

V5-3W Series

3W Regulated Single & Dual output



Features

- Regulated 24 Pin DIL Package
- Full SMD Technology
- 1000 VDC Isolation, Up to 6000 VDC(Metal Case Up To 3000Vdc)
- Continuous Short Circuit Protection
- Efficiency up to 83%
- -40 ~ 85°C Operation Temperature Range
- Plastic Case Standard, Optional Metal Case



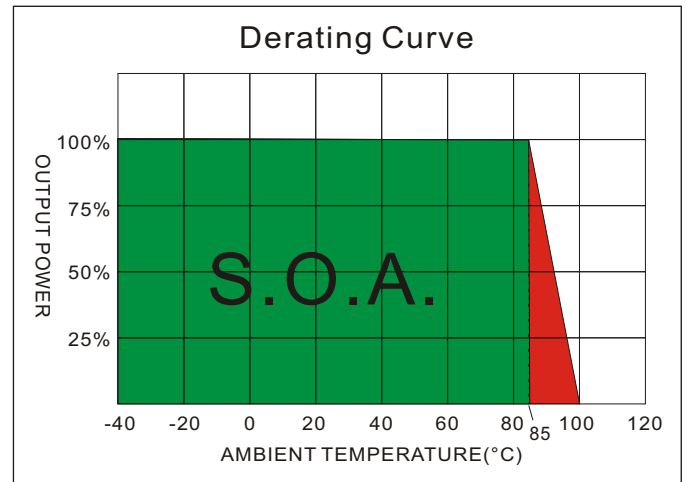
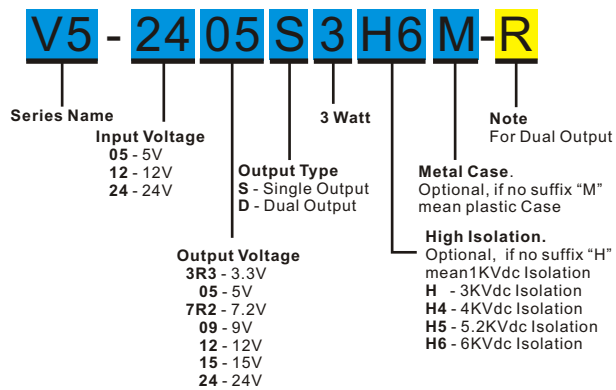
The V5 series is a family of cost effective 3W single & dual output DC-DC converters. These converters combine miniature package in a 24-pin DIL compatible case with high performance features such as 1000 VDC~6000 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and high line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 5, 12, 24 with output voltage of 3.3, 5, 7.2, 9, 12, 15, 24, ± 3.3 , ± 5 , ± 7.2 , ± 9 , ± 12 , ± 15 and ± 24 Vdc. High performance features include high efficiency operation up to 83% and output voltage accuracy of $\pm 2\%$ maximum. Standard features include an input range of $\pm 10\%$ 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		PHYSICAL SPECIFICATIONS	
Outout Voltage accuracy	$\pm 2\%$, max.	Case Material	Non-conductive Black Plastic(UL94V-0 rated) Nickel-coated Copper
Line regulation	Single & Dual : $\pm 0.5\%$, max.	Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Load regulation	Single (0% to 100%) : $\pm 1.0\%$, max. Dual (0% to 100%) : $\pm 0.5\%$, max(balanced load) Single & Dual (Output 3.3V Model) : $\pm 2.0\%$, max.	Pin Material	0.5mm Alloy42 Solder-coated $\Phi 0.5$ mm Brass Solder-coated
Ripple & noise (20 MHz bandwidth)(1)	75mVpk-pk, max.	Potting Material	Epoxy (UL94V-0 rated)
Short Circuit Protection	Indefinite(Automatic Recovery)	Weight	12.5g(Plastic Case)/17.0g(Meta Case)
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$	Dimensions	1.25"x0.8"x0.4"
Capacitor load(2)	See table ,max.	ENVIRONMENT SPECIFICATIONS	
Transient Recovery Time(3)	250 μ s, typ.	Operating Temperature	-40°C~85°C
Transient Response Deviation(3)	$\pm 3\%$, max. (3.3V Output $\pm 5\%$, max.)	Maximum Case Temperature	100°C
		Storage Temperature	-40°C~125°C
		Cooling	Nature Convection
INPUT SPECIFICATIONS		ABSOLUTE MAXIMUM RATINGS(5)	
Input Voltage Range	$\pm 10\%$	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Max. Input Current	See table		
No-Load Input Current	See table		
Input Filter	PI type		
Input Reflected Ripple Current(4)	35mA _{pk-pk} , typ.		
GENERAL SPECIFICATIONS			
Efficiency	See table ,typ.		
I/O Isolation Voltage(60sec)			
Input/Output	1000~6000Vdc		
Metal Case/Input&Ouput	1000Vdc		
I/O Isolation Capacitance	60 pF Typ.		
I/O Isolation Resistance	1000M Ohm		
Switching Frequency	Single 40kHz typ. Dual 250kHz typ.		
Humidity	95% rel H		
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1 Mhrs		
Safety Standard : (designed to meet)	IEC 60950-1		
		EMC SPECIFICATIONS	
		Radiated Emissions	EN55032 CLASS A
		Conducted Emissions (7)	EN55032 CLASS A
		ESD	IEC 61000-4-2 Perf. Criteria A
		RS	IEC 61000-4-3 Perf. Criteria A
		EFT (8)	IEC 61000-4-4 Perf. Criteria A
		Surge (8)	IEC 61000-4-5 Perf. Criteria A
		CS	IEC 61000-4-6 Perf. Criteria A
		PFMF	IEC 61000-4-8 Perf. Criteria A

