

D7W - 10W Series

10W 4:1 Regulated Single & Dual output

Features

- Wide 4:1 Input Range
- Full SMD Technology
- 1500VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 85%
- -40 ~ 85°C Operation Temperature Range
- Remote on/off Control (Optional)
- EMI Complies With En55022 Class A



The D7W series is a family of cost effective 10W single & dual output DC-DC converters. These converters are made with nickel-coated brass case in a 2"x1" with high performance features such as 1500 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated by using flame retardant resin. Input voltages of 24 and 48 with output voltage of 3.3, 5, 7.2, 9, 12, 15, ± 5 , ± 7.2 , ± 9 , ± 12 , ± 15 Vdc. High performance features include high efficiency operation up to 85% 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	
Voltage accuracy	$\pm 1\%$
Line regulation	$\pm 0.5\%$
Load regulation	$\pm 0.5\%$ (10% to 100% Loading) $\pm 1\%$ (below 10% load)
Cross Regulation (Dual Output) (1)	$\pm 5\%$
Ripple & noise (20 MHz bandwidth) (2)	75mV pk-pk
Over-current protection	140% of max. I _{out}
Short circuit protection	Indefinite (Automatic Recovery)
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Capacitor load (3)	See table

INPUT SPECIFICATIONS	
Input Voltage Range	See table
Under Voltage Lockout	
24V Models	Module ON / OFF
48V Models	Module ON / OFF
Start up Time	20mS, typ.
(Nominal Vin and constant resistive load)	
Input Filter	Pi Type
Input Current (No-Load)	See table, typ.
Input Current (Full-Load)	See table, max.
Input Reflected Ripple Current (4)	35mA _{p-p} , typ.
CTRL (5) Module ON	2.5 to 5.5 Vdc or Open
Module OFF	-0.7 to 0.8Vdc or Short circuit pin 2 and pin 6
CTRL OFF Input Current	2.5mA, typ.

GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage (3 sec)	
Input/Output	1500Vdc
Case/Input & Output	1000Vdc
Isolation Resistance	1000 M Ω , min.
Isolation Capacitance	1200 pF, typ.
Switching frequency	300kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard (designed to meet)	IEC/EN 60950-1

EMC SPECIFICATIONS		
Radiated Emissions	EN55022	CLASS A
Conducted Emissions (6)	EN55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria B
RS	IEC 61000-4-3	Perf. Criteria A
EFT	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

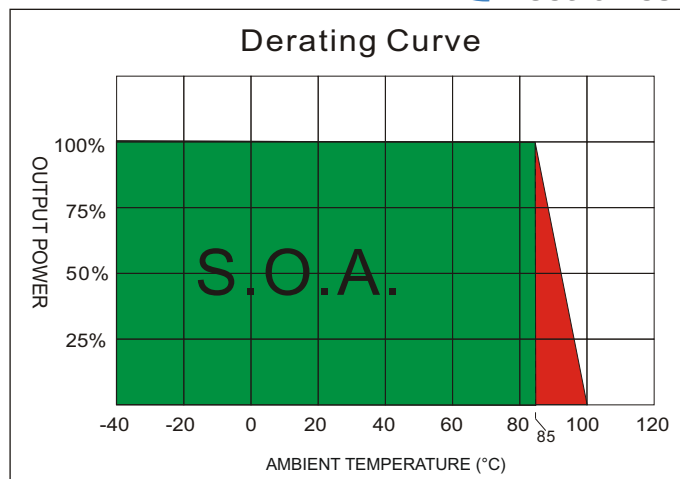
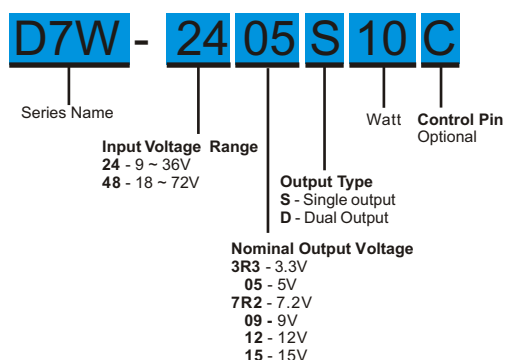
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Brass
Pin Material	1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	30.0g
Dimensions	2.00"x1.00"x0.40"

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 (8)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage (100mS)	
24 Models	50 Vdc max.
48 Models	100 Vdc max.
Lead Soldering Temperature	260 °C
(1.5mm from case 10 sec. max.)	

