



Size: 0.94in x 0.54in x 0.4in
(23.8mm x 13.7mm x 10.2mm)

FEATURES

- Wide 2:1 Input Voltage Range
- Industry Standard DIP-16 Package
- Fully Regulated Output Voltage
- I/O Isolation 1500VDC
- No Min. Load Requirement
- RoHS Compliant
- Optional Heatsink
- Low No Load Power Consumption
- Shielded Metal Case with Insulated Baseplate
- Under Voltage Protection
- Over Load and Short Circuit Protection
- Conducted EMI EN 55032 Class A Approved
- UL/cUL/IEC/EN 62368-1 Safety Approval & CE Marking

DESCRIPTION

The DCDT15 series of DC/DC converters offers up to 15 watts of output power in a compact 0.94" x 0.54" x 0.4" DIP-16 package. This series consists of both single and dual output models with a wide 2:1 input voltage range. Each model in this series has full regulated output voltage, no minimum load requirement, as well as a shielded metal case with insulated baseplate. This series is RoHS compliant, has under voltage, over load and short circuit protection, and UL/cUL/IEC/E N 62368-1 safety approvals.

MODEL SELECTION TABLE

Single Output Models

| Model Number | Input Voltage Range | Output Voltage | Max. Output Current | Input Current | | Maximum Capacitive Load | Efficiency | Output Power |
|--------------|---------------------|----------------|---------------------|---------------|----------|-------------------------|------------|--------------|
| | | | | No Load | Max Load | | | |
| DCDT15-12S51 | 12VDC (9~18VDC) | 5.1VDC | 2940mA | 20mA | 1453mA | 1800µF | 86% | 15W |
| DCDT15-12S12 | | 12VDC | 1250mA | | 1437mA | 820µF | 87% | |
| DCDT15-12S15 | | 15VDC | 1000mA | | 1437mA | 820µF | 87% | |
| DCDT15-12S24 | | 24VDC | 625mA | | 1437mA | 270µF | 87% | |
| DCDT15-24S51 | 24VDC (18~36VDC) | 5.1VDC | 2940mA | 10mA | 726mA | 1800µF | 86% | 15W |
| DCDT15-24S12 | | 12VDC | 1250mA | | 718mA | 820µF | 87% | |
| DCDT15-24S15 | | 15VDC | 1000mA | | 718mA | 820µF | 87% | |
| DCDT15-24S24 | | 24VDC | 625mA | | 718mA | 270µF | 87% | |
| DCDT15-48S51 | 48VDC (36~75VDC) | 5.1VDC | 2940mA | 7mA | 363mA | 1800µF | 86% | 15W |
| DCDT15-48S12 | | 12VDC | 1250mA | | 359mA | 820µF | 87% | |
| DCDT15-48S15 | | 15VDC | 1000mA | | 359mA | 820µF | 87% | |
| DCDT15-48S24 | | 24VDC | 625mA | | 359mA | 270µF | 87% | |

MODEL SELECTION TABLE

Dual Output Models

| Model Number | Input Voltage Range | Output Voltage | Output Current | Input Current | | Maximum Capacitive Load | Efficiency | Output Power |
|--------------|---------------------|----------------|----------------|---------------|----------|-------------------------|------------|--------------|
| | | | | No Load | Max Load | | | |
| DCDT15-12D12 | 12VDC (9~18VDC) | ±12VDC | ±625mA | 20mA | 1437mA | #560µF | 87% | 15W |
| DCDT15-12D15 | | ±15VDC | ±500mA | | 1437mA | #270µF | 87% | |
| DCDT15-24D12 | 24VDC (18~36VDC) | ±12VDC | ±625mA | 10mA | 718mA | #560µF | 87% | 15W |
| DCDT15-24D15 | | ±15VDC | ±500mA | | 718mA | #270µF | 87% | |
| DCDT15-48D12 | 48VDC (36~75VDC) | ±12VDC | ±625mA | 7mA | 359mA | #560µF | 87% | 15W |
| DCDT15-48D15 | | ±15VDC | ±500mA | | 359mA | #270µF | 87% | |

SPECIFICATIONS

All specifications are based on 25°C, Resistive Load, Nominal Input Voltage, and Rated Output Current unless otherwise noted.
 We reserve the right to change specifications based on technological advances.

