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 & EN60335-1 Certified

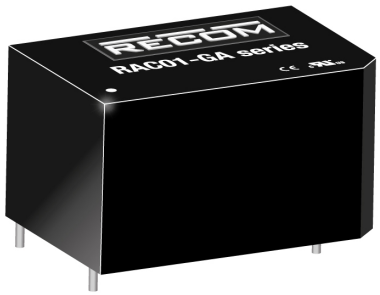
RECOM

AC/DC Converter

RAC01-GA

1 Watt Single Output EMC Class A

3 YEAR 3 warranty



Description

The RAC01-GA 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-GA have a built-in Class A / FCC Part 15 EMC filter, are certified 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.

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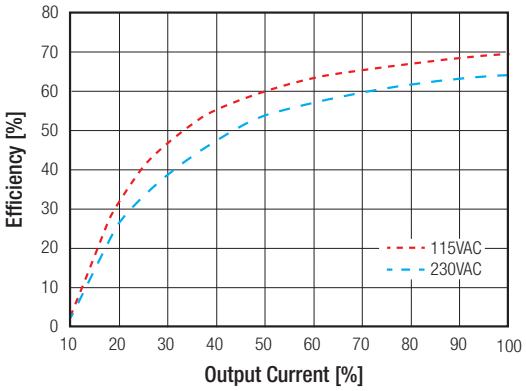
UL60950-1 Certified
IEC/EN60950-1 Certified
UL62368-1 Certified
IEC/EN62368-1 Certified
EN60335-1 Certified

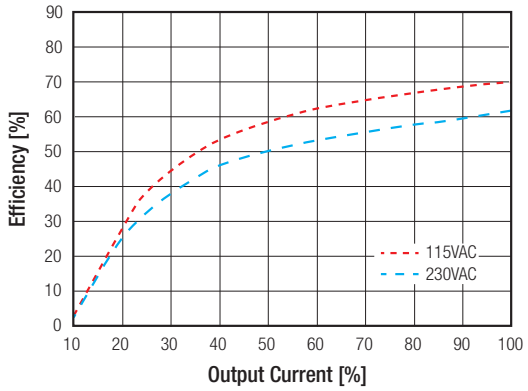
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

Efficiency vs. Load

RAC01-05SGA



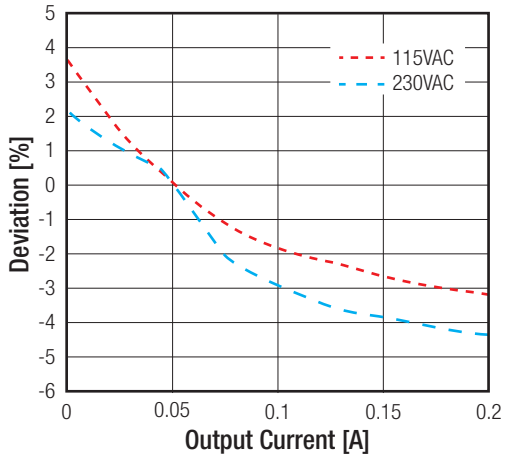
RAC01-12SGA



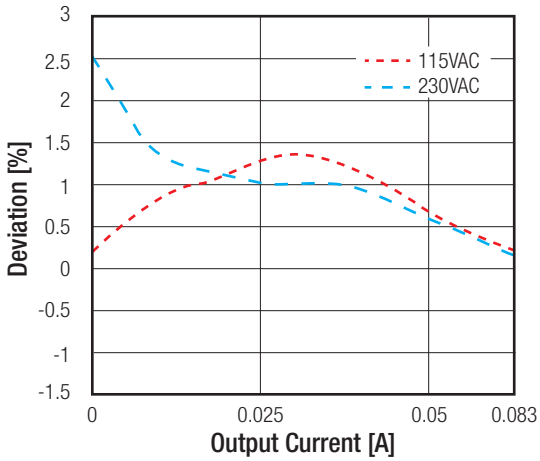
REGULATIONS		
Parameter	**Condition**	**Value**
Output Accuracy	-25°C to +80°C	±6.0% max.
Line Regulation	-25°C to +80°C	±2.0% max.
Load Regulation	-25°C to +80°C	±6.0% max.

Accuracy vs. Load

RAC01-05SGA



RAC01-12SGA



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

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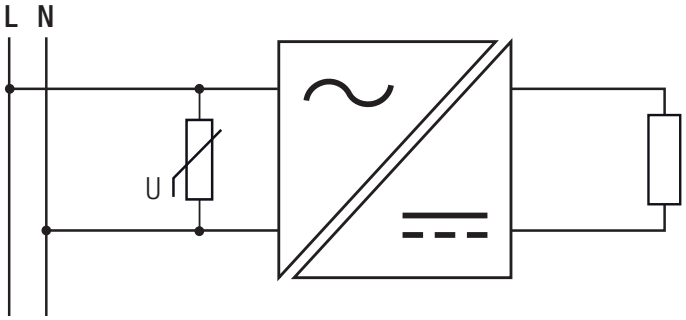
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

Notes:

