

# Features

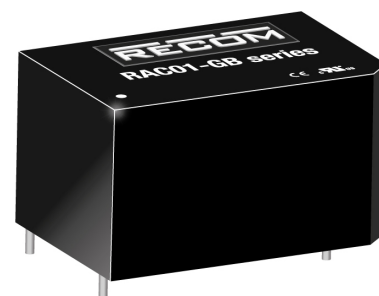
## Regulated Converter

- Universal Input 85-264VAC
- 1W PCB Mount Package
- <250mW No Load Power Consumption
- Ultra Low Profile, Compact Size
- -25°C to +80°C Operating Temperature
- Continuous SCP, OCP
- EN/IEC/UL60950 & IEC/EN/UL62368 Certified

**RECOM**  
AC/DC Converter

## RAC01-GB

**1 Watt  
Single  
Output EMC  
Class B**



### Description

The RAC01-GB series are low cost AC/DC power supplies, ideal for PCB mounted, compact, board level industrial applications. They feature universal AC input voltage range, regulated and short-circuit-proof isolated DC outputs, low standby power consumption and -25°C to +80°C operating temperature range. The RAC01-GB have a built-in Class B / FCC Part 15 EMC filter, are certified to EN60950 and EN62368 safety standards and come with a three year warranty.

### Selection Guide

| Part Number | nom. Input Voltage Range [VAC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ. [%] | Max. Capacitive Load <sup>(1)</sup> [μF] |
|-------------|--------------------------------|----------------------|---------------------|---------------------|--|
| RAC01-05SGB | 100-240                        | 5                    | 200                 | 63                  | 500                                      |
| RAC01-12SGB | 100-240                        | 12                   | 83                  | 68                  | 200                                      |

#### Notes:

Note1: measured with all input voltages at 25°C with constant resistant mode at full load.

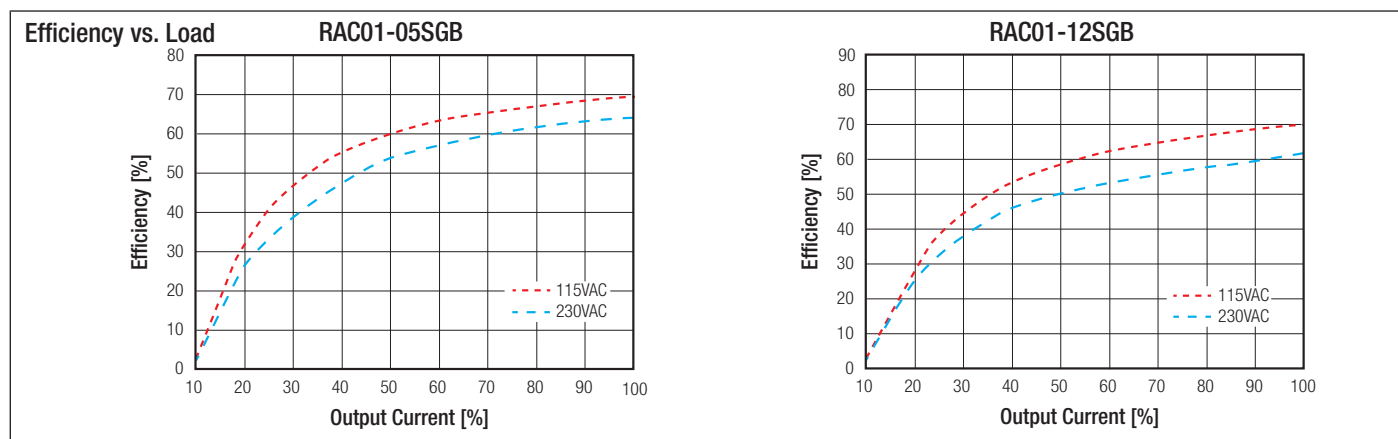
### Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

| BASIC CHARACTERISTICS  |                          |                                |         |                |                      |
|--|--------------------------|--------------------------------|---------|----------------|----------------------|
| Parameter  | Condition                |                                | Min.    | Typ.           | Max.                 |
| Internal Input Filter  |                          |                                | Pi-Type |                |                      |
| Input Voltage Range <sup>(2)</sup>   |                          |                                | 85VAC   | 230VAC         | 264VAC               |
| Input Current  | 115VAC<br>230VAC         |                                |         | 25mA<br>18mA   | 30mA<br>20mA         |
| Inrush Current   | cold start at 25°C       | 115VAC<br>230VAC               |         |                | 30A<br>40A           |
| No load Power Consumption  |                          |                                |         | 180mW          | 250mW                |
| Input Frequency Range  |                          |                                | 47Hz    |                | 63Hz                 |
| Start-up Time  | 115VAC<br>230VAC         |                                |         | 250ms<br>200ms | 2s<br>2s             |
| Hold-up time   | 115VAC<br>230VAC         |                                |         |                | 18ms<br>80ms         |
| Minimum Load   |                          |                                | 0%      |                |                      |
| Internal Operating Frequency   | 100% load at nominal Vin |                                |         | 65kHz          |                      |
| Output Ripple and Noise  | 5Vout                    | 0 °C ... 80°C<br>-25°C ... 0°C |         |                | 100mVp-p<br>200mVp-p |
|  | 12Vout                   | 0 °C ... 80°C<br>-25°C ... 0°C |         |                | 200mVp-p<br>300mVp-p |
| Power Factor   | 115VAC<br>230VAC         |                                |         | 0.5<br>0.38    |                      |
| <div>Notes:</div> <div>Note2: no proper operation with DC Input Voltage.</div> <div>continued on next page</div> |                          |                                |         |                |                      |



