



# UMR-C SERIES

125 to 6000V, 20 to 30W  
Standard DC/DC Modules



## Features

- Capacitor Charging High Voltage Power Supplies
- Regulated Output Voltage from  $V_{OUT}$  Max to True Zero
- Wide Input Voltage Range
- Low Ripple
- Indefinite Output Short Circuit Protection
- Output Voltage and Current Monitors
- Fixed-Frequency, Low-Stored-Energy Design
- UL/cUL Recognized Component; CE Mark (LVD and RoHS)

## Specifications

		Conditions		Units
		20W	30W	
<b>Input</b>				
Voltage	Nominal	+24	+24	VDC
Voltage Range	Full Power	+23 to 30	+23 to 30	VDC
Voltage Range	Derated Power Range	+10 to 32	+10 to 32	VDC
Current	Standby/Disable	<20	<20	mA
Current	No Load, Max $V_{OUT}$	<80	<80	mA
Current	Full Load, Max $V_{OUT}$	<1000	<1500	mA
AC Ripple Current	Nominal Input, Full Load	<100	<100	mAp-p
<b>Output</b>				
Static Load Regulation	No Load to Full Load, Max $V_{OUT}$	<0.01		%VDC
Line Regulation	Nominal Input, Max $V_{OUT}$ , Full Power	<0.08		%VDC
Stability	30-minute warmup, per 8h/per day	<0.01 / <0.02		%VDC
<b>Programming &amp; Controls</b>				
Input Impedance	Nominal Input, Positive Models	1.5 to Signal Ground		M $\Omega$
	Nominal Input, Negative Models	1.1 to $V_{REF}$		
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot Across $V_{REF}$ and Signal Ground, Wiper to Adjust)		$\Omega$
Adjust Logic ( $V_{ADJ}$ )	Positive Models	0 to +4.64 = 0 to 100% Rated Output		VDC
	Negative Models	+5 to +0.36 = 0 to 100% Rated Output		
Reference Voltage ( $V_{REF}$ )	Temperature +25°C	+5 $\pm$ 0.5%		VDC
Enable/Disable HV <sub>OUT</sub>	Default HV Enabled	0 to +0.5 = Disabled; +2.4 to 32 = Enabled		VDC
<b>Environmental</b>				
Operating Temperature <sup>1</sup>	Case Temperature, Full Load, Max $V_{OUT}$	-40 to +65		°C
Temperature Coefficient	Over the Specified Temperature	$\pm$ 50 ( $\pm$ 25 Optional)		PPM/°C
Thermal Shock	Mil-Std-810, Method 503-4, Proc. II	-40 to +65		°C
Storage Temperature	Non-Operating, Case Temperature	-55 to +105		°C
Humidity	All Conditions, Standard Package	0 to 95% Non-Condensing		-
Altitude	All Conditions, Standard Package	Sea Level through Vacuum		-
Shock	Mil-Std-810, Method 516.5, Proc IV	20		G
Vibration	Mil-Std-810, Method 514.5, Fig 514.5C-3	10		G

<sup>1</sup>Typically, convection cooled. Units operating at full power might require additional cooling to maintain case temperature below 65°C. Damage to the power supply may occur if not appropriately cooled during use.

Part Number <sup>3</sup>	Output Voltage VDC	Output Current mA	High Freq. Ripple <sup>4</sup> %Vp-p	Output Capacitance μF	I <sub>MON</sub> Scaling <sup>5</sup> mA/V	V <sub>MON</sub> Scaling <sup>6</sup> V
<b>20W Models</b>						
UMR-C-125*-20	0 to 125	160.0	<1	0.1000	1900	10:1 ±2%
UMR-C-250*-20	0 to 250	80.0	<1	0.0500	1000	10:1 ±2%
UMR-C-500*-20	0 to 500	40.0	<1	0.0330	506	10:1 ±2%
UMR-C-1000*-20	0 to 1000	20.0	<1	0.0330	244	100:1 ±2%
UMR-C-2000*-20	0 to 2000	10.0	<1	0.0010	130	100:1 ±2%
UMR-C-4000*-20	0 to 4000	5.0	<1	0.0034	67	100:1 ±2%
UMR-C-6000*-20	0 to 6000	3.3	<1	0.0026	49	100:1 ±2%
<b>30W Models</b>						
UMR-C-125*-30	0 to 125	240.0	<1	0.1000	2900	10:1 ±2%
UMR-C-250*-30	0 to 250	120.0	<1	0.0500	1400	10:1 ±2%
UMR-C-500*-30	0 to 500	60.0	<1	0.0330	740	10:1 ±2%
UMR-C-1000*-30	0 to 1000	30.0	<1	0.0330	400	100:1 ±2%
UMR-C-2000*-30	0 to 2000	15.0	<1	0.0010	212	100:1 ±2%
UMR-C-4000*-30	0 to 4000	7.5	<1	0.0034	86	100:1 ±2%
UMR-C-6000*-30	0 to 6000	5.0	<1	0.0026	57	100:1 ±2%

