

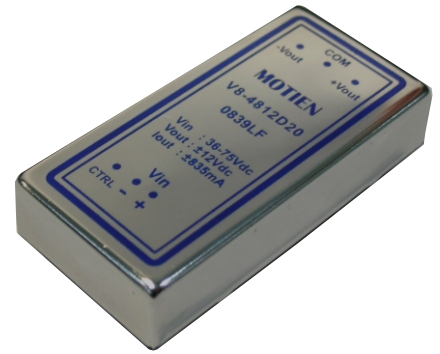
# V8 Series

## 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



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	
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 <sub>o</sub> =0% to 100%)	Single: ±0.5%, max Dual: ±1%, max(balanced load)
Cross Regulation (Dual Output) (1)	±5%
Ripple&Noise (2)	75mVp-p, max
Over Voltage Protection ( Zener diode clamp)	3.3V output 3.9V 5V output 6.2V 12V output 15V 15V output 18V ±12V output ±15V ±15V output ±18V
Over Current Protection	140% 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
Under Voltage Lockout	
12V Modes	Module ON / OFF 8.6Vdc / 7.9Vdc, typ
24V Modes	Module ON / OFF 17.8Vdc / 16Vdc, typ
48V Modes	Module ON / OFF 33.5Vdc / 30.5Vdc, typ
Start up Time (Nominal Vin and constant resistive load)	20mS, typ
Input Filter	Pi Type
Input Current(No-Load)	See table, typ
Input Current(Full-Load)	See table, max
Input Reflected Ripple Current(5)	20mA <sub>p-p</sub> , typ
Remote On/Off (CTRL)(6)	
ON:	3.0 ... 12Vdc or open circuit
OFF:	0 ... 1.2Vdc or Short circuit pin2 and pin 6
OFF idle current:	5 mA, typ

ENVIRONMENTAL SPECIFICATIONS	
Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +70°C(For 100% load)
Maximum Case Temperature	100°C
Storage Temperature	-40°C ~ +125°C
Cooling	Nature Convection

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, typ
Switching frequency	330kHz, typ
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>684 khrs
Safety Standard	IEC/EN 60950-1

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

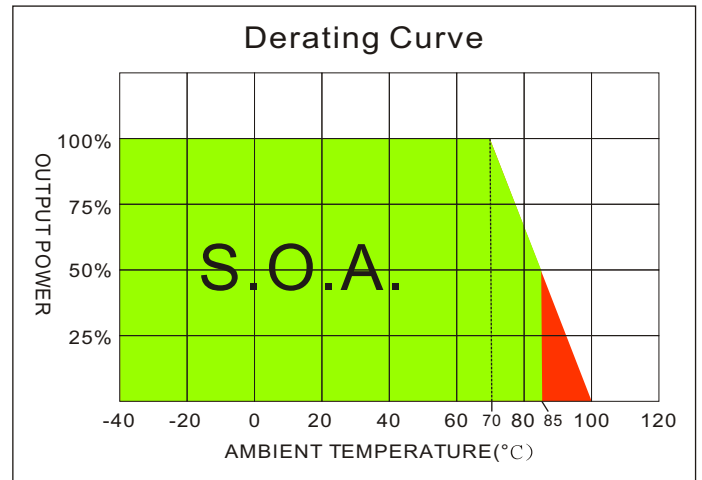
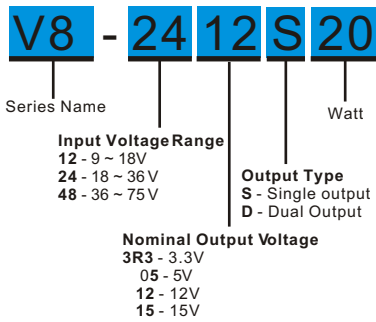
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Ø1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	30.0g
Dimensions	2.00"x1.00"x0.40"

ABSOLUTE SPECIFICATIONS (9)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Voltage(100mS)	
12 Modes	-0.7~36 Vdc
24 Modes	-0.7~50 Vdc
48 Modes	-0.7~100 Vdc
Lead Soldering Temperature (1.5mm from case 10 sec. Max.)	260°C max.

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## V8 - 20W 2:1 Regulated Single & Dual output

