

Miniature, Regulated High Voltage Power Supplies

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

www.emcohighvoltage.com
EMCO
High Voltage Corporation



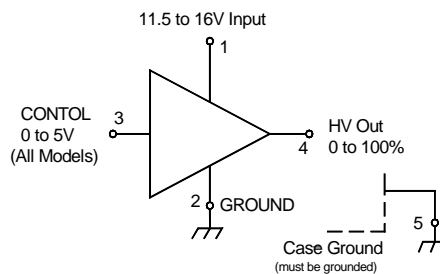
The C Series is a line of miniature, regulated high voltage power supplies. The output voltage is programmable via a 0 to +5 volt control voltage. Temperature drift is typically less than 50 PPM/°C. These modules exhibit very low ripple, noise, and EMI/RFI by utilizing a quasi-sinewave oscillator, shielded 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
- Steel Case With Isolated Case Ground

SCHEMATIC EQUIVALENT



ELECTRICAL SPECIFICATIONS

- Input Voltage: 11.5 To 16 Volts
- Input Current: See Table
- Programming Voltage: 0 To +5 Volts, <100 μ A
- 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)

- *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 instillation 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 % | <0.007 % | <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 % | |
| 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 % | |
| 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 % | |
| C80N | 0 to -8,000V | 0 to 0.125 mA | <0.2 % | <0.20 % | <100 mA | <250 mA | <0.75% | <0.25 % | |

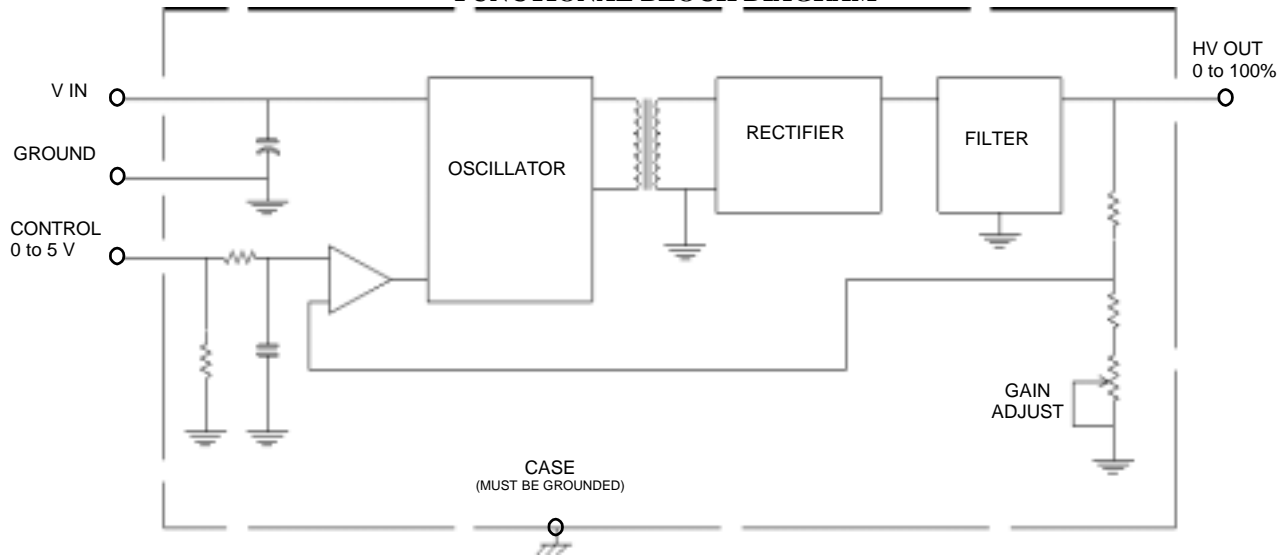
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FUNCTIONAL BLOCK DIAGRAM

