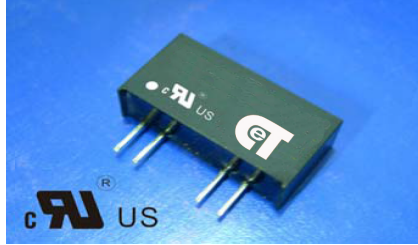


## CT-10D-1W SERIES

### 1000Vdc Isolation Single Output 1 Watt Dc-Dc Converter



#### FEATURES:

- 7PIN SIP Package
- High Efficiency up to 85%
- Unregulated Output Types
- Recognized By UL 60950-1
- Internal SMD Construction
- No External Component Required
- Operating Temperature: -40°C TO +85°C
- Industry Standard Pinout



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number  | Output Voltage | Output Current | Efficiency | Package Style |
|--------------|----------------|----------------|------------|---------------|
|              | Vdc            | mA             | %TYP       |               |
| CT-XXS03NNL  | 3.3            | 303            | 70         | 1             |
| CT-XXS05NNL  | 5              | 200            | 70         | 1             |
| CT-XXS09NNL  | 9              | 112            | 75         | 1             |
| CT-XXS12NNL  | 12             | 84             | 78         | 1             |
| CT-XXS15NNL  | 15             | 67             | 80         | 1             |
| CT-XXS24NNL  | 24             | 42             | 82         | 1             |
| CT-XXS05N2NL | 5              | 200            | 70         | 2             |
| CT-XXS09N2NL | 9              | 112            | 75         | 2             |
| CT-XXS12N2NL | 12             | 84             | 78         | 2             |
| CT-XXS15N2NL | 15             | 67             | 80         | 2             |
| CT-XXS24N2NL | 24             | 42             | 82         | 2             |

Note: 1."XX" Is Input Voltage:03=3.3Vdc,05=5Vdc,09=9Vdc,12=12Vdc,15=15Vdc,24=24Vdc,48=48Vdc. 2. Over 48Vdc input voltage, using the 2nd package  
3. The input voltage increases, there will be an increase in efficiency.

#### Input Specifications

| Parameters        | Conditions | Min | Typ | Max | Units |
|-------------------|------------|-----|-----|-----|-------|
| Voltage Tolerance | Vo,Io Nom  |     |     | ±10 | %     |
| Filter            | Capacitor  |     |     |     |       |

#### Output Specifications

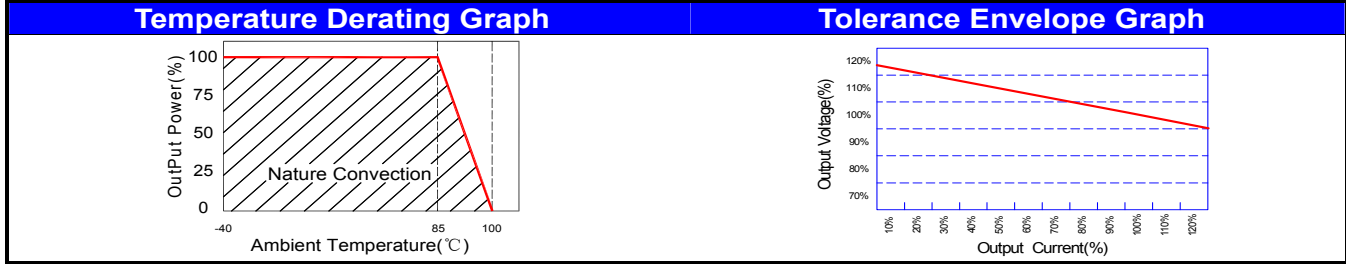
| Parameters                      | Conditions                      | Min | Typ | Max   | Units |
|---------------------------------|---------------------------------|-----|-----|-------|-------|
| Voltage Tolerance               | 100% full load                  |     |     | ±5    | %     |
| Short Circuit Protection        | Short Term                      |     |     | 1 Sec |       |
| Line Regulation                 | For 1.0% OF Vin                 |     | 1.2 |       | %     |
| Load Regulation                 | 3.3V,5V (10% To 100% F.L)       |     |     | 15    | %     |
| Load Regulation                 | 9V,12V,15V,24V(10% To 100% F.L) |     |     | 10    | %     |
| Ripple & Noise                  | BW=DC To 20MHz                  |     |     | 100   | mVp-p |
| Transient response setting time | 50% load step change            |     | 350 |       | us    |