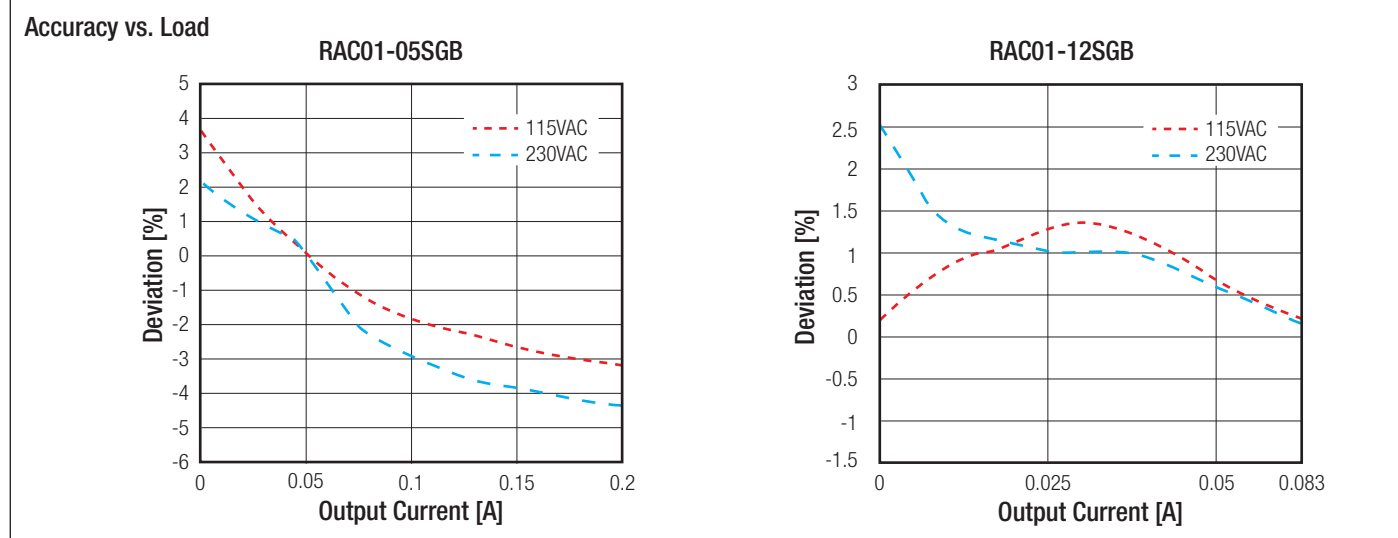
UL60950-1 Certified  
IEC/EN60950-1 Certified  
UL62368-1 Certified  
IEC/EN62368-1 Certified

**Specifications** (measured @  $t_a = 25^\circ\text{C}$ , nominal input voltage (115/230VAC), full load and after warm-up)



### REGULATIONS

| Parameter       | Condition                                  | Value            |
|-----------------|--|------------------|
| Output Accuracy | $-25^\circ\text{C}$ to $+80^\circ\text{C}$ | $\pm 6.0\%$ max. |
| Line Regulation | $-25^\circ\text{C}$ to $+80^\circ\text{C}$ | $\pm 2.0\%$ max. |
| Load Regulation | $-25^\circ\text{C}$ to $+80^\circ\text{C}$ | $\pm 6.0\%$ max. |



### PROTECTIONS

| Parameter                        | Type                | Value   |
|----------------------------------|---------------------|---|
| Input Fuse                       | internal            | 10 $\Omega$ /1W   |
| Short Circuit Protection (SCP)   | below 100m $\Omega$ | continuous, auto recovery                               |
| Over Current Protection (OCP)    | 5Vout<br>12Vout     | 0.22A - 0.5A, hiccup mode<br>0.25A - 0.91A, hiccup mode |
| Over Voltage Category (OVC)      |                     | OVC II  |
| Isolation Voltage <sup>(3)</sup> | I/P to O/P          | rated for 1 min   |
| Isolation Resistance             |                     | 100M $\Omega$ min.                                      |
| Isolation Capacitance            |                     | 1nF   |
| Insulation Grade                 |                     | reinforced  |
| Leakage Current                  | I/P to O/P          | 0.25mA max.   |

