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

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

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

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

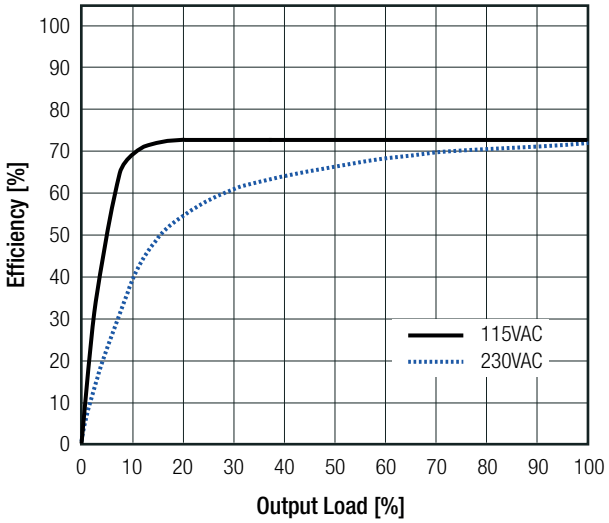
Notes:

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

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

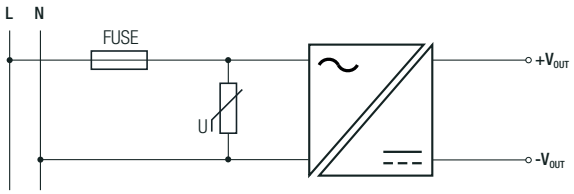
PROTECTIONS

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

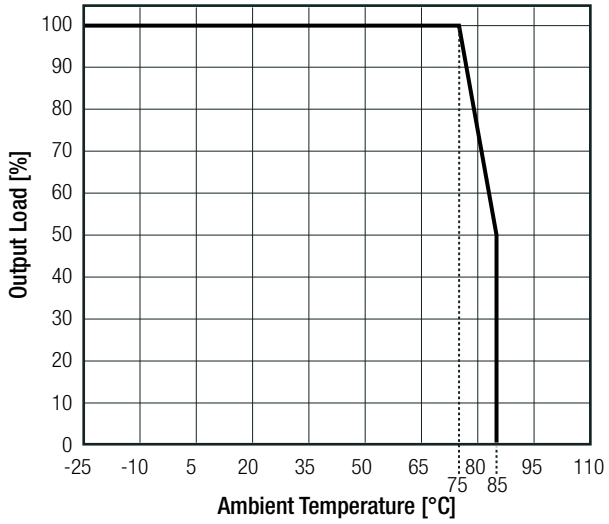
Note9: MOV required for 230VAC operation. The Varistor should comply with IEC-61051-2. e.g. EPCOS S14 Series



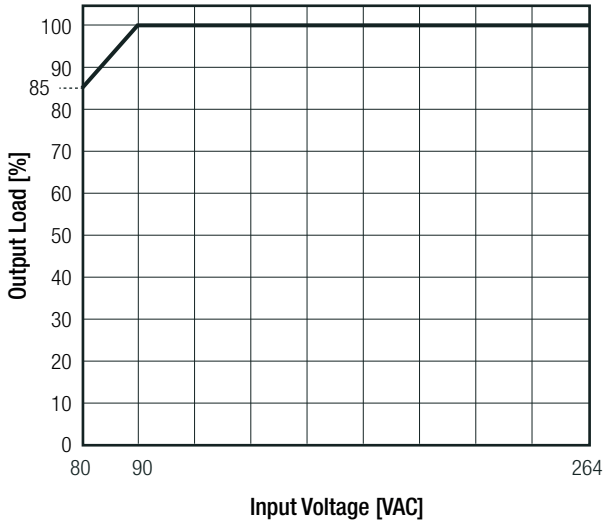
ENVIRONMENTAL

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



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:

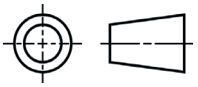
Note10: UL is pending for RAC03-3.8SC

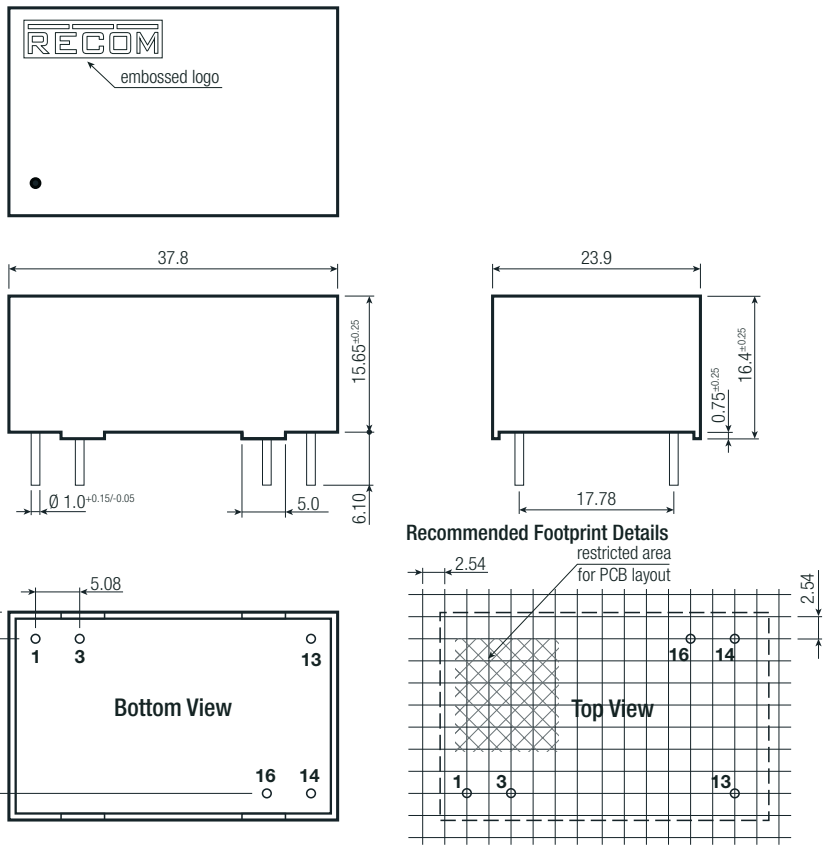
Specifications (measured at Ta= 25°C, full load otherwise noted)

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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

RECOM:

RAC03-05SC RAC03-09SC RAC03-12SC RAC03-15SC RAC03-24SC RAC03-3.3SC RAC03-3.8SC