

Features

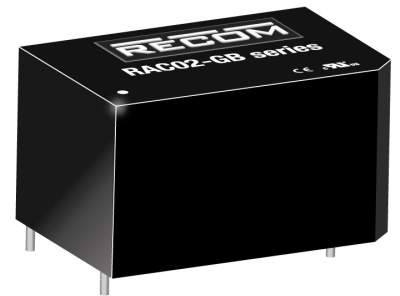
Regulated Converter

- 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



RAC02-GB

**2 Watt
Single
Output EMC
Class B**



Description

The RAC02-GB series are low cost AC/DC power supplies, ideal for PCB mounted, compact, board level industrial power supplies. 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 RAC02-GB have a built-in Class B / FCC Part 15 EMC filter, are pending 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 ⁽¹⁾ [µF] |
|-------------|--------------------------------|----------------------|---------------------|---------------------|--|
| RAC02-05SGB | 100-240 | 5 | 400 | 69 | 500 |
| RAC02-12SGB | 100-240 | 12 | 167 | 72 | 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)

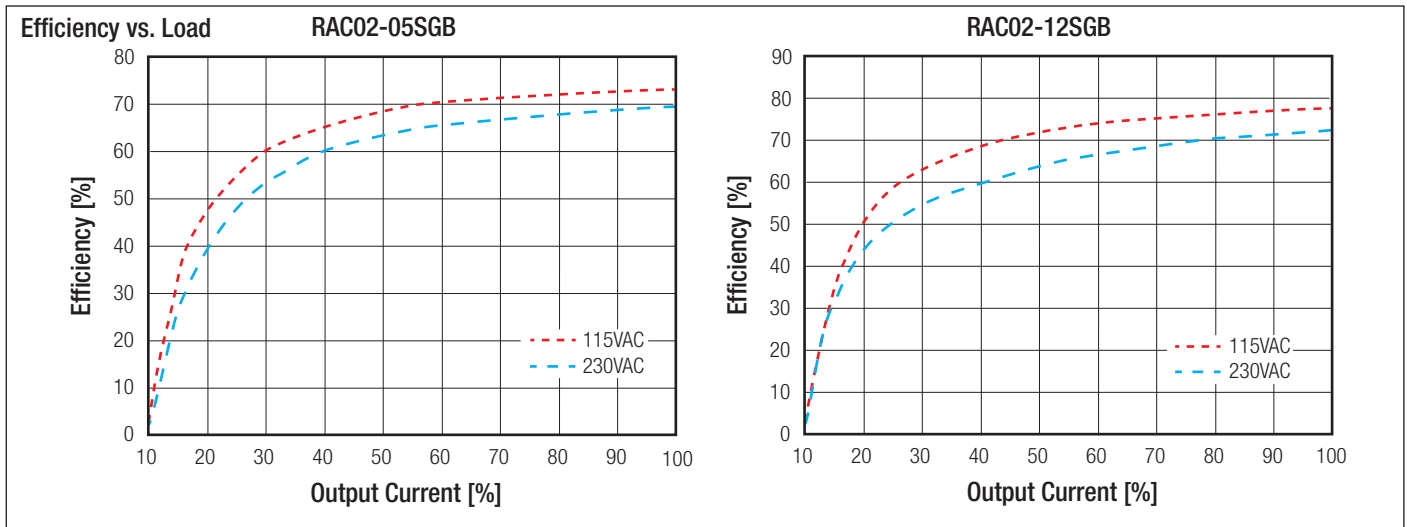
| BASIC CHARACTERISTICS | | | | | |
|---|--------------------------|--------------------------------|-------|----------------|----------------------|
| Parameter | Condition | | Min. | Typ. | Max. |
| Internal Input Filter | | | | | Pi-Type |
| Input Voltage Range ⁽²⁾ | | | 85VAC | 230VAC | 264VAC |
| Input Current | 115VAC 230VAC | | | | 50mA 30mA |
| Inrush Current | cold start at 25°C | 115VAC 230VAC | | | 30A 40A |
| No load Power Consumption | | | | 180mW | 250mW |
| Input Frequency Range | | | 47Hz | | 63Hz |
| Start-up Time | 115VAC 230VAC | | | 250ms 200ms | 2s 2s |
| Hold-up time | 115VAC 230VAC | | | | 18ms 80ms |
| Minimum Load | | | 0% | | |
| Internal Operating Frequency | 100% load at nominal Vin | | | 65kHz | |
| Output Ripple and Noise | 5Vout | 0 °C ... 80°C -25°C ... 0°C | | | 100mVp-p 200mVp-p |
| | 12Vout | 0 °C ... 80°C -25°C ... 0°C | | | 200mVp-p 300mVp-p |
| Power Factor | 115VAC 230VAC | | | 0.55 0.42 | |
| Notes: | | | | | |
| Note2: no proper operation with DC Input Voltage. | | | | | |

