

RDD05 SERIES



DC - DC CONVERTER
5 ~ 6W SINGLE & DUAL OUTPUT

FEATURES

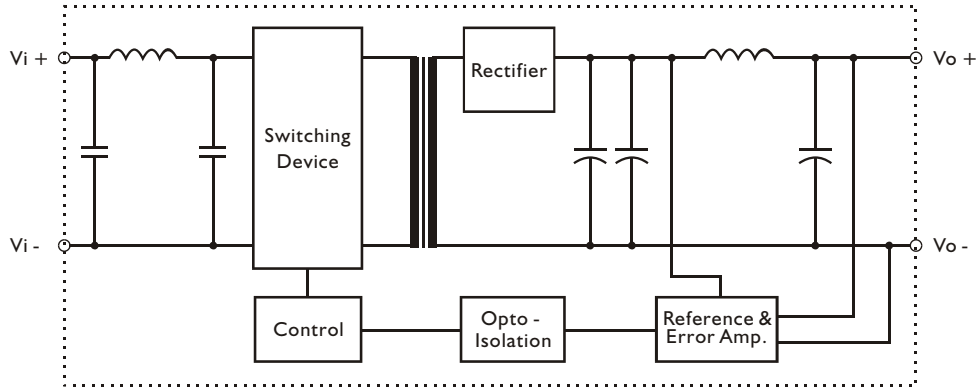
- LOW COST
- 2:1 WIDE INPUT RANGE
- ?I/O ISOLATION
- ?INPUT Pi FILTER
- ?SHORT CIRCUIT PROTECTION
- ?HIGH PERFORMANCE

MODEL LIST

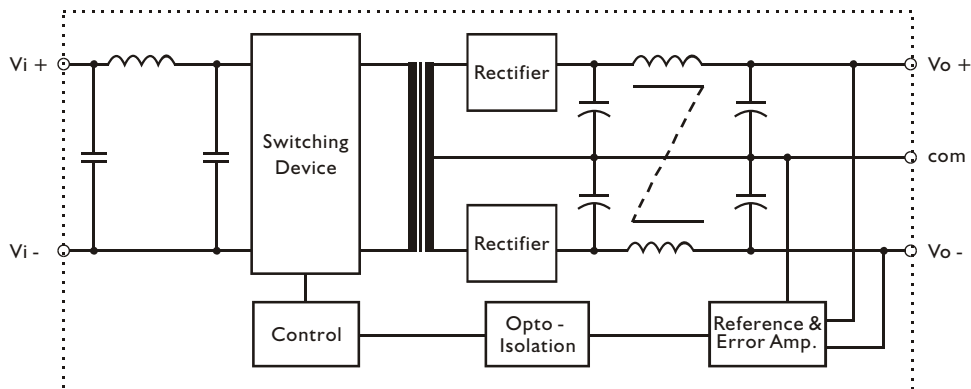
| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) |
|-----------------------------|---------------|----------------|----------------|----------------|-------------|
| Single Output Models | | | | | |
| RDD05 - 03S1 | 9~18 VDC | 5 WATTS | +3.3 VDC | 1500 mA | 74% |
| RDD05 - 05S1 | 9~18 VDC | 5 WATTS | + 5 VDC | 1000 mA | 77% |
| RDD05 - 12S1 | 9~18 VDC | 6 WATTS | + 12 VDC | 500 mA | 81% |
| RDD05 - 15S1 | 9~18 VDC | 6 WATTS | + 15 VDC | 400 mA | 82% |
| RDD05 - 03S2 | 18~36 VDC | 5 WATTS | +3.3 VDC | 1500 mA | 77% |
| RDD05 - 05S2 | 18~36 VDC | 5 WATTS | + 5 VDC | 1000 mA | 80% |
| RDD05 - 12S2 | 18~36 VDC | 6 WATTS | + 12 VDC | 500 mA | 84% |
| RDD05 - 15S2 | 18~36 VDC | 6 WATTS | + 15 VDC | 400 mA | 85% |
| RDD05 - 03S3 | 35~75 VDC | 5 WATTS | +3.3 VDC | 1500 mA | 78% |
| RDD05 - 05S3 | 35~75 VDC | 5 WATTS | + 5 VDC | 1000 mA | 81% |
| RDD05 - 12S3 | 35~75 VDC | 6 WATTS | + 12 VDC | 500 mA | 85% |
| RDD05 - 15S3 | 35~75 VDC | 6 WATTS | + 15 VDC | 400 mA | 86% |
| Dual Output Models | | | | | |
| RDD05 - 05D1 | 9~18 VDC | 5 WATTS | ± 5 VDC | ± 500 mA | 76% |
| RDD05 - 12D1 | 9~18 VDC | 6 WATTS | ± 12 VDC | ± 250 mA | 80% |
| RDD05 - 15D1 | 9~18 VDC | 6 WATTS | ± 15 VDC | ± 200 mA | 81% |
| RDD05 - 05D2 | 18~36 VDC | 5 WATTS | ± 5 VDC | ± 500 mA | 78% |
| RDD05 - 12D2 | 18~36 VDC | 6 WATTS | ± 12 VDC | ± 250 mA | 83% |
| RDD05 - 15D2 | 18~36 VDC | 6 WATTS | ± 15 VDC | ± 200 mA | 84% |
| RDD05 - 05D3 | 35~75 VDC | 5 WATTS | ± 5 VDC | ± 500 mA | 79% |
| RDD05 - 12D3 | 35~75 VDC | 6 WATTS | ± 12 VDC | ± 250 mA | 84% |
| RDD05 - 15D3 | 35~75 VDC | 6 WATTS | ± 15 VDC | ± 200 mA | 85% |

