V1-0.5W Series

MOTIEN TECHNOLOGY

0.5W Unregulated Single & Dual output

Features

- 7 Pin SIL / 14 Pin DIL Package
- 1000 VDC Isolation
- Up to 6000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 80%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case

ROHS

The V1 series is a family of cost effective 0.5W single & dual 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 5, 12, 24, 48 Vdc with output voltage of 3.3, 5,7.2, 9, 12,15, 18, 24, ±3.3, ±5,±7.2, ±9, ±12, ±15, ±18, ±24 Vdc. High performance features include 1000Vdc~6000Vdc input/output isolation, high efficiency operation and output voltage accuracy of ±3% 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	±3%
Line regulation	±1.2% / Per 1% Vin Change
Load regulation	(From 20% to 100% Load) ±10% (Output 3.3V Model) ±20%
Ripple & noise (20 MHz bandwidth)(1)	75mV 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

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)	
5 Models	7 Vdc ,max.
12 Models	15 Vdc ,max.
24 Models	28 Vdc ,max.
48 Models	54 Vdc ,max.
Soldering Temperature (1.5mm from case 10sec. max.)	260°C ,max.

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/2.3g) (DIP/2.6g)
Dimensions	SIP Case 0.76"x0.24"x0.39" DIP Case 0.80"x0.40"x0.27"

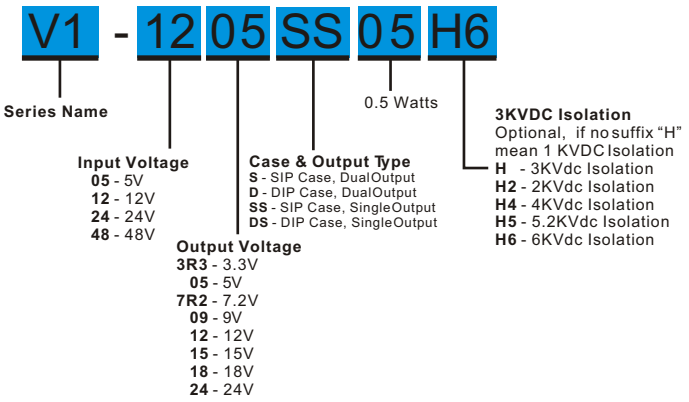
ENVIRONMENT SPECIFICATIONS

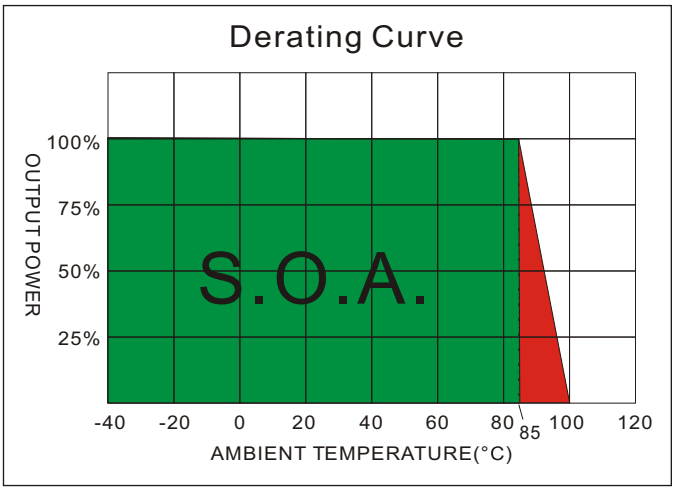
Operating Temperature	-40°C~85°C (See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

GENERAL SPECIFICATIONS

Efficiency	See table
I/O Isolation Voltage(3 sec)	
Input/Output	1000~6000Vdc
I/O Isolation Capacitance	60 pF Typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	Variable 80kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard :(designed to meet)	IEC 60950-1

