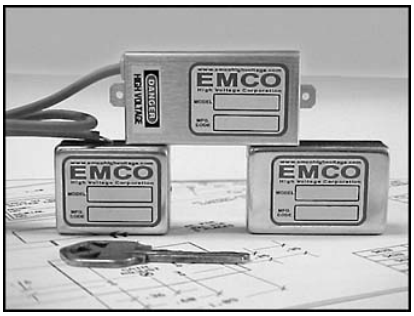
Miniature, Regulated High Voltage Power Supplies

0 TO ±100 THROUGH 0 TO ±8000 VDC @ 1 WATT
C SERIES

EMCO HIGH VOLTAGE CORPORATION

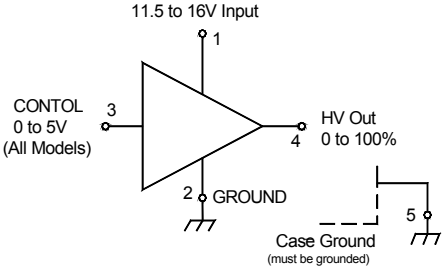


The C Series is a line of miniature, regulated high voltage power supplies. Each model is programmed from 0 to 100% of rated output via a 0 to +5 volt DAC compatible high impedance programming input voltage. Temperature drift is typically less than 50 PPM/°C. These modules exhibit very low ripple, noise, and EMI/RFI by utilizing a quasi-sinewave oscillator, shielded transformer, excellent filtering techniques and an isolated steel enclosure featuring a separate grounding pin. An externally accessible potentiometer provides adjustable gain trim allowing for individual calibration of units. Positive and negative outputs are standard, and delivery of small quantities is available from stock. Call, fax, or e-mail with your requirements for immediate attention. Technical assistance is readily available.

FEATURES
Low Ripple
Miniature Size
Regulated
0 To 100% Programmable Output
High Stability, Typically <50 PPM/° C
Wide Input Voltage Range, 11.5 To 16 V
Very Low EMI/RFI
MTBF:>2.6 million hrs per Bellcore TR-332 (model C10)
Steel Case With Isolated Case Ground
External Gain Adjust

OPTIONS
Epoxy: **A.** Low Outgassing (NASA approved per ASTM E-595-93)
B. UL 94 V0 flammability rating
RoHS(- 'R' suffix denotes the product is designed to meet RoHS requirements i.e C01R)

SCHEMATIC EQUIVALENT



ELECTRICAL SPECIFICATIONS
Input Voltage: 11.5 To 16 Volts
Input Current: *See Table*
Programming Voltage: 0 To +5 Volts, <100 µA
input capacitance: 10nF typical
Operating Temperature: -10° To +60° C
Storage Temperature: -20° To +90° C
Thermal Shock Limit: 1°C/10 Sec.
Case Sizes:
A: 1.40" x 1.10" x .50" (35.56 x 27.94 x 12.70mm)
B: 1.75" x 1.10" x .50" (44.45 x 27.94 x 12.70mm)
C: 2.10" x 1.10" x .50" (53.34 x 27.94 x 12.70mm)
D: 2.50" x 1.25" x .60" (63.50 x 31.75 x 15.24mm)

*Note 1. Output Current rated at Maximum Output Voltage.
2. Specifications after 1 hour warm-up, full load, + 25°C unless otherwise noted.
3. Post-wave solder installation recommended.

