# CD1327C

3kVDC Isolated 2W Single Output DC/DC Converter

Murata Power Solutions


## FEATURES

- RoHS compliant
- Efficiency to 75%
- Wide temperature performance at full 2 Watt load, –40°C to 85°C
- Single output
- UL 94V-0 package material
- No heatsink required
- Footprint from 1.17cm²
- Industry standard pinout
- 3kVDC isolation (1 minute)
- 5V input
- 12V output
- Internal SMD construction
- Fully encapsulated with toroidal magnetics
- No external components required
- No electrolytic or tantalum capacitors

## DESCRIPTION

CD1327C is a custom 2W DC/DC converter, offering 5V input with output of 12V at 2W.

## SELECTION GUIDE

| Order Code | Nominal Input Voltage | Output Voltage | Output Current | Load Regulation (Typ) | Load Regulation (Max) | Ripple & Noise (Typ) | Ripple & Noise (Max) | Efficiency | Package Style |
|---|---|---|---|---|---|---|---|---|---|
| | (V) | (V) | (mA) | % | | mVp-p | | % | |
| **CD1327C** | 5 | 12 | 168 | 5 | 8.0 | 120 | 150 | 75 | SIP |

When operated **with** additional external load capacitance the rise time of the input voltage will determine the maximum external capacitance value for guaranteed start up. The slower the rise time of the input voltage the greater the maximum value of the additional external capacitance for reliable start up.

## INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Voltage range | Continuous operation | 4.5 | 5 | 5.5 | V |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Short-circuit protection[1] | 1 second |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Input voltage $V_{IN}$ | 7V |

## OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Rated Power | $T_A$=-40°C to 120°C | | | 2 | W |
| Voltage Set Point Accuracy | See tolerance envelope | | | | |
| Line regulation | High $V_{IN}$ to low $V_{IN}$ | | 1.06 | 1.1 | %/% |

## ISOLATION CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Isolation test voltage | Flash tested for 1 minute | 3000 | | | VDC |
| Resistance | Viso= 1000VDC | 10 | | | GΩ |

## GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Switching frequency | | | 100 | | kHz |

## TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Specification | | -40 | | 85 | °C |
| Storage | | -50 | | 150 | |
| Cooling | Free air convection | | | | |

## RoHS COMPLIANCE INFORMATION

RoHS COMPLIANT 2002/95/EC

This product is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The pin termination finish is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate and is backward compatible with Sn/Pb soldering systems.
For further information, please visit www.murata-ps.com/rohs

1. Supply voltage must be discontinued at the end of the short circuit duration.

All specifications typical at $T_A$=25°C, nominal input voltage and rated output current unless otherwise specified.

RoHS COMPLIANT 2002/95/EC

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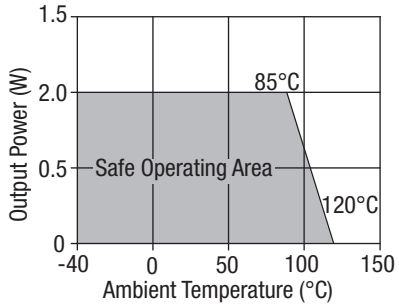
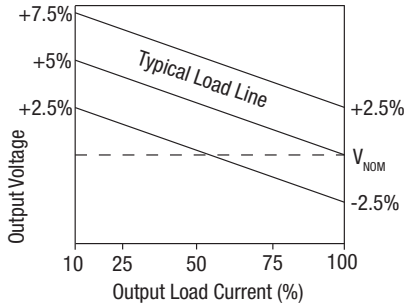
For full details go to
**www.murata-ps.com/rohs**

## TEMPERATURE DERATING GRAPH




## TOLERANCE ENVELOPE




## TECHNICAL NOTES

### ISOLATION VOLTAGE

'Hi Pot Test', 'Flash Tested', 'Withstand Voltage', 'Proof Voltage', 'Dielectric Withstand Voltage' & 'Isolation Test Voltage' are all terms that relate to the same thing, a test voltage, applied for a specified time, across a component designed to provide electrical isolation, to verify the integrity of that isolation.

Murata Power Solutions CD1327C DC/DC converter is 100% production tested at their stated isolation voltage. This is 3kVDC for 1 minute.

A question commonly asked is, "What is the continuous voltage that can be applied across the part in normal operation?"