| SPECIFICATION | TEST CONDITIONS | | | Min | Typ | Max | Unit |
|-------------------------------------|---|-----------------------------|------------------|---|-------|-------|-------|
| INPUT SPECIFICATIONS | | | | | | | |
| Input Voltage Range | 12V Input Models | | | 9 | | 18 | VDC |
| | 24V Input Models | | | 18 | | 36 | |
| | 48V Input Models | | | 36 | | 75 | |
| Input Surge Voltage (1 sec. max) | 12V Input Models | | | -0.7 | | 25 | VDC |
| | 24V Input Models | | | -0.7 | | 50 | |
| | 48V Input Models | | | -0.7 | | 100 | |
| Start-Up Threshold | 12V Input Models | | | | | 9 | VDC |
| | 24V Input Models | | | | | 18 | |
| | 48V Input Models | | | | | 36 | |
| Under Voltage Shutdown | 12V Input Models | | | | 8 | | VDC |
| | 24V Input Models | | | | 16 | | |
| | 48V Input Models | | | | 34 | | |
| Input Filter | All Models | | | Internal Pi Type | | | |
| OUTPUT SPECIFICATIONS | | | | | | | |
| Output Voltage | | | | See Table | | | |
| Voltage Accuracy | | | | | | ±1.0 | %Vom |
| Output Voltage Balance | Dual Output, Balanced Loads | | | | ±1.0 | ±2.0 | % |
| Line Regulation | Vin=Min. to Max. @Full Load | | | | ±0.2 | ±0.8 | % |
| Load Regulation | Io=0% to 100% | | | | | ±1.0 | % |
| Load Cross Regulation | Dual Output Models, Asymmetrical Load 25/100% Full Load | | | | | ±5.0 | % |
| Output Power | | | | See Table | | | |
| Output Current | | | | See Table | | | |
| Minimum Load | | | | No Minimum Load Required | | | |
| Maximum Capacitive Load | | | | See Table | | | |
| Ripple & Noise | 0-20MHz Bandwidth, measured with a 2.2µF/50V MLCC | | | | 70 | | mVp-p |
| Start Up Time (Power On) | Nominal Vin and Constant Resistive Load | | | | 30 | | mS |
| Transient Recovery Time | 25% Load Step Change | | | | | 500 | µSec |
| Transient Response Deviation | 25% Load Step Change | | | | ±3 | ±5 | % |
| Temperature Coefficient | | | | | ±0.01 | ±0.02 | %/°C |
| PROTECTION | | | | | | | |
| Short Circuit Protection | Continuous, Automatic Recovery | | | Hiccup Mode 0.3Hz typ. | | | |
| Over Load Protection | Hiccup | | | 110 | 160 | | % |
| ENVIRONMENTAL SPECIFICATIONS | | | | | | | |
| Operating Ambient Temperature | Nominal Vin, Load 100% Inom. For power derating, see derating curves | 5.1VDC Single Output Models | Without Heatsink | -40 | | +50 | °C |
| | | | With Heatsink | -40 | | +65 | |
| | | Other Models | Without Heatsink | -40 | | +55 | |
| | | | With Heatsink | -40 | | +70 | |
| Storage Temperature | | | | -50 | | +125 | °C |
| Case Temperature | | | | | | +110 | °C |
| Humidity | Non-Condensing | | | | | 95 | %RH |
| Cooling | | | | Natural Convection | | | |
| Lead Temperature | 1.5mm from case for 10sec. | | | | 260 | | °C |
| MTBF (Calculated) | @25°C, Ground Benign | | | 2,157,075 | | | Hours |
| GENERAL SPECIFICATIONS | | | | | | | |
| Efficiency | | | | See Table | | | |
| Switching Frequency | | | | | 480 | | kHz |
| Isolation Voltage | 60 Seconds | | | 1500 | | | VDC |
| | 1 Second | | | 1800 | | | |
| Isolation Voltage | Input/Output to Case | | | 1000 | | | VDC |
| Isolation Resistance | 500VDC | | | 1000 | | | MΩ |
| Isolation Capacitance | 100KHz, 1V | | | | | 2200 | pF |
| PHYSICAL SPECIFICATIONS | | | | | | | |
| Weight | | | | 0.31oz (8.77g) | | | |
| Dimensions (L x W x H) | | | | 0.94in x 0.54in x 0.4in (23.8mm x 13.7mm x 10.2mm) | | | |
| Case Material | | | | Metal with Non-Conductive Baseplate | | | |
| Pin Material | | | | Copper Alloy | | | |