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)
V1-053R3S05	5	30	166	±3.3	±75.7	60	±100
V1-0505S05	5	30	135	±5	±50	74	±100
V1-057R2S05	5	30	129	±7.2	±34.7	77	±100
V1-0509S05	5	30	128	±9	±27.7	78	±100
V1-0512S05	5	30	128	±12	±20.8	78	±100
V1-0515S05	5	30	128	±15	±16.7	78	±100
V1-0518S05	5	30	126	±18	±13.9	79	±100
V1-0524S05	5	30	126	±24	±10.4	79	±100
V1-123R3S05	12	20	69	±3.3	±75.7	60	±100
V1-1205S05	12	20	56	±5	±50	74	±100
V1-127R2S05	12	20	54	±7.2	±34.7	77	±100
V1-1209S05	12	20	53	±9	±27.7	78	±100
V1-1212S05	12	20	53	±12	±20.8	78	±100
V1-1215S05	12	20	53	±15	±16.7	78	±100
V1-1218S05	12	20	52	±18	±13.9	80	±100
V1-1224S05	12	20	52	±24	±10.4	80	±100
V1-243R3S05	24	10	35	±3.3	±75.7	60	±100
V1-2405S05	24	10	28	±5	±50	74	±100
V1-247R2S05	24	10	27	±7.2	±34.7	76	±100
V1-2409S05	24	10	27	±9	±27.7	76	±100
V1-2412S05	24	10	26	±12	±20.8	78	±100
V1-2415S05	24	10	26	±15	±16.7	78	±100
V1-2418S05	24	10	26	±18	±13.9	78	±100
V1-2424S05	24	10	26	±24	±10.4	80	±100
V1-483R3S05	48	6	17	±3.3	±75.7	60	±100
V1-4805S05	48	6	14	±5	±50	74	±100
V1-487R2S05	48	6	13	±7.2	±34.7	76	±100
V1-4809S05	48	6	13	±9	±27.7	76	±100
V1-4812S05	48	6	13	±12	±20.8	76	±100
V1-4815S05	48	6	13	±15	±16.7	77	±100
V1-4818S05	48	6	13	±18	±13.9	77	±100
V1-4824S05	48	6	13	±24	±10.4	79	±100

Suffix "H" means 3 KVdc isolation Suffix "H2" means 2 KVdc isolation Suffix "H4" means 4 KVdc isolation
Suffix "H5" means 5.2 KVdc isolation Suffix "H6" means 6 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

