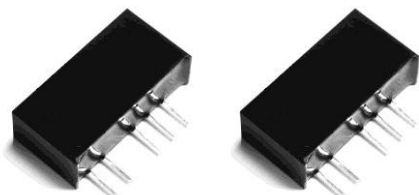


2W, Fixed input voltage, isolated & unregulated dual/single output



Continuous Short
Circuit Protection

FEATURES

- Subminiature SIP package
- Efficiency up to 86%
- High power density
- Isolation voltage: 1500VDC
- Operating temperature range:
-40°C to +105°C
- No external component required
- International standard pin-out

SA_S-2WR2 & SB_S-2WR2 series is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is suitable for

1. Where the voltage of the input power supply is stable (voltage variation: $\pm 10\% V_{in}$);
2. Where isolation is necessary between input and output (isolation voltage $\leq 1500VDC$);
3. Where do not has high requirement of line regulation and load regulation;
4. Such as: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (% Min./Typ.) @ Full Load	Max. Capacitive Load (μF)	
	Nominal (Range)	Output Voltage (VDC)	Output Current (mA) (Max./Min.)			
SA0503S-2WR2	5 (4.5-5.5)	± 3.3	$\pm 200/\pm 20$	70/74	100	
SA0505S-2WR2		± 5	$\pm 200/\pm 20$	76/80		
SA0509S-2WR2		± 9	$\pm 111/\pm 11$	80/84		
SA0512S-2WR2		± 12	$\pm 83/\pm 8$	80/84		
SA0515S-2WR2		± 15	$\pm 67/\pm 7$	80/84		
SA0524S-2WR2		± 24	$\pm 42/\pm 4$	82/86		
SB0503S-2WR2		5 (4.5-5.5)	3.3	400/40	75/79	220
SB0505S-2WR2			5	400/40	80/84	
SB0507S-2WR2			7.2	278/28	78/82	
SB0509S-2WR2			9	222/22	75/19	
SB0512S-2WR2			12	167/17	80/84	
SB0515S-2WR2			15	133/13	80/84	
SB0524S-2WR2			24	83/8	80/84	
SA0905S-2WR2	9 (8.1-9.9)	± 5	$\pm 200/\pm 20$	76/80	100	
SA0909S-2WR2		± 9	$\pm 111/\pm 11$	78/82		
SA0912S-2WR2		± 12	$\pm 83/\pm 8$	79/83		
SA0915S-2WR2		± 15	$\pm 67/\pm 7$	79/83		
SA0924S-2WR2		± 24	$\pm 42/\pm 4$	79/83		
SB0905S-2WR2		9 (8.1-9.9)	5	400/40	76/80	220
SB0909S-2WR2			9	222/22	78/82	
SB0912S-2WR2			12	167/17	79/83	
SB0915S-2WR2			15	133/13	79/83	
SB0924S-2WR2			24	83/8	79/83	
SA1203S-2WR2	12 (10.8-13.2)	± 3.3	$\pm 200/\pm 20$	71/75	100	
SA1205S-2WR2		± 5	$\pm 200/\pm 20$	76/80		
SA1207S-2WR2		± 7.2	$\pm 139/\pm 14$	80/84		
SA1209S-2WR2		± 9	$\pm 111/\pm 11$	80/84		
SA1212S-2WR2		± 12	$\pm 83/\pm 8$	80/84		
SA1215S-2WR2	12	± 15	$\pm 67/\pm 7$	80/84	100	

