SUPERVERTER™ Selection Guide, Model List & Features

The **SuperVerter** family of DC-DC converters may be used as form, fit, function replacements for industry standard half-brick modules.

FEATURES

- Direct Replacement for Industry Standard
- High Efficiency
- High MTBF (1.8 million hours)
- Constant Frequency
- Clamp Over Voltage Protection
- Remote Sense
- Trim Range: 60% to 110%
- Encapsulated
- High Power Density: up to 87 W/cu.in.
- Low Noise
- -40° to +100° C Baseplate Operation
- Choice of On/Off Logic
- Safety Agency Compliant
- Threaded or Thru Mounting Holes
- Optional Pin lengths
- Over Temperature Protection

Model Selection Guide

Model Number	*Input Voltage*	*Output Voltage*	*Output Current*
SV48-2.5-150-1	36-75Vdc	2.5Vdc	30A
SV48-2.5-200-1	36-75Vdc	2.5Vdc	50A
SV48-3-150-1	36-75Vdc	3.3Vdc	30A
SV48-3-200-1	36-75Vdc	3.3Vdc	45A
SV48-5-150-1	36-75Vdc	5Vdc	30A
SV48-5-200-1	36-75Vdc	5Vdc	40A
SV48-12-150-1	36-75Vdc	12Vdc	12.5A
SV48-12-200-1	36-75Vdc	12Vdc	20A
SV48-15-150-1	36-75Vdc	15Vdc	10A
SV48-15-200-1	36-75Vdc	15Vdc	16A
SV48-24-150-1	36-75Vdc	24Vdc	6.2A
SV48-24-200-1	36-75Vdc	24Vdc	10A
SV48-28-150-1	36-75Vdc	28Vdc	5.35A
SV48-28-200-1	36-75Vdc	28Vdc	8.6A

Negative logic On/Off is standard. For optional positive logic delete -1 suffix from model number (see below).

OPTIONAL FEATURES

For the optional features listed below, simply list the appropriate digit(s) for the features you want in ascending order in the suffix following -150 or -200 in the part number.

Feature Options	*Suffix*
Negative Logic On/Off is standard	include “1” in the suffix
Positive Logic On/Off is optional	delete “1” from the suffix
Threaded mounting holes, as shown in the outline drawing (p.9) are standard	no suffix digit required
Optional thru mounting holes (without threads) of 0.130” inside diameter*	include “4” in the suffix
Pin length of 0.20” (5.1mm) is standard	no suffix digit required
Pin length of 0.145” (3.68mm)*	include “6” in the suffix
Pin length of 0.110” (2.79mm)*	include “8” in the suffix

* *Minimum order quantities apply.*

EXAMPLES:

SV48-5-200-1 Standard module negative logic, threaded inserts, & 0.20 inch pins.
SV48-5-200-48 Positive logic, through hole inserts, & 0.110 inch pins.
SV48-5-200-146 Negative logic, through hole inserts, & 0.145 inch pins.

Heat Sinks for SuperVerter modules, of several heights and fin arrangements, are available from RO.

Absolute Maximum Ratings

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

Parameter	Min	Max	Units	Conditions
Input Voltage		80	Vdc	Continuous
Transient Input Voltage		100	Vdc	100 msec max.
Input/Output Isolation		1500	Vdc	
Operating Case Temperature	-40	100	°C	
Storage Temperature	-40	110	°C	

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					
SV48-2.5-150			3.5	A	See Input Characteristic Curves for each model starting on page 10
SV48-2.5-200			6.0	A	
SV48-3-150			4.5	A	
SV48-3-200			6.5	A	
SV48-5-150			6.5	A	
SV48-5-200			8.7	A	
SV48-12-150			6.5	A	
SV48-12-200			10.5	A	
SV48-15-150			6.5	A	
SV48-15-200			10.5	A	
SV48-24-150			6.5	A	
SV48-24-200			10.5	A	
SV48-28-150			5.6	A	
SV48-28-200			9.0	A	
Input Ripple Rejection		60		dB	@120 Hz

Output Parameters	Min	Typ	Max	Units	Conditions
Voltage Set Point					
SV48-2.5-150 or 200	2.46	2.50	2.55	Vdc	48Vin, 25°C, Full Load
SV48-3-150 or 200	3.25	3.30	3.35	Vdc	
SV48-5-150 or 200	4.92	5.0	5.08	Vdc	
SV48-12-150 or 200	11.78	12.0	12.22	Vdc	
SV48-15-150 or 200	14.73	15.0	15.27	Vdc	
SV48-24-150 or 200	23.55	24.0	24.45	Vdc	
SV48-28-150 or 200	27.72	28.0	28.28	Vdc	
Load Regulation		0.05	0.2	%	0 to Full Load
Line Regulation		0.01	0.1	%	Over Vin Range
Voltage Drift w/Temperature					
SV48-2.5-150 or 200		15	50	mV	-40 to +100°C
SV48-3-150 or 200		15	50	mV	
SV48-5-150 or 200		15	50	mV	
SV48-12-150 or 200		50	150	mV	
SV48-15-150 or 200		50	150	mV	
SV48-24-150 or 200		100	300	mV	
SV48-28-150 or 200		100	300	mV	

