Switching Power Supplies
PS5R-V Series

PRODUCT DESCRIPTION

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]	c UL us LISTED	UL/c-UL Listed File No. E467154, E177168
EN60950-1 EN50178 EN61204-3 EN50581	TÜV	TÜV SÜD[2]
	CE	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

POWER SUPPLY 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
15W	PS5R-VB12		12V	1.3A
	PS5R-VB24		24V	0.65A
30W	PS5R-VC12		12V	2.5A
	PS5R-VC24		24V	1.3A
60W	PS5R-VD24		24V	2.5A
90W	PS5R-VE24		24V	3.75A
120W	PS5R-VF24		24V	5.0A
240W	PS5R-VG24		24V	10.0A

Part Number Structure

PS5R - V □ □

Output Voltage
05: 5V[3]
12: 12V[4]
24: 24V

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

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
	Input Current (Typ.) 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
	Inrush Current (Typ.) (Ta=25°C, cold start) 230V AC	36A	45A				41A	30A
	Leakage Current 120V AC	0.5mA max.						
	Leakage Current 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%
	Efficiency (Typ.) (at rated output)[2] 230V AC	5V: 73%, 12V: 77%, 24V: 76%	5V: 73%, 12V: 80%, 24V: 81%	12V: 85%, 24V: 87%	86%	89%		90%
	Power Factor (Typ.) 100V AC	—	—	—	—	0.99		
	Power Factor (Typ.) 230V AC	—	—	—	—	0.86	0.92	0.96
Output	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	5V: 45ms, 12V: 45ms, 24V: 47ms	5V: 53ms, 12V: 34ms, 24V: 36ms	12V: 13ms, 24V: 15ms	13ms	20ms	30ms	
	Output Holding Time (Typ.) (at rated output) 230V AC	5V: 289ms, 12V: 294ms, 24V: 282ms	5V: 330ms, 12V: 215ms, 24V: 230ms	12V: 110ms, 24V: 110ms	105ms	30ms	33ms	40ms
	Start Time (at rated input and output)	450ms max.	500ms max.	600ms max.	800ms max.		700ms max.	800ms max.
	Rise Time (at rated input and output)	220ms max	5V, 12V: 200ms max. 24V: 250ms max.	200ms max.				
	Regulation: Input Fluctuation	0.4% max.						
	Regulation: Load Fluctuation	5V: 2.5% max. 12V, 24V: 1.0% max.		1.0% max.				
	Regulation: 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)	0.05%/°C max. (-25 to +50°C)
	Regulation: 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)			
	Regulation: Ripple (including noise)	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)			
	Regulation: Ripple (including noise)	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)	1% p-p max. (0 to +50°C)
Overcurrent Protection		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						
Dielectric Strength	Between input and ground terminals	2,000V AC, 1 minute						
Dielectric Strength	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		20 to 90% RH (no condensation)						
Storage Temperature (No freezing)		-25 to +75°C						
Storage Humidity		20 to 90% RH (no condensation)						
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 55Hz, 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)						
EMC	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. Notes: 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. 2: Under stable state. 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.) 4: See the output derating curves on page 3. 5: Calculation of the expected life is based on the actual life of the aluminum electrolytic capacitor. The expected life depends on operating conditions.