

VA-1.5W Series



1.5W Unregulated Single output

Features

- 4 Pin SIL / 8 Pin DIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 88%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case



The VA series is a family of cost effective 1.5W single output DC-DC converters. These converters achieve low cost and ultra-miniature SIP 4 pin or DIP 8 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 Vdc. High performance features include 1000Vdc~3000Vdc input/output isolation, high efficiency operation and output voltage accuracy of $\pm 3\%$ maximum. Standard features include an input range of $\pm 10\%$ tolerance and low output noise and ripple.

All specifications typical at $T_a = 25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Voltage accuracy	$\pm 3\%$
Line regulation	$\pm 1.2\%$ / Per 1% Vin Change
Load regulation	(From 20% to 100% Load) $\pm 10\%$ (Output 3.3V Model) $\pm 20\%$
Ripple & noise(20 MHz bandwidth)(1)	100mV pk-pk
Temperature coefficient	$\pm 0.02\%/^\circ\text{C}$
Capacitor load(2)	See table

INPUT SPECIFICATIONS	
Voltage Range	$\pm 10\%$
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)	7 Vdc ,max.
5 Models	15 Vdc ,max.
12 Models	28 Vdc ,max.
24 Models	54 Vdc ,max.
48 Models(for SIP)	260°C ,max.
Soldering Temperature (1.5mm from case 10sec. max.)	

PHYSICAL SPECIFICATIONS	
Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	
SIP Case	0.5mm Alloy42 Solder-coated
DIP Case	$\varnothing 0.5\text{mm}$ Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	(SIP/1.5g) (DIP/1.8g)
Dimensions	SIP Case 0.46"x0.24"x0.40" DIP Case 0.50"x0.40"x0.27"

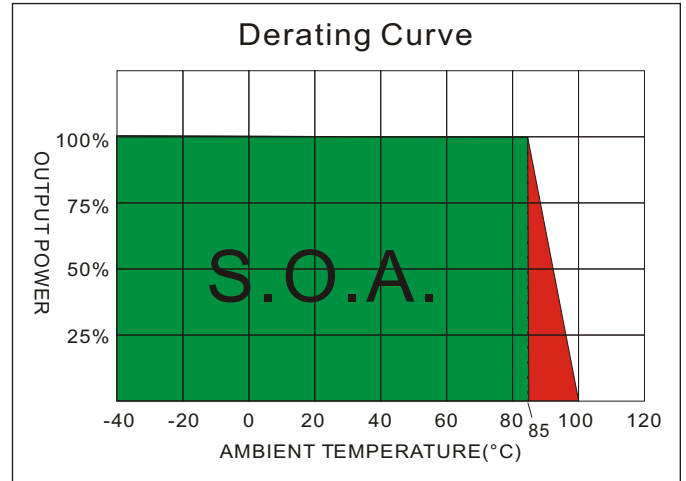
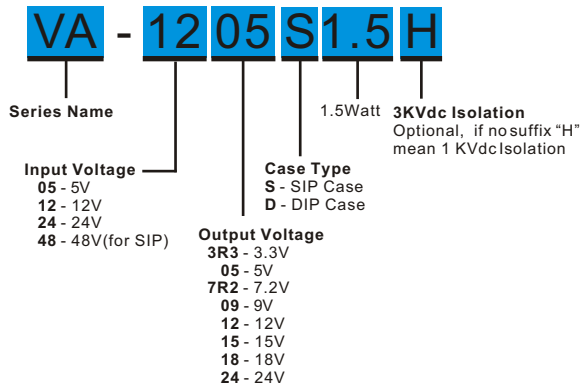
ENVIRONMENT SPECIFICATIONS	
Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
Cooling	Nature Convection

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 80kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, MOTIEN Technologies accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.

VA - 1.5W Unregulated Single output

PARTNUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(µF)
		No-Load (mA)	Full Load (mA)				
VA-053R 3S1.5	5	30	370	3.3	400	81	220
VA-050 5S1.5	5	30	380	5	300	79	220
VA-057R 2S1.5	5	35	366	7.2	208	82	220
VA-050 9S1.5	5	25	400	9	166	75	220
VA-051 2S1.5	5	25	385	12	125	78	220
VA-051 5S1.5	5	30	375	15	100	80	220
VA-051 8S1.5	5	30	353	18	83	85	220
VA-052 4S1.5	5	35	357	24	63	84	220
VA-123R 3S1.5	12	15	167	3.3	400	75	220
VA-120 5S1.5	12	25	156	5	300	80	220
VA-127R 2S1.5	12	25	167	7.2	208	75	220
VA-120 9S1.5	12	20	151	9	166	83	220
VA-121 2S1.5	12	15	152	12	125	82	220
VA-121 5S1.5	12	15	156	15	100	80	220
VA-121 8S1.5	12	15	156	18	83	80	220
VA-122 4S1.5	12	15	164	24	63	76	220
VA-243R 3S1.5	24	15	83	3.3	400	75	220
VA-240 5S1.5	24	15	76	5	300	82	220
VA-247R 2S1.5	24	10	78	7.2	208	80	220
VA-240 9S1.5	24	10	78	9	167	80	220
VA-241 2S1.5	24	15	74	12	125	84	220
VA-241 5S1.5	24	10	74	15	100	84	220
VA-241 8S1.5	24	10	78	18	83	80	220
VA-242 4S1.5	24	8	71	24	63	88	220
VA-483R 3S1.5	48	10	42	3.3	400	75	220
VA-480 5S1.5	48	10	42	5	300	75	220
VA-487R 2S1.5	48	8	41	7.2	208	76	220
VA-480 9S1.5	48	8	41	9	167	76	220
VA-481 2S1.5	48	6	41	12	125	77	220
VA-481 5S1.5	48	6	41	15	100	77	220
VA-481 8S1.5	48	6	41	18	83	77	220
VA-482 4S1.5	48	6	40	24	63	78	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