SUPERVERTER™ Specifications *(Continued)*

Electrical Specifications *(Continued)*

Output Parameter	Min	Typ	Max	Units	Conditions
Ripple					
SV48-2.5-150 or 200			150	mVp-p	
SV48-3-150 or 200			150	mVp-p	
SV48-5-150 or 200			150	mVp-p	5 Hz to 20 MHz
SV48-12-150 or 200			200	mVp-p	(limits may be exceeded
SV48-15-150 or 200			250	mVp-p	at Iout <0.5A)
SV48-24-150 or 200			400	mVp-p	
SV48-28-150 or 200			400	mVp-p	
Current:					
SV48-2.5-150	0.5*		30	A	
SV48-2.5-200	0.5		50	A	
SV48-3-150	0.5		30	A	
SV48-3-200	0.5		45	A	
SV48-5-150	0.5		30	A	See Output Characteristic
SV48-5-200	0.5		40	A	Curves for each model
SV48-12-150	0.3		12.5	A	starting on page 10
SV48-12-200	0.3		20	A	
SV48-15-150	0.3		10	A	*No minimum load requirement,
SV48-15-200	0.3		16	A	but ripple spec may be
SV48-24-150	0.3		6.2	A	exceeded @Iout < 0.5A
SV48-24-200	0.3		10	A	
SV48-28-150	0.3		5.35	A	
SV48-28-200	0.3		8.6	A	
Current Limit Inception		115	130	% Iout max.	Vout = 90% Vout nominal, See Output Characteristic Curves
Short Circuit Current			170	% Iout max	Vout = 250 mV, See Output Characteristic Curves
Transient Response Peak Deviation (0.1A/µsec slew rate)		1		% Vout	50 to 75% or 50 to 25% Load Change
Transient Response Settling Time (0.1A/µsec slew rate)		100		µsec	Vout within 1% Vout nominal
Efficiency:					
SV48-2.5-150		79		%	
SV48-2.5-200		76.5		%	
SV48-3-150		81		%	
SV48-3-200		79.5		%	
SV48-5-150		85		%	
SV48-5-200		83		%	
SV48-12-150		87.5		%	Vin=48V, Full Load, 70°C Case,
SV48-12-200		85		%	See Efficiency Curves
SV48-15-150		88		%	
SV48-15-200		87		%	
SV48-24-150		88		%	
SV48-24-200		86		%	
SV48-28-150		87		%	
SV48-28-200		86		%	
External Load Capacitance	0		10,000	µF	

Isolation Parameters	Min	Typ	Max	Units
Input to Output Capacitance		2000		pF
Input to Output Resistance	10			M ohms

Electrical Specifications *(Continued)*

Mechanical Parameters	Typical	Units	Conditions
Weight	118 (4.2)	g (oz.)	
Size	0.5 x 2.4 x 2.28	inches	See Outline Drawing below
Thermal Resistance Case to Ambient	6.6	°C/W	Case Temperature = 100°C

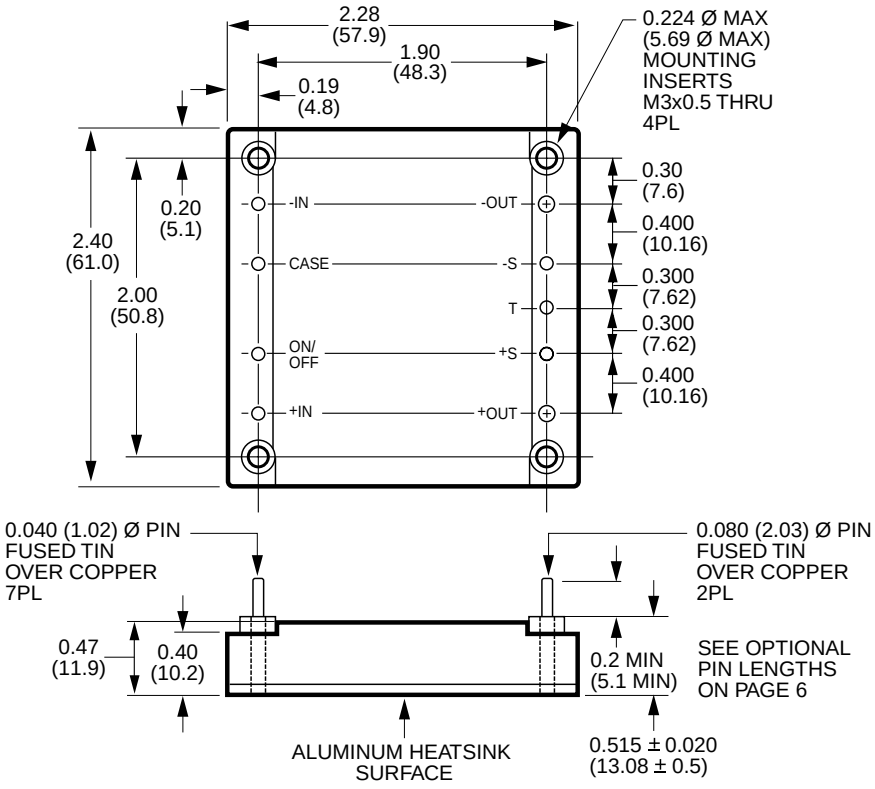
Feature Parameters	Min	Typ	Max	Units	Conditions
Trim Range	60		110	%Vout	See page 19
Remote Sense Compensation			0.5	V	
Over Voltage Clamp					
SV48-2.5-150 or 200	3.0		4.0	Vdc	
SV48-3-150 or 200	4.0		5.0	Vdc	
SV48-5-150 or 200	5.7		7.0	Vdc	
SV48-12-150 or 200	13.2		16.0	Vdc	
SV48-15-150 or 200	16.5		20.0	Vdc	
SV48-24-150 or 200	26.5		33.0	Vdc	
SV48-28-150 or 200	30.9		38.5	Vdc	
Over Temperature Shut-down		105		°C	Case Temperature
Logic On/Off*					
Logic Low: Von/off	0		1.2	V	@ Ion/off = 1 mA
Ion/off			1.0	mA	@ Von/off = 0V
Logic High: Von/off			15	V	@ Ion/off = 1 mA
Ion/off			50	µA	@ Von/off = 15V
Turn-on Time		8	35	msec	80% load, Vout within 1% Vout nominal

