

# SV-10W Series

10W 4:1 Regulated Single & Dual output

## Features

- Wide 4:1 Input Range
- Full SMD Technology
- 1600 VDC Isolation
- Efficiency up to 88%
- -40 ~ 85 °C Operation Temperature Range
- No Minimum Load Required
- Continuous Short Circuit Protection
- Over Voltage Protection
- Over Load Protection
- Low no load Input Current
- Soft Start
- High Power Density: 10W in DIL-24 Package
- Remote On/Off

The SV series are high performance 10W single & dual output DC-DC converters. These converters are consisted with nickle-coated copper 24-pin DIL package with high performance features such as synchronous rectification, high efficiency and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 24 and 48 with output voltage of 3.3, 5, 12, 15,  $\pm 5$ ,  $\pm 12$ ,  $\pm 15$ Vdc. Features include high efficiency operation up to 88%.

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS	
Output Voltage Accuracy	$\pm 1.2\%$
Maximum Output Current	See table
Line Regulation	$\pm 0.2\%$ , max.
Load Regulation ( 0% Load to Full Load ) <b>Singe</b>	$\pm 0.5\%$ , max.
Load Regulation ( 0% Load to Full Load ) <b>Dual</b>	$\pm 1.0\%$ , max.
Cross Regulation (Dual Output) (1)	$\pm 5\%$
Ripple&Noise (2)	85mVpk-pk, max.
	3.3V output 3.9V
	5.1V output 6.2V
Over Voltage Protection	12V output 15V
( Zener diode clamp)	15V output 18V
	$\pm 5$ V output $\pm 6.2$ V
	$\pm 12$ V output $\pm 15$ V
	$\pm 15$ V output $\pm 18$ V
Over Load Protection	170% of FL,typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Capacitive Load (3)	See table
Transient Recovery Time (4)	250us, typ.
Transient Response Deviation(4)	$\pm 3\%$ , max.

INPUT SPECIFICATIONS	
Input Voltage Range	See table
Start up Time	20mS, typ.
(Nominal Vin and constant resistive load)	
Input Filter	Pi Type
Input Current(No-Load)	See table, max.
Input Current(Full-Load)	See table, typ.
Input Reflected Ripple Current	20mApk-pk
Remote On/Off (CTRL)	
	ON: 3.0 ... 12Vdc or open circuit
	OFF: 0 ... 1.2Vdc or Short circuit pin1 and pin 2/3
	OFF idle current: 5.0 mA typ.

ENVIRONMENTAL SPECIFICATIONS	
Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve)
	-40°C ~ +60°C(For 100% load)
Maximum Case Temperature	105°C
Storage Temperature	-55°C ~ +125°C
Cooling	Nature Convection

# SCHMID-M



GENERAL SPECIFICATIONS	
Efficiency	See table, min.
I/O Isolation Voltage(60sec)	
Input/Output	1600Vdc
Case/Input & Output	1600Vdc
Isolation Resistance	1000 M $\Omega$ , min.
Isolation Capacitance	1500 pF, max.
Switching frequency	270kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1 Mhrs
Safety Standard : ( designed to meet )	IEC 60950-1

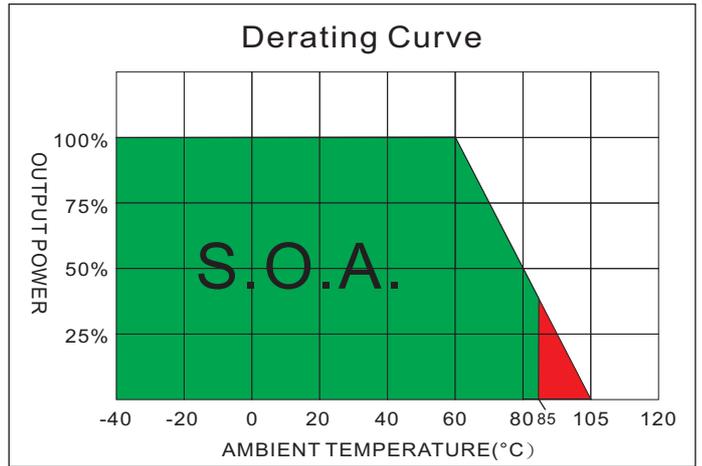
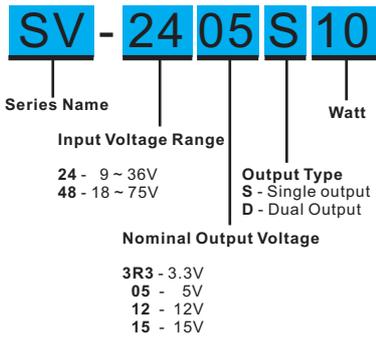
EMC CHARACTERISTICS		
Radiated Emissions	EN55022	CLASSA
Conducted Emissions(5)	EN55022	CLASSA
ESD	IEC61000-4-2	Perf. Criteria A
RS	IEC61000-4-3	Perf. Criteria A
EFT (6)	IEC61000-4-4	Perf. Criteria A
Surge (6)	IEC61000-4-5	Perf. Criteria A
CS	IEC61000-4-6	Perf. Criteria A
PFMF	IEC61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS	
Case Material	Copper with nickel plated
Base Material	Non-conductive black plastic (UL94V-0 rated)
Pin Material	$\Phi 0.5$ mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	18.0g
Dimensions	1.25"x0.8"x0.40"

ABSOLUTE SPECIFICATIONS (7)		
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.		
Input Surge Voltage(100mS)	24 Models	50Vdc, max.
	48 Models	100Vdc, max.
Soldering Temperature		260°C. max.
(1.5mm from case 10sec max.)		

