VA-DD1 Series

1W Unregulated Dual output

MOTIEN TECHNOLOGY

Features

- 8 Pin DIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 85%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case
- EMC Complies With EN55022 Class B

CE

The VA series is a family of cost effective 1W dual output DC-DC converters. These converters achieve low cost and ultra-miniature DIP 8 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 3.3, 5, 12, 15, 24Vdc 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 ±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)	100mVpk-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)	20mApk-pk

PHYSICAL SPECIFICATIONS

Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Φ0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	1.8g
Dimensions	0.50"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

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)	
3.3 Models	5 Vdc ,max.
5 Models	7 Vdc ,max.
12 Models	15 Vdc ,max.
15 Models	18 Vdc ,max.
24 Models	28 Vdc ,max.
Soldering Temperature (1.5mm from case 10 sec. max.)	260°C ,max.

EMC CHARACTERISTICS

Conducted Emissions (6)	EN55032	CLASS B
Radiated Emissions	EN55032	CLASS B
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT(7)	IEC 61000-4-4	Perf. Criteria A
Surge(7)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

GENERAL SPECIFICATIONS

Efficiency	See table
I/O Isolation Voltage(60 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)	>1.121 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

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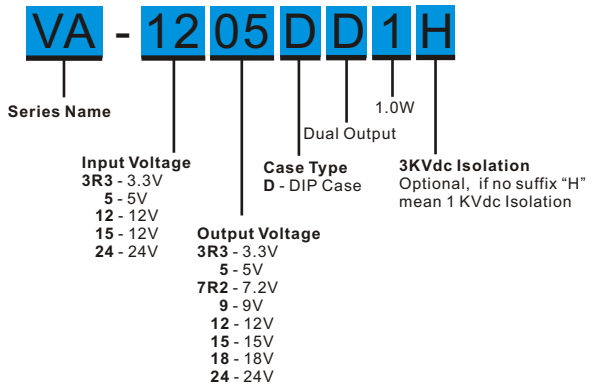
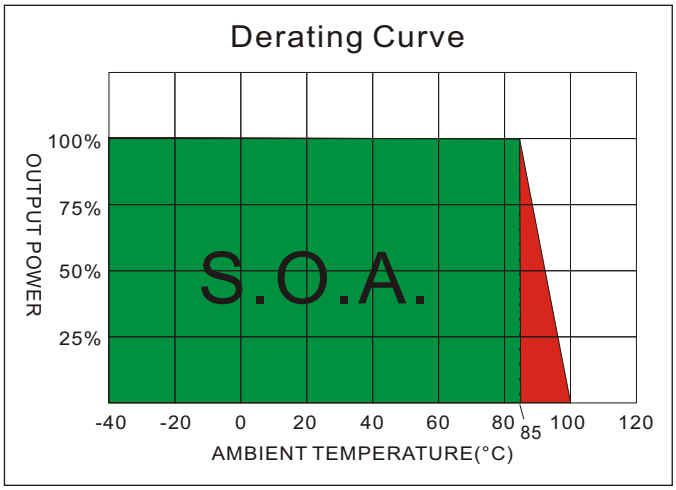
PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT	INPUT Current		OUTPUT	OUTPUT Current		
	Voltage Range (Vdc)	No-Load (mA)	Full Load (mA)	Voltage (Vdc)	Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
VA-3R33R3DD1	3.3	30	489	±3.3	±152	62	±100
VA-3R305DD1	3.3	35	481	±5	±100	63	±100
VA-3R37R2DD1	3.3	30	481	±7.2	±69	63	±100
VA-3R309DD1	3.3	30	466	±9	±56	65	±100
VA-3R312DD1	3.3	32	543	±12	±50	67	±100
VA-3R315DD1	3.3	32	452	±15	±33	67	±100
VA-3R318DD1	3.3	32	439	±18	±28	69	±100
VA-3R324DD1	3.3	32	439	±24	±25	69	±100
VA-053R3DD1	5	15	299	±3.3	±152	67	±100
VA-0505DD1	5	20	270	±5	±100	74	±100
VA-057R2DD1	5	15	260	±7.2	±69	77	±100
VA-0509DD1	5	20	260	±9	±56	77	±100
VA-0512DD1	5	22	300	±12	±50	80	±100
VA-0515DD1	5	20	247	±15	±33	81	±100
VA-0518DD1	5	22	244	±18	±28	82	±100
VA-0524DD1	5	20	300	±24	±25	85	±100
VA-123R3DD1	12	10	121	±3.3	±152	69	±100
VA-1205DD1	12	7	110	±5	±100	76	±100
VA-127R2DD1	12	15	109	±7.2	±69	76	±100
VA-1209DD1	12	15	109	±9	±56	78	±100
VA-1212DD1	12	12	123	±12	±50	81	±100
VA-1215DD1	12	10	102	±15	±33	82	±100
VA-1218DD1	12	15	103	±18	±28	81	±100
VA-1224DD1	12	20	125	±24	±25	80	±100
VA-153R3DD1	15	10	93	±3.3	±152	72	±100
VA-1505DD1	15	10	89	±5	±100	75	±100
VA-157R2DD1	15	15	89	±7.2	±69	75	±100
VA-1509DD1	15	15	87	±9	±56	77	±100
VA-1512DD1	15	5	103	±12	±50	78	±100
VA-1515DD1	15	5	80	±15	±33	83	±100
VA-1518DD1	15	10	85	±18	±28	78	±100
VA-1524DD1	15	10	103	±24	±25	78	±100

