

RDD08U SERIES

DC - DC CONVERTER
6.6 ~ 8W SINGLE & DUAL OUTPUT



FEATURES

- EFFICIENCY UP TO 85%
- 2:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- HIGH PERFORMANCE
- 3 YEARS WARRANTY



EN 60950-1



MODEL LIST

| MODEL NO. | INPUT VOLTAGE | INPUT CURRENT | | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (min.) | EFF. (typ.) | CAPACITOR LOAD (max.) | |
|-----------------------------|---------------|---------------|--------|----------------|----------------|----------------|-------------|-------------|-----------------------|--|
| | | (typ.) | (max.) | | | | | | | |
| Single Output Models | | | | | | | | | | |
| RDD08 - 03S1U | 9~18 VDC | 0.69A | 0.97A | 6.6 WATTS | +3.3 VDC | 2000 mA | 78% | 80% | 3300 μ F | |
| RDD08 - 05S1U | 9~18 VDC | 0.77A | 1.07A | 7.5 WATTS | + 5 VDC | 1500 mA | 80% | 82% | 2200 μ F | |
| RDD08 - 12S1U | 9~18 VDC | 0.79A | 1.11A | 8 WATTS | + 12 VDC | 670 mA | 83% | 85% | 470 μ F | |
| RDD08 - 15S1U | 9~18 VDC | 0.80A | 1.11A | 8 WATTS | + 15 VDC | 540 mA | 83% | 85% | 330 μ F | |
| RDD08 - 03S2U | 18~36 VDC | 0.35A | 0.48A | 6.6 WATTS | +3.3 VDC | 2000 mA | 78% | 80% | 3300 μ F | |
| RDD08 - 05S2U | 18~36 VDC | 0.38A | 0.53A | 7.5 WATTS | + 5 VDC | 1500 mA | 81% | 83% | 2200 μ F | |
| RDD08 - 12S2U | 18~36 VDC | 0.40A | 0.55A | 8 WATTS | + 12 VDC | 670 mA | 83% | 85% | 470 μ F | |
| RDD08 - 15S2U | 18~36 VDC | 0.40A | 0.55A | 8 WATTS | + 15 VDC | 540 mA | 83% | 85% | 330 μ F | |
| RDD08 - 03S3U | 35~75 VDC | 0.17A | 0.25A | 6.6 WATTS | +3.3 VDC | 2000 mA | 78% | 80% | 3300 μ F | |
| RDD08 - 05S3U | 35~75 VDC | 0.19A | 0.27A | 7.5 WATTS | + 5 VDC | 1500 mA | 81% | 83% | 2200 μ F | |
| RDD08 - 12S3U | 35~75 VDC | 0.20A | 0.28A | 8 WATTS | + 12 VDC | 670 mA | 83% | 85% | 470 μ F | |
| RDD08 - 15S3U | 35~75 VDC | 0.20A | 0.28A | 8 WATTS | + 15 VDC | 540 mA | 83% | 85% | 330 μ F | |

Dual Output Models

| | | | | | | | | | |
|---------------|-----------|-------|-------|---------|--------------|--------------|-----|-----|--------------------|
| RDD08 - 05D1U | 9~18 VDC | 0.82A | 1.14A | 8 WATTS | \pm 5 VDC | \pm 800 mA | 80% | 82% | \pm 1000 μ F |
| RDD08 - 12D1U | 9~18 VDC | 0.81A | 1.12A | 8 WATTS | \pm 12 VDC | \pm 340 mA | 83% | 85% | \pm 180 μ F |
| RDD08 - 15D1U | 9~18 VDC | 0.81A | 1.12A | 8 WATTS | \pm 15 VDC | \pm 270 mA | 83% | 85% | \pm 100 μ F |
| RDD08 - 05D2U | 18~36 VDC | 0.41A | 0.56A | 8 WATTS | \pm 5 VDC | \pm 800 mA | 81% | 83% | \pm 1000 μ F |
| RDD08 - 12D2U | 18~36 VDC | 0.40A | 0.56A | 8 WATTS | \pm 12 VDC | \pm 340 mA | 83% | 85% | \pm 180 μ F |
| RDD08 - 15D2U | 18~36 VDC | 0.40A | 0.56A | 8 WATTS | \pm 15 VDC | \pm 270 mA | 83% | 85% | \pm 100 μ F |
| RDD08 - 05D3U | 35~75 VDC | 0.20A | 0.29A | 8 WATTS | \pm 5 VDC | \pm 800 mA | 81% | 83% | \pm 1000 μ F |
| RDD08 - 12D3U | 35~75 VDC | 0.20A | 0.29A | 8 WATTS | \pm 12 VDC | \pm 340 mA | 83% | 85% | \pm 180 μ F |
| RDD08 - 15D3U | 35~75 VDC | 0.20A | 0.29A | 8 WATTS | \pm 15 VDC | \pm 270 mA | 83% | 85% | \pm 100 μ F |

