

# SVB-SC/SD

# 50W

**DC/DC Converter**  
**Single Output**

 POWER<sup>®</sup>  
SOURCE

“Ideal miniaturization should be enhanced with increased of efficiency”. The SV-series has been developed based on this fundamental design idea. This series has been developed in a super-small size, with high efficiency, high performance and high reliability. For example, the introduction of a “double side printed PCB with through” plus the latest design of eliminating capacitors from the input circuit have enabled improved reliability and longevity of the converter.



## **Features**

Wide input voltage range (9.2-140Vdc)  
High efficiency & reliability  
Output voltage +/-10%  
Switching frequency: Data sheet page 2 to 5  
MTBF: Data sheet page 2 to 5  
Warranty: 2 years

## **Mechanical features**

Dimension (WxLxH): 83x112x33mm  
Weight: 410g  
Connector: Screw terminal  
Closed type

## **Possible applications**

Process control  
Office equipment  
Computer peripherals  
Telecommunications  
Industrial electronics & machines

## **Control features**

Over voltage protection: Output shutdown  
Over current protection: Current limiting, aut. recovery  
Input polarity protection



Specifications<DC/DC>	Model				
SVB-**SC12 50WATTS/ 1 OUTPUT	SVB-05SC12	SVB-12SC12	SVB-15SC12	SVB-24SC12	SVB-48SC12
<b>Input Characteristics</b>					
Input Voltage	DC12V				
Input Range	DC9.2-16V				
Inrush Current	not specified				
Efficiency [%] (typical) *1	79	80	82	85	85
<b>Output Characteristics</b>					
Output Voltage [V]	5	12	15	24	48
Output Current [A]	8.0	3.3	2.7	1.7	0.8
Voltage Adjust Range	+/- 10% of Rated Output Voltage (at no load within the input range)				
Ripple and Noise [mVp-p](maximum) *2	150	220	250	340	580
<b>Regulation</b>					
a. Statistic Line Regulation [mV](maximum)	40	96	120	192	384
b. Statistic Load Regulation [mV](maximum)	45	108	135	216	432
c. Temperature Coefficient *3	0.03%/°C				
d. Drift[mV](maximum) *4	40	75	90	135	255
e. Dynamic Load Regulation [mV](typical) *5	150	360	450	720	1440
f. Recovery Time *5	0.3mS(typical)				
Rise up time	50mS(maximum) at 25°C and rated input/output				
Hold up time	not specified				
<b>Functions</b>					
Over current Protection	Current limiting with automatic recovery				
≥110% of Rated Output [A]	8.80	3.63	2.97	1.87	0.88
Over voltage Protection	Output shutdown(to reset, leave 1minute after shutdown)				
≥110% of Rated Output [V]	5.50	13.2	16.5	26.4	52.8
Remote Sense	not available				
Remote On/Off	not available				
Reverse voltage protection	by internal fuse				
<b>Environmental</b>					
Operating Temperature	0 to +50°C				
Operating Humidity	85%RH(non-condensing)				
Storage Temperature	-20 to +85°C				
Storage Humidity	85%RH(non-condensing)				
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute				
	Primary-Frame Ground AC2,000V for 1minute				
	Secondary-Frame Ground AC500V for 1minute				
Insulation Resistance Primary-Secondary-Frame Ground	50MΩ(minimum) by DC500V insulation tester				
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s <sup>2</sup> ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)				
Shock	294m/s <sup>2</sup>				
Cooling	Convection				
Line conduction noise	not specified				
<b>Safety</b>					
Weight (typical)	410g				
MTBF [H]	660,000				
Switching Frequency[kHz](typical)	90 Fix.	90 Fix.	90 Fix.	90 Fix.	90 Fix.