PRODUCT SELECTION TABLE

MODEL	OUTPUT VOLTAGE	OUTPUT*[1] CURRENT	RIPPLE P-P		INPUT CURRENT		REGULATION		CASE
			NO LOAD	FULL LOAD	NO LOAD	FULL LOAD	LOAD 0 TO 100%	LINE 11.5 TO 16.0V	
C01	0 to 100V	0 to 10 mA	<0.03 %	<0.75 %	<8 mA	<250 mA	<0.10 %	<0.10 %	A
C02	0 to 200V	0 to 5 mA	<0.02 %	<0.05 %	<15 mA	<225 mA	<0.10 %	<0.10 %	
C02N	0 to -200V	0 to 5 mA	<0.02 %	<0.05 %	<10 mA	<225 mA	<0.10 %	<1.00%	
C03	0 to 300V	0 to 3.3 mA	<0.0025 %	<0.03 %	<15 mA	<200 mA	<0.10 %	<0.10 %	
C05	0 to 500V	0 to 2 mA	<0.002 %	<0.004 %	<20 mA	<150 mA	<0.07 %	<0.10 %	
C05N	0 to -500V	0 to 2 mA	<0.005 %	<0.005 %	<25 mA	<185 mA	<0.50 %	<0.50 %	
C06	0 to 600V	0 to 1.67 mA	<0.001 %	<0.003 %	<30 mA	<150 mA	<0.10 %	<0.10 %	
C06N	0 to -600V	0 to 1.67 mA	<0.007%	<0.003%	<30 mA	<185 mA	<0.75 %	<0.75%	
C10	0 to 1,000V	0 to 1 mA	<0.004 %	<0.005 %	<50 mA	<150 mA	<0.30 %	<0.30 %	
C10N	0 to -1,000V	0 to 1 mA	<0.001 %	<0.002 %	<35 mA	<185 mA	<0.50 %	<0.30 %	
C12	0 to 1,250V	0 to 1 mA	<0.002 %	<0.004 %	<35 mA	<170 mA	<0.10 %	<0.10 %	
C12N	0 to -1,250V	0 to 1 mA	<0.002 %	<0.003 %	<50 mA	<190 mA	<.175 %	<0.10 %	
C15	0 to 1,500V	0 to 0.67 mA	<0.001 %	<0.002 %	<50 mA	<150 mA	<0.10 %	<0.10 %	
C15N	0 to -1,500V	0 to 0.67 mA	<0.001 %	<0.002 %	<60 mA	<185 mA	<0.20 %	<0.20 %	
C20	0 to 2,000V	0 to 0.5 mA	<0.001 %	<0.002 %	<50 mA	<150 mA	<0.15 %	<0.10 %	
C20N	0 to -2,000V	0 to 0.5 mA	<0.002 %	<0.002 %	<70 mA	<190 mA	<0.15 %	<0.10 %	
C25	0 to 2,500V	0 to 0.4 mA	<0.025 %	<0.10 %	<40mA	<150mA	<0.30 %	<0.20 %	B
C25N	0 to -2,500V	0 to 0.4 mA	<0.02 %	<0.20 %	<50mA	<185mA	<0.50 %	<0.20 %	
C30	0 to 3,000V	0 to 0.33 mA	<0.02 %	<0.10%	<60 mA	<180 mA	<0.30 %	<0.05 %	
C30N	0 to -3,000V	0 to 0.33 mA	<0.02 %	<0.20 %	<75 mA	<200 mA	<0.30 %	<0.075 %	
C40	0 to 4,000V	0 to 0.25 mA	<0.025 %	<0.10 %	<70 mA	<150 mA	<0.25 %	<0.20 %	
C40N	0 to -4,000V	0 to 0.25 mA	<0.03 %	<0.10 %	<85 mA	<200 mA	<0.20 %	<0.10 %	
C50	0 to 5,000V	0 to 0.200 mA	<0.1 %	<0.10 %	<80 mA	<200 mA	<0.35%	<0.10 %	C
C50N	0 to -5,000V	0 to 0.200 mA	<0.1 %	<0.10 %	<80 mA	<200 mA	<0.25%	<0.10 %	
C60	0 to 6,000V	0 to 0.166 mA	<0.1 %	<0.10 %	<100 mA	<200 mA	<0.25%	<0.10 %	
C60N	0 to -6,000V	0 to 0.166 mA	<0.1 %	<0.10%	<100 mA	<225 mA	<0.25%	<0.15 %	
C80	0 to 8,000V	0 to 0.125 mA	<0.2 %	<0.20%	<100 mA	<250 mA	<0.75%	<0.15 %	D
C80N	0 to -8,000V	0 to 0.125 mA	<0.2 %	<0.20 %	<100 mA	<250 mA	<0.75%	<0.25 %	

