

PS5R-V Series Switching Power Supplies



DIN-rail mount switching power supplies with global approvals for both industrial and hazardous locations

Key Features

- Compact size preserves panel space
- Slim size (width):
22.5mm (10W/15W/30W)
36mm (60W/90W)
45mm (7.5W)
46mm (120W)
60mm (240W)
- Universal Voltage Input:
85-264V AC/100-370V DC
- Wide operating temperature range
- Spring-up terminals accept ring & fork terminals
- Approved for use in Class I Division 2 hazardous locations
- Can be installed in 6 directions
- 7.5W ~ 90W meet NEC Class 2 output ratings
- Overcurrent protection with auto-reset
- Meets SEMI F47 Sag Immunity (208V AC input)
- RoHS compliant
- Five-year factory warranty



Standards Compliance

Applicable Standards	Mark	File No. or Organization
UL508 UL1310 ¹ ANSI/ISA 12.12.01 CSA C22.2 No.107.1 CSA C22.2 No.213 CSA C22.2 No.223 ¹		UL/c-UL Listed File No. E467154, E177168
EN60950-1 EN50178 EN61204-3 EN50581	 	TÜV SÜD ² EU Low Voltage Directive, EMC Directive RoHS Directive
SEMI F47	—	EPRI

Note 1: PS5R-VA/VB/VC/VD/VE only
Note 2: EN60950-1, EN50178 only

Part Numbers

Output Capacity	Part Number	Input Voltage	Output Voltage	Output Current
7.5W	PS5R-VA05	100 to 240V AC (Voltage range: 85 to 264V AC / 100 to 370V DC)	5V	1.5A
	PS5R-VA12		12V	0.6A
	PS5R-VA24		24V	0.3A
10W	PS5R-VB05		5V	2.0A
	PS5R-VB12		12V	1.3A
15W	PS5R-VB24		24V	0.65A
	PS5R-VC12		12V	2.5A
30W	PS5R-VC24		24V	1.3A
	PS5R-VD24		24V	2.5A
60W	PS5R-VE24		24V	3.75A
90W	PS5R-VF24		24V	5.0A
120W	PS5R-VF24		24V	5.0A
240W	PS5R-VG24		24V	10.0A

Part Number Structure

PS5R - V ☐ ☐

Output Capacity

A: 7.5W
B: 10W/15W
C: 30W
D: 60W
E: 90W
F: 120W
G: 240W

Output Voltage

05: 5V³
12: 12V⁴
24: 24V

Note 3: PS5R-VA/VB only

Note 4: PS5R-VA/VB/VC only

Use only for interpreting part numbers.

Do not use for developing part numbers.

