VG-4W Series

MOTIEN TECHNOLOGY

4W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 85%
- -40 ~ 85°C Operation Temperature Range
- Metal Case Standard, Optional Plastic Case

ROHS

The VG series is a family of cost effective 4W single & dual output DC-DC converters. These converters are consisted with Nickle-coated copper in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 12,24 and 48 with output voltage of 3.3,5,9,12,15, 24, ±3.3, ±5, ±9, ±12, ±15 and ±24 Vdc. High performance features include high efficiency operation up to 85% and output voltage accuracy of ±1% maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS

Voltage accuracy	±1%
Line regulation	±0.5%
Load regulation	±0.5%
	(Output 3.3V / ±3.3V Model) ±1.5%
Ripple & noise (20 MHz bandwidth)(1)	60mV pk-pk
Short circuit protection	Indefinite(Automatic Recovery)
Temperature coefficient	±0.02%/°C
Capacitor load(2)	See table

INPUT SPECIFICATIONS

Voltage Range	See table
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	PI Type
Input Reflected Ripple Current(3)	35mA pk-pk

GENERAL SPECIFICATIONS

Efficiency	See table, typ.
I/O Isolation Voltage(3 sec)	
Input/Output	1500~3500Vdc
Metal Case/Input & Output	1000Vdc
I/O Isolation Capacitance	470 pF, typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	266kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

PHYSICAL SPECIFICATIONS

Case Material	Nickel-coated Copper
	Non-conductive Black Plastic(UL94V-0 rated)
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	17.0g(Metal Case)/13.5g(Plastic Case)
Dimensions	1.25"x0.8"x0.4"

ENVIRONMENT SPECIFICATIONS

Operating Temperature	-40°C~85°C(See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(4)

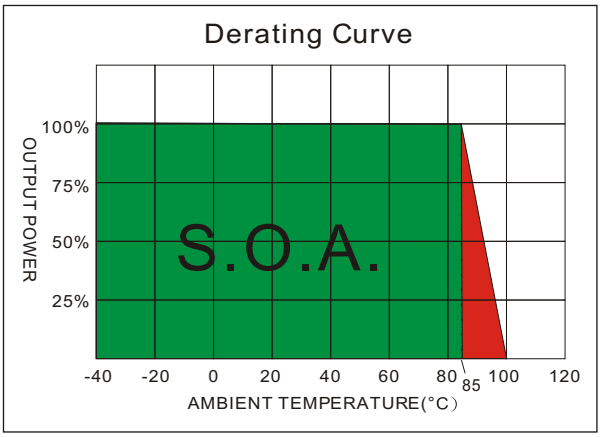
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Surge Voltage(100mS)	
12 Models	24 Vdc, max.
24 Models	40 Vdc, max.
48 Models	80 Vdc, max.
Soldering Temperature (1.5mm from case 10sec.max.)	260°C, max.

PART NUMBER STRUCTURE

VG - 24 05 S 4 H P

- **Series Name**
- **Input Voltage Range**
  - **12** - 9 ~ 18V
  - **24** - 18 ~ 36 V
  - **48** - 36 ~ 72 V
- **Output Voltage**
  - **3R3** - 3.3V
  - **5** - 5V
  - **9** - 9V
  - **12** - 12V
  - **15** - 15V
  - **24** - 24V
- **Output Type**
  - **S** - Single output
  - **D** - Dual Output
- **4 Watt**
- **3.5KVdc Isolation.** Optional, if no suffix "H" mean1.5KVdc Isolation
- **Plastic Case.** Optional, if no suffix "P" mean metal Case