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 | | 280 | | KHz |
| Isolation voltage | Input / Output | 1,500 | | | VDC |
| Isolation resistance | Input / Output, @ 500VDC | 100 | | | MΩ |
| Isolation capacitance | 100KHz / IV | | 1,000 | | PF |
| 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 | | | |
| Storage temperature | Non operational | -40 | | + 100 | °C |
| Relative humidity | Vi nom, Io nom | 20 | | 95 | % RH |
| Temperature coefficient | Vi nom, Io min | | | ± 0.02 | % / °C |
| Dimension | | L31.8 x W20.3 x H10.2 | | | mm |
| MTBF | Bellcore issue 6@40°C, GB | | 1,309,000 | | Hours |
| Cooling | Free air convection | | | | |

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 | 75 | VDC |
| No load input current | Vi nom, Io = 0 | 12V | | 30 | mA |
| | | 24V | | 25 | mA |
| | | 48V | | 20 | mA |
| Input voltage w/o damage | Io nom | 12V | | 20 | VDC |
| | | 24V | | 40 | VDC |
| | | 48V | | 80 | VDC |
| Startup voltage | Io nom | 12V | 8.7 | | VDC |
| | | 24V | 17.4 | | VDC |
| | | 48V | 31.5 | | 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 | % |
| Cross regulation (Dual modle) | Aymmetrical load 10% - 100% FL | | | ± 5 | % |
| Startup time | Vi nom, Io nom | | | 700 | ms |
| Transient recovery time | Vi nom, I ~ 0.5 Io nom | | | 1 | ms |
| Ripple & noise | Vi nom, Io nom, BW = 20MHz | | | 50 | mV |
| Efficiency | Vi nom, Io nom, Po / Pi | Up to 85%, See model list and efficiency curve | | | |

SPECIFICATION

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

CONTROL AND PROTECTION

| | | |
|----------------------------|--|---|
| Input reversed | Shunt diode built in, external fuse recommended 1A | |
| Output short circuit | Current limited (Auto-recovery) | |
| Rated over load protection | 110%min....140%max | |
| Remote on/off control | ON : 3....10Vdc or open circuit | OFF: 0....1.5Vdc or short circuit pin1 and pin2,3 |

APPROVALS AND STANDARD

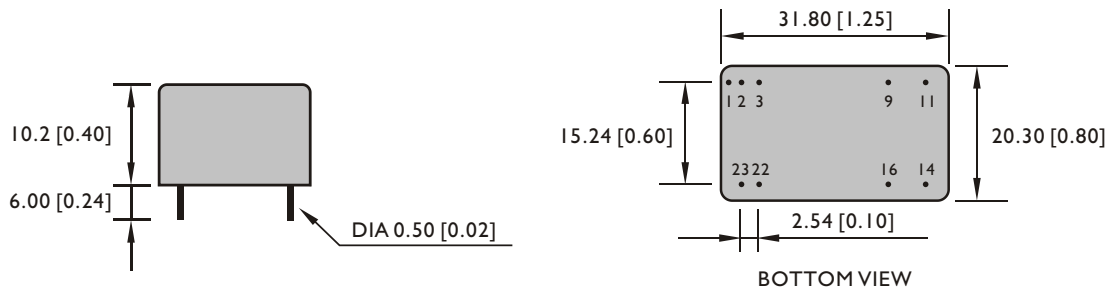
| | |
|-----------|---|
| UL/cUL | UL 60950-1 Recognized |
| TUV | EN 60950-1 |
| CE | EN 61204-3, EN 55022 Class A, EN 61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-6 |
| Vibration | meet IEC 60068-2-6 (10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis) |

PHYSICAL CHARACTERISTICS

| | |
|------------------|---|
| Case size | 31.8 x 20.3 x 10.2 mm (1.25 x 0.8 x 0.4 inches) |
| Case material | Plastic base / Metal case |
| Weight | 18 g |
| Potting material | Silicone |

MECHANISM & PIN CONFIGURATION

mm [inch]



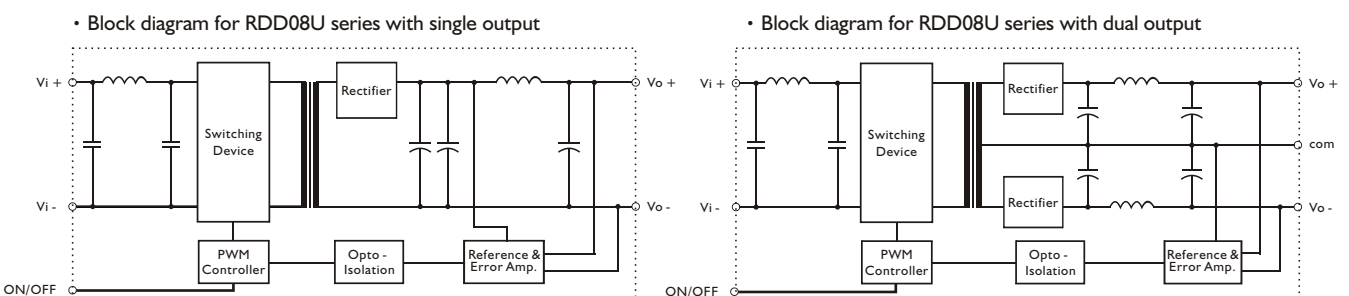
| GENERAL TOLERANCE | |
|----------------------------|-------------|
| 0.00[0.00] - 30.00[1.18] | ±0.30[0.01] |
| 30.00[1.18] - 120.00[4.72] | ±0.50[0.02] |

