VNW-15W Series

15W 4:1 Regulated Single & Dual output

MOTIEN TECHNOLOGY

Features

- Ultra Wide 4:1 Input Range
- Soft Start
- 1600 VDC Isolation
- Efficiency up to 89%
- Extended Operating Temperature Range -40 ~ 85°C max.
- Adjustable Output Voltage
- Remote On/Off Control (CTRL)
- Over Load Protection
- Over Voltage Protection
- No Minimum Load Required
- 50% Volume than traditional products

The VNW series is a family of high performance 15W single & dual output DC-DC converters. These converters are built in nickle-coated copper package in a 1"x1" case with non-conductive base, precise controling and protection provide : tight line / load regulation, soft start, over current and over voltage protection. Input voltages of 24 and 48 with output voltage of 3.3 , 5, 12, 15, ±5, ±12, ±15Vdc. Positive and negative logic ON/OFF control optional. Products are built in a case which is only half size of conventional 2"X1" package.

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

OUTPUT SPECIFICATIONS

Output Voltage Accuracy	±1%, max.
Output Voltage Adjustability (Trim)	Single output: ±10%, max.
Output Current	See table, max.
Line Regulation	Single: ±0.2%, max. Dual(balanced load): ±0.5%, max.
Load Regulation (Io=0% to 100%)	Single: ±0.5%, max. Dual(balanced load): ±1%, max.
Cross Regulation (Dual Output) (1)	±5%, max.
Ripple & Noise (20MHz bandwidth) (2)	100mVpk-pk, max.
Over Voltage Protection (Zener diode clamp)	3.3V output: 3.9V 5V output: 6.2V 12V output: 15V 15V output: 18V ±5V output: ±6.2V ±12V output: ±15V ±15V output: ±18V
Over Load Protection	170% of FL, typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	±0.02%/°C
Capacitive Load (3)	See table, max.
Transient Recovery Time (4)	250µs, typ.
Transient Response Deviation (4)	±3%, max.

INPUT SPECIFICATIONS

Input Voltage Range	See table
Start up Time (Nominal Vin and constant resistive load)	20mS, typ.
Input Filter	Pi Type
Input Current (No-Load)	See table, max.
Input Current (Full-Load)	See table, typ.
Input Reflected Ripple Current (5)	20mApk-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: 5mA, typ.

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 (7)	Nature Convection

GENERAL SPECIFICATIONS

Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
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	UL/cUL 60950-1, 62368-1 IEC/EN 60950-1, 62368-1
Safety Approvals	UL/cUL 60950-1, 62368-1 IEC/EN 60950-1, 62368-1

EMC CHARACTERISTICS

Radiated Emissions	EN55032	CLASS A
Conducted Emissions (8)	EN55032	CLASS A
ESD	IEC61000-4-2	Perf. Criteria A
RS	IEC61000-4-3	Perf. Criteria A
EFT (9)	IEC61000-4-4	Perf. Criteria A
Surge (9)	IEC61000-4-5	Perf. Criteria A
CS	IEC61000-4-6	Perf. Criteria A
PFMF	IEC61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS

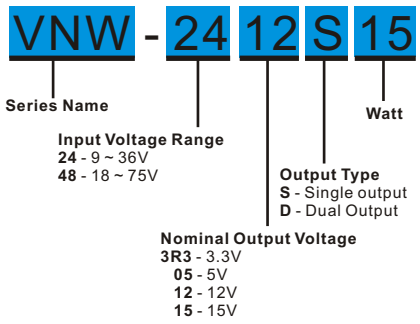
Case Material	Nickel-coated Copper
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Φ1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	18.1g
Dimensions	1.00"x1.00"x0.40"

