

Features

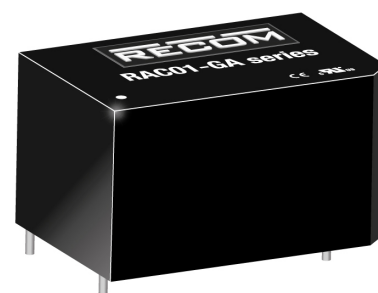
Regulated Converter

- Universal Input 85-264VAC
- 1W PCB Mount Package
- <150mW 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, EN60335-1 Pending

RECOM
AC/DC Converter

RAC01-GA

1 Watt
Single
Output EMC
Class A



UL60950-1 Certified
IEC/EN60950-1 Certified
UL62368-1 Certified
IEC/EN62368-1 Certified
EN60335-1 Pending

Description

The RAC01-GA 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 RAC01-GA have a built-in Class A / FCC Part 15 EMC filter, are pending to EN60335, 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]
RAC01-05SGA	100-240	5	200	63	500
RAC01-12SGA	100-240	12	83	68	200

Notes:

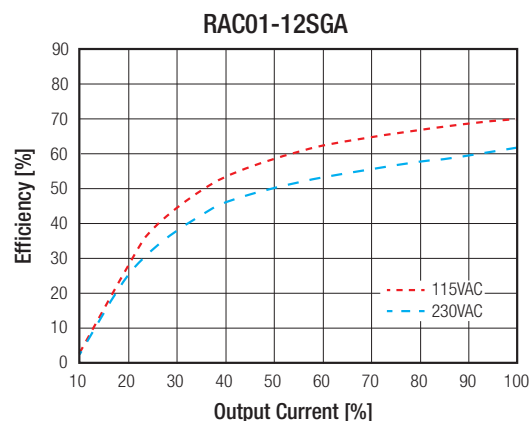
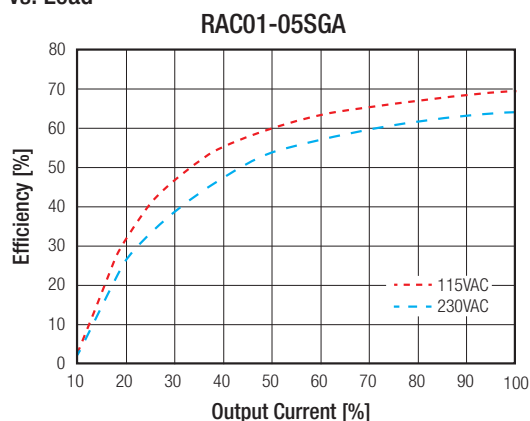
Note1: measured with all input voltages at 25°C with constant resistant mode at full load.

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 ⁽²⁾			85VAC	230VAC	264VAC
Input Current	115VAC 230VAC			25mA 18mA	30mA 20mA
Inrush Current	cold start at 25°C	115VAC 230VAC			30A 40A
No load Power Consumption					150mW
Input Frequency Range			47Hz		63Hz
Start-up Time	115VAC 230VAC				1s 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		0.4		0.6
Notes:					
Note2: no proper operation with DC Input Voltage.					
continued on next page					

