

SD-10W Series

10W 2:1 Regulated Single & Dual output

SCHMID-M

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation
- Efficiency up to 90%
- -40 ~ 85 °C Operation Temperature Range
- Continuous Short Circuit Protection
- Over Voltage Protection
- Low no load Input Current
- Soft Start
- High Power Density: 10W in DIL-24 Package



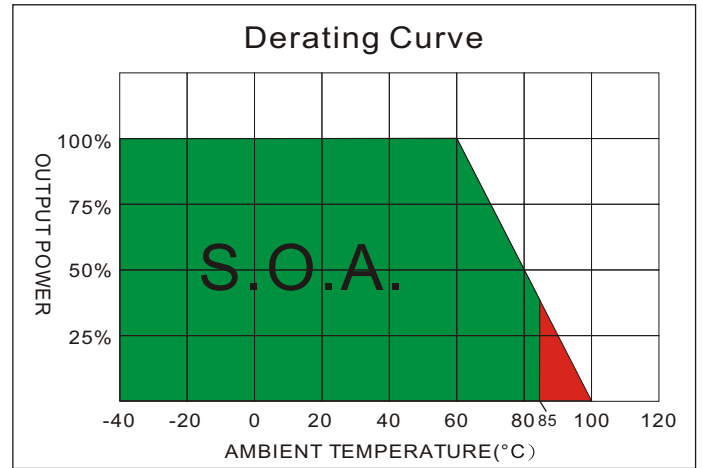
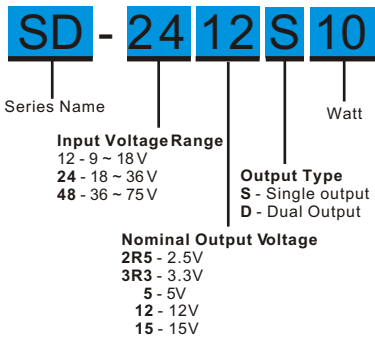
The SD-10W series are a family of high performance 10W single & dual output DC/DC converters. These converters are consisted with nickel plated copper Dual in Line 24 pin package. The high performance features include: Synchronous Rectification, high efficiency and tight line/load regulation. Devices are encapsulated with high grade flameproof epoxy with UL94V-0 recognize. Input voltages of 12, 24 and 48 with output voltage of 2.5, 3.3, 5, 12, 15, ± 12 , ± 15 Vdc. Features include high efficiency operation up to 90% and output voltage accuracy of $\pm 1\%$ maximum.

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

OUTPUT SPECIFICATIONS		EMC CHARACTERISTICS	
Output Voltage Accuracy	$\pm 1\%$	Radiated Emissions	EN55022 CLASS A
Maximum Output Current	See table	Conducted Emissions(8)	EN55022 CLASS A
Line Regulation	$\pm 0.5\%$, max.	ESD	EN61000-4-2 Perf. Criteria A
Load Regulation (Single, $I_o=0\%$ to 100%)	$\pm 0.5\%$, max.	RS	EN61000-4-3 Perf. Criteria A
(Dual, $I_o=0\%$ to 100%)	$\pm 1.0\%$, max.	EFT	EN61000-4-4 Perf. Criteria A
($I_o=0\%$ to 100%, only 3.3V)	$\pm 1.0\%$, max.	Surge (9)	EN61000-4-5 Perf. Criteria A
Cross Regulation (Dual Output) (2)	$\pm 5\%$	CS	EN61000-4-6 Perf. Criteria A
Ripple & Noise (3)	75mVpk-pk, max.	PFMF	EN61000-4-8 Perf. Criteria A
2.5V, 3.3V output	3.9V	PHYSICAL SPECIFICATIONS	
5V output	6.2V	Case Material	Nickel-coated Copper
Over Voltage Protection 12V output	15V	Pin Material	$\varnothing 0.5$ mm Brass Solder-coated
(Zener diode clamp) 15V output	18V	Potting Material	Epoxy (UL94V-0 rated)
± 12 V output	± 15 V	Weight	17.0g
± 15 V output	± 18 V	Dimensions	1.25"x0.8"x0.40"
Over Current Protection	150% of FL, typ.	GENERAL SPECIFICATIONS	
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)	Efficiency	See table, typ.
Temperature Coefficient	$\pm 0.02\%/^{\circ}\text{C}$	I/O Isolation Voltage(3 sec)	
Capacitive Load (4)	See table	Input/Output	1500Vdc
Transient Recovery Time (5)	200us, typ.	Case/Input & Output	1000Vdc
Transient Response Deviation(5)	$\pm 3\%$, max.	Isolation Resistance	1000 M Ω , min.
INPUT SPECIFICATIONS		Isolation Capacitance	1000 pF, typ.
Input Voltage Range	See table	Switching frequency	330kHz, typ.
Start up Time	20mS, typ.	Humidity	95% rel H
(Nominal Vin and constant resistive load)		Reliability Calculated MTBF(MIL-HDBK-217 F)	>1 Mhrs
Input Filter	Pi Type	Safety Standard : (designed to meet)	IEC 60950
Input Current(No-Load)	See table, max.	ENVIRONMENTAL SPECIFICATIONS	
Input Current(Full-Load)	See table, typ.	Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve)
Input Reflected Ripple Current(6)	20mApk-pk, typ.		-40°C ~ +60°C(For 100% load)
ABSOLUTE SPECIFICATIONS (7)		Maximum Case Temperature	100°C
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.			
Input Surge Voltage(100mS)		Storage Temperature	-40°C ~ +125°C
12 Models	25 Vdc, max.	Cooling	Nature Convection
24 Models	50 Vdc, max.		
48 Models	100 Vdc, max.		
Soldering Temperature	260°C, max.		
(1.5mm from case 10sec. max.)			

