SUPERVERTER™
33W – 132W DC-DC CONVERTERS
MODEL: *SV28-3.3-50/75/100/150/200*
PRELIMINARY DATA SHEET

28VDC INPUT
3.3 VDC @ 10A OUTPUT,
15A OUTPUT,
20A OUTPUT,
30A OUTPUT, or
40A OUTPUT

Designed for Telecom, Wireless, & Computer Applications

FEATURES

- Industry Standard Half-brick Package
- High Efficiency
- Constant Frequency
- Clamp Over-Voltage Protection
- Remote Sense
- Trim Range: -40 to +10%
- Encapsulated
- High Power Density: up to 54 W/cu.in.
- Low Noise
- -40 to +100°C Operation
- 105°C Over Temperature Protection
- Choice of On/Off Logic
- UL/CSA/TUV & CE Compliant
- Threaded Mounting Holes

MODEL SELECTION

Model Number	Input Voltage (Vdc)	Output Voltage (Vdc)	Output Current (A)
SV28-3.3-200-1	18-36	3.3	40
SV28-3.3-150-1	18-36	3.3	30
SV28-3.3-100-1	18-36	3.3	20
SV28-3.3-75-1	18-36	3.3	15
SV28-3.3-50-1	18-36	3.3	10

DESCRIPTION

The SuperVerter series modules are high-density DC-DC converters designed for use in telecom and other centralized, modular, and distributed power applications. The SV28-3.3 series is a family of 28V input, 3.3V output, half brick modules compatible with the industry standard footprint. These modules may be used as form, fit, and function replacements for industry standard, 3.3V half brick modules. These SuperVerter modules use metal baseplates, planar transformers, and surface mount construction to produce up to 132W of low noise, 3.3V output power.

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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)		40	Vdc	Continuous
Transient Input Voltage (+In to –In)		50	Vdc	100 msec. max.
Input/ Case Isolation		1500	Vdc	
Output/ Case Isolation		500	Vdc	
Input/ Output Isolation		1500	Vdc	
Storage Temperature	-40	+110	°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	18	28	36	Vdc	
Maximum Input Current					Over V_{in} range @ full load
SV28-3.3-50			2.8	A	
SV28-3.3-75			3.9	A	
SV28-3.3-100			5.5	A	
SV28-3.3-150			8.4	A	
SV28-3.3-200			12.2	A	
Inrush Transient			1	A^2sec	
Input Reflected Ripple Current		5		mAp-p	5Hz to 20MHz, 12µH source impedance
Input Ripple Rejection		60		dB	@120 Hz

OUTPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Voltage Set Point	3.25	3.30	3.35	Vdc	28 V_{in}, 25°C, full load
Load Regulation		0.05	0.2	%	0.5 A to full load
Line Regulation		0.01	0.1	%	Over V_{in} range
Voltage Drift w/Temperature		15	50	mV	-40 to +100 °C Case
Ripple			150	mV p-p	5 Hz to 20 MHz, ripple may exceed spec below minimum load
Rated Output Current					At $I_{out} < I_{out}$(min), the output ripple may exceed the specification. All other aspects of the unit will function properly at no load.
SV28-3.3-50	0.5		10	A	
SV28-3.3-75	0.5		15	A	
SV28-3.3-100	0.5		20	A	
SV28-3.3-150	0.5		30	A	
SV28-3.3-200	0.5		40	A	

ELECTRICAL SPECIFICATIONS (continued)

Current Limit Inception					V_{out} = 90% V_{out} nominal
SV28-3.3-50		7	13.2	A	
SV28-3.3-75		18	20	A	
SV28-3.3-100		23	26	A	
SV28-3.3-150		34.5	39.5	A	
SV28-3.3-200		48	52.5	A	
Short Circuit Current			170	% F.L.	V_{out} = 250 mV
Switching Frequency		370		kHz	
Transient Response Peak Deviation (0.1A/µsec slew rate)		3		% V_{out}	Load change from 50% to 75% full load
Transient Response Settling Time (0.1 A/µsec slew rate)			300	µsec	V_{in} = 28 V, T_{case} = 25 °C, V_{out} within 1% V_{out} nominal
Efficiency					V_{in} = 28 V, full load, T_{case} = 70 °C
SV28-3.3-50	79	81.5		%	
SV28-3.3-75	79	81.5		%	
SV28-3.3-100	77	79.5		%	
SV28-3.3-150	77	79		%	
SV28-3.3-200	74	77		%	
External Load Capacitance	0		10,000	µF	Electrolytic Capacitor

ISOLATION PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input-to-Output Capacitance		2000		pF	
Input-to-Output Resistance	10			M Ohms	

