

A_S-W25 & B_LS-W25 Series

0.25W, FIXED INPUT, ISOLATED & UNREGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER





multi-country patent protection RoHS

FEATURES

Small Footprint
1KVDC Isolation
SIP Package
Internal SMD Construction
Temperature Range: -40°C to +85°C
No Heat sink Required
No External Component Required
Industry Standard Pinout
RoHS Compliance

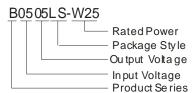
APPLICATIONS

The A_S-W25 & B_LS-W25 Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$);
- Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding. Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

MODEL SELECTION



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Number	PRODUCT PR	ROGRAM					
Number Nominal Nomin		Input		Ou			
Nominal Nomi		Voltage	(VDC)	Voltage	Current (mA)		
B0305LS-W25 3.3 3.0-3.6 5 50 65 A0505S-W25 ±5 ±25 62 A0509S-W25* ±9 ±13.8 64 A0512S-W25 ±10.4 66 65 B0505LS-W25 ±15 ±8.3 65 B0509 LS-W25* 9 27.8 65 B0512 LS-W25 12 20.8 67 B0515 LS-W25 15 16.7 65 A1205S-W25* ±5 ±25 62 A1209S-W25* ±1 ±10.4 64 A1212S-W25* ±1 ±10.4 64 B1203 LS-W25* ±1 ±15 ±8.3 65 B1205 LS-W25* ±1 ±15 ±8.3 65 B1212 LS-W25* 5 50 65 B1215 LS-W25* 5 50 65 B1215 LS-W25* 5 50 65 B2405 LS-W25* 5 5 63 B2405 LS-W25* 24 21.6-26.4 5 50 63 B2405 LS-W25* 5 50 63 B2415 LS-W25* 5 50 63 B2415 LS-W25* 65 65 65 B2415 LS-W25* 5 <td>rumber</td> <td>Nominal</td> <td>Nominal</td> <td>(VDC)</td> <td>Max</td>	rumber	Nominal	Nominal	(VDC)	Max		
B0305LS-W25 A0505S-W25 A0509S-W25* A0509S-W25* A0512S-W25 B0505LS-W25 B0505LS-W25 B0515 LS-W25 B0515 LS-W25 B0515 LS-W25 A1205S-W25* A1212S-W25* B1203 LS-W25* B1203 LS-W25* B1212 LS-W25 B1215 LS-W25* B1215	B0303LS-W25*	2.2	2026	3.3	75.8	62	
### ### ##############################	B0305LS-W25	3.3	3.0-3.0	5	50	65	
### A0512S- W25 ### A0515S- W25 ### B0505LS- W25 ### B0509 LS- W25* ### B0512 LS- W25* ### B0515 LS- W25* ### B0515 LS- W25* ### B1203 LS- W25* ### B1205 LS- W25* ### B1212 LS- W25* ### B1212 LS- W25* ### B1215 LS- W25* ##	A0505S- W25			±5	±25	62	
### A0515S-W25 ### B0505LS-W25 ### B0509 LS-W25* ### B0512 LS-W25* ### B0515 LS-W25* ### B0515 LS-W25* ### B1203 LS-W25* ### B1205 LS-W25* ### B1212 LS-W25* ### B1215 LS-W25*	A0509S- W25*			±9	±13.8	64	
B0505LS-W25 B0509 LS-W25* B0512 LS-W25 B0515 LS-W25 B0515 LS-W25 A1205S-W25* A1209S-W25* A1212S-W25* A1212S-W25* B1203 LS-W25* B1209 LS-W25* B1212 LS-W25* B1215 LS-W25 B1215 LS-W25 B1215 LS-W25* B12	A0512S- W25			±12	±10.4	66	
B0505LS- W25 5 50 64 B0509 LS- W25* 9 27.8 65 B0512 LS- W25 12 20.8 67 B0515 LS- W25* 15 16.7 65 A1205S- W25* ±5 ±25 62 A1209S- W25* ±9 ±13.8 63 A1212S- W25* ±10.4 64 A1215S- W25* ±15 ±8.3 65 B1203 LS- W25* 12 3.3 75.8 62 B1205 LS- W25* 5 50 65 B1209 LS- W25* 9 27.8 66 B1215 LS- W25* 15 16.7 66 A2405S- W25 ±5 ±25 63 A2409S- W25* ±5 ±25 63 A2412S- W25* ±10.4 65 B2405 LS- W25* 24 21.6-26.4 5 50 63 B2412 LS- W25* 15 16.7 65 B2415 LS- W25* 15 16.7 65 B2415 LS- W25* 15 16.7 65 B2424LS- W25*	A0515S- W25	Б	1555	±15	±8.3	65	
B0512 LS- W25 B0515 LS- W25 A1205S- W25* A1209S- W25* A1212S- W25* A1212S- W25* B1203 LS- W25* B1205 LS- W25* B1209 LS- W25* B1212 LS- W25 B1212 LS- W25 B1212 LS- W25 B1215 LS- W25* B2415 LS- W25*	B0505LS- W25	3	4.5-5.5	5	50	64	
B0515 LS- W25 A1205S- W25* A1209S- W25* A1212S- W25* A1212S- W25* B1203 LS- W25* B1205 LS- W25 B1205 LS- W25 B1205 LS- W25 B1205 LS- W25 B1209 LS- W25 B1212 LS- W25 B1215	B0509 LS- W25*			9	27.8	65	