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (% Min./Typ.) @ Full Load	Max. Capacitive Load (μ F)
	Nominal (Range)	Output Voltage (VDC)	Output Current (mA) (Max./Min.)		
SA1224S-2WR2	10.8-13.2	\pm 24	\pm 42/ \pm 4	82/86	220
SB1203S-2WR2		3.3	400/40	75/79	
SB1205S-2WR2		5	400/40	78/82	
SB1207S-2WR2		7.2	278/28	78/82	
SB1209S-2WR2		9	222/22	77/81	
SB1212S-2WR2		12	167/17	78/82	
SB1215S-2WR2		15	133/13	80/84	
SB1224S-2WR2		24	83/8	82/86	
SA1505S-2WR2	15 (13.5-16.5)	\pm 5	\pm 200/ \pm 20	76/80	100
SA1509S-2WR2		\pm 9	\pm 111/ \pm 11	76/80	
SA1512S-2WR2		\pm 12	\pm 83/ \pm 8	77/81	
SA1515S-2WR2		\pm 15	\pm 67/ \pm 7	81/85	
SA1524S-2WR2		\pm 24	\pm 42/ \pm 4	81/85	
SB1505S-2WR2		5	400/40	76/80	220
SB1509S-2WR2		9	222/22	76/80	
SB1512S-2WR2		12	167/17	77/81	
SB1515S-2WR2		15	133/13	81/85	
SB1524S-2WR2		24	83/8	81/85	
SA2403S-2WR2	24 (21.6-26.4)	\pm 3.3	\pm 200/ \pm 20	71/75	100
SA2405S-2WR2		\pm 5	\pm 200/ \pm 20	76/80	
SA2407S-2WR2		\pm 7.2	\pm 139/ \pm 14	80/84	
SA2409S-2WR2		\pm 9	\pm 111/ \pm 11	81/85	
SA2412S-2WR2		\pm 12	\pm 83/ \pm 8	79/83	
SA2415S-2WR2		\pm 15	\pm 67/ \pm 7	80/84	
SA2424S-2WR2		\pm 24	\pm 42/ \pm 4	82/86	
SB2403S-2WR2		3.3	400/40	75/79	220
SB2405S-2WR2		5	400/40	76/80	
SB2407S-2WR2		7.2	278/28	78/82	
SB2409S-2WR2		9	222/22	80/84	
SB2412S-2WR2		12	167/17	80/84	
SB2415S-2WR2		15	133/13	81/85	
SB2424S-2WR2		24	83/8	83/87	

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5V input	--	571/25	--	mA
	9V input	--	292/20	--	
	12V input	--	234/15	--	
	15V input	--	175/10	--	
	24V input	--	111/8	--	
Surge Voltage (1sec. max.)	5V input	-0.7	--	9	VDC
	9V input	-0.7	--	12	
	12V input	-0.7	--	18	
Surge Voltage (1sec. max.)	15V input	-0.7	--	21	VDC
	24V input	-0.7	--	30	

Reflected Ripple Current		--	15	--	mA
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope graph (Fig. 1)			
Line Regulation	Input voltage change: ±1%	3.3VDC output	--	--	±1.5	--
		Others	--	--	±1.2	
Load Regulation	10%-100% load	3.3VDC output	--	18	--	%
		5VDC output	--	12	--	
		7.2VDC output	--	10	--	
		9VDC output	--	9	--	
		12VDC output	--	8	--	
		15VDC output	--	7	--	
		24VDC output	--	6	--	
Ripple & Noise*	20MHz bandwidth	The output voltage is 12VDC and under	--	60	--	mVp-p
		15VDC and 24VDC output	--	75	--	
Temperature Drift Coefficient	100% load		--	--	±0.03	%/°C
Output Short Circuit Protection			Continuous, self-recovery			

Note: * Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	Derating if the temperature ≥85°C (see Fig. 2)	-40	--	105	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25°C	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%
Switching Frequency	100% load, nominal input voltage	--	100	300	KHz
MTBF	MIL-HDFK-217F@25°C	3500	--	--	K hours

Physical Specifications

Casing Material	Plastic (UL94-V0)
Package Dimensions	19.60*7.00*10.00mm
Weight	2.4g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	Conducted disturbance	CISPR22/EN55022 CLASS B (see Fig. 4 for recommended circuit)
	Radiated emission	CISPR22/EN55022 CLASS B (see Fig. 4 for recommended circuit)
EMS	Electrostatic discharge	IEC/EN61000-4-2 Contact ±6KV perf. Criteria B

