

VD-10W Series

10W 2:1 Regulated Single & Dual output



Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation
- Efficiency up to 90%
- -40 ~ 85 °C Operation Temperature Range
- Continuous Short Circuit Protection
- Over Voltage Protection
- Low no load Input Current
- Soft Start
- High Power Density: 10W in DIL-24 Package



The VD-10W series are a family of high performance 10W single & dual output DC/DC converters. These converters are consisted with nickel plated copper Dual in Line 24 pin package. The high performance features include: Synchronous Rectification, high efficiency and tight line/load regulation. Devices are encapsulated with high grade flameproof epoxy with UL94V-0 recognize. Input voltages of 12, 24 and 48 with output voltage of 2.5, 3.3, 5, 12, 15, ±12, ±15Vdc. Features include high efficiency operation up to 90% and output voltage accuracy of ±1% maximum.

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

OUTPUT SPECIFICATIONS	
Output Voltage Accuracy	±1%
Maximum Output Current	See table
Line Regulation	±0.5%, max.
Load Regulation (Single, Io=0% to 100%)	±0.5%, max.
(Dual, Io=0% to 100%)	±1.0%, max.
(Io=0% to 100%, only 3.3V)	±1.0%, max.
Cross Regulation (Dual Output) (2)	±5%
Ripple&Noise (3)	75mVpk-pk, max.
2.5V,3.3V output	3.9V
5V output	6.2V
Over Voltage Protection	12V output 15V
(Zener diode clamp)	15V output 18V
	12V output ±15V
	15V output ±18V
Over Current Protection	150% of FL, typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	
Capacitive Load (4)	±0.02%/°C
Transient Recovery Time (5)	See table
Transient Response Deviation(5)	200us, typ.

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(6)	20mApk-pk, typ.

ABSOLUTE SPECIFICATIONS (7)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100mS)	
12 Models	25 Vdc, max.
24 Models	50 Vdc, max.
48 Models	100 Vdc, max.
Soldering Temperature (1.5mm from case 10sec max.)	260°C, max.

EMC CHARACTERISTICS		
Radiated Emissions	EN55032	CLASS A
Conducted Emissions(8)	EN55032	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT	IEC 61000-4-4	Perf. Criteria A
Surge (9)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
Pin Material	Φ0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	17.0g
Dimensions	1.25"x0.8"x0.40"

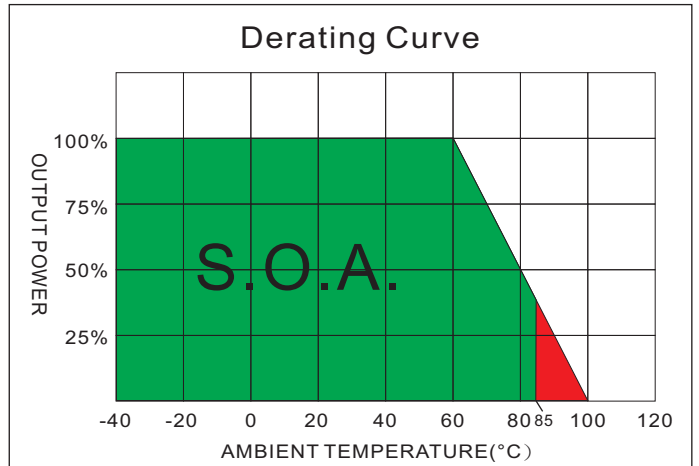
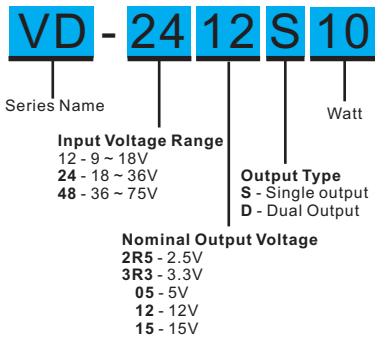
GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1500Vdc
Case/Input & Output	1000Vdc
Isolation Resistance	1000 MΩ, min.
Isolation Capacitance	1000 pF, typ.
Switching frequency	330kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1 Mhrs
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

