



1 and 2 Watt SB Series DC/DC Converters

Key Features

- Standard SIP Package
- High Density / Compact size
- Efficiencies up to 80%
- Thru Hole mounting
- 1000 VDC input/output isolation
- No derating to 71°C Operating Temperature

Applications

- Distributed Power Systems
- Data-communications Equipment
- Telecommunications Equipment
- Computer Systems
- Industrial Control Systems



The "SB" Series of DC/DC converters feature 1 to 2 Watts of isolated power combining compact size and high efficiency. The small size of this 7 pin SIP package saves valuable board space in new product design. With single or dual outputs, the SB series is ideal for a variety of demanding requirements such as those found in the data-com/telecom, industrial control, computing, transportation, or office automation industries.

The size and pin out conform to internationally recognized packaging that is an industry standard. Operating from a nominal 5, 12, 24 or 48 VDC input source, this PCB mountable, low profile miniature converter provides single or dual unregulated, isolated outputs varying from 5 to 15VDC. It is designed to meet or exceed a variety of safety and emissions requirements including CE (LVD), EN 55022 "Class A", and UL 1950.

Reliability Incorporated also provides custom designed DC/DC Converters to meet customer specifications. Reliability Incorporated is based in Houston, Texas, USA and is a leading provider of semiconductor processing equipment and DC/DC converters. Corporate headquarters, located in Houston, TX, USA. DC/DC converters are manufactured in Costa Rica.

General Electrical Specifications

(Specifications at Nominal Input and 25 C, nominal input voltage and rated output current unless otherwise noted.)

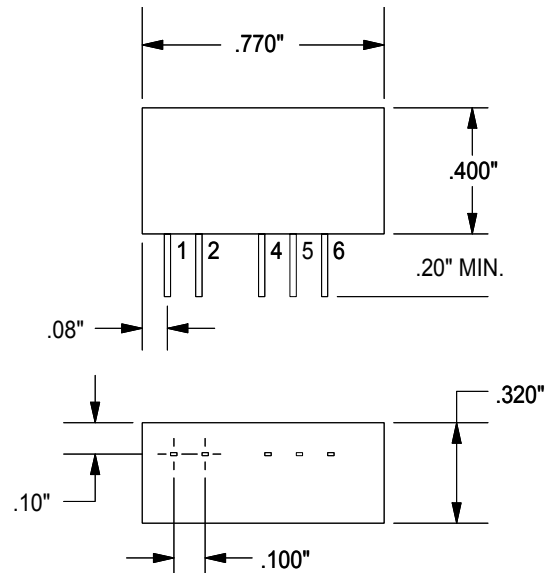
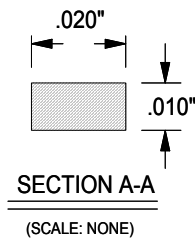
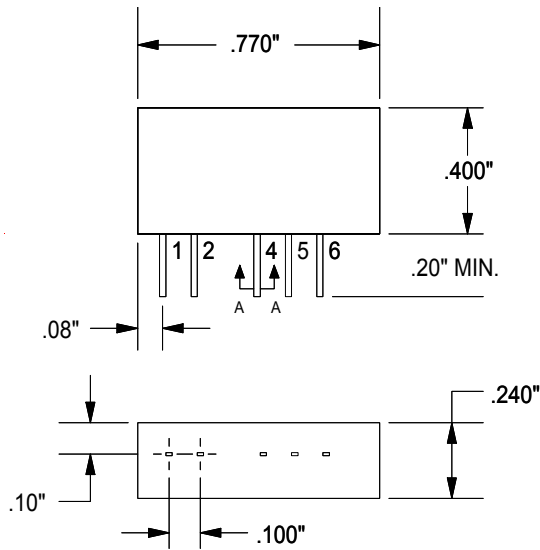
Parameter	Limits	Conditions
Output Voltage Accuracy	See selection guide column 4.	Nominal Line, Full Load
Input / Output Isolation	1000VDC	For 60 seconds, 1500VDC SB24U20 only
Minimum Load	10% of Full Load	
Output Ripple & Noise	<100 mV Peak to Peak (max)	20 MHz Bandwidth
Load Regulation	7% typical (varies by model, consult factory for details)	10% to 100% of Full Load, Nominal Line
Line Regulation	1.2% output change per 1% input voltage change (max.)	Full Load
Efficiency	75% typical	Nominal Line
Operating Temperature	-25° C to +85° C	Ambient Temperature
Storage Temperature	-55° C to 125° C	Ambient Temperature
Temperature Coefficient	± 0.02%/°C	Output VDC
Short Circuit Protection	Intermittent (<2 sec)	Self Recovering
CE	LVD	
EMC / RFI	Input Capacitor	



