Proven Reliability

F SERIES

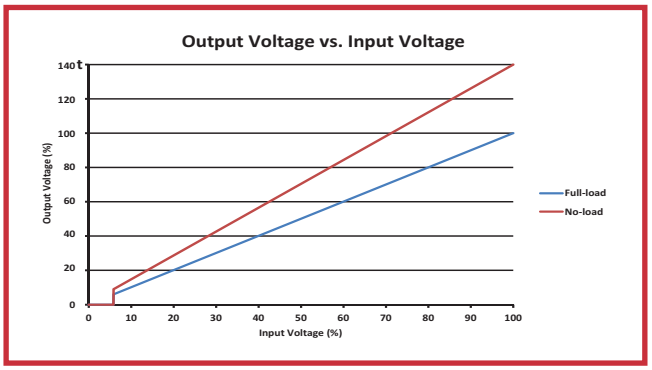
ISOLATED, PROPORTIONAL DC TO HV DC CONVERTERS

200V to 8kV at 10W



PRODUCT DESCRIPTION

The F Series is a broad line of robust, field-proven DC to HV DC converters which deliver 10 Watts continuous output power. Outputs range from 200V to 8kV. The input and output are galvanically isolated so a unit can be used to deliver a positive or negative high-voltage. The output voltage is proportional to input voltage with a low 0.7V typical turn-on voltage. The F Series employs EMCO's quasi-sinewave oscillator, a fully enclosed transformer, input and output filtering, and a 5-sided metal enclosure. As a result, these modules exhibit very low EMI/RFI, noise and ripple. An output center-tap option provides positive and negative outputs from one compact module.



APPLICATIONS

- Electrophoresis
- Capacitor Charging
- Piezo Devices
- Field Generation
- Grid Bias
- Mass Spectrometry
- Electrostatic Chuck
- Igniter / Spark Module
- Sustaining Ion Pumps

OPTIONS

- Center Tap Models Available (CT Suffix)
- Mounting Holes (F02 thru F60 only)(H Suffix)
- RoHS Version Available (R suffix)

PRODUCT SELECTION TABLE

MODEL	OUTPUT VOLTAGE*2	OUTPUT CURRENT*1
F02	0 to 200V	50 mA
F03	0 to 300V	33.3 mA
F04	0 to 400V	25 mA
F05	0 to 500V	20 mA
F06	0 to 600V	16 mA
F08	0 to 800V	12.5 mA
F10	0 to 1kV	10 mA
F12	0 to 1.2kV	8.3 mA
F15	0 to 1.5kV	6.6 mA
F20	0 to 2kV	5 mA
F30	0 to 3kV	3.3 mA
F40	0 to 4kV	2.5 mA
F50	0 to 5kV	2 mA
F60	0 to 6kV	1.66 mA
F70	0 to 7kV	1.5 mA
F80	0 to 8kV	1.25 mA

FEATURES

- Proportional Input/Output
- Compact, PCB Mount Package
- Metal Case / Shielded Transformer
- Short Circuit Protection
- Low Ripple, Low EMI / RFI
- Proven Reliability
- Input/Output Isolation
- Low Leakage Current
- Low Input/Output Coupling Capacitance
- No External Components Required
- No Minimum Load Required
- UL94 V0 Listed Proprietary Encapsulant
- MTBF: >810K hrs per Bellcore TR-332

ISO 9001:2008 CERTIFIED ISO 14001:2004 CERTIFIED RoHS COMPLIANT IPC Certified J-STD-001 Application Specialist

