

V8 Series

20W 2:1 Regulated Single & Dual output



Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1600 VDC Isolation
- No Minimum Load Required
- Efficiency up to 93%
- Extended Operating Temperature Range -40 ~ 85°C max.
- Adjustable Output Voltage
- Remote On/Off Control (CTRL)
- Continuous Short Circuit Protection
- Over Current Protection
- Over Voltage Protection
- Soft Start
- Optional Heat-sink



The V8 Series is a Series of high performance and high power density 20W single and dual output DC/DC converters. Encapsulated in a nickel coated copper case with the size of "2X1". Designed with high performance technology Active Clamp, high efficiency operation up to 93% and +/-1% output voltage accuracy. Precise controlled design provides tight line/load regulation. Various output voltages can be chosen from 3.3, 5, 12, 15, ±12, ±15Vdc !

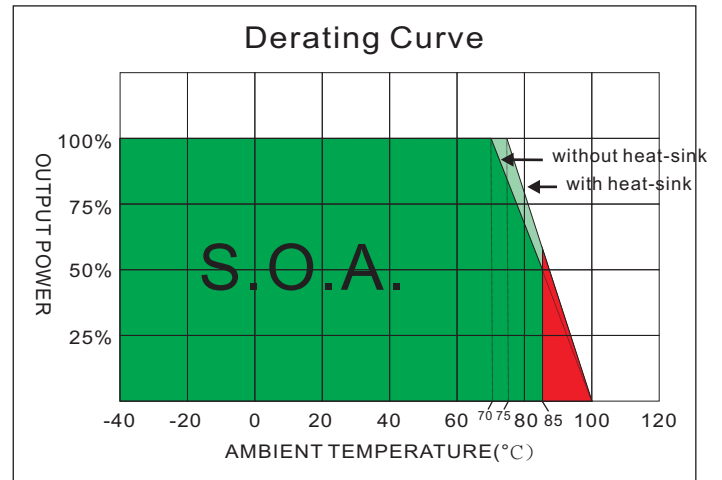
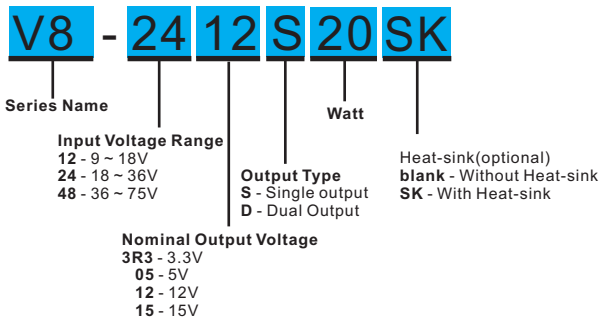
ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS		GENERAL SPECIFICATIONS	
Output Voltage Accuracy	±1%, max.	Efficiency	See table, typ.
Output Voltage Adjustability(Trim)	Single output: ±10%, max.	I/O Isolation Voltage(60sec)	
Maximum Output Current	See table, max.	Input/Output	1600Vdc
Line Regulation	±0.5%, max.	Case/Input & Output	1600Vdc
Load Regulation(I _o =0% to 100%)	Single: ±0.5%, max. Dual:±1%, max(balanced load)	Isolation Resistance	1000 MΩ, min.
Cross Regulation (Dual Output) (1)	±5%	Isolation Capacitance	1200 pF, typ.
Ripple&Noise (2)	75mVp-p, max.	Switching frequency	330kHz, typ.
	3.3V output 3.9V	Humidity	95% rel H
	5V output 6.2V	Reliability Calculated MTBF(MIL-HDBK-217 F)	>684 khrs
Over Voltage Protection (Zener diode clamp)	12V output 15V 15V output 18V ±12V output ±15V ±15V output ±18V	Safety Standard (designed to meet)	IEC/EN 60950-1
Over Current Protection	140% of FL, typ.	EMC CHARACTERISTICS	
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)	Radiated Emissions	EN55032 CLASS A
Temperature Coefficient	±0.02%/°C	Conducted Emissions(7)	EN55032 CLASS A
Capacitive Load (3)	See table, max.	ESD	IEC61000-4-2 Perf. Criteria A
Transient Recovery Time (4)	250us, typ.	RS	IEC61000-4-3 Perf. Criteria A
Transient Response Deviation(4)	±3%, max.	EFT(8)	IEC61000-4-4 Perf. Criteria A
		Surge (8)	IEC61000-4-5 Perf. Criteria A
		CS	IEC61000-4-6 Perf. Criteria A
		PFMF	IEC61000-4-8 Perf. Criteria A
INPUT SPECIFICATIONS		ENVIRONMENTAL SPECIFICATIONS	
Input Voltage Range	See table	Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +70°C(For 100% load)
Under Voltage Lockout		Maximum Case Temperature	100°C
12V Models Module ON / OFF	8.6Vdc / 7.9Vdc, typ.	Thermal Impedance (Nature Convection)	Without Heat-sink 12°C/W With Heat-sink 10°C/W
24V Models Module ON / OFF	17.8Vdc / 16Vdc, typ.	Storage Temperature	-55°C ~ +125°C.
48V Models Module ON / OFF	33.5Vdc / 30.5Vdc, typ.	Cooling	Nature Convection
Start up Time	20mS, typ.	ABSOLUTE SPECIFICATIONS (9)	
(Nominal Vin and constant resistive load)		These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Filter	Pi Type	Input Surge Voltage(100mS)	
Input Current(No-Load)	See table, max.	12 Models	36 Vdc, max.
Input Current(Full-Load)	See table, typ.	24 Models	50 Vdc, max.
Input Reflected Ripple Current(5)	20mA _{p-p} , typ.	48 Models	100 Vdc, max.
Remote On/Off (CTRL)(6)		Soldering Temperature	260°C, max.
ON: 3.0 ... 12Vdc or open circuit		(1.5mm from case 10sec. Max.)	
OFF: 0 ... 1.2Vdc or Short circuit pin2 and pin 6			
OFF idle current: 5 mA, typ			
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	31.0g		
Dimensions	2.00"x1.00"x0.40"		