SPECIFICATIONS

All specifications are based on 25°C, Resistive Load, Nominal Input Voltage, and Rated Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

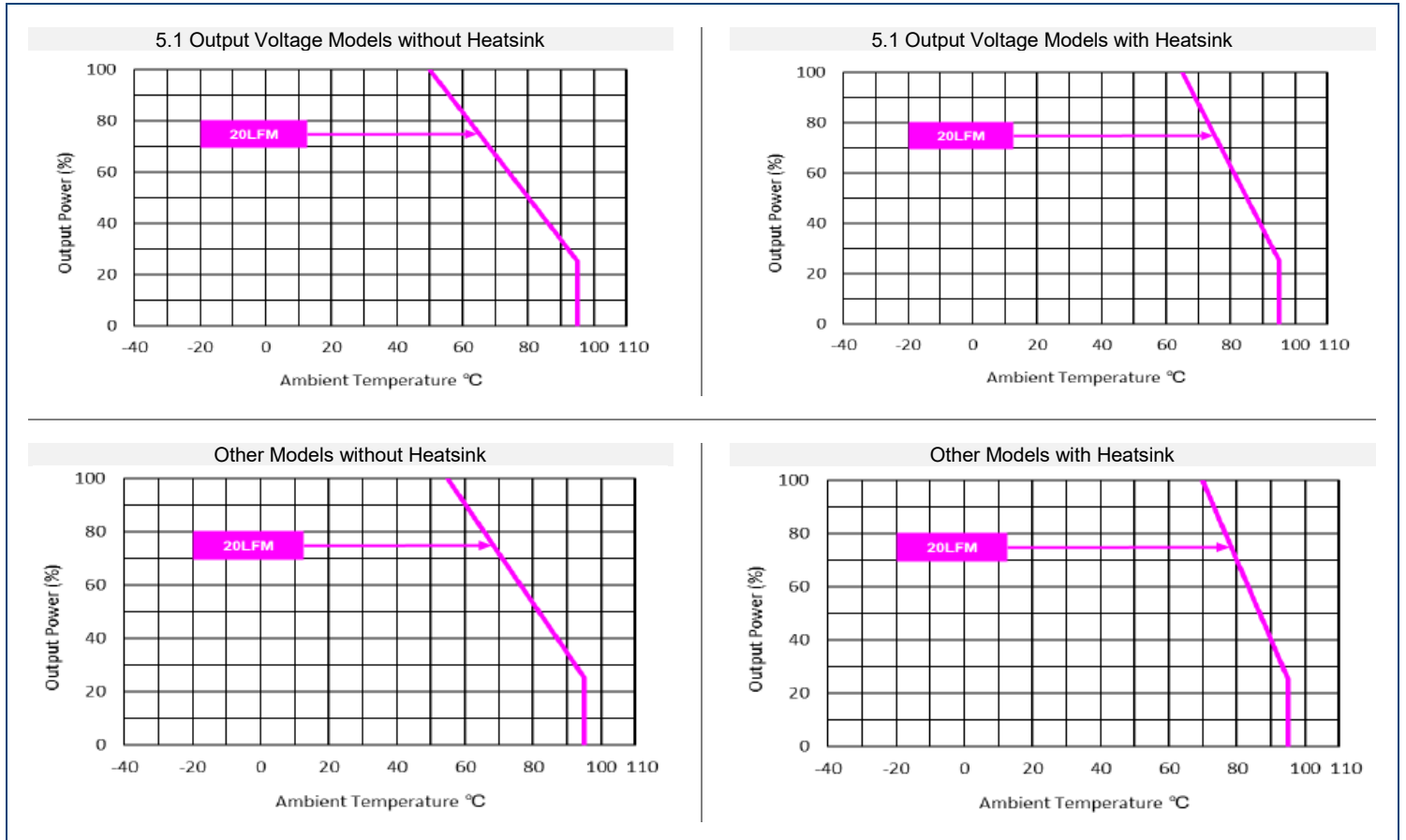
| SPECIFICATION | TEST CONDITIONS | | | Min | Typ | Max | Unit |
|---------------------------------|--------------------|--|-----------------------------|---|-----|-----|------|
| SAFETY CHARACTERISTICS | | | | | | | |
| Safety Approvals ⁽⁵⁾ | | | | UL/cUL 62368-1 Recognition (UL Certificate) IEC/EN 62368-1 (CB Report) | | | |
| EMI ⁽⁶⁾ | Conduction | EN 55032 | Without External Components | Class A | | | |
| | Radiation | EN 55032 | With External Components | Class A | | | |
| EMS ⁽⁶⁾ | | | EN 55024, EN55035 | | | | |
| | ESD | Direct Discharge | | Indirect Discharge HCP & VCP | | | |
| | | EN61000-4-2, Air ±8kV, Contact ±6kV | | Contact ±6kV | | A | |
| | Radiated Immunity | EN61000-4-3 | | 20V/m | | | |
| | Fast Transient | EN61000-4-4 | | ±2kV | | | |
| | Surge | EN61000-4-5 | | ±2kV | | | |
| | Conducted Immunity | EN61000-4-6 | | 10Vrms | | | |
| PFMF | EN61000-4-8 | | 30A/m | | | | |