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
VG-123R3S4	9-18	30	463	3.3	0	1200	72	3300
VG-1205S4	9-18	30	428	5	0	800	78	1000
VG-1209S4	9-18	30	428	9	0	444	78	470
VG-1212S4	9-18	30	417	12	0	333	80	220
VG-1215S4	9-18	30	417	15	0	266	80	100
VG-1224S4	9-18	30	417	24	0	166	80	47
VG-123R3D4	9-18	30	452	±3.3	0	±600	73	±680
VG-1205D4	9-18	30	428	±5	0	±400	78	±470
VG-1209D4	9-18	30	417	±9	0	±220	80	±220
VG-1212D4	9-18	30	417	±12	0	±166	80	±100
VG-1215D4	9-18	30	417	±15	0	±133	80	±47
VG-1224D4	9-18	30	421	±24	0	±83	79	±22
VG-243R3S4	18-36	20	223	3.3	0	1200	75	3300
VG-2405S4	18-36	20	209	5	0	800	80	1000
VG-2409S4	18-36	20	209	9	0	444	80	470
VG-2412S4	18-36	20	201	12	0	333	83	220
VG-2415S4	18-36	20	209	15	0	266	80	100
VG-2424S4	18-36	20	196	24	0	166	85	47
VG-243R3D4	18-36	20	226	±3.3	0	±600	73	±680
VG-2405D4	18-36	20	211	±5	0	±400	79	±470
VG-2409D4	18-36	20	209	±9	0	±220	80	±220
VG-2412D4	18-36	20	204	±12	0	±166	82	±100
VG-2415D4	18-36	20	209	±15	0	±133	80	±47
VG-2424D4	18-36	20	214	±24	0	±83	78	±22
VG-483R3S4	36-72	15	112	3.3	0	1200	75	3300
VG-4805S4	36-72	15	105	5	0	800	80	1000
VG-4809S4	36-72	15	102	9	0	444	82	470
VG-4812S4	36-72	15	105	12	0	333	80	220
VG-4815S4	36-72	15	103	15	0	266	81	100
VG-4824S4	36-72	15	102	24	0	166	82	47

Suffix "H" means 3.5KVdc isolation
Suffix "P" means Plastic case instead of standard Metal Case

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

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
VG-483R3D4	36-72	15	116	±3.3	0	±600	72	±680
VG-4805D4	36-72	15	107	±5	0	±400	78	±470
VG-4809D4	36-72	15	107	±9	0	±220	78	±220
VG-4812D4	36-72	15	105	±12	0	±166	80	±100
VG-4815D4	36-72	15	105	±15	0	±133	80	±47
VG-4824D4	36-72	15	105	±24	0	±83	80	±22

Suffix "H" means 3.5KVdc isolation
Suffix "P" means Plastic case instead of standard Metal Case

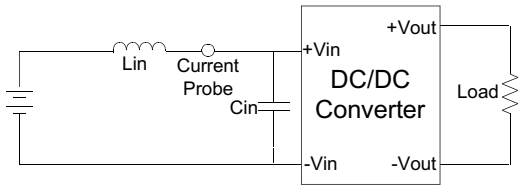
NOTE

1. Ripple/Noise measured with a 1uF ceramic capacitor.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

TEST CONFIGURATIONS

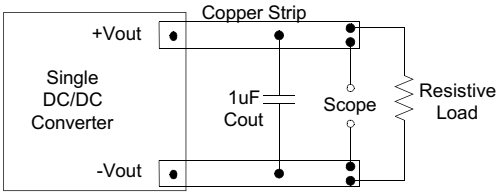
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.

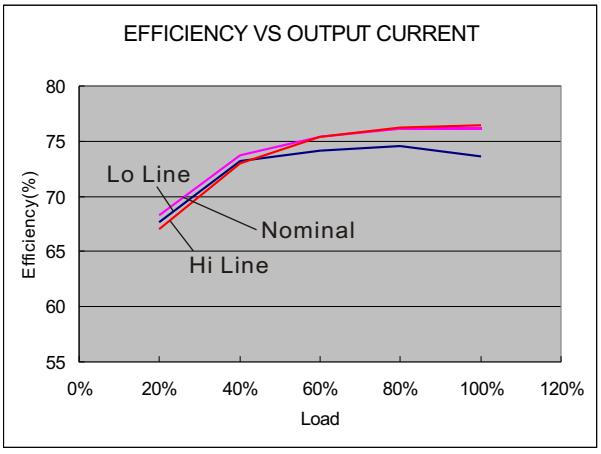


Output Ripple & Noise Measurement Test

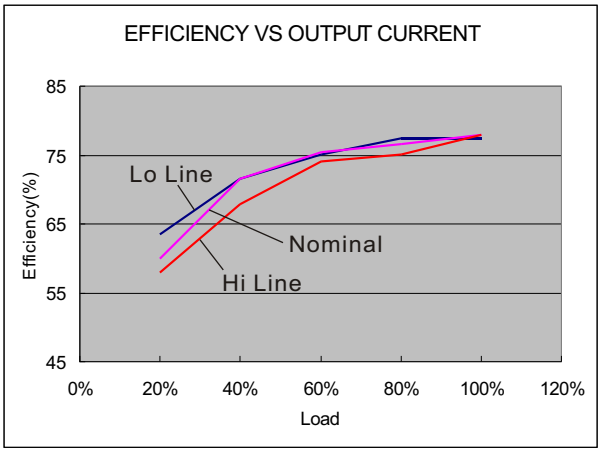
Use a capacitor Cout(1.0uF) measurement.
The Scope measurement bandwidth is 0-20MHz.



