



MEGAVERTER^o

400 WATT DC-DC CONVERTER

MODEL: MV48-5

DATA SHEET

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

INPUT: 48VDC • OUTPUT: 5VDC @ 80A • 400 WATTS



Size: 2.4 x 4.6 x 0.5 inches

FEATURES

- High Efficiency: 83%
- Constant Frequency
- -40 to +100°C Operation
- Remote Sense
- Trim Range: 4V to 5.5V
- Non-Shutdown Over Voltage Protection
- Low Profile: 0.41" Height with Recessed Mounting
- High Power Density: 72 W/cu. in.
- Low Noise
- Encapsulated
- Parallelable with Current Sharing for n+m Redundancy
- 105°C Over Temperature Protection
- Safety Agency Compliant

MODEL SELECTION

<u>Model Number</u>	<u>Input Voltage</u>	<u>Output Voltage</u>	<u>Output Current</u>
MV48-5	36-75Vdc	5Vdc	80A

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 MV48-5 provides up to 400 Watts of low noise, 5Vdc power from a 48Vdc power bus

RO Associates, Inc. Sunnyvale, CA 408 744-1450 fax: 408 744-1521 email: sales@roassoc.com

www.roassoc.com

MEGAVERTER[®] DC-DC Converter

MV48-5

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	
Enable Voltage (Enable to -In)	-0.3	6.0	Vdc	
Parallel Pin Voltage (Parallel Pin to -In)	-0.3	5.0	Vdc	
Output Voltage (+Out to -Out)	-0.5	8.0	Vdc	
Sense Voltage (+Sense to -Sense)	-0.5	8.0	Vdc	
Input/Output Isolation		3000	Vdc	
Sense/Output Isolation		500	Vdc	
Input/Baseplate Isolation		1500	Vdc	
Output/Baseplate Isolation		500	Vdc	
Sense/Baseplate Isolation		500	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

Electrical specifications apply over the entire range of input voltage, output current, and temperature unless indicated.

INPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input Voltage	36	48	75	Vdc	
Maximum Input Current			20	A	See Input Characteristic Curve
Input Ripple Rejection		60		dB	@120Hz

OUTPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Voltage Set Point	4.95	5	5.05	Vdc	48V _{in} , 25°C, Full Load
Load Regulation		12.5	10	mV	0A to 80A
Line Regulation		12.5	10	mV	Over V _{in} Range
Voltage Drift w/Temperature			0.02	%/°C	-40 to +100°C
Ripple		50	150	mV p-p	5Hz to 30MHz
Rated Current	0		80	A	See Output characteristic Curve
Output Power			400	W	
Current Limit Inception	81	92	104	A	V _{out} = 4.75Vdc, See Output Characteristic Curve
Short Circuit Current		102	115	A	V _{out} = 250 mV, See Output Characteristic Curve
Transient Response Peak Deviation (1.0A/μsec slew rate)		50		mV	16A Load to 64A Load
Transient Response Settling Time (1.0A/μsec slew rate)		100		μsec	V _{out} Within 50mV of Steady State
Efficiency:	82	83		%	V _{in} = 48V, Full Load, 25°C Case, See Efficiency Curves

MEGAVERTER[®] DC-DC Converter

MV48-5

ELECTRICAL SPECIFICATIONS (continued)

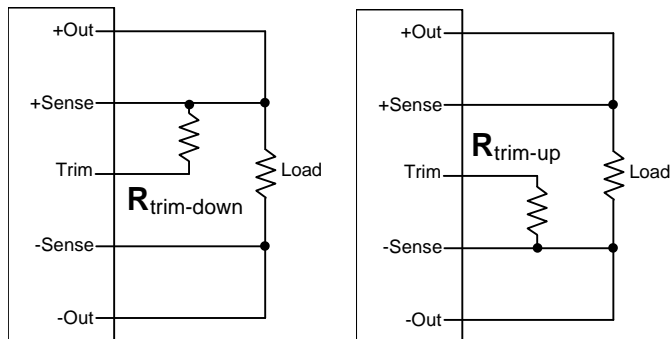
ISOLATION PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output Capacitance		470		pF	Case Floating
Input to Output Resistance	10			M ohms	

