

SWRA & SWRB S-3WR3



Product Feature

- Package Type: SIP8
- Operating Temperature Range: -40°C - +105°C
- Isolation Voltage: 1500VDC
- 2:1 Wide Input Voltage Range
- High efficiency up to 83%
- With the output overcurrent, output short circuit protection mechanism
- Fields of application: electric power, industrial control, communication, Internet of Things, automobile, rail transit, etc



Selection Guide

Part No.	Input Voltage (VDC)	Output			Ripple & Noise (Typ./Max.) (mVp-p)	Full Load Efficiency% (Min./Typ.)	Capacitive Load Max. (μF)		
	Nominal (Range)	Voltage (VDC)	Current Min.(mA)	Current Max.(mA)					
SWRB 0503 S-3WR3	5 (4.5-9)	3.3	758	38	40/75	67/69	1800		
SWRB 0505 S-3WR3		5	600	30		72/74	2200		
SWRB 0509 S-3WR3		9	333	20		74/76	1000		
SWRB 0512 S-3WR3		12	250	13		76/78	680		
SWRB 0515 S-3WR3		15	200	10		73/75	470		
SWRB 0524 S-3WR3		24	125	6		75/77	330		
SWRA 0505 S-3WR3		±5	±300	±15		73/75	#1000		
SWRA 0509 S-3WR3		±9	±167	±10		74/76	#680		
SWRA 0512 S-3WR3		±12	±125	±6		76/78	#470		
SWRA 0515 S-3WR3		±15	±100	±5		76/78	#330		
SWRA 0524 S-3WR3		±24	±63	±3		75/77	#220		
SWRB 1203 S-3WR3		12 (9-18)	3.3	758		38	70/100	74/76	2700
SWRB 1205 S-3WR3			5	600		30		75/77	2200
SWRB 1209 S-3WR3			9	333		17		77/79	1000
SWRB 1212 S-3WR3	12		250	13	81/83	680			
SWRB 1215 S-3WR3	15		200	10		82/84	471		
SWRB 1224 S-3WR3	24		125	6	100/150	80/82	330		
SWRA 1205 S-3WR3	±5		±300	±15	40/75	77/79	#1000		
SWRA 1209 S-3WR3	±9		±167	±8		77/79	#680		
SWRA 1212 S-3WR3	±12		±125	±6		78/80	#470		
SWRA 1215 S-3WR3	±15		±100	±5		79/80	#330		
SWRB 2403 S-3WR3	24 (18-36)		3.3	758		38	73/75	2700	
SWRB 2405 S-3WR3			5	600		30	80/82	2200	
SWRB 2412 S-3WR3			12	250		13	82/84	680	
SWRB 2415 S-3WR3			15	200	10	82/84	470		
SWRB 2424 S-3WR3		24	125	6	100/150		82/84	330	

SWRA 2405 S-3WR3		±5	±300	±15	40/75	78/80	#1000
SWRA 2409 S-3WR3		±9	±167	±8		79/81	#680
SWRA 2412 S-3WR3		±12	±125	±6		81/83	#470
SWRA 2415 S-3WR3		±15	±100	±5		81/83	#330
SWRB 4803 S-3WR3	48 (36-75)	3.3	758	38	100/150	74/76	2700
SWRB 4805 S-3WR3		5	600	30	40/75	75/77	2200
SWRB 4812 S-3WR3		12	250	13		79/81	680
SWRB 4815 S-3WR3		15	200	10	40/75	83/85	470
SWRB 4824 S-3WR3		24	125	6	70/100	81/83	330
SWRA 4805 S-3WR3		±5	±300	±15	100/150	78/80	#1000
SWRA 4812 S-3WR3		±12	±125	±6	40/75	81/83	#470
SWRA 4815 S-3WR3		±15	±100	±5		81/83	#330

each output

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Current (full load/no load)	5VDC Input	3.3VDC Output	--	735/40	758/85	mA
		Other Output	--	805/40	846/85	
	12VDC Input	3.3VDC Output	--	278/30	286/40	
		Other Output	--	314/30	338/40	
	24VDC Input	3.3VDC Output	--	140/20	145/40	
		Other Output	--	154/20	163/40	
48VDC Input	3.3VDC Output	--	69/5	72/15		
	Other Output	--	78/5	85/15		
Reflected Ripple Current	5VDC Input	--	20	--	VDC	
	12VDC Input	--	20	--		
	24VDC Input	--	55	--		
	48VDC Input	--	55	--		
Impulse Voltage	5VDC Input	-0.7	--	12	VDC	
	12VDC Input	-0.7	--	25		
	24VDC Input	-0.7	--	50		
	48VDC Input	-0.7	--	100		
Starting Voltage	5VDC Input	--	--	4.5	VDC	
	12VDC Input	--	--	9		
	24VDC Input	--	--	18		
	48VDC Input	--	--	36		
Input Filter		Capacitance Filter				
Hot Plug		Unavailable				
CTRL	Module off	0-0.7V turn off				
	Module on	No connect or 3.5-12V on				