V1 - 0.5W Unregulated Single & Dual output

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)
V1-053R3D05	5	30	166	±3.3	±75.7	60	±100
V1-0505D05	5	30	135	±5	±50	74	±100
V1-057R2D05	5	30	129	±7.2	±34.7	77	±100
V1-0509D05	5	30	128	±9	±27.7	78	±100
V1-0512D05	5	30	128	±12	±20.8	78	±100
V1-0515D05	5	30	128	±15	±16.7	78	±100
V1-0518D05	5	30	126	±18	±13.9	79	±100
V1-0524D05	5	30	126	±24	±10.4	79	±100
V1-123R3D05	12	20	69	±3.3	±75.7	60	±100
V1-1205D05	12	20	56	±5	±50	74	±100
V1-127R2D05	12	20	54	±7.2	±34.7	77	±100
V1-1209D05	12	20	53	±9	±27.7	78	±100
V1-1212D05	12	20	53	±12	±20.8	78	±100
V1-1215D05	12	20	53	±15	±16.7	78	±100
V1-1218D05	12	20	52	±18	±13.9	80	±100
V1-1224D05	12	20	52	±24	±10.4	80	±100
V1-243R3D05	24	10	35	±3.3	±75.7	60	±100
V1-2405D05	24	10	28	±5	±50	74	±100
V1-247R2D05	24	10	27	±7.2	±34.7	76	±100
V1-2409D05	24	10	27	±9	±27.7	76	±100
V1-2412D05	24	10	26	±12	±20.8	78	±100
V1-2415D05	24	10	26	±15	±16.7	78	±100
V1-2418D05	24	10	26	±18	±13.9	78	±100
V1-2424D05	24	10	26	±24	±10.4	80	±100
V1-483R3D05	48	6	17	±3.3	±75.7	60	±100
V1-4805D05	48	6	14	±5	±50	74	±100
V1-487R2D05	48	6	13	±7.2	±34.7	76	±100
V1-4809D05	48	6	13	±9	±27.7	76	±100
V1-4812D05	48	6	13	±12	±20.8	76	±100
V1-4815D05	48	6	13	±15	±16.7	77	±100
V1-4818D05	48	6	13	±18	±13.9	77	±100
V1-4824D05	48	6	13	±24	±10.4	79	±100
V1-053R3SS05	5	30	142	3.3	151.5	70	100
V1-0505SS05	5	30	135	5	100	74	100
V1-057R2SS05	5	30	135	7.2	69.4	74	100
V1-0509SS05	5	30	133	9	55.5	75	100
V1-0512SS05	5	30	131	12	41.6	76	100
V1-0515SS05	5	30	131	15	33.3	76	100
V1-0518SS05	5	30	131	18	27.8	76	100
V1-0524SS05	5	30	128	24	20.8	78	100
V1-123R3SS05	12	20	59	3.3	151.5	70	100
V1-1205SS05	12	20	57	5	100	73	100
V1-127R2SS05	12	20	56	7.2	69.4	74	100
V1-1209SS05	12	20	55	9	55.5	75	100
V1-1212SS05	12	20	54	12	41.6	76	100
V1-1215SS05	12	20	54	15	33.3	76	100
V1-1218SS05	12	20	54	18	27.8	76	100
V1-1224SS05	12	20	53	24	20.8	78	100

Suffix "H" means 3 KVdc isolation Suffix "H2" means 2 KVdc isolation Suffix "H4" means 4 KVdc isolation
Suffix "H5" means 5.2 KVdc isolation Suffix "H6" means 6 KVdc isolation

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V1 - 0.5W Unregulated Single & Dual output

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)
V1-243R3SS05	24	10	29	3.3	151.5	70	100
V1-2405SS05	24	10	28	5	100	73	100
V1-247R2SS05	24	10	28	7.2	69.4	74	100
V1-2409SS05	24	10	28	9	55.5	75	100
V1-2412SS05	24	10	27	12	41.6	76	100
V1-2415SS05	24	10	26	15	33.3	78	100
V1-2418SS05	24	10	26	18	27.8	78	100
V1-2424SS05	24	10	26	24	20.8	78	100
V1-483R3SS05	48	6	14	3.3	151.5	70	100
V1-4805SS05	48	6	14	5	100	72	100
V1-487R2SS05	48	6	14	7.2	69.4	72	100
V1-4809SS05	48	6	14	9	55.5	74	100
V1-4812SS05	48	6	14	12	41.6	74	100
V1-4815SS05	48	6	13	15	33.3	75	100
V1-4818SS05	48	6	13	18	27.8	75	100
V1-4824SS05	48	6	13	24	20.8	77	100
V1-053R3DS05	5	30	142	3.3	151.5	70	100
V1-0505DS05	5	30	135	5	100	74	100
V1-057R2DS05	5	30	135	7.2	69.4	74	100
V1-0509DS05	5	30	133	9	55.5	75	100
V1-0512DS05	5	30	131	12	41.6	76	100
V1-0515DS05	5	30	131	15	33.3	76	100
V1-0518DS05	5	30	131	18	27.8	76	100
V1-0524DS05	5	30	128	24	20.8	78	100
V1-123R3DS05	12	20	59	3.3	151.5	70	100
V1-1205DS05	12	20	57	5	100	73	100
V1-127R2DS05	12	20	111	7.2	69.4	74	100
V1-1209DS05	12	20	55	9	55.5	75	100
V1-1212DS05	12	20	54	12	41.6	76	100
V1-1215DS05	12	20	54	15	33.3	76	100
V1-1218DS05	12	20	54	18	27.8	76	100
V1-1224DS05	12	20	53	24	20.8	78	100
V1-243R3DS05	24	10	29	3.3	151.5	70	100
V1-2405DS05	24	10	28	5	100	73	100
V1-247R2DS05	24	10	28	7.2	69.4	74	100
V1-2409DS05	24	10	28	9	55.5	75	100
V1-2412DS05	24	10	27	12	41.6	76	100
V1-2415DS05	24	10	26	15	33.3	78	100
V1-2418DS05	24	10	26	18	27.8	78	100
V1-2424DS05	24	10	26	24	20.8	78	100
V1-483R3DS05	48	6	14	3.3	151.5	70	100
V1-4805DS05	48	6	14	5	100	72	100
V1-487R2DS05	48	6	14	7.2	69.4	72	100
V1-4809DS05	48	6	14	9	55.5	74	100
V1-4812DS05	48	6	14	12	41.6	74	100
V1-4815DS05	48	6	13	15	33.3	75	100
V1-4818DS05	48	6	13	18	27.8	75	100
V1-4824DS05	48	6	13	24	20.8	77	100