ENVIRONMENTAL SPECIFICATIONS	
Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +60°C(For 100% load)
Maximum Case Temperature	100°C
Storage Temperature	-40°C ~ +125°C
Cooling	Nature Convection

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PART NUMBER STRUCTURE

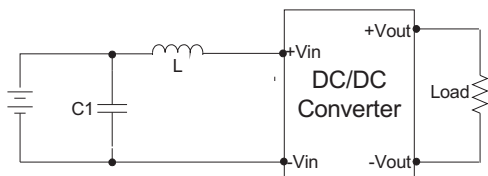


MODEL SELECTION GUIDE

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)		
VD-122R5S10	9-18	10	791	2.5	0	3000	81	2200
VD-123R3S10	9-18	10	1006	3.3	0	3000	84	2200
VD-1205S10	9-18	10	992	5	0	2000	86	2200
VD-1212S10	9-18	10	980	12	0	833	87	820
VD-1215S10	9-18	10	958	15	0	667	89	470
VD-1212D10	9-18	10	980	±12	0	±416	87	±220
VD-1215D10	9-18	10	969	±15	0	±333	88	±150
VD-242R5S10	18-36	10	381	2.5	0	3000	84	2200
VD-243R3S10	18-36	10	497	3.3	0	3000	85	2200
VD-2405S10	18-36	10	479	5	0	2000	89	2200
VD-2412S10	18-36	10	485	12	0	833	88	820
VD-2415S10	18-36	10	485	15	0	667	88	470
VD-2412D10	18-36	10	485	±12	0	±416	88	±220
VD-2415D10	18-36	10	474	±15	0	±333	90	±150
VD-482R5S10	36-75	10	191	2.5	0	3000	84	2200
VD-483R3S10	36-75	10	249	3.3	0	3000	85	2200
VD-4805S10	36-75	10	242	5	0	2000	88	2200
VD-4812S10	36-75	10	245	12	0	833	87	820
VD-4815S10	36-75	10	242	15	0	667	88	470
VD-4812D10	36-75	10	245	±12	0	±416	87	±220
VD-4815D10	36-75	10	245	±15	0	±333	87	±150

NOTE

- Operation between no-load and 10% load conditions will not damage the module, but it may not meet all specifications listed.
- 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.
- Exceeding the absolute ratings of the unit could cause damage.
 - It is not allowed for continuous operating.
- 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 IEC61000-4-5.
 - The filter capacitor Motien suggest: Nippon - chemi - con KY series, 220uF/100V.



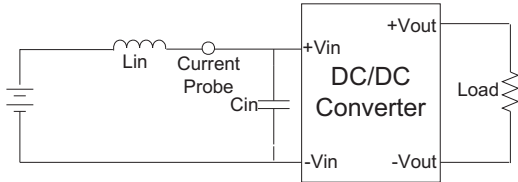
	C1	L
VD-12XXXXXX	100uF, 100V	12uH
VD-24XXXXXX	100uF, 100V	12uH
VD-48XXXXXX	100uF, 100V	12uH

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

TEST CONFIGURATIONS

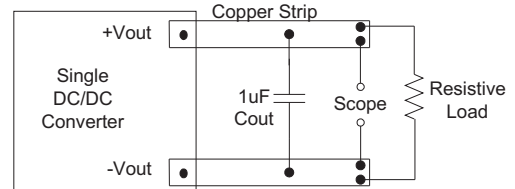
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR<1.0 Ω at 100KHz) at nominal input and full load.