** 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.*

OUTLINE DRAWING

DIMENSIONS:
INCHES
(MILLIMETERS)

TOLERANCES:
X.XX IN. ± 0.02 IN (X.X MM ± 0.05 MM)
X.XXX IN ± 0.010 IN (X.XX MM ± 0.25 MM)

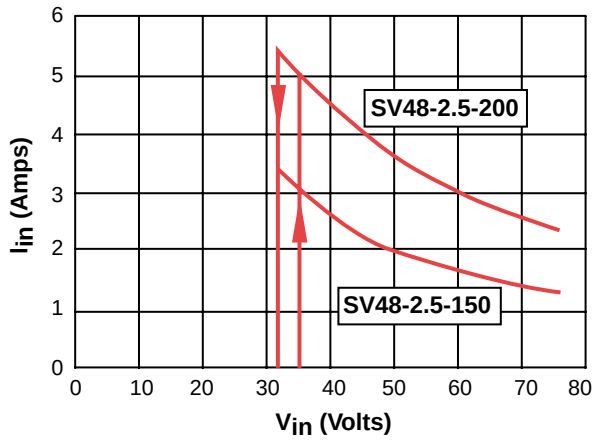


2.5V Output Models

SV48-2.5-150 SV48-2.5-200

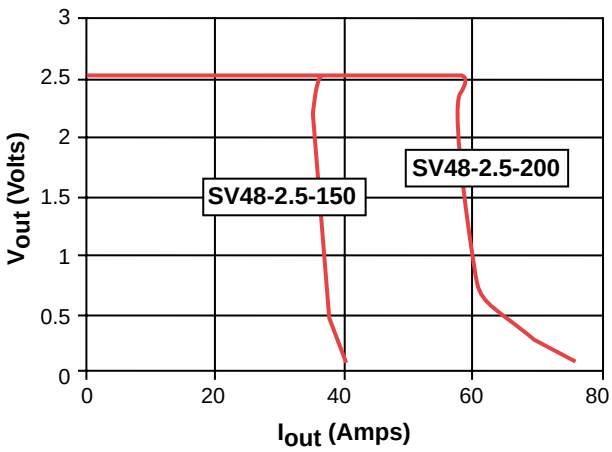
Input Characteristic

(room temperature, full load)

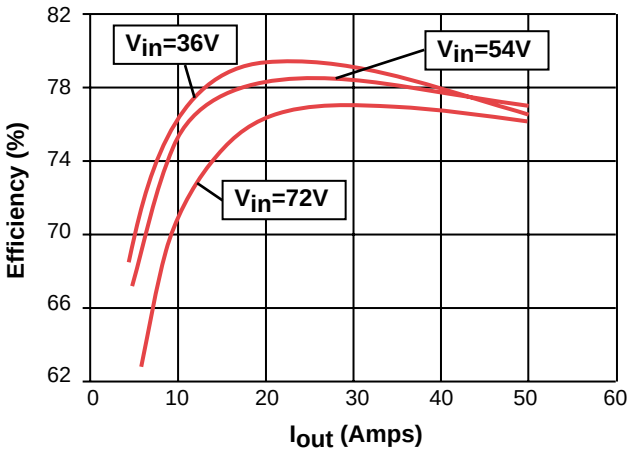


Output Characteristic

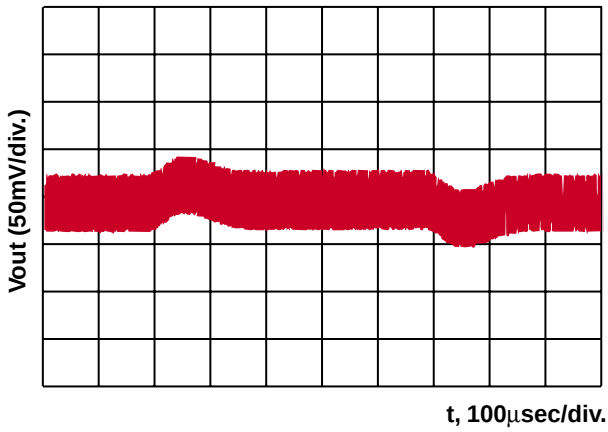
(room temperature, V_{in} = 48V)