Conditions:

\*1 At DC12V input and rated output

\*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth

\*3 At -5 to +50°C

\*4 For 7hour period after 1hour warm-up at 25°C and rated input/output

\*5 When output current is changed between 25% and 75% of rated output current rapidly at DC12V input



Specifications<DC/DC>	Model				
SVB-**SC24 50WATTS/ 1 OUTPUT	SVB-05SC24	SVB-12SC24	SVB-15SC24	SVB-24SC24	SVB-48SC24
<b>Input Characteristics</b>					
Input Voltage	DC24V				
Input Range	DC19-32V				
Inrush Current	not specified				
Efficiency [%] (typical) *1	81	83	85	87	88
<b>Output Characteristics</b>					
Output Voltage [V]	5	12	15	24	48
Output Current [A]	10.0	4.3	3.4	2.5	1.1
Voltage Adjust Range	+/- 10% of Rated Output Voltage (at no load within the input range)				
Ripple and Noise [mVp-p](maximum) *2	150	220	250	340	580
<b>Regulation</b>					
a. Statistic Line Regulation [mV](maximum)	40	96	120	192	384
b. Statistic Load Regulation [mV](maximum)	45	108	135	216	432
c. Temperature Coefficient *3	0.03%/°C				
d. Drift[mV](maximum) *4	40	75	90	135	255
e. Dynamic Load Regulation [mV](typical) *5	150	360	450	720	1440
f. Recovery Time *5	0.3mS(typical)				
Rise up time	50mS(maximum) at 25°C and rated input/output				
Hold up time	not specified				
<b>Functions</b>					
Over current Protection	Current limiting with automatic recovery				
≥110% of Rated Output [A]	11.0	4.73	3.74	2.75	1.21
Over voltage Protection	Output shutdown(to reset, leave 1minute after shutdown)				
≥110% of Rated Output [V]	5.50	13.2	16.5	26.4	52.8
Remote Sense	not available				
Remote On/Off	not available				
Reverse voltage protection	by internal fuse				
<b>Environmental</b>					
Operating Temperature	0 to +50°C				
Operating Humidity	85%RH(non-condensing)				
Storage Temperature	-20 to +85°C				
Storage Humidity	85%RH(non-condensing)				
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute Primary-Frame Ground AC2,000V for 1minute Secondary-Frame Ground AC500V for 1minute				
Insulation Resistance Primary-Secondary-Frame Ground	50MΩ(minimum) by DC500V insulation tester				
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s <sup>2</sup> ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)				
Shock	294m/s <sup>2</sup>				
Cooling	Convection				
Line conduction noise	not specified				
<b>Safety</b>					
Weight (typical)	410g				
MTBF [H]	750,000				
Switching Frequency[kHz](typical)	90 Fix.	90 Fix.	90 Fix.	90 Fix.	90 Fix.

Conditions:

\*1 At DC24V input and rated output

\*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth

\*3 At -5 to +50°C

\*4 For 7hour period after 1hour warm-up at 25°C and rated input/output

\*5 When output current is changed between 25% and 75% of rated output current rapidly at DC24V input