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

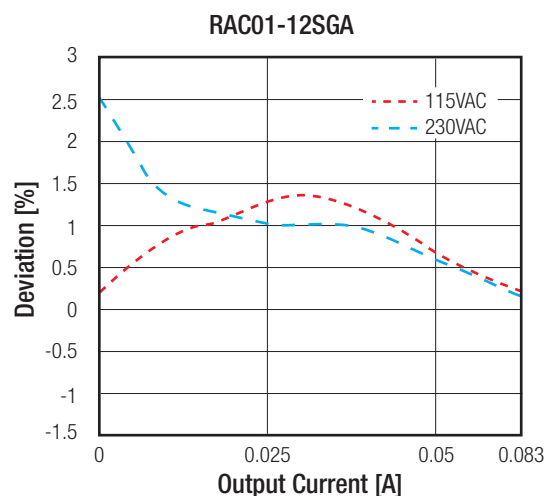
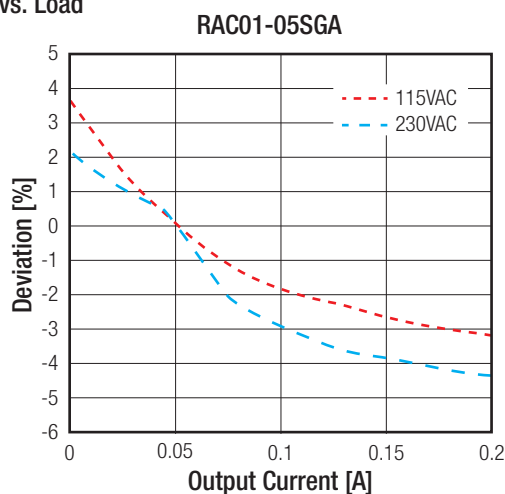
Efficiency vs. Load



REGULATIONS

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

Accuracy vs. Load



PROTECTIONS

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

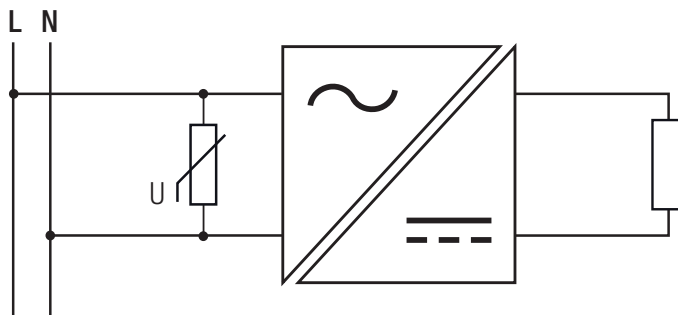
continued on next page

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

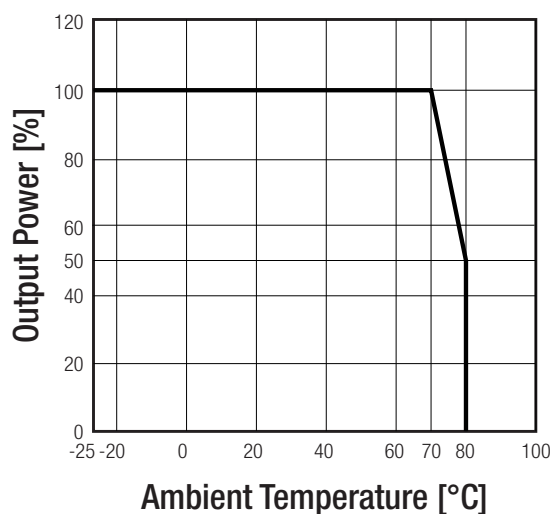


ENVIRONMENTAL

Parameter	Condition	Value
Operating Temperature Range		-25°C to $+70^\circ\text{C}$
Maximum Case Temperature		$+120^\circ\text{C}$
Temperature Coefficient		$\pm 0.03\%/^\circ\text{C}$
Operating Humidity	non-condensing	5% - 90% RH
Operating Altitude ⁽⁴⁾		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. $+25^\circ\text{C}$ $+70^\circ\text{C}$	1691×10^3 hours 424×10^3 hours

Derating Graph

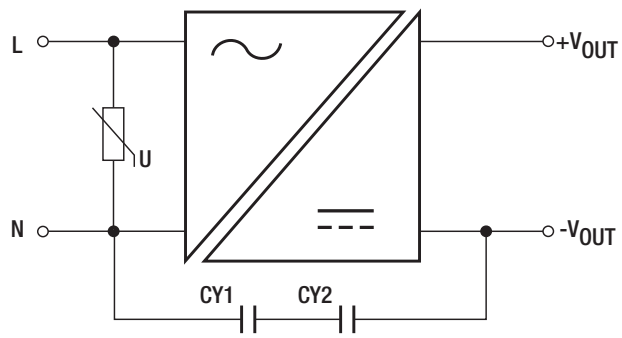
(@ Chamber and natural convection 0.1m/s)