### PART NUMBER STRUCTURE

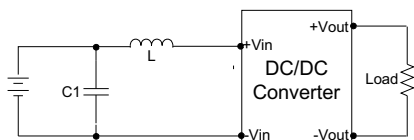


### MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		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

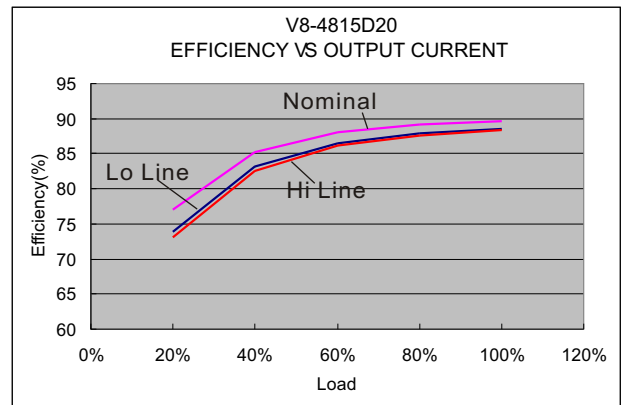
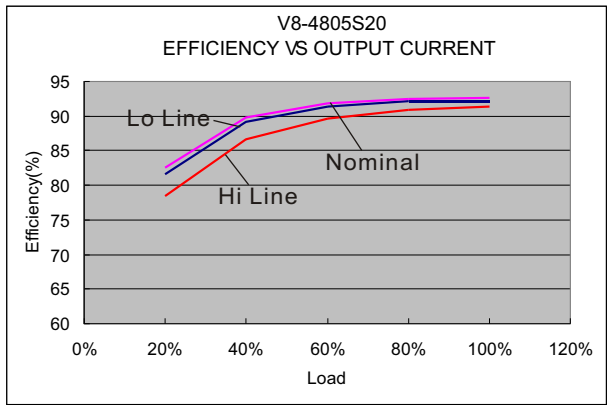
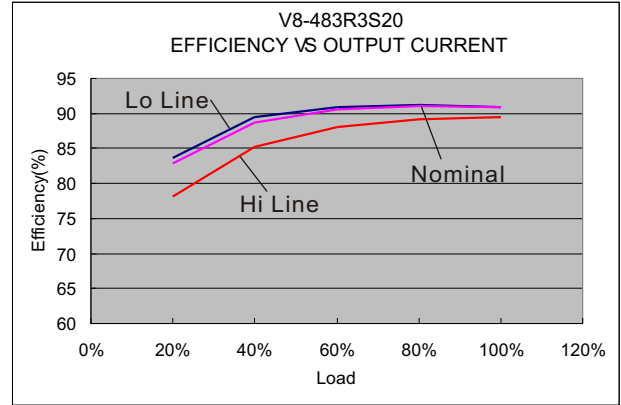
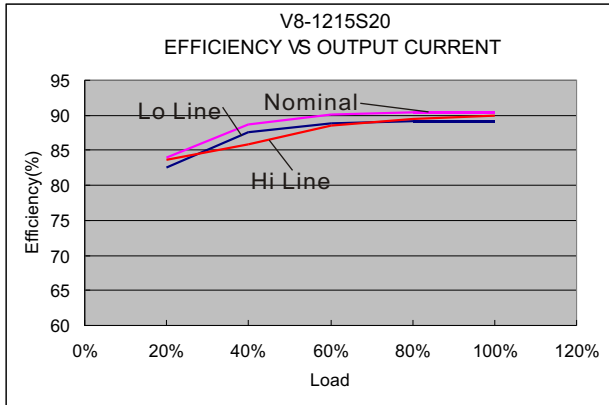
- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within  $\pm 5\%$ .
- Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
- Tested by minimal  $V_{in}$  and constant resistive load.
- Tested by normal  $V_{in}$  and 25% load step change (75%-50%-25% of  $I_o$ ).
- 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 EN61000-4-4 and EN61000-4-5. The filter capacitor Motien suggest: Nippon chemi-con KY series, 220uF/100V.
- Exceeding the absolute ratings of the unit could cause damage.



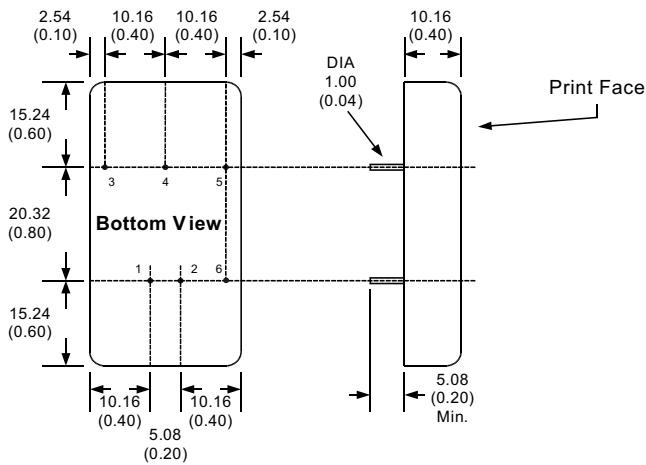
	C1	L
V9-12XXXXX	330uF/100V	12uH
V9-24XXXXX	220uF/100V	12uH
V9-48XXXXX	220uF/100V	12uH

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

## V8 - 20W 2:1 Regulated Single & Dual output



### MECHANICAL SPECIFICATIONS



All dimensions are typical in millimeters ( inches ).

1. Pin diameter:  $1.0 \pm 0.05$  (  $0.04 \pm 0.002$  )
2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )

### PIN CONNECTIONS

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

### EXTERNAL OUTPUT TRIMMING

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

