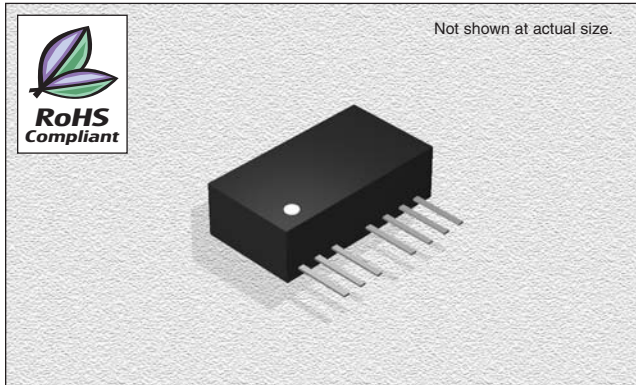


## CTDD2210SF-S1.5K-1 Series

Wide Input Isolated & Regulated  
1W Output, Single Output



### FEATURES

- Efficiency:** To 83%
- Temperature Range:** -40°C to +85°C
- Package:** UL94-V0
- Isolation:** 1.5KVDC
- Miscellaneous:** Wide (2:1) Input Range. No heat sink required. Industry standard pinout. Single Output. Remote ON/OFF.
- Samples available.**

### CHARACTERISTICS

- Output Short Circuit Protection:** Continuous
- Temperature Rise at Full Load:** 30°C (Typ.)
- Cooling:** Free air convection
- No Load, Power Consumption:** 150mW (typical)
- Operating Temperature Range:** -40°C to +85°C
- Storage Temperature Range:** -55°C to +125°C
- Lead Temperature:** 300°C (1.5mm from case for 10 seconds)
- Storage Humidity Range:** ≤ 95%
- Case Material:** Plastic (UL94-V0)
- MTBF:** >1,000,000 hours
- Miscellaneous:** RoHS Compliant.

### SPECIFICATIONS

| Part Number             | Vin Nom. (VDC) | Input Range (VDC) | Vin Max.* (VDC) | Vout (VDC) | Iout Max. (mA) | Iout Min. (mA) | Effi. Typ. (%) |
|-------------------------|----------------|-------------------|-----------------|------------|----------------|----------------|----------------|
| CTDD2210SF-0505-S1.5K-1 | 5              | 4.5-9             | 11              | 5          | 200            | 20             | 71             |
| CTDD2210SF-0509-S1.5K-1 | 5              | 4.5-9             | 11              | 9          | 110            | 11             | 73             |
| CTDD2210SF-0512-S1.5K-1 | 5              | 4.5-9             | 11              | 12         | 84             | 8              | 77             |
| CTDD2210SF-0515-S1.5K-1 | 5              | 4.5-9             | 11              | 15         | 66             | 6              | 78             |
| CTDD2210SF-1205-S1.5K-1 | 12             | 9-18              | 22              | 5          | 200            | 20             | 75             |
| CTDD2210SF-1209-S1.5K-1 | 12             | 9-18              | 22              | 9          | 110            | 11             | 78             |
| CTDD2210SF-1212-S1.5K-1 | 12             | 9-18              | 22              | 12         | 84             | 8              | 77             |
| CTDD2210SF-1215-S1.5K-1 | 12             | 9-18              | 22              | 15         | 66             | 6              | 80             |
| CTDD2210SF-1505-S1.5K-1 | 15             | 12-24             | 30              | 5          | 200            | 20             | 75             |
| CTDD2210SF-1509-S1.5K-1 | 15             | 12-24             | 30              | 9          | 110            | 11             | 79             |
| CTDD2210SF-1512-S1.5K-1 | 15             | 12-24             | 30              | 12         | 84             | 8              | 80             |
| CTDD2210SF-1515-S1.5K-1 | 15             | 12-24             | 30              | 15         | 66             | 6              | 81             |
| CTDD2210SF-2405-S1.5K-1 | 24             | 18-36             | 40              | 5          | 200            | 20             | 75             |
| CTDD2210SF-2409-S1.5K-1 | 24             | 18-36             | 40              | 9          | 110            | 11             | 80             |
| CTDD2210SF-2412-S1.5K-1 | 24             | 18-36             | 40              | 12         | 84             | 8              | 81             |
| CTDD2210SF-2415-S1.5K-1 | 24             | 18-36             | 40              | 15         | 66             | 6              | 81             |
| CTDD2210SF-4805-S1.5K-1 | 48             | 36-72             | 80              | 5          | 200            | 20             | 76             |
| CTDD2210SF-4809-S1.5K-1 | 48             | 36-72             | 80              | 9          | 110            | 11             | 81             |
| CTDD2210SF-4812-S1.5K-1 | 48             | 36-72             | 80              | 12         | 84             | 8              | 82             |
| CTDD2210SF-4815-S1.5K-1 | 48             | 36-72             | 80              | 15         | 66             | 6              | 83             |

\*If Input voltage above specified may cause permanent damage to the device.