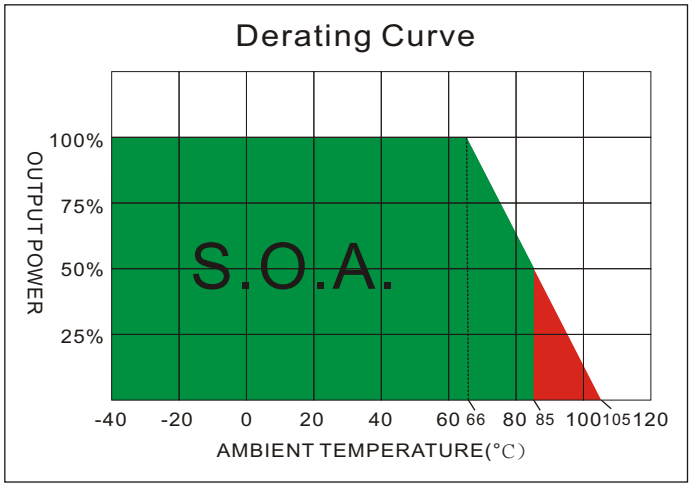
ABSOLUTE SPECIFICATIONS (10)

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 (1.5mm from case 10sec max.)	260°C, max.

PART NUMBER STRUCTURE





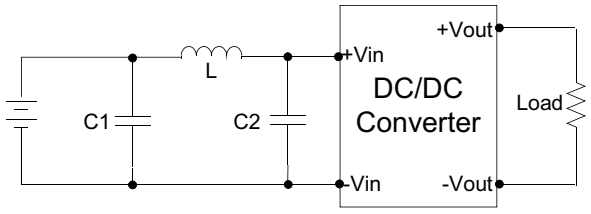
MODEL SELECTION GUIDE

NODEL NUNBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
VNW-243R3S15	9-36	15	647	3.3	0	4000	86	1000
VNW-2405S15	9-36	15	727	5	0	3000	87	1000
VNW-2412S15	9-36	15	747	12	0	1300	88	330
VNW-2415S15	9-36	15	710	15	0	1000	89	220
VNW-483R3S15	18-75	10	331	3.3	0	4000	84	1000
VNW-4805S15	18-75	10	368	5	0	3000	86	1000
VNW-4812S15	18-75	10	378	12	0	1300	87	330
VNW-4815S15	18-75	10	360	15	0	1000	88	220
VNW-2405D15	9-36	15	744	±5	0	±1500	85	±470
VNW-2412D15	9-36	15	718	±12	0	±625	88	±220
VNW-2415D15	9-36	15	710	±15	0	±500	89	±100
VNW-4805D15	18-75	10	376	±5	0	±1500	84	±470
VNW-4812D15	18-75	10	363	±12	0	±625	87	±220
VNW-4815D15	18-75	10	359	±15	0	±500	88	±100

NOTE

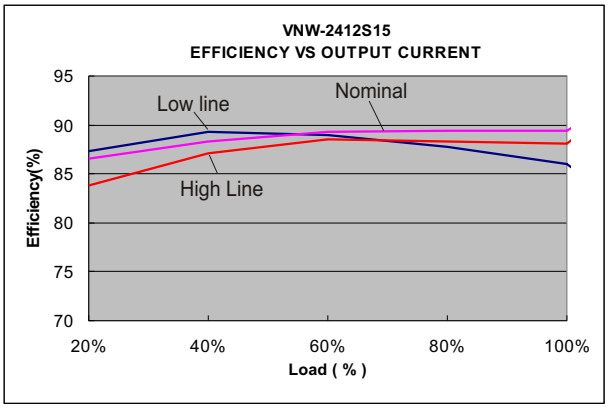
1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Measured with a 1.0μF ceramic capacitor and 10μF tantalum capacitor.
3. Tested by minimal Vin and constant resistive load.
4. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
5. Measured with a simulated source inductance of 12μHand a source capacitor Cin(47μF, ESR<1.0Ω at 100KHz).
6. The remote on/off control pin is referenced to -Vin(pin2).
7. Nature Convection" is usually about 30-65 LFM but is not equal to still air (0 LFM).
8. Input filter components (C1, C2, L) are used to 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 IEC61000-4-4 and IEC61000-4-5.
   The filter capacitor Motien suggest: Nippon chemi-con KY series, 220μF/100V.
10. Exceeding the absolute ratings of the unit could cause damage.
    It is not allowed for continuous operating.

