

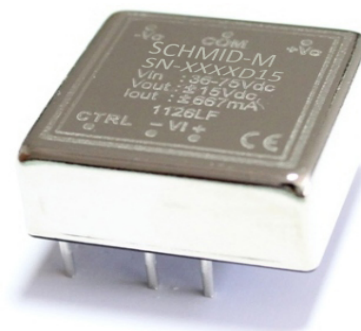
SCHMID-M

SN Series

15W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- Soft Start
- No Minimum Load Required
- Efficiency up to 89%
- Adjustable Output Voltage
- Remote On/Off Control (CTRL)
- Over Current Protection
- Over Voltage Protection
- 1600 VDC Isolation
- Operating Temperature Range -40 ~ 85°C max.



The SN series is a family of compact and high power density 15W single & dual output DC-DC converters. The compact nickel-coated copper package in an 1"x1" case reduces the size of 50% from conventional 2"x1" , superior Line /Load Regulation with over current & over voltage protection . Input voltages of 12 ,24 and 48with output voltage of 3.3 ,5, 12, 15, ±5, ±12, ±15Vdc. High performance features include high efficiency operation upto 89% and output voltage accuracy of ±1% maximum with adjustable output .

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

OUTPUT SPECIFICATIONS	
Output Voltage Accuracy	±1%
Output Voltage Adjustability(Trim)	Single output: ±10%, max.
Maximum Output Current	See table
Line Regulation	±0.2%, max.
Load Regulation(I _o =0% to 100%)	Single: ±0.5%, max. Dual: ±1%, max(balanced load)
Cross Regulation (Dual Output) (1)	±5%
Ripple&Noise(20MHz bandwidth) (2)	100mVpk-pk, max.
	3.3V output 3.9V
	5V output 6.2V
Over Voltage Protection	12V output 15V
(Zener diode clamp)	15V output 18V
	±5V output ±6.2V
	±12V output ±15V
	±15V output ±18V
Over Current Protection	150% of FL, typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	±0.02%/°C
Capacitive Load (3)	See table
Transient Recovery Time (4)	250us, typ.
Transient Response Deviation(4)	±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, typ.
Input Current(Full-Load)	See table, max.
Input Reflected Ripple Current(5)	20mA _{pk} -pk, typ.
Remote On/Off (Positive logic)(6)	
	ON: 3.0 ~ 12Vdc or open circuit
	OFF: 0 ~ 1.2Vdc or Short circuit pin 2 and pin 3
	OFF idle current: 5 mA, typ.

GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage(3 sec)	
Input/Output	1600Vdc
Case/Input & Output	1600Vdc
Isolation Resistance	1000 MΩ, min.
Isolation Capacitance	1200 pF, max.
Switching frequency	375kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>560 khrs
Safety Standard (designed to meet)	IEC/EN 60950-1

EMC CHARACTERISTICS		
Radiated Emissions	EN55022	CLASS A
Conducted Emissions(7)	EN55022	CLASS A
ESD	EN61000-4-2	Perf. Criteria A
RS	EN61000-4-3	Perf. Criteria A
EFT(8)	EN61000-4-4	Perf. Criteria A
Surge (8)	EN61000-4-5	Perf. Criteria A
CS	EN61000-4-6	Perf. Criteria A
PFMF	EN61000-4-8	Perf. Criteria A

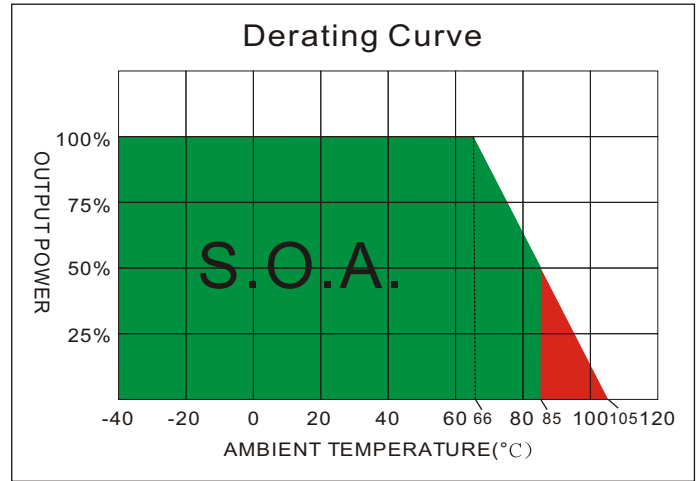
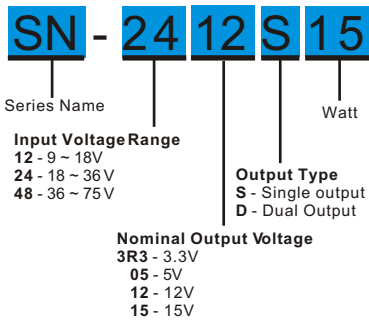
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Ø1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	18.0g
Dimensions	1.00"x1.00"x0.40"

ENVIRONMENTAL SPECIFICATIONS	
Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +66°C(For 100% load)
Maximum Case Temperature	105°C
Storage Temperature	-55°C ~ +125°C
Cooling	Nature Convection

ABSOLUTE SPECIFICATIONS (9)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100mS)	
12 Models	36 Vdc, max.
24 Models	50 Vdc, max.
48 Models	100 Vdc, max.
Soldering Temperature	260°C, max.
(1.5mm from case 10 sec. max.)	