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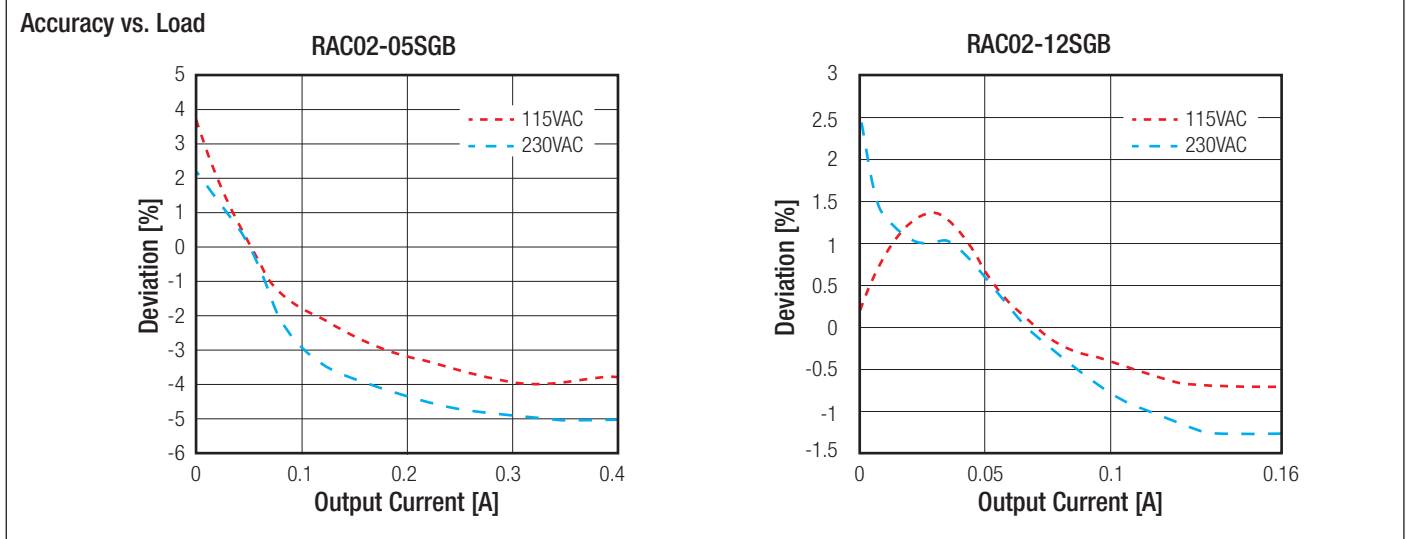
UL60950-1 Certified
IEC/EN60950-1 Certified
UL62368-1 Certified
IEC/EN62368-1 Certified

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°C to +80°C | ±6.0% max. |
| Line Regulation | -25°C to +80°C | ±2.0% max. |
| Load Regulation | -25°C to +80°C | ±6.0% max. |