CIRCUIT SCHEMATIC

- Block diagram for RDD05 series with single output



- Block diagram for RDD05 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 | 150 | | | 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 |
| 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 | 9 | 12 | 18 | VDC |
| | | 18 | 24 | 36 | VDC |
| | | 36 | 48 | 72 | VDC |
| No load input current | Vi nom, Io = 0 | 12V models | | 30 | mA |
| | | 24V models | | 22 | mA |
| | | 48V models | | 15 | mA |
| Input voltage w/o damage | Io nom | 12V models | | 20 | VDC |
| | | 24V models | | 40 | VDC |
| | | 48V models | | 75 | VDC |
| Input filter | Pi type | | | | |

OUTPUT SPECIFICATIONS

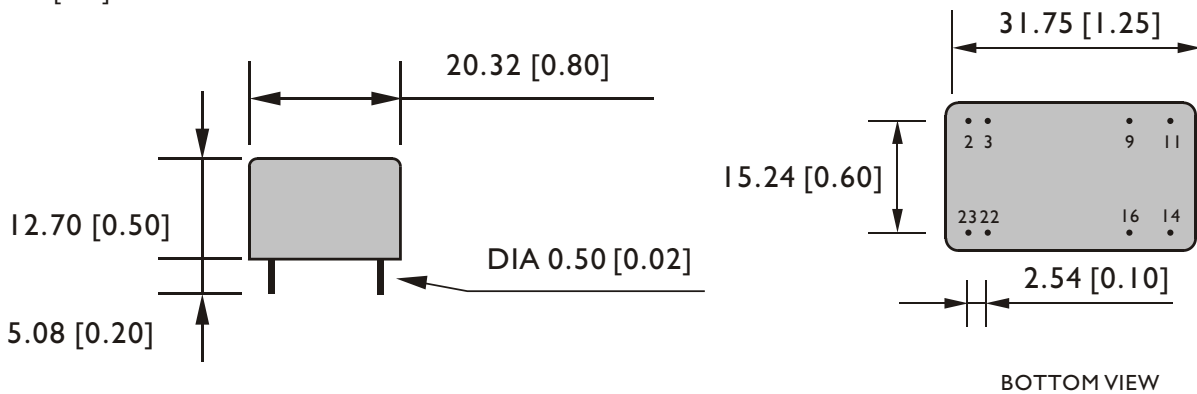
| Characteristics | Conditions | min. | typ. | max. | unit |
|-------------------------|---|---------------------------|------|--------|--------|
| Output voltage accuracy | Vi nom, Io nom | | | ± 2 | % |
| Minimum load | Vi nom, single output models | 0 | | | % |
| | Vi nom, dual output models (each output) | 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 | | | ± 3 | % |
| Transient recovery time | 25% load step changed | | 500 | | μs |
| Temperature coefficient | Vi nom, Io nom | | | ± 0.02 | % / °C |
| Ripple & noise | Vi nom, Io nom, BW = 20MHz | | | 100 | mV |
| Efficiency | Vi nom, Io nom, Po / Pi | Up to 86%, See model list | | | |

