# CBLD - 75W Series

DC-DC Power Supply Module/1500V Isolation

## Product features

2:1 wide input voltage range
Short circuit and overcurrent protection: resettable
Isolation Voltage: 1500Vdc isolation
Operating Temperature: -45℃-85℃
No additional components required
Stable performance, high reliability, MTBF≥1 million hours
Metal packaging, six-sided shielding
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 (A) | Maximum current (A) | |
| **CBLD2405-75W** | 24 | 18-36 | 5 | 0 | 15.0 | 90 |
| **CBLD2409-75W** | | | 9 | 0 | 8.33 | 90 |
| **CBLD2412-75W** | | | 12 | 0 | 6.25 | 91 |
| **CBLD2415-75W** | | | 15 | 0 | 5.0 | 91 |
| **CBLD2424-75W** | | | 24 | 0 | 3.12 | 92 |
| **CBLD2428-75W** | | | 28 | 0 | 2.67 | 92 |
| **CBLD4805-75W** | 48 | 36-75 | 5 | 0 | 15.0 | 90 |
| **CBLD4809-75W** | | | 9 | 0 | 8.33 | 90 |
| **CBLD4812-75W** | | | 12 | 0 | 6.25 | 91 |
| **CBLD4815-75W** | | | 15 | 0 | 5.0 | 91 |
| **CBLD4824-75W** | | | 24 | 0 | 3.12 | 92 |
| **CBLD4828-75W** | | | 28 | 0 | 2.67 | 92 |
| | * Tailored model based on client needs. * | | | | | |

## Input characteristics

| | Item | Test conditions | Minimum value | Typical value | Maximum value | Unit |
|---|---|---|---|---|---|---|
| Input specifications | Maximum input voltage | 24Vdc input (18-36Vdc) | | | 40 | Vdc |
| | | 48Vdc input (36-75Vdc) | | | 80 | |
| | Control pin (Ctrl) | When the module is enabled, Ctrl is left floating. | | | | |
| | | When the module is disabled, Ctrl is connected to low level. | | | 1.2 | |
| | Hot swap | Non hot-swap | | | | |

We reserve the right to change the above parameters Final product specifications will be according to the specific product datasheet

## General characteristics

| | | |
|---|---|---|
| Switching frequency | 300KHz | Nominal input voltage, 100% load |
| Output short-circuit duration | Durable, resettable | |
| Casing's temperature rise during operation | 35°C (Typ.) | |
| Temperature coefficient | 0.03%/℃ | 100% full load |
| Pin soldering temperature | 300℃ | Soldering time≤3s |
| Isolation voltage (input and output) | 1500VDC | Test time 1 minute, leakage current less than 1mA. |
| Insulation resistance | 1000MΩ | Insulation voltage: 500V |
| Isolation capacitor | 100pF(Typ.) | Input/Output 100KHz/V |
| No-load power consumption | 500mW (Typ.) | |
| Operating temperature | -40～+85℃ | Operating ambient temperature |
| Storage temperature | -55～+125℃ | |
| Storage humidity | <95% | Non-condensing |
| Cooling method | Natural air cooling | |
| Weight | 15g | Standard |

## Input characteristics

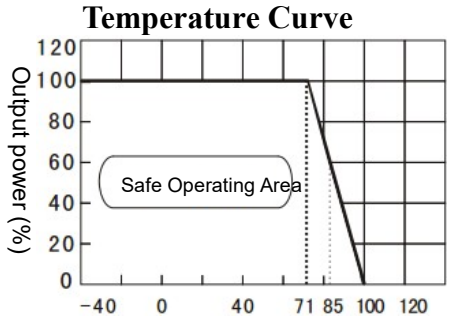
| Input voltage (Vdc) | | Maximum value (Vdc) | No-load current | |
|---|---|---|---|---|
| 2:1 | | | | *The input voltage must not exceed this value, otherwise it may cause permanent damage to the module. |
| | | | | |
| | 9-36 | 40 | 35 | |
| | 18-72 | 80 | 20 | |
| | | | | |

## Output characteristics

| Item | Test conditions | | Typical value | Maximum value |
|---|---|---|---|---|
| Linear voltage regulation rate | From the lowest to the highest input voltage | | <0.2% | <0.5% |
| Load regulation | 10% to 100% load | | <0.5% | <1.0% |
| Output voltage accuracy | Specified input range and load | | ±1% | ±3% |
| Overcurrent protection | Full voltage input range | | ≥ 1.5 times the rated output current | |
| Ripple and noise | 20MHz bandwidth | 3.3V/5V/12V/15V | 50mVp-p | 100mVp-p |
| | | 24V/28V | 100mVp-p | 150mVp-p |