NOTES

- # for each output
- Transient Recovery time is measured to within 1% error band for a step change in output load of 75% to 100%
- It is recommend to protect the converter by a slow blow fuse in the input supply line.
- Other inputs and outputs may be available, please contact factory.
- This product is Listed to applicable standards and requirements by UL.
- The external components might be required to meet EMI/EMS standard for some test items. Contact factory for more information.
- Heatsink is available for this series. To indicate product with heatsink, add "H" suffix.

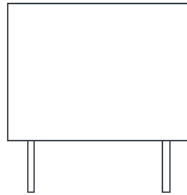
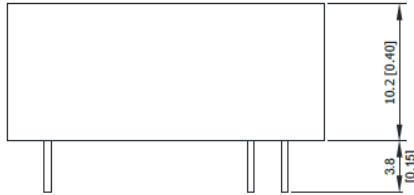
*Due to advances in technology, specifications subject to change without notice.

DERATING CURVES



MECHANICAL DRAWINGS

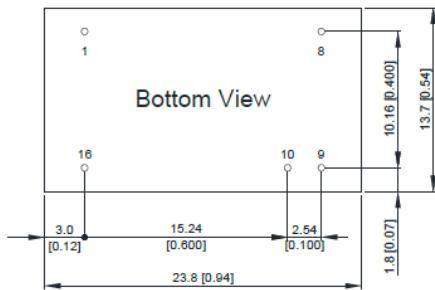
Standard Model



PIN CONNECTIONS

| Pin | Single Output | Dual Output | Diameter mm (inches) |
|-----|---------------|-------------|----------------------|
| 1 | -Vin | -Vin | Ø0.5 [0.02] |
| 8 | NC | Common | Ø0.5 [0.02] |
| 9 | +Vout | +Vout | Ø0.5 [0.02] |
| 10 | -Vout | -Vout | Ø0.5 [0.02] |
| 16 | +Vin | +Vin | Ø0.5 [0.02] |

NC= No Connection



Notes:

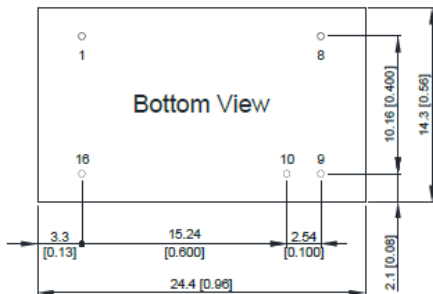
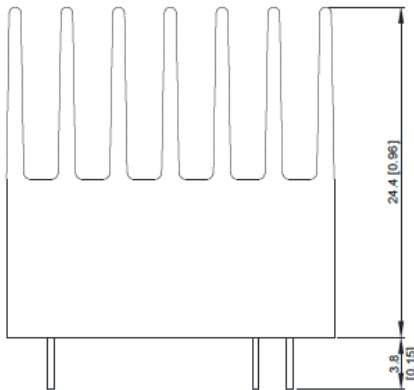
All dimensions in mm (inches)

