

V6-6W Series

6W 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 83%
- -40 ~ 85°C Operation Temperature Range
- Metal Case Standard, Optional Plastic Case



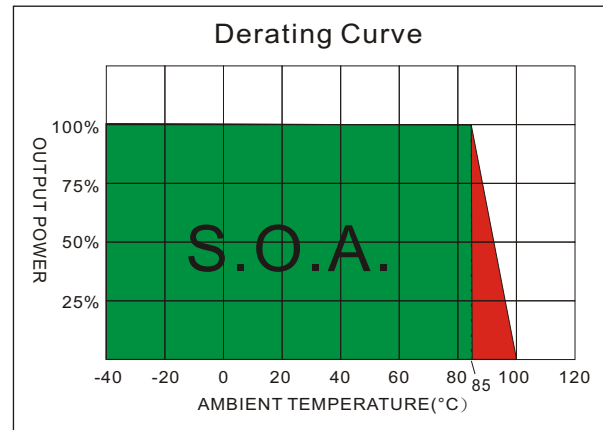
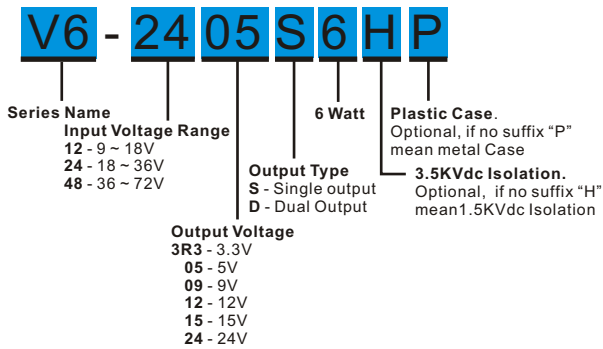
The V6 series is a family of cost effective 6W single & dual output DC-DC converters. These converters are consisted with Nickle-coated copper in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic 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 83% and output voltage accuracy of $\pm 1\%$ maximum.

All specifications typical at Ta=25°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 / ± 3.3 V Model) $\pm 1.5\%$	Pin Material	$\Phi 0.5$ 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"x0.8"x0.4"
Capacitor load(2)	See table		
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	See table	Operating Temperature	-40°C~85°C(See Derating Curve)
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	-40°C~125°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(60sec)		Input Surge Voltage(100mS)	
Input/Output	1500~3500Vdc	12 Models	24 Vdc, max.
Metal Case/Input & Output	1000Vdc	24 Models	40 Vdc, max.
I/O Isolation Capacitance	470 pF, typ.	48 Models	80 Vdc, max.
I/O Isolation Resistance	1000M Ohm	Soldering Temperature	260°C, max.
Switching Frequency	Typical 266kHz	(1.5mm from case 10sec max.)	
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)		
V6-123R3S6	9-18	30	527	3.3	0	1400	73	1000
V6-1205S6	9-18	30	649	5	0	1200	77	1000
V6-1209S6	9-18	30	641	9	0	666	78	680
V6-1212S6	9-18	30	617	12	0	500	81	330
V6-1215S6	9-18	30	625	15	0	400	80	220
V6-1224S6	9-18	30	625	24	0	250	80	68
V6-123R3D6	9-18	30	527	±3.3	0	±909	73	±680
V6-1205D6	9-18	30	649	±5	0	±600	77	±330
V6-1209D6	9-18	30	625	±9	0	±333	80	±220
V6-1212D6	9-18	30	625	±12	0	±250	80	±100
V6-1215D6	9-18	30	632	±15	0	±200	79	±47
V6-1224D6	9-18	30	625	±24	0	±125	80	±33
V6-243R3S6	18-36	20	256	3.3	0	1400	75	1000
V6-2405S6	18-36	20	313	5	0	1200	80	1000
V6-2409S6	18-36	20	304	9	0	666	82	680
V6-2412S6	18-36	20	313	12	0	500	80	330
V6-2415S6	18-36	20	304	15	0	400	82	220
V6-2424S6	18-36	20	305	24	0	250	82	68
V6-243R3D6	18-36	20	333	±3.3	0	±909	75	±680
V6-2405D6	18-36	20	321	±5	0	±600	78	±330
V6-2409D6	18-36	20	301	±9	0	±333	83	±220
V6-2412D6	18-36	20	312	±12	0	±250	80	±100
V6-2415D6	18-36	20	312	±15	0	±200	80	±47
V6-2424D6	18-36	20	312	±24	0	±125	80	±33
V6-483R3S6	36-72	12	128	3.3	0	1400	75	1000
V6-4805S6	36-72	12	156	5	0	1200	80	1000
V6-4809S6	36-72	12	152	9	0	666	82	680
V6-4812S6	36-72	12	156	12	0	500	80	330
V6-4815S6	36-72	12	151	15	0	400	83	220
V6-4824S6	36-72	12	151	24	0	250	83	68

