SURE SURF S-3WR4

Product Feature

- Universal Input：4:1
- Package Type：SIP8
- Operating temperature range：-40℃ - +85℃
- Isolation voltage：3000VDC
- High efficiency up to：81%（Type）
- With the output overcurrent, output short circuit protection mechanism.
- Fields of application：electric power, industrial control,etc.

Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%)Typ.	Capacitive Load (μF)Max.
	Nominal (Range)	Max.	Voltage (VDC)	Current (mA)Max.		
SURF 1203 S-3WR4	12 (4.5-18)	20	3.3	700	74	1760
SURF 1205 S-3WR4	12 (4.5-18)	20	5	600	78	1000
SURF 1212 S-3WR4	12 (4.5-18)	20	12	250	80	170
SURF 1215 S-3WR4	12 (4.5-18)	20	15	200	80	110
SURF 1224 S-3WR4	12 (4.5-18)	20	24	125	80	47
SURE 1205 S-3WR4	12 (4.5-18)	20	±5	±300	80	#470
SURE 1212 S-3WR4	12 (4.5-18)	20	±12	±125	80	#100
SURE 1215 S-3WR4	12 (4.5-18)	20	±15	±100	80	#47
SURF 2403 S-3WR4	24 (9-36)	40	3.3	700	75	1760
SURF 2405 S-3WR4	24 (9-36)	40	5	600	80	1000
SURF 2412 S-3WR4	24 (9-36)	40	12	250	81	170
SURF 2415 S-3WR4	24 (9-36)	40	15	200	81	110
SURE 2405 S-3WR4	24 (9-36)	40	±5	±300	79	#470
SURE 2412 S-3WR4	24 (9-36)	40	±12	±125	80	#100
SURE 2415 S-3WR4	24 (9-36)	40	±15	±100	81	#47
SURF 4803 S-3WR4	48 (18-75)	80	3.3	700	74	1760
SURF 4805 S-3WR4	48 (18-75)	80	5	600	79	1000
SURF 4812 S-3WR4	48 (18-75)	80	12	250	79	170
SURF 4815 S-3WR4	48 (18-75)	80	15	200	79	110
SURE 4805 S-3WR4	48 (18-75)	80	±5	±300	79	#470
SURE 4812 S-3WR4	48 (18-75)	80	±12	±125	79	#100
SURE 4815 S-3WR4	48 (18-75)	80	±15	±100	80	#47

SURE SURF S-3WR4

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current(full load/no load)	12VDC Input	--	306/60	--	mA
	24VDC Input	--	140/25	--	
	48VDC Input	--	82/15	--	
Reflected Ripple Current		--	15	--	mA
Impulse Voltage	12VDC Input	-0.7	--	25	VDC
	24VDC Input	-0.7	--	50	
	48VDC Input	-0.7	--	100	
Starting Voltage	12VDC Input	3	4	4.5	VDC
	24VDC Input	4.5	6	9	
	48VDC Input	8.5	12	18	
Undervoltage Protection	12VDC Input	--	--	4	VDC
	24VDC Input	--	--	8	
	48VDC Input	--	--	16	
CTRL	turn off module	0-0.7V turn off			
	turn on module	No connect or 3.5-12V on			
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0% - 100% Load	--	±1.0	--	%
Linear Regulation	Full load,Input voltage from low limit to high limit	--	±0.3	±0.5	%
Load Regulation	10% - 100% Load	--	±0.5	±1.0	%
Ripple & Noise	20MHz Bandwidth	--	50	150	mV
Transient Recovery Time	25% load step change	--	0.3	3	ms
Transient Response Deviation	25% load step change	--	±3	±5	%
Temperature Coeffcient	Full Load	--	±0.01	±0.02	%/°C
Over Current Protection		110	140	--	%
Short-circuit Protection		Continuous, Self-Recovery			

SURE SURF S-3WR4

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	25	--	pF
Operating Temperature	See Figure 1	-40	--	85	℃
Storage Temperature		-55	--	105	℃
Storage Humidity	Non-condensing	5	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	℃
Switching Frequency	Full Load, Nominal Input Voltage	--	250	--	kHz
MTBF	MIL-HDBK-217F@25℃	>3500Kh			

