

Distributed Power Supply for Server

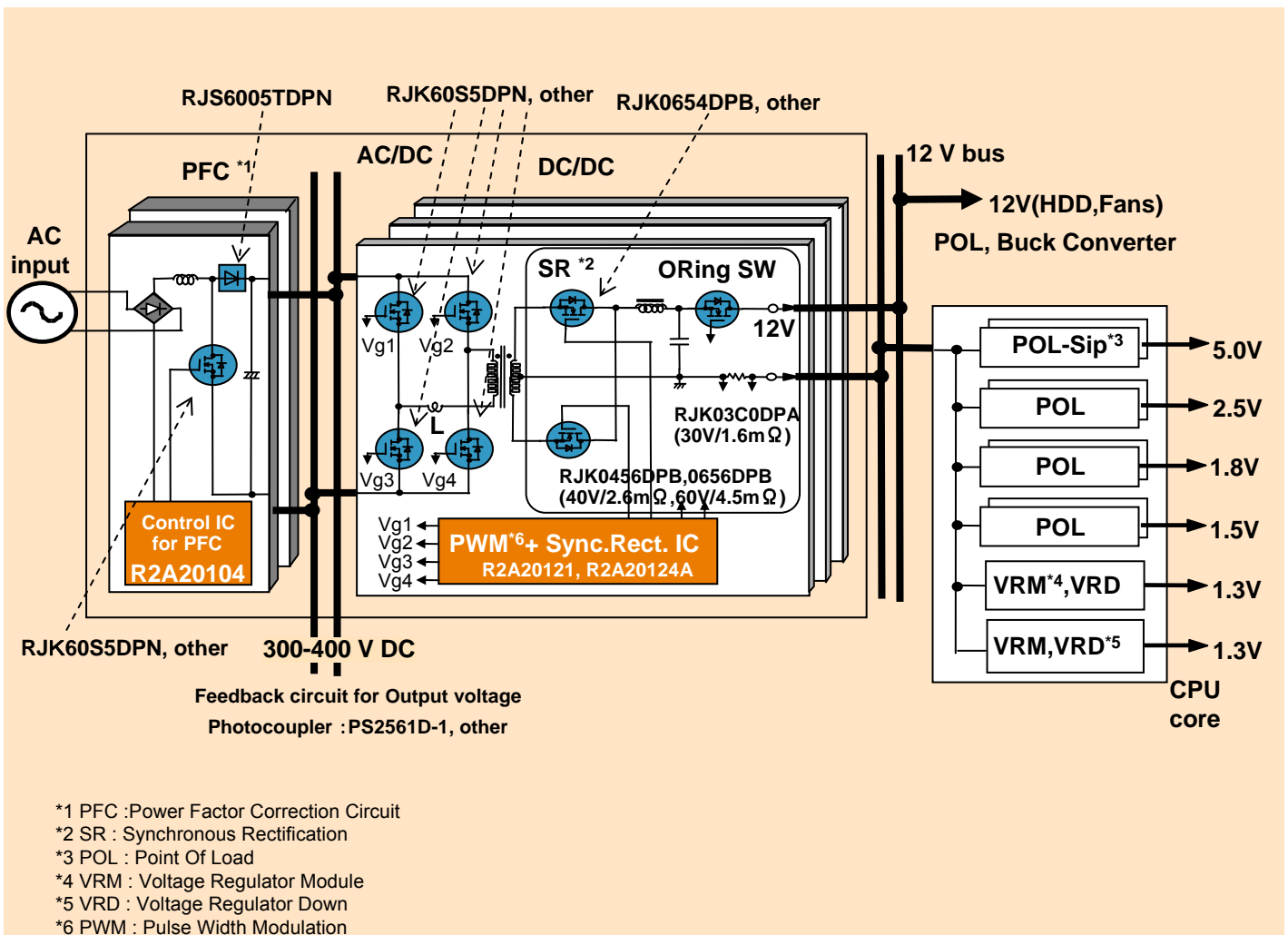
Overview



PC servers and commercial servers both utilize distributed power supplies. The power supplies for large servers consist of three main sections; a block that converts external AC into DC; a block that boosts the power efficiency and a POL block. The POL converts the DC (12 V, 24 V, or 48 V) and distributed the required voltages by the individual circuit blocks to each PCB in the system.

Renesas meets the requirements of customers developing distributed power supplies by offering an extensive lineup of products including PFC devices; devices for use in insulated switching power supplies; PWM control devices; power MOSFET devices and IGBTs.

System Block Diagram

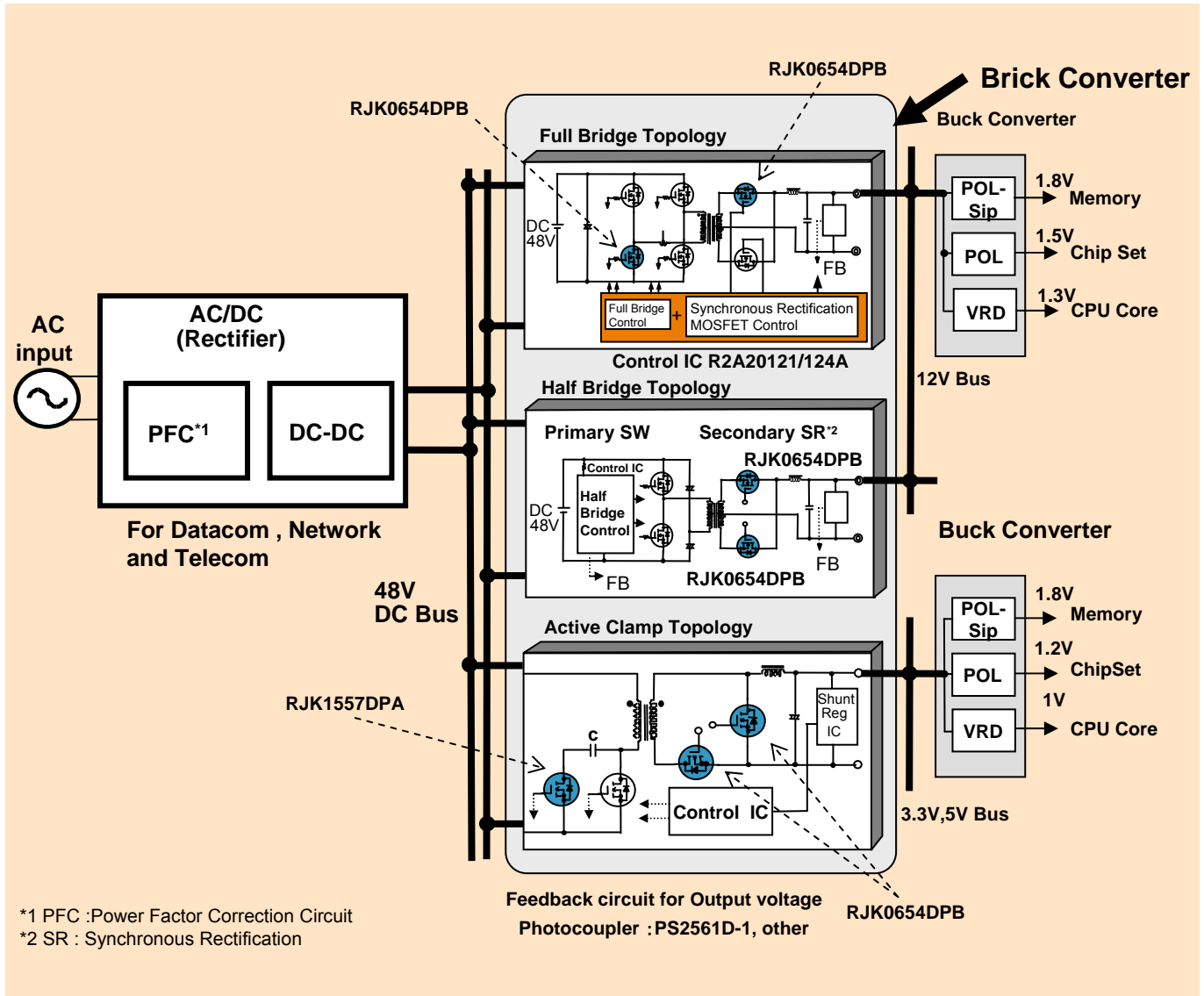


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System Block Diagram

■ For Insulated DC/DC Power Supply (Brick Converter Example)



*1 PFC :Power Factor Correction Circuit
 *2 SR : Synchronous Rectification

Recommended Products

As of March 2012

Block	Semiconductor device		Recommended products	Features, etc.	
PFC	PFC IC		R2A20104/114	Continuous conduction, interleaving	
			R2A20112A	Critical conduction, interleaving	
			R2A20131 *	Continuous conduction, single, improving efficiency at light-load	
			R2A20132	Critical conduction, interleaving; improving efficiency at light-load	
PFC,DC/DC	SJ MOSFET		RJK60S5DPK-MO	600V/20A 150mΩtyp.	
			RJK60S8DPK-MO	600V/55A 45mΩtyp.	
	SiC-SBD		RJS6004TDPN-EJ	600V/10A $V_F=1.5V_{typ.}$, $t_{rr}=15ns$	
			RJS6005TDPN-EJ	600V/15A $V_F=1.5V_{typ.}$, $t_{rr}=16ns$	
	Si-FRD		RJU60C Series	600V $V_F=1.2V_{typ.}$, $t_{rr}=50ns$	
			RJU605 * Series	600V $V_F=2.5V_{typ.}$, $t_{rr}=25ns$	
FET		RJK5020DPK	500 V/40A 115mΩ		
		RJK6015DPK	600 V/21A 360mΩ		
PWM + Sync. Rect.	PWM + Sync. Rect. IC		R2A20121/124A	Synchronous rectification phase shift full bridge control	
VRM, DC/DC Converter Synchronous Rectifier	FET	Bus Converter $V_{in}=36\sim75V$ $V_{out}=12V$	Pout=120~240W	RJK0654DPB	Secondary for Full (Half) Bridge: 60 V
				RJK0854DPB	Secondary for Full (Half) Bridge: 80 V
				RJK1055DPB	Primary for Full (Half) Bridge: 100 V
			RJK1056DPB	Primary for Full (Half) Bridge: 100 V	
		Pout=300~700W	RJK0656DPB	Secondary for Full Bridge: 60 V	
			RJK0856DPB	Secondary for Full Bridge: 80 V	
	RJK1056DPB		Primary for Full Bridge: 100 V		
	Isolated Converter $V_{in}=38\sim55V$ $V_{out}=3.3V, 5V$	Pout=30~90W	RJK0454DPB	Secondary for Forward Active Clamp: 40 V	
			RJK1557DPA	Primary for Forward Active Clamp: 150 V	
		Pout=100~200W	RJK0455DPB	Secondary for Half Bridge: 40 V	
			RJK0456DPB	Secondary for Half Bridge: 40 V	
	PA Converter $V_{in}=36\sim75V$ $V_{out}=28V$	Pout=300~500W	RJK0856DPB	Primary for Half Bridge: 80 V	
			RJK1055DPB	Secondary for Full Bridge: 100 V	
			RJK1056DPB	Primary for Full Bridge: 100 V	
PWM control IC		RJK1056DPB	Secondary for Full Bridge: 100 V		
Feedback circuit for Output voltage	Photocoupler(standard)		HA16150	$V_{cc}=20V$, Push-pull/single-end output switching	
			PS2381-1 New	High isolation voltage(5kVr.m.s.), 4p-L SOP, $T_a=115^{\circ}C$	
			PS2561D Series	High isolation voltage(5kVr.m.s.), 4p-DIP, $T_a=110^{\circ}C$	
			PS2761B Series	High isolation voltage(3.75kVr.m.s.), 4p-SOP, $T_a=110^{\circ}C$	
		PS2861B Series	High isolation voltage(2.5kVr.m.s.), 4p-SSOP, $T_a=110^{\circ}C$		
POL	POL-Sip(Integrated Power Device) *Control IC + MOSFETs		R2J20702NP	QFN56(8x8mm)	
			R2J20751NP	QFN40(6x6mm)	

* = Under development

Related Application Notes/Sample Code

Title	Document No.
R2A20104/114 Series Application Note *	-
R2A20112A Application Note *	-
R2A20131 Application Note *	-
R2A20132 Application Note *	-
R2A20124A Application Note *	-

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Related Boards

Name	Part No.
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R2A20112A Evaluation Board *	-
R2A20131 Evaluation Board *	-
R2A20132 Evaluation Board *	-
R2A20124A Evaluation Board *	-

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 2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
 Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited

 1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
 Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited

 Duker Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
 Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH

 Arcadiastrasse 10, 40472 Düsseldorf, Germany
 Tel: +49-211-65030, Fax: +49-211-6503-1327¹
Renesas Electronics (China) Co., Ltd.

 7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
 Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.

 Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China
 Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

Renesas Electronics Hong Kong Limited

 Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
 Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.

 7F, No. 363 Fu Shing North Road Taipei, Taiwan
 Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.

 1 harbourFront Avenue, #06-10, keppel Bay Tower, Singapore 098632
 Tel: +65-6213-0200, Fax: +65-6278-8001

Renesas Electronics Malaysia Sdn.Bhd.

 Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
 Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.

 11F., Samik Lavied² or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea
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