### ### ##############################	B0512 LS- W25			12	20.8	67	
### ### ##############################	B0515 LS- W25			15	16.7	65	
A1212S-W25* ±12 ±10.4 64 A1215S-W25* ±15 ±8.3 65 B1203 LS-W25* 5 50 65 B1209 LS-W25* 9 27.8 66 B1212 LS-W25* 12 20.8 67 B1215 LS-W25* 15 16.7 66 A2405S-W25 ±5 ±25 63 A2409S-W25* ±9 ±13.8 64 A2412S-W25* ±12 ±10.4 65 B2405 LS-W25* ±15 ±8.3 65 B2409 LS-W25* 24 21.6-26.4 5 50 63 B2412 LS-W25* 9 27.8 63 B2415 LS-W25* 15 16.7 65 B2424LS-W25* 24 10.4 64	A1205S- W25*		- 1	±5	±25	62	
A1215S-W25* 12 10.8-13.2 ±15 ±8.3 65 B1203 LS-W25* 5 50 65 B1209 LS-W25* 9 27.8 66 B1212 LS-W25 12 20.8 67 B1215 LS-W25* 15 16.7 66 A2405S-W25 ±5 ±25 63 A2409S-W25* ±9 ±13.8 64 A2412S-W25* ±12 ±10.4 65 B2405 LS-W25* ±15 ±8.3 65 B2409 LS-W25* 24 21.6-26.4 5 50 63 B2412 LS-W25* 9 27.8 63 B2415 LS-W25* 15 16.7 65 B2424LS-W25* 24 10.4 64	A1209S- W25*			±9	±13.8	63	
B1203 LS- W25* 12 10.8-13.2 3.3 75.8 62 B1205 LS- W25 5 50 65 B1209 LS- W25* 9 27.8 66 B1212 LS- W25 12 20.8 67 B1215 LS- W25* 15 16.7 66 A2405S- W25 ±5 ±25 63 A2409S- W25* ±9 ±13.8 64 A2412S- W25* ±10.4 65 B2405 LS- W25* ±15 ±8.3 65 B2409 LS- W25* 24 21.6-26.4 5 50 63 B2412 LS- W25* 9 27.8 63 B2415 LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	A1212S- W25*			±12	±10.4	64	
B1205 LS- W25 B1209 LS- W25* B1212 LS- W25 B1215 LS- W25* A2405S- W25 A2409S- W25* A2412S- W25* B2405 LS- W25 B2405 LS- W25* B2405 LS- W25* B2412 LS- W25* B2412 LS- W25* B2424LS- W25*	A1215S- W25*		- 40	±15	±8.3	65	
B1209 LS- W25* 9 27.8 66 B1212 LS- W25 12 20.8 67 B1215 LS- W25* 15 16.7 66 A2405S- W25 ±5 ±25 63 A2409S- W25* ±9 ±13.8 64 A2412S- W25* ±12 ±10.4 65 B2405 LS- W25 24 21.6-26.4 5 50 63 B2409 LS- W25* 9 27.8 63 B2412 LS- W25* 12 20.8 65 B2424LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	B1203 LS- W25*	12	10.8-13.2	3.3	75.8	62	
B1212 LS- W25 B1215 LS- W25* A2405S- W25 A2409S- W25* A2412S- W25* B2405 LS- W25 B2405 LS- W25* B2412 LS- W25* B2424LS- W25*	B1205 LS- W25		- 57	5	50	65	
B1215 LS- W25* A2405S- W25 A2409S- W25* A2412S- W25* B2405 LS- W25 B2409 LS- W25* B2412 LS- W25* B2415 LS- W25* B2415 LS- W25* B2415 LS- W25* B2424LS- W25* B2424LS- W25* B2424LS- W25* B2424LS- W25*	B1209 LS- W25*			9	27.8	66	
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A2409S-W25* ±9 ±13.8 64 A2412S-W25* ±12 ±10.4 65 A2415S-W25* ±15 ±8.3 65 B2405 LS-W25* 24 5 50 63 B2409 LS-W25* 9 27.8 63 B2412 LS-W25* 12 20.8 65 B2424LS-W25* 15 16.7 65 B2424LS-W25* 24 10.4 64	B1215 LS- W25*			15	16.7	66	
A2412S- W25* ±12 ±10.4 65 A2415S- W25* ±15 ±8.3 65 B2405 LS- W25 24 5 50 63 B2409 LS- W25* 9 27.8 63 B2412 LS- W25* 12 20.8 65 B2424LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	A2405S- W25			±5	±25	63	
A2415S- W25* 24 21.6-26.4 ±15 ±8.3 65 B2405 LS- W25 24 5 50 63 B2409 LS- W25* 9 27.8 63 B2412 LS- W25* 12 20.8 65 B2424LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	A2409S- W25*			±9	±13.8	64	
B2405 LS- W25 24 21.6-26.4 5 50 63 B2409 LS- W25* 9 27.8 63 B2412 LS- W25* 12 20.8 65 B2415 LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	A2412S- W25*			±12	±10.4	65	
B2409 LS- W25* B2412 LS- W25* B2415 LS- W25* B2424LS- W25* B2424LS- W25* B2424LS- W25*	A2415S- W25*			±15	±8.3	65	
B2412 LS- W25* 12 20.8 65 B2415 LS- W25* 15 16.7 65 B2424LS- W25* 24 10.4 64	B2405 LS- W25	24	21.6-26.4	5	50	63	
B2415 LS- W25* B2424LS- W25* 15 16.7 65 24 10.4 64	B2409 LS- W25*			9	27.8	63	
B2424LS- W25* 24 10.4 64	B2412 LS- W25*			12	20.8	65	
	B2415 LS- W25*			15	16.7	65	
Designing.	B2424LS- W25			24	10.4	64	
	*Designing.						

