D6-5W Series

5W 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 D6 series is a family of cost effective 5W 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 ±1% maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS		
Voltage accuracy		±1%
Line regulation		±0.5%
Load regulation		±0.5%
	(Output 3.3V / ±3.3V Model)	±1.5%
Ripple & noise (20 MHz bandwidth)(1)		60mV pk-pk
Short circuit protection		Indefinite(Automatic Recovery)
Temperature coefficient		±0.02%/°C
Capacitor load(2)		See table

INPUT SPECIFICATIONS		
Voltage Range		See table
Max. Input Current		See table
No-Load Input Current		See table
Input Filter		PI Type
Input Reflected Ripple Current (3)		35mA pk-pk

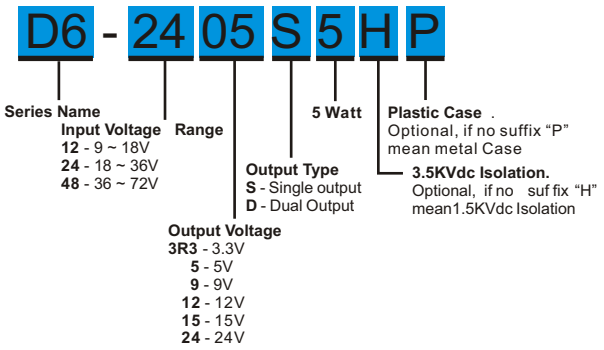
GENERAL SPECIFICATIONS		
Efficiency		See table, typ.
I/O Isolation Voltage(3 sec)		
Input/Output		1500~3500Vdc
Metal Case/Input & Output		1000Vdc
I/O Isolation Capacitance		470 pF typ.
I/O Isolation Resistance		1000M Ohm
Switching Frequency		Typical 266kHz
Humidity		95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)		>1.121 Mhrs
Safety Standard : (designed to meet)		IEC 60950-1

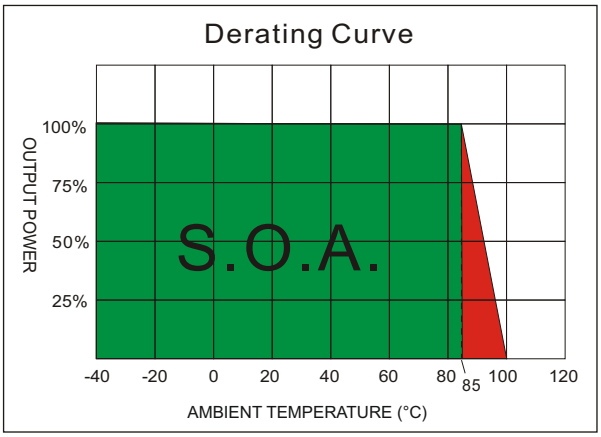
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
	Non-conductive Black Plastic(UL94V-0 rated)
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	¨ 0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0rated)
Weight	17.0g (Metal Case)/ 13.5g(Plastic Case)
Dimensions	1.25 ”x0.8 ”x0.4 ”

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)	
12 Models	24 Vdc, max.
24 Models	40 Vdc, max.
48 Models	80 Vdc, max.
Soldering Temperature (1.5mm from case 10 sec. max.)	260°C, max.