Notes:

Note4: Recognized by UL for safe operation up to 4000m. High altitude operation may impact the performance and lifetime. Contact RECOM tech support for advice

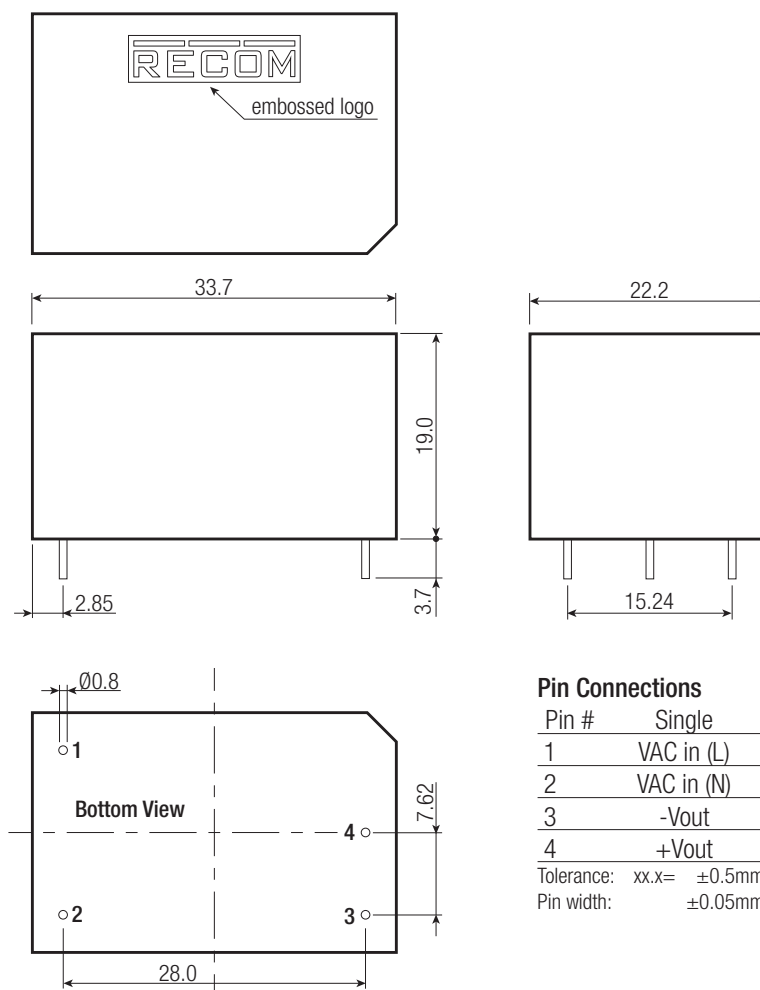
Specifications (measured @ $t_a = 25^\circ\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)

SAFETY AND CERTIFICATIONS				
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		UL62368-1, 2nd Edition 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 EN62368-1, 1st Edition, 2014		
Household and similar electrical appliances - Safety. General requirements	pending	EN60335-1, 1st Edition, 2012 + AM11, 2014		
RoHs 2+		RoHs 2011/65/EU + AM2015/863		
EMC Compliance	Condition	Standard / Criterion		
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement		EN55022, Class A		
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		
EMI Filtering according to EN60335-1 / EN55022 Class B Compliance				
 <table border="1" data-bbox="617 1644 930 1756"><thead><tr><th>CY1,CY2</th></tr></thead><tbody><tr><td>Vishay 564R30TSD22, SLCCv X7R radial, 2.2nF, 3kVDC $\pm 10\%$</td></tr></tbody></table>			CY1,CY2	Vishay 564R30TSD22, SLCCv X7R radial, 2.2nF, 3kVDC $\pm 10\%$
CY1,CY2				
Vishay 564R30TSD22, SLCCv X7R radial, 2.2nF, 3kVDC $\pm 10\%$				

DIMENSION and PHYSICAL CHARACTERISTICS		
Parameter	Type	Value
Material	Case PCB	black plastic 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.

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.