V4-1W Series

1W Regulated Single output

MOTIEN TECHNOLOGY

Features

- 7 Pin SIL / 14 Pin DIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 73%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case

CE

The V4 series is a family of cost effective 1W single output DC-DC converters. These converters achieve low cost and ultra-miniature SIP 7 pin or DIP 14 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 3.3, 5, 12, 24 Vdc with output voltage of 3.3, 5,7.2, 9, 12,15Vdc. High performance features include 1000Vdc~3000Vdc input/output isolation, high efficiency operation and output voltage accuracy of ±2% maximum. Standard features include an input range of ±10% tolerance and low output noise and ripple.

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

OUTPUT SPECIFICATIONS

Outout Voltage accuracy	±2% ,max.
Line regulation	±0.5%
Load regulation	(From 0% to 100% Load) ±0.5% ,max. (Output 3.3V Model) ±1.0% ,max.
Ripple & noise (20 MHz bandwidth)(1)	50mVpk-pk ,max.
Temperature coefficient	±0.02%/°C
Capacitor load(2)	See table ,max.

INPUT SPECIFICATIONS

Intput Voltage Range	±10%
Input Current (Full Load)	See table ,typ.
Input Current (No-Load)	See table ,max.
Input Filter	Capacitors
Input Reflected Ripple Current(3)	20mApk-pk ,typ.

ENVIRONMENT SPECIFICATIONS

Operating Temperature	-40°C~85°C
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

PHYSICAL SPECIFICATIONS

Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	0.5mm Alloy42 Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	SIP 2.8g DIP 2.7g
Dimensions	SIP Case 0.76"x0.28"x0.39" DIP Case 0.80"x0.40"x0.27"

EMC SPECIFICATIONS(4)

Radiated Emissions	EN55032	CLASS B
Conducted Emissions	EN55032	CLASS B
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	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

ABSOLUTE MAXIMUM RATINGS(5)

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

Input Surge Voltage(100mS)	
3.3 Models	5 Vdc ,max.
5 Models	7 Vdc ,max.
12 Models	15 Vdc ,max.
24 Models	28 Vdc ,max.
Soldering Temperature (1.5mm from case 10sec max.)	260°C ,max.

GENERAL SPECIFICATIONS

Efficiency	See table
I/O Isolation Voltage(60sec) Input/Output	1000~3000Vdc
I/O Isolation Capacitance	60 pF Typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	Variable 50kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>3.5 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

NOTE

1.Ripple/Noise measured with 20MHz bandwidth.

2.Tested by minimal Vin and constant resistive load.

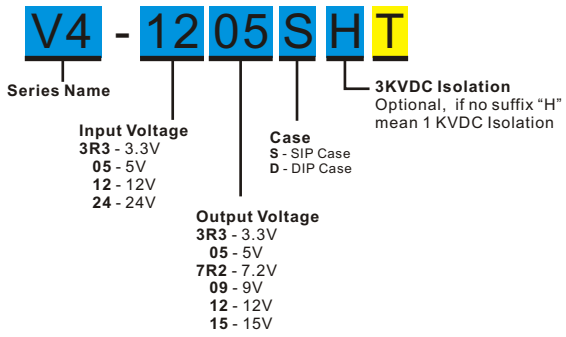
3.Measured Input reflected ripple current with a simulated source inductance of 12μH.

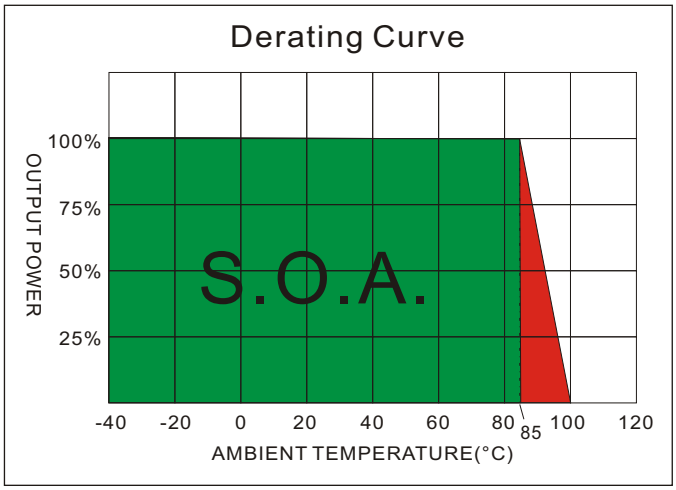
4. Input filter components (C1, L) are used to help meet EMC requirement for the module.
These components should be mounted as close as possible to the module;and all leads should be minimized to decrease radiated noise.