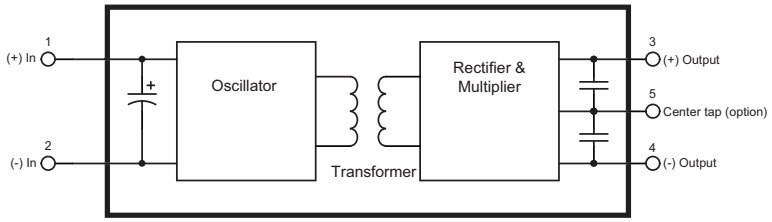
ELECTRICAL SPECIFICATIONS*2

MODELS	INPUT VOLTAGE	OUTPUT CURRENT	RIPPLE*4	REVERSIBLE MODEL	OUTPUT VOLTAGE	CENTER TAP MODEL	OUTPUT VOLTAGE
F02/F02CT	0 to 12V	50mA	<1.0%	F02	0 to 200V	F02CT	0 to +/- 100V
F03/F03CT	0 to 12V	33.3mA	<1.0%	F03	0 to 300V	F03CT	0 to +/- 150V
F04/F04CT	0 to 12V	25mA	<1.0%	F04	0 to 400V	F04CT	0 to +/- 200V
F05/F05CT	0 to 12V	20mA	<0.1%	F05	0 to 500V	F05CT	0 to +/- 250V
F06/F06CT	0 to 12V	16mA	<0.1%	F06	0 to 600V	F06CT	0 to +/- 300V
F08/F08CT	0 to 12V	12.5mA	<0.1%	F08	0 to 800V	F08CT	0 to +/- 400V
F10/F10CT	0 to 12V	10mA	<0.1%	F10	0 to 1kV	F10CT	0 to +/- 500V
F12/F12CT	0 to 12V	8.3mA	<0.1%	F12	0 to 1.2kV	F12CT	0 to +/- 600V
F15/F15CT	0 to 12V	6.6mA	<0.1%	F15	0 to 1.5kV	F15CT	0 to +/- 750V
F20/F20CT	0 to 12V	5mA	<1.0%	F20	0 to 2kV	F20CT	0 to +/- 1kV
F30/F30CT	0 to 15V	3.3mA	<1.0%	F30	0 to 3kV	F30CT	0 to +/- 1.5kV
F40/F40CT	0 to 15V	2.5mA	<1.0%	F40	0 to 4kV	F40CT	0 to +/- 2kV
F50/F50CT	0 to 15V	2mA	<1.0%	F50	0 to 5kV	F50CT	0 to +/- 2.5kV
F60/F60CT	0 to 15V	1.66mA	<1.0%	F60	0 to 6kV	F60CT	0 to +/- 3kV
F70/F70CT	0 to 15V	1.5mA	<2.5%	F70	0 to 7kV	F70CT	0 to +/- 3.5kV
F80/F80CT	0 to 15V	1.25mA	<2.5%	F80	0 to 8kV	F80CT	0 to +/- 4kV

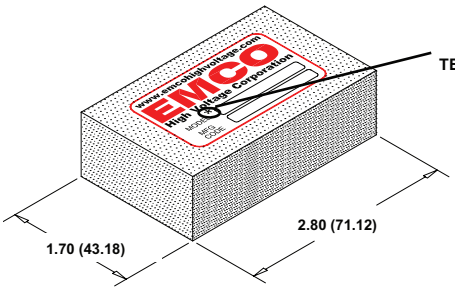
F-SERIES ELECTRICAL SPECIFICATIONS*3

PARAMETER	VALUE
INPUT VOLTAGE	0 TO 12V (F02 TO F20)
	0 TO 15V (F30 TO F80)
TURN-ON VOLTAGE	<0.7V
INPUT CURRENT	<500MA, NO LOAD
	<1.5A, FULL LOAD
ISOLATION	< +/-3.5kV BIAS (F02 TO F60)
	< +/-500V BIAS (F70 TO F80)
INPUT CAPACITANCE	~240uF
RESPONSE TIME	260 ms (typical)
OUTPUT VOLTAGE TOLERANCE	+/-5% (Full Load, 100% output voltage)
FREQUENCY	25 kHz TO 125 kHz
OPERATING TEMPERATURE*5	-10C to +70C (Case)
STORAGE TEMPERATURE	-25C to +90C

