

Features

Unregulated Converter

- 1 : 1 Input Range
- 0.5W SMD Package
- Efficiency up to 80%
- Approved for Medical Applications
- 1kVDC and 3 kVDC Isolation Option
- Operating Temperature from -40°C to +100°C

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

| Part Number SMD | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency typ. (%) | Max Capacitive Load ⁽¹⁾ ** |
|-----------------|---------------------|----------------------|---------------------|---------------------|---------------------------------------|
| R0.5S**-3.305* | 3.3 | 5 | 100 | 80 | 1000µF |
| R0.5S**-3.312* | 3.3 | 12 | 42 | 77 | 150µF |
| R0.5S**-3.315* | 3.3 | 15 | 33 | 77 | 150µF |
| R0.5S**-0505* | 5 | 5 | 100 | 72 | 1000µF |
| R0.5S**-0512* | 5 | 12 | 42 | 77 | 150µF |
| R0.5S**-0515* | 5 | 15 | 33 | 79 | 150µF |
| R0.5S**-1205* | 12 | 5 | 100 | 74 | 1000µF |
| R0.5S**-1212* | 12 | 12 | 42 | 75 | 150µF |
| R0.5S**-1215* | 12 | 15 | 33 | 75 | 150µF |
| R0.5S**-2405* | 24 | 5 | 100 | 75 | 1000µF |
| R0.5S**-2412* | 24 | 12 | 42 | 77 | 150µF |
| R0.5S**-2415* | 24 | 15 | 33 | 77 | 150µF |
| R0.5D**-3.305* | 3.3 | ±5 | ±50 | 79 | ±470µF |
| R0.5D**-3.312* | 3.3 | ±12 | ±21 | 76 | ±68µF |
| R0.5D**-3.315* | 3.3 | ±15 | ±17 | 77 | ±68µF |
| R0.5D**-0505* | 5 | ±5 | ±50 | 79 | ±470µF |
| R0.5D**-0512* | 5 | ±12 | ±21 | 77 | ±68µF |
| R0.5D**-0515* | 5 | ±15 | ±17 | 79 | ±68µF |
| R0.5D**1205* | 12 | ±5 | ±50 | 76 | ±470µF |
| R0.5D**1212* | 12 | ±12 | ±21 | 75 | ±68µF |
| R0.5D**1215* | 12 | ±15 | ±17 | 75 | ±68µF |
| R0.5D**2405* | 24 | ±5 | ±50 | 77 | ±470µF |
| R0.5D**2412* | 24 | ±12 | ±21 | 75 | ±68µF |
| R0.5D**2415* | 24 | ±15 | ±17 | 75 | ±68µF |

*add Suffix "/H" for 3kVDC Isolation Voltage

**add Suffix "/P" for continuous short circuit protection

**add Suffix "-R" for tape & reel packing

For more details and dimensions of the tapes and reels see Application Notes

R0.5S**:

**without marking denotes 5 pins out of 8 fitted (includes „/H“ option)

**with marking 8 denotes 8 pins out of 8 fitted („/H“ option not available)

**with marking 12 denotes 10 pins out of 12 fitted (includes „/H“ option)

R0.5D**:

**without marking denotes 6 pins out of 10 fitted (includes „/H“ option)

**with marking 10 denotes 10 pins out of 10 fitted („/H“ option not available)

**with marking 12 denotes 10 pins out of 12 fitted (includes „/H“ option)

ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

0.5 Watt SMD Isolated Single or Dual Output



UL-60950-1 Certified

RO.5S_D

Derating-Graph (Ambient Temperature)