V5 - 3W Regulated Single & Dual output

PART NUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% typ.)	Capacitor Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
V5-053R3S3	5	62	683	3.3	600	58	470
V5-0505S3	5	65	909	5	600	66	470
V5-057R2S3	5	65	923	7.2	417	65	470
V5-0509S3	5	70	882	9	333	68	470
V5-0512S3	5	60	845	12	250	71	470
V5-0515S3	5	70	833	15	200	72	470
V5-0518S3	5	70	857	18	167	70	470
V5-0524S3	5	100	896	24	125	67	470
V5-123R3S3	12	30	232	3.3	600	71	470
V5-1205S3	12	36	253	5	600	66	470
V5-127R2S3	12	32	235	7.2	417	71	470
V5-1209S3	12	32	235	9	333	71	470
V5-1212S3	12	37	231	12	250	72	470
V5-1215S3	12	35	225	15	200	74	470
V5-1218S3	12	35	222	18	167	75	470
V5-1224S3	12	55	235	24	125	71	470
V5-243R3S3	24	10	158	3.3	700	61	470
V5-2405S3	24	23	187	5	600	67	470
V5-247R2S3	24	25	189	7.2	417	66	470
V5-2409S3	24	27	184	9	333	68	470
V5-2412S3	24	30	181	12	250	69	470
V5-2415S3	24	28	179	15	200	70	470
V5-2418S3	24	16	169	18	167	74	470
V5-2424S3	24	20	167	24	125	75	470
V5-053R3D3-R	5	15	776	±3.3	±400	68	±1000
V5-0505D3-R	5	20	845	±5	±300	71	±470
V5-057R2D3-R	5	20	811	±7.2	±417	74	±470
V5-0509D3-R	5	25	789	±9	±167	76	±470
V5-0512D3-R	5	40	822	±12	±125	73	±470
V5-0515D3-R	5	30	811	±15	±100	74	±470
V5-0518D3-R	5	45	822	±18	±167	73	±220

Suffix "H" means 3KVdc isolation Suffix "H4" means 4KVdc isolation Suffix "H5" means 5.2KVdc isolation
 Suffix "H6" means 6KVdc isolation
 Suffix "M" means Metal Case Up To 3KVdc 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