Specifications

Model		5V DC output	PS5R-VA05	PS5R-VB05	-	-	-	-										
		12V DC output	PS5R-VA12	PS5R-VB12	PS5R-VC12	-	-	-										
		24V DC output	PS5R-VA24	PS5R-VB24	PS5R-VC24	PS5R-VD24	PS5R-VE24	PS5R-VF24	PS5R-VG24									
Output Capacity		7.5W		15W (5V Model is 10W)		30W		60W		90W		120W		240W				
Input		Rated Input Voltage (Single-phase two-wire) ¹		100 to 240V AC (Voltage range: 85 to 264V AC/100 to 370V DC) (Load ≤ 80% at 100-105V DC)														
		Frequency		50/60 Hz														
		Input Current (Typ.)	100V AC	5V: 0.20A 12V, 24V: 0.18A		5V: 0.25A 12V, 24V: 0.35A		0.7A		1.3A		1.1A		1.4A		2.7A		
			230V AC	5V: 0.12A 12V, 24V: 0.10A		5V: 0.14A 12V, 24V: 0.19A		0.3A		0.8A		0.6A		0.7A		1.2A		
		Inrush Current (Typ.) (Ta=25°C, cold start)	100V AC	15A		18A										14A		
			230V AC	36A		45A										41A		30A
		Leakage Current	120V AC	0.5mA max.														
			230V AC	1.0mA max.														
		Efficiency (Typ.) (at rated output) ²	100V AC	5V: 74%, 12V: 79%, 24V: 80%		5V: 77%, 12V: 82%, 24V: 84%		12V: 83%, 24V: 85%		86%		88% 89%		89%				
			230V AC	5V: 73%, 12V: 77%, 24V: 76%		5V: 73%, 12V: 80%, 24V: 81%		12V: 85%, 24V: 87%		86%						90%		
Power Factor (Typ.)	100V AC	—		—		—		—		0.86		0.92		0.96				
	230V AC	—		—		—		—										
Rated Voltage/Current		5V/1.5A, 12V/0.6A, 24V/0.3A		5V/2.0A ³ , 12V/1.3A, 24V/0.65A		12V/2.5A, 24V/1.3A		24V/2.5A		24V/3.75A		24V/5A		24V/10A				
Adjustable Voltage Range		±10%										±5%		±10%				
Output Holding Time (Typ.) (at rated output)	100V AC	45ms		5V: 53ms, 12V: 34ms, 24V: 36ms		12V: 13ms, 24V: 15ms		13ms		20ms		30ms						
	230V AC	285ms		5V: 330ms 12V: 215ms 24V: 230ms		12V: 110ms 24V: 110ms		105ms		30ms		33ms		40ms				
Start Time (at rated input and output)		500ms max.		500ms max.		600ms max.		800ms max.		700ms max.		800ms max.						
Output	Rise Time (at rated input and output)		5V, 12V: 200ms max 24V: 250ms max		5V, 12V: 200ms max. 24V: 250ms max.		200ms max.											
	Regulation	Input Fluctuation		0.4% max.														
		Load Fluctuation		5V: 2.5% max. 12V, 24V: 1.0% max.				1.0% max.										
		Temperature Change		0.04%/°C max. (-10 to +65°C)		0.05%/°C max. (-10 to +65°C)		12V: 0.05%/°C max. (-10 to +50°C) 24V: 0.05%/°C max. (-10 to +55°C)		0.05%/°C max. (-10 to +55°C)		0.05%/°C max. (-10 to +50°C)		0.05%/°C max. (-25 to +55°C)				
		Ripple (including noise)		5V: 8% p-p max. (-25 to -10°C) 12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)		5V: 8% p-p max. (-25 to -10°C) 12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)		12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)		4% p-p max. (-25 to -10°C)								
				5V: 5% p-p max. (-10 to +0°C) 12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)		5V: 5% p-p max. (-10 to +0°C) 12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)		12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)		1.5% p-p max. (-10 to +0°C)								
				5V: 2.5% p-p max. (0 to +65°C) 12V: 1.5% p-p max. (0 to +65°C) 24V: 1% p-p max. (0 to +65°C)		5V: 2.5% p-p max. (0 to +65°C) 12V: 1.5% p-p max. (0 to +65°C) 24V: 1% p-p max. (0 to +65°C)		12V: 1.5% p-p max. (0 to +50°C) 24V: 1% p-p max. (0 to +55°C)		1% p-p max. (0 to +55°C)		1% p-p max. (0 to +50°C)		1% p-p max. (0 to +55°C)				
				105% min. (auto reset)		101% min. (auto reset)										105% min. (auto reset)		
		Operation Indicator		LED (green)														
	Dielectric Strength	Between input and output terminals		3,000V AC, 1 minute														
Between input and ground terminals		2,000V AC, 1 minute																
Between output and ground terminals		500V AC, 1 minute																
Insulation Resistance		Between input and output terminals: 100MΩ min. (500V DC megger)										Between input and ground terminals: 100MΩ min. (500V DC megger)						
Operating Temperature ⁴ (No freezing)		-25 to +75°C				-25 to +70°C				-25 to +65°C								
Operating Humidity (no condensation)		20 to 90% RH																
Storage Temperature (No freezing)		-25 to +75°C																
Storage Humidity (no condensation)		20 to 90% RH																
Vibration Resistance		10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL6 end clips)				10 to 55Hz, amplitude 0.33mm, 2 hours each in 3 axes (when used with BNL6 end clips) 10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL8 end clips)				10 to 55Hz, amplitude 0.21mm, 2 hours each in 3 axes (when used with BNL6 end clips) 10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL8 end clips)		10 to 55 Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with part no. BNL6 mounting clips)						
Shock Resistance		300 m/s ² (30G), 3 times each in 6 directions																
Expected Life ⁵		8 years minimum (at the rated input, 50% load, operating temperature +40°C, standard mounting direction)																
EMC	EMI	EN61204-3 (Class B)																
	EMS	EN61204-3 (industrial)																
Safety Standards		UL508 (Listing), UL1310 Class 2, ANSI/ISA-12.12.01 CSA C22.2 No. 107.1, 213, 223 EN60950-1, EN50178										UL508 (Listing) ANSI/ISA-12.12.01 CSA C22.2 No. 107.1, 213 EN60950-1, EN50178						
Other Standard		SEMI F47 (at 208V AC input only)																
Degree of Protection		IP20 (EN60529)																
Dimensions (mm)		75H × 45W × 70D		90H × 22.5W × 95D				95H × 36W × 108D				115H × 46W × 121D		125H × 60W × 125D				
Weight (approx.)		130g		140g		150g		260g		310g		470g		960g				
Terminal Screw		M3.5																

*At normal temperature and humidity unless otherwise specified.