SN - 15W 2:1 Regulated Single & Dual output

PART NUMBER STRUCTURE

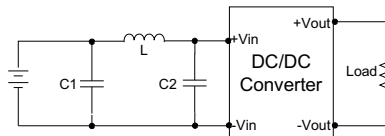


MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Nin. load (mA)	Full load (mA)		
SN-123R3S15	9-18	20	1310	3.3	0	4000	85	1000
SN-1205S15	9-18	20	1471	5	0	3000	86	1000
SN-1212S15	9-18	20	1494	12	0	1300	88	330
SN-1215S15	9-18	20	1420	15	0	1000	89	220
SN-243R3S15	18-36	15	647	3.3	0	4000	86	1000
SN-2405S15	18-36	15	727	5	0	3000	87	1000
SN-2412S15	18-36	15	747	12	0	1300	88	330
SN-2415S15	18-36	15	710	15	0	1000	89	220
SN-483R3S15	36-75	10	327	3.3	0	4000	85	1000
SN-4805S15	36-75	10	368	5	0	3000	86	1000
SN-4812S15	36-75	10	374	12	0	1300	88	330
SN-4815S15	36-75	10	359	15	0	1000	88	220
SN-1205D15	9-18	20	1488	±5	0	±1500	85	±470
SN-1212D15	9-18	20	1420	±12	0	±625	89	±220
SN-1215D15	9-18	20	1437	±15	0	±500	89	±100
SN-2405D15	18-36	15	744	±5	0	±1500	85	±470
SN-2412D15	18-36	15	718	±12	0	±625	88	±220
SN-2415D15	18-36	15	710	±15	0	±500	89	±100
SN-4805D15	36-75	10	377	±5	0	±1500	84	±470
SN-4812D15	36-75	10	363	±12	0	±625	87	±220
SN-4815D15	36-75	10	359	±15	0	±500	88	±100