Refer to Application Notes

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

| | | |
|-----------------------------|--|--|
| Input Voltage Range | | $\pm 10\%$ max. |
| Voltage Set Accuracy | 100% Load/nominal Vin | -1% typ. / $\pm 5\%$ max. |
| Line Regulation | Low Line to High Line @ max. Load | 1.2% typ. |
| Load Regulation | 5V output | 6% typ. / 15% max. |
| (10% to 100% Load) | 12/15V output | 5%typ. / 10% max. |
| Ripple & Noise @ 20MHz BW | | 50 mVp-p typ. / 100mVp-p max. |
| Efficiency at Full Load | | 70% min. |
| Operating Temperature | | -40°C to +100°C |
| Storage Temperature | | -55°C to +125°C |
| Isolation Voltage | (tested for 1 second) (rated for 1 minute***) | 1000VDC 500VAC / 60Hz |
| Isolation Voltage | H-Suffix (tested for 1 second) H-Suffix (rated for 1 minute***) | 3000VDC 1500VAC / 60Hz |
| Isolation Capacitance | | 75pF max. |
| Isolation Resistance | Viso = 500V | 10 G Ω min. |
| Humidity | | 95% max. |
| Operating Frequency | Vin (nom.) | 20kHz min. / 50 kHz typ. / 90 kHz max. |
| Short-Circuit Protection | | 1 Second |
| MTBF | Using MIL-HDBK 217F (+100°C) | 1003 x 10 ³ hours |
| Using MIL-HDBK 217F (+25°C) | 3962 x 10 ³ hours | <i>Detailed Information see Application Notes chapter „MTBF“</i> |
| Weight | Single Types | 1.0 g |
| | Dual Types | 1.2 g |
| Certification | | |
| UL General Safety | Report: E358085 | UL 60950-1 2nd Ed. |

***Any data referred to in this datasheet are of indicative nature and based on our practical experience only. For further details, please refer to our Application Notes.

Notes

Note1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1second without damage to the converter.

Typical Characteristics

Tolerance Envelope



Typical Characteristics

R0.5S-3.3xx



R0.5S-05xx



R0.5S-12xx



R0.5S-24xx



ECONOLINE

DC/DC-Converter

R0.55_D Series

Typical Characteristics

R0.5D-3.3xx



R0.5D-05xx



R0.5D-12xx



R0.5D-24xx



R0.55_D

Single Output



Except „/P“ Versions

| C1 | L1 | Vin |
|-------|-------|------|
| 4.7µF | 4.7µH | 3.3V |
| 4.7µF | 4.7µH | 5V |
| 4.7µF | 4.7µH | 12V |
| 2.2µF | 4.7µH | 15V |

Dual Output



Except „/P“ Versions

| C1 | L1 | Vin |
|-------|-------|------|
| 4.7µF | 10µH | 3.3V |
| 4.7µF | 4.7µH | 5V |
| 4.7µF | 2.2µH | 12V |
| 4.7µF | 2.2µH | 15V |

C1 = MLCC
L1 = SMD Inductor

Package Style and Pinning (mm)

5 PINS Single SMD Package



Footprint

Pin Connections

| Pin # | Single | Dual |
|-------|--------|--------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 4 | -Vout | Com. |
| 5 | +Vout | -Vout |
| 7 | No Pin | +Vout |
| 8 | NC | No Pin |
| 10 | No Pin | NC |

NC= No Connection

UNIT: mm

TOL.: ± 0.25 mm

6 PINS Dual SMD Package



Footprint

Package Style and Pinning (mm)

8 PINS Single SMD Package



Footprint

Pin Connections

| Pin # | Single | Dual |
|---------|--------|-------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 4 | -Vout | Com. |
| 5 | +Vout | -Vout |
| 7 | NC | +Vout |
| 3, 6, 8 | NC | NC |
| 9, 10 | No Pin | NC |

NC= No Connection

UNIT: mm

TOL.: ± 0.25 mm

10 PINS Dual SMD Package



Footprint

ECONOLINE

DC/DC-Converter

R0.55_D Series

Package Style and Pinning (mm)

12 PINS Dual SMD Package



Pin Connections

| Pin # | Function Single | Function Dual |
|--------------|-----------------|---------------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 5 | -Vout | Com. |
| 6 | NC | -Vout |
| 8 | +Vout | +Vout |
| 3,7,10,11,12 | NC | NC |

NC= No Connection

Unit: mm

TOL.: ± 0.25 mm



Footprint

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