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	5% - 100% Load, Input voltage range	--	±1.0	±3.0	%	
No-load Output Voltage Accuracy	Input Voltage Range	SWRB 1203 S-3WR3 / SWRB 4803 S-3WR3	--	±5.0		±8.0
		Other	--	±1.5		±5.0
Linear Regulation	Full load, Input voltage from low limit to high limit	--	±0.2	±0.5		
Load Regulation	5% - 100% Load	--	±0.6	±1.0		
Transient Recovery Time	25% load step change	--	0.5	3	ms	
Transient Response Deviation		--	±2.5	±5	%	
Temperature Coefficient	Full Load	--	±0.02	±0.03	%/°C	
Over Current Protection		110	140	--	%Io	
Short-circuit Protection		Continuous, Self-Recovery				

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	120	--	pF
Operating Temperature	Derating when operating temperature ≥ 85°C, (See Figure 1)	-40	--	85	°C
Storage Temperature		-55	--	105	
Storage Humidity	Non-condensing	--	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Switching Frequency	Full Load, Nominal Input Voltage	--	250	--	kHz
MTBF	MIL-HDBK-217F@25°C	>1000Kh			

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL 94V-0 rated)
Package Dimensions	22.00 * 12.00 * 9.50 mm
Weight	3.8g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
	RE	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 3-②)	
EMS	ESD	IEC/EN61000-4-2 Contact±4KV	perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m	Perf.Criteria A
	EFT	IEC/EN61000-4-4 ±2KV(The recommended circuit is shown in Figure 3-①)	Perf.Criteria B
	Surge	IEC/EN61000-4-5 line to line±2KV (The recommended circuit is shown in Figure 3-①)	Perf.Criteria B
	Cs	IEC/EN61000-4-6 3 Vr.m.s	Perf.Criteria A

Typical Characteristic Curves

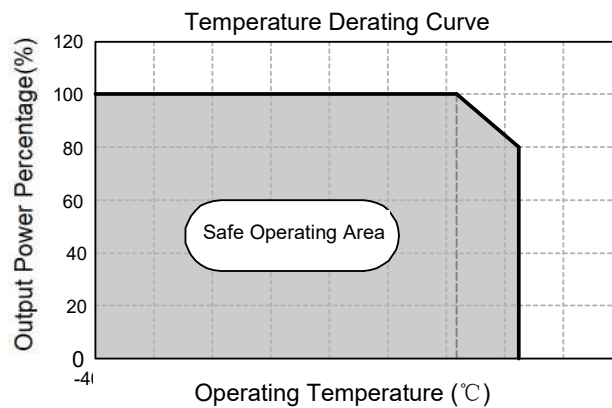
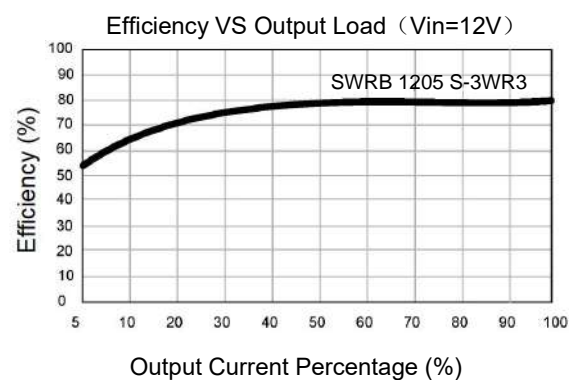
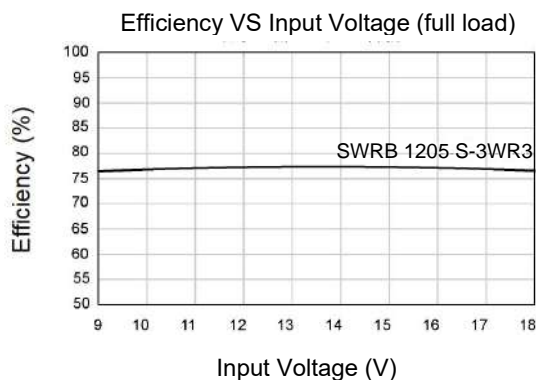
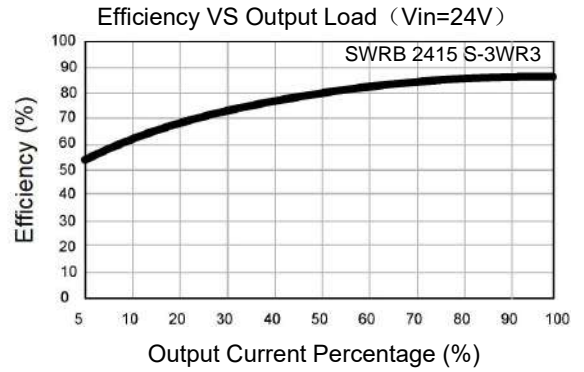
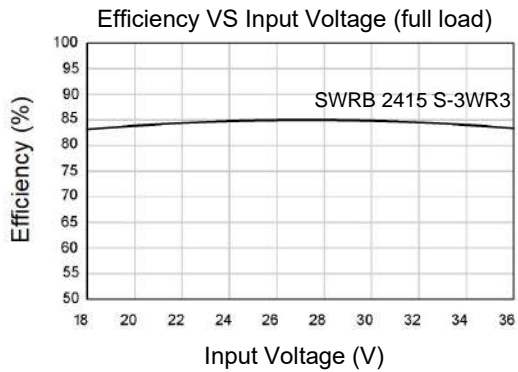