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e-mail sales@emcohighvoltage.com
Web site www.emcohighvoltage.com
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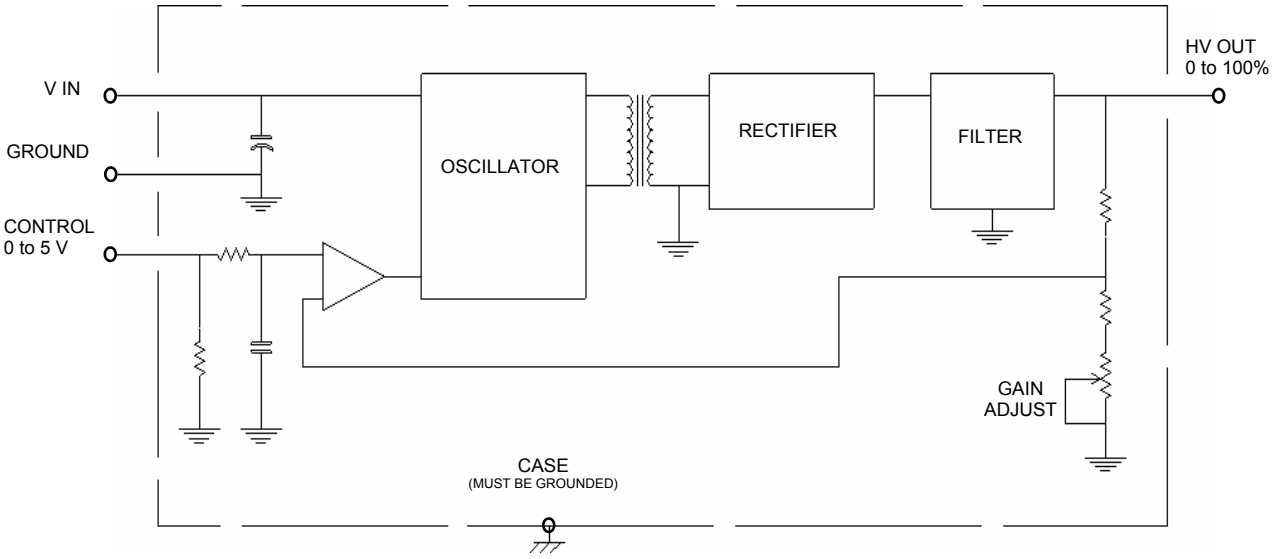
FUNCTIONAL BLOCK DIAGRAM