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)		
V6-483R3D6	36-72	12	171	±3.3	0	±909	73	±680
V6-4805D6	36-72	12	158	±5	0	±600	79	±330
V6-4809D6	36-72	12	158	±9	0	±333	79	±220
V6-4812D6	36-72	12	156	±12	0	±250	80	±100
V6-4815D6	36-72	12	156	±15	0	±200	80	±47
V6-4824D6	36-72	12	156	±24	0	±125	80	±33

Suffix "H" means 3.5KVdc isolation

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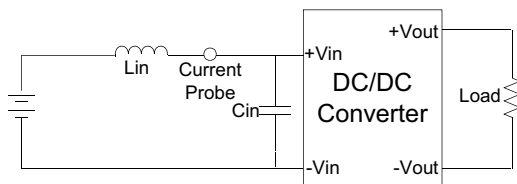
NOTE

1. Ripple/Noise measured with a 1uF ceramic capacitor.
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.

TEST CONFIGURATIONS

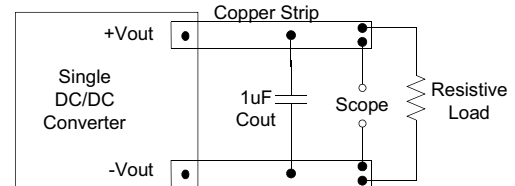
Input Reflected Ripple Current Test Step

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

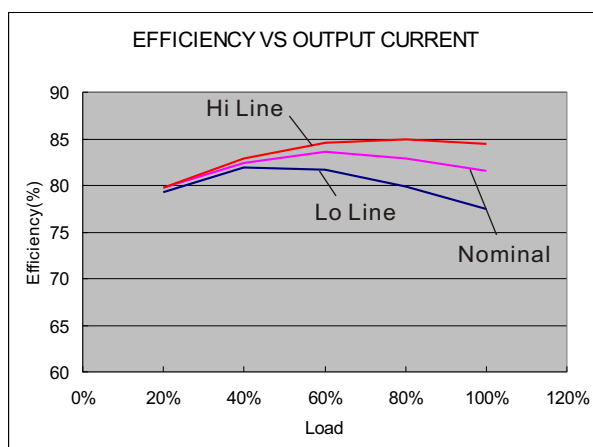


Output Ripple & Noise Measurement Test

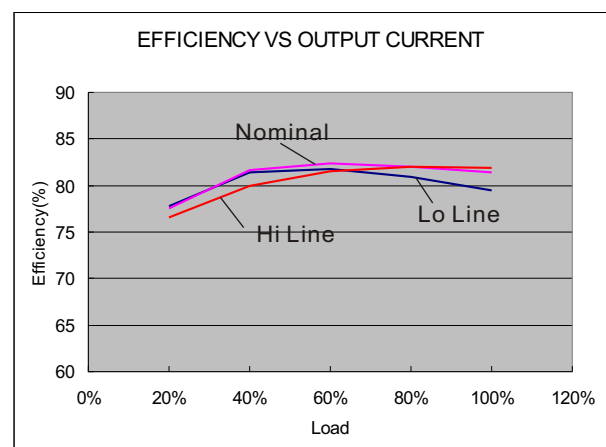
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