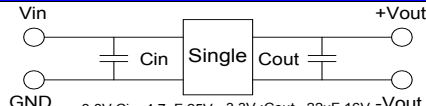
#### General Specifications

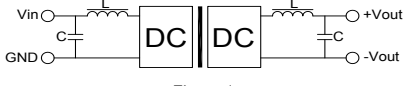
| Parameters            | Conditions              | Min     | Typ           | Max | Units |
|-----------------------|-------------------------|---------|---------------|-----|-------|
| Isolation Resistance  | 500Vdc                  | 1000    |               |     | MΩ    |
| Switching Frequency   | Full load,nominal input |         | 100           |     | KHz   |
| Operating Temperature |                         | -40     |               | +85 | °C    |
| Humidity              | Non Condensing          |         |               | 95  | %     |
| Cooling               | Free air Convection     |         |               |     |       |
| Case material         | DAP                     |         |               |     |       |
| MTBF                  | MIL-HDBK-217F@25°C      | 3500000 |               |     | Hours |
| Weight                | Package1 or Package2    |         | 2.1 or 2.7    |     | g     |
| Dimensions            | Package 1               |         | 19.5x6.0x10.0 |     | mm    |
| Dimensions            | Package 2               |         | 19.5x7.1x10.0 |     | mm    |

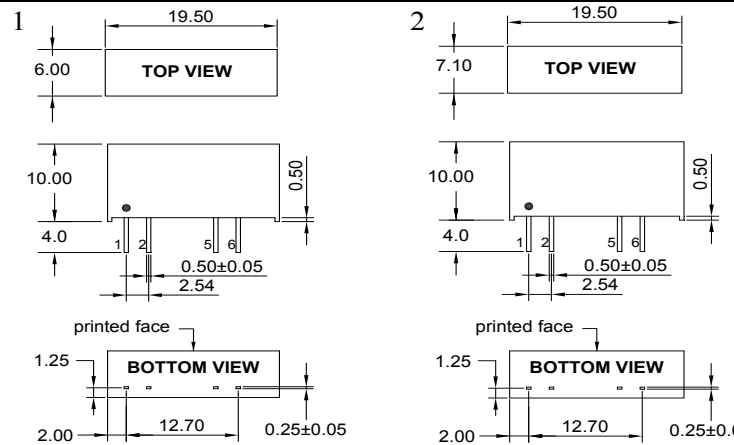
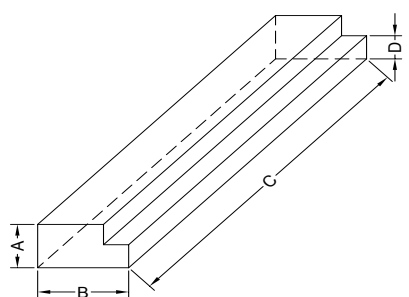
## CT-10D-1W SERIES

### 1000Vdc Isolation Single Output 1 Watt Dc-Dc Converter



| Recommended Test Circuit  | Part Number   |
|---|---|
|  <p>           3.3V:Cin 4.7uF,25V 3.3V:Cout 22uF,16V<br/>           5V :Cin 4.7uF,25V 5V :Cout 10uF,25V<br/>           9V :Cin 4.7uF,25V 9V :Cout 4.7uF,25V<br/>           12V:Cin 2.2uF,25V 12V:Cout 2.2uF,25V<br/>           15V:Cin 1uF,50V 15V:Cout 1uF,50V<br/>           24V:Cin 1uF,50V 24V:Cout 1uF,50V<br/>           48V:Cin 1uF,100V         </p> | <p> <b>10D - 05 S 05 N 2 NL</b><br/> <b>A B C D E F G</b> </p> <p>           A:Series<br/>           B:Input Voltage<br/>           C:Single(S)<br/>           D:Output Voltage<br/>           E:UNRegulated(N)<br/>           F:Package<br/>           G:RoHS Version         </p> |

