Draft Rev.A 12/12/2007

SV28-12-100-1

Power Modules: SuperVerter DC-DC Converter

18Vdc to 36Vdc Input, 12V Output, 100W

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

DESCRIPTION:

The SuperVerter modules are high density DC-DC converters designed for use in distributed power architectures, workstations, EDP equipment and telecommunications. The SuperVerter modules may be used as form, fit and function replacements for industry standard half brick modules. All use metal base plate, planar transformers, and surface mount constructions to produce up to 100W in a half brick package.

FEATURES:

- Miniature Size: 61.0mm x 57.9mm x 12.7mm (2.40in. x 2.28in. x 0.50in.) (Typical)
- High Power Density
- Constant Frequency 300K Hz
- -40 to $+100$ ^{o}C Operation
- 105 ^{o}C Over Temperature
- High Efficiency
- Low Output Noise
- Industry-Standard Pin out
- Metal Base plate
- 2:1 Input Voltage Range
- Thermal Protection
- Output Over Voltage Protection
- Current Limit/Short Circuit Protection
- Adjustable Output Voltage: 60% to 110% of $V_{0,set}$
- Remote Sense
- Logic ON/OFF
- **ROHS Compliant**

OPTIONS:

- Negative logic ON/OFF is standard. For optional positive logic add a "0" suffix after model number.
- Long Leads: 5.84mm (0.23in.)
- Medium Leads: 3.60mm (0.14in.)

SPECIFICATIONS:
ABSOLUTE MAXIMUM RATING

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

PARAMETER	MIN	MAX	UNITS	CONDITIONS
Input Voltage		40	Vdc	Continuous
Transient Input voltage		50	Vdc	100 msec max.
Input/Output Isolation		1500	Vdc	
Operating Case Temperature	-40	100	°C	
Storage Temperature	-40	110	°C	

INPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage (V_i)	18	28	36	Vdc	
Maximum Input Current ($I_{i,max}$) SV28-12-100-1			8.7	A	V_i =0V to 36V $I_o = I_{o,max}$
Input Reflected Ripple Current Peak to Peak		5		mAp-p	5Hz to 20MHz, 12UH Source Impedance
Input Ripple Rejection		60		dB	@ 120Hz

OUTPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Voltage Set Point ($V_{o,set}$)	11.78	12.00	12.22	V	T_C =25℃, V_i =28V, $I_o = I_{o,max}$
Line Regulation		0.01	0.1	%	V_i =18V to 36V
Load Regulation		0.05	0.2	%	I_o = 0.5 to $I_{o,max}$
Temperature Drift		50	150	mV	T_C =-40℃ to 100℃
Output Ripple and Noise Voltage Peak to Peak		100	200	mV_{p-p}	5Hz to 20MHz
External Load Capacitance	330		5000	uF	Electrolytic capacitor
Output Current (I_o) SV28-12-100-1	0.15		8.3	A	
Output Current limit SV28-12-100-1		9.6	10.8	A	Vo=90% of Vo,set
Output Short Circuit Current			170	% $I_{o,max}$	V_o =250mV

Efficiency SV28-12-100-1	88	89		%	Vi =28V Iout=80% Load
Dynamic Response Peak Deviation Settling Time		 2	 300	 %$V_{o,set}$ μs	25% to 50 % load, 50% to 75 % load, 0.1A/ μs ;

CONTROL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Logic ON/OFF SV28-12-xxx1 Standard Logic: Logic Low – Module ON SV28-12- xxx0 Optional Logic: Logic High – Module ON Logic Low: Sink Current Ion/off Output Voltage Von/off Logic High: Source Current Ion/off Output Voltage Von/off			 1 1.2 50 15	 mA V μA V	 Von/off=0V Ion/off<1mA Von/off=15V Ion/off=0.0 μA
Turn-On Time		20	35	ms	I_o =80% of $I_{o,\max}$ V_o with ±1% $V_{o,set}$
Output Remote Sense Range Output Voltage Trim Range	 60		1.2 110	V %Vo,set	
Output Over Voltage Clamp	13.5		16	V	Auto. recovery
Over Temperature Shutdown		105		℃	Auto. Recovery

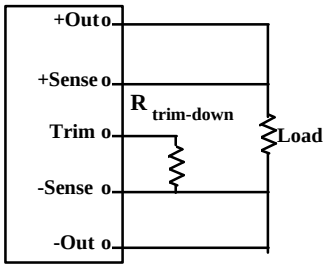
ISOLATION SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output		1500		Vdc	
Input to Case		1500		Vdc	
Output to Case		500		Vdc	
Input to Output Capacity		2000		pF	
Isolation Resistance	10			MΩ	

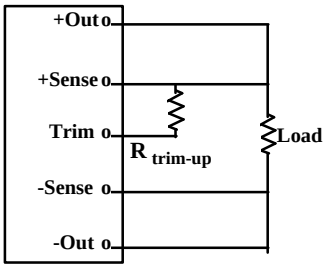
MECHANICAL PARAMETERS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		118		g	
Size		2.40x2.28x0.50		in^3	

TRIM CIRCUIT:



Trim Down



Trim Up

$R_{trim\text{-}down} = ((100/\Delta\,\%) - 2))$ kohms

$$R_{trim\text{-}up} = \left(\frac{Vo(100 + \Delta\,\%)}{1.225\,\Delta\,\%} - \frac{(100 + 2\,\Delta\,\%)}{\Delta\,\%}\right) \text{kohms}$$

Δ % = Desired Output Voltage Change
Vo = Output Voltage
$R_{trim\text{-}up}$= External Resistor Value to Increase Vo
$R_{trim\text{-}down}$= External Resistor Value to Decrease Vo

Outline Drawing: