

V6-2W Series

2W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 78%
- -40 ~ 85°C Operation Temperature Range
- Metal Case Standard, Optional Plastic Case



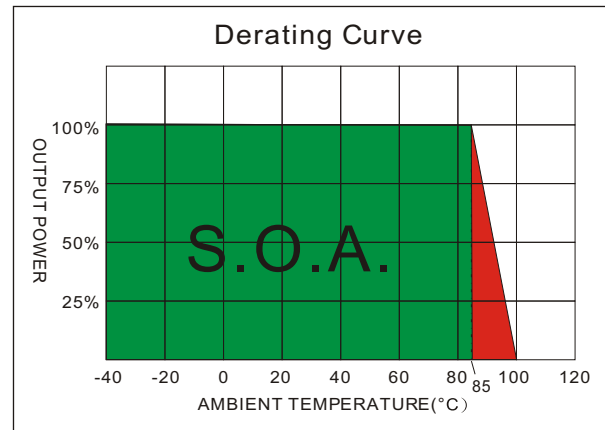
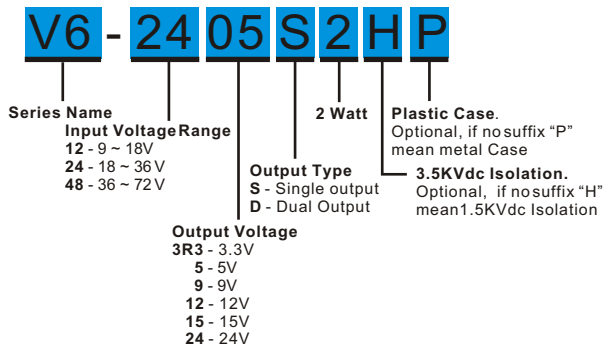
The V6 series is a family of cost effective 2W single & dual output DC-DC converters. These converters are consisted with Nickle-coated copper in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 12, 24 and 48 with output voltage of 3.3, 5, 9, 12, 15, 24, ± 3.3 , ± 5 , ± 9 , ± 12 , ± 15 and ± 24 Vdc. High performance features include high efficiency operation up to 78% and output voltage accuracy of $\pm 1\%$ maximum.