Selection Guide

Device Type	Input Voltage Range VDC	Input Current (A) Max Load	Output Voltage VDC	Max Output Current (A)	Product Style
SB5U5	4.75-5.25	0.267	5.0 $\pm$ 10%	0.200	1S
SB5U12	4.75-5.25	0.270	12.0 $\pm$ 10%	0.083	1S
SB5U15	4.75-5.25	0.270	15.0 $\pm$ 10%	0.067	1S
SB12U5	10.8-13.2	0.111	5.0 $\pm$ 10%	0.200	1S
SB12U12	10.8-13.2	0.111	12.0 $\pm$ 10%	0.083	1S
SB12U15	10.8-13.2	0.111	15.0 $\pm$ 10%	0.067	1S
SB24U5	21.6-26.4	0.056	5.0 $\pm$ 10%	0.200	2S
SB24U12	21.6-26.4	0.056	12.0 $\pm$ 10%	0.083	2S
SB24U15	21.6-26.4	0.056	15.0 $\pm$ 10%	0.067	2S
SB48U5	43.2-52.8	0.028	5.0 $\pm$ 10%	0.200	2S
SB48U12	43.2-52.8	0.028	12.0 $\pm$ 10%	0.083	2S
SB48U15	43.2-52.8	0.028	15.0 $\pm$ 10%	0.067	2S
SB5U5-5	4.75-5.25	0.267	$\pm$ 5.0 $\pm$ 10%	$\pm$ 0.100	1D
SB5U12-12	4.75-5.25	0.267	$\pm$ 12.0 $\pm$ 10%	$\pm$ 0.042	1D
SB5U15-15	4.75-5.25	0.267	$\pm$ 15.0 $\pm$ 10%	$\pm$ 0.033	1D
SB12U5-5	10.8-13.2	0.110	$\pm$ 5.0 $\pm$ 10%	$\pm$ 0.100	1D
SB12U12-12	10.8-13.2	0.110	$\pm$ 12.0 $\pm$ 10%	$\pm$ 0.042	1D
SB12U15-15	10.8-13.2	0.110	$\pm$ 15.0 $\pm$ 10%	$\pm$ 0.033	4
SB24U20	21.6-26.4	0.057	20.0 $\pm$ 5%	.050	2S
SB24U5-5	21.6-26.4	0.056	$\pm$ 5.0 $\pm$ 10%	$\pm$ 0.100	2D
SB24U12-12	21.6-26.4	0.056	$\pm$ 12.0 $\pm$ 10%	$\pm$ 0.042	2D
SB24U15-15	21.6-26.4	0.056	$\pm$ 15.0 $\pm$ 10%	$\pm$ 0.033	2D
SB48U5-5	43.2-52.8	0.028	$\pm$ 5.0 $\pm$ 10%	$\pm$ 0.100	2D
SB48U12-12	43.2-52.8	0.028	$\pm$ 12.0 $\pm$ 10%	$\pm$ 0.042	2D
SB48U15-15	43.2-52.8	0.028	$\pm$ 15.0 $\pm$ 10%	$\pm$ 0.033	2D
2SB5U9	4.9-5.1	0.560	9.0 $\pm$ 3%	0.250	3
2SB12U5	10.8-13.2	0.222	5.0 $\pm$ 10%	0.400	2S
2SB12U9	11.64-12.36	0.250	9.0 $\pm$ 3%	0.250	2S
2SB24U5-5	21.6-26.4	0.115	$\pm$ 5.0 $\pm$ 10%	$\pm$ 0.200	2D
2SB24U9	21.6-26.4	0.125	9.0 $\pm$ 3%	0.250	3
2SB24U15	21.6-26.4	0.125	15.0 $\pm$ 10%	0.133	2S
2SB48U9	43.2-52.8	0.062	9.0 $\pm$ 10%	0.250	2S
2SB5U9-9	4.75-5.25	0.520	$\pm$ 9.0 $\pm$ 10%	$\pm$ 0.110	2D
2SB12U9-9	10.8-13.2	0.220	$\pm$ 9.0 $\pm$ 10%	$\pm$ 0.110	2D
2SB12U12-12	10.8-13.2	0.220	$\pm$ 12.0 $\pm$ 10%	$\pm$ 0.080	2D
2SB24U9-9	21.6-26.4	0.110	$\pm$ 9.0 $\pm$ 10%	$\pm$ 0.110	2D
2SB48U9-9	43.2-52.8	0.055	$\pm$ 9.0 $\pm$ 10%	$\pm$ 0.110	2D