Efficiency



Transient Response



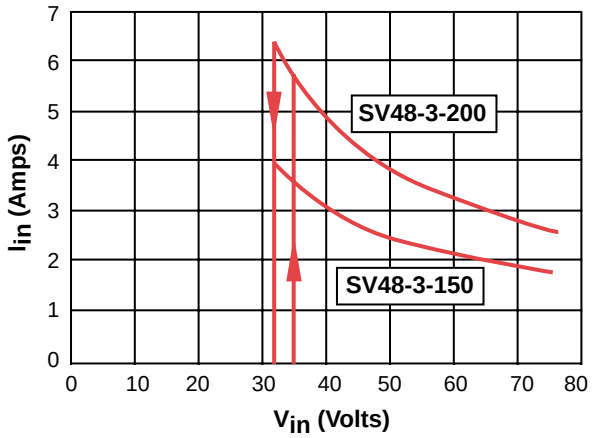
I_{out} = 22.5A-15A-22.5A
Current Slew Rate 0.1A/µsec.
SV48-2.5-150

3.3V Output Models

SV48-3-150 SV48-3-200

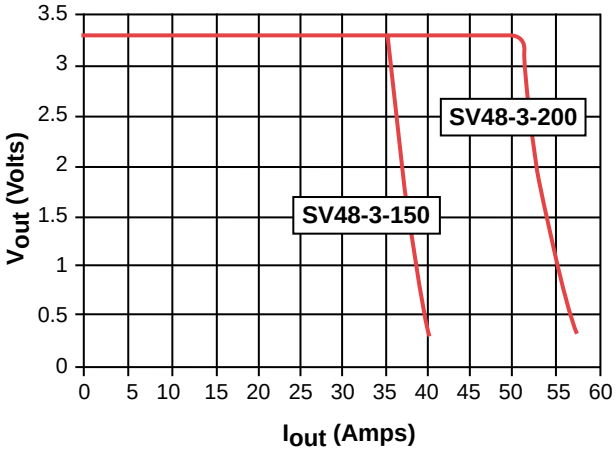
Input Characteristic

(room temperature, full load)

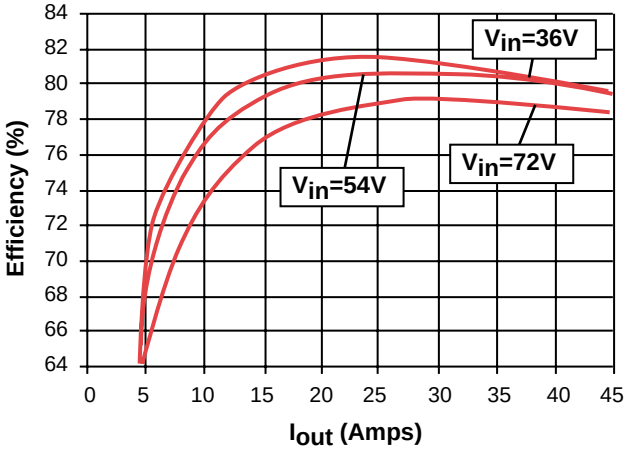


Output Characteristic

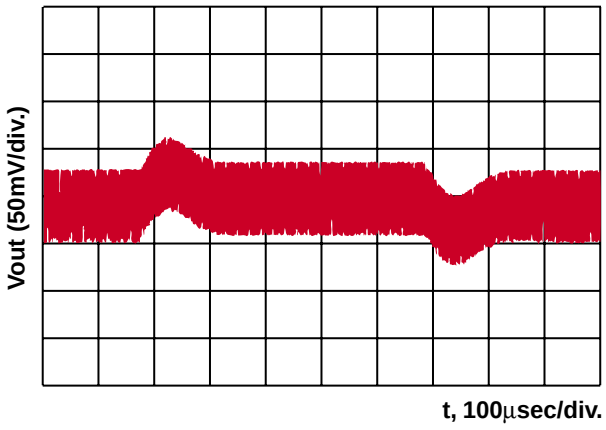
(room temperature, V_{in} = 48V)