Specifications<DC/DC>	Model				
SVB-**SC48 50WATTS/ 1 OUTPUT	SVB-05SC48	SVB-12SC48	SVB-15SC48	SVB-24SC48	SVB-48SC48
<b>Input Characteristics</b>					
Input Voltage	DC48V				
Input Range	DC38-64V				
Inrush Current	not specified				
Efficiency [%] (typical) *1	82	84	86	88	89
<b>Output Characteristics</b>					
Output Voltage [V]	5	12	15	24	48
Output Current [A]	10.0	4.3	3.4	2.5	1.1
Voltage Adjust Range	+/- 10% of Rated Output Voltage (at no load within the input range)				
Ripple and Noise [mVp-p](maximum) *2	150	220	250	340	580
<b>Regulation</b>					
a. Statistic Line Regulation [mV](maximum)	40	96	120	192	384
b. Statistic Load Regulation [mV](maximum)	45	108	135	216	432
c. Temperature Coefficient *3	0.03%/°C				
d. Drift[mV](maximum) *4	40	75	90	135	255
e. Dynamic Load Regulation [mV](typical) *5	150	360	450	720	1440
f. Recovery Time *5	0.3mS(typical)				
Rise up time	50mS(maximum) at 25°C and rated input/output				
Hold up time	not specified				
<b>Functions</b>					
Over current Protection	Current limiting with automatic recovery				
≥110% of Rated Output [A]	11.0	4.73	3.74	2.75	1.21
Over voltage Protection	Output shutdown(to reset, leave 1minute after shutdown)				
≥110% of Rated Output [V]	5.50	13.2	16.5	26.4	52.8
Remote Sense	not available				
Remote On/Off	not available				
Reverse voltage protection	by internal fuse				
<b>Environmental</b>					
Operating Temperature	0 to +50°C				
Operating Humidity	85%RH(non-condensing)				
Storage Temperature	-20 to +85°C				
Storage Humidity	85%RH(non-condensing)				
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute Primary-Frame Ground AC2,000V for 1minute Secondary-Frame Ground AC500V for 1minute				
Insulation Resistance Primary-Secondary-Frame Ground	50MΩ(minimum) by DC500V insulation tester				
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s <sup>2</sup> ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)				
Shock	294m/s <sup>2</sup>				
Cooling	Convection				
Line conduction noise	not specified				
<b>Safety</b>					
Weight (typical)	410g				
MTBF [H]	750,000				
Switching Frequency[kHz](typical)	90 Fix.	90 Fix.	90 Fix.	90 Fix.	90 Fix.

Conditions:

\*1 At DC48V input and rated output

\*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth

\*3 At -5 to +50°C

\*4 For 7hour period after 1hour warm-up at 25°C and rated input/output

\*5 When output current is changed between 25% and 75% of rated output current rapidly at DC48V input





Specifications<DC/DC>	Model				
SVB-**SD 50WATTS/ 1 OUTPUT	SVB-05SD	SVB-12SD	SVB-15SD	SVB-24SD	SVB-48SD
<b>Input Characteristics</b>					
Input Voltage	DC110V				
Input Range	DC85-140V				
Inrush Current *1	20A(maximum) at DC110V				
Efficiency [%] (typical) *2	81	83	84	86	87
<b>Output Characteristics</b>					
Output Voltage [V]	5	12	15	24	48
Output Current [A]	10.0	4.3	3.4	2.5	1.1
Voltage Adjust Range	+/- 10% of Rated Output Voltage (at no load within the input range)				
Ripple and Noise [mVp-p](maximum) *3	150	220	250	340	580
Regulation					
a. Statistic Line Regulation [mV](maximum)	40	96	120	192	384
b. Statistic Load Regulation [mV](maximum)	45	108	135	216	432
c. Temperature Coefficient *4	0.03%/°C				
d. Drift[mV](maximum) *5	40	75	90	135	255
e. Dynamic Load Regulation [mV](typical) *6	150	360	450	720	1440
f. Recovery Time *6	0.3mS(typical)				
Rise up time	500mS(maximum) at 25°C and rated input/output				
Hold up time	10mS(minimum) at 25°C and rated input/output				
<b>Functions</b>					
Over current Protection	Current limiting with automatic recovery				
≥110% of Rated Output [A]	11.0	4.73	3.74	2.75	1.21
Over voltage Protection	Output shutdown(to reset, leave 1minute after shutdown)				
≥110% of Rated Output [V]	5.50	13.2	16.5	26.4	52.8
Remote Sense	not available				
Remote On/Off	not available				
Reverse voltage protection	by internal fuse				
<b>Environmental</b>					
Operating Temperature	0 to +50°C				
Operating Humidity	85%RH(non-condensing)				
Storage Temperature	-20 to +85°C				
Storage Humidity	85%RH(non-condensing)				
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute Primary-Frame Ground AC2,000V for 1minute Secondary-Frame Ground AC500V for 1minute				
Insulation Resistance Primary-Secondary-Frame Ground	50MΩ(minimum) by DC500V insulation tester				
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s <sup>2</sup> ,20minutes, period for 60minutes each along X,Y,Z axes(non-operating)				
Shock	294m/s <sup>2</sup>				
Cooling	Convection				
Line conduction noise	not specified				
<b>Safety</b>					
Weight (typical)	410g				
MTBF [H]	610,000				
Switching Frequency[kHz](typical)	140 Fix.	140 Fix.	140 Fix.	140 Fix.	140 Fix.