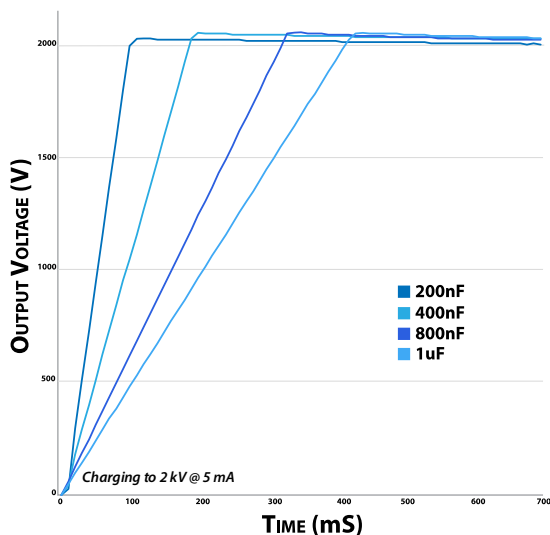
<sup>3</sup>For "\*", substitute "P" for positive output or "N" for negative output

<sup>4</sup>1Hz to 1MHz

<sup>5</sup>Full Scale Signal

<sup>6</sup>Into 10MΩ Meter

## Rise Time/Capacitor Charging



Maximum Safe Repetitive Discharge Rate:

$$\frac{C \cdot V_o^2}{2} F < 1W$$

Typical Rise Time:

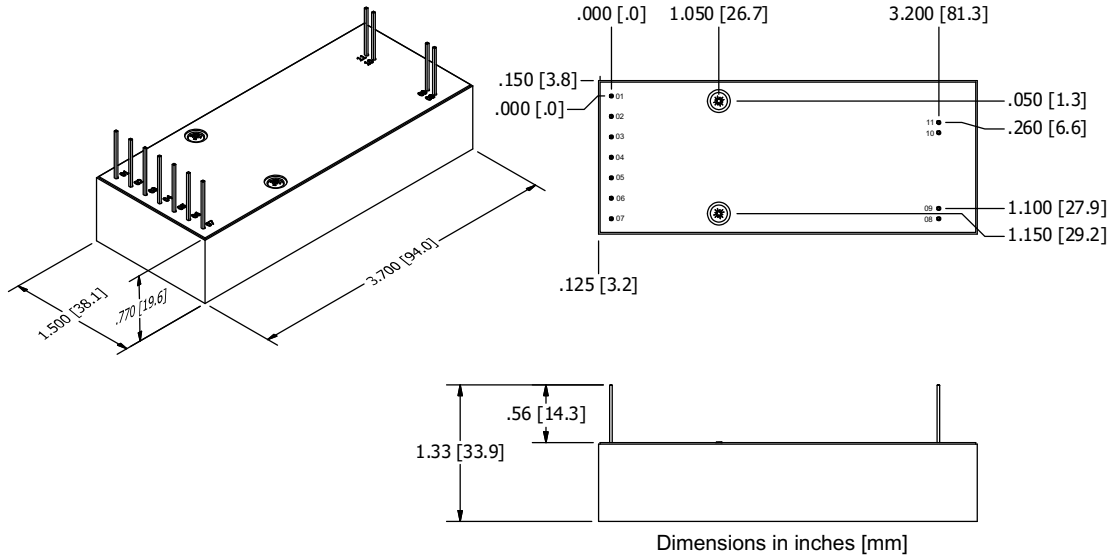
$$t_R = \frac{C + C_{ext}}{I_o} V_o$$

Minimum Rise Time is 10nS

Abbreviations:

- C Output Capacitance of Power Supply
- C<sub>ext</sub> Capacitance of External Capacitor
- V<sub>o</sub> Power Supply Output Voltage
- F Power Supply Discharge Frequency
- I<sub>o</sub> Nominal Output Current
- t<sub>R</sub> Rise Time

## Mechanical Drawings and Pin Assignments



Mechanical Specifications	
<b>Volume</b>	4.3in <sup>3</sup> [70.5cm <sup>3</sup> ]
<b>Weight</b>	5.0oz [142g]
<b>Case</b>	DAP case certified to ASTM-D-5948
<b>Pins</b>	Pins 1-7 0.200in Spacing Pins 8-9, 10-11 0.100in Spacing

Tolerances	
<b>Overall</b>	0.050in [±1.27mm]
<b>Pin to Pin</b>	0.015in [±0.38mm]
<b>Mounting</b>	0.025in [±0.64mm]

Pin Assignments & Connections		
<b>Pin 1</b>	PWRGND <sup>7</sup>	Input Power Ground Return
<b>Pin 2</b>	+VIN	Positive Power Input
<b>Pin 3</b>	IMON <sup>7</sup>	Output Current Monitor
<b>Pin 4</b>	ENABLE	Enable/Disable
<b>Pin 5</b>	SIGGND	Signal Ground Return
<b>Pin 6</b>	VADJ <sup>7</sup>	Voltage Adjust
<b>Pin 7</b>	VREF	Voltage Reference
<b>Pin 8</b>	HVRTN	High Voltage Ground Return
<b>Pin 9</b>	VMON	Output Voltage Monitor
<b>Pin 10,11</b>	HVOUT	High Voltage Output

<sup>7</sup>PWRGND may be labelled -VIN, IMON as IOUT, and VADJ as RMTADJ on some models.

## Options

Append to Part #	Option Description	Not Compatible With
-H	Aluminum Heat Sink	E, C
-T	±25PPM/°C Temperature Coefficient <sup>8</sup>	-
-W	Flying Lead for High Voltage Output	-
-M	Mu-Metal Shielding Over Case	-
-E	Eared Mounting Plate	H
-C	RF Tight Aluminum Case	E, H

<sup>8</sup>Operating Temperature is +10 to +45°C.

## Certifications and Compliances

