

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

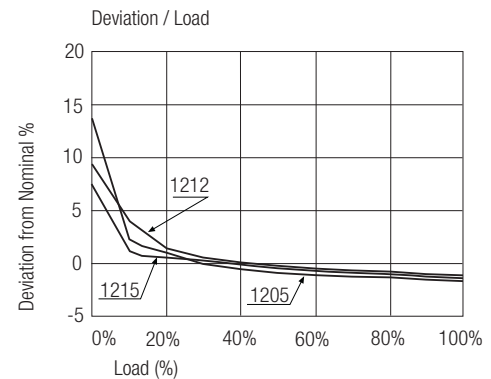
R0.5D-3.3xx



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



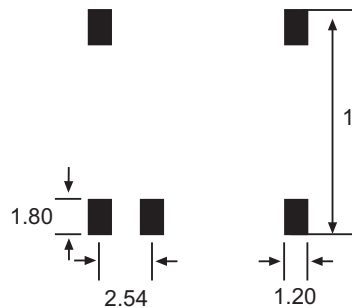
Except „/P“ Versions

| 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

The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.