BLOCK DIAGRAM

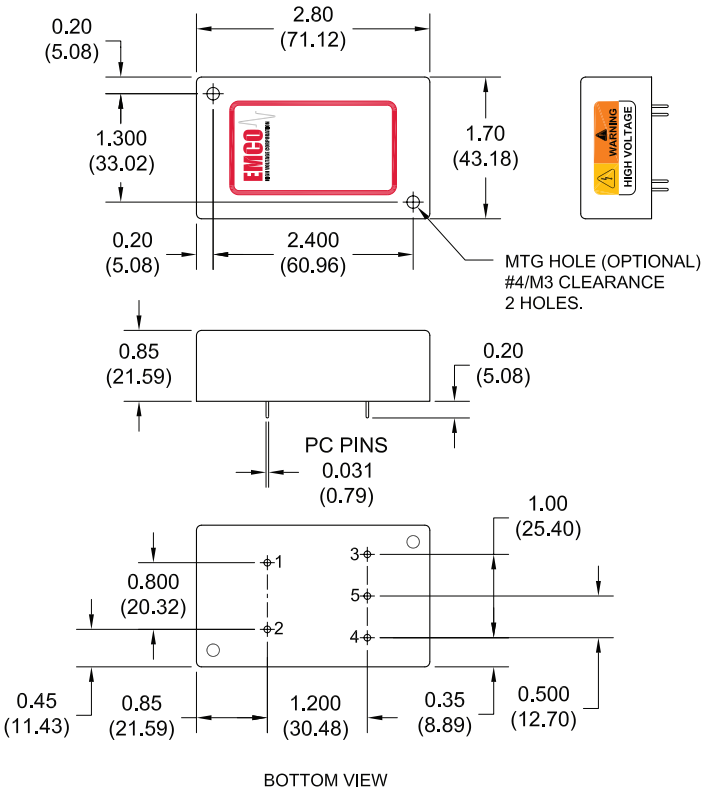


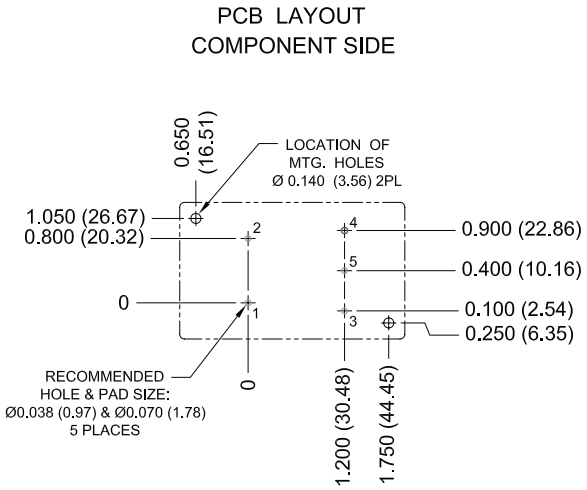
HOT SPOT CASE TEMPERATURE POINT



DIMENSIONS ARE IN INCHES (METRIC EQUIVALENTS ARE IN PARENTHESIS)
DIMENSIONAL TOLERANCES: .XX = ± 0.03 (0.76), .XXX = ± 0.005 (0.127)

MECHANICAL SPECIFICATIONS F02-F60





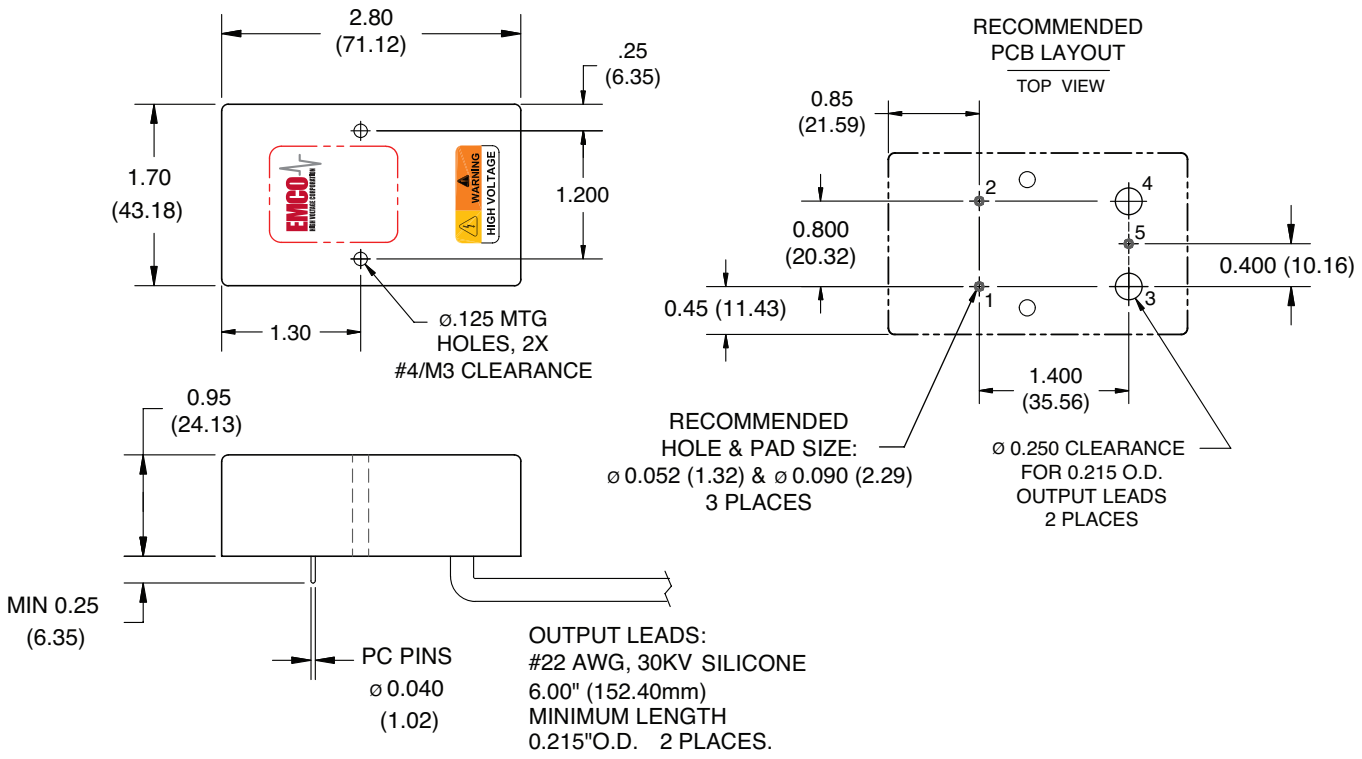
NOTE: CASE IS INTERNALLY CONNECTED TO (-) INPUT.