| Application Note  |                    |                    |                    |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
|---|--------------------|--------------------|--------------------|--------------------|--------|-----------|--------|----------|------|-----------|------|----------|------|-----------|------|-----------|-------|-----------|-------|-----------|-------|---------|-------|---------|-------|---------|-------|---------|-------|----------|----|----|
|  <p>&lt;Figure 1&gt;</p> <p>External Capacitor Table</p> <table border="1"> <thead> <tr> <th>Vin</th> <th>External Capacitor</th> <th>Vout</th> <th>External Capacitor</th> </tr> </thead> <tbody> <tr> <td>3.3VDC</td> <td>4.7uF/25V</td> <td>3.3VDC</td> <td>22uF/16V</td> </tr> <tr> <td>5VDC</td> <td>4.7uF/25V</td> <td>5VDC</td> <td>10uF/25V</td> </tr> <tr> <td>9VDC</td> <td>4.7uF/25V</td> <td>9VDC</td> <td>4.7uF/25V</td> </tr> <tr> <td>12VDC</td> <td>2.2uF/25V</td> <td>12VDC</td> <td>2.2uF/25V</td> </tr> <tr> <td>15VDC</td> <td>1uF/50V</td> <td>15VDC</td> <td>1uF/50V</td> </tr> <tr> <td>24VDC</td> <td>1uF/50V</td> <td>24VDC</td> <td>1uF/50V</td> </tr> <tr> <td>48VDC</td> <td>1uF/100V</td> <td>--</td> <td>--</td> </tr> </tbody> </table> <p><b>Filtering</b></p> <p>In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must proper. If the capacitance is too big, a startup problem might arise. For every channel of output, providing the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor refer to the external capacitor table. To get an extreme low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference (see figure 1).</p> | Vin                | External Capacitor | Vout               | External Capacitor | 3.3VDC | 4.7uF/25V | 3.3VDC | 22uF/16V | 5VDC | 4.7uF/25V | 5VDC | 10uF/25V | 9VDC | 4.7uF/25V | 9VDC | 4.7uF/25V | 12VDC | 2.2uF/25V | 12VDC | 2.2uF/25V | 15VDC | 1uF/50V | 15VDC | 1uF/50V | 24VDC | 1uF/50V | 24VDC | 1uF/50V | 48VDC | 1uF/100V | -- | -- |
| Vin   | External Capacitor | Vout               | External Capacitor |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 3.3VDC  | 4.7uF/25V          | 3.3VDC             | 22uF/16V           |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 5VDC  | 4.7uF/25V          | 5VDC               | 10uF/25V           |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 9VDC  | 4.7uF/25V          | 9VDC               | 4.7uF/25V          |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 12VDC   | 2.2uF/25V          | 12VDC              | 2.2uF/25V          |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 15VDC   | 1uF/50V            | 15VDC              | 1uF/50V            |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 24VDC   | 1uF/50V            | 24VDC              | 1uF/50V            |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |
| 48VDC   | 1uF/100V           | --                 | --                 |                    |        |           |        |          |      |           |      |          |      |           |      |           |       |           |       |           |       |         |       |         |       |         |       |         |       |          |    |    |

| Markings and dimensions  | Packaging   |          |     |  |  |   |   |   |   |     |      |     |     |
|--|---|----------|-----|--|--|---|---|---|---|-----|------|-----|-----|
|  <p>UNIT:mm Unless otherwise specified,all tolerances are ±0.25</p> |  <table border="1"> <thead> <tr> <th colspan="4">Size(mm)</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>9.5</td> <td>16.5</td> <td>522</td> <td>5.0</td> </tr> </tbody> </table> | Size(mm) |     |  |  | A | B | C | D | 9.5 | 16.5 | 522 | 5.0 |
| Size(mm)   |   |          |     |  |  |   |   |   |   |     |      |     |     |
| A  | B   | C        | D   |  |  |   |   |   |   |     |      |     |     |
| 9.5  | 16.5  | 522      | 5.0 |  |  |   |   |   |   |     |      |     |     |

| PIN Connection |      |      |       |       |
|----------------|------|------|-------|-------|
| PIN            | 1    | 2    | 5     | 6     |
| Single         | +Vin | -Vin | -Vout | +Vout |