CONTROL AND PROTECTION

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

MECHANISM & PIN CONFIGURATION

mm [inch]



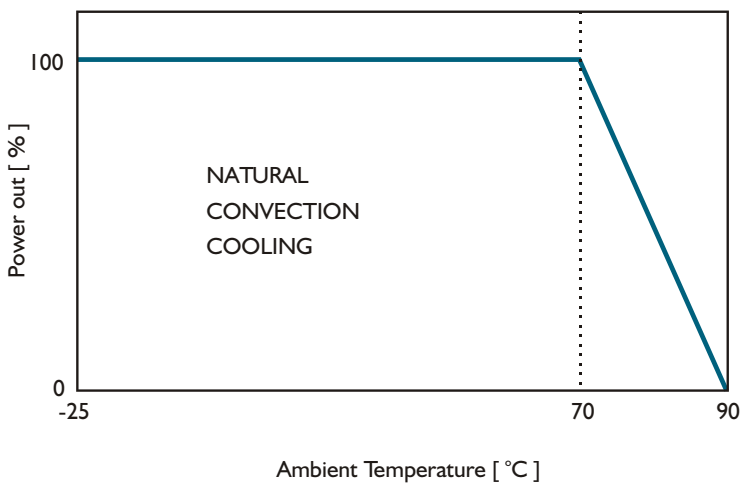
PHYSICAL CHARACTERISTICS

| | |
|---------------|---|
| CASE SIZE | 20.3 x 31.8 x 12.7 mm 0.8 x 1.25 x 0.5 inches |
| CASE MATERIAL | Plastic |
| WEIGHT | 16 g |

PIN ASSIGNMENT

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

DERATING



RDD05 SERIES



DC - DC CONVERTER
4 ~ 6W SINGLE & DUAL OUTPUT

FEATURES

- LOW COST
- 4:1 WIDE INPUT RANGE
- ?I/O ISOLATION
- ?INPUT Pi FILTER
- ?SHORT CIRCUIT PROTECTION
- ?HIGH PERFORMANCE

MODEL LIST

| MODEL NO. | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (TYP.) | EFF. (min.) |
|-----------|---------------|----------------|----------------|----------------|-------------|-------------|
|-----------|---------------|----------------|----------------|----------------|-------------|-------------|

