!NOT RECOMMENDED FOR NEW DESIGNS!
(LAST TIME BUY: 12TH AUG 2022)

Features

Regulated Converters

- Compact low profile AC-DC power supply
- 80mW no load power consumption
- Class II power supply with 3kVAC isolation
- Extra wide input voltage range (80~264VAC)
- Low output ripple/noise
- EN, UL and CE certified

RECOM

AC/DC Converter

RAC03-C

3 Watt Single Output

3 YEAR warranty

Description

The RAC03-C series is an ultra-compact universal input AC/DC power module for PCB mounting. It features high efficiency, low standby power, high operating temperature, soft start, low output ripple/noise, overload and short-circuit protection as well as a built-in EMC Class B filter. Output voltages range from 3.3VDC to 24VDC, including a 3.8VDC version designed for battery chargers and GSM modems.

Selection Guide

Part Number	Input Voltage Range [VAC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ (1) [%]	Max. Capacitive Load (2,3) [µF]
RAC03-3.3SC	80-264	3.3	900	67	6800
RAC03-3.8SC	80-264	3.8	789	67	6800
RAC03-05SC	80-264	5	600	72	4000
RAC03-09SC	80-264	9	333	76	3000
RAC03-12SC	80-264	12	250	76	680
RAC03-15SC	80-264	15	200	76	470
RAC03-24SC	80-264	24	125	78	200

Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: Measured @ 230VAC / 50Hz / Ta=25°C with constant resistant mode at full load

Note3: If used @ 115VAC / 60Hz with full load, max. capacitive load is less, please contact RECOM Techsupport for detailed information

Model Numbering

RAC03-__ SC

nom. Output Power

nom. Output Voltage

Single

Ordering Examples:

RAC3-3.3SC	3 Watt	3.3Vout	Single Output
RAC3-24SC	3 Watt	24Vout	Single Output

PREFERRED ALTERNATIVES

Please consider these alternatives:

RAC03E-K/277

IEC/EN60950-1 certified
UL60950-1 certified
CAN/CSA-C22.2 No. 60950-1 certified
IEC/EN60335-1 certified
EN55032/14 compliant
EN55024 compliant
CB-Report

RECOM

AC/DC Converter

RAC03-C Series

Specifications (measured at Ta= 25°C, full load otherwise noted)

BASIC CHARACTERISTICS

Parameter	Condition		Min.	Typ.	Max.
Input Voltage Range (4,5)	nom. Vin = 230VAC		80VAC 115VDC		264VAC 370VDC
Input Current	115VAC 230VAC				85mA 40mA
Inrush Current	<0.5ms	115VAC 230VAC			30A 60A
No load Power Consumption	115VAC 230VAC				60mW 100mW
Input Frequency Range	AC Input		47Hz		63Hz
Minimum Load			0%		
Start-up Time	115VAC 230VAC				0.5s 0.2s
Rise Time	115VAC 230VAC			20ms 20ms	
Hold-up time	115VAC 230VAC		15ms 80ms		
Internal Operating Frequency	100% load at nominal Vin			35kHz	
Output Ripple and Noise (6)	20MHz BW	3.3, 3.8, 5Vout all others			120mVp-p 150mVp-p

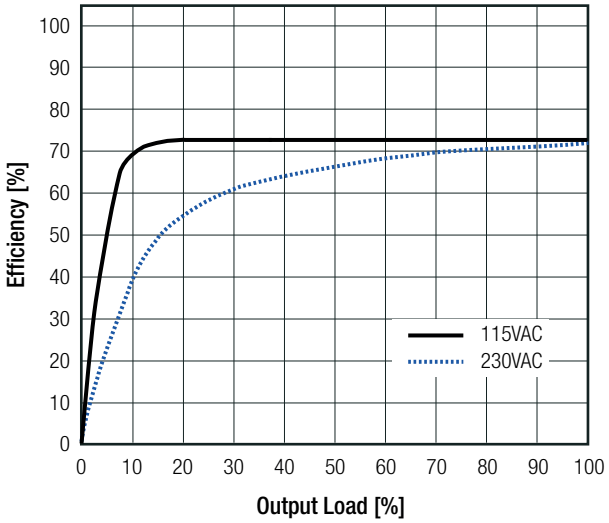
Notes:

Note4: The products were submitted for safety files at AC-Input operation

Note5: Refer to line derating graph on page PA-3

Note6: Measurements are made with a 0.1µF MLCC across output (low ESR)

Efficiency vs. Load



REGULATIONS

Parameter	Condition	Value
Output Accuracy		±5.0% max.
Line Regulation	low line to high line	±3.0% max.
Load Regulation (7)	10% to 100% load	6.0% max.

