

## SMSA\_D-3W & SMSB\_D-3W SMSA\_MD-3W & SMSB\_(M)D-3W Series

### 3W, WIDE INPUT, DUAL&SINGLE OUTPUT, DIP DC-DC CONVERTER



#### FEATURES

Wide (2:1) Input Range  
Efficiency Up To 82%  
1.5KVDC Isolation  
Short Circuit Protection(automatic recovery)  
Operating Temperature: -40°C to +85°C  
Internal SMD construction  
UL94-V0 Package  
No Heat Sink Required  
Industry Standard Pin out  
MTBF>1,000,000 hours  
RoHS Compliance

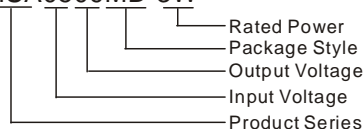
#### APPLICATIONS

The SMSA\_D-3W & SMSB\_D-3W Series are specially designed for applications where a wide range input voltage 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 wide range (voltage range: 2:1);
- 2) Where isolation is necessary between input and output(isolation voltage $\leq$ 1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

#### MODEL SELECTION

SMSA0509MD-3W



#### PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ)	Certificate
	Voltage (VDC)			Voltage (VDC)	Current (mA)			
	Nominal	Range	Max*		Max	Min		
SMSA0505D-3W	5	4.5-9	11	±5	±300	±30	68	
SMSA0509D-3W				±9	±167	±16	70	
SMSA0512D-3W				±12	±125	±12	71	
SMSA0515D-3W				±15	±100	±10	71	
SMSB0505D-3W				5	600	60	68	
SMSB0509D-3W				9	333	33	70	
SMSB0512D-3W				12	250	25	71	
SMSB0515D-3W				15	200	20	71	
SMSB0524D-3W				24	125	12	70	
SMSA1205D-3W				12	9-18	22	±5	±300
SMSA1209D-3W	±9	±167	±16				78	
SMSA1212D-3W	±12	±125	±12				79	
SMSA1215D-3W	±15	±100	±10				80	
SMSB1205D-3W	5	600	60				78	
SMSB1209D-3W	9	333	33				79	
SMSB1212D-3W	12	250	25				80	
SMSB1215D-3W	15	200	20				81	
SMSB1224D-3W	24	125	12				80	
SMSA2405D-3W	24	18-36	40				±5	±300
SMSA2409D-3W				±9	±167	±16	78	
SMSA2412D-3W				±12	±125	±12	80	
SMSA2415D-3W				±15	±100	±10	81	
SMSB2403D-3W				3.3	909	90	76	UL
SMSB2405D-3W				5	600	60	78	UL
SMSB2409D-3W				9	333	33	80	UL
SMSB2412D-3W				12	250	25	81	UL
SMSB2415D-3W				15	200	20	82	UL
SMSB2424D-3W				24	125	12	80	
SMSA4805D-3W	48	36-72	80	±5	±300	±30	76	
SMSA4809D-3W				±9	±167	±16	78	
SMSA4812D-3W				±12	±125	±12	80	
SMSA4815D-3W				±15	±100	±10	81	
SMSB4803D-3W				3.3	909	90	76	
SMSB4805D-3W				5	600	60	78	
SMSB4809D-3W				9	333	33	80	
SMSB4812D-3W				12	250	25	81	
SMSB4815D-3W				15	200	20	82	
SMSB4824D-3W				24	125	12	80	

\* Input voltage over it may cause permanent damage to the device.

Note:

1. Metal package style's series is SMSA\_MD-3W & SMSB\_MD-3W.

2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

#### ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input/Output		80		pF

## OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power	See below products program	0.3		3	W
Voltage accuracy	Refer to recommended circuit		±1	±3	%
Load regulation	From 10% to 100% load		±0.5	±1	
Line regulation	Input Voltage From Low to High		±0.2	±0.5	
Temperature drift(Vout)	Refer to recommended circuit			±0.03	%/°C
Ripple&Noise	20MHz bandwidth		50	100	mVp-p
Switching frequency	100% load, nominal input voltage	80	300	550	KHz

