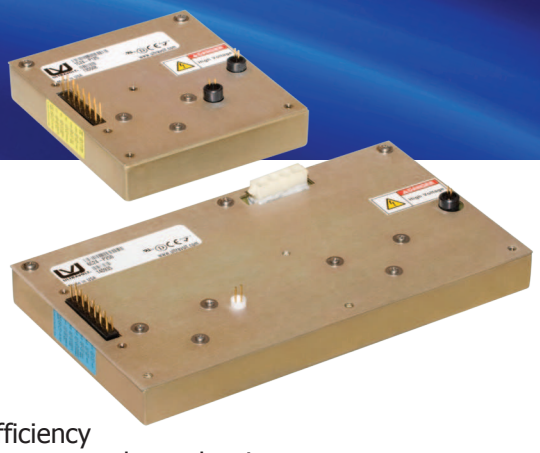
# HIGH POWER C SERIES

## High Voltage Cap-Charging Supply



This High Power line of high-voltage regulated DC to DC converters is an extension of the C Series, directly addressing the high power density needs of >30 watt applications. High Power C units provide up to 60/125/250 watts. This high power density is especially suited to high-energy systems with large capacitances, fast repetition rates, or high continuous-DC-power requirements. See Application Note 10 for more charging information. Typical applications for the High Power C Series include the following: laser, cap-charging, pulsed power, pulse generator, and test equipment.

- 7 models from 0 to 125 Volts through 0 to 6kV
- 60, 125, or 250 watts of output power
- Maximum Iout capability down to 0 Volts
- Maximum Iout during charge/rise time
- Output short-circuit protection
- Very fast rise with very low overshoot
- High efficiency
- High power to voltage density
- Very low profile
- Output current & voltage monitors
- >200,000 hour MTBF @65°C
- Fixed-frequency, low-stored-energy design
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

| PARAMETER | CONDITIONS | | | | | | | | | | | | | | | | | | | | | | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INPUT** | | **ALL TYPES** | | | | | | | | | | | | | | | | | | | | | |
| Voltage Range | Full Power | + 23 to 30 | | | | | | | | | | | | | | | | | | | | | VDC |
| Voltage Range | Derated Power Range | + 11 to 32 | | | | | | | | | | | | | | | | | | | | | VDC |
| Current | Standby / Disable | < 40 | | | | | | | | | | | | | | | | | | | | | mA |
| Current | Max Load, Max Eout | 60W: 3, 125W: 6 250W: 12 | | | | | | | | | | | | | | | | | | | | | A |
| Current | No Load, Max Eout | 1/8C to 1C: < 300, 2C to 6C: < 500 | | | | | | | | | | | | | | | | | | | | | mA |
| AC Ripple Current | Nominal Input, Full Load | < 50 | | | | | | | | | | | | | | | | | | | | | mA p-p |
| **OUTPUT** | | **1/8C** | | | **1/4C** | | | **1/2C** | | | **1C** | | | **2C** | | | **4C** | | | **6C** | | | |
| Voltage Range | Nominal Input | 0 to 125 | | | 0 to 250 | | | 0 to 500 | | | 0 to 1,000 | | | 0 to 2,000 | | | 0 to 4,000 | | | 0 to 6,000 | | | VDC |
| Power | Nominal Input, Max Eout | 60 | 125 | 250 | 60 | 125 | 250 | 60 | 125 | 250 | 60 | 125 | 250 | 60 | 125 | 250 | 60 | 125 | 250 | 60 | 125 | 250 | Watts |
| Current | Iout, Entire Output Voltage Range | 480 | 1000 | 2000 | 240 | 500 | 1000 | 120 | 250 | 500 | 60 | 125 | 250 | 30 | 62 | 125 | 15 | 31 | 62 | 10 | 21 | 42 | mA |
| Current Scale Factor | Full Load | 400 | 833 | 1667 | 200 | 417 | 833 | 109 | 208 | 417 | 50 | 114 | 227 | 26 | 52 | 104 | 11.5 | 26 | 52 | 6.2 | 17.7 | 35 | mA/V |