Conditions:

\*1 At cold start

\*2 At DC110V and rated output

\*3 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth

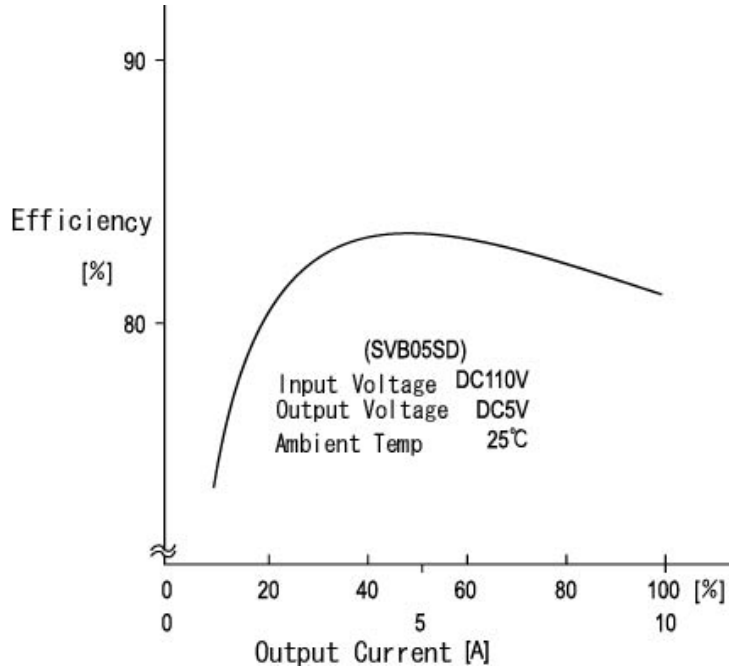
\*4 At -5 to +50°C

\*5 For 7hour period after 1hour warm-up at 25°C and rated input/output

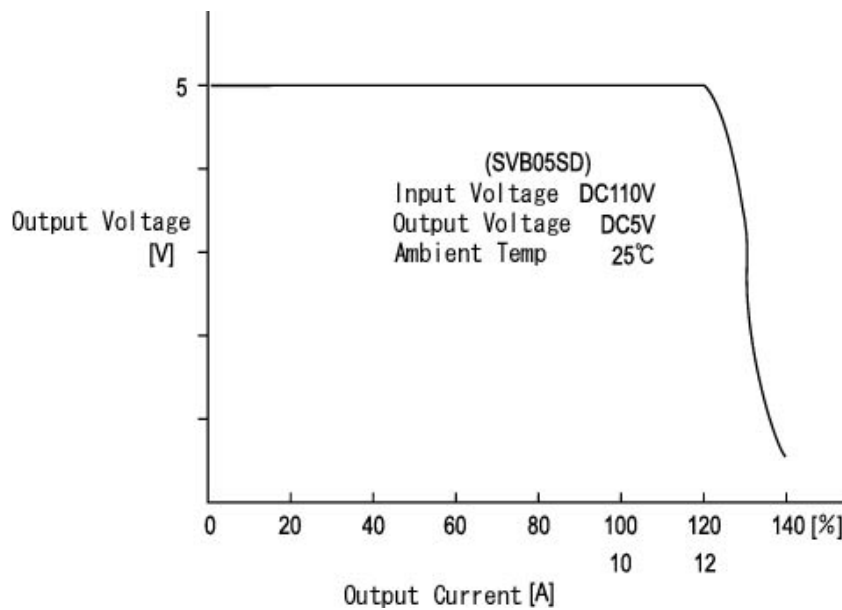
\*6 When output current is changed between 25% and 75% of rated output current rapidly at DC110V input



## Efficiency



## OCP



## Block Diagram

