

SJ-1.5W Series

1.5W 4:1 Regulated Single & Dual output

SCHMID-M

Features

- Wide 4:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 78%
- -40 ~ 85°C Operation Temperature Range
- Metal Case Standard, Optional Plastic Case



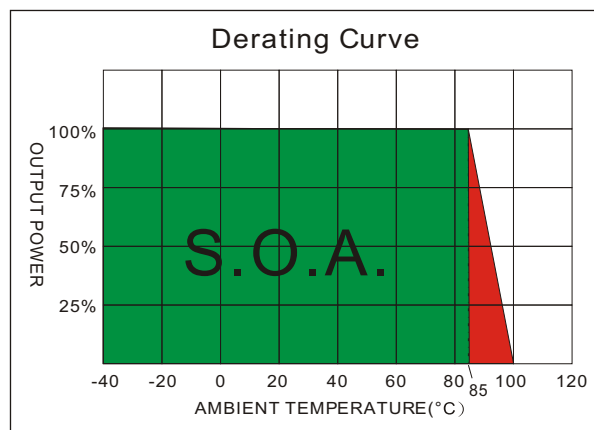
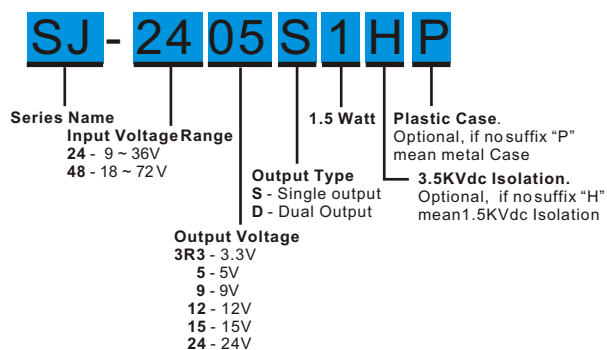
The SJ series is a family of cost effective 1.5W single & dual output DC-DC converters. These converters are consisted with Nickel-coated copper in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 24 and 48 with output voltage of 3.3, 5, 9, 12, 15, 24, ± 3.3 , ± 5 , ± 9 , ± 12 , ± 15 and ± 24 Vdc. High performance features include high efficiency operation up to 78% 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	$\pm 0.5\%$		Non-conductive Black Plastic (UL94V-0 rated)
Load regulation	$\pm 0.5\%$	Base Material	Non-conductive Black Plastic (UL94V-0 rated)
	(Output 3.3V / ± 3.3 V Model) $\pm 1.5\%$	Pin Material	$\varnothing 0.5$ mm Brass Solder-coated
Ripple & noise (20 MHz bandwidth)(1)	60mV pk-pk	Potting Material	Epoxy (UL94V-0 rated)
Short circuit protection	Indefinite (Automatic Recovery)	Weight	17.0g (Metal Case) / 13.5g (Plastic Case)
Temperature coefficient	$\pm 0.02\% / ^\circ\text{C}$	Dimensions	1.25" x 0.8" x 0.4"
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 Surge Voltage(100mS)	
Input/Output	1500~3500Vdc	24 Models	40 Vdc max.
Metal Case/Input & Output	1000Vdc	48 Models	80 Vdc max.
I/O Isolation Capacitance	470 pF Typ.	Soldering Temperature	260°C max.
I/O Isolation Resistance	1000M Ohm	(1.5mm from case 10sec. max.)	
Switching Frequency	Typical 266kHz		
Humidity	95% rel H		
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs		
Safety Standard : (designed to meet)	IEC 60950-1		