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	$\pm 1\%$	Case Material	Nickel-coated Copper
Line regulation	$\pm 0.5\%$		Non-conductive Black Plastic (UL94V-0 rated)
Load regulation	$\pm 0.5\%$	Base Material	Non-conductive Black Plastic (UL94V-0 rated)
	(Output 3.3V / $\pm 3.3\text{V}$ Model) $\pm 1.5\%$	Pin Material	$\varnothing 0.5\text{mm}$ Brass Solder-coated
Ripple & noise (20 MHz bandwidth)(1)	60mV pk-pk	Potting Material	Epoxy (UL94V-0 rated)
Short circuit protection	Indefinite (Automatic Recovery)	Weight	17.0g (Metal Case) / 13.5g (Plastic Case)
Temperature coefficient	$\pm 0.02\% / ^\circ\text{C}$	Dimensions	1.25" x 0.8" x 0.4"
Capacitor load(2)	See table		
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	See table	Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
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	PI Type	Cooling	Nature Convection
Input Reflected Ripple Current(3)	35mA pk-pk		
GENERAL SPECIFICATIONS		ABSOLUTE MAXIMUM RATINGS(4)	
Efficiency	See table, typ	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
I/O Isolation Voltage(3 sec)		Input Voltage(100ms)	
Input/Output	1500~3500Vdc	12 Modes	-0.7~24 Vdc
Metal Case/Input & Output	1000Vdc	24 Modes	-0.7~40 Vdc
I/O Isolation Capacitance	470 pF Typ.	48 Modes	-0.7~80 Vdc
I/O Isolation Resistance	1000M Ohm	Soldering Temperature	260°C
Switching Frequency	Typical 266kHz	(1.5mm from case 10sec.)	
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 Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
V6-123R3S2	9-18	30	223	3.3	0	600	74	680
V6-1205S2	9-18	30	222	5	0	400	75	680
V6-1209S2	9-18	30	219	9	0	222	76	330
V6-1212S2	9-18	30	219	12	0	167	76	220
V6-1215S2	9-18	30	219	15	0	133	76	100
V6-1224S2	9-18	30	219	24	0	83	76	33
V6-123R3D2	9-18	30	229	±3.3	0	±300	72	±330
V6-1205D2	9-18	30	219	±5	0	±200	75	±330
V6-1209D2	9-18	30	219	±9	0	±111	76	±100
V6-1212D2	9-18	30	219	±12	0	±83	76	±47
V6-1215D2	9-18	30	219	±15	0	±67	76	±33
V6-1224D2	9-18	30	219	±24	0	±42	76	±22
V6-243R3S2	18-36	20	109	3.3	0	600	76	680
V6-2405S2	18-36	20	107	5	0	400	78	680
V6-2409S2	18-36	20	107	9	0	222	78	330
V6-2412S2	18-36	20	107	12	0	167	78	220
V6-2415S2	18-36	20	107	15	0	133	78	100
V6-2424S2	18-36	20	107	24	0	83	78	33
V6-243R3D2	18-36	20	112	±3.3	0	±300	74	±330
V6-2405D2	18-36	20	109	±5	0	±200	76	±330
V6-2409D2	18-36	20	107	±9	0	±111	78	±100
V6-2412D2	18-36	20	107	±12	0	±83	78	±47
V6-2415D2	18-36	20	107	±15	0	±67	78	±33
V6-2424D2	18-36	20	107	±24	0	±42	78	±22
V6-483R3S2	36-72	12	56	3.3	0	600	74	680
V6-4805S2	36-72	12	56	5	0	400	75	680
V6-4809S2	36-72	12	56	9	0	222	75	330
V6-4812S2	36-72	12	56	12	0	167	75	220
V6-4815S2	36-72	12	56	15	0	133	75	100
V6-4824S2	36-72	12	56	24	0	83	75	33

Suffix "H" means 3.5KVdc isolation

Suffix "P" means Plastic case instead of standard Metal Case

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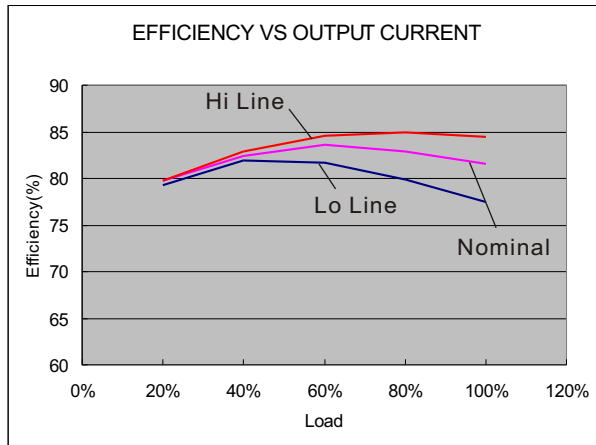
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
V6-483R3D2	36-72	12	56	±3.3	0	±300	74	±330
V6-4805D2	36-72	12	56	±5	0	±200	75	±330
V6-4809D2	36-72	12	56	±9	0	±111	75	±100
V6-4812D2	36-72	12	56	±12	0	±83	75	±47
V6-4815D2	36-72	12	56	±15	0	±67	75	±33
V6-4824D2	36-72	12	56	±24	0	±42	75	±22

Suffix "H" means 3.5KVdc isolation

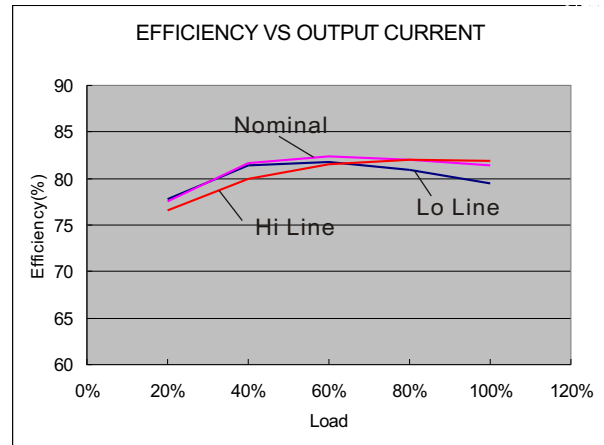
Suffix "P" means Plastic case instead of standard Metal Case