5.Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

6.Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA ,max.)	INPUT Current Full Load (mA ,typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% ,typ.)	Capacitor Load @LF (µF ,max.)
V4-3R33R3ST	3.3	30	497	3.3	303	61	220
V4-3R305ST	3.3	32	473	5	200	64	220
V4-3R37R2ST	3.3	40	481	7.2	139	63	220
V4-3R309ST	3.3	40	481	9	111	63	220
V4-3R312ST	3.3	40	481	12	83	63	220
V4-3R315ST	3.3	45	466	15	67	65	220
V4-053R3ST	5	23	333	3.3	303	60	220
V4-0505ST	5	23	294	5	200	68	220
V4-057R2ST	5	25	299	7.2	139	67	220
V4-0509ST	5	30	282	9	111	71	220
V4-0512ST	5	30	286	12	83	70	220
V4-0515ST	5	35	282	15	67	71	220
V4-123R3ST	12	10	153	3.3	303	60	220
V4-1205ST	12	16	128	5	200	65	220
V4-127R2ST	12	17	124	7.2	139	67	220
V4-1209ST	12	18	124	9	111	67	220
V4-1212ST	12	18	117	12	83	71	220
V4-1215ST	12	21	121	15	67	69	220
V4-243R3ST	24	7	72	3.3	333	64	220
V4-2405ST	24	6	61	5	200	68	220
V4-247R2ST	24	7	62	7.2	139	67	220
V4-2409ST	24	7	58	9	111	72	220
V4-2412ST	24	9	60	12	83	70	220
V4-2415ST	24	9	59	15	67	71	220
V4-3R33R3DT	3.3	30	497	3.3	303	61	220
V4-3R305DT	3.3	32	473	5	200	64	220
V4-3R37R2DT	3.3	40	481	7.2	139	63	220
V4-3R309DT	3.3	40	481	9	111	63	220
V4-3R312DT	3.3	40	481	12	83	63	220
V4-3R315DT	3.3	45	466	15	67	65	220
V4-053R3DT	5	23	333	3.3	303	60	220
V4-0505DT	5	24	308	5	200	65	220

Suffix "H" means 3 KVdc isolation

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

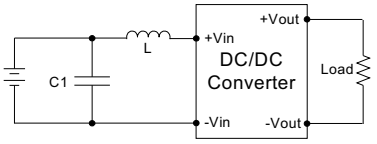
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA ,max.)	INPUT Current Full Load (mA ,typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% ,typ.)	Capacitor Load @LF (µF ,max.)
V4-057R2DT	5	25	299	7.2	139	67	220
V4-0509DT	5	32	303	9	111	66	220
V4-0512DT	5	35	286	12	83	70	220
V4-0515DT	5	27	294	15	67	68	220
V4-123R3DT	12	14	146	3.3	303	57	220
V4-1205DT	12	11	124	5	200	67	220
V4-127R2DT	12	17	124	7.2	139	67	220
V4-1209DT	12	17	124	9	111	67	220
V4-1212DT	12	15	126	12	83	70	220
V4-1215DT	12	21	126	15	67	66	220
V4-243R3DT	24	5	75	3.3	333	61	220
V4-2405DT	24	5	62	5	200	67	220
V4-247R2DT	24	7	62	7.2	139	67	220
V4-2409DT	24	7	60	9	111	70	220
V4-2412DT	24	6	57	12	83	73	220
V4-2415DT	24	7	57	15	67	73	220