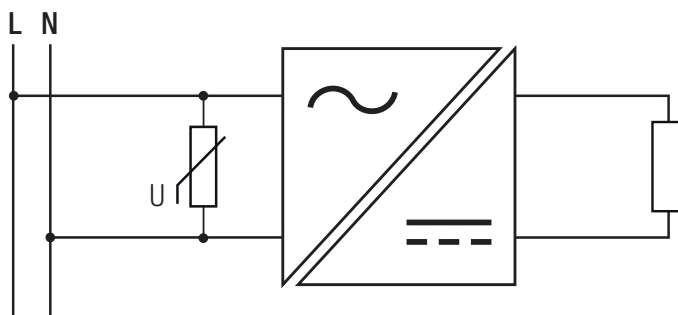
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**Specifications** (measured @  $t_a = 25^\circ\text{C}$ , nominal input voltage (115/230VAC), full load and after warm-up)

**Notes:**

Note3: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note4: For operation at 230VAC, an external MOV is recommended. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 series

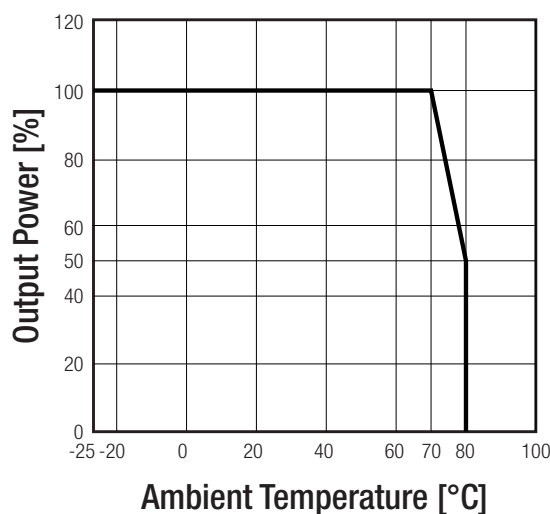


### ENVIRONMENTAL

| Parameter                         | Condition   | Value   |
|-----------------------------------|---|---|
| Operating Temperature Range       |   | $-25^\circ\text{C}$ to $+70^\circ\text{C}$                      |
| Maximum Case Temperature          |   | $+120^\circ\text{C}$  |
| Temperature Coefficient           |   | $\pm 0.03\%/^\circ\text{C}$                                     |
| Operating Humidity                | non-condensing  | 5% - 90% RH   |
| Operating Altitude <sup>(5)</sup> |   | 4000m   |
| Pollution Degree                  |   | PD2   |
| Vibration                         |   | 10-150Hz, 2G 10min./1cycle, period 60min. each along x,y,z axes |
| Shock                             |   | 20G/11ms pulse, 3 times at each x, y, z axes                    |
| MTBF                              | according to MIL-HDBK-217F, G.B. $+25^\circ\text{C}$<br>$+70^\circ\text{C}$ | $1691 \times 10^3$ hours<br>$424 \times 10^3$ hours             |

### Derating Graph

(@ Chamber and natural convection 0.1m/s)



**Notes:**

Note5: Recognized by UL for safe operation up to 4000m. High altitude operation may impact the performance and lifetime. Contact RECOM tech support for advice

