# 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

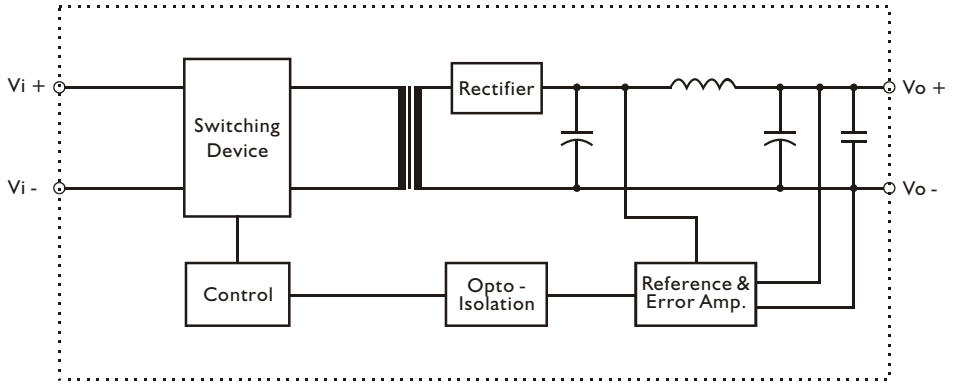
| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) |
|---|---|---|---|---|---|
| **Single Output Models** | | | | | |
| FDD03 - 05S | 20~60 VDC | 2.5 WATTS | + 5 VDC | 500 mA | 68% |
| FDD03 - 12S | 20~60 VDC | 3 WATTS | + 12 VDC | 250 mA | 70% |
| FDD03 - 15S | 20~60 VDC | 3 WATTS | + 15 VDC | 200 mA | 70% |
| FDD03 - 05S1 | 9~18 VDC | 2 WATTS | + 5 VDC | 400 mA | 63% |
| FDD03 - 12S1 | 9~18 VDC | 2.4 WATTS | + 12 VDC | 200 mA | 65% |
| FDD03 - 15S1 | 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

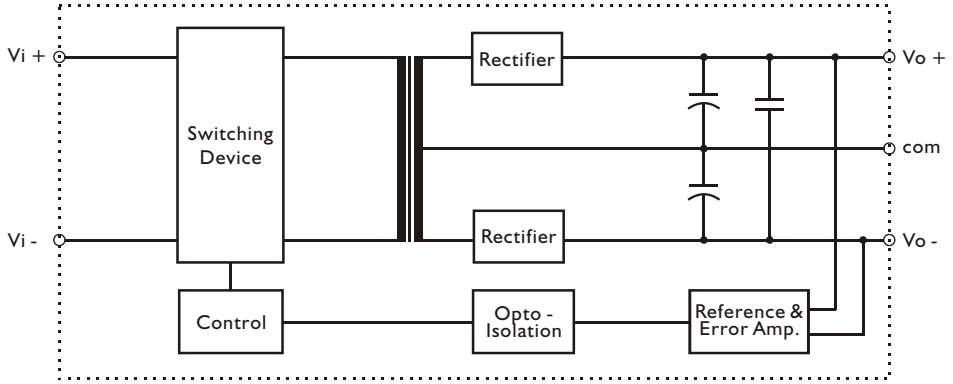
| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) |
|---|---|---|---|---|---|
| | | **Dual Output Models** | | | |
| FDD03 - 05D | 20~60 VDC | 2.5 WATTS | ± 5 VDC | ± 250 mA | 70% |
| FDD03 - 12D | 20~60 VDC | 3 WATTS | ± 12 VDC | ± 125 mA | 72% |
| FDD03 - 15D | 20~60 VDC | 3 WATTS | ± 15 VDC | ± 100 mA | 73% |
| FDD03 - 05D1 | 9~18 VDC | 2 WATTS | ± 5 VDC | ± 200 mA | 65% |
| FDD03 - 12D1 | 9~18 VDC | 2.4 WATTS | ± 12 VDC | ± 100 mA | 67% |
| FDD03 - 15D1 | 9~18 VDC | 2.4 WATTS | ± 15 VDC | ± 80 mA | 67% |
| FDD03 - 05D2 | 18~36 VDC | 2.5 WATTS | ± 5 VDC | ± 250 mA | 70% |
| FDD03 - 12D2 | 18~36 VDC | 3 WATTS | ± 12 VDC | ± 125 mA | 72% |
| FDD03 - 15D2 | 18~36 VDC | 3 WATTS | ± 15 VDC | ± 100 mA | 73% |
| FDD03 - 05D3 | 36~72 VDC | 2.5 WATTS | ± 5 VDC | ± 250 mA | 70% |
| FDD03 - 12D3 | 36~72 VDC | 3 WATTS | ± 12 VDC | ± 125 mA | 72% |
| FDD03 - 15D3 | 36~72 VDC | 3 WATTS | ± 15 VDC | ± 100 mA | 73% |
| FDD03 - 05D4 | 9~36 VDC | 2.5 WATTS | ± 5 VDC | ± 250 mA | 70% |
| FDD03 - 12D4 | 9~36 VDC | 3 WATTS | ± 12 VDC | ± 125 mA | 72% |
| FDD03 - 15D4 | 9~36 VDC | 3 WATTS | ± 15 VDC | ± 100 mA | 73% |
| FDD03 - 05D5 | 18~72 VDC | 2.5 WATTS | ± 5 VDC | ± 250 mA | 70% |
| FDD03 - 12D5 | 18~72 VDC | 3 WATTS | ± 12 VDC | ± 125 mA | 72% |
| FDD03 - 15D5 | 18~72 VDC | 3 WATTS | ± 15 VDC | ± 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, 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 |
| | | | 18 | 48 | 72 | VDC |
| No load input current | Vi nom, Io = 0 | 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

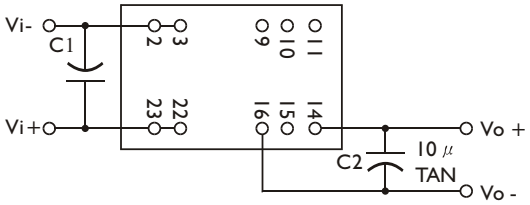
| Characteristics | Conditions | | min. | typ. | max. | unit |
|---|---|---|---|---|---|---|
| Output voltage accuracy | Vi nom, Io nom | | | | ±2 | % |
| Minimum load | Vi nom | single output models | 0 | | | % |
| | | dual output models (each output) | 20 | | | % |
| Line regulation | Io nom, Vi min ...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

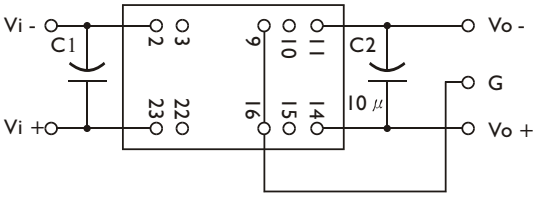
| | |
|---|---|
| Input reversed | Shunt diode built in, external fuse recommended |
| Output short circuit | Continuous |

## APPLICATION CIRCUIT

a. SINGLE OUTPUT MODELS :
(BOTTOM VIEW)




b. DUAL OUTPUT MODELS :
(BOTTOM VIEW)

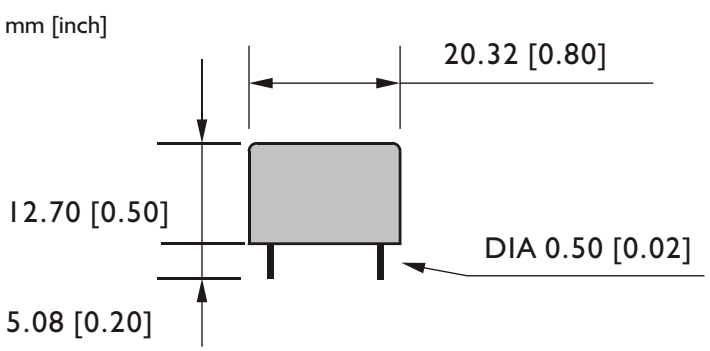


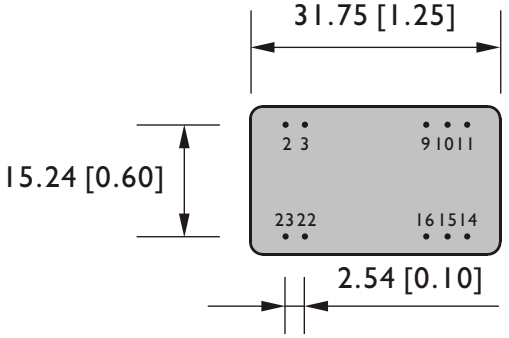

***NOTE:***

a. C1=4.7 μF/100V, C2=10 μF
b. C1 MUST BE ADDED WHEN APPLICATION .
c. C2 OPTIONAL TO MINIMIZE THE R&N <100mV .
d. 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]




BOTTOM VIEW

## PHYSICAL CHARACTERISTICS

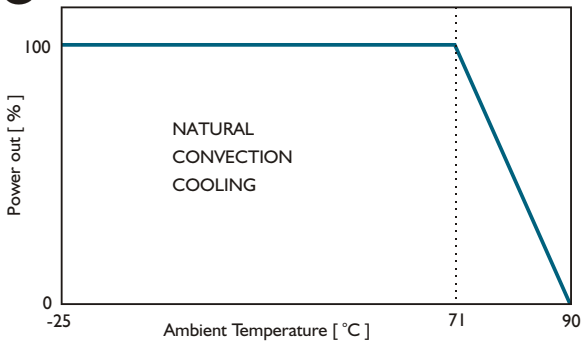
| | |
|---|---|
| CASE SIZE | 20.3 x 31.8 x 12.7 mm 0.8 x 1.25 x 0.5 inches |
| CASE MATERIAL | Plastic |
| WEIGHT | 15 g |

## 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



LifeElectronics
Живое партнерство

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*Тел: +7 (812) 336 43 04 (многоканальный)*
*Email: org@lifeelectronics.ru*

***www.lifeelectronics.ru***