ELECTRICAL CHARACTERISTIC CURVES

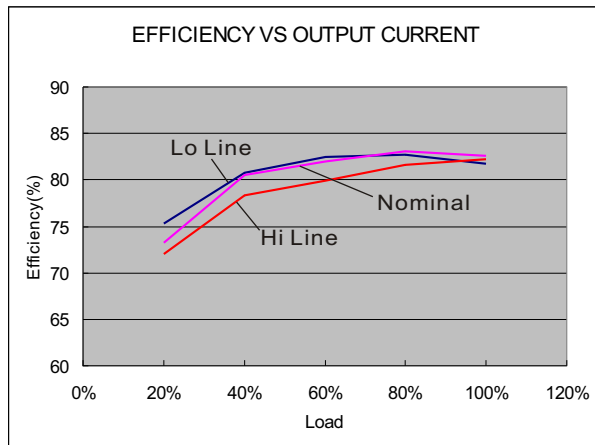


12 Models



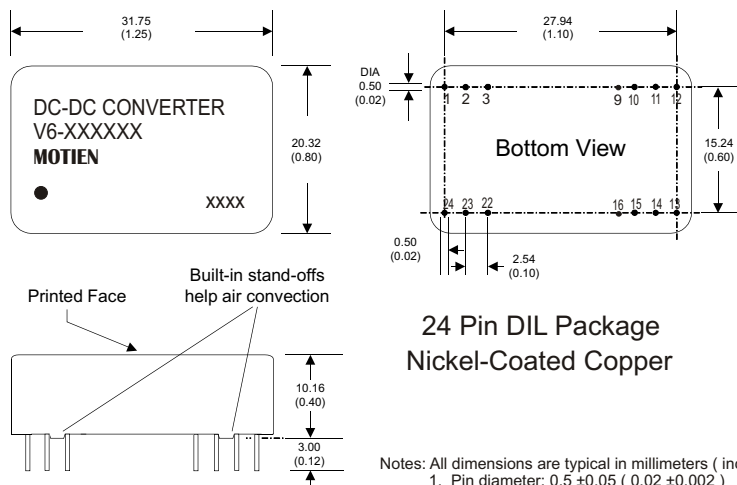
24 Models

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48 Models

MECHANICAL SPECIFICATIONS

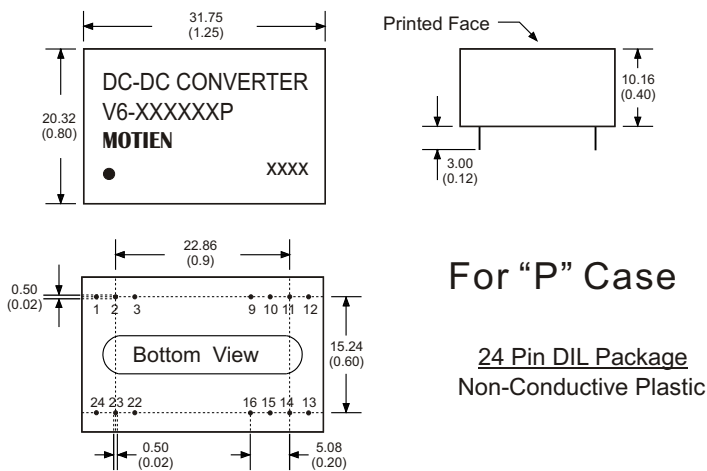


Notes: All dimensions are typical in millimeters (inches).
 1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	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.

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

MECHANICAL SPECIFICATIONS



Notes: All dimensions are typical in millimeters (inches).
 1. Pin diameter: 1.0 ± 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	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.

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