



# MEGAVERTER®

## 700 WATT DC-DC CONVERTER

### MODEL: MV48-28-700

### PRELIMINARY DATA SHEET

Distributed Power in Telecom, Industrial Control, Wireless, & Computer Applications

## INPUT: 48VDC • OUTPUT: 28V • 700 WATTS



Size: 2.4 x 4.6 x 0.5 inches

#### FEATURES

- High Efficiency: 89%
- Constant Frequency
- -40 to +100°C Operation
- Remote Sense
- Non-Shutdown Over Voltage Protection
- Low Profile: 0.41" Height with Recessed Mounting
- Trim Range: 21V to 29V
- High Power Density: 150 W/cu. in.
- Low Noise
- Encapsulated
- Parallelable with Current Sharing for n+m Redundancy
- 105°C Over Temperature Protection
- Short Circuit Protection

#### MODEL SELECTION

Model Number	Input Voltage	Output Voltage	Output Current
MV48-28-700	36-60Vdc 40-60Vdc	28Vdc 28Vdc	26.6A 28.5A

**Application Notes and Evaluation Boards are Available**

#### DESCRIPTION

MEGAVERTER DC-DC converters are high density, feature rich modules packaged in the industry standard "full brick" size (2.4x4.6x0.5 inches) for circuit board mounting. They are used where large blocks of DC power are required. The MV48-28-700 provides up to 800 Watts of low noise, 28Vdc output power from a 48Vdc power bus.

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## MV48-28-700

### ABSOLUTE MAXIMUM RATINGS

Exceeding absolute maximum ratings may cause permanent damage and may reduce reliability.

PARAMETER	MIN	MAX	UNITS	CONDITIONS
Input Voltage (+In to -In)	-0.3	100	Vdc	Continuous
Enable Voltage (Enable to -In)	-0.3	6.0	Vdc	
Parallel Pin Voltage (Parallel Pin to -In)	-0.3	5.0	Vdc	
Storage Temperature	-55	+125	°C	
Operating Temperature	-40	+100	°C	Baseplate
Soldering Temperature (Wave Solder)		260	°C	< 5 sec.
Soldering Temperature (Hand Solder)		390	°C	< 7 sec.

### ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage	36	48	60	V	
Maximum Input Current (I <sub>i,max</sub> )			33A	A	I <sub>o</sub> = 28.5A
Inrush Transient			1	A <sup>2</sup> t	
Input Ripple Rejection		60		DB	@ 120Hz

OUTPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Voltage Set Point	27.72	28.00	28.28	V	48V <sub>in</sub> , 25°C, Full Load
Line Regulation		0.01	0.2	%	Over V <sub>in</sub> Range, I <sub>o</sub> = 0.5A to 20A
Load Regulation		0.05	0.2	%	0A to 20A
Temperature Drift			0.015	%/°C	-40 to +100°C baseplate
Output Ripple and Noise Voltage			500	mV p-p	5Hz to 20MHz, I <sub>o</sub> > 0.5A, C <sub>ext</sub> = 220uF/35V
Output Current	0.5*		26.6	A	V <sub>in</sub> = 36V to 60V
	0.5*		28.5	A	V <sub>in</sub> = 40V to 60V
Output Current limit	30	32.7	37.2	A	V <sub>o</sub> =90% of V <sub>o,set</sub>
Output Short Circuit Current			170	%	V <sub>o</sub> =250mV
Switching Frequency		400		kHz	
Transient Response Peak Deviation Settling Time		3	300	% µsec	25% - 50% - 75% Load Change @ 0.1A/µsec slew rate, 48V <sub>in</sub> , 25°C case, C <sub>ext</sub> = 220uF/35V
Efficiency:	86	89		% %	V <sub>in</sub> = 48V, I <sub>o</sub> = 20A, T <sub>c</sub> = 25°C V <sub>in</sub> = 48V, I <sub>o</sub> = 20A, T <sub>c</sub> = 90°C

\*The unit operates at no load but may exceed the output ripple spec.