Efficiency



Transient Response



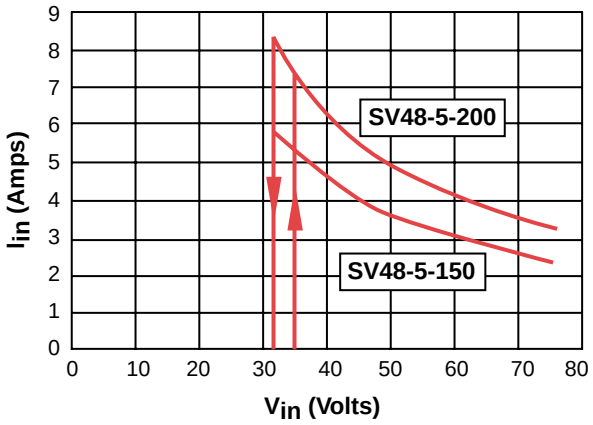
I_{out} = 22.5A-15A-22.5A
Current Slew Rate 0.1A/µsec.
SV48-3-150

5V Output Models

SV48-5-150 SV48-5-200

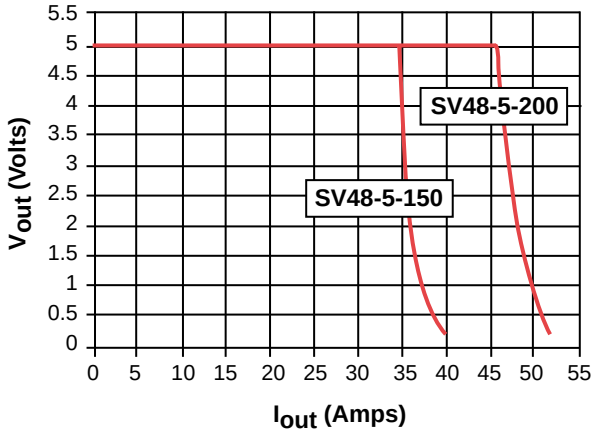
Input Characteristic

(room temperature, full load)

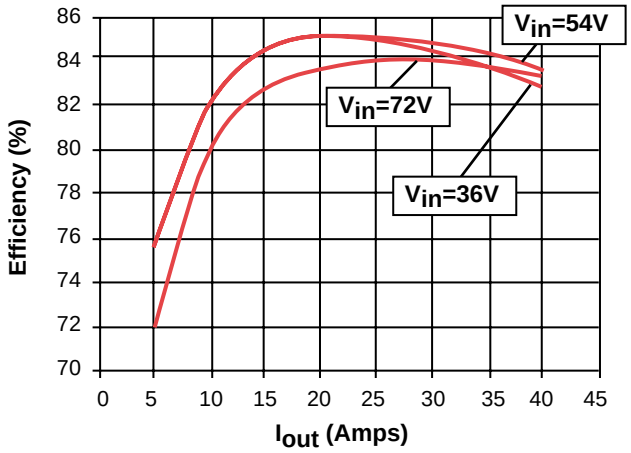


Output Characteristic

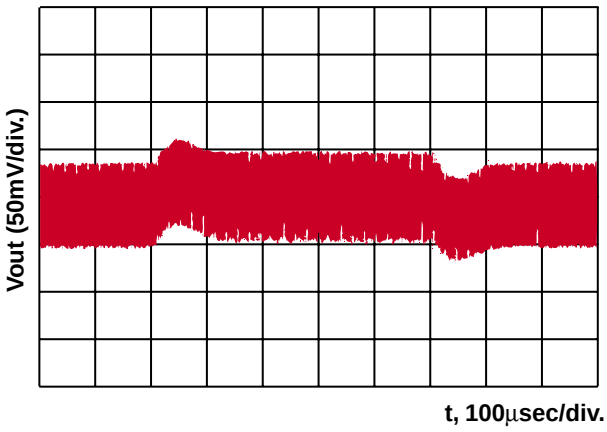
(room temperature, V_{in} = 48V)



Efficiency



Transient Response



I_{out} = 22.5A-15A-22.5A
Current Slew Rate 0.1A/µsec.
SV48-5-150

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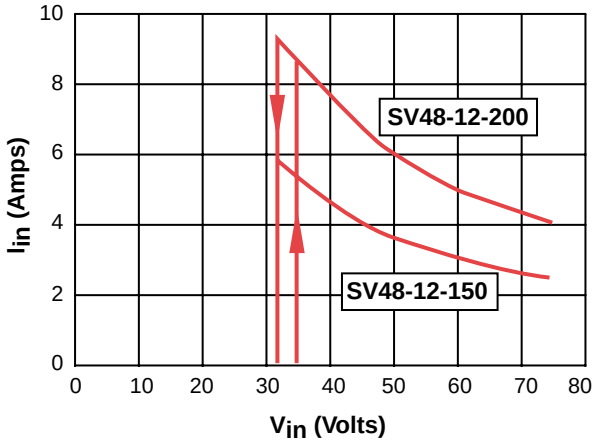
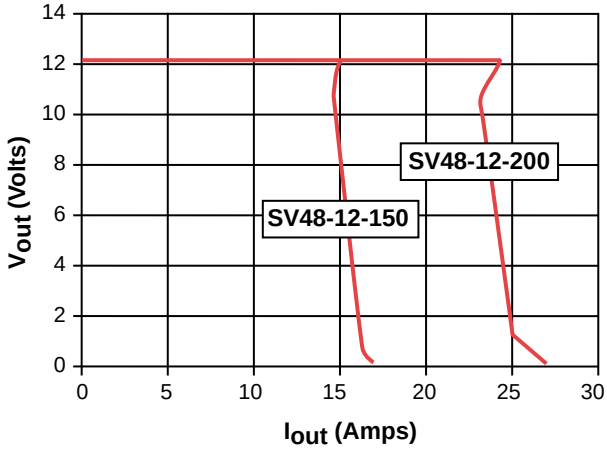
12V Output Models
SV48-12-150 SV48-12-200

