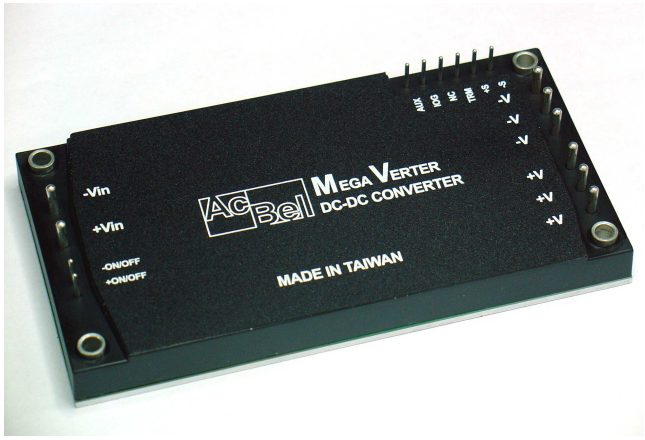
Rev:A1 4/3/2007

High Output Power, High Efficiency DC-DC Converter, MV24-28-600S

Module: 18Vdc to 36Vdc Input, 28Vdc Output, Maximum Output Power 600W.

World's Most Advanced Ultra High Power Density DC-DC Converters.



DESCRIPTION:

MegaVerter MV24-28-600S modules are high power density and high efficiency DC-DC converters designed for uses in telecom and other centralized modular and distributed power applications. All use metal baseplates, planar transformers, and surface mount construction to produce up to 600W maximum.

FEATURES:

- Miniature Size: 116.8mm x 61mm x 12.7mm (4.59in. x 2.40in. x 0.50in.)
- High Power Density: Up to 109.29W/in.^3
- High Efficiency: 91% Typical
- Low Output Noise
- Industry-Standard Size
- Metal Baseplate
- Thermal Protection
- Over Voltage Protection
- Output Under Voltage Protection
- Current Limit/Short Circuit Protection
- Adjustable Output Voltage: 60% to 110% of Vo,set
- Remote Sense
- Auxiliary Voltage: 8V +/- 1V, Io<=20mA
- I.O.G. (DC Good): Open Collector Output
- Remote ON/OFF Control: Short-ON, Open-OFF

SPECIFICATIONS:

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input Voltage (+In to –In)	-0.3		50	V	<100ms
	-0.3		36	V	Continuous
Storage Temperature	-55		+125	℃	
Storage Humidity	10		95	%	
Operating Temperature	-40		+100	℃	Temperature measure shall be taken from the baseplate (Tb). Refer to Fig.3 for location definition
Operating Humidity	30		95	%	

INPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage (Vi)	18	24	36	V	
Maximum Input Current (Ii,max)			28.9	A	Vi=24V, Io =Io,max
Inrush Transient			2	A^2s	
Input Ripple Rejection		60		dB	@ 120Hz

OUTPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Set Point (Vo,set)	27.95	28.0	28.05	V	Initial Adjusted @Tb=25℃,Vi=24V, Io=Io,max
Output Voltage Accuracy (28V)	27.72	28.0	28.28	V	Vi=24V, Io=Io,max
Line Regulation		0.01	0.2	%	Vi=18V to 36V
Load Regulation		0.05	0.2	%	Io= Io,min to Io,max.
Temperature Drift		0.002	0.02	%/℃	Tb= -40 to 100℃
Output Ripple and Noise Voltage Peak to Peak			250	mVp-p	Bandwidth 5Hz to 20MHz and with filter 0.1uF MLCC series 100 ohm Min. Output Capacitor: 220uF *2, Tc>= -20℃ 220uF *4, Tc<= -20℃
Output Current (Io,max)			21.5	A	At Vo<=28V, if Vo>28V Output Power (Po) should be <=602W
Output Current limit	105		140	%Io,max	Current limit inception point Vo=90% of Vo,set @Tb=25℃
Output Over Voltage Protection	115		135	%Vo,set	Io=0.5A
Output Under Voltage Protection		12		V	Output over load and short circuit.

OUTPUT SPECIFICATIONS (CONTINUED):

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Efficiency		91		%	Vi=24V, Vo=28V, Io= 80%Io,max @Tb=25°C
Dynamic Response: Peak Deviation Settling Time		3	300	%Vo,set us	25% - 50% -75% load, 0.1A/us; With Cap. 440uF/35V Tb=25℃, Vi=24V

CONTROL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Turn-On Time			200	ms	Io=80% of Io,max Vo with +/- 1% Vo,set
Output Voltage Adjustment Output Voltage Trim Range	60		110	%Vo,set	With Cap. 440uF/35V, @Tb=25℃
Over Temperature Protection Shutdown Recovery	105 100	110	115	℃ ℃	 Auto. Recovery

ISOLATION SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output		1500		Vdc	60 seconds
Input to Case		1500		Vdc	60 seconds
Output to Case		500		Vdc	60 seconds
Input to Output Capacitance		2000		pF	
Isolation Resistance	100			Mohm	at Tb=25°C and 70%RH, Output to Baseplate - 500VDC

STRUCTURAL DYNAMICS:

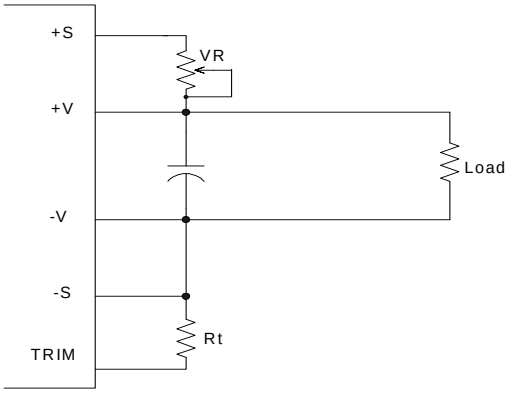
PARAMETER	CONDITIONS
Vibration	Sine Wave, 10-55Hz (Sweep for 1 min.), Amplitude 0.825mm Constant (Maximum 0.5g) X,Y,Z 1 Hour each, At No Operating,
Shock	20g, 166 in/sec, Square Wave

GENERAL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
MTBF		1.2		Mhrs	Tb=40℃, Io=80% Io,max, Vi=24V
Weight		225		g	
Size (WxHxD)		4.59x2.4x0.5		in.^3	

TRIM CIRCUIT:

A. Output Voltage Adjusted by using external resistor and/or variable resistor:



The output voltage can be determined by below equations:

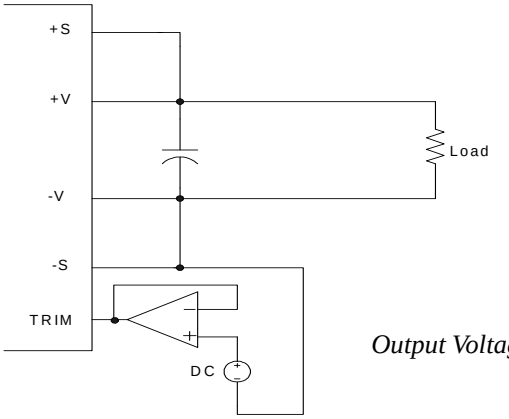
$$V_f = \frac{1.225 * (R_t // 32.4))}{7.32 + (Rt // 32.4)} \quad (V)$$

$$V_{out} = (28 + VR) * V_f \quad (V)$$

Rt: +/-5% tolerance
VR: +/-20% tolerance
Unit: KΩ

Fig. 1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.

B. Output Voltage Adjustment by Using External DC Voltage:



*Output Voltage = TRIM Terminal Voltage * Nominal Output Voltage* (V)

Fig. 2 The schematic of output voltage adjusted by using external DC voltage.

BASEPLATE MEASURE POINT:

UNIT: mm

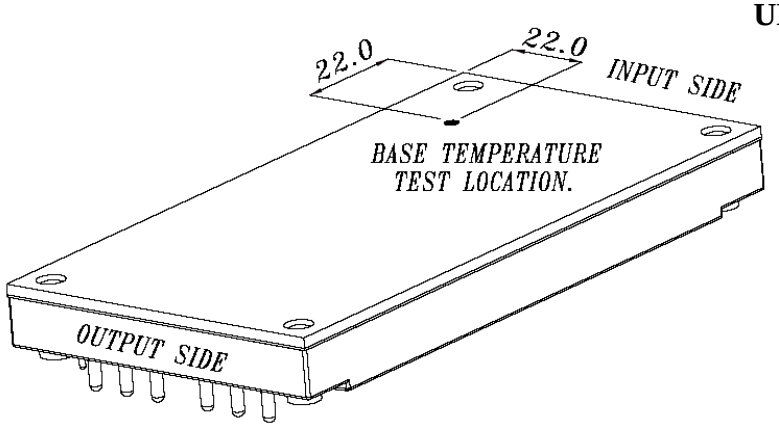
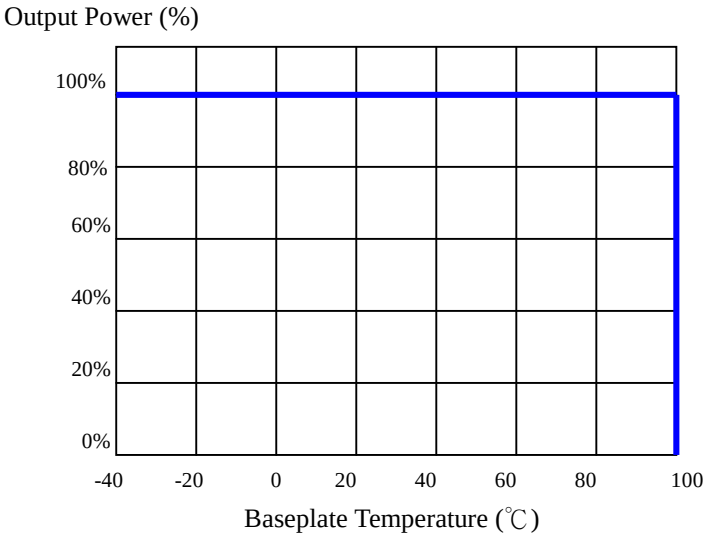


Fig. 3 Baseplate Temperature Measure Point.

DERATING CURVE:



OUTLINE DRAWING: