

# FDD03 SERIES



DC - DC CONVERTER  
2 ~ 3W SINGLE & DUAL OUTPUT

## FEATURES

- LOW COST
- 4:1 & 3:1 & 2:1 WIDE INPUT RANGE
- I/O ISOLATION
- SHORT CIRCUIT PROTECTION
- HIGH EFFICIENCY UP TO 73%

## MODEL LIST

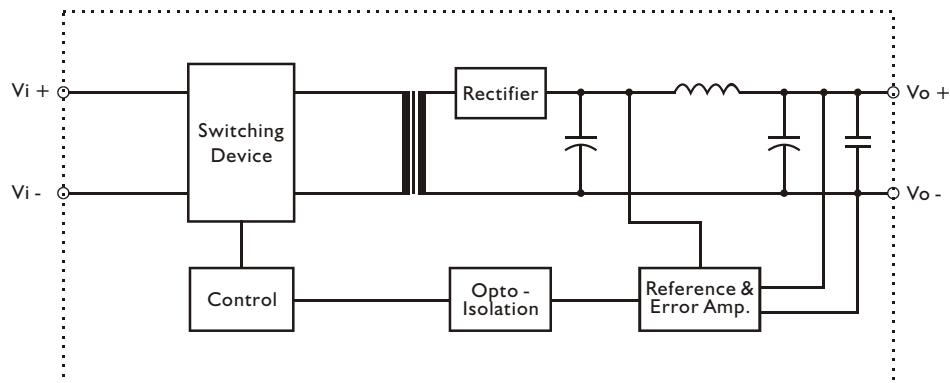
| MODEL NO.            | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) |
|----------------------|---------------|----------------|----------------|----------------|-------------|
| Single Output Models |               |                |                |                |             |
| FDD03 - 05S          | 20~60 VDC     | 2.5 WATTS      | + 5 VDC        | 500 mA         | 68%         |
| FDD03 - 12S          | 20~60 VDC     | 3 WATTS        | + 12 VDC       | 250 mA         | 70%         |
| FDD03 - 15S          | 20~60 VDC     | 3 WATTS        | + 15 VDC       | 200 mA         | 70%         |
| FDD03 - 05SI         | 9~18 VDC      | 2 WATTS        | + 5 VDC        | 400 mA         | 63%         |
| FDD03 - 12SI         | 9~18 VDC      | 2.4 WATTS      | + 12 VDC       | 200 mA         | 65%         |
| FDD03 - 15SI         | 9~18 VDC      | 2.2 WATTS      | + 15 VDC       | 150 mA         | 65%         |
| FDD03 - 05S2         | 18~36 VDC     | 2.5 WATTS      | + 5 VDC        | 500 mA         | 68%         |
| FDD03 - 12S2         | 18~36 VDC     | 3 WATTS        | + 12 VDC       | 250 mA         | 70%         |
| FDD03 - 15S2         | 18~36 VDC     | 3 WATTS        | + 15 VDC       | 200 mA         | 70%         |
| FDD03 - 05S3         | 36~72 VDC     | 2.5 WATTS      | + 5 VDC        | 500 mA         | 68%         |
| FDD03 - 12S3         | 36~72 VDC     | 3 WATTS        | + 12 VDC       | 250 mA         | 70%         |
| FDD03 - 15S3         | 36~72 VDC     | 3 WATTS        | + 15 VDC       | 200 mA         | 70%         |
| FDD03 - 05S4         | 9~36 VDC      | 2.5 WATTS      | + 5 VDC        | 500 mA         | 68%         |
| FDD03 - 12S4         | 9~36 VDC      | 3 WATTS        | + 12 VDC       | 250 mA         | 70%         |
| FDD03 - 15S4         | 9~36 VDC      | 3 WATTS        | + 15 VDC       | 200 mA         | 70%         |
| FDD03 - 05S5         | 18~72 VDC     | 2.5 WATTS      | + 5 VDC        | 500 mA         | 68%         |
| FDD03 - 12S5         | 18~72 VDC     | 3 WATTS        | + 12 VDC       | 250 mA         | 70%         |
| FDD03 - 15S5         | 18~72 VDC     | 3 WATTS        | + 15 VDC       | 200 mA         | 70%         |

### MODEL LIST

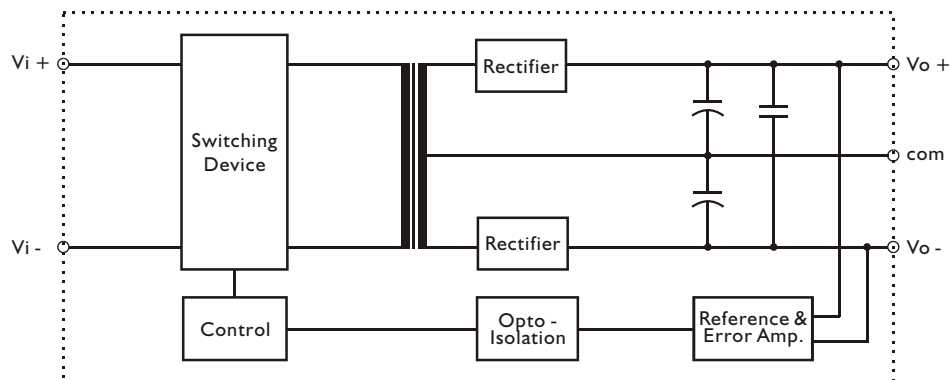
| MODEL NO.                 | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) |
|---------------------------|---------------|----------------|----------------|----------------|-------------|
| <b>Dual Output Models</b> |               |                |                |                |             |
| FDD03 - 05D               | 20~60 VDC     | 2.5 WATTS      | $\pm 5$ VDC    | $\pm 250$ mA   | 70%         |
| FDD03 - 12D               | 20~60 VDC     | 3 WATTS        | $\pm 12$ VDC   | $\pm 125$ mA   | 72%         |
| FDD03 - 15D               | 20~60 VDC     | 3 WATTS        | $\pm 15$ VDC   | $\pm 100$ mA   | 73%         |
| FDD03 - 05D1              | 9~18 VDC      | 2 WATTS        | $\pm 5$ VDC    | $\pm 200$ mA   | 65%         |
| FDD03 - 12D1              | 9~18 VDC      | 2.4 WATTS      | $\pm 12$ VDC   | $\pm 100$ mA   | 67%         |
| FDD03 - 15D1              | 9~18 VDC      | 2.4 WATTS      | $\pm 15$ VDC   | $\pm 80$ mA    | 67%         |
| FDD03 - 05D2              | 18~36 VDC     | 2.5 WATTS      | $\pm 5$ VDC    | $\pm 250$ mA   | 70%         |
| FDD03 - 12D2              | 18~36 VDC     | 3 WATTS        | $\pm 12$ VDC   | $\pm 125$ mA   | 72%         |
| FDD03 - 15D2              | 18~36 VDC     | 3 WATTS        | $\pm 15$ VDC   | $\pm 100$ mA   | 73%         |
| FDD03 - 05D3              | 36~72 VDC     | 2.5 WATTS      | $\pm 5$ VDC    | $\pm 250$ mA   | 70%         |
| FDD03 - 12D3              | 36~72 VDC     | 3 WATTS        | $\pm 12$ VDC   | $\pm 125$ mA   | 72%         |
| FDD03 - 15D3              | 36~72 VDC     | 3 WATTS        | $\pm 15$ VDC   | $\pm 100$ mA   | 73%         |
| FDD03 - 05D4              | 9~36 VDC      | 2.5 WATTS      | $\pm 5$ VDC    | $\pm 250$ mA   | 70%         |
| FDD03 - 12D4              | 9~36 VDC      | 3 WATTS        | $\pm 12$ VDC   | $\pm 125$ mA   | 72%         |
| FDD03 - 15D4              | 9~36 VDC      | 3 WATTS        | $\pm 15$ VDC   | $\pm 100$ mA   | 73%         |
| FDD03 - 05D5              | 18~72 VDC     | 2.5 WATTS      | $\pm 5$ VDC    | $\pm 250$ mA   | 70%         |
| FDD03 - 12D5              | 18~72 VDC     | 3 WATTS        | $\pm 12$ VDC   | $\pm 125$ mA   | 72%         |
| FDD03 - 15D5              | 18~72 VDC     | 3 WATTS        | $\pm 15$ VDC   | $\pm 100$ mA   | 73%         |

### CIRCUIT SCHEMATIC

• Block diagram for FDD03 series with single output



• Block diagram for FDD03 series with dual output



### SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

#### GENERAL

| Characteristics      | Conditions                       | min.               | typ.    | max.  | unit   |
|----------------------|----------------------------------|--------------------|---------|-------|--------|
| Switching frequency  | Vi nom, Io nom                   | 50                 |         |       | KHz    |
| Isolation voltage    | Input / Output                   | 1,500              |         |       | VDC    |
| Isolation resistance | Input / Output, @ 500VDC         | 1G                 |         |       | Ω      |
| Ambient temperature  | Operating at Vi nom, Io nom      | -25                |         | + 71  | °C     |
| Case temperature     | Operating at Vi nom, Io nom      |                    |         | + 90  | °C     |
| Derating             | Vi nom                           | See derating curve |         |       | % / °C |
| Storage temperature  | Non operational                  | -40                |         | + 100 | °C     |
| M.T.B.F.             | According to MIL-HDBK-217F, GF40 |                    | 896,100 |       | Hrs    |
| Dimension            | L20.3 x W31.8 x H12.7            |                    |         |       | mm     |
| Cooling              | Free air convection              |                    |         |       |        |
| Case material        | Plastic                          |                    |         |       |        |

#### INPUT SPECIFICATIONS

| Characteristics          | Conditions                  |            | min. | typ. | max. | unit |
|--------------------------|-----------------------------|------------|------|------|------|------|
| Input voltage range      | Ta min ...Ta max,<br>Io nom | 2:1 models | 9    | 12   | 18   | VDC  |
|                          |                             |            | 18   | 24   | 36   | VDC  |
|                          |                             |            | 36   | 48   | 72   | VDC  |
|                          |                             | 3:1 models | 20   | 48   | 60   | VDC  |
|                          |                             | 4:1 models | 9    | 24   | 36   | VDC  |
| No load input current    | Vi nom, Io = 0              |            | 18   | 48   | 72   | VDC  |
|                          |                             | 12V models |      |      | 18   | mA   |
|                          |                             | 24V models |      |      | 12   | mA   |
|                          |                             | 48V models |      |      | 8    | mA   |
| Input voltage w/o damage | Io nom                      | 12V models |      |      | 20   | VDC  |
|                          |                             | 24V models |      |      | 40   | VDC  |
|                          |                             | 48V models |      |      | 75   | VDC  |

#### OUTPUT SPECIFICATIONS

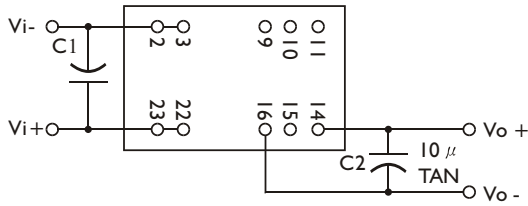
| Characteristics         | Conditions                                   |                                  | min.                      | typ. | max.        | unit   |
|-------------------------|----------------------------------------------|----------------------------------|---------------------------|------|-------------|--------|
| Output voltage accuracy | Vi nom, Io nom                               |                                  |                           |      | ± 2         | %      |
| Minimum load            | Vi nom                                       | single output models             | 0                         |      |             | %      |
|                         |                                              | dual output models (each output) | 20                        |      |             | %      |
| Line regulation         | Io nom, Vi min ...Vi max                     |                                  |                           |      | ± 1         | %      |
| Load regulation         | Vi nom, Io 0 ...Io nom, single output models |                                  |                           |      | ± 2         | %      |
|                         | Vi nom, Io min ...Io nom, dual output models |                                  |                           |      | ± 5         | %      |
| Temperature coefficient | Vi nom, Io nom                               |                                  |                           |      | ± 0.02      | % / °C |
| Ripple & noise          | Vi nom, Io nom, BW = 20MHz                   |                                  |                           |      | Vout x ± 2% | mV     |
| Efficiency              | Vi nom, Io nom, Po / Pi                      |                                  | Up to 73%, See model list |      |             |        |

#### CONTROL AND PROTECTION

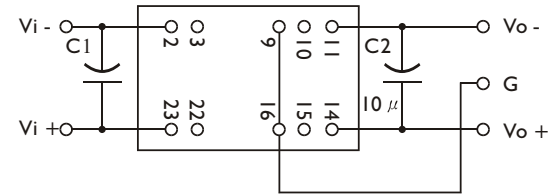
|                      |                                                 |
|----------------------|-------------------------------------------------|
| Input reversed       | Shunt diode built in, external fuse recommended |
| Output short circuit | Continuous                                      |

### APPLICATION CIRCUIT

#### a. SINGLE OUTPUT MODELS : (BOTTOM VIEW)



#### b. DUAL OUTPUT MODELS : (BOTTOM VIEW)

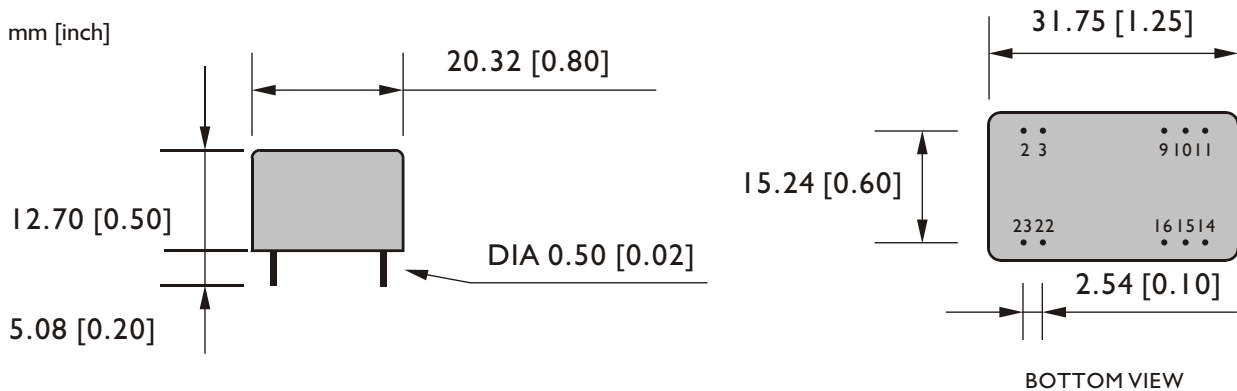


#### NOTE:

- $C1 = 4.7 \mu F / 100V$ ,  $C2 = 10 \mu F$
- $C1$  MUST BE ADDED WHEN APPLICATION.
- $C2$  OPTIONAL TO MINIMIZE THE R&N  $< 100mV$ .
- MAX. 80% LOAD WHEN INPUT VOLTAGE AT 9-11VDC FOR 9-36VDC INPUT MODELS & 18-21VDC FOR 18-72VDC INPUT MODELS.

### MECHANISM & PIN CONFIGURATION

mm [inch]



### PHYSICAL CHARACTERISTICS

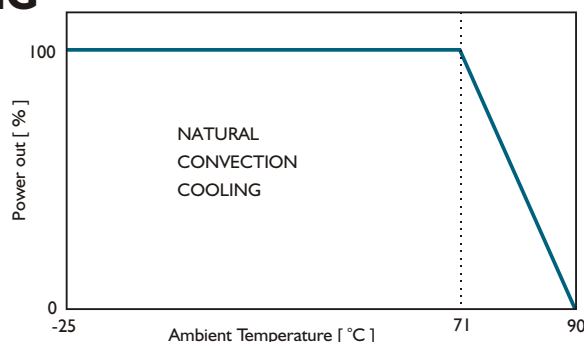
|               |                                               |
|---------------|-----------------------------------------------|
| CASE SIZE     | 20.3 x 31.8 x 12.7 mm 0.8 x 1.25 x 0.5 inches |
| CASE MATERIAL | Plastic                                       |
| WEIGHT        | 15 g                                          |

### PIN ASSIGNMENT

#### GENERAL

| PIN NO. | 2&3  | 9     | 10&15 | 11    | 14  | 16   | 22&23 |
|---------|------|-------|-------|-------|-----|------|-------|
| SINGLE  | Vi - | N. C. | N. C. | N. C. | Vo+ | Vo - | Vi+   |
| DUAL    | Vi - | com   | N. C. | Vo-   | Vo+ | com  | Vi+   |

### DERATING



## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9