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

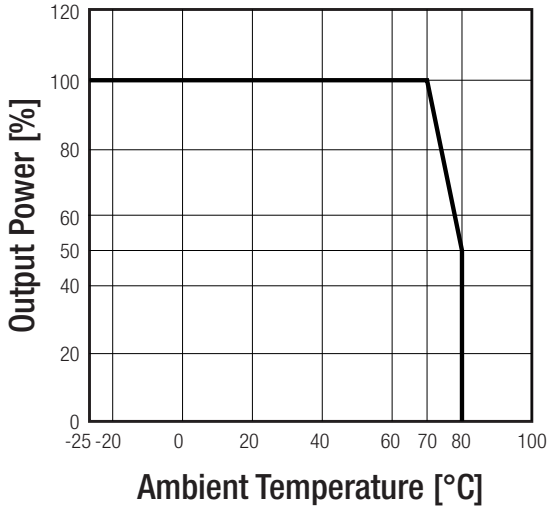
Note4: For operation at 230VAC, an external MOV is recommended. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 series



ENVIRONMENTAL

Parameter	Condition	Value
Operating Temperature Range		-25°C to +70°C
Maximum Case Temperature		+120°C
Temperature Coefficient		±0.03%/°C
Operating 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°C +70°C	1691 x 10^3 hours 424 x 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

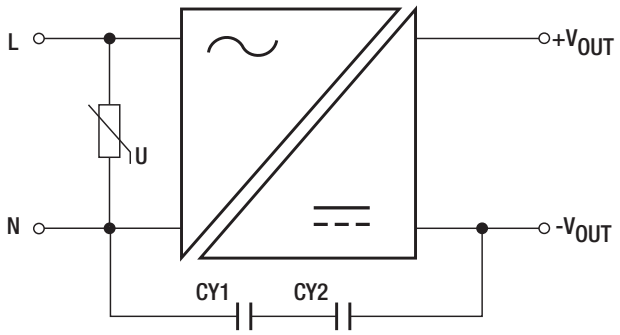
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

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	NTEK-2016NT10279570S	EN60335-1, 1st Edition, 2012 + AM11, 2014
RoHs 2+		RoHs 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements		EN55032, Class A
Limitations on the amount of electromagnetic intererence allowed from digital and electronic devices		47 CFR FCC Part 15, Subpart B 2016, Class A & B
ESD Electrostatic discharge immunity test	Air ±8kV, Contact ±4kV	EN61000-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity	±1kV	EN61000-4-4, Criteria B
Surge Immunity	±1kV	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 / EN55032 Class B Compliance



CY1,CY2
Vishay 564R30TSD22, SLCCv X7R radial, 2.2nF, 3kVDC ±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.

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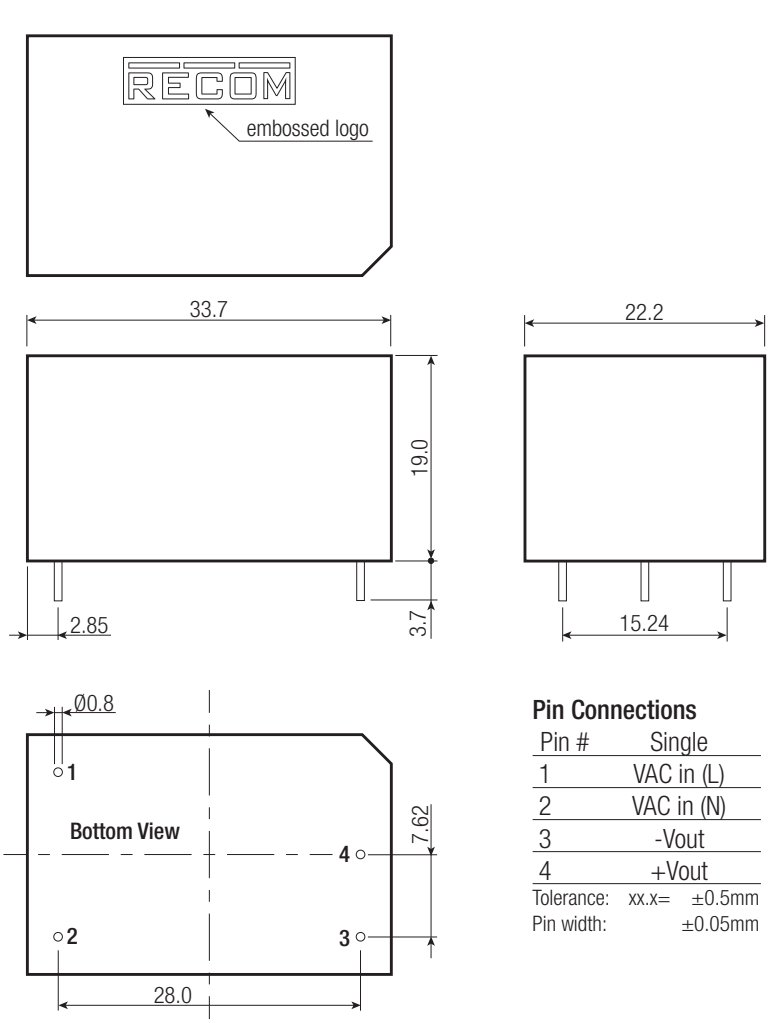
Specifications (measured @ ta= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

Dimension Drawing (mm)



Pin Connections

Pin #	Single
1	VAC in (L)
2	VAC in (N)
3	-Vout
4	+Vout

Tolerance: xx.x= ±0.5mm
Pin width: ±0.05mm

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 Humidtiy	non-condensing	5% - 95% RH max.