Notes:

Note7: Operation below 10% load will not harm the converter, but specifications may not be met

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AC/DC Converter

RAC03-C Series

Specifications (measured at Ta= 25°C, full load otherwise noted)

PROTECTIONS

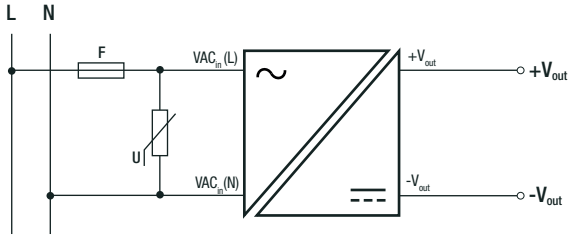
Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ		Hiccup mode, automatic recovery
Over Voltage Category			OVCII
Isolation Voltage	I/P to O/P	tested for 1 minute	3kVAC
Isolation Resistance	I/P to O/P		1GΩ min.
Isolation Capacitance			1000pF typ.
Insulation Grade			double insulated
Leakage Current			0.85mA max.

Notes:

Note8: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Note9: MOV required for 230VAC operation. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 Series

Protection Circuit

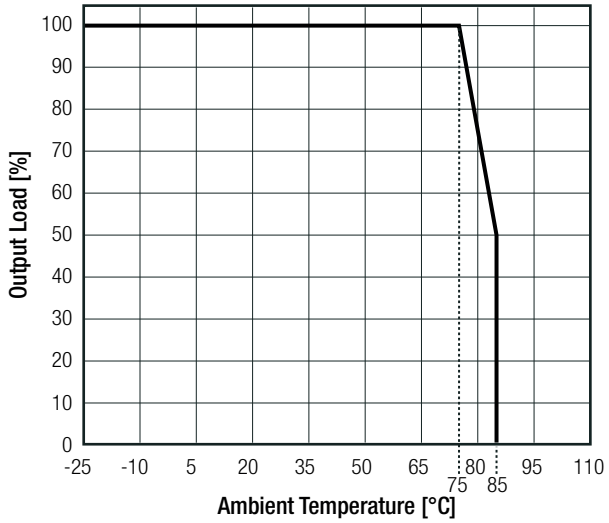


ENVIRONMENTAL

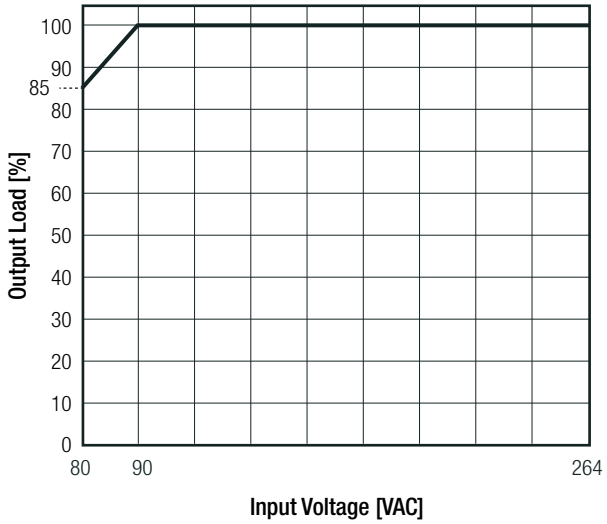
Parameter	Condition		Value
Operating Temperature Range [8]	@ natural convection 0.1m/s	full load	-25°C to +75°C
		refer to derating graph	-25°C to +85°C
Maximum Case Temperature			+100°C
Temperature Coefficient	+25°C to +75°C		0.07%/K
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	550 x 10^3 hours
		+80°C	76 x 10^3 hours

Derating Graph

(@ Chamber and natural convection 0.1m/s)



Line Derating



RECOM

AC/DC Converter

RAC03-C Series

Specifications (measured at Ta= 25°C, full load otherwise noted)

SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	**Report / File Number**	**Standard**
Information Technology Equipment - General Requirments for Safety	SPCLVD1606038	IEC60950-1:2006 + A2:2013 EN60950-1, 2nd Edition , 2013
Household and similar electrical appliances – Safety – Part 1: General requirements	L0339L26-B2-L	IEC60335-1:2010+AMD1:2013 EN60335-1:2012+A11:2014
Information Technology Equipment - General Requirments for Safety (CB Scheme)	L0339m10-CB-1-B1	IEC60950-1:2005 2nd Edition + A2:2013
Information Technology Equipment - General Requirments for Safety		EN60950-1:2006 + A2:2013
Information Technology Equipment - General Requirments for Safety	E224736-A5-UL (10)	UL60950-1, 2nd Edition, 2007 CSA C22.2 60950-1, 2nd Edition, 2007
EAC Safety of Low Voltage Equipment	RU-AT.49.09571	TP TC 004/2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863

