# CIA-ZP-1W5R3 Serie DC/DC Converters

Fixed Voltage Input/Unregulated DualOutput/1.5WR3

Product features:

Isolation voltage: 1500Vdc isolation
Operating temperature: -45℃-85℃
Stable performance, high reliability
MTBF≥2 million hours
Flame-retardant packaging
Meeting UL94-V0 requirements
International standard pinout (Pin 24)
Surface-mount design
No additional components required
Compliant with the RoHS Directive


## Module selection guide

| Model number | Input | | Output | | | Conversion efficiency |
|---|---|---|---|---|---|---|
| | Nominal voltage (V) | Voltage Range (V) | Rated voltage (V) | Minimum Current (mA) | Maximum current (mA) | (%) |
| CIA0503ZP-1W5R3 | 5 | 4.5-5.5 | ±3.3 | ±22 | ±227 | 76 |
| CIA0505ZP-1W5R3 | | | ±5 | ±15 | ±150 | 81 |
| CIA0509ZP-1W5R3 | | | ±9 | ±8 | ±83 | 82 |
| CIA0512ZP-1W5R3 | | | ±12 | ±6 | ±60 | 81 |
| CIA0515ZP-1W5R3 | | | ±15 | ±5 | ±50 | 82 |
| CIA0524ZP-1W5R3 | | | ±24 | ±3 | ±31 | 80 |
| CIA1203ZP-1W5R3 | 12 | 10.8-13.2 | ±3.3 | ±22 | ±227 | 76 |
| CIA1205ZP-1W5R3 | | | ±5 | ±15 | ±150 | 79 |
| CIA1209ZP-1W5R3 | | | ±9 | ±8 | ±83 | 80 |
| CIA1212ZP-1W5R3 | | | ±12 | ±6 | ±60 | 82 |
| CIA1215ZP-1W5R3 | | | ±15 | ±5 | ±50 | 82 |
| CIA1224ZP-1W5R3 | | | ±24 | ±3 | ±31 | 80 |
| CIA2403ZP-1W5R3 | 24 | 21.6-26.4 | ±3.3 | ±22 | ±227 | 76 |
| CIA2405ZP-1W5R3 | | | ±5 | ±15 | ±150 | 78 |
| CIA2409ZP-1W5R3 | | | ±9 | ±8 | ±83 | 79 |
| CIA2412ZP-1W5R3 | | | ±12 | ±6 | ±60 | 80 |
| CIA2415ZP-1W5R3 | | | ±15 | ±5 | ±50 | 80 |
| CIA2424ZP-1W5R3 | | | ±24 | ±3 | ±31 | 80 |
| | | | | | | |

## General characteristics

| | | |
|---|---|---|
| Switching frequency | 150KHz | 100% load, nominal input voltage |
| Output short-circuit duration | | Long duration, resettable |
| Casing's temperature rise during operation | 15℃ (Typ.) | 25℃ (Max) |
| Temperature coefficient | 0.03%/℃ | 100% full load |
| Pin soldering temperature | 300℃ | Soldering time≤3s |
| Isolation voltage (input and output) | 1500VDC | Test time: 1 minute<br>Leakage current: less than 1mA |
| Insulation resistance | 1000MΩ | Insulation voltage: 500V |
| Operating temperature | -40～+85℃ | Operating ambient temperature |
| Storage temperature | -55～+125℃ | |
| Storage humidity | <95% | Non-condensing |
| Cooling method | Natural air cooling | |
| Weight | SIP series: 1.2g | Standard |

## Input characteristics

| | |
|---|---|
| Voltage range | ≤±10% |
| Filtering | Ceramic capacitor |
| No-load power consumption | 10% rated power (typical value) |

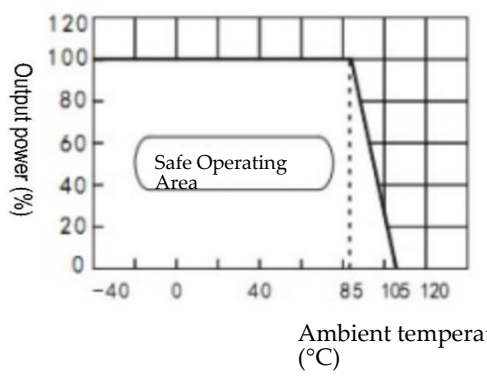
## Output characteristics

| Item | Value | Test conditions |
|---|---|---|
| Linear voltage regulation rate | ±0.25 (Max) | Input voltage variation 1% |
| Load regulation | ≤ ±3% (Max) | 10% to 100% load |
| Output voltage accuracy | Please refer to the Envelope Curve for Errors | 100% full load |
| Ripple and noise | ≤75mVp-p (Typ)<br>100mVp-p (Max) | Bandwidth: 20MHz |