Mechanical Specification & Pin Connections (dimensions in inches)



Tolerances: .XX $\pm 0.020"$.XXX $\pm 0.010"$

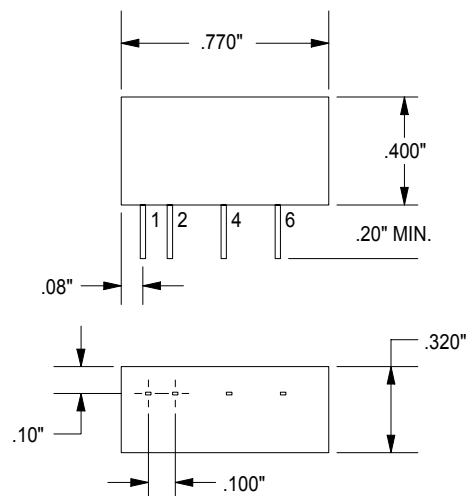
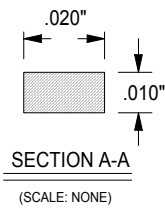
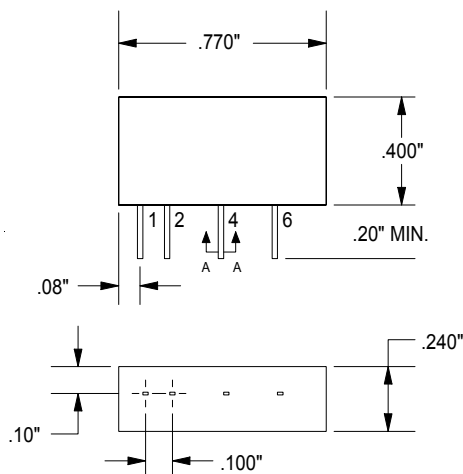
Style 1D

SB5U5-5 SB12U5-5
SB5U12-12 SB12U12-12
SB5U15-15

Style 2D

SB24U5-5 2SB5U9-9
SB24U12-12 2SB12U9-9
SB24U15-15 2SB24U5-5
SB48U5-5 2SB24U9-9
SB48U12-12 2SB48U9-9
SB48U15-15 2SB12U12-12

Mechanical Specification & Pin Connections (dimensions in inches)



Style 1S

SB5U5 SB12U5
SB5U12 SB12U12
SB5U15 SB12U15

Style 2S

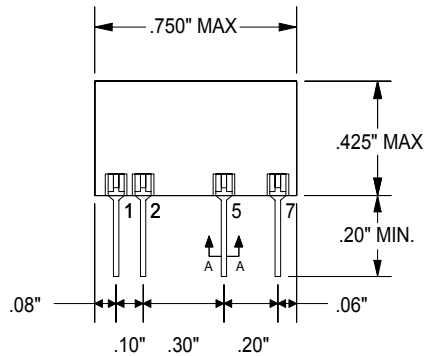
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SB24U12 SB48U12 2SB12U9
SB24U15 SB48U15 2SB24U15
SB24U20 2SB48U9



Reliability Incorporated

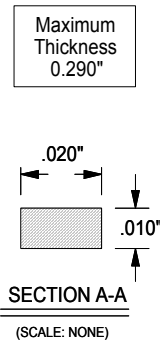
Single Output		Dual Output Models	
1	+ input	1	+ input
2	- input	2	- input
4	- output	4	- output
6	+ output	5	com
		6	+ output

Alternative Pin Connections & Mechanical Dimensions (dimensions in inches)



Style 3*

2SB5U9
2SB24U9



Style 4*

SB12U15-15

* Styles 3 and 4 are coated, not potted in shells.

Single Output		Dual Output Models	
1	+ input	1	+ input
2	- input	2	- input
5	- output	5	- output
7	+ output	6	com
		7	+ output

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