### ISOLATION SPECIFICATIONS

| Item                 | Test Condition      | MIN  | TYP | MAX | Units |
|----------------------|---------------------|------|-----|-----|-------|
| Isolation Voltage    | Tested for 1 minute | 1500 |     |     | VDC   |
| Isolation Resistance | Test at 500VDC      | 1000 |     |     | MΩ    |

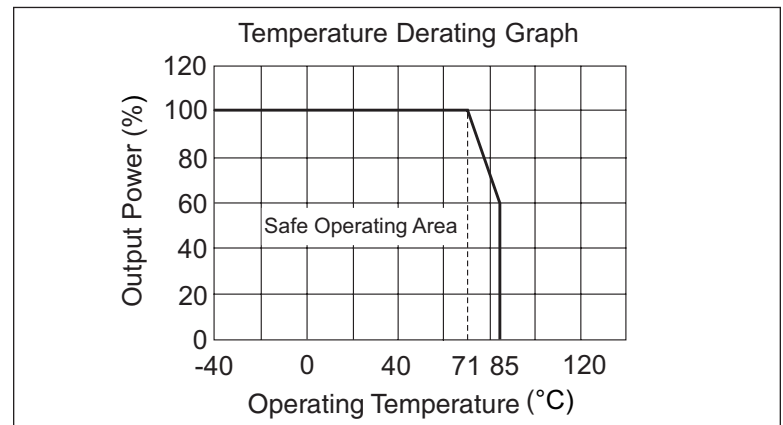
### OUTPUT SPECIFICATIONS

| Item                     | Test Condition                   | MIN | TYP  | MAX   | Units |
|--------------------------|----------------------------------|-----|------|-------|-------|
| 1W Output Power          |                                  | 0.1 |      | 1     | W     |
| Output voltage accuracy  | Refer to Recommended Circuit     |     | ±1   | ±3    | %     |
| Load regulation          | From 10% to 100% load            |     | ±0.5 | ±0.75 | %     |
| Line regulation          | Input Voltage from low to high   |     | ±0.2 | ±0.5  | %     |
| Temperature drift (Vout) | See tolerance envelope graph     |     |      | 0.03  | %/°C  |
| Ripple                   | 20Hz to 300kHz Bandwidth         |     | 40   | 60    | mVp-p |
| Noise                    | DC-20MHz Bandwidth               |     | 80   | 150   | mVp-p |
| Switching frequency      | 100% load, nominal input voltage | 200 |      | 400   | KHz   |
| Switching frequency      | 10% load, nominal input voltage  | 700 |      | 1000  | KHz   |

Note:

1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output unless otherwise specified.

### TYPICAL CHARACTERISTICS



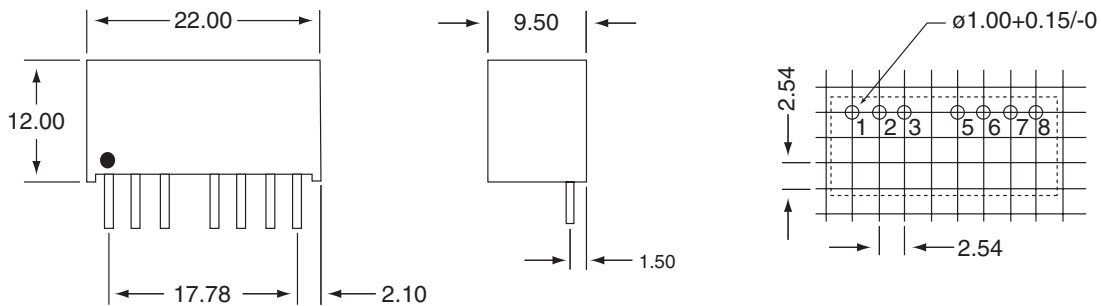
01.05.07

## CTDD2210SF-S1.5K-1 Series

Wide Input Isolated & Regulated  
1W Output, Single Output

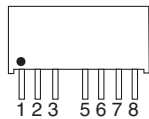
### OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

#### CTDD2210SF-S1.5K-1 Package



Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.50mm (Tolerance:  $\pm 0.10$ ); all dimensions in mm..

### PIN CONNECTIONS



| Pin | Function |
|-----|----------|
| 1   | GND      |
| 2   | Vin      |
| 3   | CTRL     |
| 5   | NC       |
| 6   | +Vo      |
| 7   | OV       |
| 8   | CS       |

#### CS Pin

By connecting a low ESR capacitor between this terminal and the pin-7 (connection to the anode of the capacitor), the output ripple and noise may be further improved. Generally, the capacitance is no greater than 100 $\mu$ F.

#### CTRL

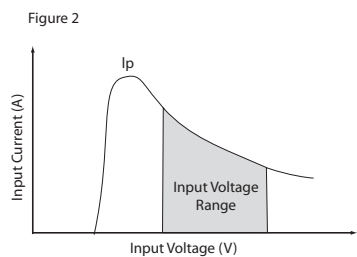
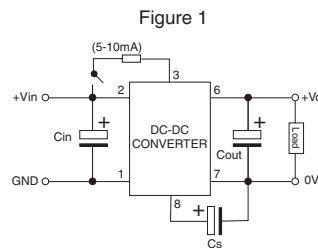
When open or high impedance, converter work well. When control pin positive referenced to the negative input (equal to import to earth), converter shutdown. Please note that the input current should be between 5-10mA, exceeding the maximum 20mA will cause permanent damage to converter.

### RECOMMENDED CIRCUIT

All the CTDD2210SF-S1.5K-1 Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (See figure 1). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high (See table 1). If you want to use the products in high EMI, please choose our metal packaged products.

External Capacitor Table (table 1)

| Vin       | C <sub>in</sub> | C <sub>out</sub> (0+70°C)            | C <sub>out</sub> (-40+85°C)     |
|-----------|-----------------|--------------------------------------|---------------------------------|
| 5V & 12V  | 100 $\mu$ F     | 100 $\mu$ F (electrolytic capacitor) | 47 $\mu$ F (tantalum capacitor) |
| 24V & 48V | 10 $\mu$ F      |                                      |                                 |



01.05.07