

WDD20U SERIES

DC - DC CONVERTER
20W SINGLE & DUAL OUTPUT



FEATURES

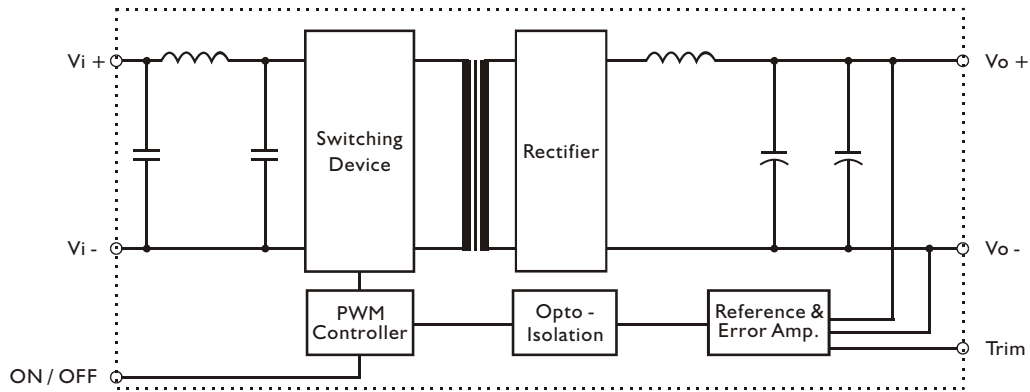
- LOW COST
- 2:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- HIGH PERFORMANCE
- 2 YEARS WARRANTY

MODEL LIST

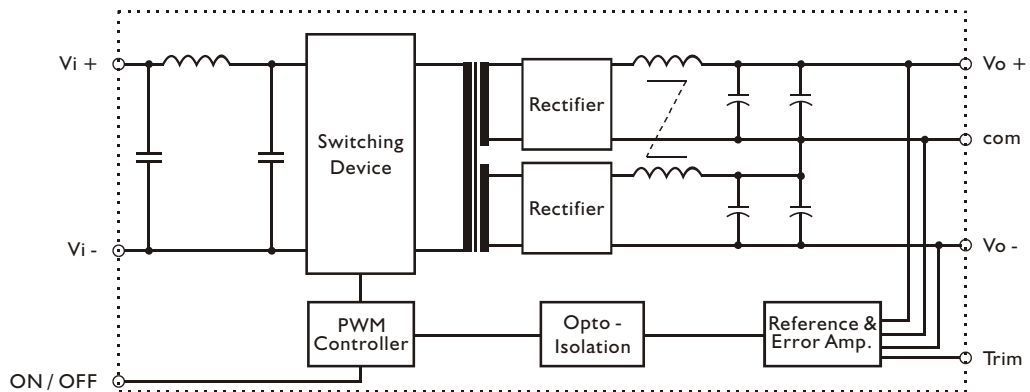
| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (typ.) | EFF. (min.) |
|-----------------------------|---------------|----------------|----------------|----------------|-------------|-------------|
| Single Output Models | | | | | | |
| WDD20 - 03S1U | 9~18 VDC | 20 WATTS | +3.3 VDC | 6000 mA | 82% | 80% |
| WDD20 - 05S1U | 9~18 VDC | 20 WATTS | + 5 VDC | 4000 mA | 85% | 83% |
| WDD20 - 12S1U | 9~18 VDC | 20 WATTS | + 12 VDC | 1670 mA | 86% | 84% |
| WDD20 - 15S1U | 9~18 VDC | 20 WATTS | + 15 VDC | 1330 mA | 86% | 84% |
| WDD20 - 03S2U | 18~36 VDC | 20 WATTS | +3.3 VDC | 6000 mA | 83% | 81% |
| WDD20 - 05S2U | 18~36 VDC | 20 WATTS | + 5 VDC | 4000 mA | 87% | 85% |
| WDD20 - 12S2U | 18~36 VDC | 20 WATTS | + 12 VDC | 1670 mA | 88% | 86% |
| WDD20 - 15S2U | 18~36 VDC | 20 WATTS | + 15 VDC | 1330 mA | 89% | 87% |
| WDD20 - 03S3U | 35~75 VDC | 20 WATTS | +3.3 VDC | 6000 mA | 83% | 81% |
| WDD20 - 05S3U | 35~75 VDC | 20 WATTS | + 5 VDC | 4000 mA | 87% | 85% |
| WDD20 - 12S3U | 35~75 VDC | 20 WATTS | + 12 VDC | 1670 mA | 89% | 87% |
| WDD20 - 15S3U | 35~75 VDC | 20 WATTS | + 15 VDC | 1330 mA | 89% | 87% |
| Dual Output Models | | | | | | |
| WDD20 - 05D1U | 9~18 VDC | 20 WATTS | ± 5 VDC | ± 2000 mA | 84% | 82% |
| WDD20 - 12D1U | 9~18 VDC | 20 WATTS | ± 12 VDC | ± 830 mA | 87% | 85% |
| WDD20 - 15D1U | 9~18 VDC | 20 WATTS | ± 15 VDC | ± 670 mA | 88% | 86% |
| WDD20 - 05D2U | 18~36 VDC | 20 WATTS | ± 5 VDC | ± 2000 mA | 86% | 84% |
| WDD20 - 12D2U | 18~36 VDC | 20 WATTS | ± 12 VDC | ± 830 mA | 88% | 86% |
| WDD20 - 15D2U | 18~36 VDC | 20 WATTS | ± 15 VDC | ± 670 mA | 89% | 87% |
| WDD20 - 05D3U | 35~75 VDC | 20 WATTS | ± 5 VDC | ± 2000 mA | 86% | 84% |
| WDD20 - 12D3U | 35~75 VDC | 20 WATTS | ± 12 VDC | ± 830 mA | 88% | 86% |
| WDD20 - 15D3U | 35~75 VDC | 20 WATTS | ± 15 VDC | ± 670 mA | 89% | 87% |

CIRCUIT SCHEMATIC

• Block diagram for WDD20U series with single output



• Block diagram for WDD20U 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 | | 250 | | KHz |
| Isolation voltage | Input / Output | 1,500 | | | VDC |
| Isolation resistance | Input / Output, @ 500VDC | 100 | | | MΩ |
| Ambient temperature | Vi nom, 3.3V & 5V output models | -40 | | + 60 | °C |
| | Io nom 12V, 15V & dual output models | -40 | | + 71 | °C |
| Case temperature | Operating at Vi nom, Io nom | | | + 100 | °C |
| Derating | Vi nom | See derating curve | | | % / °C |
| Storage temperature | Non operational | -40 | | + 100 | °C |
| Dimension | L40.6 x W50.8 x H10.2 | | | | mm |
| Cooling | Free air convection | | | | |
| Case material | Metal | | | | |

INPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|--------------------------|---------------------------|------------|------|------|------|
| Input voltage range | Ta min ... Ta max, Io nom | 9 | 12 | 18 | VDC |
| | | 18 | 24 | 36 | VDC |
| | | 35 | 48 | 75 | VDC |
| No load input current | Vi nom, Io = 0 | 12V models | 30 | | |
| | | 24V models | 20 | | mA |
| | | 48V models | 15 | | |
| Input voltage w/o damage | Io nom | 12V models | | 20 | |
| | | 24V models | | 40 | VDC |
| | | 48V models | | 80 | |
| Startup voltage | Io nom | 12V models | 8.5 | | VDC |
| | | 24V models | 16 | | VDC |
| | | 48V models | 33 | | VDC |
| Input filter | Pi type | | | | |

OUTPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|-------------------------|---|---------------------------|------|--------|--------|
| Output voltage accuracy | Vi nom, Io nom | | | ± 2 | % |
| Minimum load | Vi nom single output models | 0 | | | % |
| | Vi nom dual output models (each output) | 10 | | | % |
| 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 | % |
| Transient recovery time | Vi nom, Io 0 ... 1/2 Io nom | | 500 | | μs |
| Temperature coefficient | Vi nom, Io nom | | | ± 0.02 | % / °C |
| Ripple & noise | Vi nom, Io nom, 3.3V & 5V output models | | | 100 | mV |
| | BW = 20MHz 12V, 15V & dual | | | 150 | mV |
| Voltage trim range | Vi nom 3.3V output models | | ± 5 | | % |
| | Vi nom 5V, 12V, 15V & dual | | ± 10 | | % |
| Efficiency | Vi nom, Io nom, Po / Pi | Up to 89%, See model list | | | |

SPECIFICATION

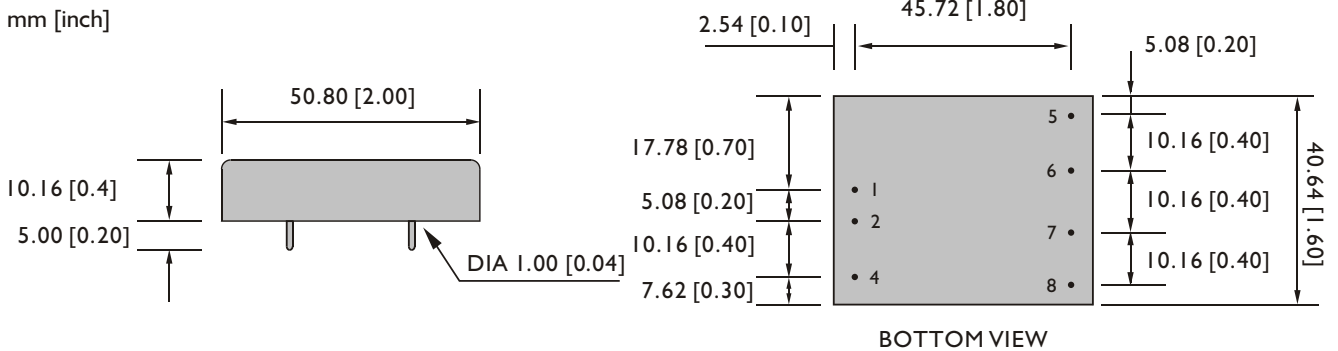
CONTROL AND PROTECTION

| | |
|----------------------|---|
| Remote ON / OFF | ON: opened or 8 ~ 10VDC applied, reference to input GND OFF: -0.3 ~ 2VDC applied, reference to input GND |
| Input reversed | Shunt diode built in, external fuse recommended |
| Output short circuit | Continuous |

APPROVALS AND STANDARD

| | |
|--------|----------------------------|
| UL/cUL | UL60950-1 |
| TUV | EN60950-1 |
| CE | EN61204-3(Class A for EMI) |

MECHANISM & PIN CONFIGURATION



PHYSICAL CHARACTERISTICS

| | |
|---------------|--|
| CASE SIZE | 40.6 x 50.8 x 10.2 mm 1.6 x 2 x 0.4 inches |
| CASE MATERIAL | Metal |
| WEIGHT | 60 g |

