

**Proven
Reliability**

F SERIES

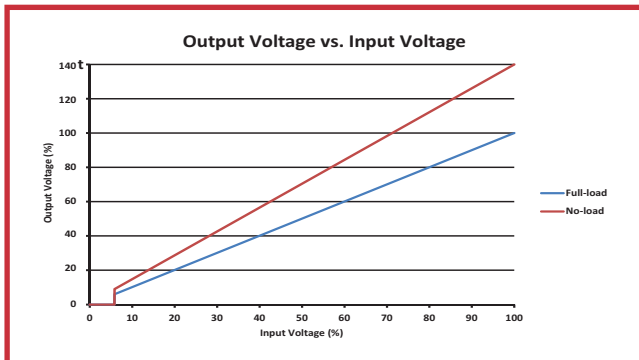
ISOLATED, PROPORTIONAL DC TO HV DC CONVERTERS

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. A dual output option with center-tap pin which, when grounded provides both 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

- Dual output (Center Tap) Models Available (CT Suffix)
- Mounting Holes (F02 thru F60 only)(H 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
- MTBF: >810K hrs per Bellcore TR-332
- RoHS Compliant



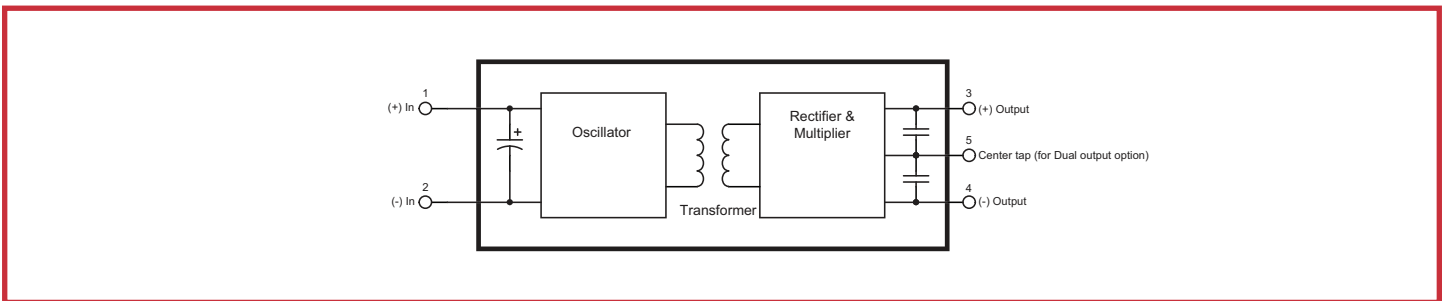
ELECTRICAL SPECIFICATIONS*2

MODELS	INPUT VOLTAGE	OUTPUT CURRENT	RIPPLE ⁴	REVERSIBLE MODEL	OUTPUT VOLTAGE	DUAL OUTPUT (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