DIMENSIONS ARE IN INCHES (METRIC EQUIVALENTS ARE IN PARENTHESIS)
DIMENSIONAL TOLERANCES: .XX = ± 0.02 (0.51), .XXX = ± 0.005 (0.127)

PARAMETER	VALUE
WEIGHT	<5 OZ (142 GRAMS)
VOLUME	4.0 cu. In. (66.3 cc)
DIMENSIONS	2.8L (71.12L) x 1.7W (43.18W) x 0.85H (21.59H)
CASE MATERIAL	Black Anodized Aluminum

PIN #	FUNCTION
1	(+) Input
2	(-) Input
3	(+) Output
4	(-) Output
5	Center tap (optional)

MECHANICAL SPECIFICATIONS F70-F80



NOTE: CASE IS INTERNALLY CONNECTED TO (-) INPUT.

DIMENSIONS ARE IN INCHES (METRIC EQUIVALENTS ARE IN PARENTHESIS)
DIMENSIONAL TOLERANCES: .XX = ± 0.02 (0.51), .XXX = ± 0.005 (0.127)

PARAMETER	VALUE
WEIGHT	<5 OZ (142 GRAMS)
VOLUME	4.5 cu. In. (74.1cc)
DIMENSIONS	2.8L (71.12L) x 1.7W (43.18W) x 0.95H (24.13H)
CASE MATERIAL	Black Anodized Aluminum

PIN #	FUNCTION
1	(+) Input
2	(-) Input
3	(+) Output
4	(-) Output
5	Center tap (optional)

OPTION CODE TABLE

OPTION		ORDER CODE	MODELS
POLARITY	Positive / Negative reversible	Blank	ALL
	Bipolar center tap option	CT	ALL
OPTIONS	ROHS	R	ALL
	Mounting Holes	H	UP TO 6KV

HOW TO ORDER

PART NUMBER SELECTOR:

Model Number:

F30CTH

Model

Output Voltage (See table)

Mounting Hole (optional)

Center Tap

EXAMPLE: **F30CTH** (**F**-Model, **30**-Output Voltage, **CT**-Center Tap, **H**-Holes)

* Notes:

1. At maximum rated output voltage.
2. Output voltage is load dependent. Under light or no load conditions, reduce input voltage so maximum rated output voltage is not exceeded.
3. Specifications after 1 hour warm up, full load, at 25C unless otherwise indicated.
4. Ripple specification for center-tapped units applies to the voltage between the positive and negative output terminals.
5. Proper thermal management techniques are required to maintain safe case temperature at maximum power output

XP-EMCO reserves the right to make changes on products and literature, including specifications, without notice. XP-EMCO standard product models are not recommended for "copy-exact" applications or any other application restricting product changes. "Copy-exact" options are available. Please contact an XP-EMCO sales representative for more details.