Note 1: DC input voltage is not subject to safety standards. When using on DC input, connect a fuse to the input terminal for DC input protection.

Note 2: Under stable state.

Note 3: PS5R-VB05 (5V DC/2.0A) is 10W (Up to 3.0A at Ta = 0 to 40°C. Not subject to safety standards above 2.0A.)

Note 4: See the output derating curves.

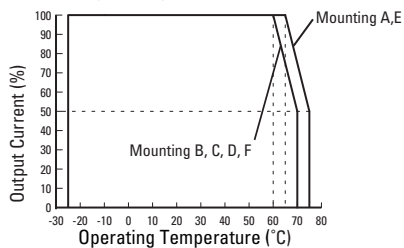
Note 5: Calculation of the expected life is based on the actual life of the aluminum electrolytic capacitor. The expected life depends on operating conditions.

Characteristics

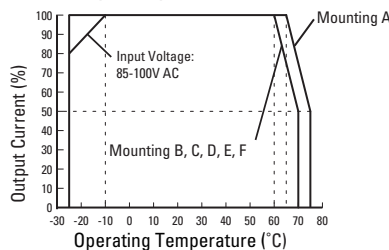
Operating Temperature vs. Output Current (Derating Curves)

Conditions: Natural air cooling (Operating temperature is the temperature around the switching power supply.)