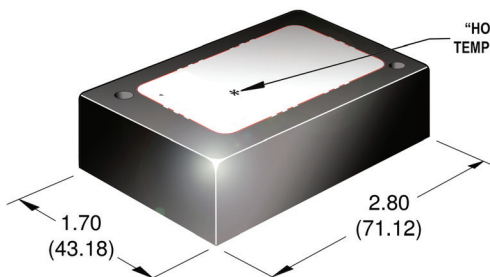
F-SERIES ELECTRICAL SPECIFICATIONS*3

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

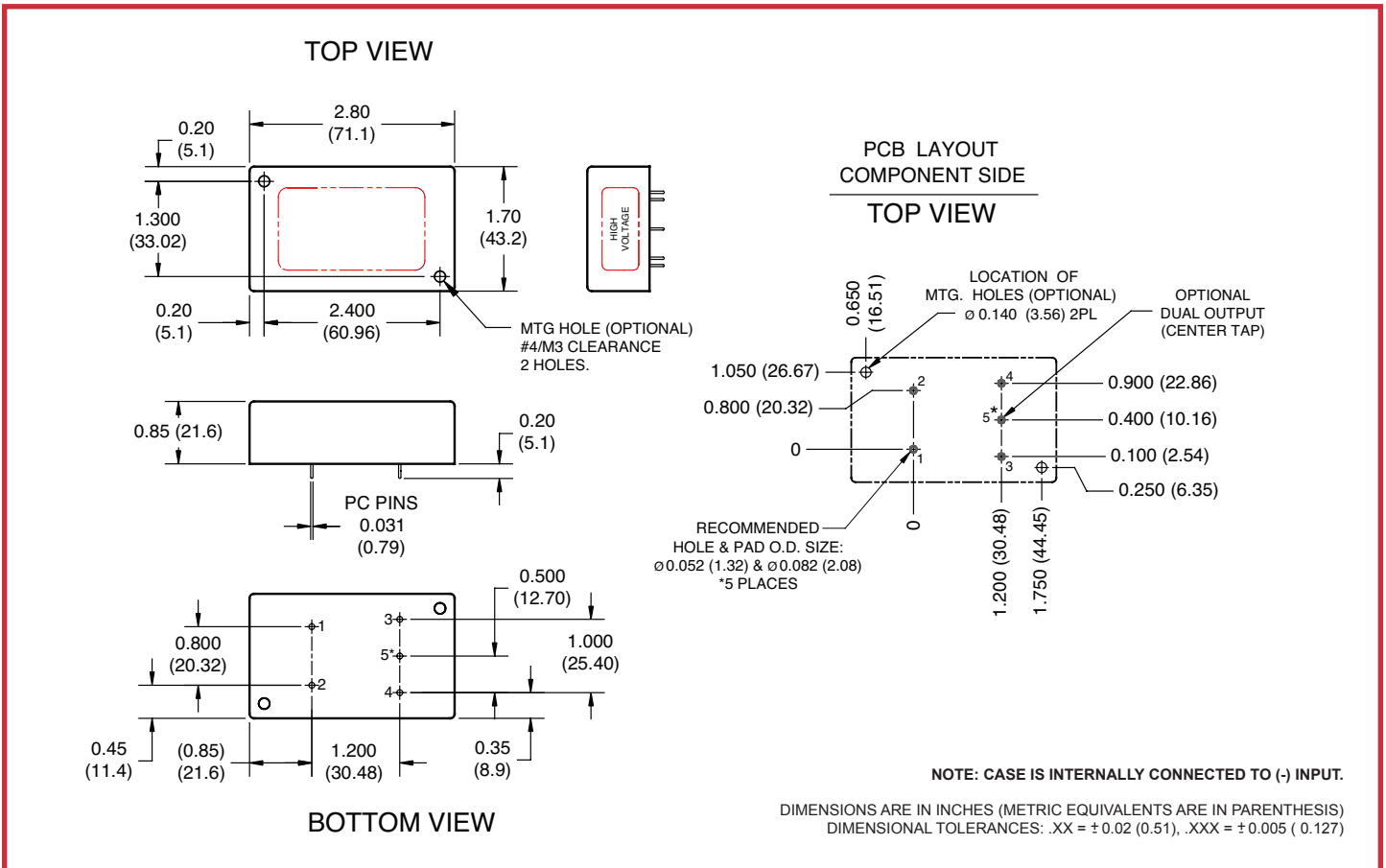


HOT SPOT CASE TEMPERATURE POINT



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

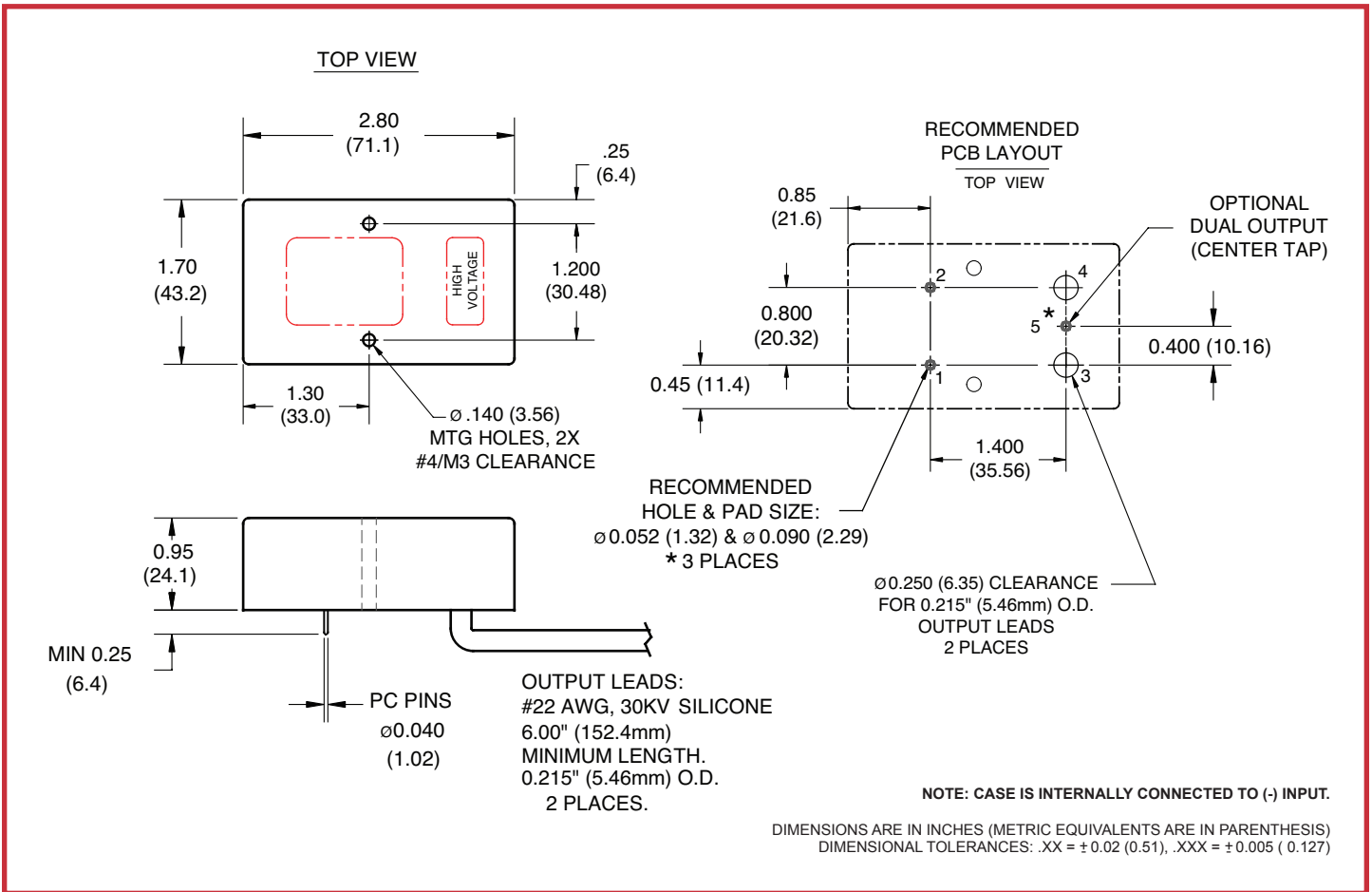
MECHANICAL SPECIFICATIONS F02-F60



PARAMETER	VALUE
WEIGHT	<5 OZ (142 GRAMS)
VOLUME	4.0 cu. In. (66.3 cc)
DIMENSIONS	2.80L (71.1L) x 1.70W (43.2W) x 0.85H (21.6H)
CASE MATERIAL	Black Anodized Aluminum

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

MECHANICAL SPECIFICATIONS F70-F80



PARAMETER	VALUE
WEIGHT	<5 OZ (142 GRAMS)