## COMMON SPECIFICATIONS

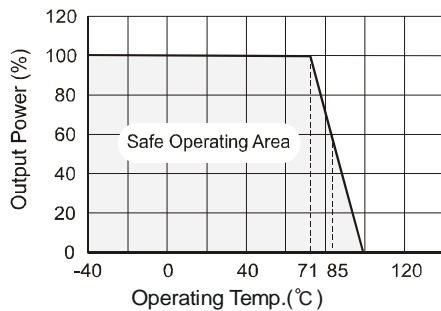
Item	Test Conditions	Min	Typ	Max	Units
Storage humidity			95		%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature			15	35	
Temp. rise at full load	1.5mm from case for 10 seconds			300	
Cooling	Free air convection				
No-load Power			0.2		W
Short circuit protection	Short circuit protection	Continuous, Automatic Recovery			
Case material	D:Plastic (UL94-V0); MD: Steel, Nickel Coated				
MTBF		1000			K
Weigh			15		g

Note:

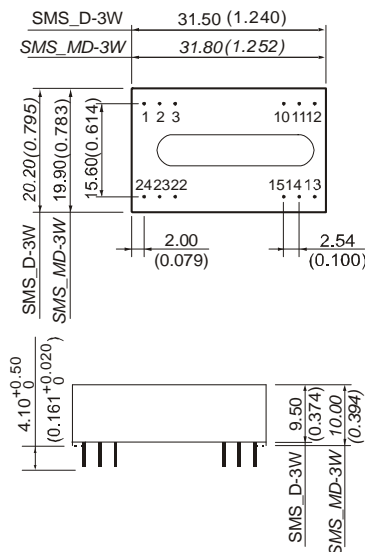
1.All specifications measured at TA=25°C, humidity<75%, no minimal input voltage and rated output load unless otherwise specified.

2.See below recommended circuits for more details.

## TYPICAL CHARACTERISTICS



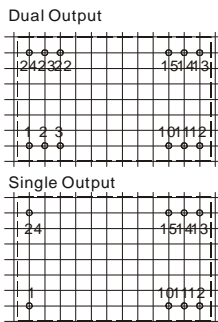
## OUTLINE DIMENSIONS& PIN CONNECTIONS



Note:  
 Unit:mm(inch)  
 Pin diameter:0.50mm(0.020inch)  
 Pin tolerances:±0.05mm(±0.002inch)  
 General tolerances:±0.25mm(±0.010inch)

First Angle Projection

RECOMMENDED FOOTPRINT  
 Bottom view,grid:2.54mm(0.1inch)  
 diameter:1.00mm



FOOTPRINT DETAILS

Pin	Single	Dual
1, 24	V <sub>in</sub>	V <sub>in</sub>
2, 23	Nb Fl n	-V <sub>O</sub>
3, 22	Nb Fl n	0V
10, 15	0V	0V
11, 14	+V <sub>o</sub>	+V <sub>o</sub>
12, 13	GND	GND

## APPLICATION NOTE

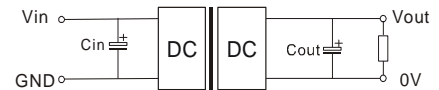
### Recommended Circuit

All the SMSA\_(M)D-3W & SMSB\_(M)D-3W Series have been tested according to the following recommended testing circuit before leaving factory(Figure 1). This series should be tested under load.

#### Single Output



#### Dual Output



(Figure 1)

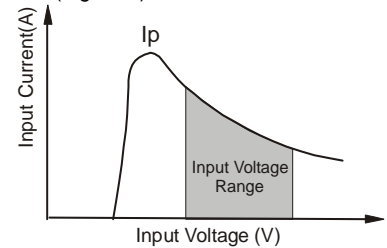
If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1). If you want to use the products in high EMI, please choose our metal packaged products(SMSA\_MD-3W & SMSB\_MD-3W).

External Capacitor Table(Table 1)

V <sub>in</sub> (VDC)	C <sub>in</sub> (uF)	Single V <sub>out</sub> (VDC)	C <sub>out</sub> (uF)	Dual V <sub>out</sub> (VDC)	C <sub>out</sub> (uF)
5	100	5	1000	±5	470
12	100	9	470	±9	220
15	10-47	12	330	±12	150
24	10-47	15	220	±15	120

### Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (Figure 2)



(Figure 2)

The products cannot be used in parallel and in plug and play.