Mechanical Specification

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

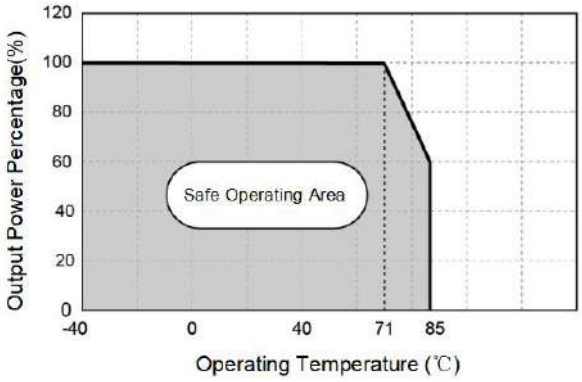
EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS B （Application circuit 3）	
	RE	CISPR32/EN55032 CLASS B （Application circuit 3）	
EMS	ESD	IEC/EN61000-4-2 Contact±8KV	perf. Criteria B

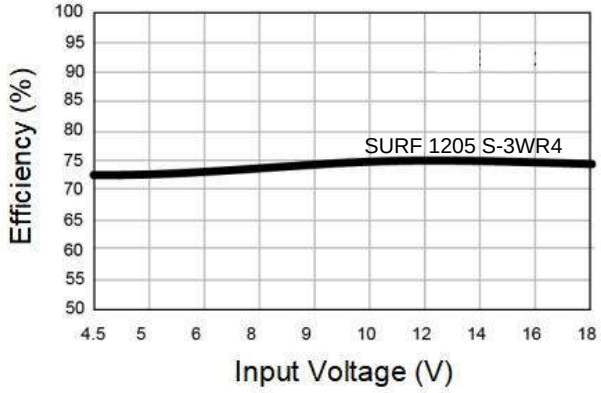
SURE SURF S-3WR4

Typical Characteristic Curves

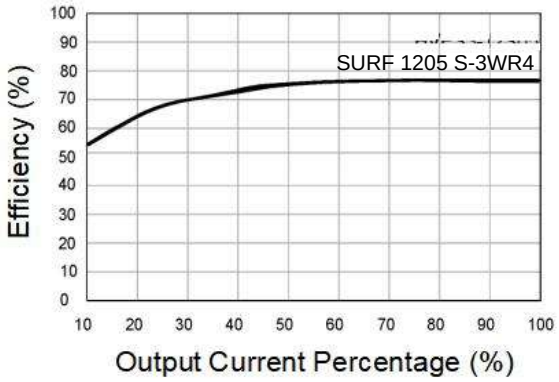
Temperature Derating Curve（Figure 1）



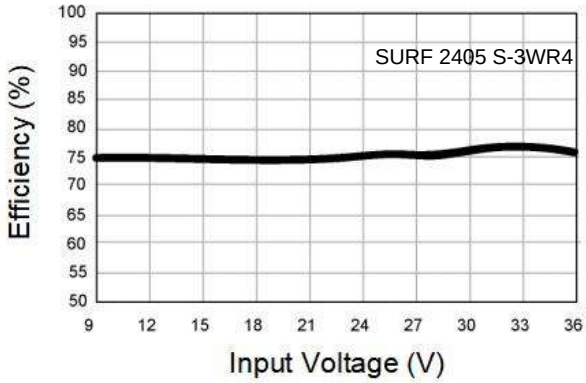
Efficiency VS Input Voltage (full load)



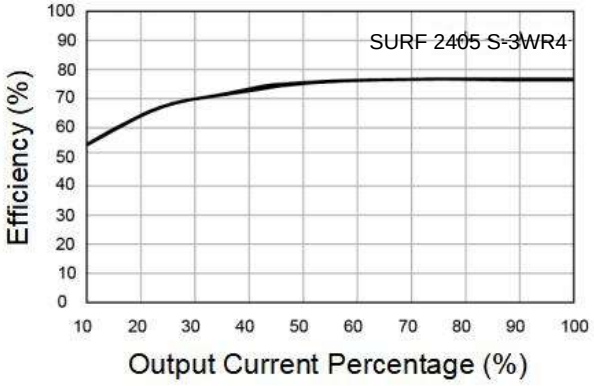
Efficiency VS Output Load（Vin=12V）



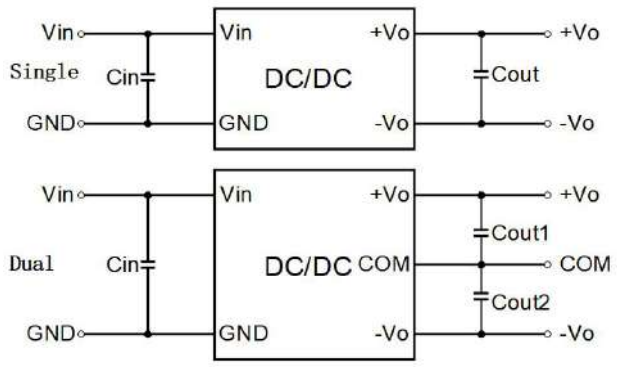
Efficiency VS Input Voltage (full load)



