

# SCHMID-M

## SD-4W Series

4W 2:1 Regulated Single & Dual output

### Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 82%
- -40 ~ 85°C Operation Temperature Range
- Metal Case Standard, Optional Plastic Case

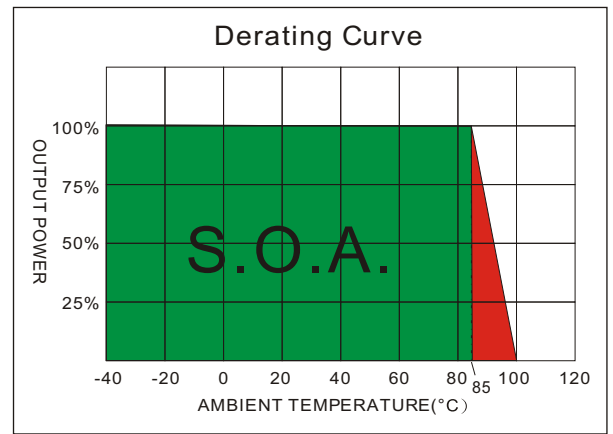
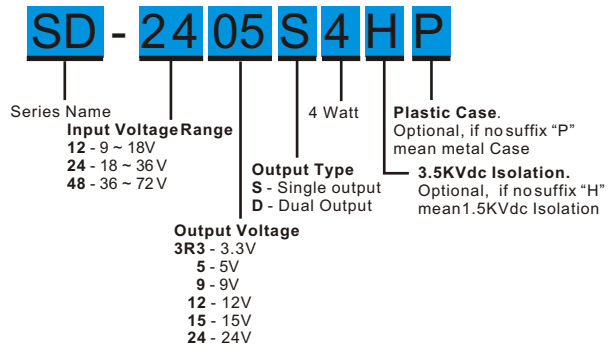


The SD series is a family of cost effective 4W single & dual output DC-DC converters. These converters are consisted with Nickel-coated copper in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 12, 24 and 48 with output voltage of 3.3, 5, 9, 12, 15, 24,  $\pm 3.3$ ,  $\pm 5$ ,  $\pm 9$ ,  $\pm 12$ ,  $\pm 15$  and  $\pm 24$  Vdc. High performance features include high efficiency operation up to 82% and output voltage accuracy of  $\pm 1\%$  maximum.

All specifications typical at  $T_a = 25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS		PHYSICAL SPECIFICATIONS	
Voltage accuracy	$\pm 1\%$	Case Material	Nickel-coated Copper
Line regulation	$\pm 0.5\%$	Base Material	Non-conductive Black Plastic (UL94V-0 rated)
Load regulation	$\pm 0.5\%$	Pin Material	$\varnothing 0.5\text{mm}$ Brass Solder-coated
	(Output 3.3V / $\pm 3.3\text{V}$ Model) $\pm 1.5\%$	Potting Material	Epoxy (UL94V-0 rated)
Ripple & noise (20 MHz bandwidth)(1)	60mV pk-pk	Weight	17.0g (Metal Case) / 13.5g (Plastic Case)
Short circuit protection	Indefinite (Automatic Recovery)	Dimensions	1.25" x 0.8" x 0.4"
Temperature coefficient	$\pm 0.02\%/^\circ\text{C}$		
Capacitor load(2)	See table		
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	See table	Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
Input Filter	PI Type	Cooling	Nature Convection
Input Reflected Ripple Current(3)	35mA pk-pk		
GENERAL SPECIFICATIONS		ABSOLUTE MAXIMUM RATINGS(4)	
Efficiency	See table, typ	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
I/O Isolation Voltage(3 sec)		Input Voltage(100mS)	
Input/Output	1500~3500Vdc	12 Modes	-0.7~24 Vdc
Metal Case/Input & Output	1000Vdc	24 Modes	-0.7~40 Vdc
I/O Isolation Capacitance	470 pF Typ.	48 Modes	-0.7~80 Vdc
I/O Isolation Resistance	1000M Ohm	Lead Soldering Temperature	260°C
Switching Frequency	Typical 266kHz	(1.5mm from case 10sec.)	
Humidity	95% rel H		
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs		
Safety Standard : (designed to meet)	IEC 60950-1:2001		

