

# Features

## Regulated Converters

- Ultracompact Low Profile AC-DC Power Supply
- Ultra-low 30mW Standby Power Consumption
- 1 Watt or 2 Watt PCB Mount Package
- Extra Wide Input Voltage Range (80~264VAC)
- Class II Power Supply with 3kVAC Isolation
- -25°C to +85°C Operating Temp
- Low Output Ripple
- Short Circuit Protected Outputs
- EN, UL and CE Certified

## Description

The RAC01-SC and RAC02-SC series are ultra-compact universal input AC/DC power modules for PCB mounting. They feature high efficiency, low standby power, high operating temperature, soft start and short-circuit protection as well as a built-in EMC Class B filter. Output voltages range from 3.3VDC to 24VDC.

## Selection Guide

| Part Number | Input Range (VAC) | Output Voltage (VDC) | Output Current (mA) | Efficiency typ. (%) | Max Capacitive Load <sup>(1+2)</sup> |
|-------------|-------------------|----------------------|---------------------|---------------------|--------------------------------------|
| RAC01-3.3SC | 80-264            | 3.3                  | 300                 | 65                  | 2200µF                               |
| RAC02-3.3SC |                   |                      | 600                 | 66                  | 2700µF                               |
| RAC01-05SC  | 80-264            | 5                    | 200                 | 68                  | 1600µF                               |
| RAC02-05SC  |                   |                      | 400                 | 70                  | 2000µF                               |
| RAC01-09SC  | 80-264            | 9                    | 111                 | 70                  | 470µF                                |
| RAC02-09SC  |                   |                      | 222                 | 72                  | 560µF                                |
| RAC01-12SC  | 80-264            | 12                   | 83                  | 72                  | 180µF                                |
| RAC02-12SC  |                   |                      | 167                 | 74                  | 200µF                                |
| RAC01-15SC  | 80-264            | 15                   | 67                  | 72                  | 180µF                                |
| RAC02-15SC  |                   |                      | 133                 | 74                  | 200µF                                |
| RAC01-24SC  | 80-264            | 24                   | 42                  | 73                  | 68µF                                 |
| RAC02-24SC  |                   |                      | 83                  | 77                  | 68µF                                 |

## Specifications (measured at TA 25°C, full load after warm-up)

|   |   |                |
|---|---|----------------|
| Input Voltage Range (with derating)   | 80-264VAC or 115-370VDC                           |                |
| Rated Power   | 1 or 2 Watts max.                                 |                |
| Input Frequency Range (for AC Input)  | 47-63Hz   |                |
| Input Current (full load)   | RAC01 (115/230VAC)                                | 34mA/23mA max. |
|   | RAC02 (115/230VAC)                                | 55mA/36mA max. |
| No Load Power Consumption   | @115VAC   | 30mW typ.      |
|   | @230VAC   | 80mW typ.      |
| Inrush Current (<0.5ms)   | 30/60A max.                                       |                |
| Leakage Current   | 0.25mA max.                                       |                |
| Output Voltage Tolerance (combined Tolerance, Line Reg and Load Reg at full load) | ±5% max.  |                |
| Line Voltage Regulation   | low line, high line at full load                  | ±2% max.       |
| Load Voltage Regulation   | 10% to 100% full load                             | ±6% max.       |
| Output Ripple (20MHz BW limited)  | 3.3V Output                                       | <150mVrms      |
|   | All others  | <100mVrms      |
| Operating Frequency (full load)   | 30kHz typ.  |                |
| Minimum Load = 0%   | specifications valid for 10% minimum load only    |                |
| RMS Isolation Voltage (input to output)   | 3kVAC / 1 minute                                  |                |
| Isolation Resistance  | 1 GΩ min.   |                |
| Short Circuit Protection  | Hiccup, Automatic Restart                         |                |
| Over Voltage Category   | OVC II  |                |
| Operating Temperature Range <sup>(3)</sup>  | (1W, natural convection, no derating)             | -25°C to +80°C |
|   | (2W natural convection, no derating)              | -25°C to +75°C |
|   | (natural convection, with derating)               | -25°C to +85°C |
| Storage Temperature Range   | -40°C to +100°C                                   |                |
| Humidity  | non-condensing                                    | 95% RH max     |
| Case Material   | Plastic Case, Silicone potting material (UL94V-0) |                |