Single Output Models

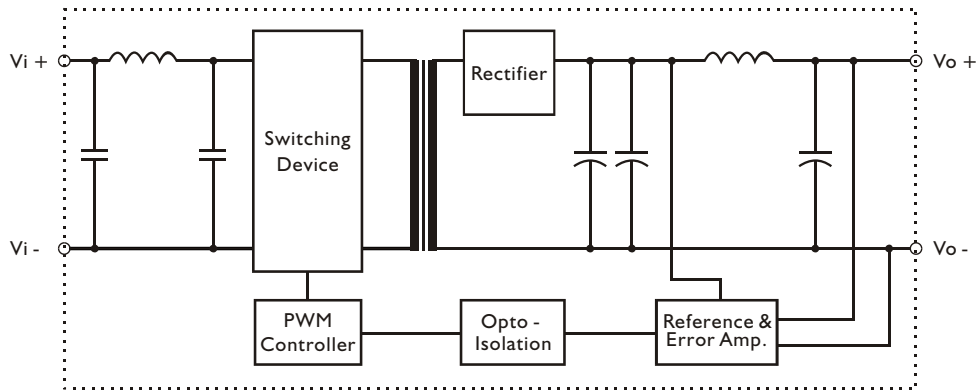
| | | | | | | |
|--------------|-----------|---------|----------|---------|-----|-----|
| RDD05 - 03S4 | 9~36 VDC | 4 WATTS | +3.3 VDC | 1200 mA | 77% | 75% |
| RDD05 - 05S4 | 9~36 VDC | 5 WATTS | + 5 VDC | 1000 mA | 79% | 77% |
| RDD05 - 12S4 | 9~36 VDC | 6 WATTS | + 12 VDC | 500 mA | 81% | 79% |
| RDD05 - 15S4 | 9~36 VDC | 6 WATTS | + 15 VDC | 400 mA | 81% | 79% |
| RDD05 - 03S5 | 18~75 VDC | 4 WATTS | +3.3 VDC | 1200 mA | 77% | 75% |
| RDD05 - 05S5 | 18~75 VDC | 5 WATTS | + 5 VDC | 1000 mA | 80% | 78% |
| RDD05 - 12S5 | 18~75 VDC | 6 WATTS | + 12 VDC | 500 mA | 82% | 80% |
| RDD05 - 15S5 | 18~75 VDC | 6 WATTS | + 15 VDC | 400 mA | 82% | 80% |

Dual Output Models

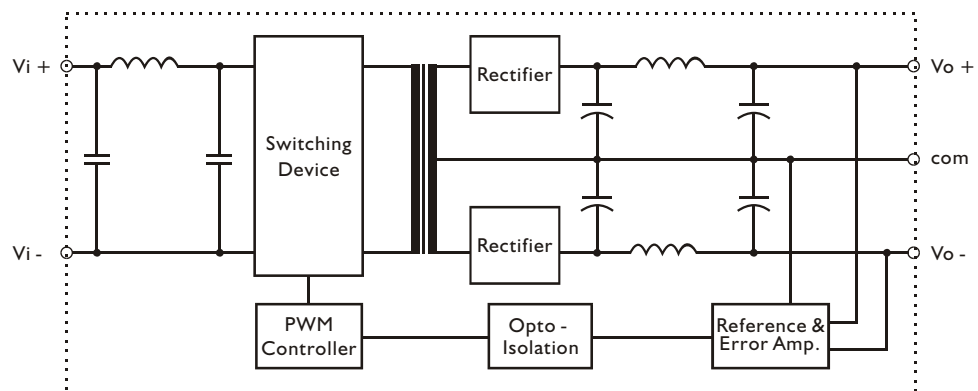
| | | | | | | |
|--------------|-----------|---------|----------|----------|-----|-----|
| RDD05 - 05D4 | 9~36 VDC | 5 WATTS | ± 5 VDC | ± 500 mA | 80% | 78% |
| RDD05 - 12D4 | 9~36 VDC | 6 WATTS | ± 12 VDC | ± 250 mA | 81% | 79% |
| RDD05 - 15D4 | 9~36 VDC | 6 WATTS | ± 15 VDC | ± 200 mA | 81% | 79% |
| RDD05 - 05D5 | 18~75 VDC | 5 WATTS | ± 5 VDC | ± 500 mA | 80% | 78% |
| RDD05 - 12D5 | 18~75 VDC | 6 WATTS | ± 12 VDC | ± 250 mA | 82% | 80% |
| RDD05 - 15D5 | 18~75 VDC | 6 WATTS | ± 15 VDC | ± 200 mA | 82% | 80% |

CIRCUIT SCHEMATIC

- Block diagram for RDD05 series with single output



- Block diagram for RDD05 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 | | 300 | | KHz |
| Isolation voltage | Input / Output | 1,500 | | | VDC |
| Isolation resistance | Input / Output, @ 500VDC | 1G | | | Ω |
| Ambient temperature | Operating at Vi nom, Io nom | -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 | L20.3 x W31.8 x H10.2 | | | | mm |
| Cooling | Free air convection | | | | |
| Case material | Tinplate nickel plated | | | | |