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PART NUMBER STRUCTURE

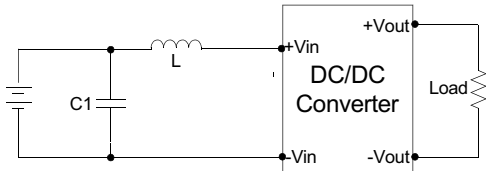


MODEL SELECTION GUIDE

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)		
SD-122R5S10	9-18	10	791	2.5	0	3000	81	2200
SD-123R3S10	9-18	10	1006	3.3	0	3000	84	2200
SD-1205S10	9-18	10	992	5	0	2000	86	2200
SD-1212S10	9-18	10	980	12	0	833	87	820
SD-1215S10	9-18	10	958	15	0	667	89	470
SD-1212D10	9-18	10	980	±12	0	±416	87	±220
SD-1215D10	9-18	10	969	±15	0	±333	88	±150
SD-242R5S10	18-36	10	381	2.5	0	3000	84	2200
SD-243R3S10	18-36	10	497	3.3	0	3000	85	2200
SD-2405S10	18-36	10	479	5	0	2000	89	2200
SD-2412S10	18-36	10	485	12	0	833	88	820
SD-2415S10	18-36	10	485	15	0	667	88	470
SD-2412D10	18-36	10	485	±12	0	±416	88	±220
SD-2415D10	18-36	10	474	±15	0	±333	90	±150
SD-482R5S10	36-75	10	191	2.5	0	3000	84	2200
SD-483R3S10	36-75	10	249	3.3	0	3000	85	2200
SD-4805S10	36-75	10	242	5	0	2000	88	2200
SD-4812S10	36-75	10	245	12	0	833	87	820
SD-4815S10	36-75	10	242	15	0	667	88	470
SD-4812D10	36-75	10	245	±12	0	±416	87	±220
SD-4815D10	36-75	10	245	±15	0	±333	87	±150

NOTE

1. Operation between no-load and 10% load conditions will not damage the module, but it may not meet all specifications listed.
2. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
3. Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
4. Tested by minimal Vin and constant resistive load.
5. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
6. Measured Input reflected ripple current with a simulated source inductance of 12uH.
7. Exceeding the absolute ratings of the unit could cause damage.
It is not allowed for continuous operating.
8. Input filter components (C1, L) 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.
9. An external filter capacitor is required if the module has to meet EN61000-4-5.
The filter capacitor Schmid-M suggest: Nippon - chemi - con KY series, 220uF/100V.

