

## SV28-5-175 (API0DC98-003G)

### Power Modules: SuperVerter DC-DC Converter

18Vdc to 36Vdc Input, 5V Output, 175W

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 175W 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 — Up to 64W/in<sup>3</sup>
- Constant Frequency – 370kHz
- –40 to +85 °C Operation
- 105 °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
- Non-Safety Agency Compliant

#### OPTIONS:

- Negative logic ON/OFF is standard. For optional positive logic add a “P” suffix after model number.
- Short Leads: 2.79mm (0.110in.)  
3.68mm (0.145in )

**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	85	°C	
Storage Temperature	-40	110	°C	

**INPUT SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage ( $V_i$ ) (85% Full outputpower)	20 18	28	36	Vdc	85% Full output power
Maximum Input Current ( $I_{i,max}$ ) SV28-5-175			13	A	$V_i=0V$ to 36V $I_o = I_{o,max}$
Input Ripple Rejection		60		dB	@ 120Hz

**OUTPUT SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Voltage Set Point ( $V_{o,set}$ )	4.92	5.00	5.08	V	$T_C=25^\circ C$ , $V_i=28V$ , $I_o = I_{o,max}$
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		15	50	mV	$T_C=-40^\circ C$ to $85^\circ C$
Output Ripple and Noise Voltage Peak to Peak			150	mV <sub>P-P</sub>	5Hz to 20MHz
External Load Capacitance	220*3		10,000	uF	Electrolytic capacitor
Output Current ( $I_o$ ) SV28-5-175	0.5		35	A	At $I_o < 0.5A$ , the modules may exceed Output ripple specifications
Output Current limit SV28-5-175		42	46	A	$V_o=90\%$ of $V_{o,set}$
Output Short Circuit Current		170		% $I_{o,max}$	$V_o=250mV$

Efficiency					
SV28-5-175	80	82		%	$T_C = 70^\circ\text{C}$ , $V_i = 28\text{V}$ $I_o = I_{o,max}$
Dynamic Response					25% to 50 % load, 50% to 75 % load, 0.1A/ $\mu\text{s}$ ; $T_C = 25^\circ\text{C}$ , $V_i = 28\text{V}$
Peak Deviation		3		% $V_{o,set}$	
Settling Time		300		$\mu\text{s}$	

**CONTROL SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Logic ON/OFF SV28-5-xxx Standard Logic: Logic Low – Module On SV28-5-xxxP Optional Logic: Logic High – Module On Logic Low: Sink Current $I_{on/off}$			1	mA	$V_{on/off}=0\text{V}$ $I_{on/off}<1\text{mA}$
Output Voltage $V_{on/off}$			1.5	V	
Logic High: Source Current $I_{on/off}$			50	$\mu\text{A}$	$V_{on/off}=15\text{V}$ $I_{on/off}=0.0\ \mu\text{A}$
Output Voltage $V_{on/off}$			15	V	
Turn-On Time		8	25	ms	$I_o = 80\%$ of $I_{o,max}$ $V_o$ with $\pm 1\%$ $V_{o,set}$
Output Voltage Adjustment					
Output Remote Sense Range			0.5	V	
Output Voltage Trim Range	60		110	% $V_{o,set}$	
Output Over Voltage Clamp	5.7		7.0	V	Auto. recovery
Over Temperature Shutdown		105		$^\circ\text{C}$	Auto. Recovery

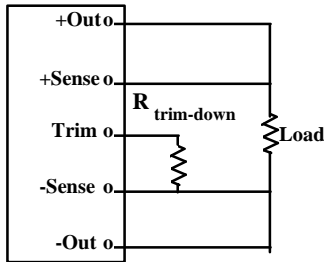
**ISOLATION SPECIFICATIONS:**

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			M $\Omega$	

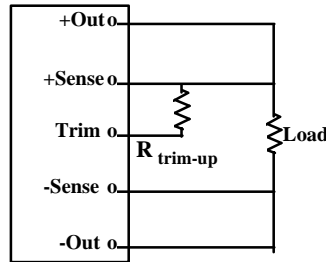
**MECHANICAL PARAMETERS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		118		g	
Size		2.40x2.28x0.50		$\text{in}^3$	

**TRIM CIRCUIT:**



Trim Down



Trim Up

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

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

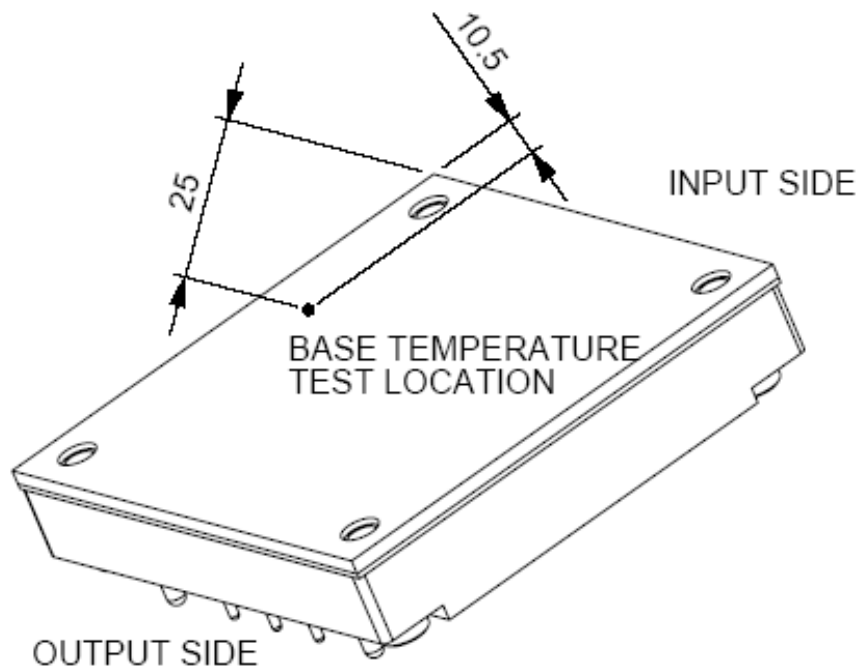
$\Delta \%$  = Desired Output Voltage Change

$V_o$  = Output Voltage

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

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

**Baseplate Measure Point:**



**Outline Drawing:**

- NOTE:  
 1. UNIT: MM [INCH]  
 2. TOLERANCE: X.X [X.XX] ±0.5 [00.2]  
 X.XX [X.XXX] ±0.25 [0.010]

