

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Features

Regulated **Converters**

- 50mW max. No Load Power Consumption
- High Efficiency up to 79%
- Isolated Output 3.75kVAC / 1 min
- SCP, OVP Protection
- Wide Operating Temperature Range:

-40°C to +80°C (only with suffix "-E")

Universal Input 80-305VAC

Description

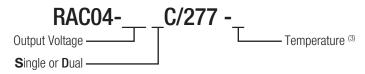
The RACO4-xxS_DC/277 series are fully certified single and dual regulated AC/DC converters in an encapsulated PCB-mount package style with 3.75kVAC isolation and very low stand-by power consumption. The modules are suitable for worldwide use due to their wide input voltage range from 80VAC to 305VAC. Possible uses include home automation, standby applications and industrial controls.

Selection Guide					
Part Number	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	Max. Capacitive Load ⁽¹⁺²⁾ (μF)
RAC04-3.3SC/277 ⁽³⁾	80-305	3.3	1200	72	10000
RAC04-05SC/277 (3)	80-305	5	800	75	7200
RAC04-12SC/277 (3)	80-305	12	333	78	1000
RAC04-15SC/277 (3)	80-305	15	267	79	820
RAC04-24SC/277 (3)	80-305	24	167	79	220
RAC04-0512DC/277 (3)	80-305	5/12	720/33	75	4700/100
RAC04-05DC/277 (3)	80-305	±5	±400	76	±3300
RAC04-12DC/277 (3)	80-305	±12	±166	78	±680

Notes:

Note1: Measured @ 230VAC/50Hz/Ta 25°C with constant resistant mode at full load. Note2: If used @115VAC/60Hz with full load, max. capacitive load is less, please contact RECOM for detailed information.

Model Numbering



Ordering Examples:

e.g. RAC04-3.3SC/277-E, Single Output, with -40° to +80°C operating temperature range e.g. RAC04-05DC/277, Dual Output with standard operating temperature range

Note3: with suffix "-E" for -40°C to +80°C operating temperature range without suffix standard operating temperature range (-25°C to +80°C)

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Тур.	Max.
Input Voltage Range		80VAC 113VDC	277VAC 390VDC	305VAC 430VDC
Input Current	full load, 115VAC full load, 230VAC			98mA 64mA
Inrush Current	cold start at 25°C, 115VAC cold start at 25°C, 230VAC			15A 30A
No load Power Consumption	80-305VAC, 50/60Hz			50mW
Input Frequency Range	AC Input	47Hz		440Hz
Hold-up time	115VAC	15ms		
continued on next page				



RAC04-C/277

4 Watt Single and **Dual Output**













IEC-60950-1 Certified **EN-55024 Certified** EN-60950-1 Certified UL-60950-1 Certified

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Series

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)

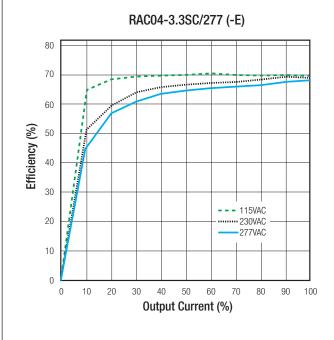
BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Тур.	Max.
Operating Frequency	full load		67kHz	
Efficiency				see Selection Guide
Minimum Load	RAC04-0512DC/277(-E) All Others		±5% / ±0% 0%	
Output Ripple and Noise (4)			200mVp-p	

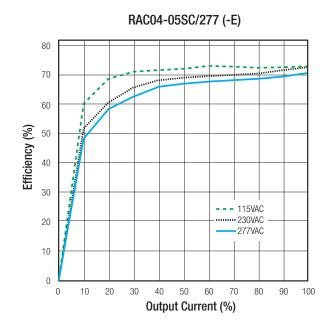
Notes:

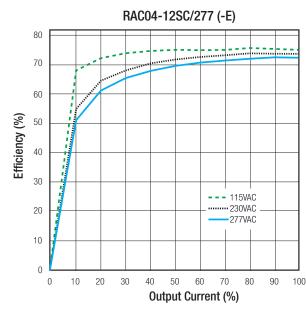
Note4:

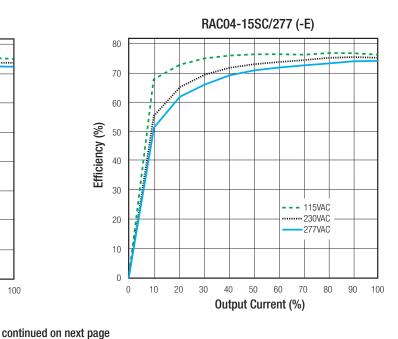
Ripple and Noise is measured at 20MHz bandwidth and with a 47µF low-ESR electrolytic capacitor in parallel with a 0.1µF ceramic capacitor across output.

Efficiency vs. Load





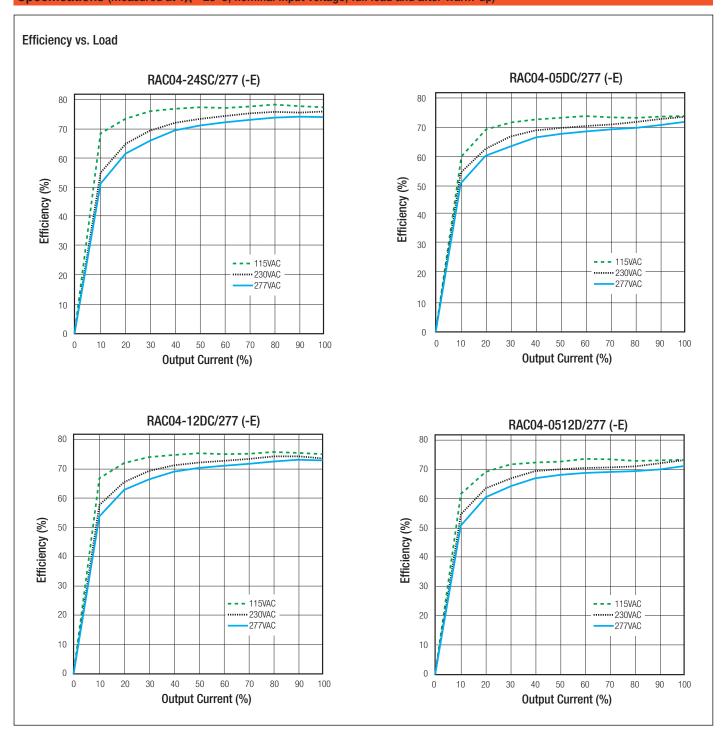






Series

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)



REGULATIONS		
Parameter	Condition	Value
Output Voltage Telerance	RAC04-0512DC/277(-E)	±2% / ±10% typ.
Output Voltage Tolerance	All Others	±2% typ.
Lie-Veltere Develetion	90-305VAC, RAC04-0512DC/277(-E)	±0.2% / ±1% typ.
Line Voltage Regulation	90-305VAC, All Others	±0.2% typ.
Load Voltage Regulation	3.3V, 5V	±1% typ.
Load Voltage Regulation (5V minimum load 5% @12V full load)	RAC04-0512DC/277(-E)	±1% / ±5% typ.
(3V IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	All Others	±0.5% typ.

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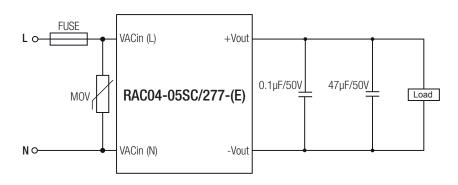


Series

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)

PROTECTIONSParameterTypeValueShort Circuit Protection (SCP)automatic recoveryIsolation VoltageI/P to O/P3.75kVAC / 1 MinuteIsolation Resistance100M Ω min.Leakage Current277VAC / 50Hz0.25mA max.

Application Note



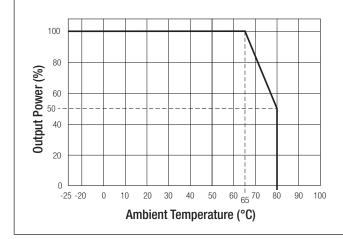
Notes:

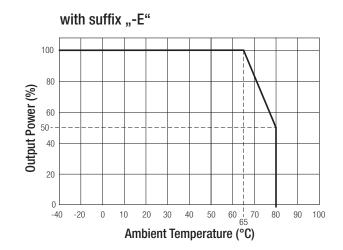
Note5: An external input fuse is recommended: T1A slow blow type

Note6: To measure the output ripple and noise short runs by $0.1\mu\text{F}/50\text{V}$ & $47\mu\text{F}/50\text{V}$ @20MHz, nominal input and full load. Note7: An external MOV is required for 230VAC operation. (MOV model: shall comply with IEC 61051-2, e.g. Epcos S14 Series.

ENVIRONMENTAL			
Parameter	Condition	Value	
Operating Temperature Denge	230VAC, with derating (see graph)	-25°C to +80°C	
Operating Temperature Range	with suffix "-E", with derating (see graph)	-40°C to +80°C	
Maximum Case Temperature		90°C	
Thermal Impedance		10°C/W	
Humidity	non-condensing	95%, RH max.	
MTBF (8)	MII -HDBK-217F ±25°C	500 x 10 ³ hours	

Derating Graph







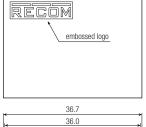
Series

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)

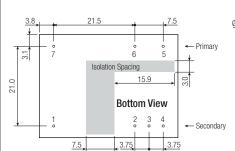
SAFETY AND CERTIFICATIONS		
Certificate Type	Report / File Number	Standard
CB Report	1310055-1-CB-M1	IEC-60950-1, 2nd Edition
EN General Safety	SPCLVD1310055-1-M1	EN-60950-1, 2nd Edition
UL General Safety	F00470C V1 A10	UL-60950-1, 2nd Edition, 2011
Canada General Safety	E224736-X1-A18	CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2011
Certificate Type (Environmental)	Report / File Number	Standard / Criterion
EMI Standard	Report: T160225D10-E	EN55022, Class B EN55024
ESD Radiated Immunity Fast Transient Surge Conducted Immunity Voltage dips and variations Harmonic Current Emissions Voltage flicker	Report: T160225D10-E	EN61000-4-2, Criteria B EN61000-4-3, Criteria A EN61000-4-4, Criteria B EN61000-4-5, Criteria B EN61000-4-6, Criteria A EN61000-4-8, Criteria A EN-61000-3-2 EN-61000-3-3
Vibration		MIL-STD-202G
Over Voltage Category		OVC II

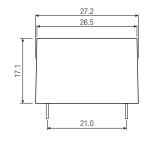
DIMENSION and PHYSICAL CHARACTERISTICS			
Parameter	Туре	Value	
Case Material		UL94V-0, black plastic	
Potting Material		UL94V-0, Silicone	
Package Dimension (LxWxH)		36.7 x 27.2 x 17.1mm	
Package Weight		41g typ.	

Dimension Drawing (mm)









Recommended Footprint				
00.9 ±0.1	2.54			
	Leave clear of PCB traces	2 3	0 4	
2.54		6	5	
	- - -++	+- - -	++1	

Pin Connections

Pin #	Single	Dual	Dual (asymmetric)
_2	+VDC out	+VDC out	+5V
3	-VDC out	Com	Com
4	NC	-VDC out	+12V
5	VAC in (L)	VAC in (L)	VAC in (L)
6	VAC in (N)	VAC in (N)	VAC in (N)
7	NC	NC	NC

 $\begin{tabular}{lll} NC= & no connection \\ Tolerance: & xx.x=\pm0.5mm \\ xx.xx=\pm0.35mm \\ Pin width: & \pm0.05mm \\ \end{tabular}$

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Series

Specifications (measured at TA= 25°C, nominal input voltage, full load and after warm-up)

PACKAGING INFORMATION			
Parameter	Туре	Value	
Packaging Dimension (LxWxH)	Tube	520 x 32 x 27mm	
Packaging Quantity		12 pcs.	
Storage Temperature Range		-40°C to +100°C	

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