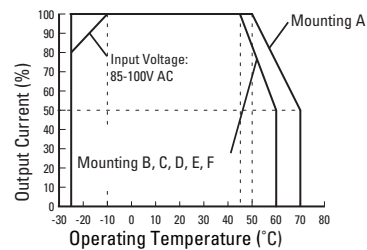
PS5R-VA05, -VA12, -VA24



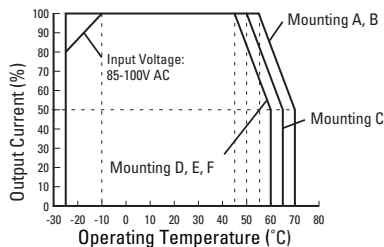
PS5R-VB05, -VB12, -VB24



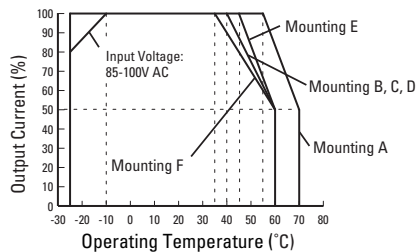
PS5R-VC12



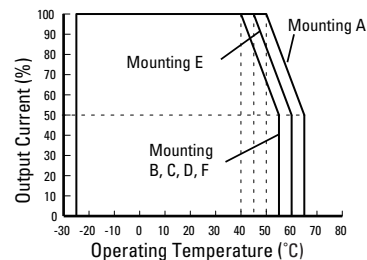
PS5R-VC24



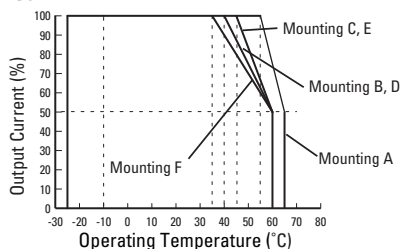
PS5R-VD24



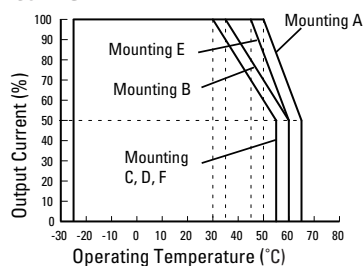
PS5R-VE24



PS5R-VF24

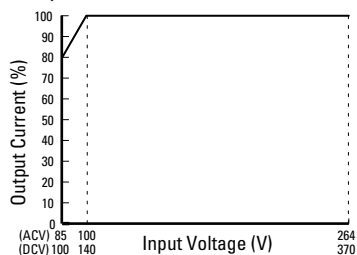


PS5R-VG24

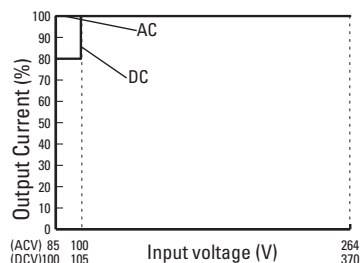


Input Voltage vs. Output Current (Derating Curves) Ta=25°C

PS5R-VB05, -VB12, -VB24, -VC12, -VC24, -VD24, -VE24, -VF24

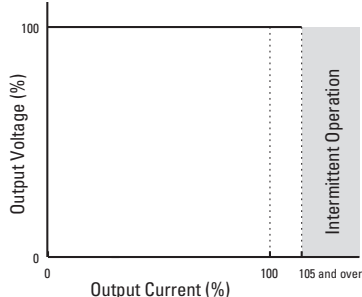


PS5R-VA05, -VA12, -VA24, -VG24

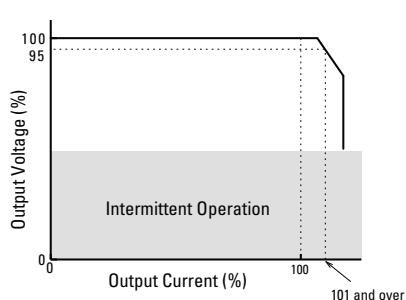


Overcurrent Protection Characteristics

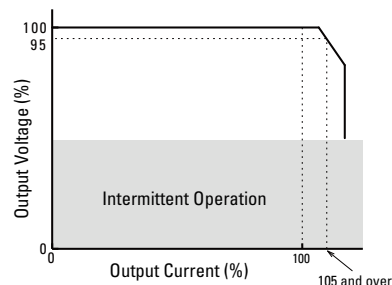
PS5R-VA/VB/VC/VD/VF



PS5R-VE24



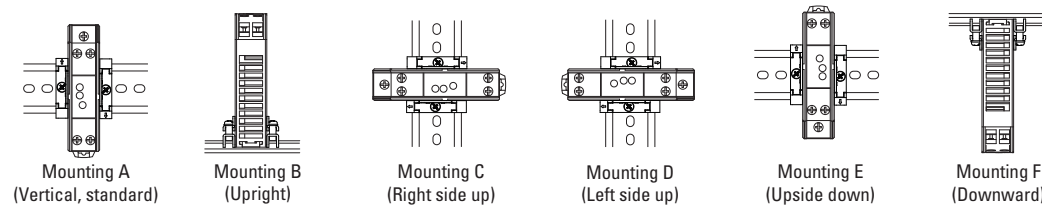
PS5R-VG24



Operating Temperature Approved by Safety Standards

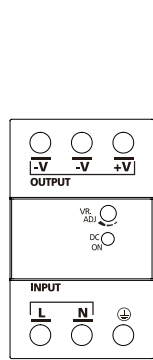
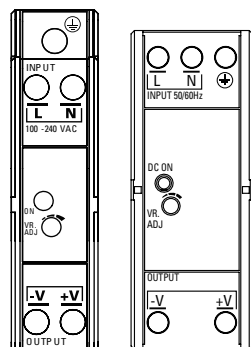
Part Number	UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178					
	Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
PS5R-VA05, -VA12, -VA24	65	60	60	60	65	60
PS5R-VB05, -VB12, -VB24	65	60	60	60	60	60
PS5R-VC12	50	45	45	45	45	45
PS5R-VC24	55	55	50	45	45	45
PS5R-VD24	55	40	40	40	45	35
PS5R-VE24	50	40	40	40	45	40
PS5R-VF24	55	40	45	40	45	35
PS5R-VG24	50	35	30	30	45	30

Mounting Style

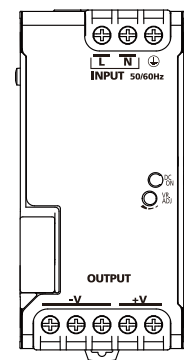


Front Panel

PS5R-VA

PS5R-VB/VC
PS5R-VD/VE/VF

PS5R-VG



Marking	Name	Description
L, N	AC Input Terminal	Voltage range: 85 to 264V AC/100 to 370V DC
⊕	Ground Terminal	Be sure to connect this terminal to a proper ground.
+V, -V	DC Output Terminals	+V: Positive output terminal -V: Negative output terminal
VR.ADJ	Output Voltage Adjustment	Allows adjustment within $\pm 10\%$. (VE = $\pm 5\%$) Turning clockwise increases the output voltage. Turning counterclockwise decreases the output voltage.
DC ON	Operation Indicator (green)	Illuminates when the output voltage is on.

Accessories

Panel Mounting Bracket²

Applicable Switching Power Supply	Part Number	Remarks
PS5R-VB	PS9Z-5R1B	—
PS5R-VC	PS9Z-5R2B	For side mounting
PS5R-VD	PS9Z-5R1C	—
PS5R-VE	PS9Z-5R1E	—
PS5R-VF	PS9Z-5R1E	—
PS5R-VG	PS9Z-6R1F	—
	PS9Z-6R2F	For side mounting

Note 2: Used when installing on a panel directly, PS5R-VA model does not require panel mounting bracket.

DIN Rail (35mm-wide)

1000mm	BNDN1000	Aluminum
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End Clip

Part Number
BNL6
BNL8