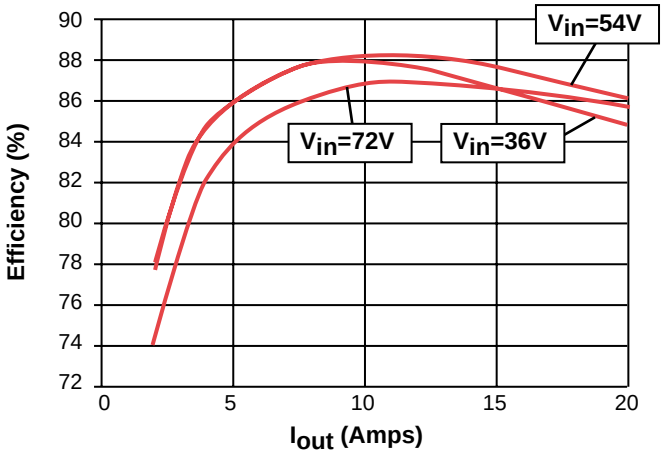
Input Characteristic
(room temperature, full load)



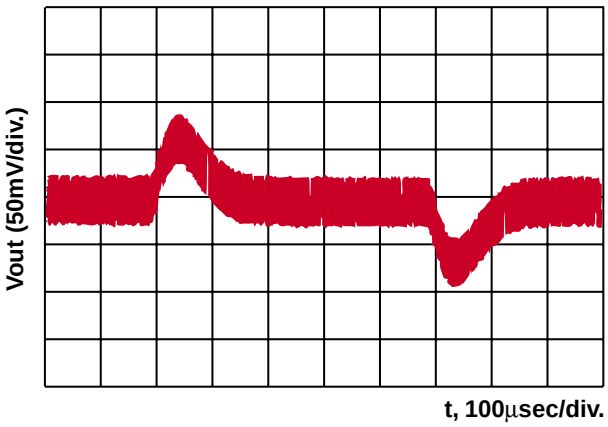
Output Characteristic
(room temperature, V_{in} = 48V)



Efficiency



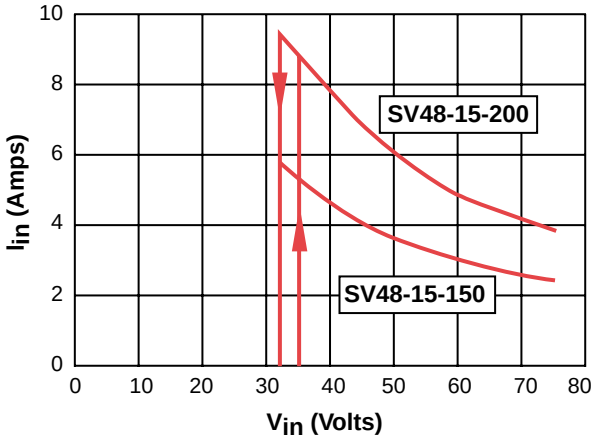
Transient Response



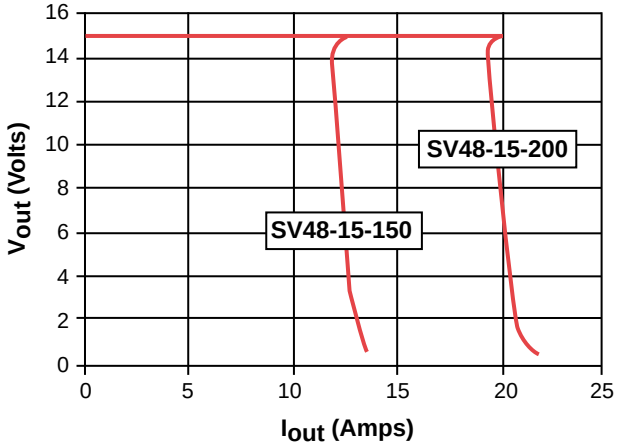
I_{out} = 9.37A-6.25A-9.37A
Current Slew Rate 0.1A/µsec.
SV48-12-150