continued on next page

# POWERLINE

## AC/DC-Converter

with 3 year Warranty

RECOM

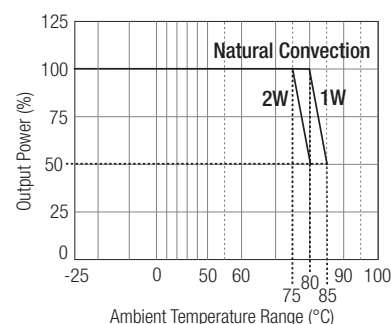
## 1 - 2 Watt Single Output



EN-60950-1 Certified  
UL-60950-1 Certified

## RAC01-C RAC02-C

## Derating-Graph (Ambient Temperature)



Refer to Application Notes

### Specifications (measured at TA 25°C, full load after warm-up)

|                     |                    |   |
|---------------------|--------------------|---|
| Package Weight      |                    | 25g                                     |
| Packing Quantity    |                    | 22 pcs                                  |
| EMC                 |                    | Conducted and Radiate<br>Noise Immunity |
|                     |                    | EN55022 Class B<br>EN55024              |
| MTBF                | +25°C              | 666 x 10³ hours                         |
| 230VAC              | +55°C              | 395 x 10³ hours                         |
| using MIL-HDBK-217F | +80°C              | 125 x 10³ hours                         |
| Certifications:     |                    |   |
| UL General Safety   | File Nr. E224736   | UL-60950-1, 2nd Edition                 |
| EN General Safety   | SPCLVD 1202026     | EN-60950-1, 2nd Edition                 |
| CE                  | Report: 2011-04-19 | EN55022 Class B                         |

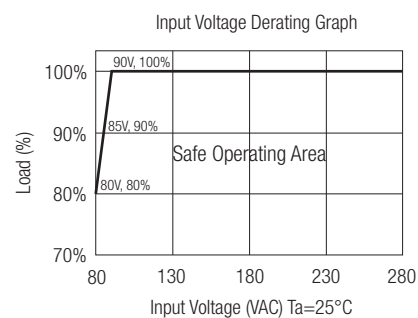
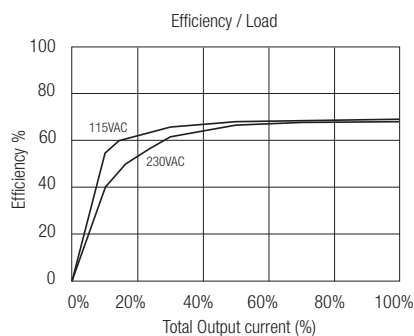
#### Notes:

Note1: Measured @ 230VAC / 50Hz / Ta=25°C with constant resistant mode at full load.

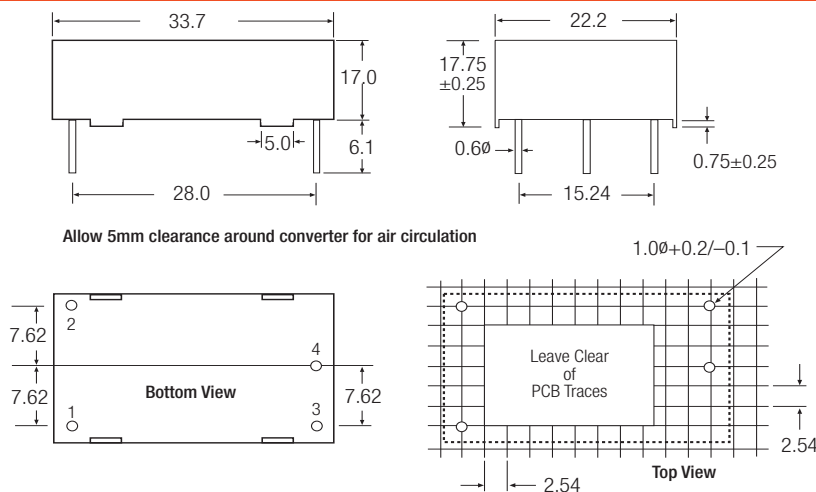
Note2: If used @ 115VAC / 60Hz with full load, max. capacitive load is less, please contact RECOM for detailed information.

Note3: Start up only is guaranteed at temperatures down to -25°C. Other specifications may not be met.

#### RAC01-05SC



### Standard Package Style and Pinning



#### Pin Connections

| Pin # | Single Output |
|-------|---------------|
| 1     | VAC in (N)    |
| 2     | VAC in (L)    |
| 3     | -VDC out      |
| 4     | +VDC out      |

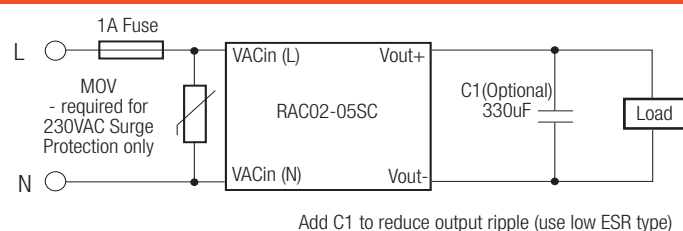
Tolerance ± 0.5 mm  
unless otherwise specified

### Recommended Application Circuit

Compact single output regulated power supply

Suggested fuse rating: 1A Slow Blow.

An external MOV is required for 230VAC operation. The varistor should comply with IEC-61051-2 e.g. Epcos S14 series



Add C1 to reduce output ripple (use low ESR type)

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