFTER FINISH (B) ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED (C) TOLERANCES ARE AS SHOWN (D) INTERPRET DRAWINGS PER ANSI Y14.5M 1994. | | TOLERANCES: MAX. MACHINE FINISH X ± 0.03 Y ± 0.01 Z ± 0.01 A ± 0.01 B ± 0.01 C ± 0.01 | |
| MACHINABLE TOLERANCES: UNLESS OTHERWISE SPECIFIED: 0.0135 - 0.0080 -0.01 +0.02 0.006 - 0.1060 -0.02 +0.03 0.1475 - 0.2480 -0.02 +0.04 0.250 - 0.750 -0.02 +0.05 0.7506 - 1.000 -0.03 +0.07 | | FINISH: THREANGLE PROJECTION | |
| TITLE CUSTOMER DRAWING BFC10010 | | SIZE | REV. |
| DATE | REV. | DESCRIPTION | DATE |
| 8/22/2011 | 1 | ISSUE FOR MANUFACTURE | 8/22/2011 |
| SOURCE: BFC10010.DWG SOURCE: BFC10010.DWG | | SHEET 1 OF 1 | |



| | | |
|--|--------------------------------------|---|
| ADVANCED MOTION CONTROLS 880 ONE TREE CIRCLE, CA 94025 | | NAME: _____ DATE: 8/10/2011 |
| DRAWN: R.J. CHECKED: _____ ENG. APPR: _____ | TITLE: CUSTOMER DRAWING BFC-15030 | SIZE: C UNITS: INO. BFC-15030 |
| GENERAL NOTES: UNLESS OTHERWISE SPECIFIED: A) ALL DIMENSIONS APPLY AFTER FINISH. B) ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED. C) INTERPRET DRAWING PER ANSI Y14.3M 1994. D) MAX. MACHINE FINISH. | | TOLERANCES: X = ± .03 Y = ± .06 Z = ± .05 ∠ = ± .5° |
| MACHINED HOLE TOLERANCES: UNLESS OTHERWISE SPECIFIED: 0.0150 - 0.0400: -.001 +.002 0.0406 - 0.0800: -.002 +.003 0.0875 - 0.2400: -.002 +.004 0.2500 - 0.7500: -.002 +.005 0.7500 - 1.0000: -.003 +.007 | | THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ADVANCED MOTION CONTROLS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN CONSENT OF ADVANCED MOTION CONTROLS IS PROHIBITED. |
| FINISH: _____ THERMAL PROTECTION: _____ | | SHEET: 1 OF 1 |



| | | | |
|--|--|--|--|
| ADVANCED MOTION CONTROLS 10000 LINDEN DRIVE MILWAUKEE, WI 53222 800 ONE TREE CENTER, CA 94012 | | NAME: R. JOHNSON DATE: 8/10/2011 DRAWN: R. JOHNSON CHECKED: [blank] ENG. APPR: [blank] | TITLE: CUSTOMER DRAWING BFC16030800A |
| GENERAL NOTE: UNLESS OTHERWISE SPECIFIED: A) ALL DIMENSIONS APPLY AFTER FINISH. B) DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED. C) DIMENSIONS TO SURFACE UNLESS OTHERWISE SPECIFIED. D) INTERFERE TIRING PER ANSI Y14.4M 1994. | | REGULAR AND CONDUCTORIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ADVANCED MOTION CONTROLS. ANY REPRODUCTION IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF ADVANCED MOTION CONTROLS IS PROHIBITED. | SIZE: C DWG. NO.: BFC16030800A REV: - SHEET: 1 OF 1 |
| MACHINING TOLERANCES: 0.0150 - 0.0400 -0.01 +0.02 0.0406 - 0.1000 -0.02 +0.03 0.1075 - 0.2400 -0.02 +0.04 0.2500 - 0.7500 -0.02 +0.05 0.7506 - 1.0000 -0.03 +0.07 | TOLERANCES: X ± 0.03 Y ± 0.05 Z ± 0.05 ANGLES ± 0.5° | FINISH: 63/ | THIRD ANGLE PROJECTION |

CUSTOMIZATION INFORMATION

ADVANCED Motion Controls' products are available in many configurations. All models listed in the selection tables of the website are readily available, standard product offerings.

ADVANCED Motion Controls also has the capability to promptly develop and deliver specified products for OEMs with volume requests. Our Applications and Engineering Departments will work closely with your design team through all stages of development in order to provide the best servo drive solution for your system. Equipped with on-site manufacturing for quick-turn customs capabilities, ADVANCED Motion Controls utilizes our years of engineering and manufacturing expertise to decrease your costs and time-to-market while increasing system quality and reliability. Feel free to contact Applications Engineering for further information and details.

Examples of Customized Products

- | | |
|--------------------------------|-----------------------------------|
| ▲ Optimized Footprint | ▲ Tailored Project File |
| ▲ Private Label Software | ▲ Silkscreen Branding |
| ▲ OEM Specified Connectors | ▲ Optimized Base Plate |
| ▲ No Outer Case | ▲ Increased Current Limits |
| ▲ Increased Current Resolution | ▲ Increased Voltage Range |
| ▲ Increased Temperature Range | ▲ Conformal Coating |
| ▲ Custom Control Interface | ▲ Multi-Axis Configurations |
| ▲ Integrated System I/O | ▲ Reduced Profile Size and Weight |

Available Accessories

ADVANCED Motion Controls offers a variety of accessories designed to facilitate drive integration into a servo system. Visit www.a-m-c.com to see which accessories will assist with your application design and implementation.