ELECTRICAL CHARACTERISTIC CURVES



12 Models



24 Models

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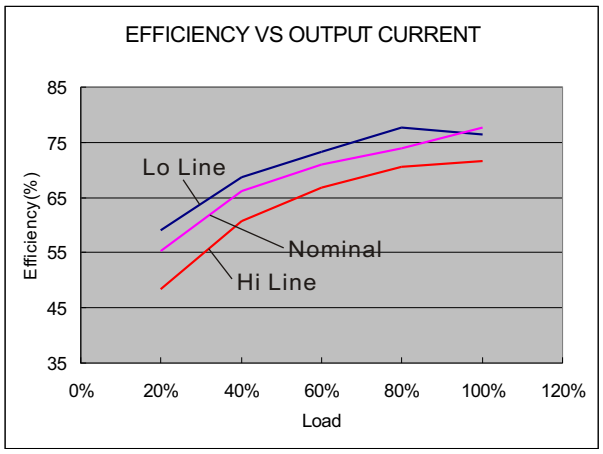
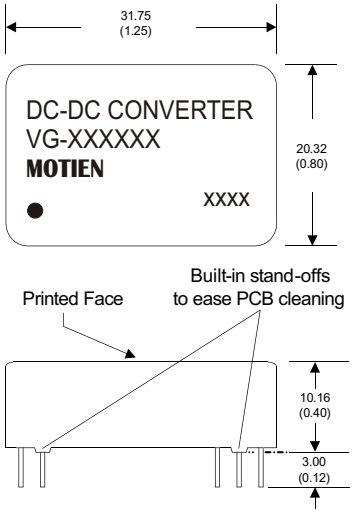
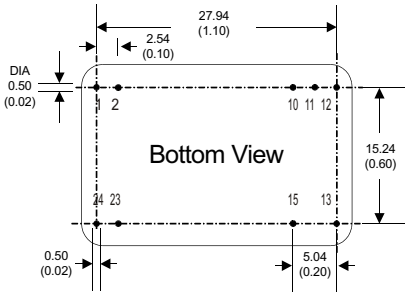


48 Models

MECHANICAL SPECIFICATIONS





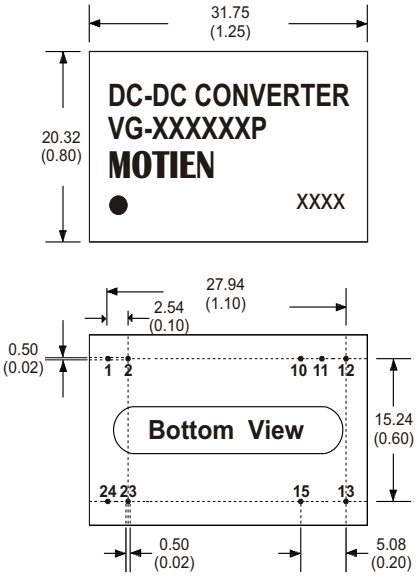
24 Pin DIL Package
Nickel-Coated Copper

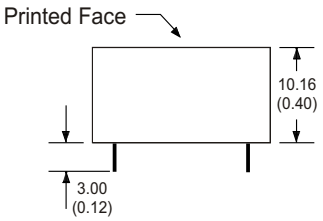
Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C.	Common
11	N.C.	Common
12	-V Output	N.C.
13	+V Output	−V Output
15	N.C.	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

(The Pin Connection of high isolation one is the same with normal one.)

MECHANICAL SPECIFICATIONS





For "P" Case

24 Pin DIL Package
Non-Conductive Plastic

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
1	+V Input	+V Input
2	+V Input	+V Input
10	N.C.	Common
11	N.C.	Common
12	-V Output	N.C.
13	+V Output	−V Output
15	N.C.	+V Output
23	-V Input	-V Input
24	-V Input	-V Input

(The Pin Connection of high isolation one is the same with normal one.)

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