Item	Test conditions	Min	Тур	Max	Units
Storage humidity				95	%
Operating Temperature		-40		85	
Storage Temperature		-55		125	°C
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			300	
Short circuit protection*				1	s
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
MTBF		3500			K hours
Weight			2.1		g

ISOLATION SPECIFICATIONS					
Item	Test conditions	Min	Тур	Max	Units
Isolation voltage	Tested for 1 minute and 1 mA max	1000			VDC
Isolation resistance	Test at 500VDC	1000			ΜΩ

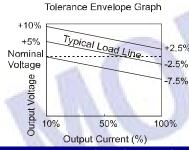
OUTPUT SPECIFICATIONS						
Item	Test conditions		Min	Тур	Max	Units
Output power					0.25	W
Line near dation	For Vin change of ±1%	(3.3V input)			±1.5	%
Line regulation		(Others input)			±1.2	
	10% to 100% load	(3.3V output)		12	20	
		(5V output)		10.5	15	
Load regulation		(9V output)		8.3	15	
		(12V output)		6.8	15	
		(15V output)		6.3	15	
Output voltage accuracy			See to	olerance	envelope	graph
Temperature drift	100% full load				0.03	%/°C
Ripple & Noise*	20MHz Bandwidth			50	75	mVp-p
Switching frequency	Full load, nominal input			100		KHz

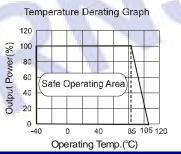
^{*}Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:

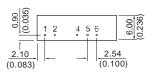
- All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 2. See below recommended circuits for more details.
- 3. Dual output models unbalanced load: ±5%.

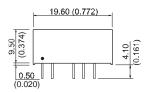
TYPICAL CHARACTERISTICS





OUTLINE DIMENSIONS & PIN CONNECTIONS

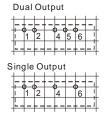




Note: Unit:mm(inch) Pin section:0.50*0.30mm(0.020*0.012inch) Pin section tolerances:±0.10mm(±0.004inch) General tolerances:±0.25mm(±0.010inch)

First Angle Projection 🕣 🕀

RECOMMENDED FOOTPRINT Top view,grid:2.54*2.54mm(0.1*0.1inch), diameter:1.00mm(0.039inch)



FOOTPRINT DETAILS

Single	Dual
Vin	Vin
GND	GND
0V	-Vo
No Pin	0V
+Vo	+Vo
	Vin GND 0V No Pin

APPLICATION NOTE

Requirement on output load

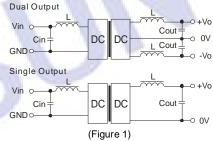
To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no load! If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

Recommended circuit

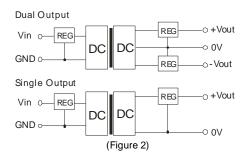
If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).



It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. It's not recommended to connect any external capacitor in the application field.

Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure 2).



No parallel connection or plug and play.