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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)		
SJ-243R3S1	9-36	15	83.3	3.3	0	454	75	330
SJ-2405S1	9-36	15	82.2	5	0	300	76	220
SJ-2409S1	9-36	15	80.1	9	0	167	78	68
SJ-2412S1	9-36	15	80.1	12	0	125	78	47
SJ-2415S1	9-36	15	80.1	15	0	100	78	22
SJ-2424S1	9-36	15	80.1	24	0	63	78	10
SJ-243R3D1	9-36	15	83.3	±3.3	0	±227	75	±100
SJ-2405D1	9-36	15	82.2	±5	0	±150	76	±100
SJ-2409D1	9-36	15	80.1	±9	0	±84	78	±33
SJ-2412D1	9-36	15	80.1	±12	0	±63	78	±22
SJ-2415D1	9-36	15	80.1	±15	0	±50	78	±10
SJ-2424D1	9-36	15	80.1	±24	0	±32	78	±10
SJ-483R3S1	18-72	12	41.6	3.3	0	454	75	330
SJ-4805S1	18-72	12	41.1	5	0	300	76	220
SJ-4809S1	18-72	12	40.1	9	0	167	78	68
SJ-4812S1	18-72	12	40.1	12	0	125	78	47
SJ-4815S1	18-72	12	40.1	15	0	100	78	22
SJ-4824S1	18-72	12	40.1	24	0	63	78	10
SJ-483R3D1	18-72	12	41.6	±3.3	0	±227	75	±100
SJ-4805D1	18-72	12	41.1	±5	0	±150	76	±100
SJ-4809D1	18-72	12	40.1	±9	0	±84	78	±33
SJ-4812D1	18-72	12	40.1	±12	0	±63	78	±22
SJ-4815D1	18-72	12	40.1	±15	0	±50	78	±10
SJ-4824D1	18-72	12	40.1	±24	0	±32	78	±10

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

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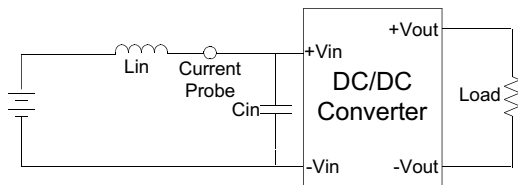
NOTE

1. Ripple/Noise measured with a 1uF ceramic capacitor.
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.

TEST CONFIGURATIONS

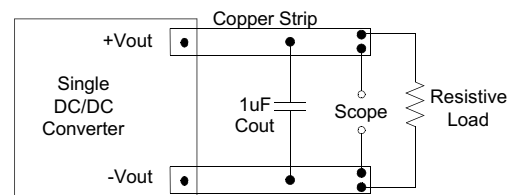
Input Reflected Ripple Current Test Step

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.

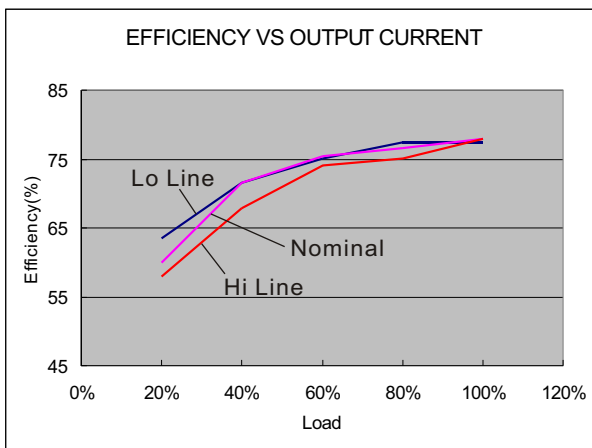


Output Ripple & Noise Measurement Test

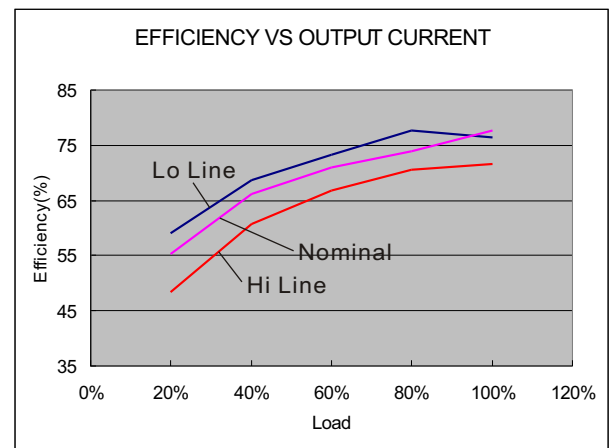
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