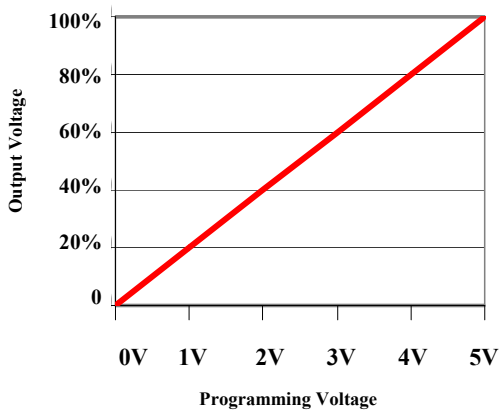


TYPICAL PERFORMANCE

MODEL	INTERNAL OSCILLA-FREQUENCY	% TRIM GAIN ADJUST	CONTROL RESPONSE TIME ON	CONTROL RESPONSE TIME OFF[1]
C01	200 - 250kHz	10 %	2 ms	1.5 ms
C02	250 - 350kHz	11 %	3.5 ms	4 ms
C02N	75 - 150kHz	5 %	30 ms	35 ms
C03	200 - 300kHz	10 %	16 ms	12 ms
C05	250 - 350kHz	10 %	25 ms	35 ms
C05N	200 - 350kHz	11 %	30 ms	30 ms
C06	250 - 300kHz	12 %	30 ms	35 ms
C06N	125 - 200kHz	12 %	25 ms	35 ms
C10	200 - 250kHz	7 %	60 ms	80 ms
C10N	100 - 125kHz	7 %	70 ms	70 ms
C12	100 - 125kHz	8 %	60 ms	100 ms
C12N	75 - 100kHz	8 %	80 ms	100 ms
C15	75 - 125kHz	10 %	50 ms	120 ms
C15N	75 - 100kHz	10 %	60 ms	140 ms
C20	125 - 150kHz	5 %	100 ms	300 ms
C20N	75 - 100kHz	5 %	140 ms	500 ms
C25	125 - 150kHz	9 %	35 ms	35 ms
C25N	125 - 150kHz	9 %	35 ms	35 ms
C30	75 - 100kHz	9 %	35 ms	120 ms
C30N	75 - 100kHz	10 %	60 ms	140 ms
C40	50 - 125kHz	6 %	90 ms	160 ms
C40N	75 - 100kHz	6 %	160 ms	160 ms
C50	75 - 150kHz	5 %	140 ms	200 ms
C50N	125 - 175kHz	5 %	140 ms	180 ms
C60	125 - 175kHz	5 %	100 ms	250 ms
C60N	125 - 175kHz	5 %	60 ms	60 ms
C80	100 - 150kHz	10 %	200 ms	250 ms
C80N	100 - 150kHz	10 %	200 ms	250 ms

NOTES: [1]OFF TIME MEASURED USING RESISTIVE LOAD.

C Series
Output Voltage vs. Programming Voltage



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Now up to 8kV!
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Cost Effective
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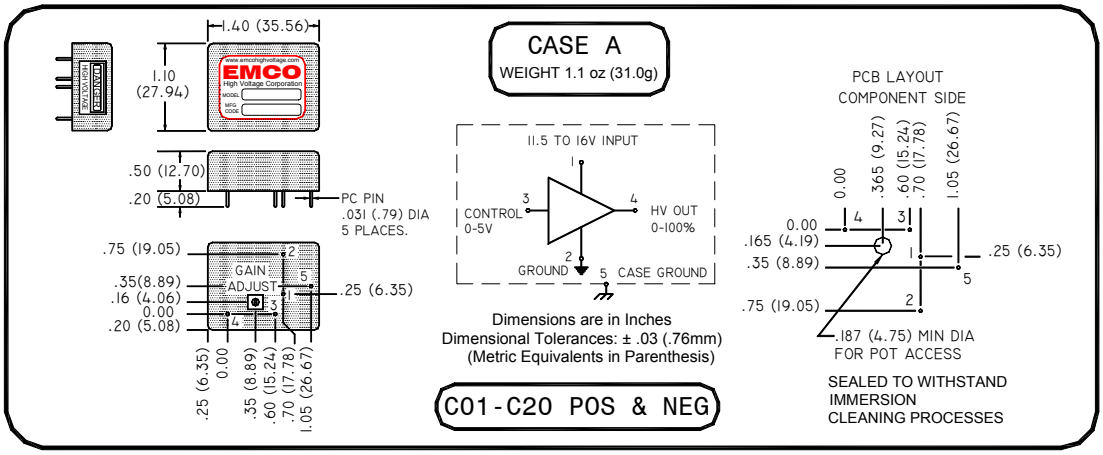