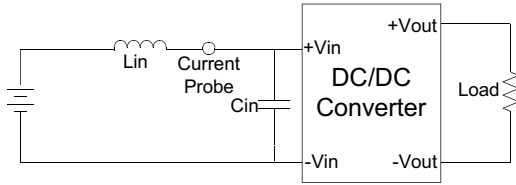


	C1	L
SD-12XXXXXX	100uF, 100V	12uH
SD-24XXXXXX	100uF, 100V	12uH
SD-48XXXXXX	100uF, 100V	12uH

TEST CONFIGURATIONS

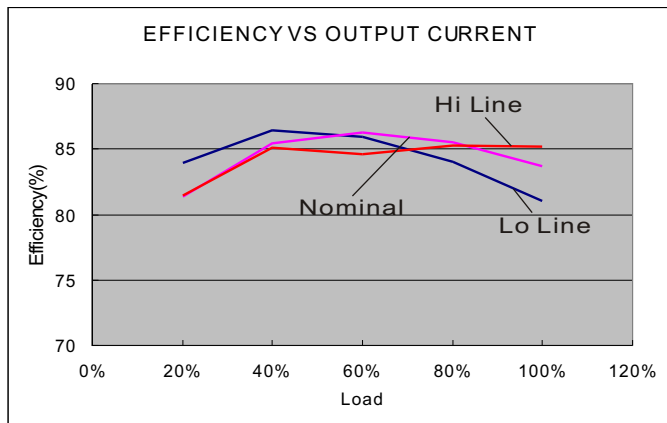
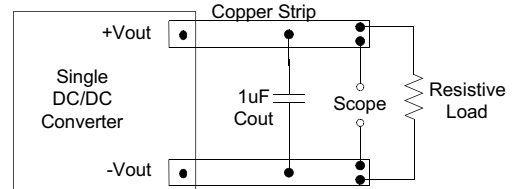
Input Reflected Ripple Current Test Step

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

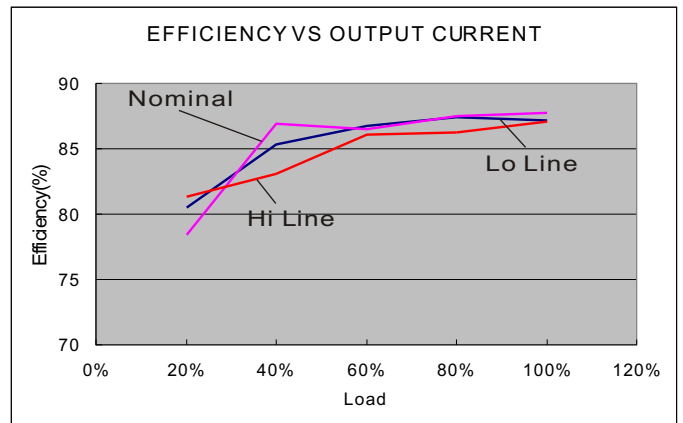


Output Ripple & Noise Measurement Test

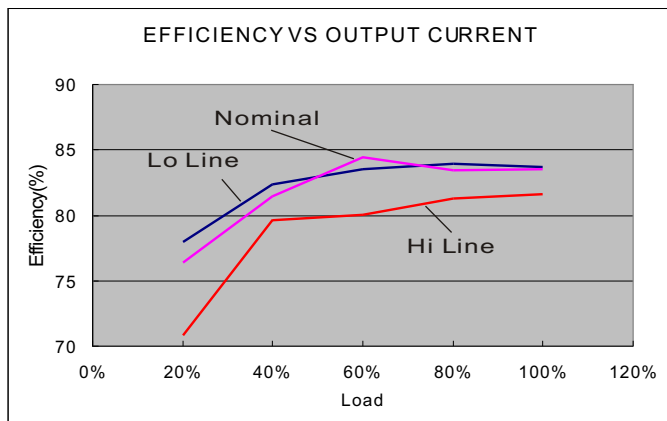
Use a capacitor C_{out} (1.0 μ F) measurement. The Scope measurement bandwidth is 0-20MHz.



12 Models



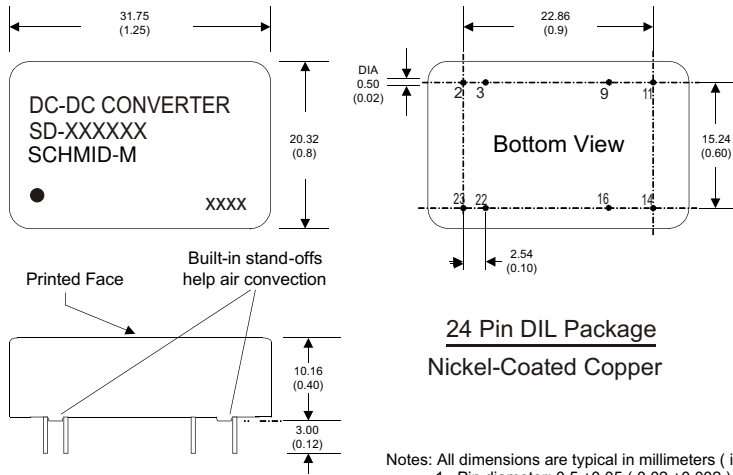
24 Models



48 Models

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MECHANICAL SPECIFICATIONS



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