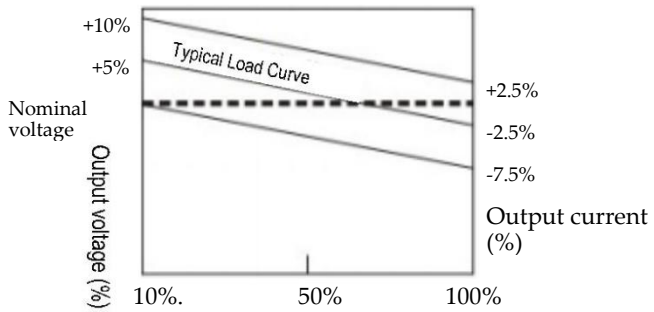
Unless otherwise specified, all parameters are tested under nominal input voltage, resistive load, and at room temperature of 25°C.

## Curves for typical characteristics

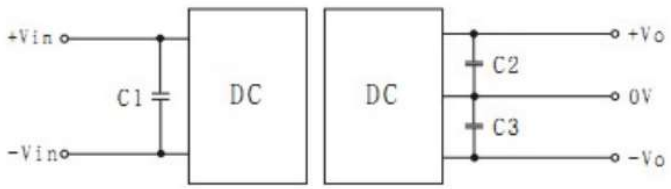
Temperature Curve




Envelope Curve for Errors



## Recommended circuit for basic application




Capacitive load table:

| Input voltage (VDC) | External capacitor (uF) | Output voltage (VDC) | External capacitor (uF) |
|---|---|---|---|
| 3.3 or 5 | 4.7 | ±3.3 or ±5 | 10 |
| 12 | 2.2 | ±9 | 4.7 |
| 15or24 | 1 | ±12 | 2.2 |
| | | ±15or±24 | 1 or 0.47 |

## Caution

1. Output load requirements: Avoid no-load operation. When the actual power consumption of the load is less than 10% of the module's rated output power or if there is a no-load condition, it is recommended to connect a dummy load at the output end or choose a module with a smaller rated power. The dummy load (resistor) can be calculated as 5-10% of the module's rated power. Value of the resistance = U2 / (10%×2WR3).
2. Overload protection: Under normal operating conditions, the output circuit of this product has no protection against overload conditions. The simplest method is to connect a resettable fuse in series at the input end or to add a circuit breaker to the circuit.
3. The capacitance of the external capacitor at the output end should not be too large; otherwise, it may cause overcurrent or poor startup during module initiation. The specific value of the capacitance should be according to the capacitive load table.
4. For applications with high ripple and noise requirements, an external LC filter circuit should be used (as shown in Figure 1). It is recommended to use ceramic capacitors or high-frequency low-impedance electrolytic capacitors for Cout. Using tantalum capacitors may cause module damage.
5. The simplest method for output voltage regulation, overvoltage protection, and overcurrent protection is to connect a linear regulator with over temperature protection in series at the input or output end (as shown in Figure 2).

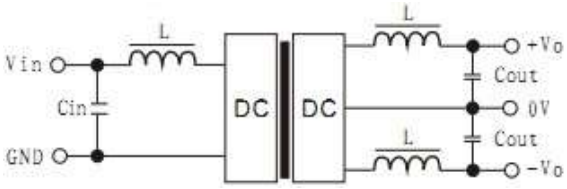



Figure 1

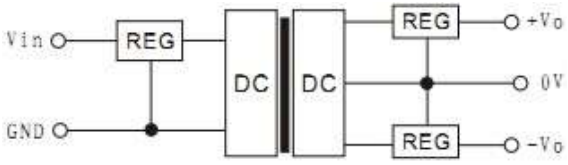
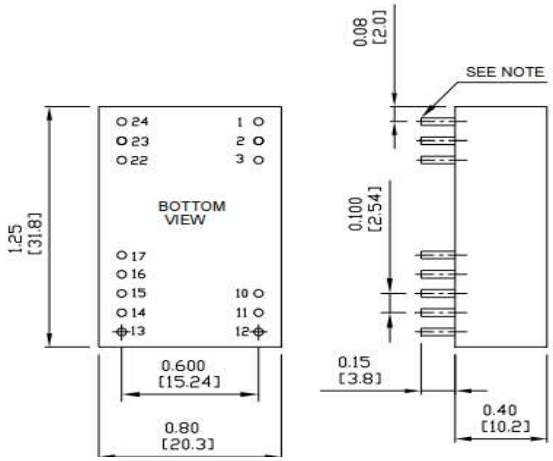



Figure 2

## Dimensions and pinout




(Unit: mm Tolerance: ±0.25)

**PIN CONNECTIONS**

| PIN NUMBER | |
|---|---|
| 1,24 | +Vin |
| 2,23 | -Vin |
| 3,10,15,22 | 0Vout |
| 12,13 | -Vout |
| 11,14 | +VO |