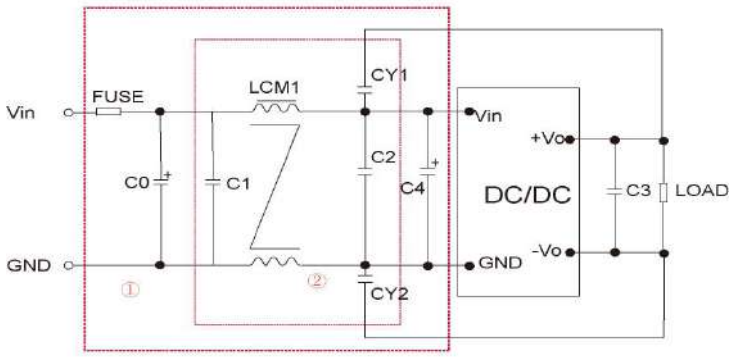
Efficiency VS Input Voltage (Vin=24V)



Typical Circuit Design and Application

Application circuit（Figure 2）	Recommended Capacitive Load Value Table	
	Cin (μF)	100
	Cout (μF)	100
	Cout 1 (μF)	100
	Cout 2 (μF)	100

All DC/DC converters in this series are tested according to the recommended testing circuit (Figure 2) before leaving the factory. If further reduction of input and output ripple is required, the input and output external capacitors Cin and Cout can be increased or a capacitor with a small series equivalent impedance value can be selected, but the capacitance value cannot exceed the maximum capacitive load of the product.

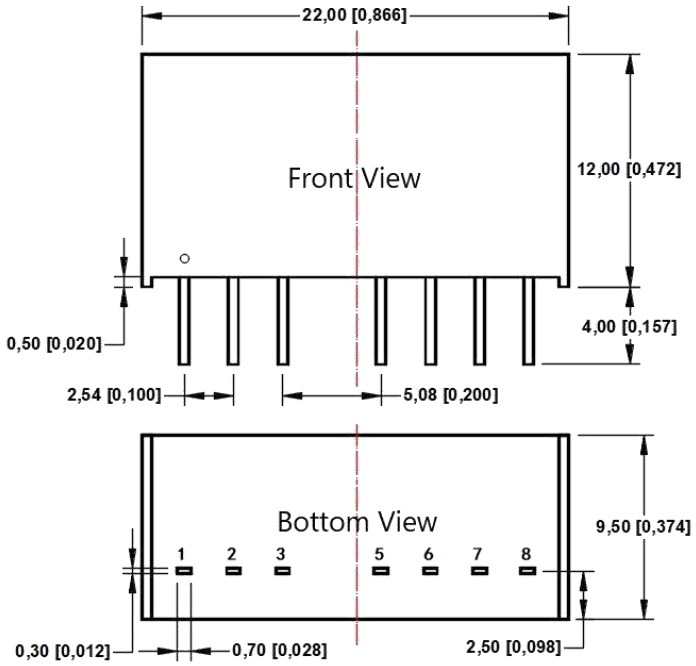
EMC Recommended Circuit（Figure 3）	EMI Recommended Parameter Table		
	Vin	Vin:12V	Vin:24V	Vin:48V
	FUSE	Select according to the actual input current of the customer		
	C0、C4	330uF/35V	330uF/50V	100uF/100V
	C1、C2	10μF/50V		
	LCM1	1.4-1.7mH		
	C3	22μF/50V		
	CY1、CY2	1nF/400VAC		

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.

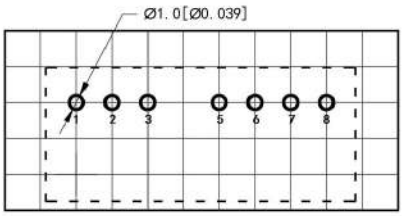
SURE SURF S-3WR4

Dimensions and Recommended Layout

Dimensions	PCB Printing Layout



Note:
Unit: mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]



The grid distance is 2.54mm x2.54mm

Pin Definition Table

Pin	Single	Dual
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 circuity

Note:

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
- Suggested dual output module load imbalance: ≤ ± 5%. If it exceeds ± 5%, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at Ta=25 °C, humidity<75% RH, nominal input voltage, and output rated load;
- All indicator testing methods in this manual are based on our company's corporate standards;
- Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
- Product specifications are subject to change without prior notice.