Figure 1





Circuit Design and Application

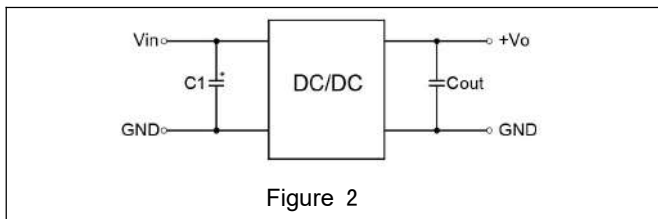


Figure 2

Recommended Capacitive Load Value Table	
Cin(μF)	Cout(μF)
100	22

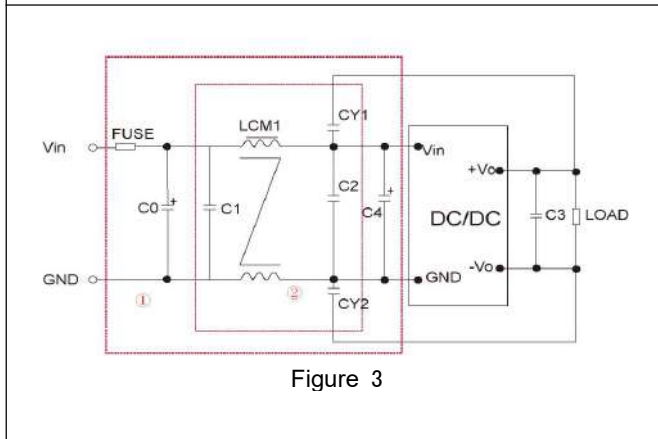


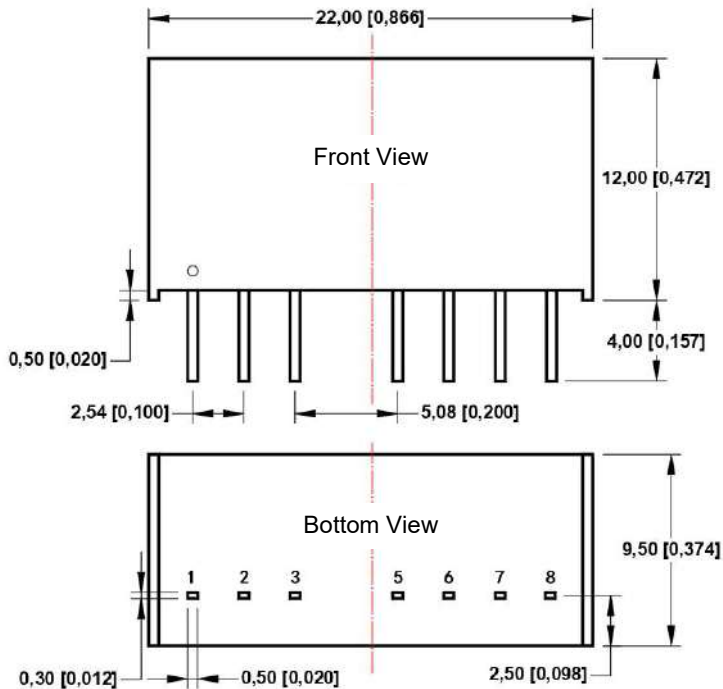
Figure 3

EMI Recommended Parameter Table		
Model	Vin:12V	Vin:24V
FUSE	Select according to the actual input current of the customer	
C0, C4	330uF/35V	330uF/50V
C1, C2	10μF/50V	
LCM1	1.4-1.7mH	
C3	22μF/50V	
CY1, CY2	1nF/400VAC	

Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand.

Dimensions and Recommended Layout

Dimensions



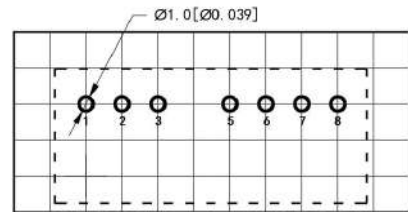
Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.10 [\pm 0.004]$

General tolerances: $\pm 0.50 [\pm 0.020]$

PCB Printing Layout & Pin Definition Table



Note: The grid distance is 2.54mm*2.54mm

Pin	Function (single)	Function (double)
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	-Vo	COM
8	NC	-Vo

NC: Pin to be isolated from circuitry