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 68%
- -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

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

INPUT SPECIFICATIONS

Voltage Range	±10%
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitors
Input Reflected Ripple Current(3)	20mA pk-pk

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

GENERAL SPECIFICATIONS

Efficiency	See table
I/O Isolation Voltage (3 sec)	
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

EMC SPECIFICATIONS

Radiated Emissions	EN55022	CLASS B
Conducted Emissions (4)	EN55022	CLASS B
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT (5)	IEC 61000-4-4	Perf. Criteria A
Surge (5)	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	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	0.5mm Alloy42 Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	2.7g
Dimensions	SIP Case 0.76"x0.28"x0.39"
	DIP Case 0.80"x0.40"x0.27"

ABSOLUTE MAXIMUM RATINGS(6)

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

Input Voltage(100mS)	
3.3 Models	0~5 Vdc
5 Models	0~7 Vdc
12 Models	0~15 Vdc
24 Models	0~28 Vdc
Soldering Temperature (1.5mm from case 10sec. max.)	260°C , max.

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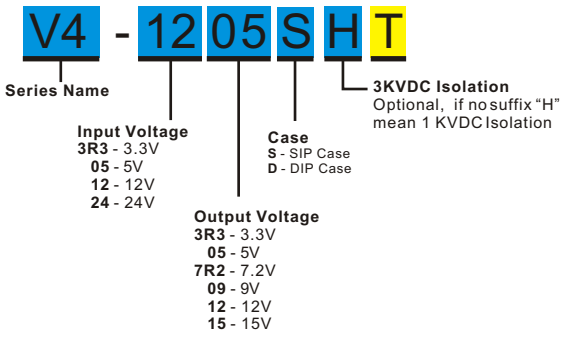
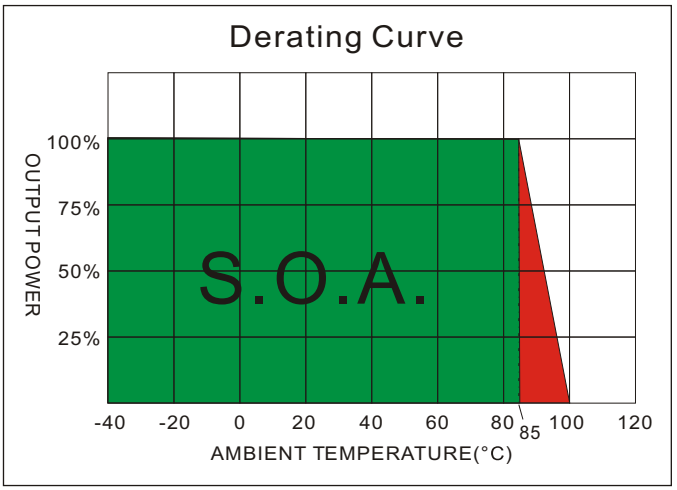
PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
V4-3R33R3ST	3.3	40	522	3.3	333	58	220
V4-3R305ST	3.3	40	505	5	200	60	220
V4-3R37R2ST	3.3	40	505	7.2	138.9	60	220
V4-3R309ST	3.3	45	505	9	111.1	60	220
V4-3R312ST	3.3	45	505	12	83.3	60	220
V4-3R315ST	3.3	45	466	15	66.7	65	220
V4-053R3ST	5	30	385	3.3	333	57	220
V4-0505ST	5	30	307	5	200	65	220
V4-057R2ST	5	30	307	7.2	138.9	65	220
V4-0509ST	5	35	307	9	111.1	65	220
V4-0512ST	5	35	294	12	83.3	68	220
V4-0515ST	5	35	294	15	66.7	68	220
V4-123R3ST	12	20	160	3.3	333	57	220
V4-1205ST	12	20	132	5	200	63	220
V4-127R2ST	12	20	128	7.2	138.9	65	220
V4-1209ST	12	20	126	9	111.1	66	220
V4-1212ST	12	20	122	12	83.3	68	220
V4-1215ST	12	20	126	15	66.7	66	220
V4-243R3ST	24	10	76	3.3	333	60	220
V4-2405ST	24	10	64	5	200	65	220
V4-247R2ST	24	10	64	7.2	138.9	65	220
V4-2409ST	24	10	61	9	111.1	68	220
V4-2412ST	24	10	61	12	83.3	68	220
V4-2415ST	24	10	61	15	66.7	68	220
V4-3R3 3R3DT	3.3	40	522	3.3	333	58	220
V4-3R3 05DT	3.3	40	505	5	200	60	220
V4-3R3 7R2DT	3.3	40	505	7.2	138.9	60	220
V4-3R3 09DT	3.3	45	505	9	111.1	60	220
V4-3R3 12DT	3.3	45	505	12	83.3	60	220
V4-3R3 15DT	3.3	45	466	15	66.7	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