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
D6-123R3S5	9-18	30	490	3.3	0	1300	73	1000
D6-1205S5	9-18	30	542	5	0	1000	77	1000
D6-1209S5	9-18	30	534	9	0	555	78	680
D6-1212S5	9-18	30	514	12	0	417	81	330
D6-1215S5	9-18	30	520	15	0	333	80	220
D6-1224S5	9-18	30	520	24	0	208	80	68
D6-123R3D5	9-18	30	565	±3.3	0	±750	73	±680
D6-1205D5	9-18	30	542	±5	0	±500	77	±330
D6-1209D5	9-18	30	520	±9	0	±278	80	±220
D6-1212D5	9-18	30	520	±12	0	±208	80	±100
D6-1215D5	9-18	30	528	±15	0	±167	79	±47
D6-1224D5	9-18	30	520	±24	0	±104	80	±33
D6-243R3S5	18-36	20	239	3.3	0	1300	75	1000
D6-2405S5	18-36	20	261	5	0	1000	80	1000
D6-2409S5	18-36	20	254	9	0	555	82	680
D6-2412S5	18-36	20	261	12	0	417	80	330
D6-2415S5	18-36	20	255	15	0	333	82	220
D6-2424S5	18-36	20	255	24	0	208	82	68
D6-243R3D5	18-36	20	275	±3.3	0	±750	75	±680
D6-2405D5	18-36	20	267	±5	0	±500	78	±330
D6-2409D5	18-36	20	251	±9	0	±278	83	±220
D6-2412D5	18-36	20	261	±12	0	±208	80	±100
D6-2415D5	18-36	20	261	±15	0	±167	80	±47
D6-2424D5	18-36	20	261	±24	0	±104	80	±33
D6-483R3S5	36-72	12	120	3.3	0	1300	75	1000
D6-4805S5	36-72	12	131	5	0	1000	80	1000
D6-4809S5	36-72	12	127	9	0	555	82	680
D6-4812S5	36-72	12	131	12	0	417	80	330
D6-4815S5	36-72	12	126	15	0	333	83	220
D6-4824S5	36-72	12	126	24	0	208	83	68

Suffix "H" means 3.5KVdc isolation
Suffix "P" means Plastic case instead of standard Metal Case

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 : info@zimtec-electronics.de

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
D6-483R3D5	36-72	12	142	±3.3	0	±750	73	±680
D6-4805D5	36-72	12	132	±5	0	±500	79	±330
D6-4809D5	36-72	12	132	±9	0	±278	79	±220
D6-4812D5	36-72	12	131	±12	0	±208	80	±100
D6-4815D5	36-72	12	131	±15	0	±167	80	±47
D6-4824D5	36-72	12	131	±24	0	±104	80	±33

Suffix "H" means 3.5KVdc isolation
Suffix "P" means Plastic case instead of standard Metal Case

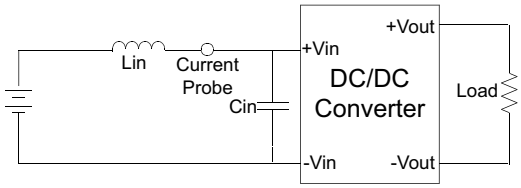
NOTE

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 12 uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

TEST CONFIGURATIONS

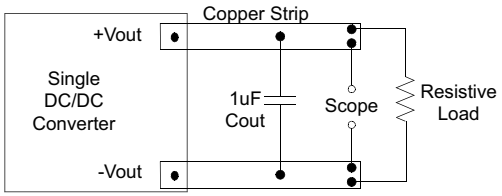
Input Reflected Ripple Current Test Step