V5 - 3W Regulated Single & Dual output

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% typ.)	Capacitor Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
V5-0524D3-R	5	45	800	±24	±62.5	75	±220
V5-123R3D3-R	12	7	306	±3.3	±400	72	±1000
V5-1205D3-R	12	8	321	±5	±300	78	±1000
V5-127R2D3-R	12	8	313	±7.2	±417	80	±470
V5-1209D3-R	12	10	313	±9	±167	80	±470
V5-1212D3-R	12	10	321	±12	±125	78	±470
V5-1215D3-R	12	15	309	±15	±100	81	±470
V5-1218D3-R	12	15	309	±18	±167	81	±220
V5-1224D3-R	12	20	316	±24	±62.5	79	±220
V5-243R3D3-R	24	5	174	±3.3	±455	72	±1000
V5-2405D3-R	24	6	158	±5	±300	79	±470
V5-247R2D3-R	24	5	158	±7.2	±417	79	±470
V5-2409D3-R	24	7	152	±9	±167	82	±470
V5-2412D3-R	24	8	151	±12	±125	83	±470
V5-2415D3-R	24	10	154	±15	±100	81	±470
V5-2418D3-R	24	15	156	±18	±167	80	±220
V5-2424D3-R	24	15	154	±24	±62.5	81	±220

Suffix "H" means 3KVdc isolation

Suffix "H4" means 4KVdc isolation

Suffix "H5" means 5.2KVdc isolation

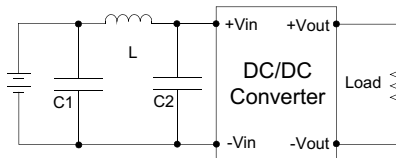
Suffix "H6" means 6KVdc isolation

Suffix "M" means Metal Case Up To 3KVdc isolation

TEST CONFIGURATIONS

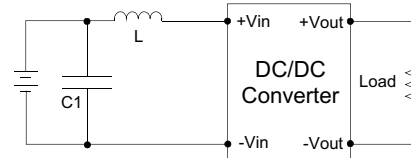
EMI Filter

Input filter components (C1,C2, 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	C2
V5-05XXXXXX	220μF/100V	12μH	220μF/100V
V5-12XXXXXX	220μF/100V	12μH	220μF/100V
V5-24XXXXXX	220μF/100V	12μH	220μF/100V

Single Output



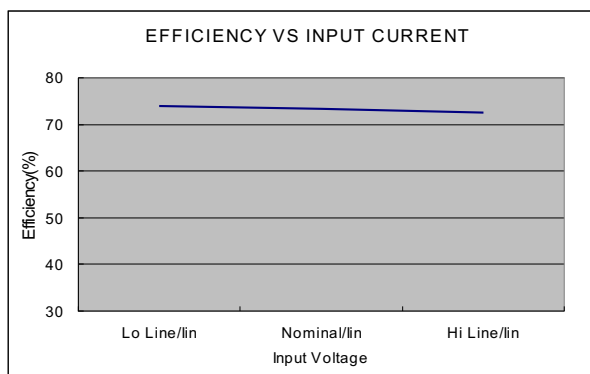
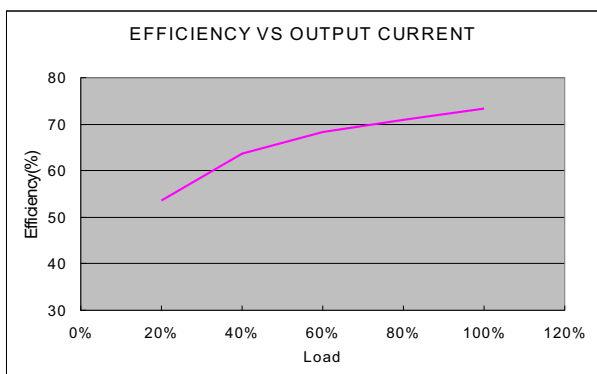
	C1	L
V5-05XXXXXX	220μF/100V	12μH
V5-12XXXXXX	220μF/100V	12μH
V5-24XXXXXX	220μF/100V	12μH