Tolerance: X.X±0.5 (X.XX ±0.02)

X.XX±0.25 (X.XXX±0.01)

Pin Diameter Tolerance: X.X±0.05 (X.XX±0.002)

Standard Model with Heatsink ("H" Suffix)



Notes:

Heatsink Material: Aluminum

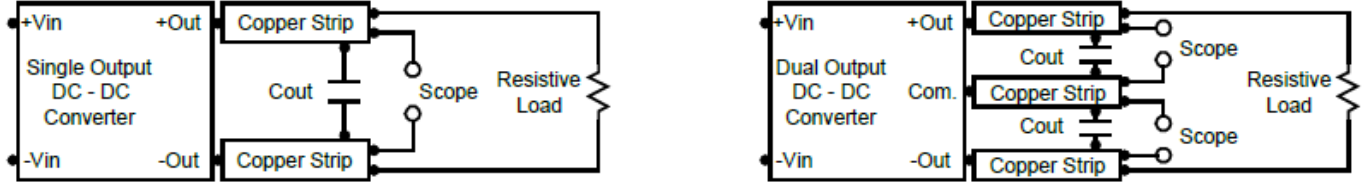
Finish: Black Anodized Coating

Weight: 14.2g

TEST SETUP

Peak to Peak Output Noise Measurement Test

Refer to the output specifications or add 2.2µF capacitor if the output specifications undefine Cout. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20 MHz. Position the load between 50 mm and 75 mm from the DC-DC Converter.



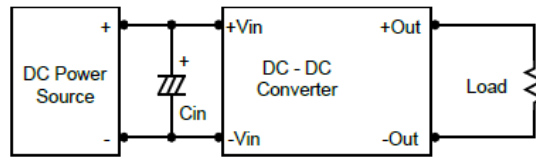
TECHNICAL NOTES

Overload Protection

To provide hiccup mode protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure overload for an unlimited duration.

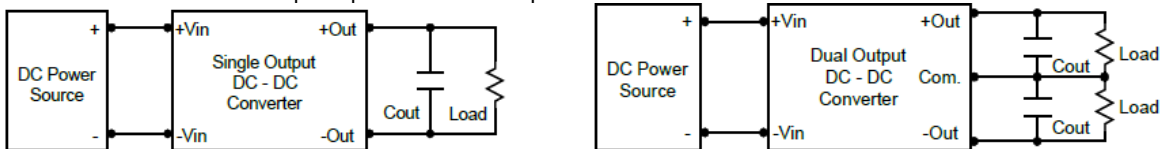
Input Source Impedance

The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor on the input to insure startup. By using a good quality low Equivalent Series Resistance (ESR < 1.0Ω at 100 kHz) capacitor of a 2.2µF for the 12V, 24V and a 27µF/200V/KXJ for the 48V input devices, capacitor mounted close to the power module helps ensure stability of the unit.



Output Ripple Reduction

A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 2.2µF capacitors at the output.

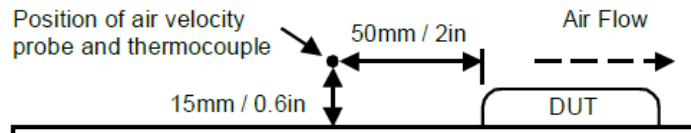


Maximum Capacitive Load

The DCDT15 series has limitation of maximum connected capacitance on the output. The power module may operate in current limiting mode during start-up, affecting the ramp-up and the startup time. Connect capacitors at the point of load for best performance. The maximum capacitance can be found in the data sheet.

Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 110°C. The derating curves are determined from measurements obtained in a test setup.



COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

Phone: ☎ (603)778-2300
Toll Free: ☎ (888)597-9255
Fax: ☎ (603)778-9797
E-mail: sales@wallindustries.com
Web: www.wallindustries.com
Address: 37 Industrial Drive
Exeter, NH 03833

©2023 Wall Industries, Inc. Specifications subject to change without notice. Wall Industries is not responsible for typographical errors. The information contained herein is for informational purposes only. This information is provided by Wall Industries and we make no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information contained in this document for any purpose. All product and manufacturer names are trademarks or registered trademarks of their respective companies.