For a part holding no specific agency approvals, such CD1327C, both input and output should normally be maintained within SELV limits i.e. less than 42.4V peak, or 60VDC. The isolation test voltage represents a measure of immunity to transient voltages and the part should never be used as an element of a safety isolation system. The part could be expected to function correctly with several hundred volts offset applied continuously across the isolation barrier; but then the circuitry on both sides of the barrier must be regarded as operating at an unsafe voltage and further isolation/insulation systems must form a barrier between these circuits and any user-accessible circuitry according to safety standard requirements.

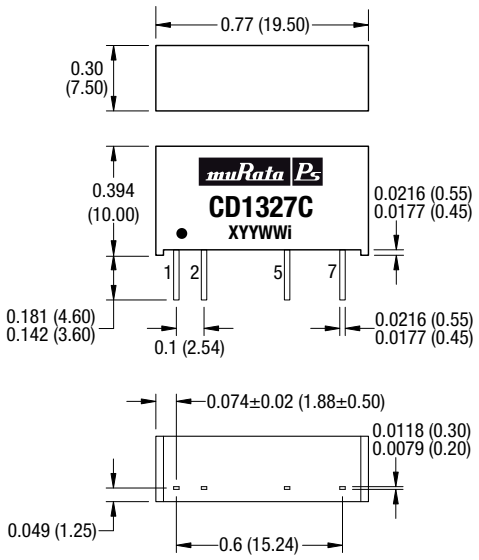
### REPEATED HIGH-VOLTAGE ISOLATION TESTING

It is well known that repeated high-voltage isolation testing of a barrier component can actually degrade isolation capability, to a lesser or greater degree depending on materials, construction and environment. CD1327C has a toroidal isolation transformer, with no additional insulation between primary and secondary windings of enameled wire. While parts can be expected to withstand several times the stated test voltage, the isolation capability does depend on the wire insulation. Any material, including this enamel (typically polyurethane) is susceptible to eventual chemical degradation when subject to very high applied voltages thus implying that the number of tests should be strictly limited. We therefore strongly advise against repeated high voltage isolation testing, but if it is absolutely required, that the voltage be reduced by 20% from specified test voltage.

This consideration equally applies to agency recognized parts rated for better than functional isolation where the wire enamel insulation is always supplemented by a further insulation system of physical spacing or barriers.

## PACKAGE SPECIFICATIONS

### MECHANICAL DIMENSIONS



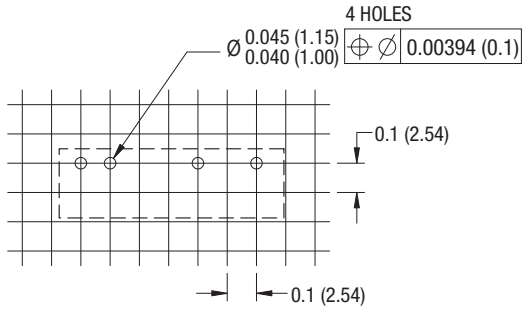

Weight: 2.1g

All dimensions in inches ±0.01 (mm ±0.25mm). All pins on a 0.1 (2.54) pitch and within ±0.01 (0.25) of true position.

### PIN CONNECTIONS

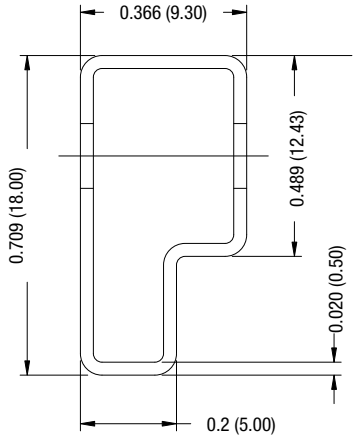
| Pin | Function |
|---|---|
| 1 | $+V_{IN}$ |
| 2 | $-V_{IN}$ |
| 5 | $-V_{OUT}$ |
| 7 | $+V_{OUT}$ |

### RECOMMENDED FOOTPRINT DETAILS




Unless otherwise stated all dimensions in inches (mm) ±0.5mm.

### TUBE OUTLINE DIMENSIONS




Tube Quantity : 25

Unless otherwise stated all dimensions in inches (mm) ±0.5mm.
Tube length : 20.47 (520mm ±2mm).

Murata Power Solutions

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