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

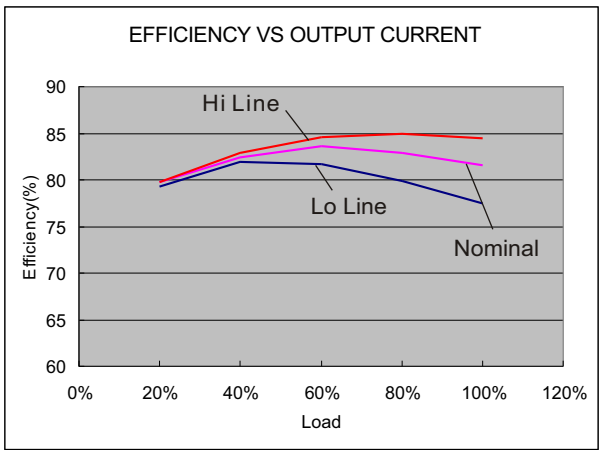


Output Ripple & Noise Measurement Test

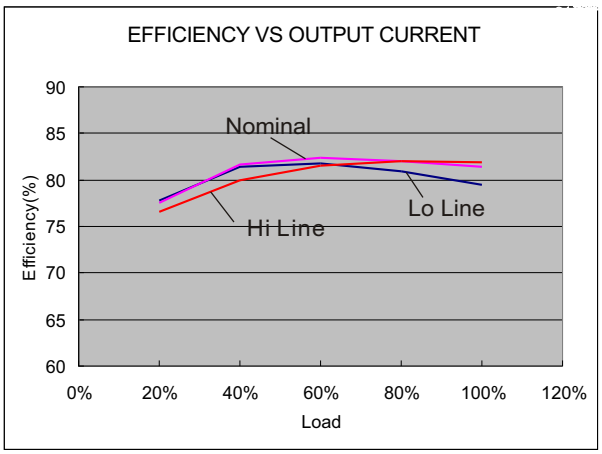
Use a capacitor Cout(1.0uF) measurement.
The Scope measurement bandwidth is 0-20MHz.



ELECTRICAL CHARACTERISTIC CURVES



12 Models



24 Models

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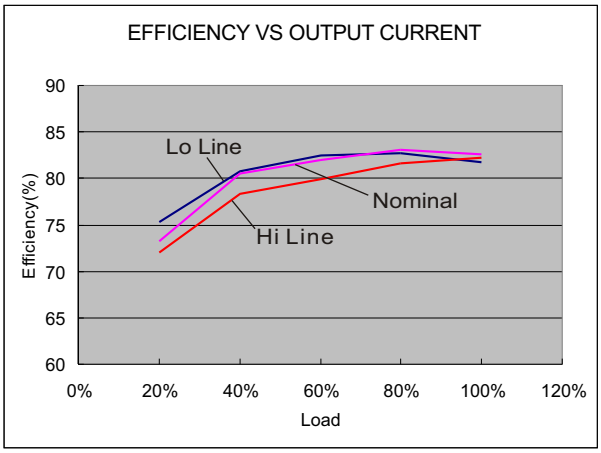
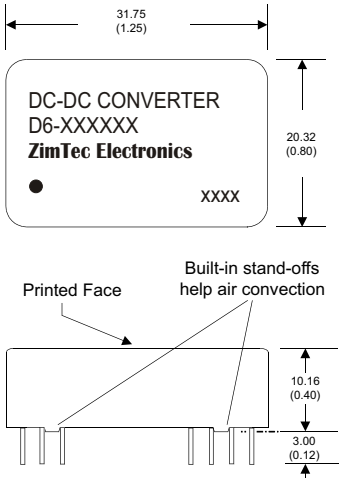
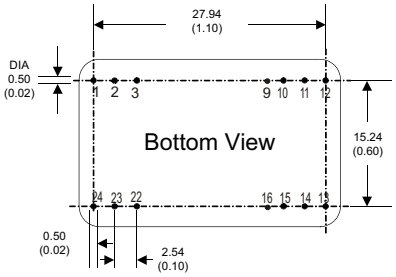


48 Models

MECHANICAL SPECIFICATIONS





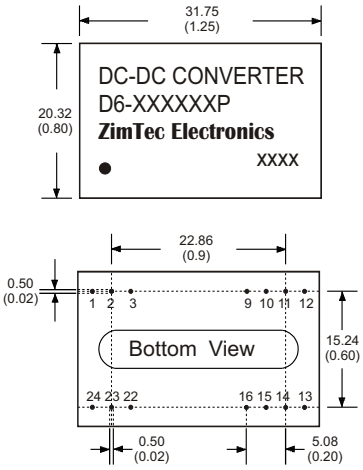
24 Pin DIL Package
Nickel-Coated Copper

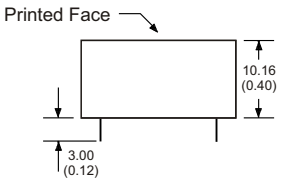
Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)

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





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 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.)

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