VA - 1.5W Unregulated Single output

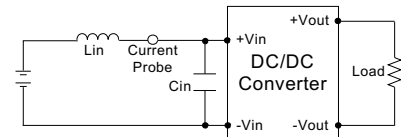
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(µF)
		No-Load (mA)	Full Load (mA)				
VA-053R3D1.5	5	35	390	3.3	400	77	220
VA-0505D 1.5	5	30	385	5	300	78	220
VA-057R2D1.5	5	30	400	7.2	208	75	220
VA-0509D 1.5	5	25	400	9	167	75	220
VA-0512D 1.5	5	25	370	12	125	81	220
VA-0515D 1.5	5	25	366	15	100	82	220
VA-0518D 1.5	5	25	375	18	83	80	220
VA-0524D 1.5	5	30	361	24	63	83	220
VA-123R3D1.5	12	15	170	3.3	400	74	220
VA-1205D 1.5	12	15	154	5	300	81	220
VA-127R2D1.5	12	25	164	7.2	208	76	220
VA-1209D 1.5	12	15	149	9	167	84	220
VA-1212D 1.5	12	15	156	12	125	80	220
VA-1215D 1.5	12	15	156	15	100	80	220
VA-1218D 1.5	12	15	156	18	83	80	220
VA-1224D 1.5	12	15	164	24	63	76	220
VA-243R3D1.5	24	10	83	3.3	400	75	220
VA-2405D 1.5	24	9	76	5	300	82	220
VA-247R2D1.5	24	10	75	7.2	208	83	220
VA-2409D 1.5	24	10	74	9	167	85	220
VA-2412D 1.5	24	10	78	12	125	80	220
VA-2415D 1.5	24	8	76	15	100	82	220
VA-2418D 1.5	24	8	78	18	83	80	220
VA-2424D 1.5	24	9	76	24	63	82	220

Suffix "H" means 3 KVdcisolation

TEST CONFIGURATIONS

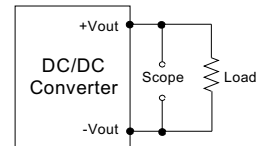
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12µH) and a source capacitor C_{in} (47µF, ESR<1.0Ω at 100KHz) at nominal input and full load.



Output Ripple & Noise Measurement Test

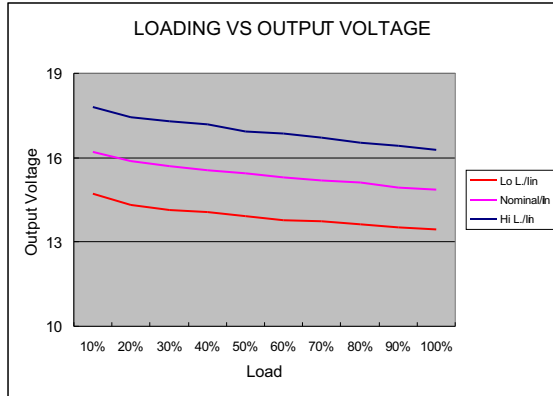
The Scope measurement bandwidth is 20MHz .



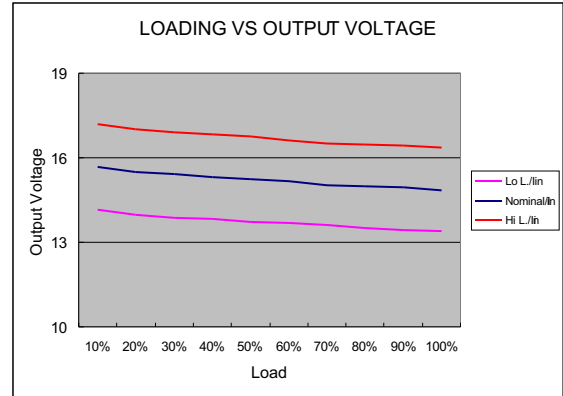
NOTE

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal V_{in} and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12µH.
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.

VA - 1.5W Unregulated Single output

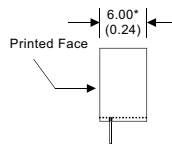
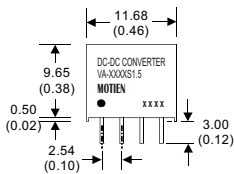


5 Models



12 Models

MECHANICAL SPECIFICATIONS



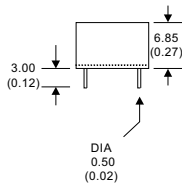
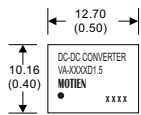
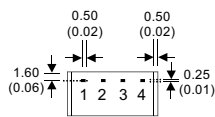
* The thickness of 48V input voltage model is 7.50 (0.29)

4 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
1	-V Input
2	+V Input
3	-V Output
4	+V Output

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



8 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
1	-V Input
4	+V Input
5	+V Output
7	-V Output

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