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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)		
D7W-243R3S10	9-36	25	348	3.3	0	2000	80	3300
D7W-2405S10	9-36	25	508	5	0	2000	82	3300
D7W-247R2S10	9-36	25	502	7.2	0	1388	83	1000
D7W-2409S10	9-36	25	502	9	0	1111	83	680
D7W-2412S10	9-36	25	490	12	0	833	85	680
D7W-2415S10	9-36	25	490	15	0	666	85	470
D7W-2405D10	9-36	25	508	±5	0	±1000	82	±2200
D7W-247R2D10	9-36	25	502	±7.2	0	±694	83	±470
D7W-2409D10	9-36	25	502	±9	0	±555	83	±470
D7W-2412D10	9-36	25	490	±12	0	±416	85	±470
D7W-2415D10	9-36	25	490	±15	0	±333	85	±330
D7W-483R3S10	18-72	20	174	3.3	0	2000	79	3300
D7W-4805S10	18-72	20	254	5	0	2000	82	3300
D7W-487R2S10	18-72	20	251	7.2	0	1388	83	1000
D7W-4809S10	18-72	20	251	9	0	1111	83	680
D7W-4812S10	18-72	20	245	12	0	833	85	680
D7W-4815S10	18-72	20	245	15	0	666	85	470
D7W-4805D10	18-72	20	254	±5	0	±1000	82	±2200
D7W-487R2D10	18-72	20	251	±7.2	0	±694	83	±470
D7W-4809D10	18-72	20	251	±9	0	±555	83	±470
D7W-4812D10	18-72	20	245	±12	0	±416	85	±470
D7W-4815D10	18-72	20	245	±15	0	±333	85	±330

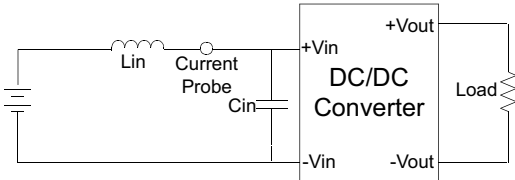
NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
- Tested by minimal Vin and constant resistive load.
- Measured Input reflected ripple current with a simulated source inductance of 12uH.
- To order the converter with CTRL function, please add suffix C (e.g. V7W-4812S10C).
- Input filter components (C1, L, C2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
- An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
The filter capacitor ZimTec Electronics suggest: Nippon chemi-con KY series, 220uF/100V.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

TEST CONFIGURATIONS

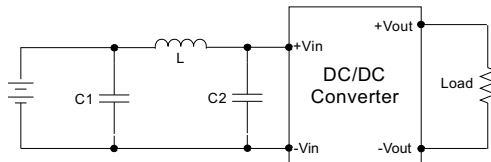
Input Reflected Ripple Current Test Step

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



EMI Filter

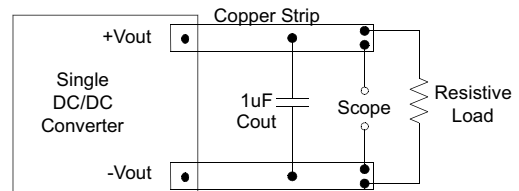
Input filter components (C_1 , L , C_2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



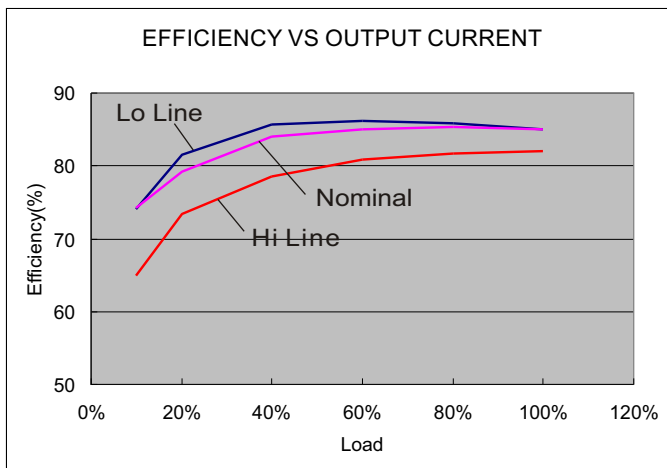
	C1	L	C2
D7W-24XXXXX	330 μ F/100V	12 μ H	100 μ F/100V
D7W-48XXXXX	330 μ F/100V	12 μ H	100 μ F/100V

Output Ripple & Noise Measurement Test

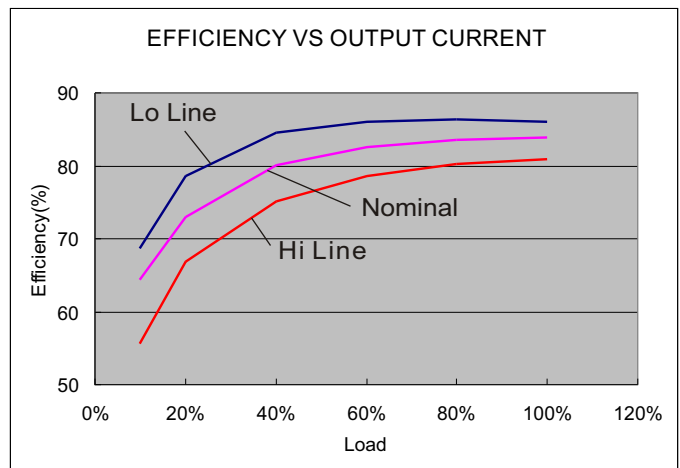
Use a capacitor C_{out} (1.0 μ F) measurement. The Scope measurement bandwidth is 0-20MHz.



ELECTRICAL CHARACTERISTIC CURVES

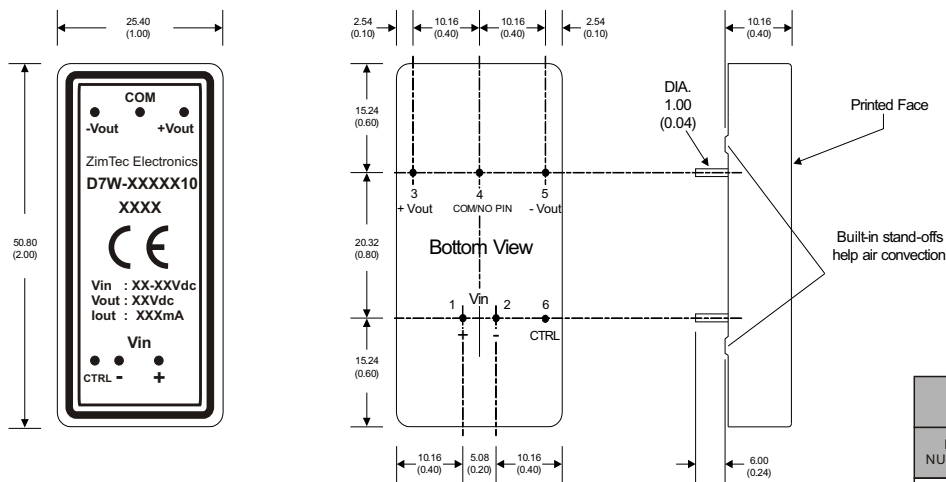


24 Models



48 Models

MECHANICAL SPECIFICATIONS



All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS

PIN NUMBER	Standard		Remote Control(Optional)	
	SINGLE	DUAL	SINGLE	DUAL
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
3	+V Output	+V Output	+V Output	+V Output
4	N.P.	Common	N.P.	Common
5	-V Output	-V Output	-V Output	-V Output
6	N.P.	N.P.	CTRL	CTRL