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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 (% , typ.)	Capacitor Load @FL (µF , max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
V8-123R3S20	9-18	60	1738	3.3	0	5500	90	10000
V8-1205S20	9-18	60	1872	5	0	4000	92	6800
V8-1212S20	9-18	30	1915	12	0	1670	90	1000
V8-1215S20	9-18	30	1915	15	0	1330	90	680
V8-243R3S20	18-36	35	859	3.3	0	5500	91	10000
V8-2405S20	18-36	35	926	5	0	4000	93	6800
V8-2412S20	18-36	25	946	12	0	1670	91	1000
V8-2415S20	18-36	25	947	15	0	1330	91	680
V8-483R3S20	36-75	25	425	3.3	0	5500	91	10000
V8-4805S20	36-75	25	463	5	0	4000	93	6800
V8-4812S20	36-75	15	473	12	0	1670	91	1000
V8-4815S20	36-75	15	473	15	0	1330	91	680
V8-1212D20	9-18	30	1937	±12	0	±835	89	±470
V8-1215D20	9-18	30	1937	±15	0	±665	89	±330
V8-2412D20	18-36	30	957	±12	0	±835	90	±470
V8-2415D20	18-36	30	957	±15	0	±665	90	±330
V8-4812D20	36-75	20	478	±12	0	±835	90	±470
V8-4815D20	36-75	20	484	±15	0	±665	89	±330

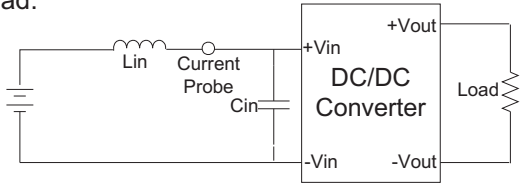
NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±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).
- Measured Input reflected ripple current with a simulated source inductance of 12uH.
- The remote on/off control pin is referenced to -Vin(pin2).
- 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.
- 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, 220uF/100V.
- Exceeding the absolute ratings of the unit could cause damage.

TEST CONFIGURATIONS

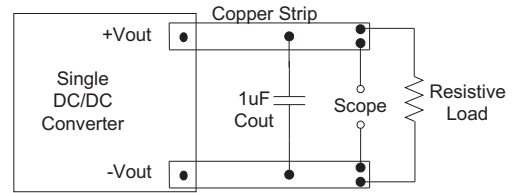
Input Reflected Ripple Current Test Step

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.