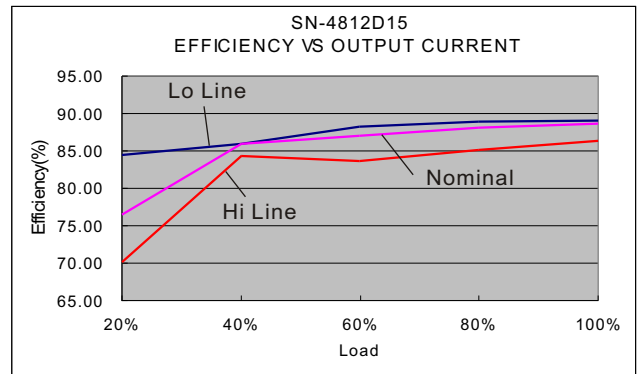
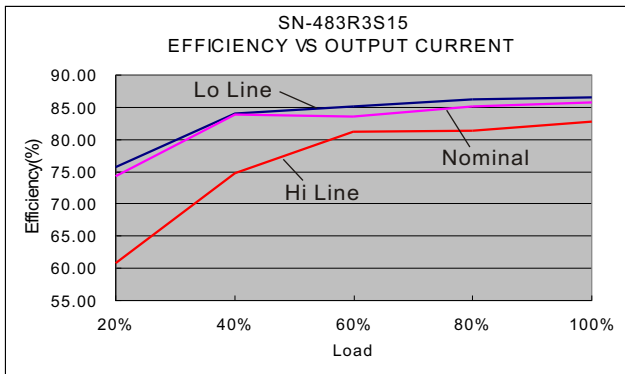
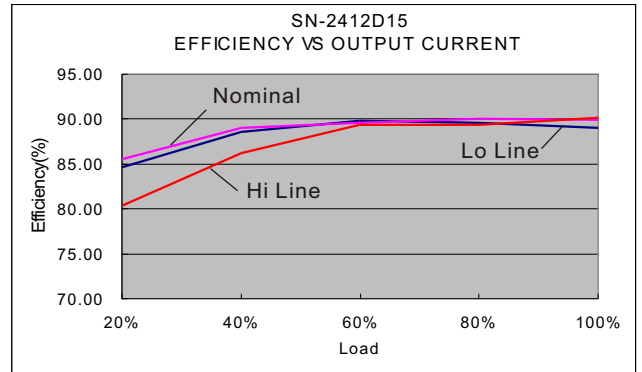
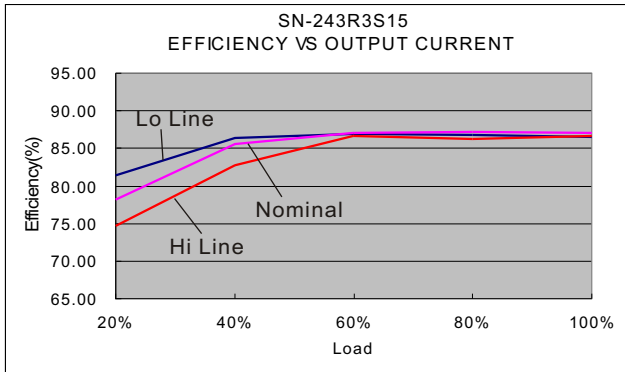
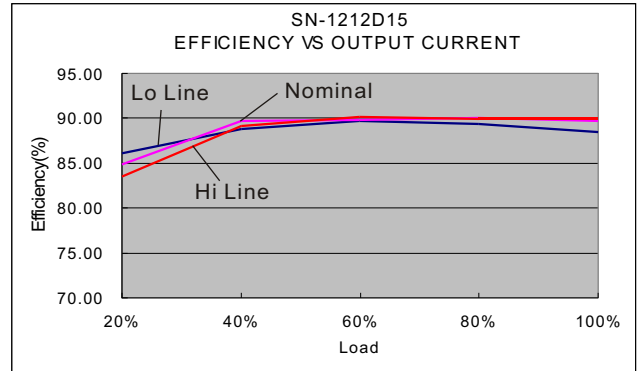
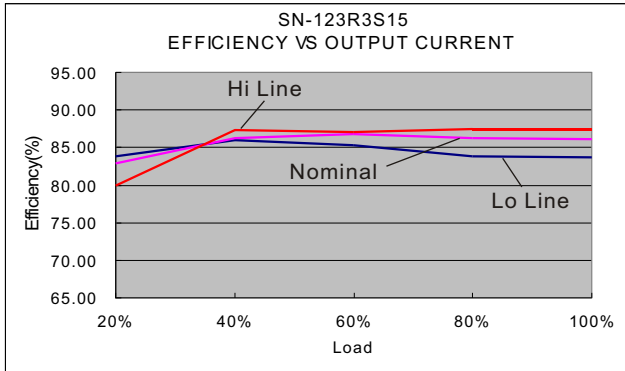
NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with a 1.0uF ceramic capacitor and 10uF tantalum capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
- Measured Input reflected ripple current with a simulated source inductance of 12uH and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz).
- The remote on/off control pin is referenced to -Vin(pin2).
- Input filter components (C1, C2, 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.
- An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5.
The filter capacitor Schmid-M suggest: Nippon chemi-con KY series, 220uF/100V
- Exceeding the absolute ratings of the unit could cause damage.
It is not allowed for continuous operating.

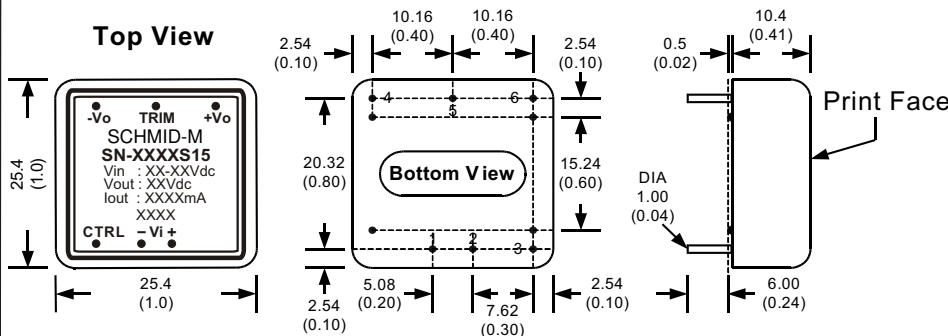


	C1	L	C2
SN-12XXXXX	1210, 2.2uF/100V	12uH	1210, 2.2uF/100V
SN-24XXXXX	1210, 2.2uF/100V	12uH	1210, 2.2uF/100V
SN-48XXXXX	1210, 2.2uF/100V	12uH	1210, 2.2uF/100V

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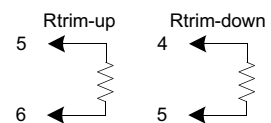
MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method as below. (single output models only)



All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)
4. Stand-off tolerance: ± 0.1 (± 0.004)