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

## Curves for typical characteristics



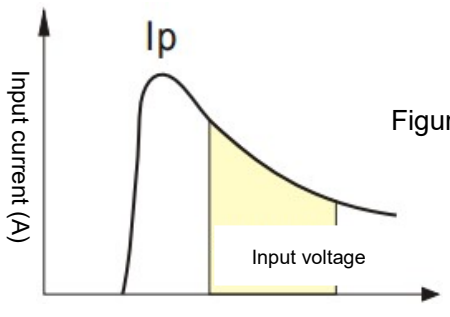




Figure 2

We reserve the right to change the above parameters Final product specifications will be according to the specific product datasheet

## Caution

1. Recommended circuit: If input and output ripple needs further reduction, connect an 'LC' filter network at the input and output ends with appropriate filter capacitors. It is recommended to use ceramic capacitors or high-frequency low-impedance electrolytic capacitors. Using tantalum capacitors may cause module damage. Excessive capacitance and low ESR values may cause instability in module operation, or lower current limit and output voltage. The recommended value for output capacitance is 220uF/A (the current here is the rated output current). For each output, the maximum capacitive load value, ensuring safe and reliable operating conditions, can be found in the Maximum Capacitive Load Value Table.
2. Input current: When using an unstable power supply, please ensure that the power supply's fluctuation range and ripple voltage are within the module's input requirements. The input current of the power source must be sufficient to accommodate the DC/DC module's instantaneous start-up current Ip (Figure 2), which is approximately 1.4 times the average input current, i.e., Ip ≤ 1.4 * Iin-max.
3. Load requirements: The minimum load should be no less than 10%. Otherwise, the output ripple will increase rapidly. If the product operates below the minimum required load, the module will not be damaged, but the performance specified in this datasheet cannot be guaranteed.
4. This product cannot be used in parallel and does not support hot swapping.

**Recommended circuit for basic application**

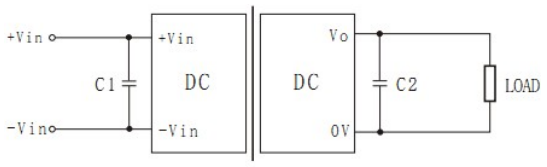
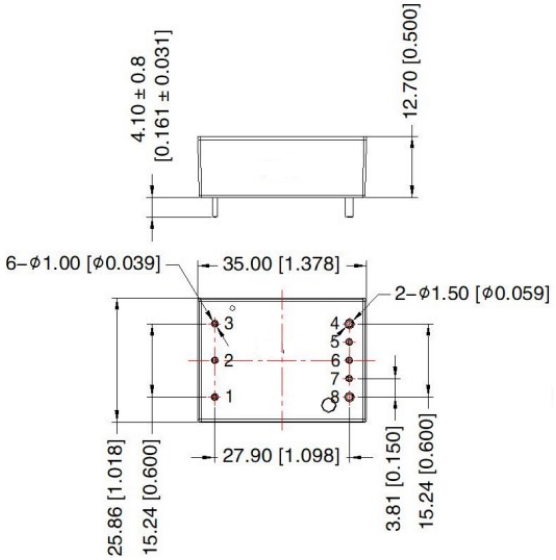



Figure 1

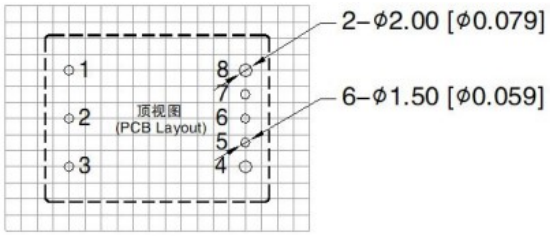
**Maximum Capacitive Load**

| Single output (Vdc) | External capacitor | Dual output (Vdc) | External capacitor |
|---|---|---|---|
| 3.3 | 2200 | ±5 | 680 |
| 5 | 1000 | ±9 | 470 |
| 12 | 470 | ±12 | 330 |
| 15 | 330 | ±15 | 220 |
| 24 | 220 | ±24 | 100 |

## Dimensions and pinout




**Recommended PCB layout**




**Grid: 2.54*2.54mm**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pin | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Function | +Vin | Ctrl | -Vin | 0V | Sense- | Trim | Sense+ | +Vo |
| Description | Positive input | Control pin | Negative input | Ground | Sense- | Trim pin | Sense+ | Positive output |

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