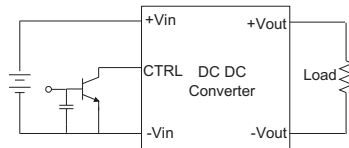
DESIGN&FEATURE CONFIGURATIONS

CTRL Module ON / OFF

Positive logic turns on the module during high logic and off during low logic.

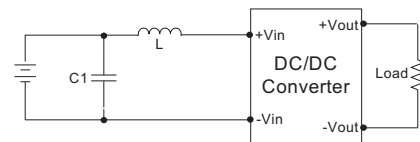
Ctrl module on/off can be controlled by an external switch between the ctrl terminal and -Vin terminal. The switch can be an open collector or open drain.

For positive logic if the ctrl feature is not used, please leave the ctrl pin floating.



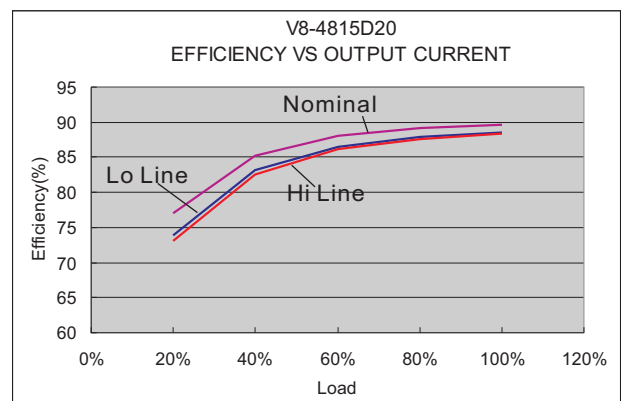
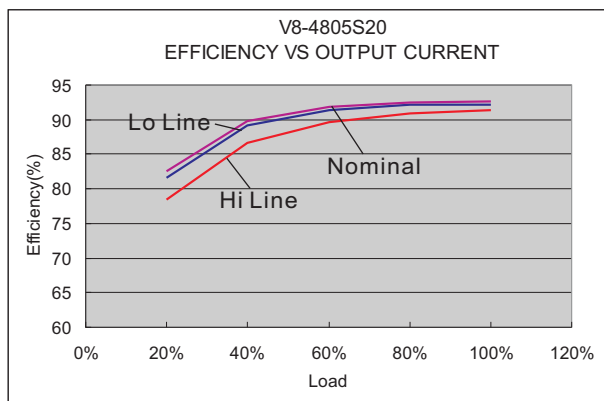
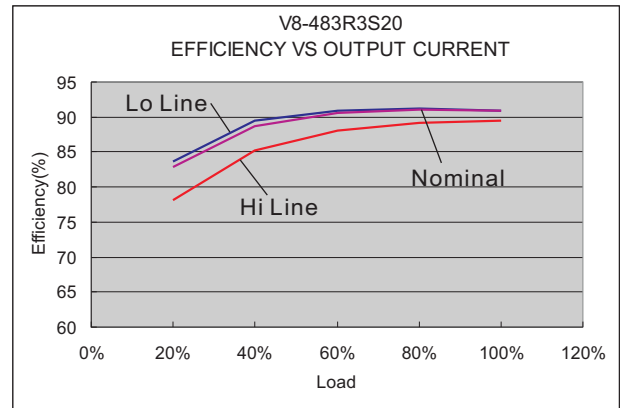
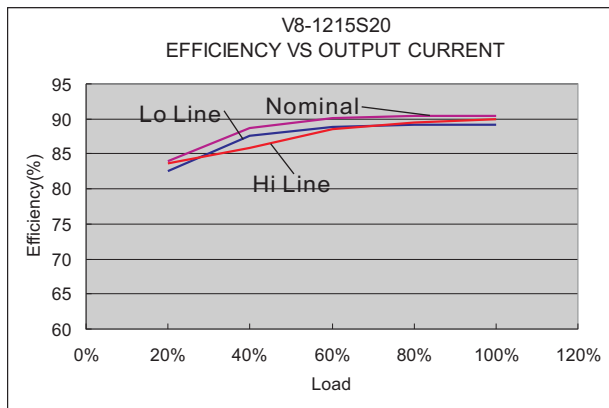
EMI Filter

Input filter components (C_1 , 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.