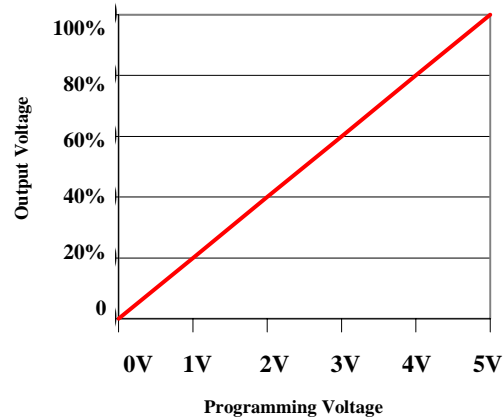


TYPICAL PERFORMANCE

| MODEL | INTERNAL FREQUENCY | % TRIM GAIN ADJUST | CONTROL RESPONSE TIME | |
|-------|--------------------|--------------------|-----------------------|------------------|
| | | | ON | OFF ¹ |
| C01 | 200 KHZ - 250 KHZ | 10 % | 2 ms | 1.5 ms |
| C02 | 250 KHZ - 334 KHZ | 11 % | 3.5 ms | 4 ms |
| C02N | 91 KHZ - 143 KHZ | 5 % | 30 ms | 35 ms |
| C03 | 200 KHZ - 285 KHZ | 10 % | 16 ms | 12 ms |
| C05 | 250 KHZ - 334 KHZ | 10 % | 25 ms | 35 ms |
| C05N | 200KHZ - 334 KHZ | 11 % | 30 ms | 30 ms |
| C06 | 250 KHZ - 285 KHZ | 12 % | 30 ms | 35 ms |
| C06N | 142 KHZ - 200 KHZ | 12 % | 25 ms | 35 ms |
| C10 | 200 KHZ - 250 KHZ | 7 % | 60 ms | 80 ms |
| C10N | 111 KHZ - 125 KHZ | 7 % | 70 ms | 70 ms |
| C12 | 100 KHZ - 125 KHZ | 8 % | 60 ms | 100 ms |
| C12N | 91 KHZ - 100 KHZ | 8 % | 80 ms | 100 ms |
| C15 | 91 KHZ - 111 KHZ | 10 % | 50 ms | 120 ms |
| C15N | 91 KHZ to 100 KHZ | 10 % | 60 ms | 140 ms |
| C20 | 125 KHZ - 142 KHZ | 5 % | 100 ms | 300 ms |
| C20N | 91 KHZ - 100 KHZ | 5 % | 140 ms | 500 ms |
| C25 | 125 KHZ - 142 KHZ | 9 % | 35 ms | 35 ms |
| C25N | 125 KHZ - 142 KHZ | 9 % | 35 ms | 35 ms |
| C30 | 77 KHZ - 100 KHZ | 9 % | 35 ms | 120 ms |
| C30N | 84 KHZ - 91 KHZ | 10 % | 60 ms | 140 ms |
| C40 | 72 KHZ - 125 KHZ | 6 % | 90 ms | 160 ms |
| C40N | 77 KHZ - 100 KHZ | 6 % | 160 ms | 160 ms |
| C50 | 90 KHZ - 145 KHZ | 5 % | 140 ms | 200 ms |
| C50N | 140 KHZ - 170 KHZ | 5 % | 140 ms | 180 ms |
| C60 | 125 KHZ - 160 KHZ | 5 % | 100 ms | 250 ms |
| C60N | 140 KHZ - 170 KHZ | 5 % | 60 ms | 60 ms |
| C80 | 100 KHZ - 150 KHZ | 10 % | 200 ms | 250 ms |
| C80N | 100 KHZ - 150 KHZ | 10 % | 200 ms | 250 ms |

NOTES: ¹OFF TIME MEASURED USING RESISTIVE LOAD.