NOTE

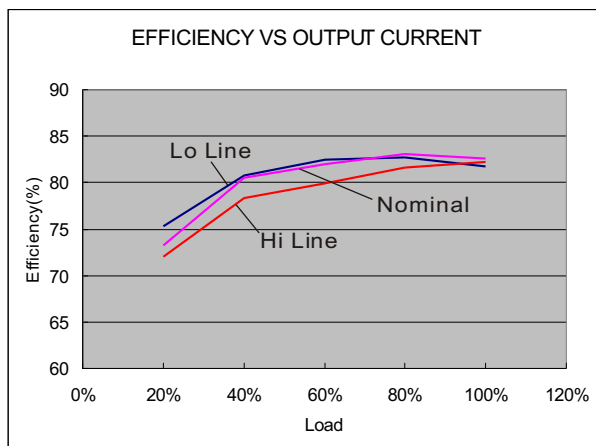
1. Typical value at nominal input voltage and full load.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.



12 Models



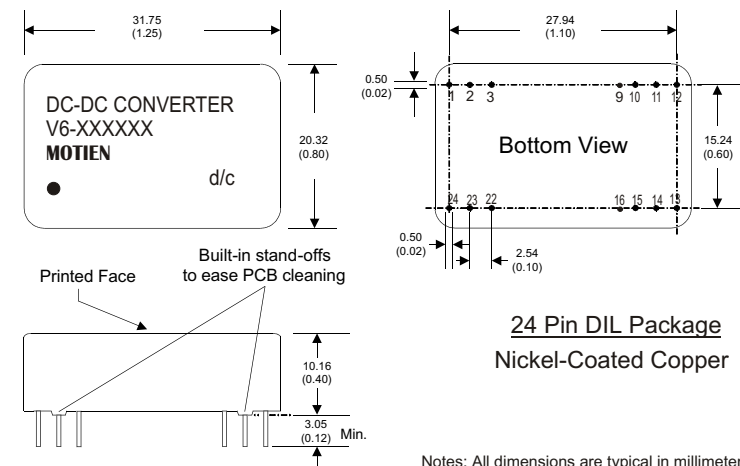
24 Models



48 Models

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MECHANICAL SPECIFICATIONS



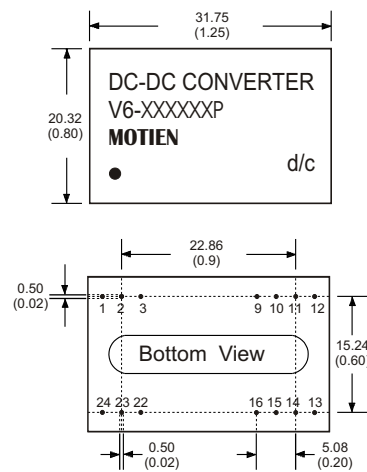
24 Pin DIL Package
Nickel-Coated Copper

Notes: All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ± 0.05 (0.02 ± 0.002)
2. Pin pitch 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	N.P.	N.P.
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	N.P.	N.P.	N.P.	Common
10	-V Output	Common	N.P.	N.P.
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	N.P.	N.P.
13	-V Input	-V Input	N.P.	N.P.
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	N.P.	N.P.
16	N.P.	N.P.	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	N.P.	N.P.

MECHANICAL SPECIFICATIONS



For "P" Case

24 Pin DIL Package
Non-Conductive Plastic

Notes: All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ± 0.05 (0.02 ± 0.002)
2. Pin pitch 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	N.P.	N.P.
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	N.P.	N.P.	N.P.	Common
10	-V Output	Common	N.P.	N.P.
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	N.P.	N.P.
13	-V Input	-V Input	N.P.	N.P.
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	N.P.	N.P.
16	N.P.	N.P.	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	N.P.	N.P.