| Voltage Monitor Scaling | | 100:1 ±2% into 10MΩ | | | | | | | | | | | | | | | | | | | | | - |
| Ripple | Full Load, Max Eout, Cload ≥0.5uF | < 1.0 | | | | | | | | | | | | | | | | | | | | | %V p-p |
| Overshoot | C Load, 0 Eout to Full Eout | < 1 | | | | | | | | | | | | | | | | | | | | | %V pk |
| Rise Time | Max Iout, Various C Loads & Eout | Figure A | | | | | | | | | | | | | | | | | | | | | - |
| Storage Capacitance | Internal | 0.90 | 0.90 | 1.80 | 0.90 | 0.90 | 1.80 | 0.43 | 0.43 | 0.85 | 0.019 | 0.019 | 0.038 | 0.019 | 0.019 | 0.038 | 0.013 | 0.013 | 0.026 | 0.013 | 0.013 | 0.026 | uF |
| Line Regulation | Nom. Input, Max Eout, Full Power | < 0.01% | | | | | | | | | | | | | | | | | | | | | VDC |
| Static Load Regulation | No Load to Full Load, Max Eout | < 0.01% | | | | | | | | | | | | | | | | | | | | | VDC |
| Stability | 30 Min. warmup, per 8 hr/ per day | < 0.01% / < 0.02% | | | | | | | | | | | | | | | | | | | | | VDC |
| **PROGRAMMING & CONTROLS** | | **ALL TYPES** | | | | | | | | | | | | | | | | | | | | | |
| Input Impedance | Nominal Input | + Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref | | | | | | | | | | | | | | | | | | | | | MΩ |
| Adjust Resistance | Typical Potentiometer Values | 10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust) | | | | | | | | | | | | | | | | | | | | | Ω |
| Adjust Logic | 0 to +5 for +Out, +5 to 0 for - Out | +4.64 VDC for +Output or +0.36 for -Output = Nominal Eout | | | | | | | | | | | | | | | | | | | | | - |
| Output Voltage & Impedance | T=+25°C | + 5.00VDC ± 2%, Zout = 464Ω ± 1% | | | | | | | | | | | | | | | | | | | | | - |
| Enable/Disable (ON/OFF) | | 0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable) | | | | | | | | | | | | | | | | | | | | | VDC |
| **ENVIRONMENTAL** | | **ALL TYPES** | | | | | | | | | | | | | | | | | | | | | |
| Operating | Full Load, Max Eout, Case Temp. | -40 to +65 | | | | | | | | | | | | | | | | | | | | | °C |
| Coefficient | Over the Specified Temperature | ±50 | | | | | | | | | | | | | | | | | | | | | PPM/°C |
| Thermal Shock | Mil-Std 810, Method 503-4, Proc. II | -40 to +65 | | | | | | | | | | | | | | | | | | | | | °C |
| Storage | Non-Operating, Case Temp. | -55 to +105 | | | | | | | | | | | | | | | | | | | | | °C |
| Humidity | All Conditions, Standard Package | 0 to 95% non-condensing | | | | | | | | | | | | | | | | | | | | | - |
| Altitude | Standard Package, All Conditions | Sea Level through 70,000 | | | | | | | | | | | | | | | | | | | | | ft |
| Shock | Mil-Std-810, Method 516.5, Proc. IV | 20 | | | | | | | | | | | | | | | | | | | | | G's |
| Vibration | Mil-Std-810, Method 514.5, Fig.514.5C-3 | 10 | | | | | | | | | | | | | | | | | | | | | G's |