MECHANICAL PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		250 (8.8)		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
Power Sharing Accuracy			±4	Adc	8A to 80A Load Current
Trim Range	4		5.5	Vdc	
Remote Sense Compensation			0.5	Vdc	
Over Voltage Protection (Non-Shutdown, Auto. Recovery)	5.7		6.5	Vdc	25°C Case
Over Temperature Shut-down	+100	+105	+110	°C	Case Temperature
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			2	msec	F.L., V _{out} within 1% of Steady State

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

TRIM CIRCUIT CONFIGURATIONS



Trim Down

Trim Up

TRIM RESISTOR CALCULATIONS

$$R_{\text{trim-up}} = \frac{3.549}{\Delta V_o} \text{ kohms}$$

$$R_{\text{trim-down}} = \left(\frac{10.76 - 2.862 \times \Delta V_o}{\Delta V_o} \right) \text{ kohms}$$

ΔV_o = Desired Output Voltage Change (Volts)

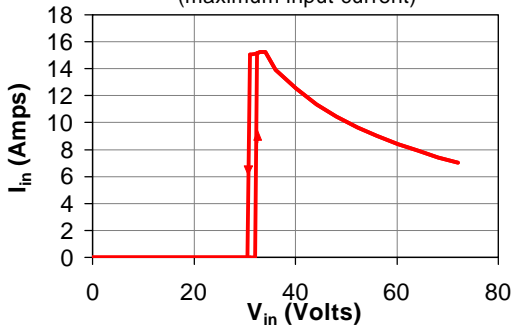
$R_{\text{trim-down}}$ = External Resistor Value to Decrease V_o

$R_{\text{trim-up}}$ = External Resistor Value to Increase V_o

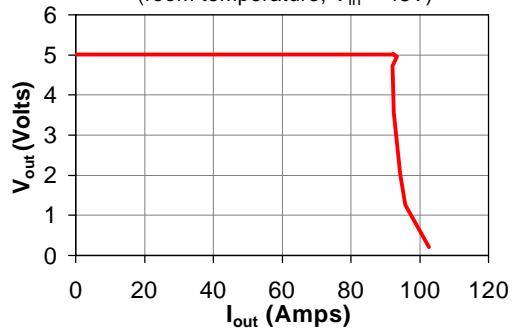
MEGAVERTER[®] DC-DC Converter

MV48-5

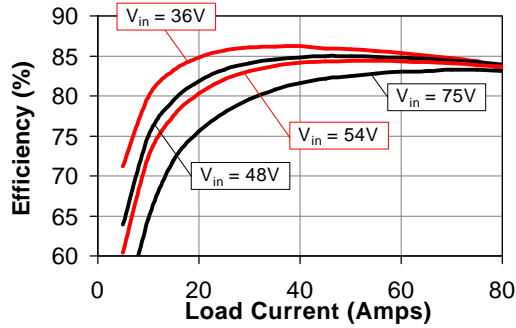
Input Characteristic
(maximum input current)



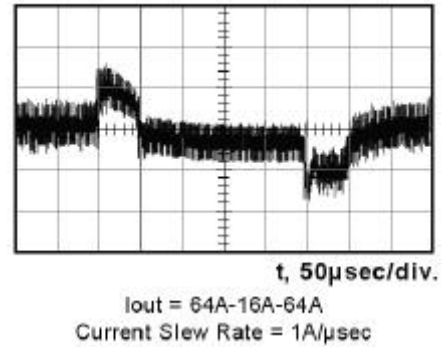
Output Characteristic
(room temperature, $V_{in} = 48V$)



Efficiency



Transient Response



Outline Drawing