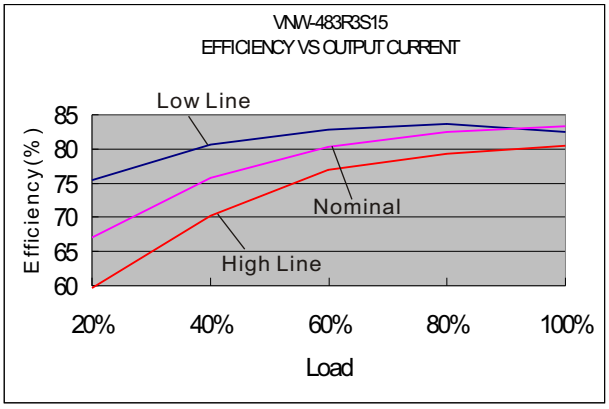
EMI Filter

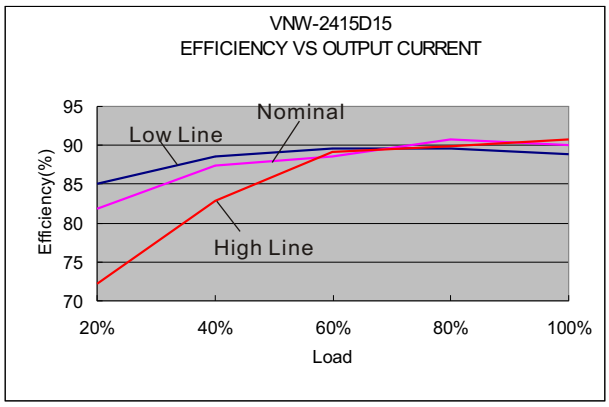


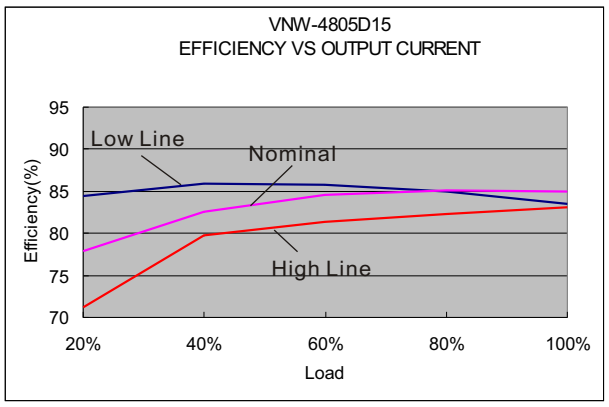
	C1	L	C2
VNW-24XXXXX	1210, 2.2μF/100V	12μH	1210, 2.2μF/100V
VNW-48XXXXX	1210, 2.2μF/100V	12μH	1210, 2.2μF/100V

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

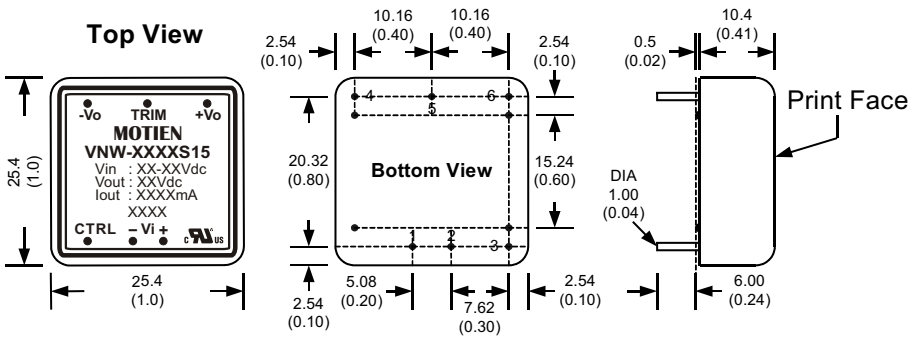








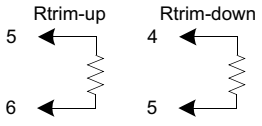
MECHANICAL SPECIFICATIONS



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)

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