Dual Output

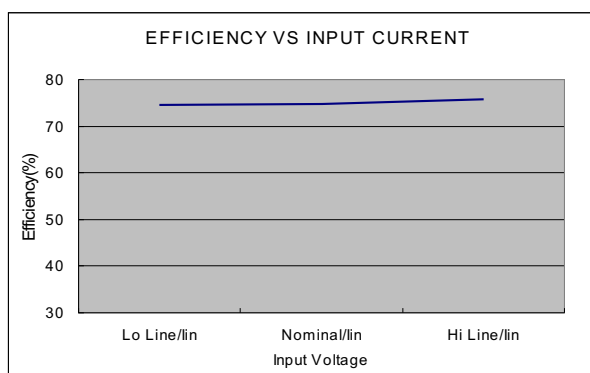
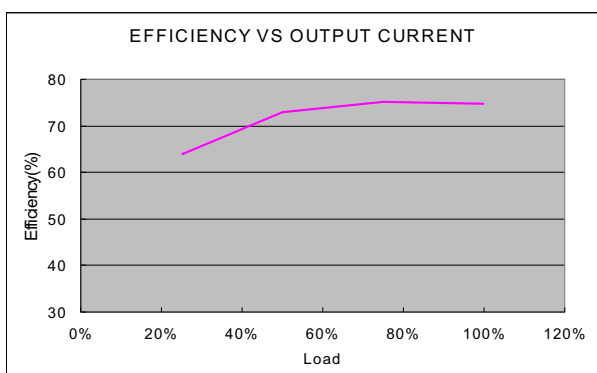
NOTE

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Tested by normal Vin and 25% load step change (75%-50%-25% of Io)
4. Measured Input reflected ripple current with a simulated source inductance of 12μH.
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.
7. Input filter components are required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
8. 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, 220μF/100V.

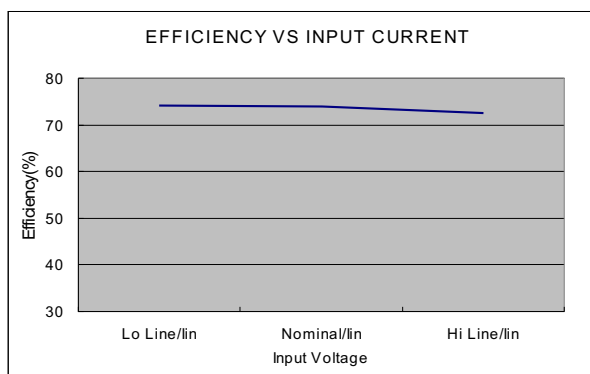
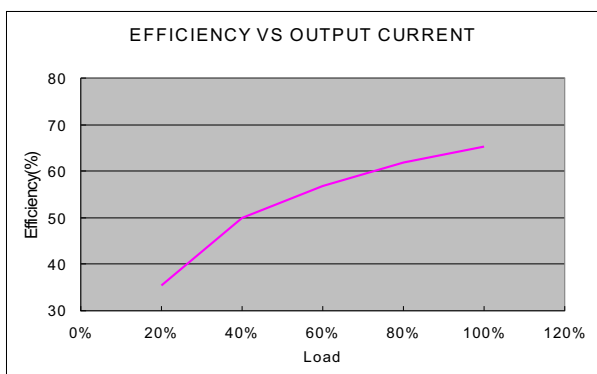
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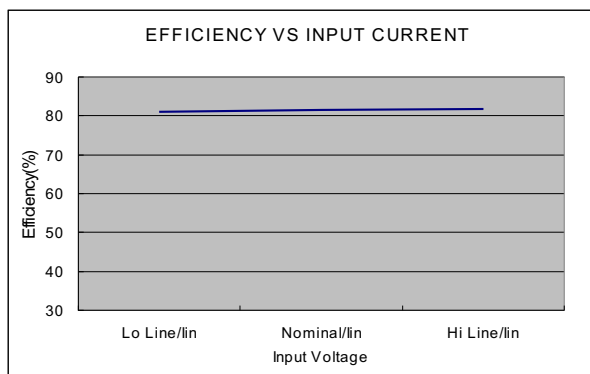
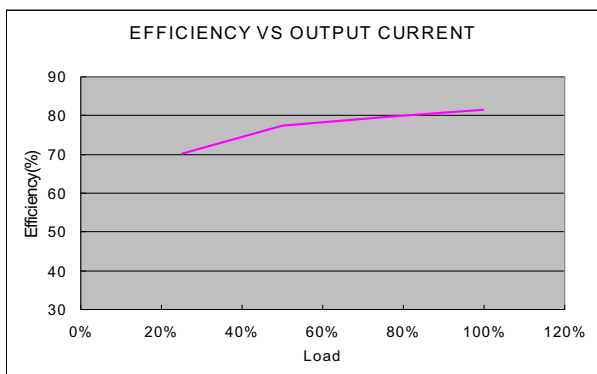
05 Single Output Models