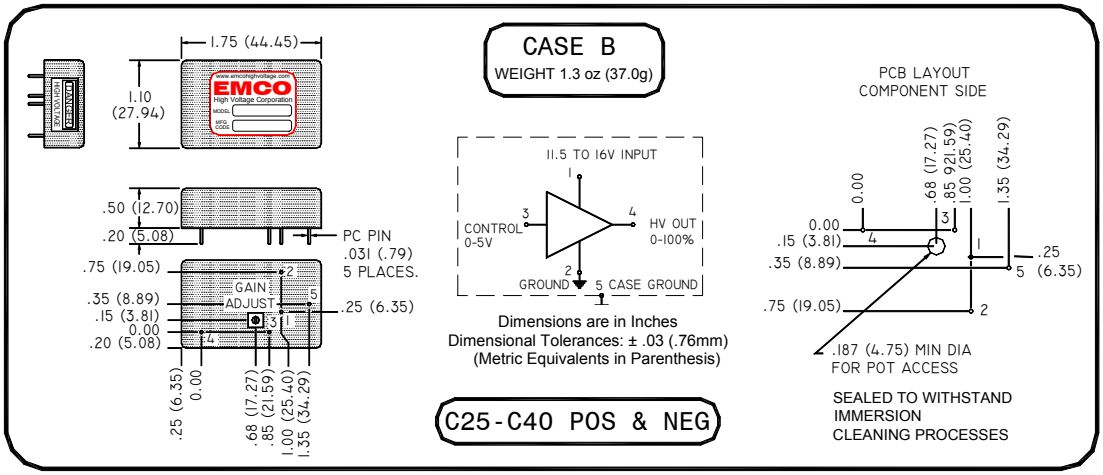

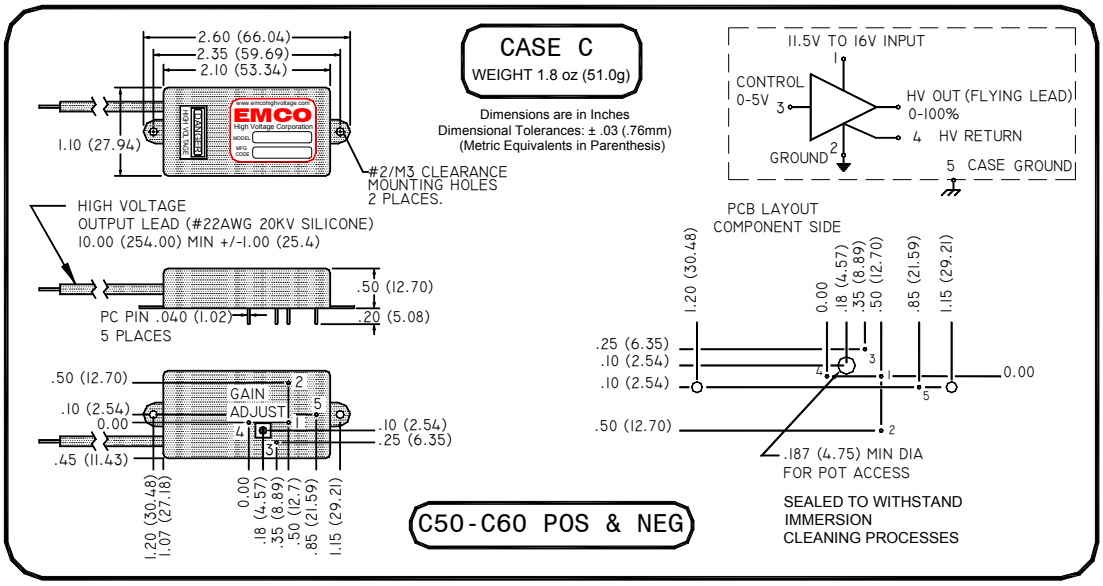

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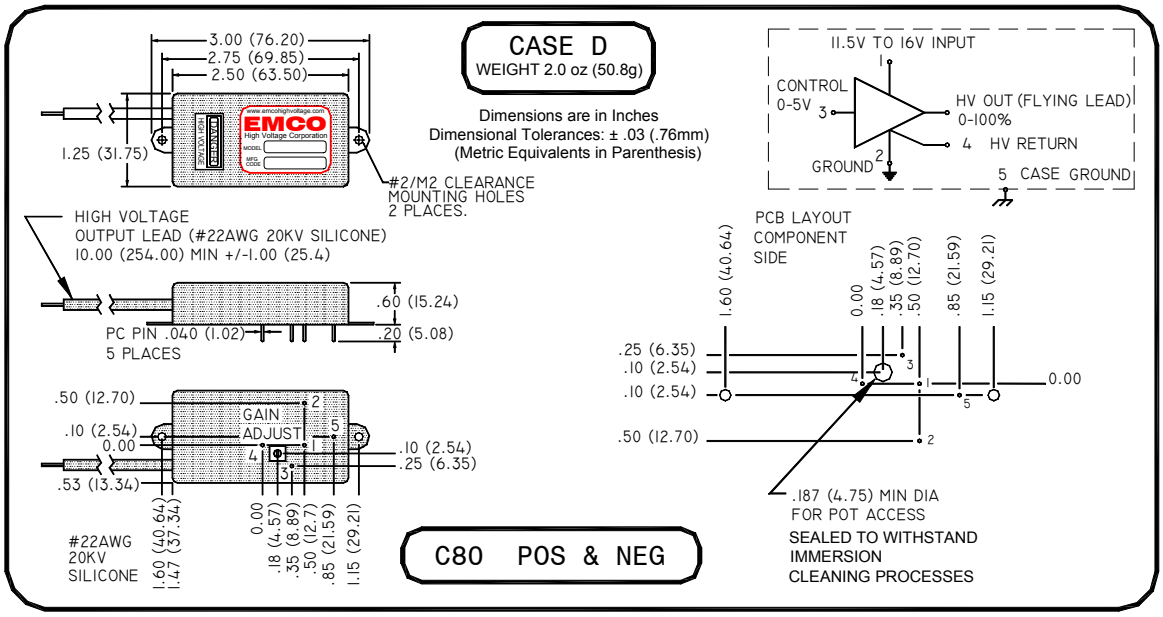
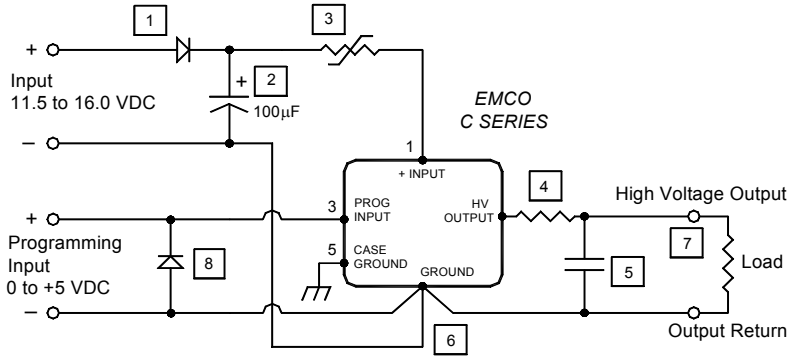


Improved Performance and Protection



1 Diode provides reverse polarity protection.

2 Capacitor reduces ripple.

3 Resettable fuse (Raychem P/N RXE020,025 or 030) provides indefinite short circuit protection. *Selection depends on model used, load characteristics and operating temperature range.*

4 Series resistance increases arc protection and reduces ripple (when used with an output capacitor).

5 Capacitor reduces ripple.

6 IMPORTANT: Keep Input, Programming and Output return paths separate to eliminate ground loop accuracy errors.

7 Conformal coating recommended on all exposed high voltage conductors.

8 Diode provides protection against negative programming voltage or negative transient spike.

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