15V Output Models
SV48-15-150 SV48-15-200

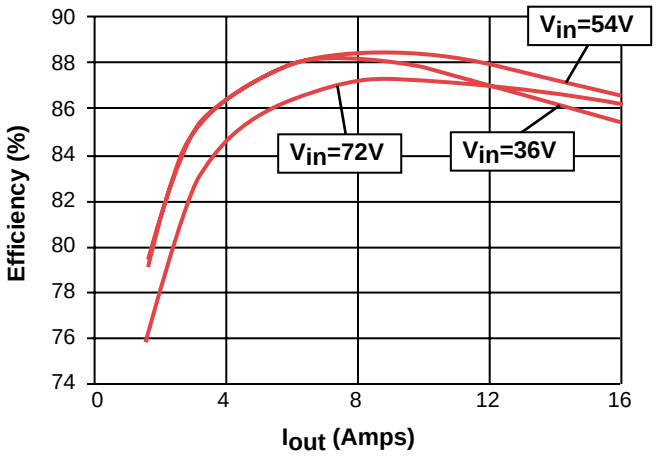
Input Characteristic
(room temperature, full load)



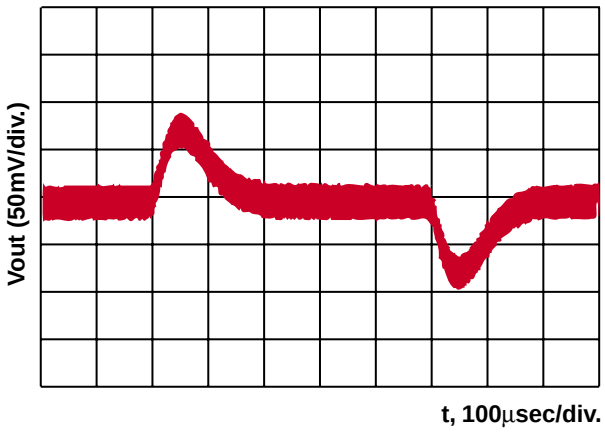
Output Characteristic
(room temperature, V_{in} = 48V)



Efficiency



Transient Response



I_{out} = 7.5A-5A-7.5A
Current Slew Rate 0.1A/µsec.
SV48-15-150

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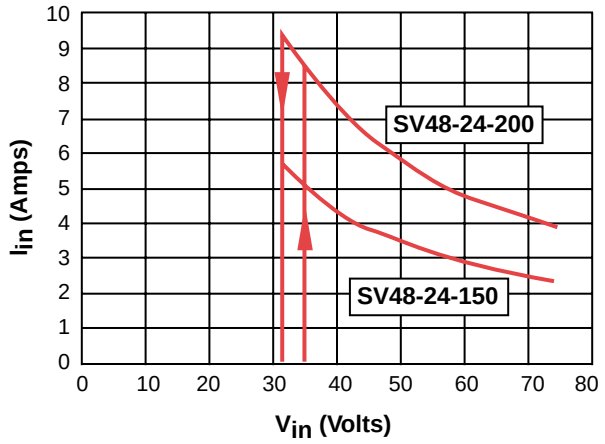
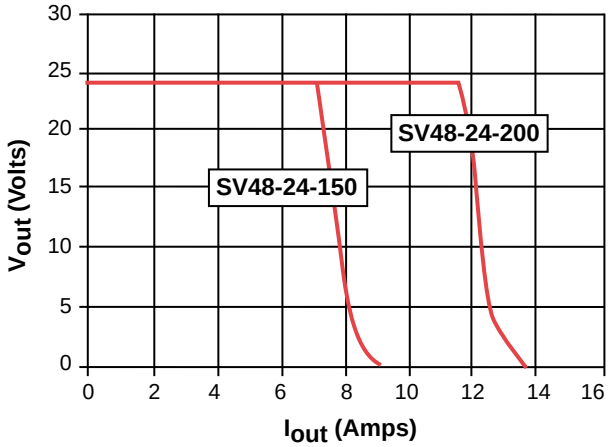
24V Output Models
SV48-24-150 SV48-24-200

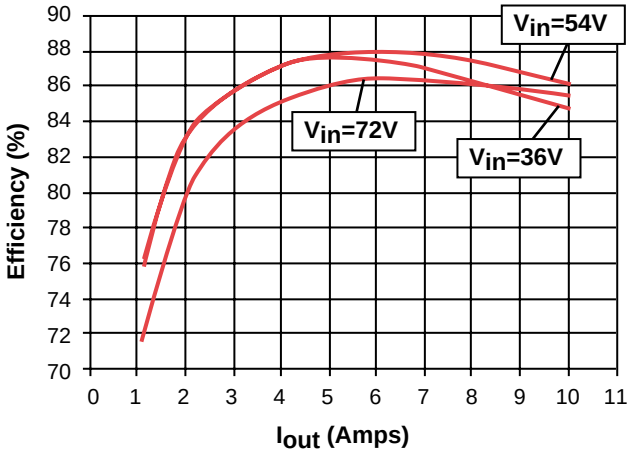
Input Characteristic
(room temperature, full load)