## PARTNUMBER STRUCTURE



## MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(μF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
SD-123R3S4	9-18	30	463	3.3	0	1200	72	3300
SD-1205S4	9-18	30	428	5	0	800	78	1000
SD-1209S4	9-18	30	428	9	0	444	78	470
SD-1212S4	9-18	30	417	12	0	333	80	220
SD-1215S4	9-18	30	417	15	0	266	80	100
SD-1224S4	9-18	30	417	24	0	166	80	47
SD-123R3D4	9-18	30	452	±3.3	0	±600	73	±680
SD-1205D4	9-18	30	428	±5	0	±400	78	±470
SD-1209D4	9-18	30	417	±9	0	±220	80	±220
SD-1212D4	9-18	30	417	±12	0	±166	80	±100
SD-1215D4	9-18	30	417	±15	0	±133	80	±47
SD-1224D4	9-18	30	421	±24	0	±83	79	±22
SD-243R3S4	18-36	20	223	3.3	0	1200	75	3300
SD-2405S4	18-36	20	209	5	0	800	80	1000
SD-2409S4	18-36	20	209	9	0	444	80	470
SD-2412S4	18-36	20	201	12	0	333	83	220
SD-2415S4	18-36	20	209	15	0	266	80	100
SD-2424S4	18-36	20	196	24	0	166	85	47
SD-243R3D4	18-36	20	226	±3.3	0	±600	73	±680
SD-2405D4	18-36	20	211	±5	0	±400	79	±470
SD-2409D4	18-36	20	209	±9	0	±220	80	±220
SD-2412D4	18-36	20	204	±12	0	±166	82	±100
SD-2415D4	18-36	20	209	±15	0	±133	80	±47
SD-2424D4	18-36	20	214	±24	0	±83	78	±22
SD-483R3S4	36-72	15	112	3.3	0	1200	75	3300
SD-4805S4	36-72	15	105	5	0	800	80	1000
SD-4809S4	36-72	15	102	9	0	444	82	470
SD-4812S4	36-72	15	105	12	0	333	80	220
SD-4815S4	36-72	15	103	15	0	266	81	100
SD-4824S4	36-72	15	102	24	0	166	82	47

Suffix "H" means 3.5KVdc isolation

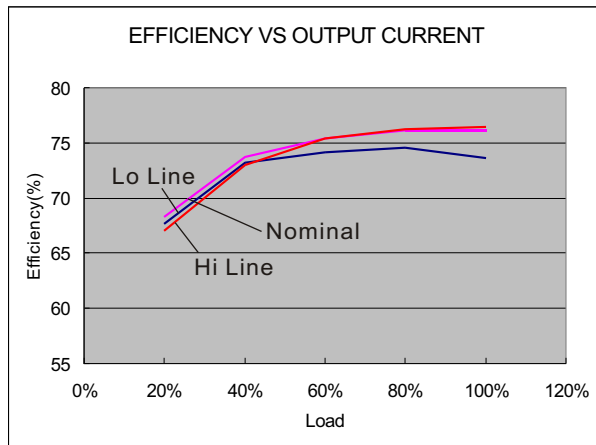
Suffix "P" means Plastic case instead of standard Metal Case

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
SD-483R3D4	36-72	15	116	±3.3	0	±600	72	±680
SD-4805D4	36-72	15	107	±5	0	±400	78	±470
SD-4809D4	36-72	15	107	±9	0	±220	78	±220
SD-4812D4	36-72	15	105	±12	0	±166	80	±100
SD-4815D4	36-72	15	105	±15	0	±133	80	±47
SD-4824D4	36-72	15	105	±24	0	±83	80	±22

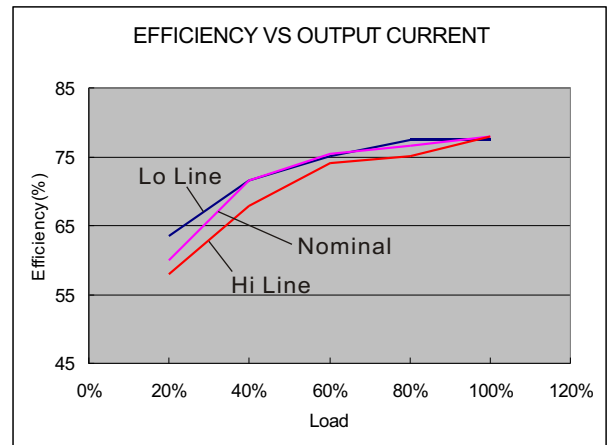
Suffix "H" means 3.5KVdc isolation  
 Suffix "P" means Plastic case instead of standard Metal Case

