



ULTRAVOLT C SERIES HIGH VOLTAGE CAP-CHARGING SUPPLIES

The UltraVolt[®] C series of high voltage regulated DC-to-DC converters are designed for fast rise time/ charging applications utilizing state-of-the-art power conversion topology. This high power density module is especially suited to high-energy pulsers, amplifiers, and discharge devices with large capacitance, fast repetition rates, or high current loads. Surface-mount technology and encapsulation techniques provide high reliability and low cost.

PRODUCT HIGHLIGHTS

- 7 models from 0 to 125 V through 0 to 6 kV
- 20 or 30 W output power
- Maximum lout capability down to 0 V
- Maximum lout during charge/rise time
- Indefinite output short circuit protection
- Very fast rise with very low overshoot
- Output voltage and current monitors
- > 400,000 h MTBF at 65°C
- Fixed-frequency, low-stored-energy design
- UL/cUL recognized component; CE Mark (LVD and RoHS)

TYPICAL APPLICATIONS

- Cap-charging
- Pulsed power
- Test equipment
- Mass spectrometry
- Automated test equipment (ATE)
- Lasers and electro-optics
- HV pulse generator bias
- HV amplifier bias



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ELECTRICAL SPECIFICATIONS

Parameter	Conditions	Model	S							Units
Input		All Typ	bes							
Voltage Range	Full Power	+23 to 30				VDC				
Voltage Range	Derated Power Range	+9 to 32				VDC				
Current	Standby/Disable	< 30				mA				
Current	No Load, Max Eout	< 90				mA				
Current	Max Load, Max Eout	20 W: 950, 30 W: 1425					mA			
AC Ripple Current	Nominal Input, Full Load	< 80				mA pk to pk				
Output		1/8C			1/4C		1	L/2C		
Voltage Range	Nominal Input	0 to 125		0 to 250		C	0 to 500		VDC	
Power	Nominal Input, Max Eout	20	3	0	20	30	2	20	30	W
Current	lout, Entire Output Voltage Range	160	2	40	80	120	4	10	60	mA
Current Scale Factor	Full Load	2540	4	210	1096	2000	1	142	1667	mA/V
Voltage Monitor Scaling	-	100:1	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	V pk to pk
Overshoot	C Load, 0 Eout to Full Eout	< 1.0	<	1.0	< 1.0	< 1.0	<	: 2.0	< 2.0	V pk
Rise Time	Max lout, Various C Loads and Eout	Figure A ·					-			
Storage Capacitance	Internal	0.50	0	.50	0.15	0.15	C	0.16	0.16	uF
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	%/< 0.0)2%						VDC
Output		1C		2C		4C		6C		
Voltage Range	Nominal Input	0 to 1000 0 to 2		2000 0 to 400		00 0 to 600		00	VDC	
Power	Nominal Input, Max Eout	20	30	20	30	20	30	20	30	W
Current	lout, Entire Output Voltage Range	20	30	10	15	5	7.5	3.3	5	mA
Current Scale Factor	Full Load	307	476	159	259	94	112	51	86	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	< 1.0	V pk to pk
Overshoot	C Load, 0 Eout to Full Eout	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	<4.0	< 6.0	<6.0	V pk
Rise Time	Max lout, Various C Loads and Eout	Figure A				-				
Storage Capacitance	Internal	0.033	0.018	3 0.0019	9 0.009	0.010	0.010	0.0064	0.0064	uF
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.)2%						VDC
C = uF V = Volts I = mA T = mS	C = uF C = vF V = kV I = mA F = Hz	٢F	C V I = F	= uF = kV = mA = Hz	F = -	l CxV		C = uF E ² = kV J = Ws	J =	C x E ²

Figure A - Rise time formulas

Note: Capacitance must include HVPS internal capacitance.



ELECTRICAL SPECIFICATIONS (CONTINUED)

Programming And Controls		All Types	Units
Input Impedance	Nominal Input	+Output models 1.1 M Ω to ground, -output models 1.1 M Ω 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)	VDC

Environmental		Standard	-25 PPM Option	Units	
Operating	Full Load, Max Eout, Case Temp.	-40 to +65 +10 to +45		°C	
Coefficient	Over The Specified Temperature	±50	±25	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	All Conditions, Standard Package	Sea level through vacuum (vacuu factory for details)	-		
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 (standard), 40 (-C option)	Gs		
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10 (standard), 20 (-C option)		Gs	





MECHANICAL SPECIFICATIONS

Physical Specifications		
Construction	Epoxy-filled DAP box certified to ASTM-D-5948 with -C option, aluminum box, chem film per MIL-A-8625 Type II (anodizing)	
Volume	70.5 cc (4.30 in ³), with -C option: 131.1 cc (8.00 in ³)	
Weight	142 g (5.0 oz), with -C Option: 284 g (10.0 oz)	
Tolerance	Overall 1.27 mm (±0.050"), pin to pin 0.38 mm (±0.015"), mounting hole location 0.64 (±0.025") (plastic case	
	Overall 0.64 mm (±0.025"), pin to pin 0.38 mm (±0.015"), hole to hole location 0.64 mm (±0.025") (metal case)	

20 and 30 W versions are an additional 157 mm (0.062") in height.

-M equipped units are an additional 0.76 mm (0.030") for each dimension.

Contact Advanced Energy for drawings of models equipped with -E or -H options.







ULTRAVOLT C SERIES

INTERFACE

Connections				
Pin	Function			
1	Input Power Ground Return			
2	Positive Power Input			
3	lout Monitor			
4	Enable/Disable			
5	Signal Ground Return			
6	Remote Adjust Input			
7	+5 VDC Reference Output			
8	HV Ground Return			
9	Eout Monitor			
10 and 11	HV Output			

All grounds joined internally. Power supply mounting points isolated from internal grounds by > 100 kQ, 0.01 uF/50 V (max) on all models except -M, -M-C, -M-E, and -M-H configurations which are 0 Ω .





ORDERING INFORMATION

Туре	0 to 125 VDC Main Output	1/8C		
	0 to 250 VDC Main Output	1/4C		
	0 to 500 VDC Main Output	1/2C		
	0 to 1,000 VDC Main Output	1C		
	0 to 2000 VDC Main Output	2C		
	0 to 4000 VDC Main Output	4C		
	0 to 6000 VDC Main Output	6C		
Input	24 VDC Nominal (20 and 30 W)	24		
Polarity	Positive Output	-P		
	Negative Output	-N		
Power	W Output	20		
	W Output	30		
Case	Plastic Case - Diallyl Phthalate	(Standard)		
	'Eared' Heatsink Plate (Plastic Case)	-E		
	RF-Tight Aluminum Case	-C		
Heatsink	0.400" High (Sized-to-Fit Case)	-Н		
Shield	Six-sided Mu-Metal Shield	-M		
Temp. Coefficient	25 PPM Temperature Coefficient	-25 PPM		



Popular accessories ordered with this product include CONN-KIT and BR-1 mounting bracket kit.