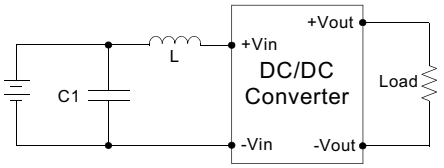
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
V4-05 3R3DT	5	30	350	3.3	333	57	220
V4-0505DT	5	35	317	5	200	63	220
V4-05 7R2DT	5	45	327	7.2	138.9	61	220
V4-0509DT	5	40	298	9	111.1	67	220
V4-0512DT	5	35	298	12	83.3	67	220
V4-0515DT	5	35	298	15	66.7	67	220
V4-12 3R3DT	12	20	146	3.3	333	57	220
V4-1205DT	12	20	132	5	200	63	220
V4-12 7R2DT	12	20	132	7.2	138.9	63	220
V4-1209DT	12	20	128	9	111.1	65	220
V4-1212DT	12	20	122	12	83.3	68	220
V4-1215DT	12	20	126	15	66.7	66	220
V4-24 3R3DT	24	10	73	3.3	333	57	220
V4-2405DT	24	10	76	5	200	60	220
V4-24 7R2DT	24	10	76	7.2	138.9	60	220
V4-2409DT	24	10	61	9	111.1	68	220
V4-2412DT	24	10	63	12	83.3	66	220
V4-2415DT	24	10	63	15	66.7	66	220

Suffix “H” means 3 KVdc isolation

TEST CONFIGURATIONS

EMI 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.

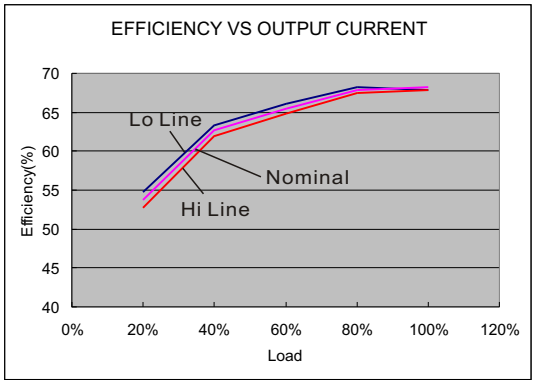


	C1	L
V4-3R3XXXXX	220uF/100V	12uH
V4-05XXXXX	220uF/100V	12uH
V4-12XXXXX	220uF/100V	12uH
V4-24XXXXX	220uF/100V	12uH

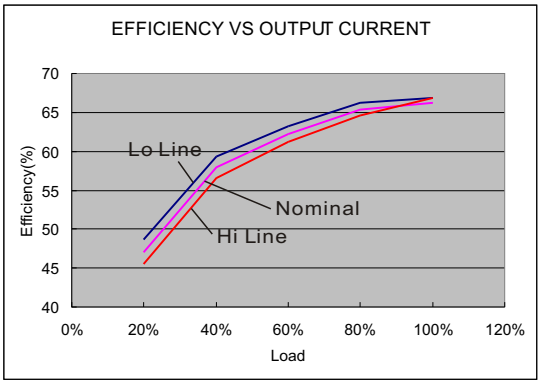
NOTE

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 12uH.
4. Input filter components are be required to help meet conducted emission class B, which application refer to the EMI Filter of design & feature configuration.
5. 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, 470uF/100V.
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
7. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

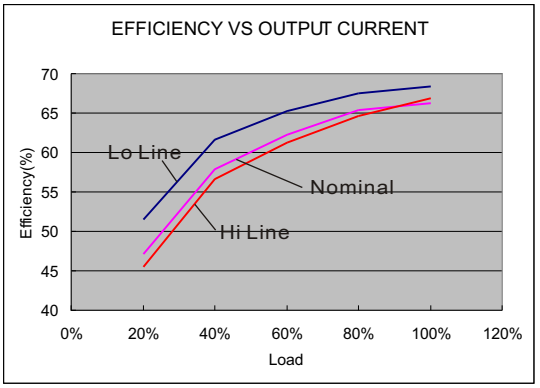
The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw



05 Models

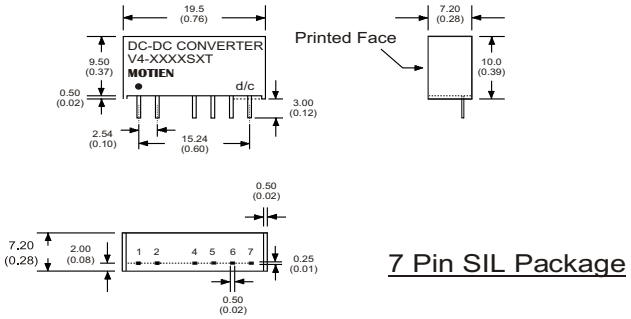


12 Models



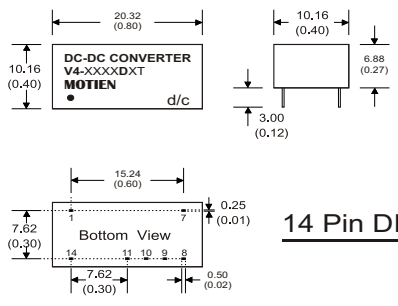
24 Models

MECHANICAL SPECIFICATIONS



7 Pin SIL Package

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

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

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)

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