

VAP-1W Series

1W Unregulated Single & Dual output



Features

- 4 Pin SIL / 8 Pin DIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 81%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case
- Continuous Short Circuit Protection



The VAP series is a family of cost effective 1W 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, 24Vdc with output voltage of 5, 12, 15Vdc. 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.

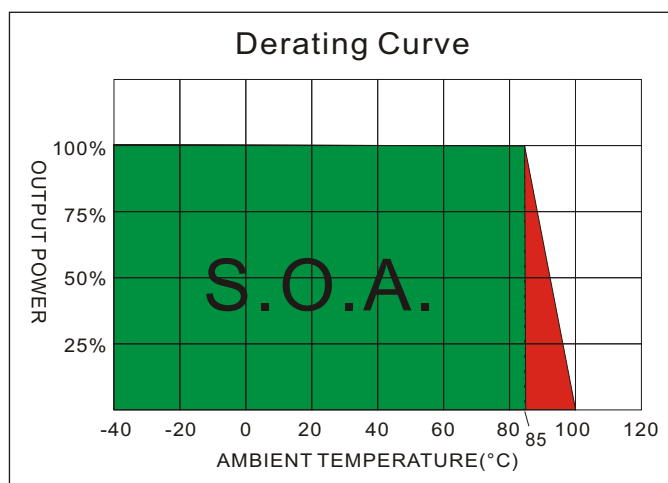
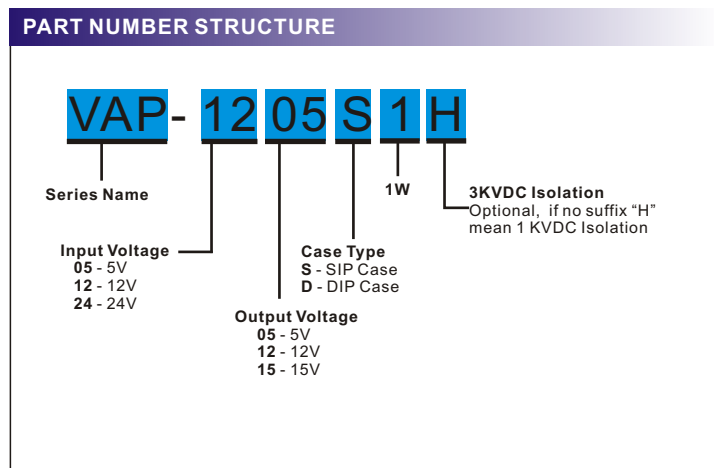
All specifications typical at $T_a = 25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS		PHYSICAL SPECIFICATIONS	
Voltage accuracy	$\pm 3\%$	Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Line regulation	$\pm 1.2\%$ / Per 1% Vin Change	Pin Material	
Load regulation	(From 20% to 100% Load) $\pm 10\%$	SIP Case	0.5mm Alloy42 Solder-coated
Ripple & noise (20 MHz bandwidth)(1)	100mV pk-pk	DIP Case	$\Phi 0.5\text{mm}$ Brass Solder-coated
Short Circuit Protection	Indefinite(Automatic Recovery)	Potting Material	Epoxy (UL94V-0 rated)
Temperature coefficient	$\pm 0.02\%/^\circ\text{C}$	Weight	(SIP/1.5g) (DIP/1.8g)
Capacitor load(2)	See table	Dimensions	SIP Case 0.46"x0.24"x0.40" DIP Case 0.50"x0.40"x0.27"
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	$\pm 10\%$	Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
Input Filter	Capacitors	Cooling	Nature Convection
Input Reflected Ripple Current(3)	20mA pk-pk		
GENERAL SPECIFICATIONS		ABSOLUTE MAXIMUM RATINGS(4)	
Efficiency	See table	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
I/O Isolation Voltage(60sec)		Input Surge Voltage(100mS)	
Input/Output	1000~3000Vdc	5 Models	7 Vdc ,max.
I/O Isolation Capacitance	10 pF Typ.	12 Models	15 Vdc ,max.
I/O Isolation Resistance	1000M Ohm	24 Models	28 Vdc ,max.
Switching Frequency	Variable 80kHz	Soldering Temperature	260°C ,max.
Humidity	95% rel H	(1.5mm from case 10sec max.)	
Reliability Calculated MTBF(MIL-HDBK-217 F)	$> 1.121\text{Mhrs}$		
Safety Standard : (designed to meet)	IEC 60950-1		

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 12 μH .
4. Do not operate the unit(s) exceeding the absolute maximum rating, over rating causes damage to the units.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

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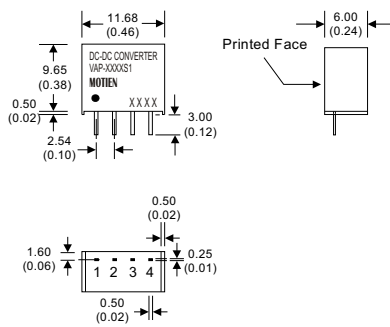
MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% .typ.)	Capacitor Load @LF (μF ,max.)
		No-Load (mA ,max.)	Full Load (mA ,typ.)				
VAP-0505S1	5	60	267	5	200	75	100
VAP-0512S1	5	52	270	12	83.3	74	100
VAP-0515S1	5	35	253	15	66.6	79	100
VAP-1205S1	12	20	110	5	200	76	100
VAP-1212S1	12	23	107	12	83.3	78	100
VAP-1215S1	12	30	105	15	66.6	79	100
VAP-2405S1	24	15	53	5	200	79	100
VAP-2412S1	24	15	56	12	83.3	75	100
VAP-2415S1	24	12	51	15	66.6	81	100
VAP-0505D1	5	53	267	5	200	75	100
VAP-0512D1	5	48	270	12	83.3	74	100
VAP-0515D1	5	35	253	15	66.6	79	100
VAP-1205D1	12	20	110	5	200	76	100
VAP-1212D1	12	23	107	12	83.3	78	100
VAP-1215D1	12	30	105	15	66.6	79	100
VAP-2405D1	24	20	58	5	200	72	100
VAP-2412D1	24	16	56	12	83.3	74	100
VAP-2415D1	24	12	51	15	66.6	81	100
VAP-0505DD1	5	50	286	±5	±100	70	±47
VAP-0512DD1	5	50	260	±12	±50	77	±47
VAP-0515DD1	5	50	260	±15	±33	77	±47
VAP-1205DD1	12	18	111	±5	±100	75	±47
VAP-1212DD1	12	18	103	±12	±41.66	81	±47
VAP-1215DD1	12	25	106	±15	±33	78	±47
VAP-2405DD1	24	14	56	±5	±100	74	±47
VAP-2412DD1	24	15	55	±12	±41.66	75	±47
VAP-2415DD1	24	20	55	±15	±33	75	±47

Suffix "H" means 3 KVdc isolation

VAP - 1W Unregulated Single output

MECHANICAL SPECIFICATIONS

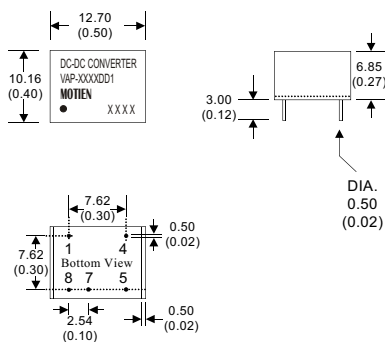


4 Pin SIL Package

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	Dual	Single
1	-V Input	-V Input
4	+V Input	+V Input
5	+V Output	+V Output
7	Common	-V Output
8	-V Output	N.P

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