PIN ASSIGNMENT

GENERAL

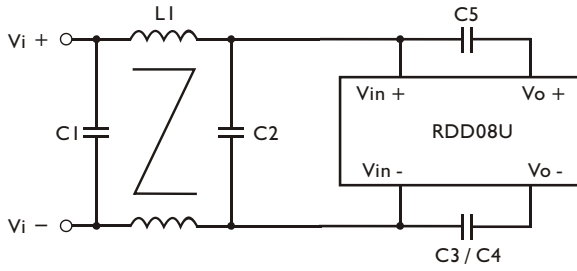
| PIN NO. | 1 | 2 & 3 | 9 | 11 | 14 | 16 | 22 & 23 |
|---------|--------|-------|-------|-------|------|------|---------|
| SINGLE | ON/OFF | Vi - | N. C. | N. C. | Vo + | Vo - | Vi + |
| DUAL | ON/OFF | Vi - | com | Vo - | Vo + | com | Vi + |

CIRCUIT SCHEMATIC



RECOMMENDED CIRCUIT

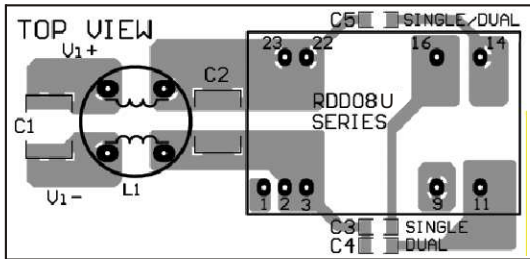
- Recommended filter for EN55022 Class B compliance.



- The components used in the above figure, together with the manufacturer part numbers for these components, are as follows.

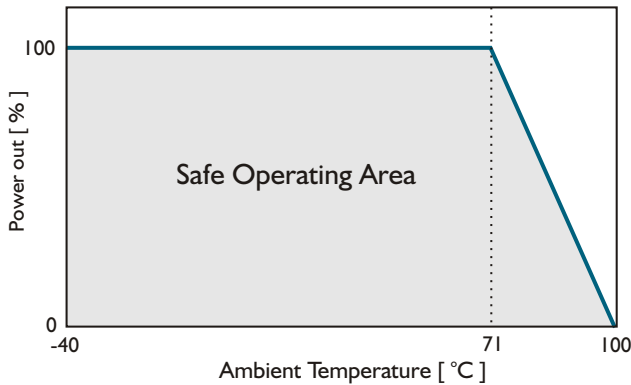
| | C1 | C2 | C3 / C4 | C5 | L1 |
|-------------|-------------------------|-------------------------|--------------|--------------|--------------------|
| RDD08-XXX1U | 2.2 μ F / 50V MLCC | 4.7 μ F / 50V MLCC | InF/2KV MLCC | InF/2KV MLCC | 1.5mH Common Choke |
| RDD08-XXX2U | 2.2 μ F / 50V MLCC | 4.7 μ F / 50V MLCC | InF/2KV MLCC | InF/2KV MLCC | 1.5mH Common Choke |
| RDD08-XXX3U | 2.2 μ F / 100V MLCC | 2.2 μ F / 100V MLCC | InF/2KV MLCC | InF/2KV MLCC | 1.5mH Common Choke |

- Recommended EN 55022 Class B filter circuit layout.

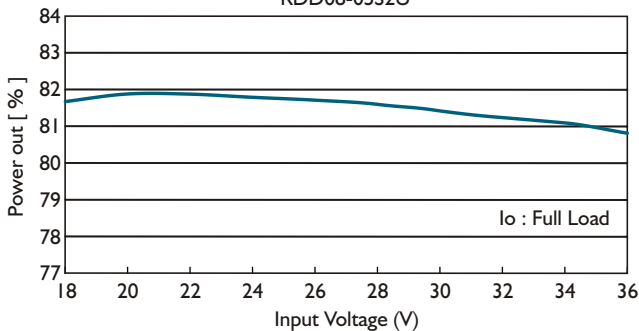


DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage
RDD08-05S2U



Efficiency Vs Output Load
RDD08-05S2U