C Series
Output Voltage vs. Programming Voltage

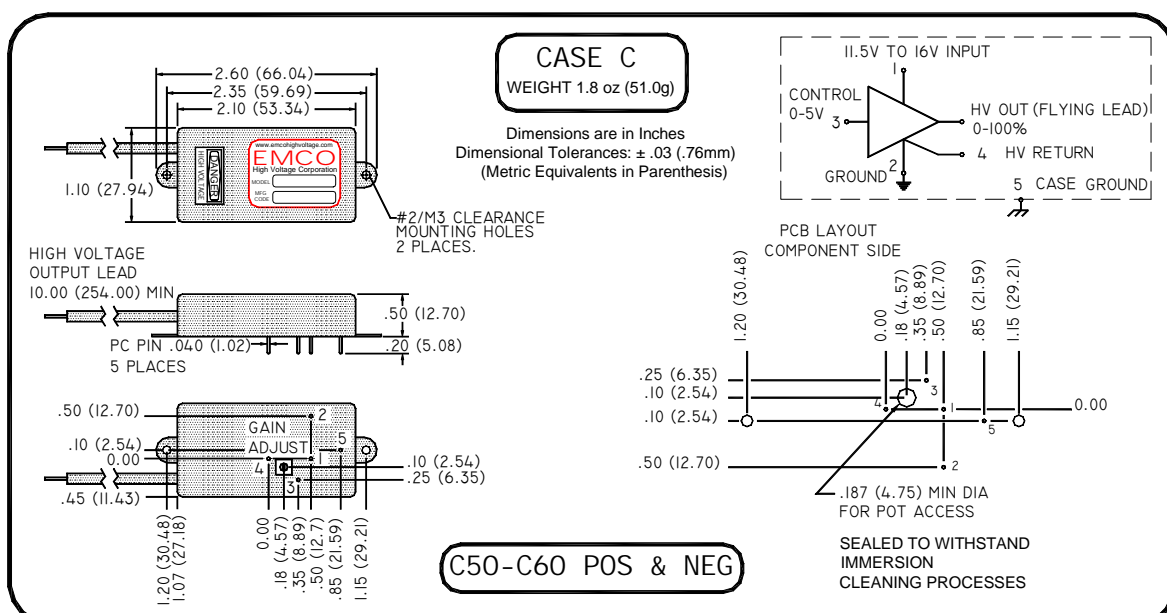
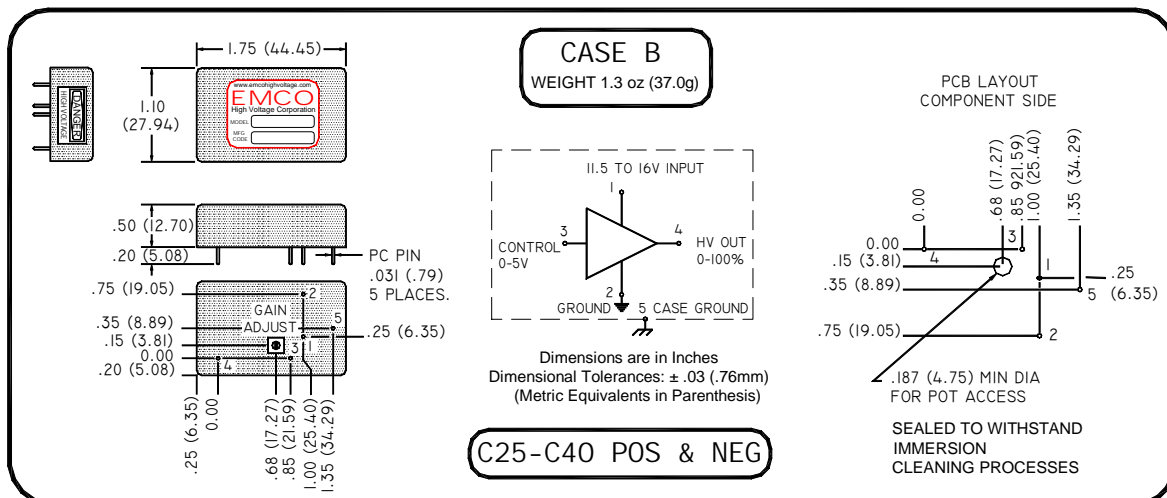
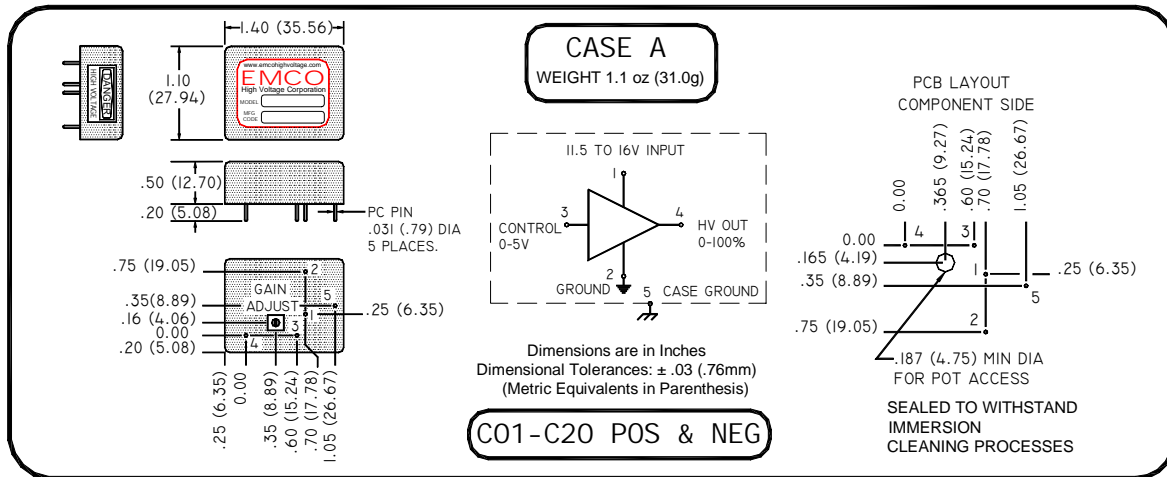