**NOTE**

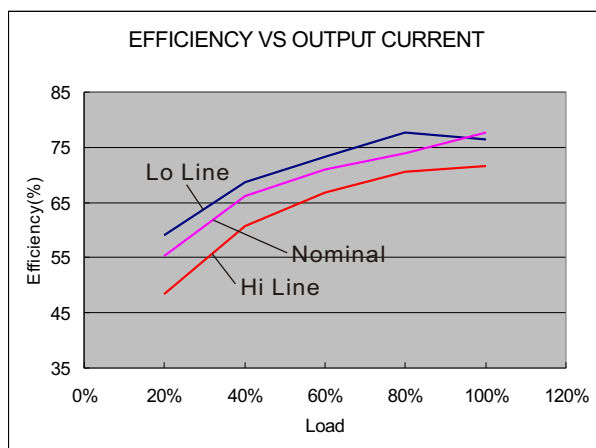
1. Typical value at nominal input voltage and full load.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.



12 Models

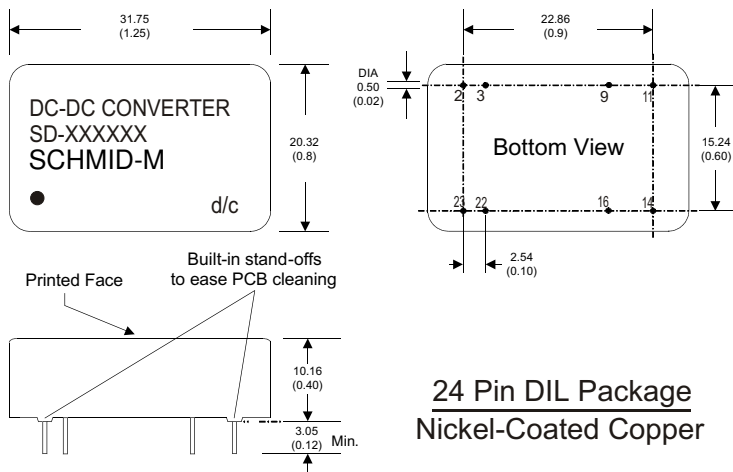


24 Models



48 Models

## MECHANICAL SPECIFICATIONS



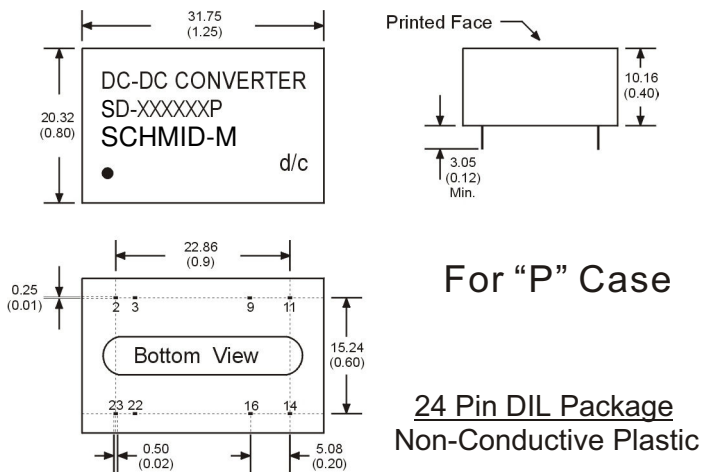
**24 Pin DIL Package  
Nickel-Coated Copper**

- Notes: All dimensions are typical in millimeters ( inches ).
1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )
  2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
  3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

(The Pin Connection of high isolation one is the same with normal one.)

## MECHANICAL SPECIFICATIONS



**For "P" Case**

**24 Pin DIL Package  
Non-Conductive Plastic**

- Notes: All dimensions are typical in millimeters ( inches ).
1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )
  2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
  3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

(The Pin Connection of high isolation one is the same with normal one.)