Suffix “H” means 3 KVdc isolation

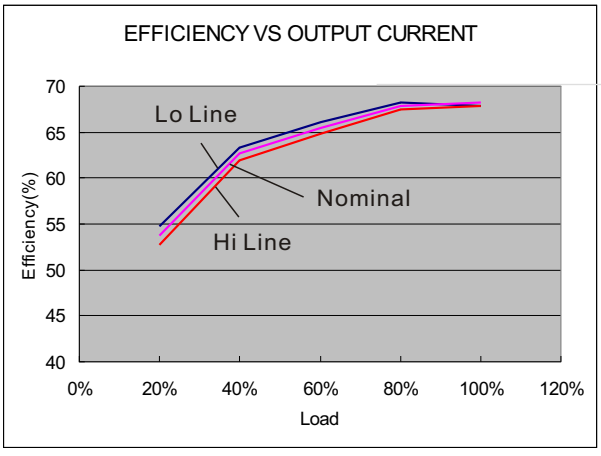
TEST CONFIGURATIONS

EMC Filter

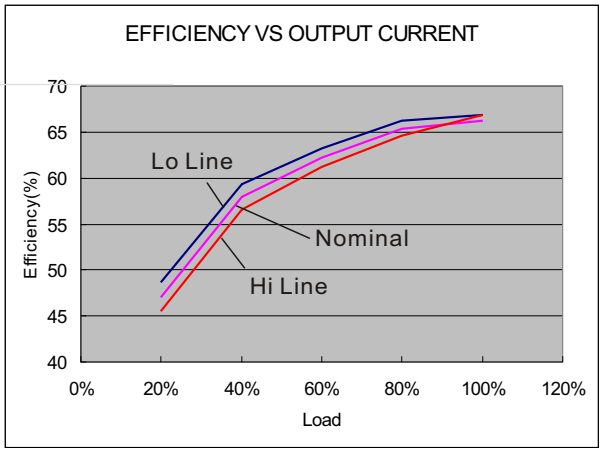
Input filter components (C1, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



	C1	L
V4-3R3XXXXX	220uF/100V	12uH
V4-05XXXXX	220uF/100V	12uH
V4-12XXXXX	220uF/100V	12uH
V4-24XXXXX	220uF/100V	12uH



05 Models



12 Models

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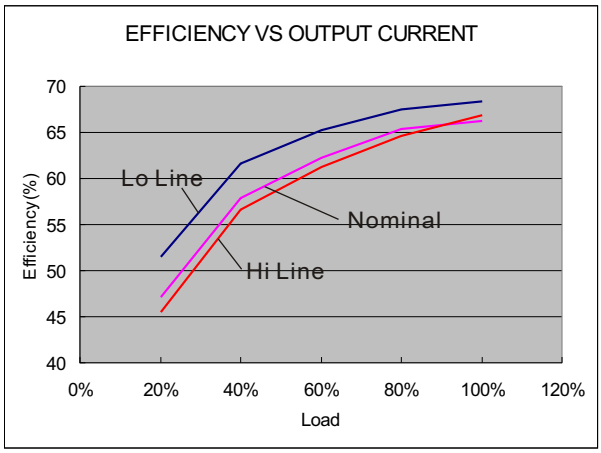
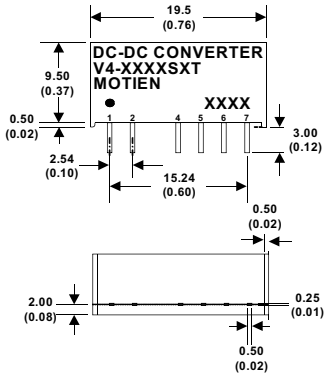
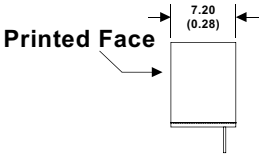


24 Models

MECHANICAL SPECIFICATIONS

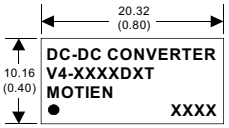


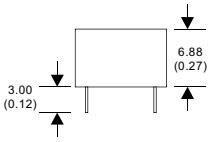


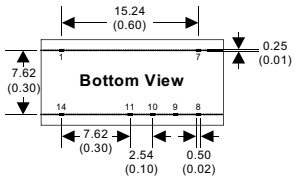
7 Pin SIL Package

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	SINGLE-H
1	+V Input	+V Input
2	−V Input	−V Input
4	−V Output	N.P.
5	N.P.	−V Output
6	+V Output	N.P
7	N.P	+V Output







14 Pin DIL Package

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	SINGLE-H
1	−V Input	−V Input
7	N.C.	N.C.
8	N.P.	+V Output
9	+V Output	N.P.
10	N.P	−V Output
11	−V Output	N.P.
14	+V Input	+V Input

MOTIEN ISO 9001 . ISO 14001 . IECQ QC080000
No. 9, Keji 2nd Rd., Tainan Technology Industrial Park, Tainan City 70955, Taiwan
Tel: 886-6-384 2366 (Rep.) Fax: 886-6-384 2399
Website : www.motien.com.tw Email : sales@motien.com.tw

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