Suffix "H" means 3 KVdc isolation

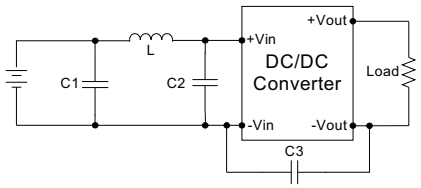
The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

MODEL NUMBER	INPUT	INPUT Current		OUTPUT	OUTPUT Current		
	Voltage Range (Vdc)	No-Load (mA)	Full Load (mA)	Voltage (Vdc)	Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
VA-243R3DD1	24	5	60	±3.3	±152	70	±100
VA-2405DD1	24	6	56	±5	±100	74	±100
VA-247R2DD1	24	6	55	±7.2	±69	76	±100
VA-2409DD1	24	7	56	±9	±56	75	±100
VA-2412DD1	24	5	62	±12	±50	81	±100
VA-2415DD1	24	5	51	±15	±33	81	±100
VA-2418DD1	24	7	53	±18	±28	78	±100
VA-2424DD1	24	7	64	±24	±25	78	±100

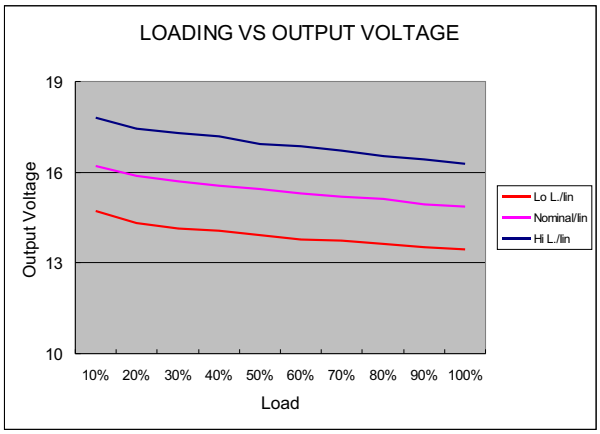
Suffix “H” means 3 KVdc isolation

NOTE

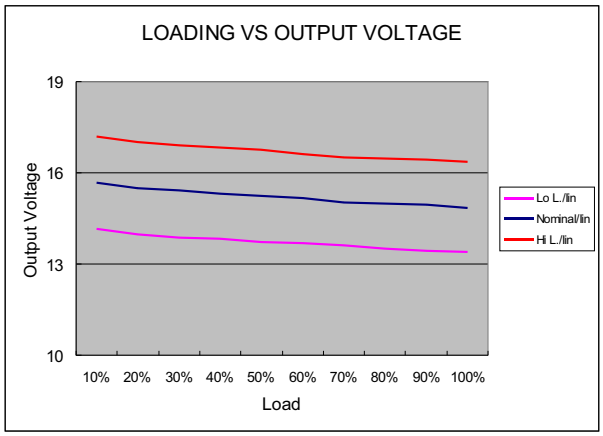
1.Ripple/Noise measured with 20MHz bandwidth.
2.Tested by minimal Vin and constant resistive load.
3.Measured Input reflected ripple current with a simulated source inductance of 12uH.
4.Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5.Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
6. Input filter components are be required to help meet conducted emission class B, which application refer to the EMI Filter of design & feature configuration.
7. 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.



	C1	L	C2	C3
VA-3R3XXXXX	1210, 2.2uF/100V	18uH		
VA-05XXXXX	1210, 2.2uF/100V	18uH		
VA-12XXXXX	1210, 2.2uF/100V	18uH		
VA-15XXXXX	1210, 2.2uF/100V	18uH		
VA-24XXXXX	1210, 2.2uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV
VA-48XXXXX	Electrolytic capacitor, 10uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV



5 Models



12 Models

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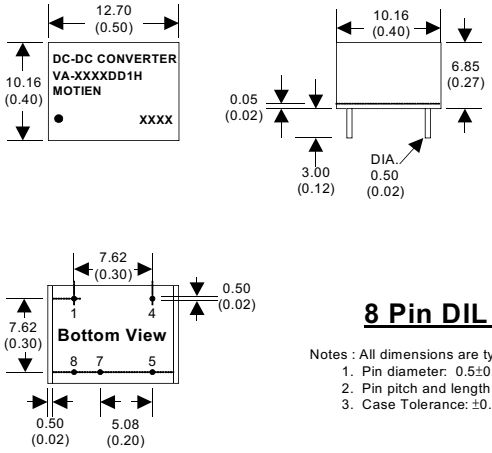
MECHANICAL SPECIFICATIONS



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	Dual
1	−V Input
4	+V Input
5	+V Output
7	Common
8	−V Output

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

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