INPUT SPECIFICATIONS

| Characteristics | Conditions | min. | typ. | max. | unit |
|--------------------------|---------------------------|------------|------|------|------|
| Input voltage range | Ta min ... Ta max, Io nom | 9 | 24 | 36 | VDC |
| | | 18 | 48 | 75 | VDC |
| No load input current | Vi nom, Io = 0 | 24V models | | 20 | mA |
| | | 48V models | | 15 | mA |
| Input voltage w/o damage | Io nom | 24V models | | 40 | VDC |
| | | 48V models | | 80 | VDC |
| startup voltage | Io nom | 24V models | 8.7 | | VDC |
| | | 48V models | 17.4 | | 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 | | | ± 0.5 | % |
| Load regulation | Vi nom, Io 0 ... Io nom, single output models | | | ± 0.5 | % |
| | Vi nom, Io min ... Io nom, dual output models | | | ± 1 | % |
| Transient recovery time | Vi nom, Io nom = I ↔ 1/2 Io nom | | 1 | | ms |
| Temperature coefficient | Vi nom, Io nom | | | ± 0.02 | % / °C |
| Ripple & noise | Vi nom, Io nom, BW = 20MHz | | | 50 | mV |
| Efficiency | Vi nom, Io nom, Po / Pi | Up to 86%, See model list | | | |
| Capacitive Load | Io nom | 3.3Vout models | | 2200 | μF |
| | | 5.0Vout models | | 1500 | |
| | | 12.0Vout models | | 330 | |
| | | 15.0Vout models | | 220 | |
| | | ± 5Vout models | | ± 680 | |
| | | ± 12Vout models | | ± 150 | |
| | | ± 15Vout models | | ± 68 | |

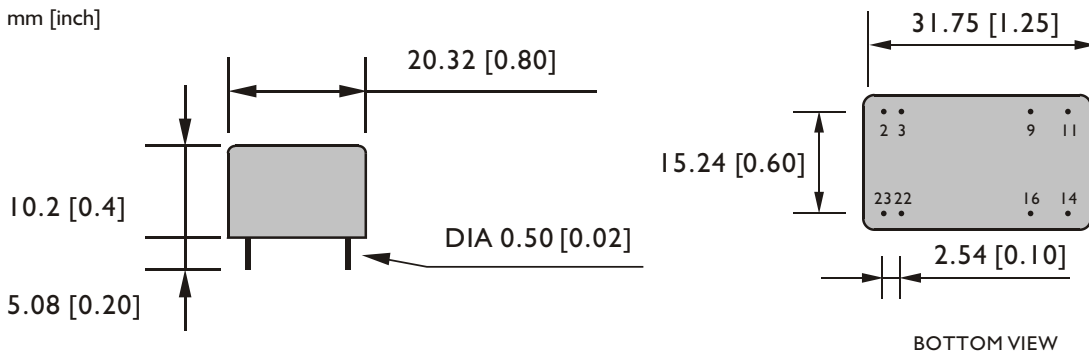
CONTROL AND PROTECTION

| | |
|----------------------------|---|
| Input reversed | Shunt diode built in, external fuse recommended |
| Output short circuit | Continuous |
| Rated over load protection | 115%min....160%max |

APPROVALS AND STANDARD

| | |
|--------|--------------------------|
| UL/cUL | UL1950 |
| TUV | EN60950 |
| CE | EN61204(Class A for EMI) |

MECHANISM & PIN CONFIGURATION



PHYSICAL CHARACTERISTICS

| | |
|---------------|---|
| CASE SIZE | 20.3 x 31.8 x 10.2 mm 0.8 x 1.25 x 0.4 inches |
| CASE MATERIAL | Tinplate nickel plated |
| WEIGHT | 16 g |

PIN ASSIGNMENT

GENERAL

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

DERATING