# SV - 10W 4:1 Regulated Single & Dual output

## PART NUMBER STRUCTURE

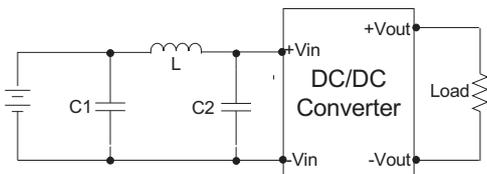


## MODEL SELECTION GUIDE

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)		
SV-243R3S10	9-36	15	440	3.3	0	2700	85	1330
SV-2405S10	9-36	15	480	5	0	2000	87	1330
SV-2412S10	9-36	15	475	12	0	833	88	288
SV-2415S10	9-36	15	475	15	0	667	88	200
SV-2405D10	9-36	15	495	5	0	1000	85	900
SV-2412D10	9-36	15	480	12	0	417	87	133
SV-2415D10	9-36	15	480	15	0	330	87	90
SV-483R3S10	18-75	15	225	3.3	0	2700	84	1330
SV-4805S10	18-75	15	240	5	0	2000	87	1330
SV-4812S10	18-75	15	240	12	0	833	87	288
SV-4815S10	18-75	15	240	15	0	667	87	200
SV-4805D10	18-75	15	250	5	0	1000	85	900
SV-4812D10	18-75	15	240	12	0	417	88	133
SV-4815D10	18-75	15	240	15	0	330	88	90

## NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within  $\pm 5\%$ .
- Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change ( 75%-50%-25% of Io ).
- Input filter components (C1, L, C2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
- An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5. The filter capacitor Schmid-M suggest: Nippon - chemi - con KY series, 330uF/100V.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

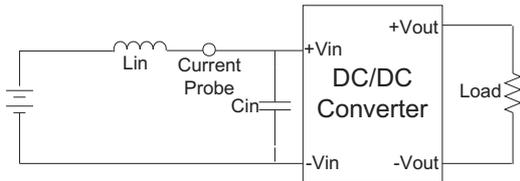


	C1	L	C2
SV-24XXXXXX	2.2uF, 100V	12uH	2.2uF, 100V
SV-48XXXXXX	2.2uF, 100V	12uH	2.2uF, 100V

TEST CONFIGURATIONS

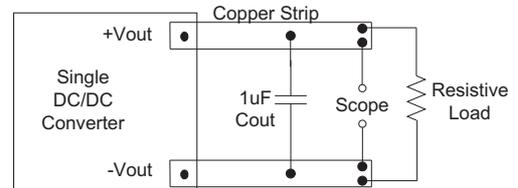
**Input Reflected Ripple Current Test Step**

Input reflected ripple current is measured through a source inductor  $L_{in}$  (12uH) and a source capacitor  $C_{in}$  (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.

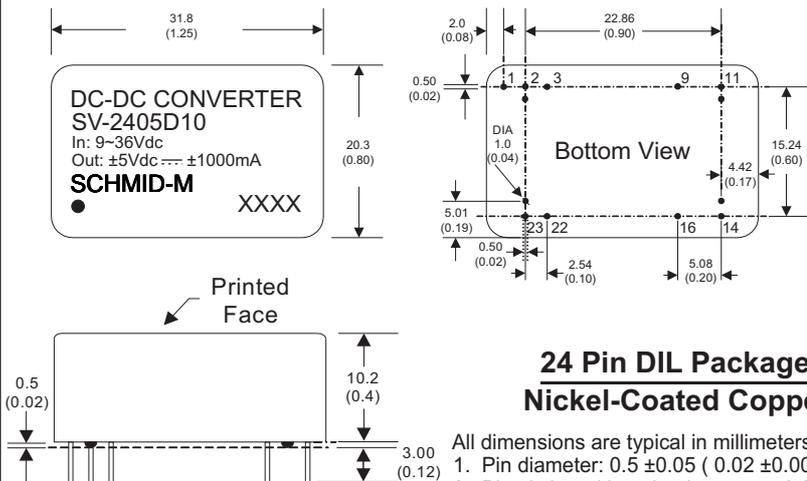


**Output Ripple & Noise Measurement Test**

Use a capacitor  $C_{out}$  (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



MECHANICAL SPECIFICATIONS



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

- All dimensions are typical in millimeters ( inches ).
1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )
  2. Pin pitch and length tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
  3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )
  4. Stand-off tolerance:  $\pm 0.1$  (  $\pm 0.004$  )

PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL
1	Remote On/Off	Remote On/Off
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