EMC Compliance Industrial	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
ESD Electrostatic discharge immunity test	Air ±8.0kV; Contact ±4.0kV	IEC61000-4-2:2008, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3:2006 + A2:2010, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1.0kV	IEC61000-4-4:2012, Criteria A
Surge Immunity	AC Power Port: L-N ±1.0kV	IEC61000-4-5:2005, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3Vr.m.s	IEC61000-4-6:2008, Criteria A
Voltage Dips and Interruptions	Voltage Dips >95% Voltage Dips 30% Voltage Interruptions > 95%	IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria A IEC61000-4-11:2004, Criteria C
Limits of Voltage Fluctuations & Flicker		EN61000-3-3:2013

EMC Compliance Household	Condition	Standard / Criterion
Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission		EN55014-1:2006+A2:2011
Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity		EN55014-2:2015
ESD Electrostatic discharge immunity test	Air ±8.0kV; Contact ±4.0kV	IEC61000-4-2:2008, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3:2006 + A2:2010, Criteria A
Fast Transient and Burst Immunity	AC Power Port: ±1.0kV DC Output: ±0.5kV	IEC61000-4-4:2012, Criteria A
Surge Immunity	AC Power Port: L-N ±2.0kV DC Output: L-N ±1.0kV	IEC61000-4-5:2014, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	AC Power Port: 3V DC Output: 3V	IEC61000-4-6:2013, Criteria A
Voltage Dips and Interruptions	Voltage Dips >95% Voltage Dips 30% Voltage Interruptions > 95%	IEC61000-4-11:2004, Criteria B IEC61000-4-11:2004, Criteria C IEC61000-4-11:2004, Criteria C
Limits of Harmonic Current Emissions		EN61000-3-2:2014
Limits of Voltage Fluctuations & Flicker		EN61000-3-3:2013

Notes:

Note10: UL is pending for RAC03-3.8SC

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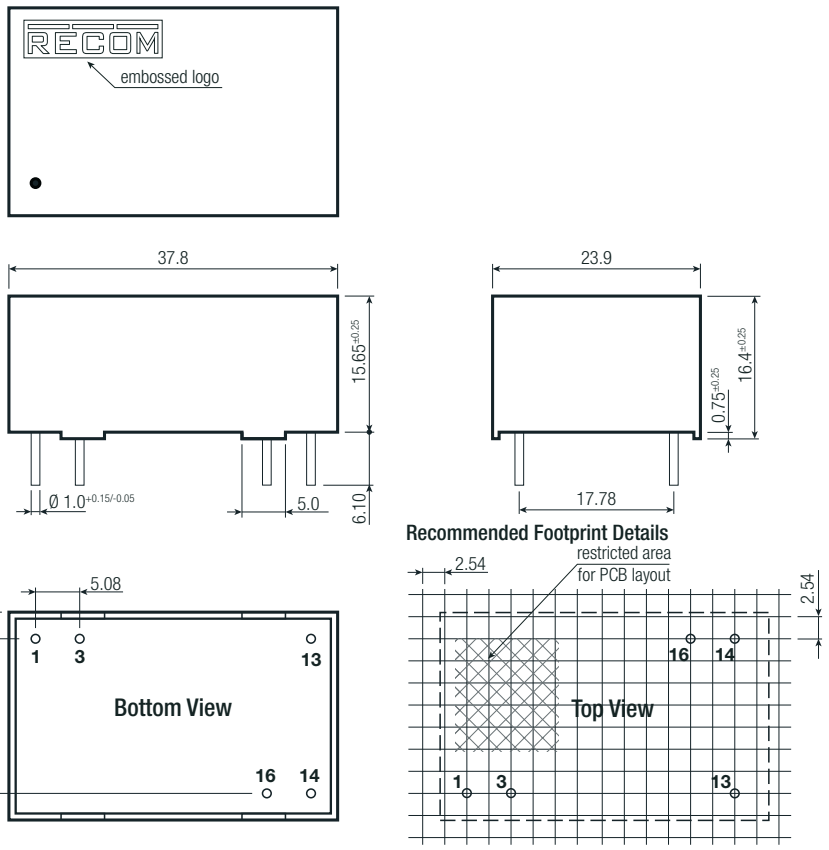
Specifications (measured at Ta= 25°C, full load otherwise noted)

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting	black plastic (UL94V-0) silicone (UL94V-0)
Dimension (LxWxH)		37.8 x 23.9 x 16.4mm
Weight		30g typ.

Dimension Drawing (mm)



Pin Connections

Pin #	Single
1	VAC in (L)
3	VAC in (N)
13	NC
14	-Vout
16	+Vout

NC= no connection

Tolerance: xx.x= ±0.5mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 32.0 x 27.0mm
Packaging Quantity		12pcs
Storage Temperature Range		-40°C to +100°C
Storage Humidity	non-condensing	95% RH max.

The product information and specifications may be subject to changes even without prior written notice.The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant 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.