PROTECTIONS

| Parameter | Type | Value |
|----------------------------------|-----------------|---|
| Input Fuse | internal | 10Ω/1W |
| Short Circuit Protection (SCP) | below 100mΩ | continuous, auto recovery |
| Over Current Protection (OCP) | 5Vout 12Vout | 0.44A - 1.2A, hiccup mode 0.183A - 0.5A, hiccup mode |
| Over Voltage Category (OVC) | | OVC II |
| Isolation Voltage ⁽³⁾ | I/P to O/P | rated for 1min 3kVAC |
| Isolation Resistance | | 100MΩ min. |
| Isolation Capacitance | | 1nF |
| Insulation Grade | | reinforced |
| Leakage Current | I/P to O/P | 0.25mA max. |

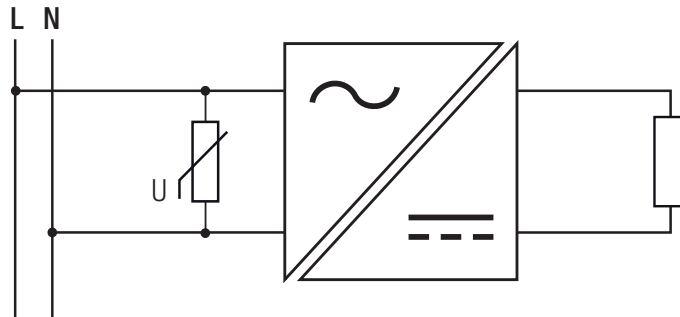
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Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)

Notes:

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

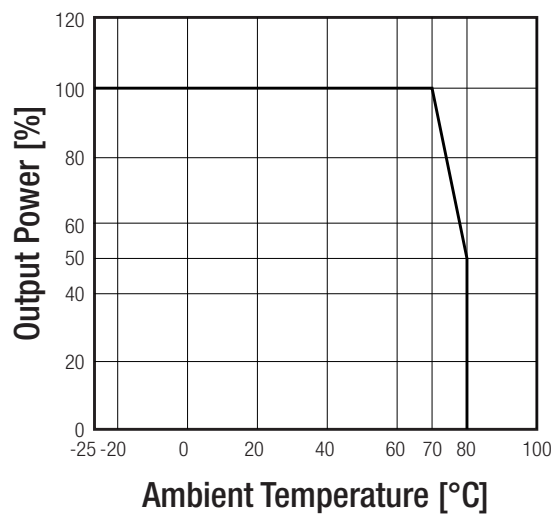
Note4: For operation at 230VAC, an external MOV is recommended. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 series



| ENVIRONMENTAL | | |
|-----------------------------------|----------------------------------|---|
| Parameter | Condition | Value |
| Operating Temperature Range | | -25°C to + 70°C |
| Maximum Case Temperature | | +120°C |
| Temperature Coefficient | | ±0.03%/°C |
| Operating Altitude ⁽⁵⁾ | | 4000m |
| Operating Humidity | non-condensing | 5% - 90% RH |
| 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°C +70°C 1691 x 10 ³ hours 424 x 10 ³ hours |

Derating Graph

(@ Chamber and natural convection 0.1m/s)



Notes:

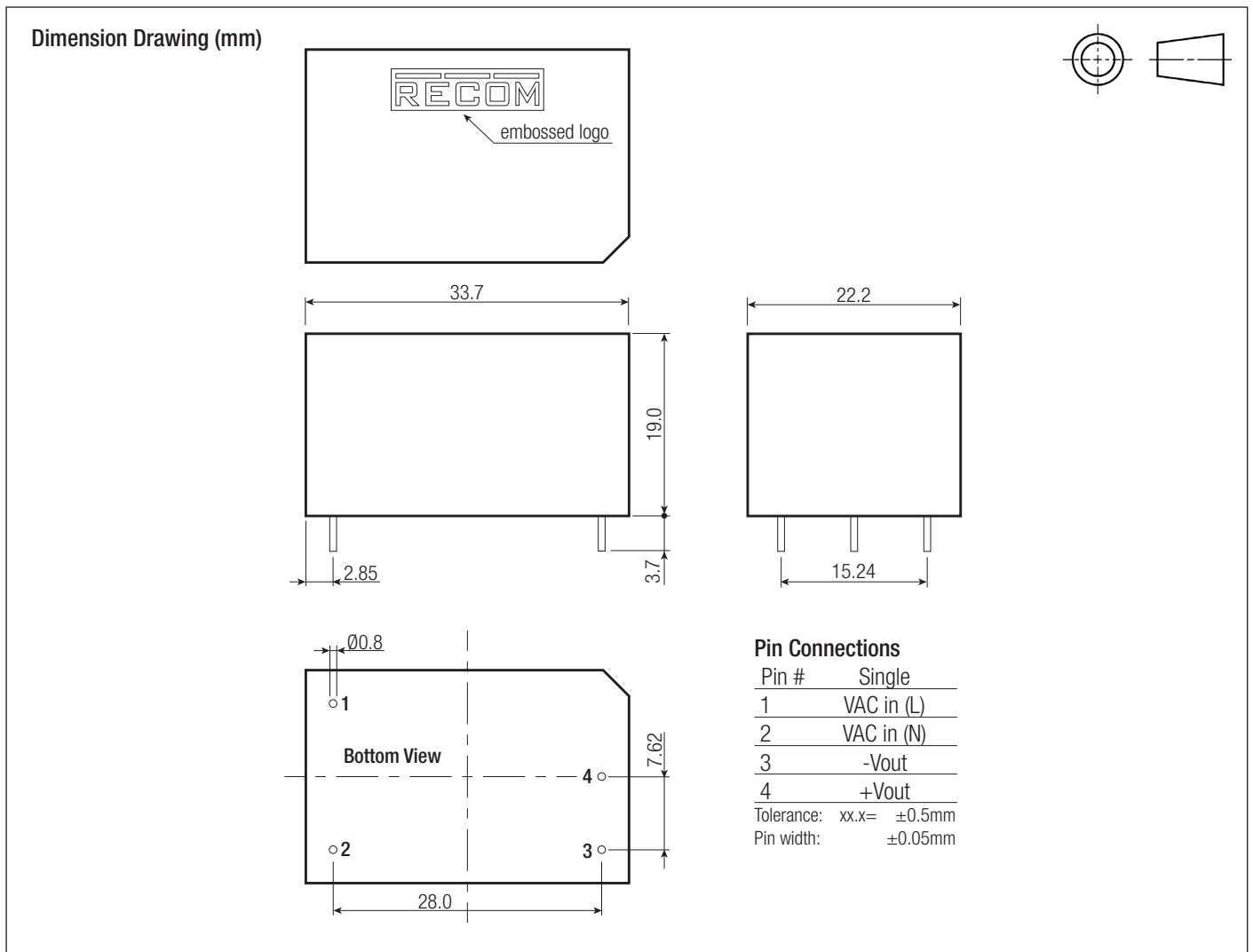
Note5: Recognized by UL for safe operation up to 4000m. High altitude operation may impact the performance and lifetime. Contact RECOM tech support for advice

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 EN60950-1, 1st Edition, 2006 + AM2, 2013 |
| Information Technology Equipment, General Requirements for Safety | E196683 A1 | UL60950-1, 2nd Edition CAN/CSA C22.2 No. 60950-1-07, 2nd Edition |
| Audio/video, information and communication technology equipment. Safety requirements (CB Scheme) | | UL62368-1, 2nd Edition CAN/CSA C22.2 No 62368-1, 2nd Edition |
| Audio/video, information and communication technology equipment. Safety requirements | 16BCS1004811 | IEC62368-1, 2nd Edition, 2014 EN62368-1, 1st Edition, 2014 |
| RoHs 2+ | | RoHs 2011/65/EU + AM2015/863 |
| EMC Compliance | | |
| 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 | black plastic |
| | PCB | FR4 |
| Package Dimension (LxWxH) | | 33.7 x 22.2 x 19.0mm |
| Package Weight | | 12g typ. |
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Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)



| 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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