Each model is programmed from 0 to 100% of rated output via a 0 to +5V programming voltage.

Now up to 8kV!
Miniature, Regulated,
Cost Effective
HV Supplies

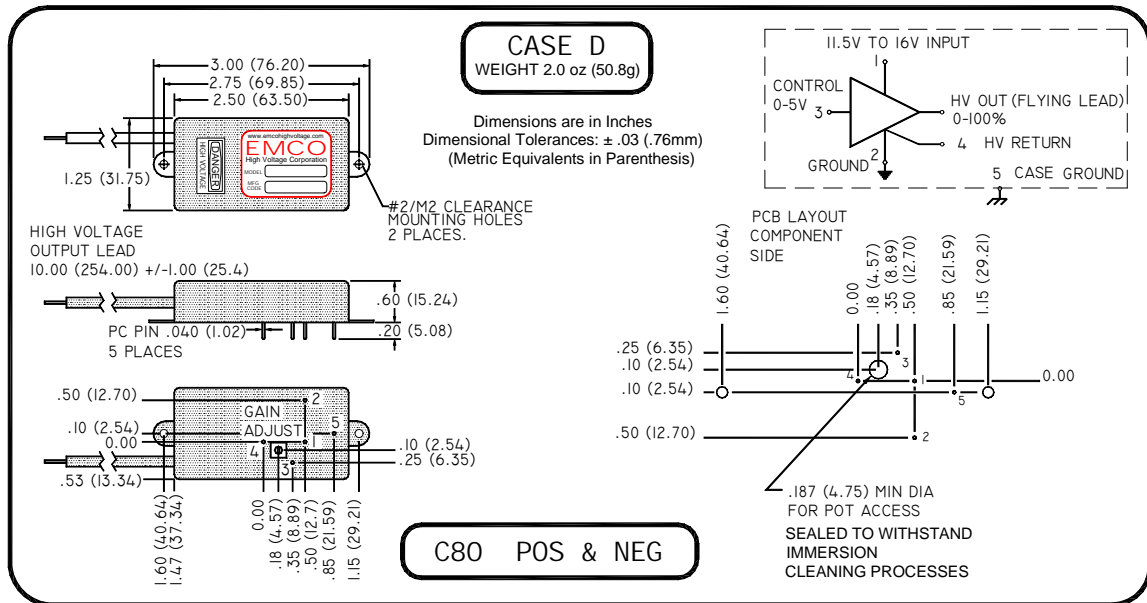
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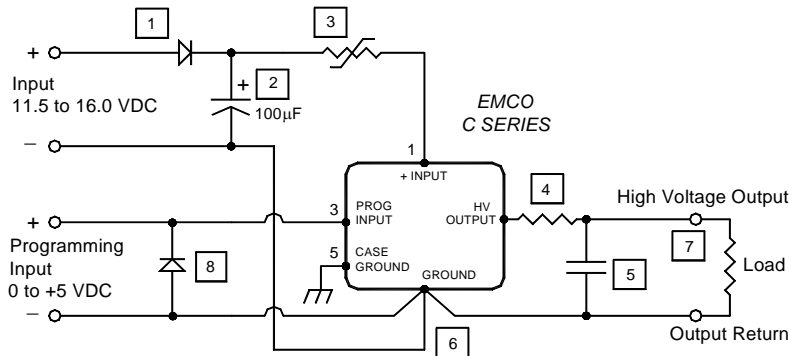


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Improved Performance and Protection



- 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.