Advanced Energy®

ULTRAVOLT® BIPOLAR HIGH POWER C SERIES

DUAL-OUTPUT HIGH VOLTAGE POWER SUPPLIES



DC-to-HVDC dual-output high voltage cap-charging modules

The bipolar C series line of regulated DC-to-DC high voltage converters is an extension of the high power C series. Bipolar C series units contain a pair of + and - standard-product, 60 or 125 W high power C series assemblies, providing a total of 125 or 250 W. By encapsulating a module pair within one case, the cost of testing, potting, burn-in, and system integration is reduced.

The ± HV output pair is packaged in UltraVolt's 11.4 cm x 20.3 cm x 2.8 cm (4.5″ x 8″ x 1.1″) standard case. This high power density is especially suited to high-energy pulsers, amplifiers, and discharge devices with large capacitance, fast repetition rates, or high current loads.

Features

- 125 or 250 W total output power
- Dual, independently controlled outputs
- Output current and voltage monitors
- High efficiency
- Maximum Iout capability down to 0 V
- Low profile
- Fast T_{rise} with very low overshoot
- High power to voltage density
- > 200,000 h MTBF at 65°C
- Output short circuit protection
- Fixed-frequency, low stored energy design
- UL/cUL recognized component; CE mark (LVD and RoHS)

Typical Applications

- Cap-charging
- Pulsed power
- Ultrasound
- Amplifiers
- Pulse generators
- Lasers
- Electro-optics
- HV pulse generator bias
- HV amplifier bias

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	125 W: 3, 250 W: 6															A
Current	No Load, Max Eout	1/8C to 1C: < 600 2C to 6C: < 1000															mA
AC Ripple Current	Nominal Input, Full Load	< 50															mA pk to pk
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 ±1000		0 to ±2000		0 to ±4000		0 to ±6000			VDC
Power	Nominal Input, Max Eout	125	250	125	250	125	250	125	250	125	250	125	250	125	250		W
Current	Iout, Entire Output Voltage Range	1000	2000	500	1000	250	500	125	250	62	125	31	62	21	42		mA
Current Scale Factor	Full Load	833	1667	417	833	208	417	114	227	52	104	26	52	17.7	35		mA/V
Voltage Monitor Scaling		100:1 ±2% into 10 MΩ															-
Ripple	Full Load, Max Eout, Cload ≥ 0.5 uF	< 1.0		< 1.0		< 1.0		< 1.0		< 1.0		< 1.0		< 1.0			V pk to pk
Rise Time	Max Iout, Various C Loads and Eout	Figure A															-
Storage Capacitance	Internal	0.90	0.90	0.90	0.90	0.43	0.43	0.019	0.019	0.019	0.019	0.013	0.013	0.013	0.013		uF
Overshoot	C Load, 0 Eout to Full Eout	< 1 V		< 1 V		< 1 V		< 1 V		< 1 V		< 1 V		< 1 V			V pk
Line Regulation	Nominal 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 h, Per Day	< 0.01%/< 0.02%															VDC
Environmental		All Types															
Input Impedance	Nominal Input	+Output models 1.1 MΩ to ground, -output models 1.1 MΩ to +5 vRef.															MΩ
Adjust Resistance	Typical Potentiometer Values	10 to 100 K (potentiometer across vRef. and signal ground, 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 and Impedance	T = +25°C	+5.00 VDC ± 2%, Zout = 464 Ω ±1%															-
Enable/ disable		0 to +0.5 disable, +2.4 to 32 enable (default = enable)															-

PARAMETER	CONDITIONS		UNITS
Temperature and Humidity		**All Types**	
Operating	Full Load, Max Eout, Case Temperature	-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 Temperature	-55 to +105	°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing	-
Altitude	Standard Package, All Conditions	Sea level through vacuum (vacuum may require -P2 option, contact factory for details)	-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20	Gs
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10	Gs