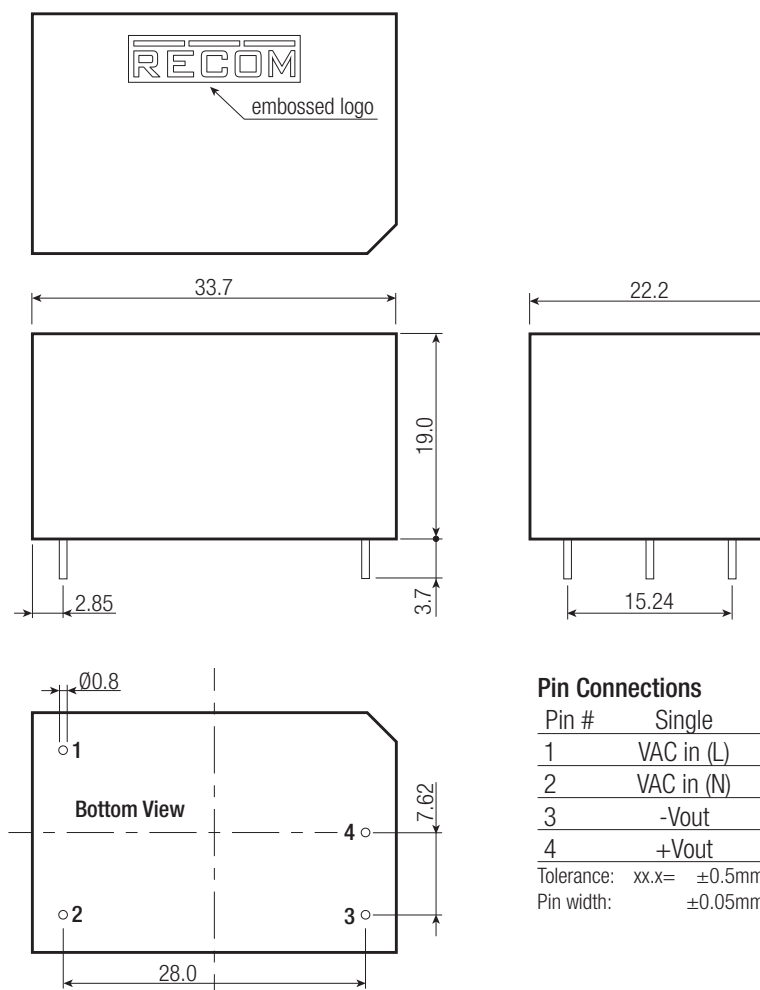
**Specifications** (measured @  $t_a = 25^\circ\text{C}$ , nominal input voltage (115/230VAC), full load and after warm-up)

| SAFETY AND CERTIFICATIONS (pending)   |   |   |
|---|---|---|
| Certificate Type (Safety)   | Report / File Number                            | Standard  |
| Information Technology Equipment, General Requirements for Safety (CB Scheme)                         | 16BAS1004811                                    | IEC60950-1, 2nd Edition, 2005 + AM2, 2013<br>EN60950-1, 1st Edition, 2006 + AM2, 2013 |
| Information Technology Equipment, General Requirements for Safety                                     | E196683 A1                                      | UL60950-1, 2nd Edition<br>CAN/CSA C22.2 No. 60950-1-07, 2nd Edition                   |
| Audio/video, information and communication technology equipment. Safety requirements                  |   | UL62368-1, 2nd Edition<br>CAN/CSA C22.2 No 62368-1, 2nd Edition                       |
| Audio/video, information and communication technology equipment. Safety requirements (CB Scheme)      | 16BCS1004811                                    | IEC62368-1, 2nd Edition, 2014<br>EN62368-1, 1st Edition, 2014                         |
| RoHs 2+   |   | RoHs 2011/65/EU + AM2015/863  |
| EMC Compliance  | Condition                                       | Standard / Criterion  |
| Electromagnetic compatibility of multimedia equipment - Emission requirements                         |   | EN55032, Class B  |
| Limitations on the amount of electromagnetic interference allowed from digital and electronic devices |   | 47 CFR FCC Part 15, Subpart B 2016, Class A & B                                       |
| ESD Electrostatic discharge immunity test   | Air $\pm 8\text{kV}$ , Contact $\pm 4\text{kV}$ | EN61000-4-2, Criteria A   |
| Radiated, radio-frequency, electromagnetic field immunity test  | 3V/m  | EN61000-4-3, Criteria A   |
| Fast Transient and Burst Immunity   | $\pm 1\text{kV}$                                | EN61000-4-4, Criteria B   |
| Surge Immunity  | $\pm 1\text{kV}$                                | EN61000-4-5, Criteria B   |
| Immunity to conducted disturbances, induced by radio-frequency fields                                 | 3V  | EN61000-4-6, Criteria A   |
| Voltage Dips and Interruption   | Voltage Dips >95%                               | EN61000-4-11, Criteria A  |
|   | Voltage Dips 30%                                | EN61000-4-11, Criteria B  |
|   | Voltage Interruptions >95%                      | EN61000-4-11, Criteria B  |

| DIMENSION and PHYSICAL CHARACTERISTICS |             |                      |
|--|-------------|----------------------|
| Parameter                              | Type        | Value                |
| Material                               | Case<br>PCB | black plastic<br>FR4 |
| Package Dimension (LxWxH)              |             | 33.7 x 22.2 x 19.0mm |
| Package Weight                         |             | 12g typ.             |
| continued on next page                 |             |                      |

**Specifications** (measured @  $t_a = 25^\circ\text{C}$ , nominal input voltage (115/230VAC), full load and after warm-up)

Dimension Drawing (mm)



### PACKAGING INFORMATION

| Parameter                   | Type           | Value                 |
|-----------------------------|----------------|-----------------------|
| Packaging Dimension (LxWxH) | tube           | 470.0 x 36.4 x 26.4mm |
| Packaging Quantity          |                | 20pcs                 |
| Storage Temperature Range   |                | -25°C to +85°C        |
| Storage Humidity            | non-condensing | 5%-95% RH max.        |

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