VOLUME	4.5 cu. in. (74.1cc)
DIMENSIONS	2.80L (71.12L) x 1.70W (43.18W) x 0.95H (24.13H)
CASE MATERIAL	Black Anodized Aluminum

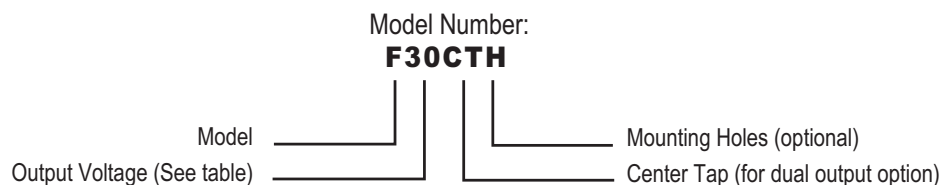
PIN #	FUNCTION
1	(+) Input
2	(-) Input
3	(+) Output
4	(-) Output
5	Dual Output/Center Tap (optional)

OPTION CODE TABLE

OPTION		ORDER CODE	MODELS
POLARITY	Positive / Negative reversible	Blank	ALL
	Dual Output (center tap) option	CT	ALL
OPTIONS	Mounting Holes	H	UP TO 6KV

HOW TO ORDER

PART NUMBER SELECTOR:



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 dual output 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

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