



**THE DATASHEET OF  
SB01S1212A**



### FEATURES

- Efficiency up to 81%
- SMD Package with Industry Standard Pinout
- High Isolation Voltage 3000 VDC
- Operating Temperature Range  $-40^{\circ}$  to  $+85^{\circ}$ C
- Low ripple and noise
- Lead free, RoHs Compliant
- Moisture sensitivity level (MSL) 3
- 3 Years Product Warranty



The SB01S/D series are miniature, SMD Package, isolated 1W DC/DC converters with 3,000VDC isolation. It offers short circuit protection and allows a wide operating temperature range of  $-40^{\circ}$ C to  $+85^{\circ}$ C. These isolated DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc. With creative design technology and optimization of component placement, these converters possess outstanding electrical and thermal performance, as well as extremely high reliability under highly stressful operating conditions

### Model List

Model Number	Input Voltage (Range) VDC	Output Voltage VDC	Output Current		Input Current		Load Regulation % (max.)	Max. capacitive Load uF	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
			mA	mA	mA(typ.)	mA(typ.)			%
SB01S0505A	5 (4.5 ~ 5.5)	5	200	4	281	30	10	33	71
SB01S0512A		12	84	1.5	258		7	4.7	78
SB01S0515A		15	67	1	258		7	4.7	78
SB01D0505A		$\pm 5$	$\pm 100$	$\pm 2$	277		10	10*	72
SB01D0512A		$\pm 12$	$\pm 42$	$\pm 0.8$	255		7	2.2*	78
SB01D0515A		$\pm 15$	$\pm 34$	$\pm 0.7$	258		7	2.2*	79
SB01S1205A	12 (10.8 ~ 13.2)	5	200	4	117	12	8	33	71
SB01S1212A		12	84	1.5	106		5	4.7	79
SB01S1215A		15	67	1	104		5	4.7	80
SB01D1205A		$\pm 5$	$\pm 100$	$\pm 2$	112		8	10*	74
SB01D1212A		$\pm 12$	$\pm 42$	$\pm 0.8$	105		5	2.2*	80
SB01D1215A		$\pm 15$	$\pm 34$	$\pm 0.7$	104		5	2.2*	81
SB01S2405A	24 (21.6 ~ 26.4)	5	200	4	58	7	8	33	71
SB01S2412A		12	84	1.5	53		5	4.7	78
SB01S2415A		15	67	1	53		5	4.7	79
SB01D2405A		$\pm 5$	$\pm 100$	$\pm 2$	57		8	10*	72
SB01D2412A		$\pm 12$	$\pm 42$	$\pm 0.8$	53		5	2.2*	79
SB01D2415A		$\pm 15$	$\pm 34$	$\pm 0.7$	53		5	2.2*	80

\* For each output

## Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	24V Input Models	21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	9	VDC
	12V Input Models	-0.7	---	18	
	24V Input Models	-0.7	---	30	
Reverse Polarity Input Current	All Models	---	---	0.3	A
Input Filter		Internal Capacitor			
Internal Power Dissipation		---	---	550	mW

## Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±1.5	±4.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.1	±1.0	%
Line Regulation	For Vin Change of 1%	---	±1.2	±1.5	%
Load Regulation	Io=20% to 100%	See Model Selection Guide			
Ripple & Noise (20MHz)		---	75	100	mV <sub>P-P</sub>
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	150	mV <sub>P-P</sub>
Ripple & Noise (20MHz)		---	---	15	mV <sub>rms</sub>
Temperature Coefficient		---	±0.01	±0.02	%/°C
Short Circuit Protection		0.5 Second Max.			

## General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	3000	---	---	VDC
I/O Isolation Resistance	500 VDC	10	---	---	GΩ
I/O Isolation Capacitance	100KHz, 1V	---	60	100	pF
Switching Frequency		50	100	150	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	2,000,000	---	---	Hours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D	Level 3			

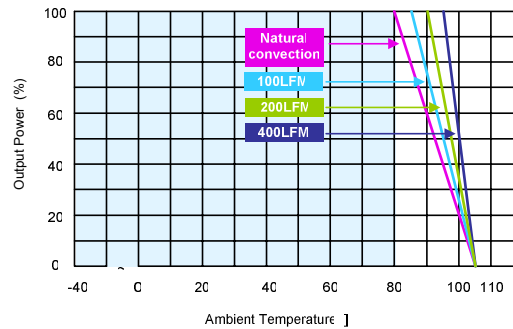
## Recommended Input Fuse

5V Input Models	12V Input Models	24V Input Models
500mA Slow-Blow Type	200mA Slow-Blow Type	100mA Slow-Blow Type

## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	°C
Case Temperature		---	+90	°C
Storage Temperature Range		-50	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	300	°C

## Power Derating Curve

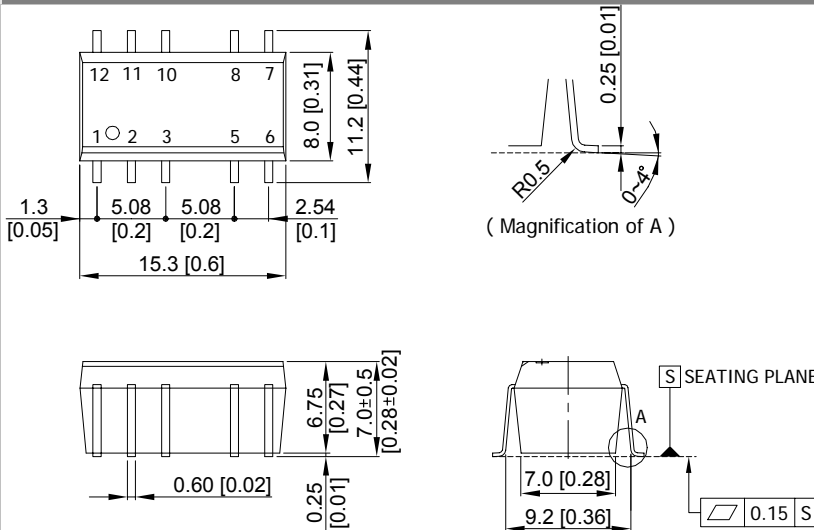


## Notes

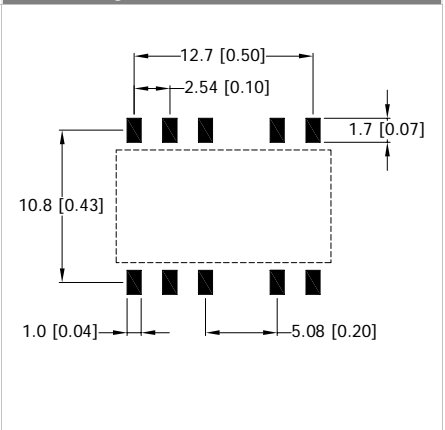
- 1 Specifications typical at Ta=+25°C, resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 Ripple & Noise measurement bandwidth is 0-20MHz.
- 3 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
- 4 All DC/DC converters should be externally fused at the front end for protection.
- 5 Specifications subject to change without notice.

## Mechanical Drawing

### Mechanical Dimensions



### Connecting Pin Patterns



- ▶ All dimensions in mm (inches)
- ▶ Tolerance: X.X±0.25 (X.XX±0.01)  
X.XX±0.13 (X.XXX±0.005)
- ▶ Pins ±0.05 (±0.002)

### Pin Connections

Pin	Single Output	Dual Output
1	-Vin	-Vin
2	+Vin	+Vin
3	NA	NA
5	-Vout	Common
6	NA	-Vout
7	NA	NA
8	+Vout	+Vout
10	NA	NA
11	NA	NA
12	NA	NA

NA : Not Available for Electrical Connection

### Physical outline

Case Size	: 15.3x8.0x6.75mm (0.60x0.31x0.27 Inches)
Case Material	: Molding (flammability to UL 94V-0 rated)
Weight	: 2.2g



## Part Numbering System

S	B	01	S	05	05	A
Form factor	Family series	Watt	Number of Outputs	Input Voltage	Output Voltage	Option Code
D-DIP	A~Z	01:1W	S - Single	03:3.3V	03:3.3V	A - Std. Functions
P-SIP		02:2W	D- Dual	05: 5V	05: 5V	
S-SMD		03:3W		12:12V	12:12V	
		04:4W		24: 24V	15: 15V	
		06:6W		48:48V	24: 24V	

### WARRANTY

Delta offers a three(3) years limited warranty. Complete warranty information is listed on our web site or is available upon request from Delta.

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