Tolerance Envelope Graph

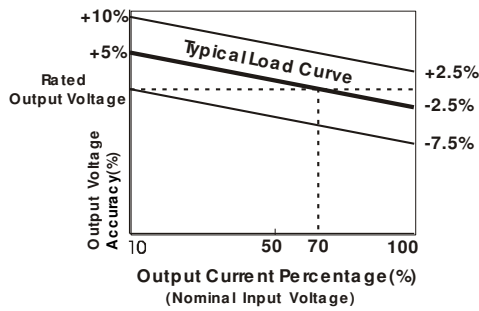


Fig. 1

Temperature Derating Curve

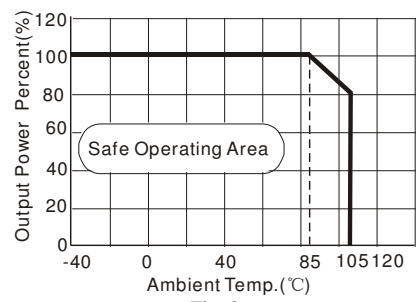
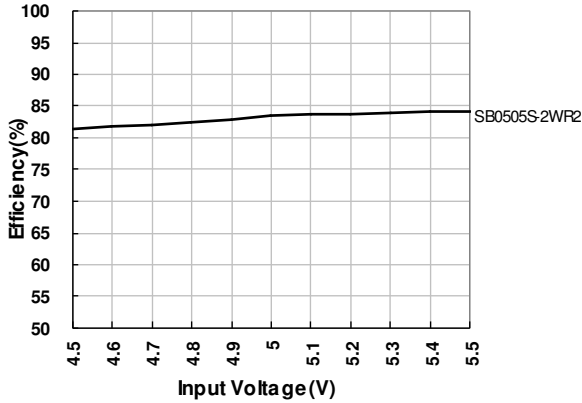
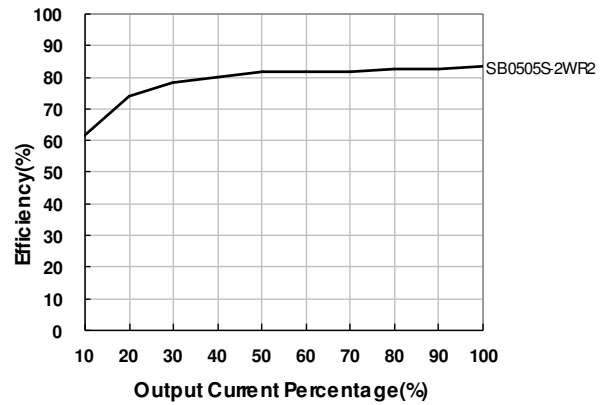


Fig. 2

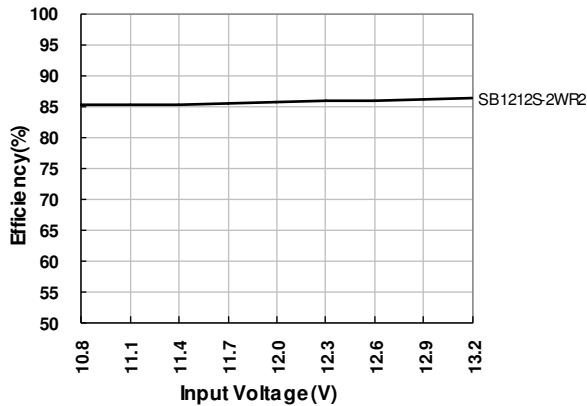
Efficiency Vs Input Voltage (Full Load)



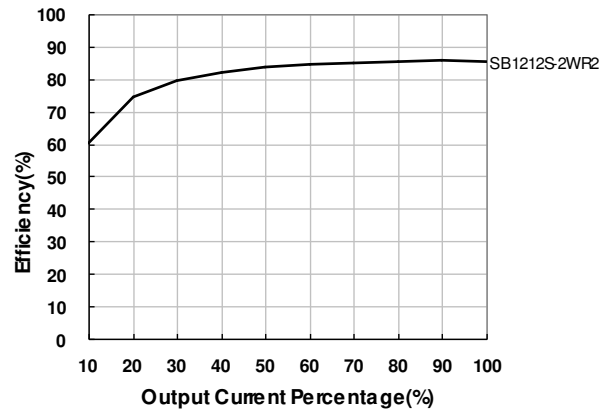
Efficiency Vs Output Load (Vin=5V)



Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Load (Vin=12V)



Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.3.

Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.

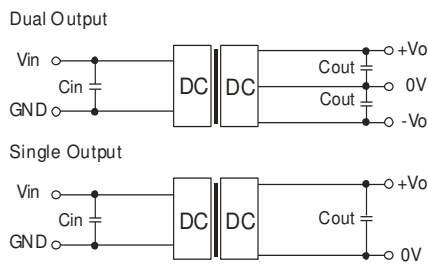


Fig.3

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout# (μF)
5	4.7	3.3/5	10	±3.3/±5/±7.2	4.7
9/12/15	2.2	9/12	2.2	±9/±12	1
24	1	15/24	1	±15/±24	0.47

Note: #It is not recommended to connect any external capacitor when output power is less than 0.5W.

2. EMC typical recommended circuit (CLASS B)

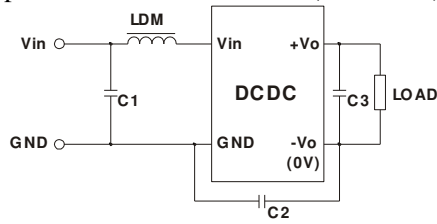


Fig. 4

Input voltage (VDC)		5/9/12/15/24
EMI	C1	4.7μF/50V
	C2	--
	C3	Refer to the Cout in Fig.3
	LDM	6.8μH

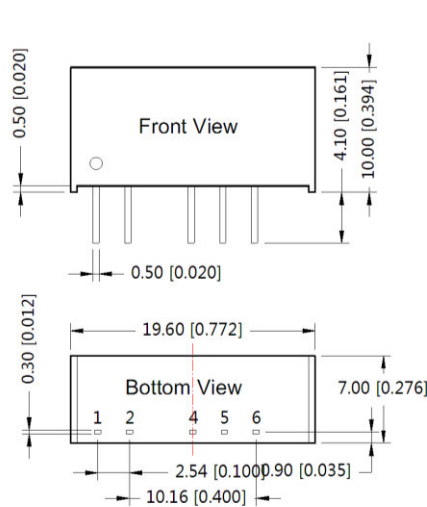
Note: It is not needed to add the component in the peripheral circuit when parameter with the symbol of "--"

3. Output load requirements

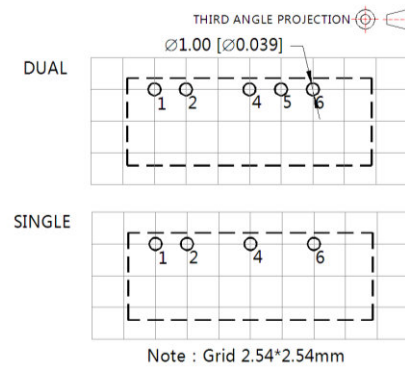
To ensure the module work efficiently and reliably, during the operation, the min. output load should be no less than 10% of the full load. If the actual output power is low, please connect a resistor to the output terminal in parallel, with a recommended resistance which is 10% of the rated power, and derating is required during operation.

4. For more information please find the application notes on www.schmid-m.com

Dimensions and Recommended Layout



Note:
Unit :mm[inch]
Pin section tolerances :±0.10[±0.004]
General tolerances:±0.25[±0.010]



Pin	Pin-Out	
	Single	Dual
1	Vin	Vin
2	GND	GND
4	0V	-Vo
5	No Pin	0V
6	+Vo	+Vo

Note:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58200001;
2. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
3. The max. capacitive load should be tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, data in this data sheet should be tested under the conditions of $T_a=25^\circ\text{C}$, humidity<75% when inputting nominal voltage and outputting rated load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
7. We can provide product customization service;
8. Specifications of this product are subject to changes without prior notice.