	C1	L
V8-12XXXXX	220uF/100V	12uH
V8-24XXXXX	220uF/100V	12uH
V8-48XXXXX	220uF/100V	12uH

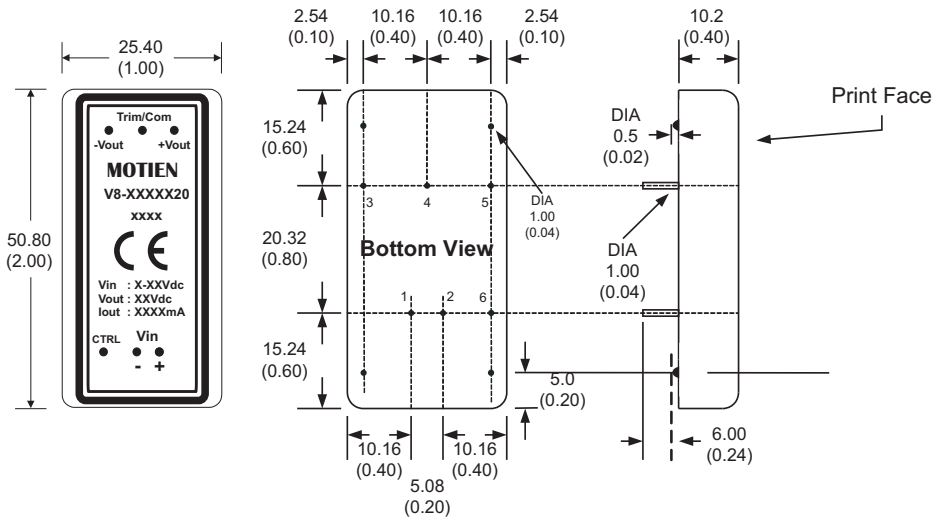
ELECTRICAL CHARACTERISTIC CURVES



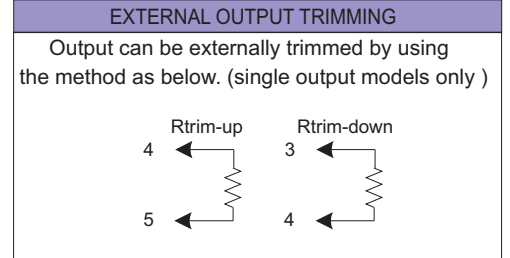
The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

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MECHANICAL SPECIFICATIONS



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

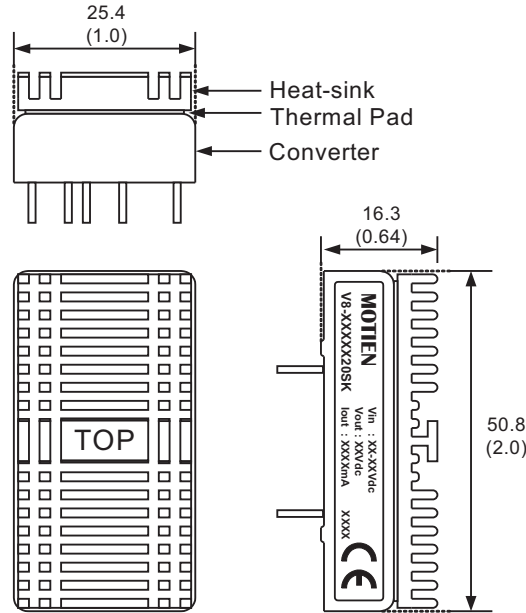


All dimensions are typical in millimeters (inches).

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)

MECHANICAL SPECIFICATIONS

With Heat-sink



Order code: V8-XXXXS20SK(contain: heat-sink, thermal pad)
 Material: Aluminum
 Finish: Anodic treatment (black)
 Weight: 11.2 g (0.39oz) (without converter)

Note:
 1. Converters will be supplied with heat-sinks already mounted.
 Please contact factory for quotation.