Suffix "H" means 3 KVdc isolation Suffix "H2" means 2 KVdc isolation Suffix "H4" means 4 KVdc isolation
Suffix "H5" means 5.2 KVdc isolation Suffix "H6" means 6 KVdc isolation

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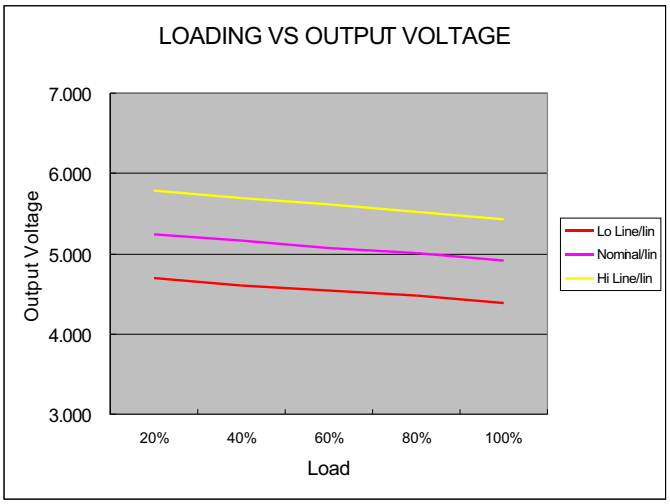
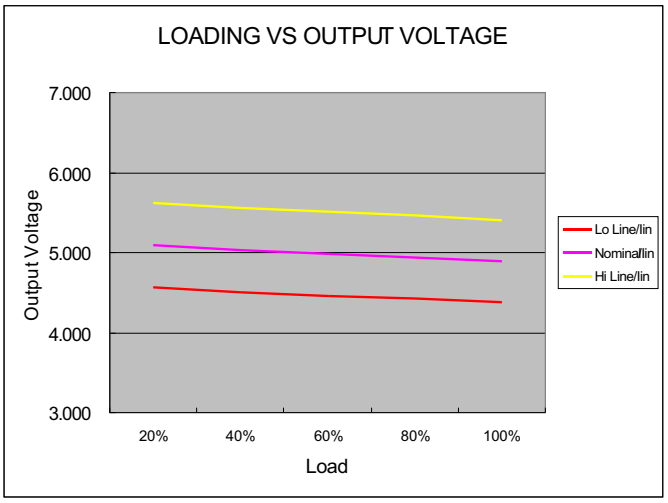
NOTE