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

$$F = \frac{I}{CxV}$$

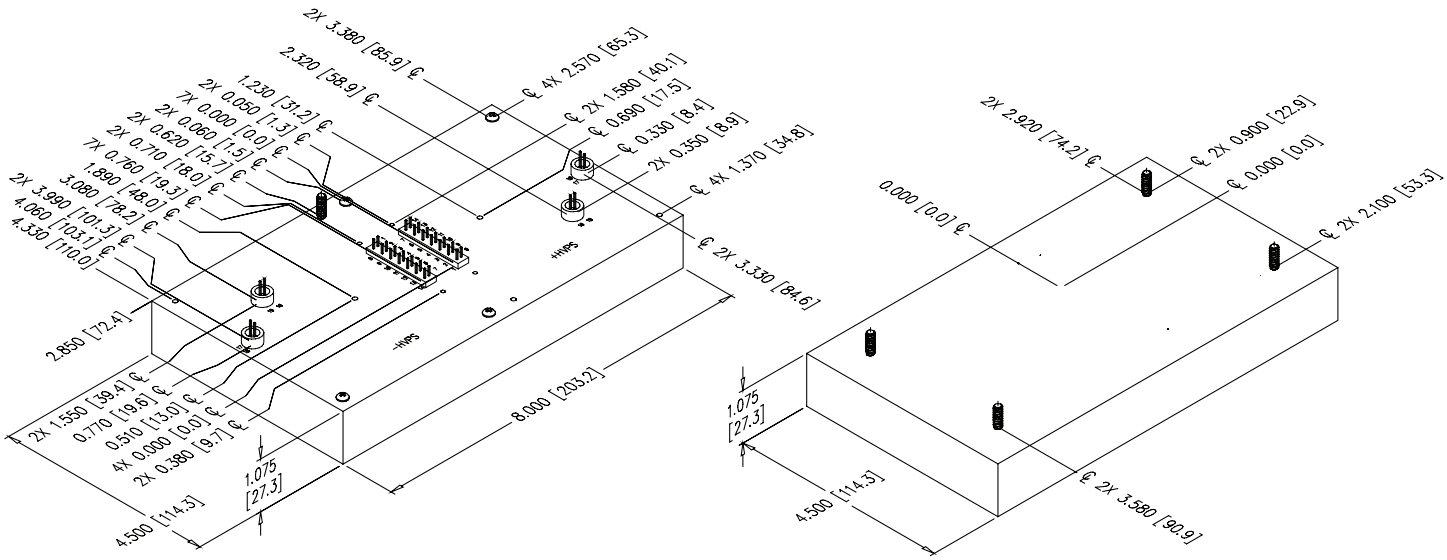
C = uF
E^2 = kV
J = Ws

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

Figure A - Rise time formulas

Note: Capacitance must include HVPS internal capacitance.

STANDARD CASE



PHYSICAL SPECIFICATIONS	
Construction	Epoxy-filled aluminum box
	Chem film per MIL-A-8625 Type II (anodizing)
Volume	634 cc (38.7in^3)
Weight	1.1 kg (2.45 lb)
Tolerance	
Overall	±0.64 mm (0.025")
Pin to Pin	±0.38 mm (0.015")
Hole to Hole Location	±0.64 mm (0.025")

+HVPS CONNECTIONS

1 and 8	INPUT POWER GROUND RETURN
3	IOUT MONITOR
4	ENABLE/DISABLE
5	SIGNAL GROUND RETURN
6	REMOTE ADJUST INPUT
7	+5 VDC REFERENCE OUTPUT
2, 9, and 10	POSITIVE POWER INPUT
11, 12, and 13	N/C
14	EOUT MONITOR
15 and 16	HV GROUND RETURN
17 and 18	HV OUTPUT

All grounds joined internally. Power supply mounting points isolated from internal grounds by > 100 kW, 0.01 uF/50 V (max).

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CE c UL us
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 1000 VDC Output	1C
	0 to 2000 VDC Output	2C
	0 to 4000 VDC Output	4C
	0 to 6000 VDC Output	6C
Input	24 VDC Nominal	24
Polarity	Negative and Positive Output	-NP
Power	125 W Output	125 (60Wx2)
	250 W Output	250 (125Wx2)
Heat Sink	10.16 mm (0.400") High (sized to fit case)	-H
PCB Support	(7) 4.75 mm (0.187") Standoffs on Top Cover	-Z11

Example: **1/2C24-NP125(60Wx2)**

- Type: Voltage, Model
- Input
- Polarity
- Total Output Power

Popular accessories ordered with this product include CONN-KIT-HP, and BR-7 and BR-8 mounting bracket kits.



For international contact information, visit
advanced-energy.com.

ENG-HV-BiPolarC-230-A 10.16

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