ELECTRICAL CHARACTERISTIC CURVES



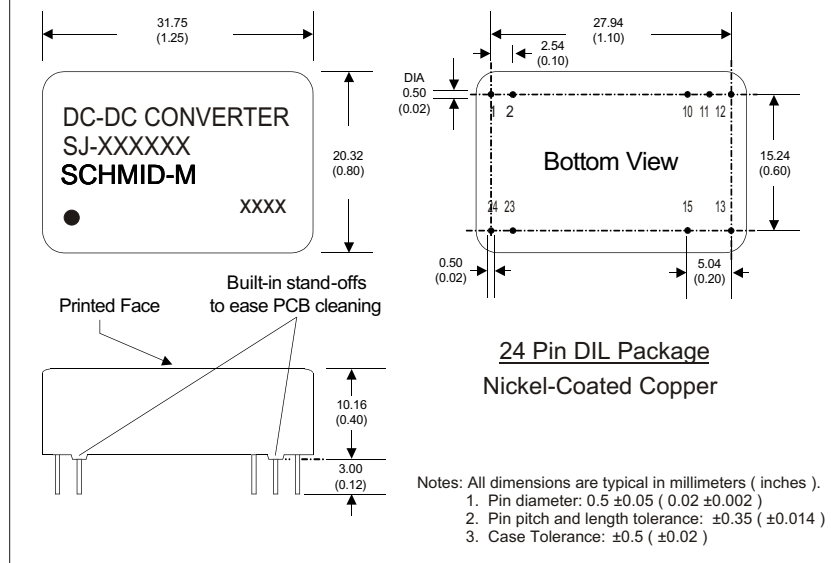
24 Models



48 Models

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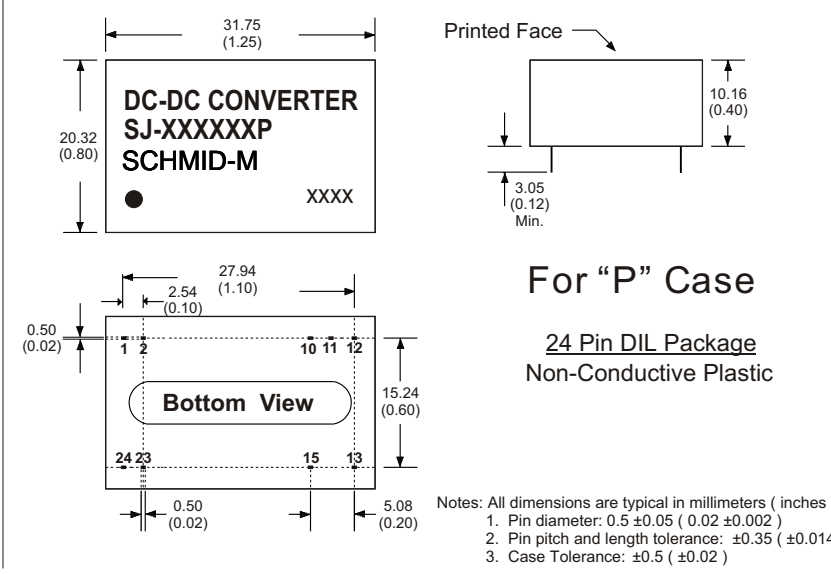
MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C.	Common
11	N.C.	Common
12	-V Output	N.C.
13	+V Output	-V Output
15	N.C.	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

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

MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C.	Common
11	N.C.	Common
12	-V Output	N.C.
13	+V Output	-V Output
15	N.C.	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

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