FEATURE PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Trim Range	60		110	%Vout	
Remote Sense Compensation			0.5	Vdc	
Over Voltage Clamp (Non-Shutdown, Auto. Recovery)	4.0		5.0	Vdc	
Over Temperature Shut-down		+105		°C	100W & 150W models only
Turn-On Time		20	35	msec	80% load, V_{out} within 1% of steady state
Logic On/Off *					
Logic Low Von/off	0		1.2	V	@ Ion/off = 1mA
Ion/off			1.0	mA	@ Von/off = 0V
Logic High: Von/off			15	V	@ Ion/off = 1mA
Ion/off			50	µA	@ Von/off = 15V

** Negative logic on/off is standard, positive logic is optional (delete the "-1" suffix from model number for positive logic). With negative logic, logic low turns module on, logic high turns it off. The reverse is true for positive logic.*

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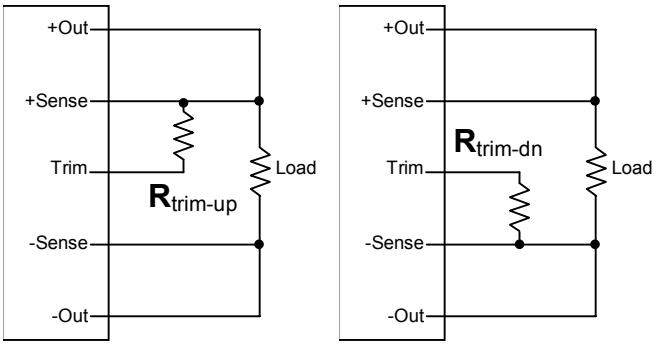
MECHANICAL SPECIFICATIONS

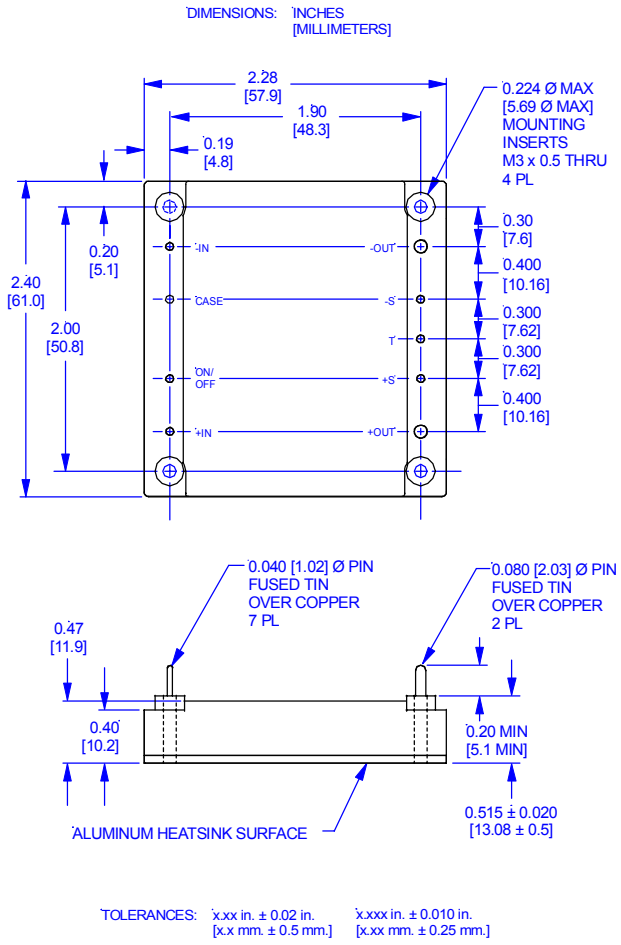
MECHANICAL PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		118 (4.2)		g (oz.)	
Size		0.5 x 2.4 x 2.28		Inches	See Outline Drawing
Thermal Resistance, Case-to-Ambient		6.6		°C/W	T_{case} = 100 °C

TRIM CIRCUIT CONFIGURATIONS



Trim Up **Trim Down**

OUTLINE DRAWING



TRIM RESISTOR CALCULATIONS

$$R_{trim-up} = \left(\frac{3.3 \times (100 + \Delta\%)}{1.225 \times \Delta\%} - \frac{(100 + 2 \times \Delta\%)}{\Delta\%} \right) \text{kohms}$$

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

$\Delta\% = $ Desired Output Voltage Change ($\Delta\% > 0$)

$\mathbf{R}_{trim-up} = $ External Resistor Value to Increase V_o

$\mathbf{R}_{trim-down} = $ External Resistor Value to Decrease V_o

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