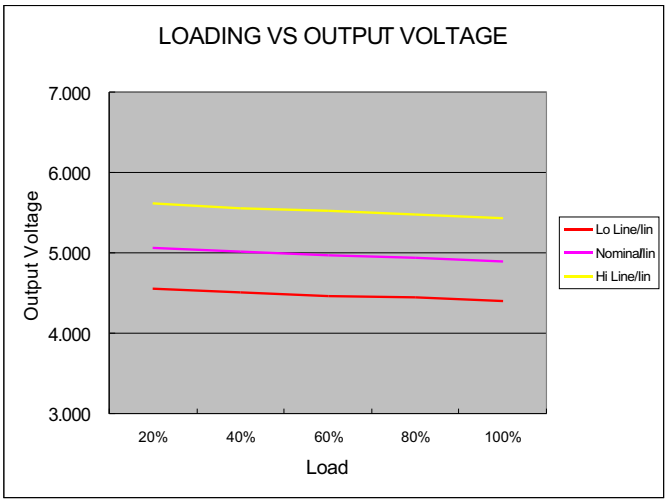
1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.



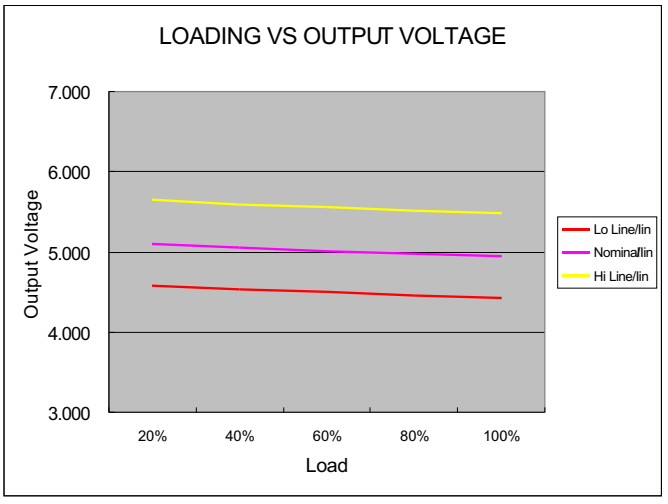
5 Models



12 Models



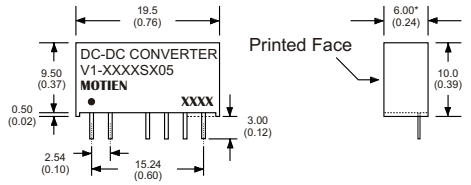
24 Models



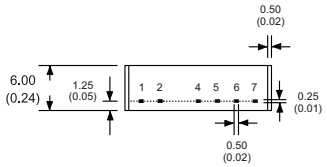
48 Models

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

MECHANICAL SPECIFICATIONS



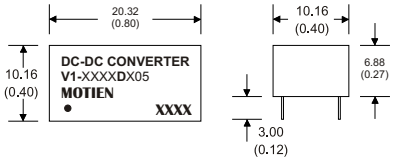
* The thickness of 48V input voltage model is 7.20(0.28)

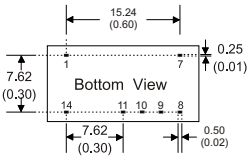


7 Pin SIL Package

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	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	+V Input	+V Input
2	−V Input	−V Input	−V Input	−V Input
4	−V Output	−V Output	N.P.	N.P.
5	N.P.	Common	−V Output	−V Output
6	+V Output	+V Output	N.P.	Common
7	N.P.	N.P.	+V Output	+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	DUAL	SINGLE-H	DUAL-H
1	−V Input	−V Input	−V Input	−V Input
7	N.C.	N.C.	N.C.	N.C.
8	N.P.	Common	+V Output	+V Output
9	+V Output	+V Output	N.P.	Common
10	N.P.	N.P.	−V Output	−V Output
11	−V Output	−V Output	N.P.	N.P.
14	+V Input	+V Input	+V Input	+V Input

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DRAWING: APPROVED:

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