Specifications are subject to change without notice.

C = uF
V = Volts
I = mA
T = mS

$$T = \frac{C \times V}{I}$$

C = uF
V = kV
I = mA
F = Hz

$$I = C \times V \times F$$

C = uF
V = kV
I = mA
F = Hz

$$F = \frac{I}{C \times V}$$

C = uF
E² = kV
J = Ws

$$J = \frac{C \times E^2}{2}$$

Figure A - Rise Time Formulas

NOTE: Capacitance must include HVPS internal Capacitance.

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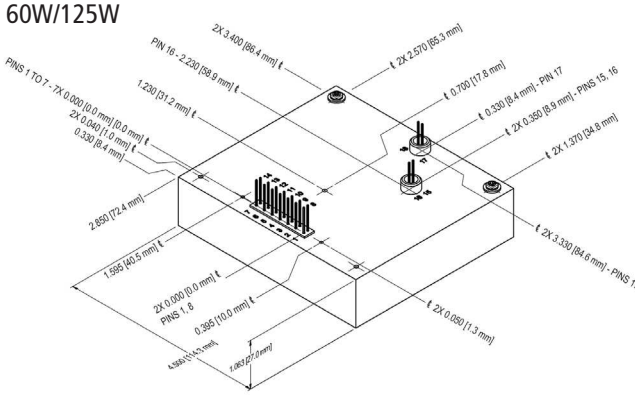
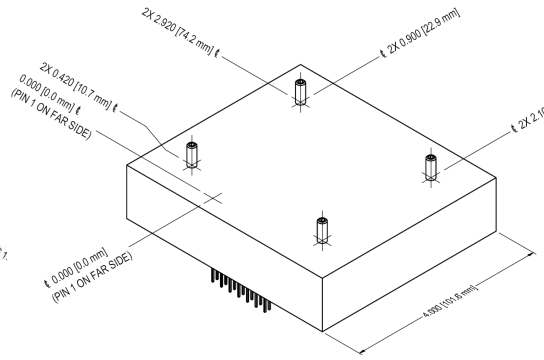
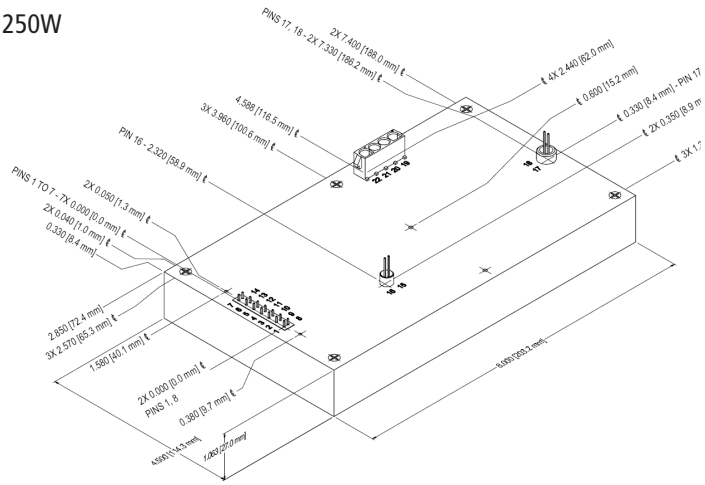
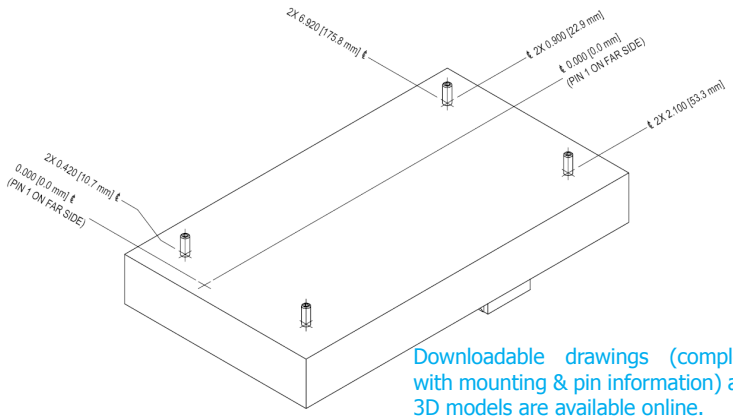
60W/125W




250W




Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

### CONSTRUCTION

Epoxy-filled Aluminum Box
Chem film per MIL-A-8625 Type II (Anodizing)

### SIZE

Volume:
60W/125W: 19.35in$^3$ (317cc)
250W: 38.7in$^3$ (634cc)
Weight:
60W/125W: 1.4 lbs (.64kg)
250W: 2.6 lbs (1.18kg)

### TOLERANCE

Overall ±0.025" (0.64)
Pin to Pin ±0.015" (0.38)
Hole to Hole location ±0.025" (0.64)

| CONNECTIONS | |
|---|---|
| PIN | FUNCTION |
| 1 & 8 | Input Power Ground Return |
| 2 & 9 | Positive Power Input |
| 3 | Iout Monitor |
| 4 | Enable/Disable |
| 5 | Signal Ground Return |
| 6 | Remote Adjust Input |
| 7 | +5VDC Reference Output |
| 10, 11, 12, & 13 | N/C |
| 14 | Eout Monitor |
| 15 & 16 | HV Ground Return |
| 17 & 18 | HV Output |

All grounds joined internally. Power-supply mounting points isolated from internal grounds by >100kΩ, .01uF / 50V (Max).

| HIGH POWER PIN CONNECTIONS (250 WATT UNITS) | |
|---|---|
| PIN | FUNCTION |
| 2, 9, & 10 | N/C |
| 19 & 20 | Positive Power Input |
| 21 & 22 | Input Power Ground Return |

CE cULus D
IEC-60950-1

RoHS COMPLIANT Non-RoHS compliant units are available. Please contact the factory for more information.

| ORDERING INFORMATION | | |
|---|---|---|
| Type | 0 to 125 VDC Output | 1/8C |
| | 0 to 250 VDC Output | 1/4C |
| | 0 to 500 VDC Output | 1/2C |
| | 0 to 1,000 VDC Output | 1C |
| | 0 to 2,000 VDC Output | 2C |
| | 0 to 4,000 VDC Output | 4C |
| | 0 to 6,000 VDC Output | 6C |
| Input | 24VDC Nominal | 24 |
| Polarity | Positive Output | -P |
| | Negative Output | -N |
| Power | 60 Watts Output | 60 |
| | 125 Watts Output | 125 |
| | 250 Watts Output | 250 |
| Heat Sink | .400" High (sized to fit case) | -H |
| PCB Support | (5 or 7) 0.187" standoffs on top cover | -Z11 |
| Enhanced Interface | 5V Control and Monitors | -I5 |
| | 10V Control and Monitors | -I10 |

Note: For more information on the enhanced interface options, download the I5/I10 Option datasheet.

Example: 1/2C24-P125
Type — Voltage — Model — Input — Power — Polarity

Popular accessories ordered with this product include CONN-KIT-HP250, CONN-KIT-HP and the BR-8 mounting bracket kit.

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PROUDLY MADE IN THE USA



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