05 Dual Output Models

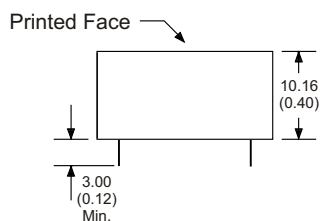
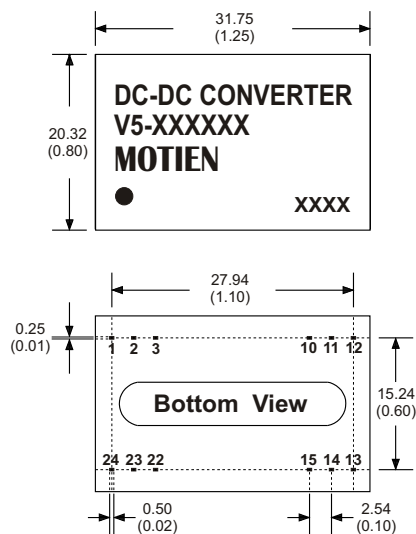


24 Single Output Models



24 Dual Output Models

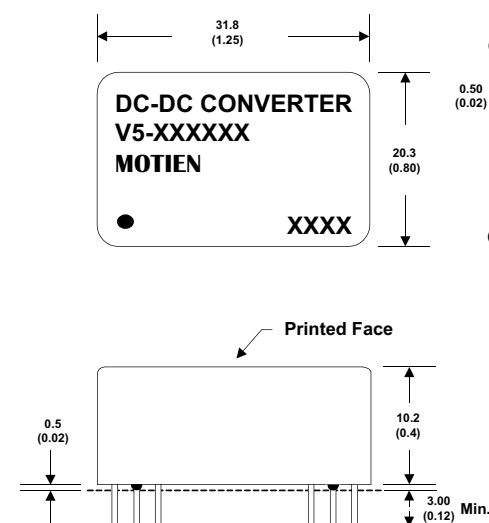
MECHANICAL SPECIFICATIONS



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	SINGLE-H	DUAL-H
1	+V Input	+V Input	+V Input	+V Input
2	N.C.	-V Output	+V Input	+V Input
3	N.C.	Common	N.P.	N.P.
10	-V Output	Common	N.P.	Common
11	+V Output	+V Output	N.P.	Common
12	-V Input	-V Input	-V Output	N.P.
13	-V Input	-V Input	+V Output	-V Output
14	+V Output	+V Output	N.P.	N.P.
15	-V Output	Common	N.P.	+V Output
22	N.C.	Common	N.P.	N.P.
23	N.C.	-V Output	-V Input	-V Input
24	+V Input	+V Input	-V Input	-V Input



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)
4. Stand-off tolerance: ± 0.1 (± 0.004)

PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	+V Input	+V Input
2	N.C.	-V Output	+V Input	+V Input
3	N.C.	Common	N.P.	N.P.
10	-V Output	Common	N.P.	Common
11	+V Output	+V Output	N.P.	Common
12	-V Input	-V Input	-V Output	N.P.
13	-V Input	-V Input	+V Output	-V Output
14	+V Output	+V Output	N.P.	N.P.
15	-V Output	Common	N.P.	+V Output
22	N.C.	Common	N.P.	N.P.
23	N.C.	-V Output	-V Input	-V Input
24	+V Input	+V Input	-V Input	-V Input

For "M" Case