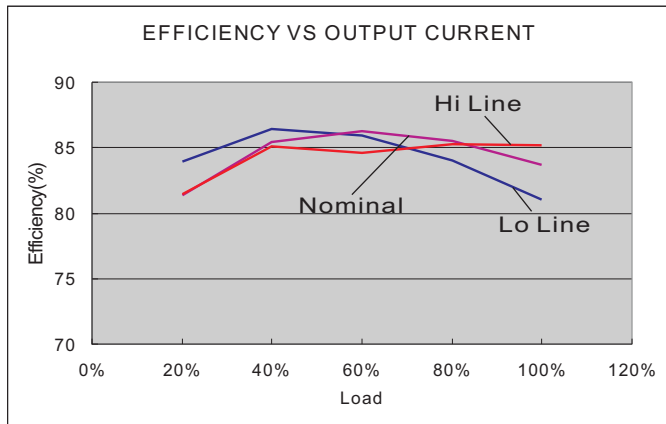


Output Ripple & Noise Measurement Test

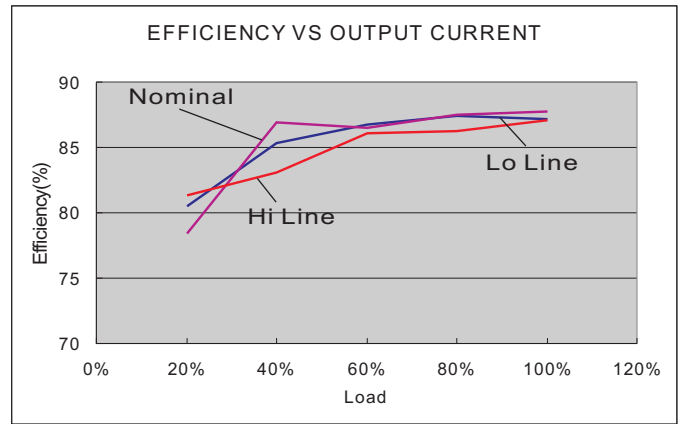
Use a capacitor C_{out} (1.0 μ F) measurement. The Scope measurement bandwidth is 0-20MHz.



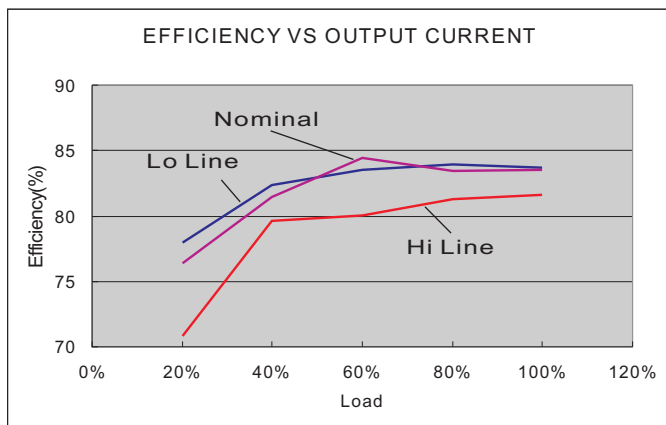
ELECTRICAL CHARACTERISTIC CURVES



12 Models



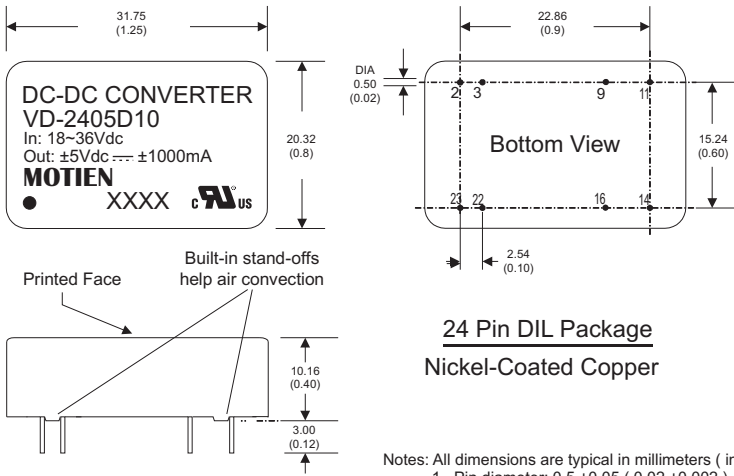
24 Models



48 Models

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MECHANICAL SPECIFICATIONS



24 Pin DIL Package
Nickel-Coated Copper

- Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input