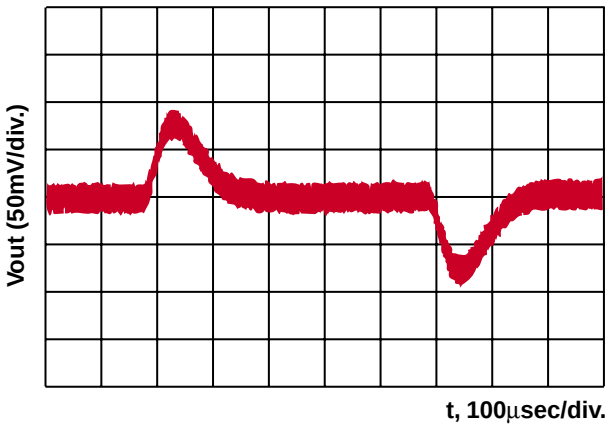
Output Characteristic
(room temperature, V_{in} = 48V)



Efficiency



Transient Response

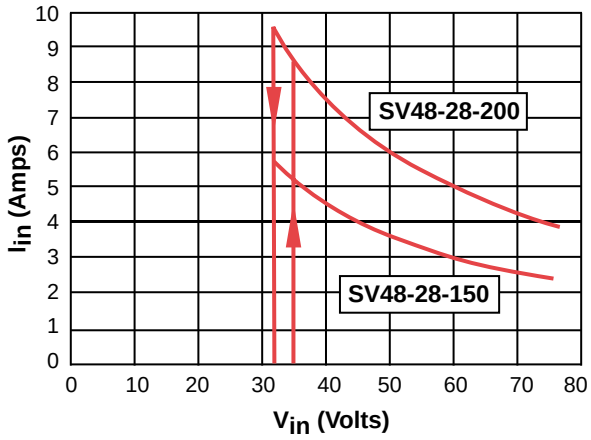


I_{out} = 4.65A-3.1A-4.65A
Current Slew Rate 0.1A/µsec.
SV48-24-150

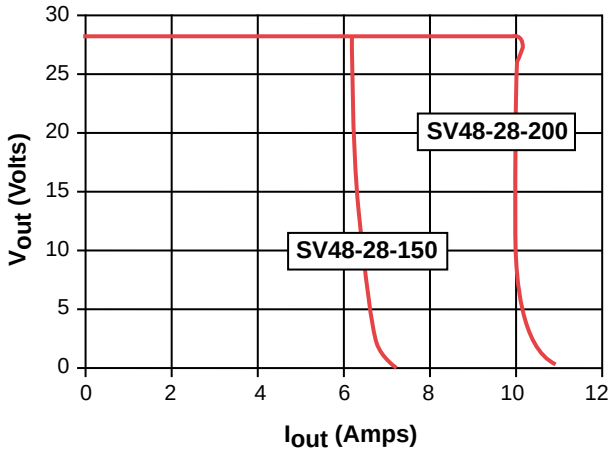
SUPERVERTER™ Performance Data

28V Output Models
SV48-28-150 SV48-28-200

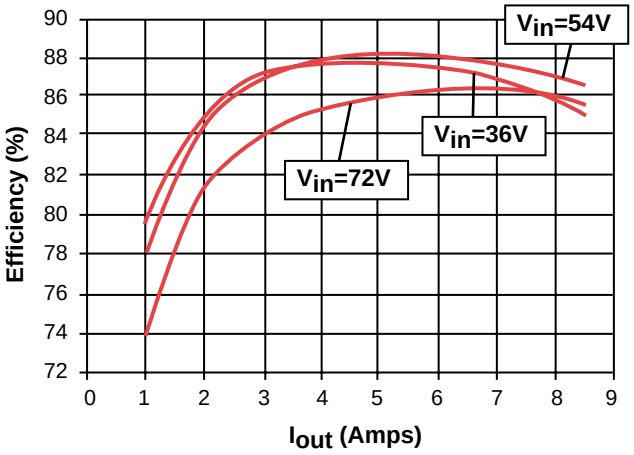
Input Characteristic
(room temperature, full load)



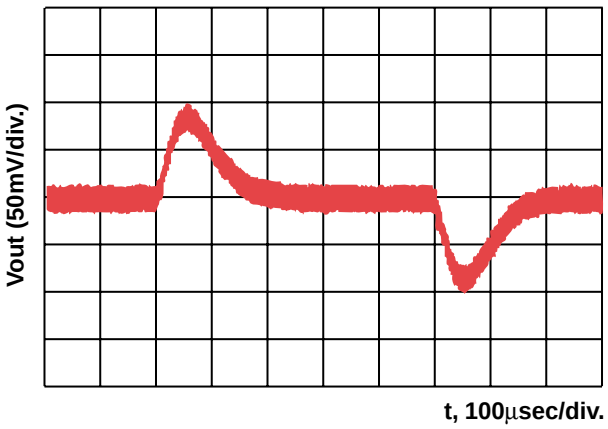
Output Characteristic
(room temperature, V_{in} = 48V)



Efficiency



Transient Response



I_{out} = 4.875A-3.25A-4.875A
Current Slew Rate 0.1A/µsec.
SV48-28-150

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