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### ELECTRICAL SPECIFICATIONS (continued)

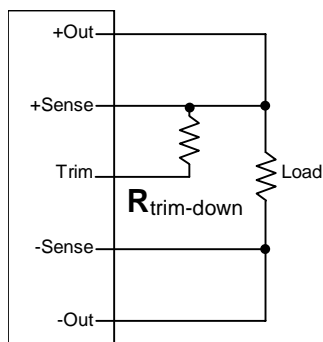
ISOLATION PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Case		1500		Vdc	
Output to Case		500		Vdc	
Input to Output Capacitance		470		pF	
Isolation Resistance	10			M ohms	

MECHANICAL PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
MTBF		1.4		Mhr	40°C case, $V_{in} = 48V$ , $I_o = 18A$
Weight		225 (7.93)		g (oz.)	
Size		0.5 x 2.4 x 4.6		Inches	See Outline Drawing
Thermal Resistance, Case to Ambient		3.3		°C/W	Case Temperature = 100°C

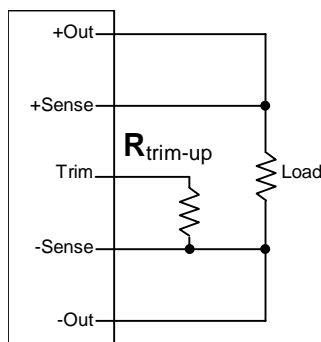
FEATURE PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Trim Range	75		103	%Vo	$C_{ext} = 220\mu F/35V$
Over Voltage Clamp	34		37	Vdc	25°C Case
Over Temperature Shut-down	100	105	110	°C	Case temp, Auto Recovery
Over Temperature Recovery	85	95	100	°C	Case temp
Enable *					
Logic Off Threshold	0.8			V	$V_{out} = 0$
Enable Current (Logic Off)			1.0	mA	@ $V_{enable} = 0V$
Logic On Threshold			2.4	V	
Turn-On Time			200	msec	80% F.L., $V_{out}$ within 1% Steady State

\* An open collector connection or equivalent is recommended for on/off control.

### TRIM CIRCUIT CONFIGURATIONS



Trim Down



Trim Up

### TRIM RESISTOR CALCULATIONS

$$R_{trim-dn} = \left( \frac{13.106 \cdot (V_o - 2.5)}{26 - V_o} \right) k\Omega$$

$$R_{trim-up} = \left( \frac{32.805}{V_o - 26.03} \right) k\Omega$$

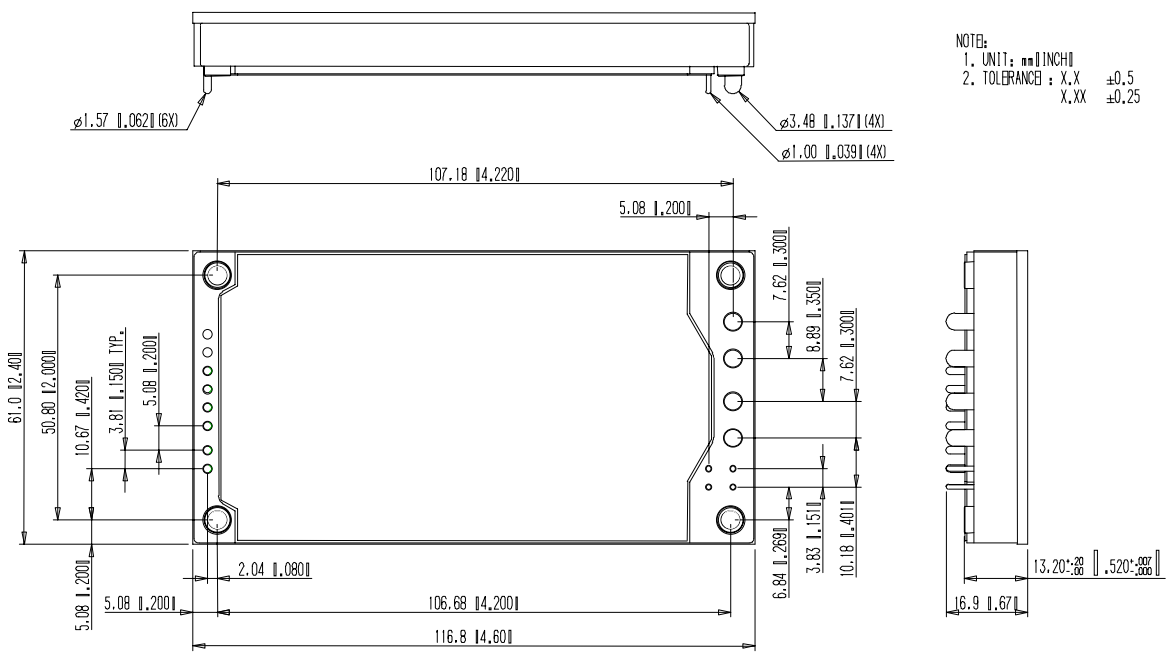
Where:

$V_o$  = The desired output voltage of the module.

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### OUTLINE DRAWING



NOTE:  
 1. UNIT: mm INCH  
 2. TOLERANCE: X.X ±0.5  
 X,XX ±0.25