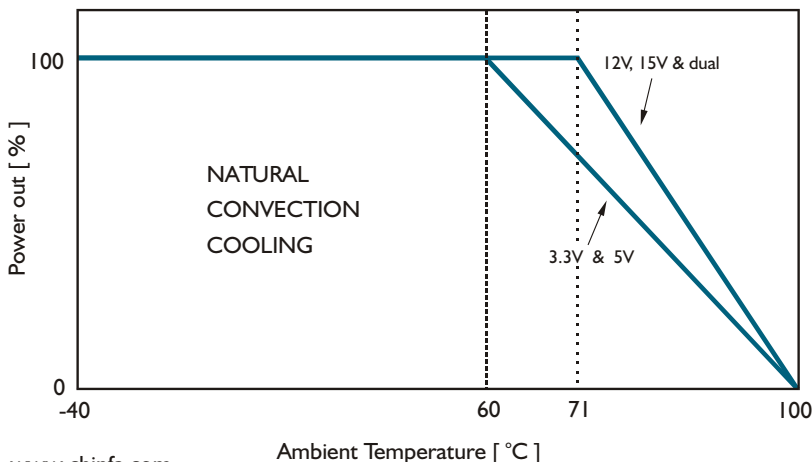
PIN ASSIGNMENT

GENERAL

| PIN NO. | 1 | 2 | 4 | 5 | 6 | 7 | 8 |
|---------|-----|-----|-------|--------|-----|-----|------|
| SINGLE | Vi+ | Vi- | S. D. | NO PIN | Vo+ | Vo- | Trim |
| DUAL | Vi+ | Vi- | S. D. | Vo+ | com | Vo- | Trim |

S.D. : REMOTE ON / OFF

DERATING



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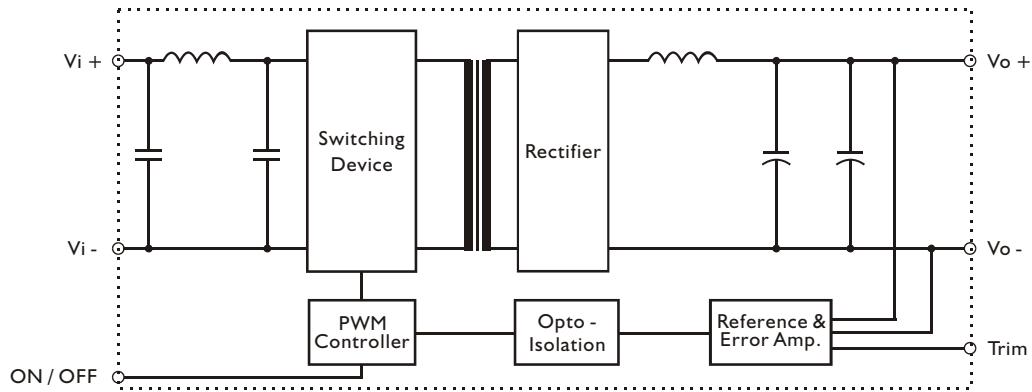
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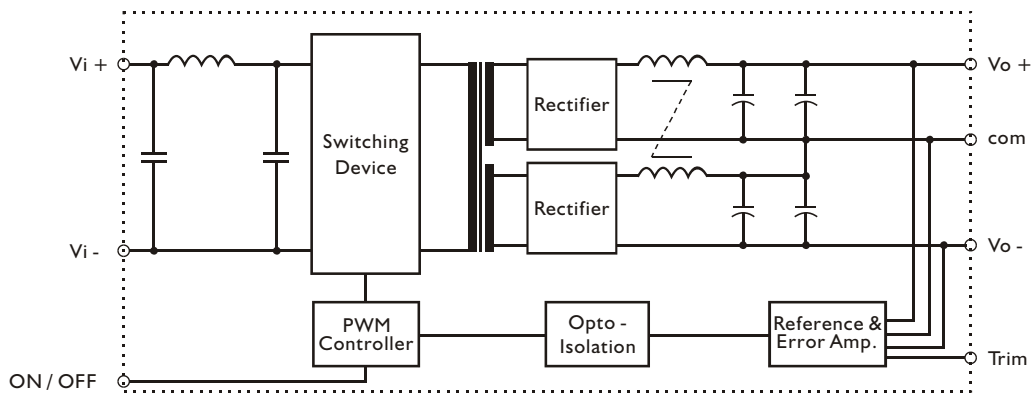
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| WDD20 - 05S4U | 9~36 VDC | 20 WATTS | + 5 VDC | 4000 mA | 80% | 78% |
| WDD20 - 12S4U | 9~36 VDC | 20 WATTS | + 12 VDC | 1670mA | 82% | 80% |
| WDD20 - 15S4U | 9~36 VDC | 20 WATTS | + 15 VDC | 1330 mA | 83% | 81% |
| WDD20 - 03S5U | 18~75 VDC | 20 WATTS | +3.3 VDC | 6000 mA | 79% | 77% |
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| Isolation voltage | Input / Output | 1,500 | | | VDC |
| Isolation resistance | Input / Output, @ 500VDC | 100 | | | MΩ |
| Ambient temperature | Vi nom, 3.3V & 5V output models | -40 | | + 60 | °C |
| | Io nom 12V, 15V & dual output models | -40 | | + 71 | °C |
| Case temperature | Operating at Vi nom, Io nom | | | + 100 | °C |
| Derating | Vi nom | See derating curve | | | % / °C |
| Storage temperature | Non operational | -40 | | + 100 | °C |
| Dimension | L50.8 x W40.6 x H10.2 | | | | mm |
| Cooling | Free air convection | | | | |
| Case material | Metal | | | | |

INPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
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| Input voltage range | Ta min ... Ta max, Io nom | 9 | 24 | 36 | VDC |
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| Startup voltage | Io nom | 24V models | | 8.5 | VDC |
| | | 48V models | | 16 | VDC |
| Input filter | Pi type | | | | |

OUTPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|-------------------------|---|---------------------------|------|--------|--------|
| Output voltage accuracy | Vi nom, Io nom | | | ± 2 | % |
| Minimum load | Vi nom single output models | 0 | | | % |
| | Vi nom dual output models (each output) | 10 | | | % |
| 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 | % |
| Transient recovery time | Vi nom, Io 0 ... 1/2 Io nom | | 500 | | μs |
| Temperature coefficient | Vi nom, Io nom | | | ± 0.02 | % / °C |
| Ripple & noise | Vi nom, Io nom, 3.3V & 5V output models | | | 100 | mV |
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| Voltage trim range | Vi nom 3.3V output models | | ± 5 | | % |
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| Efficiency | Vi nom, Io nom, Po / Pi | Up to 84%, See model list | | | |

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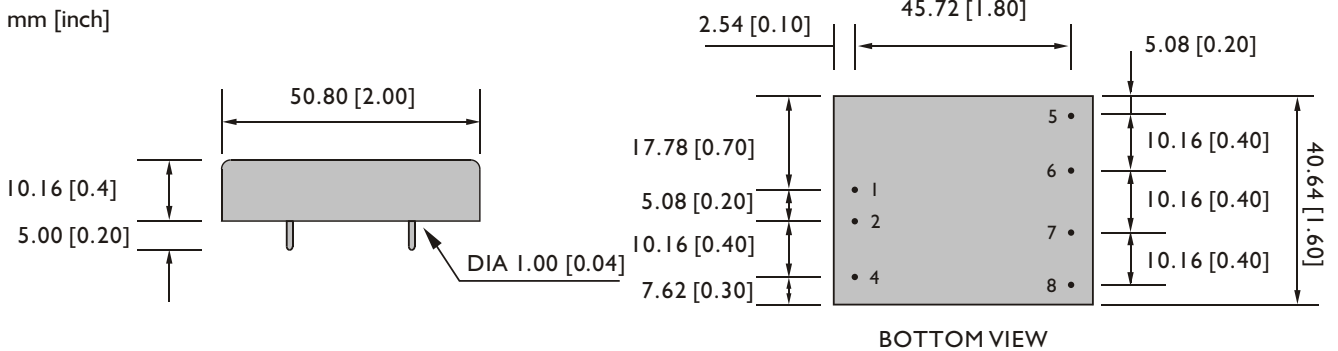
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| Input reversed | Shunt diode built in, external fuse recommended |
| Output short circuit | Continuous |

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|---------|-----|-----|-------|--------|-----|-----|------|
| SINGLE | Vi+ | Vi- | S. D. | NO PIN | Vo+ | Vo- | Trim |
| DUAL | Vi+ | Vi- | S. D. | Vo+ | com | Vo- | Trim |

S.D. : REMOTE ON / OFF

DERATING

